

Appendices to Chapter F

Ecology

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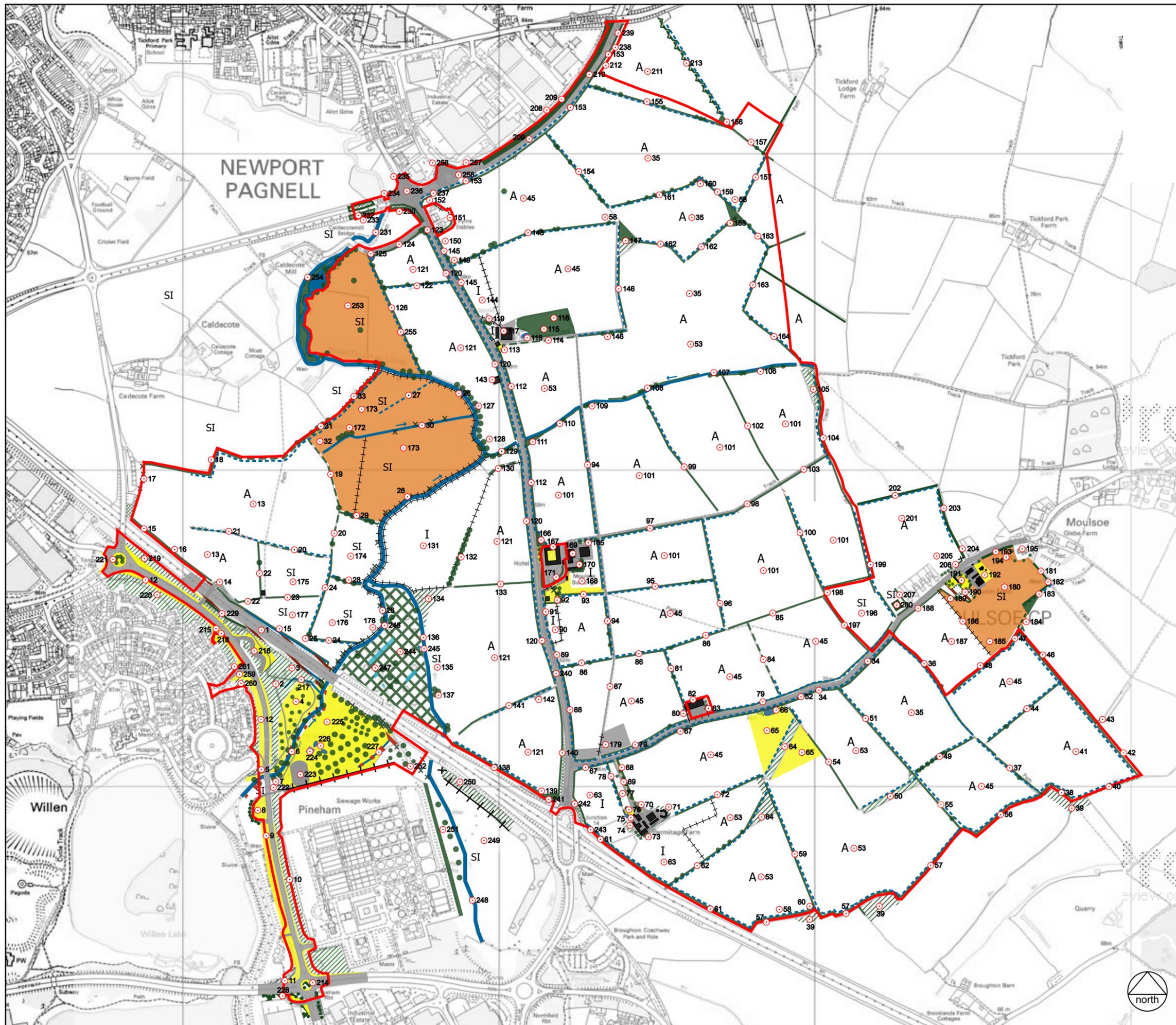
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Figures to Chapter F

Ecology



KEY

-  Site boundary
-  Semi-natural broadleaved woodland
-  Broadleaved plantation woodland
-  Mixed plantation woodland
-  Scattered trees
-  Intact hedgerow
-  Defunct hedgerow
-  Dense scrub
-  Scattered scrub
-  Tall ruderals
-  SI Semi-improved neutral grassland
-  SI Species-poor semi-improved grassland
-  I Improved grassland
-  Amenity grassland
-  A Arable land
-  Watercourse and direction of flow
-  Dry / seasonally wet ditch
-  Standing water
-  Fence
-  Hardstanding
-  Buildings
-  Target note

CLIENT:
St James

PROJECT:
Newport Pagnell Ecology

TITLE:
Phase 1 Habitat Survey Plan

SCALE AT A3: DATE:
 Not to scale March 2021

2090.52 / 15a **FIGURE F1**

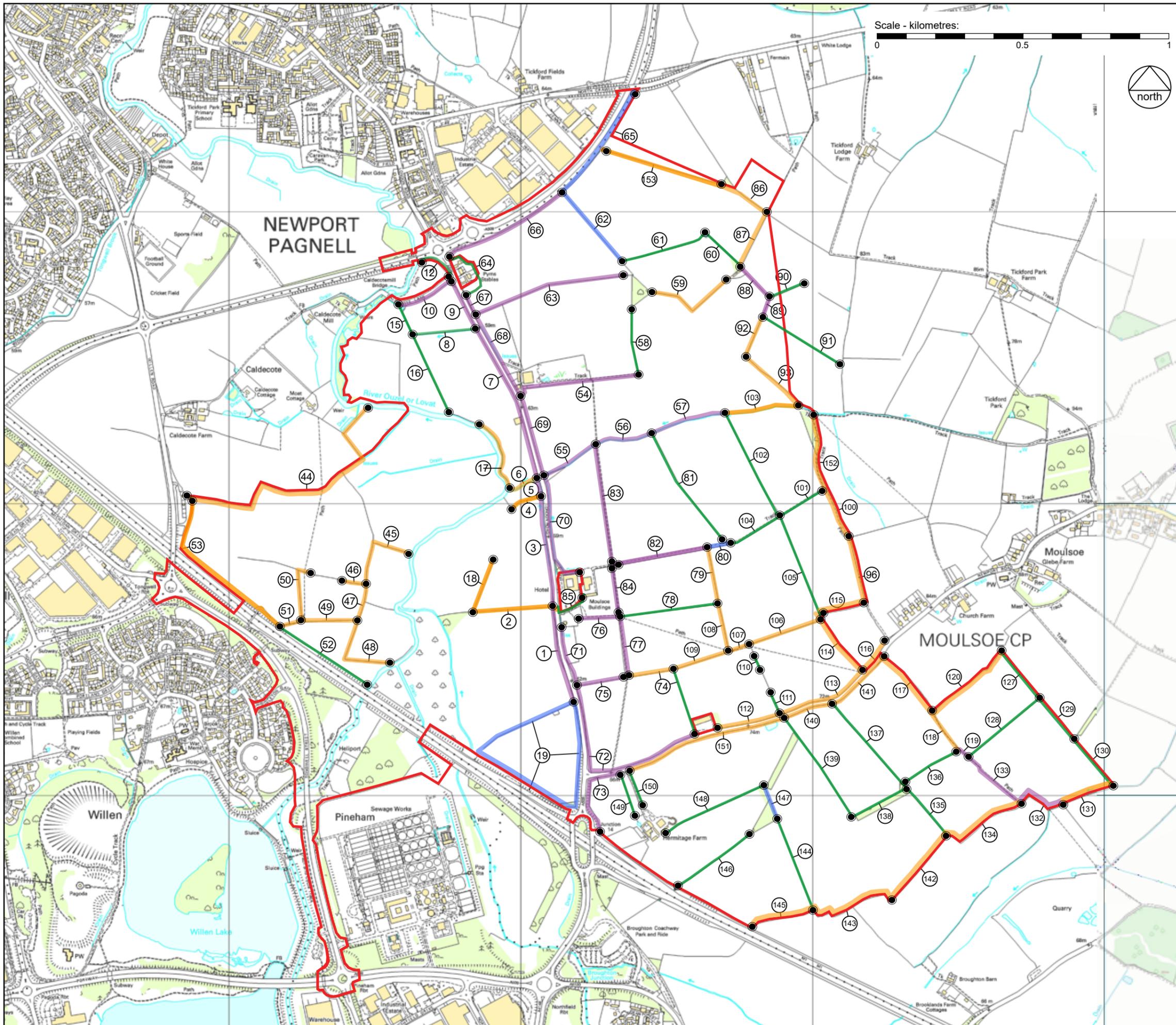
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KEY

-  Site boundary
-  Hedgerow node
-  Hedgerow number*

Hedgerow assessment under Hedgerow Regulations (1997)

-  Hedgerow important under Historical & Archaeological Criteria (Paragraphs 1-5)
-  Hedgerow important under Wildlife & Landscape Criteria (Paragraphs 6-10)
-  Hedgerow important under both Historical & Archaeological and Wildlife & Landscape Criteria (Paragraphs 1-10)
-  Hedgerow non-important

*Sequential numbers not shown on the plan relate to off-site hedgerows which are not included in the current assessment

CLIENT:
St James
PROJECT:
Milton Keynes East
TITLE:
Hedgerow Survey Results Plan

SCALE AT A3:
1:12,500

DATE:
March 2021

2090.52 / 27

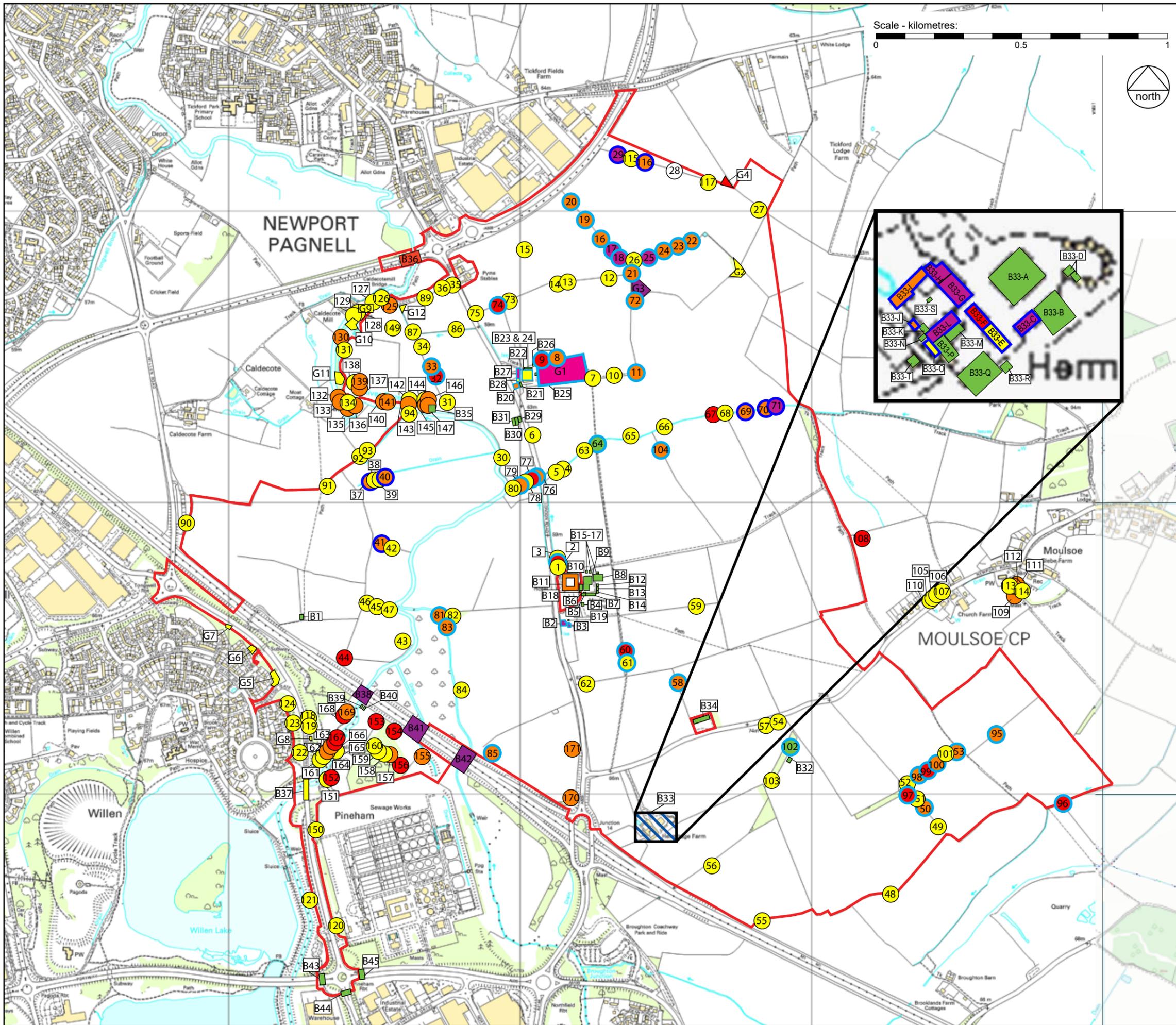
FIGURE F2

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KEY

- Site boundary
- Tree/building subject to Phase 2 roost survey in 2019
- Tree/building subject to Phase 2 roost survey in 2020

BUILDINGS*

- Confirmed bat roost
- Probable bat roost
- High bat roost potential
- Moderate bat roost potential
- Low bat roost potential
- Negligible bat roost potential

TREES*

- Confirmed bat roost
- High bat roost potential
- Moderate bat roost potential
- Low bat roost potential

*Roosting categories relate to roost potential in accordance with the BCT 2016 guidelines. All other trees within the site are regarded as having 'negligible' potential to support roosting bats.

CLIENT:
St James

PROJECT:
Milton Keynes East

TITLE:
Bat Roost Survey Summary Plan

SCALE AT A3:
1:12,500

DATE:
March 2021

2090.52 / 31

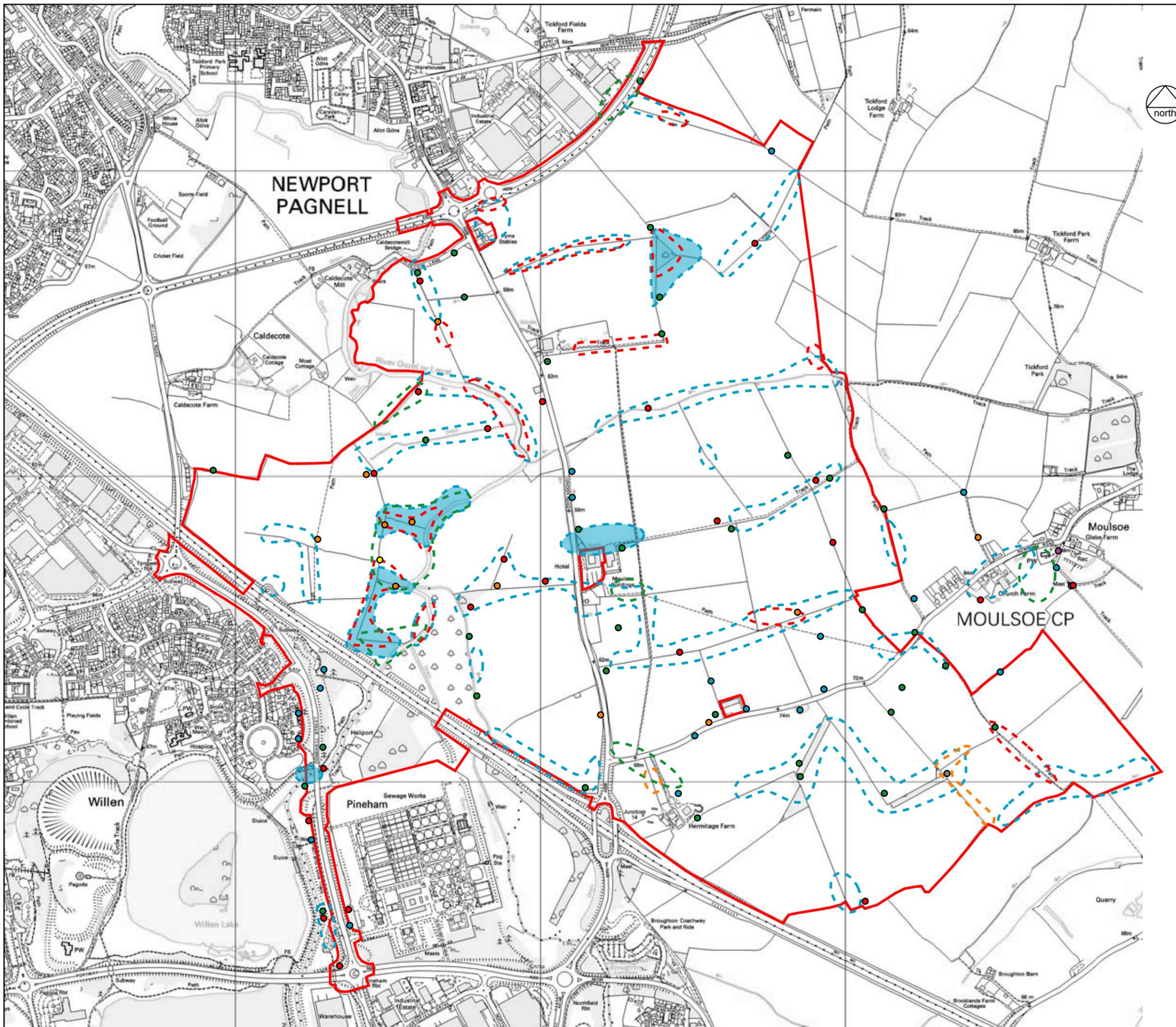
FIGURE F3

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KEY

- Site boundary

- Bat foraging and commuting activity**
- Common Pipistrelle
 - Single bat pass
 - Occasional bat pass / foraging
 - Moderate foraging activity
- Soprano Pipistrelle
 - Single bat pass
 - Occasional bat pass / foraging
- Noctule
 - Single bat pass
 - Occasional bat pass / foraging
- Myotis* sp.
 - Single bat pass
 - Occasional bat pass / foraging
- Brown Long-eared bat
 - Single bat pass
 - Occasional bat pass / foraging
- Serotine
 - Single bat pass
- Leisler's
 - Single bat pass

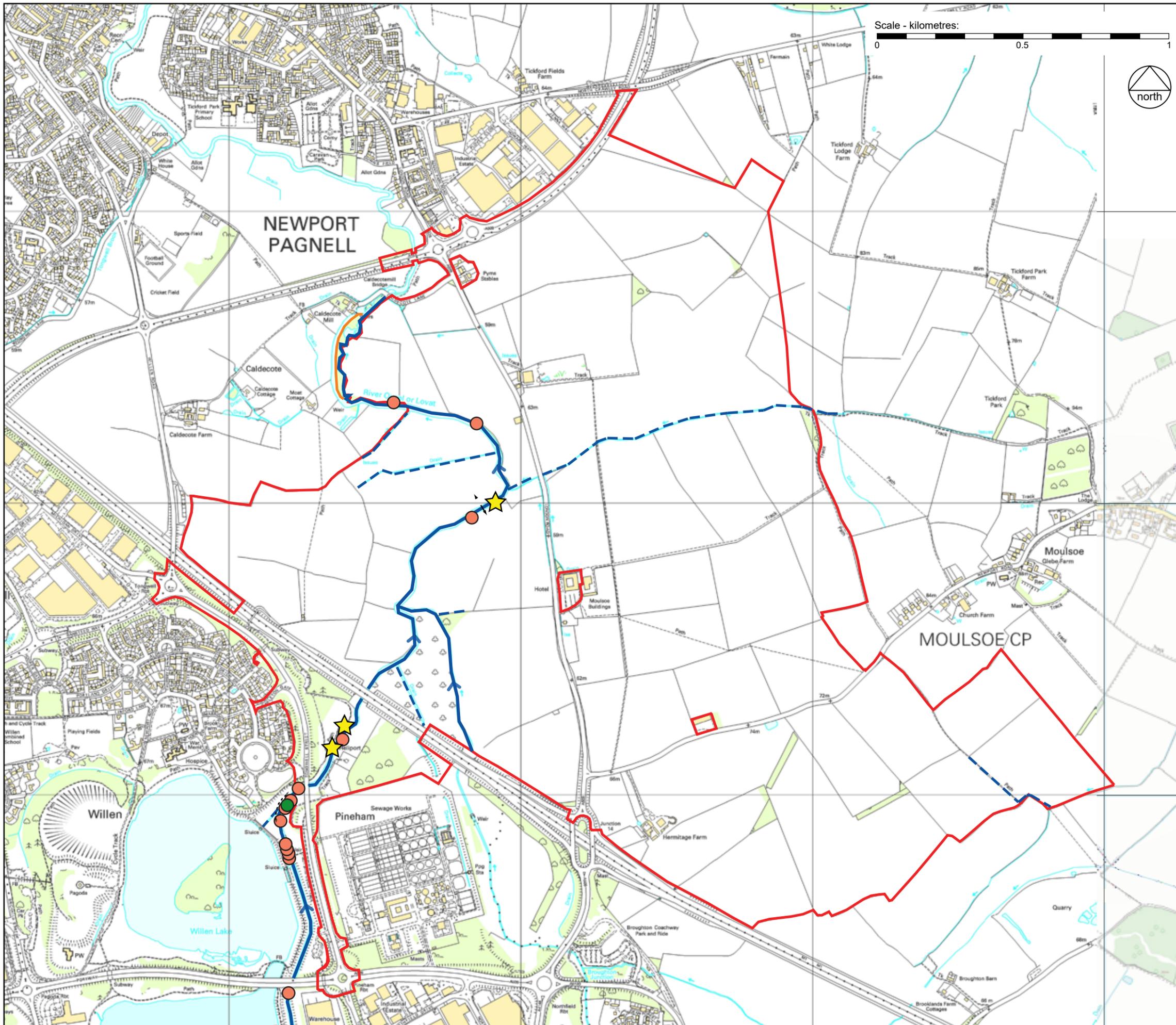
CLIENT:
St James

PROJECT:
Milton Keynes East

TITLE:
Bat Activity Transect Survey Summary Plan

SCALE AT A3: DATE:
Not to Scale March 2021

2090.52/20 **FIGURE F4**



KEY

- Site boundary
- Running water
- Dry ditch
- Access unavailable for survey
- ★ Otter feeding signs
- Potential Otter lying-up site/ holt
- Otter spraint
- Mammal path with Otter tracks

No evidence of Water Vole recorded

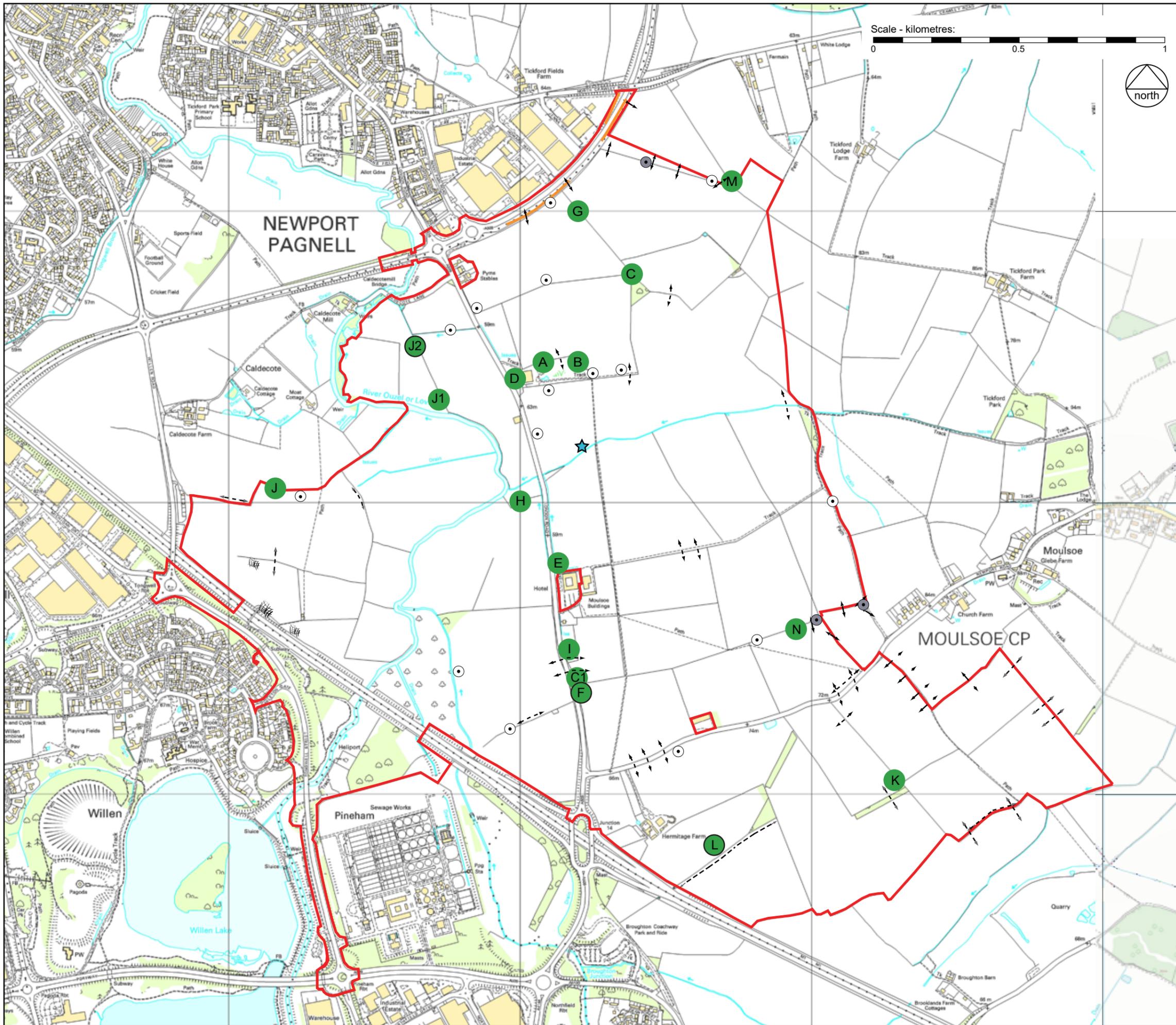
CLIENT:
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PROJECT:
Milton Keynes East

TITLE:
Water Vole and Otter Survey Summary Plan

SCALE AT A3: 1:12,500 DATE: March 2021

2090.52 / 31 **FIGURE F5**



KEY

- Site boundary
- Outlying Badger sett
- Active Badger sett
- Restricted access for survey
- Mammal path
- Badger foraging signs
- Well used latrine
- Single dung pit
- ★ Badger footprint

CLIENT:
St James

PROJECT:
Milton Keynes East

TITLE:
Badger Survey Summary Plan

SCALE AT A3: 1: 12,500 DATE: March 2021

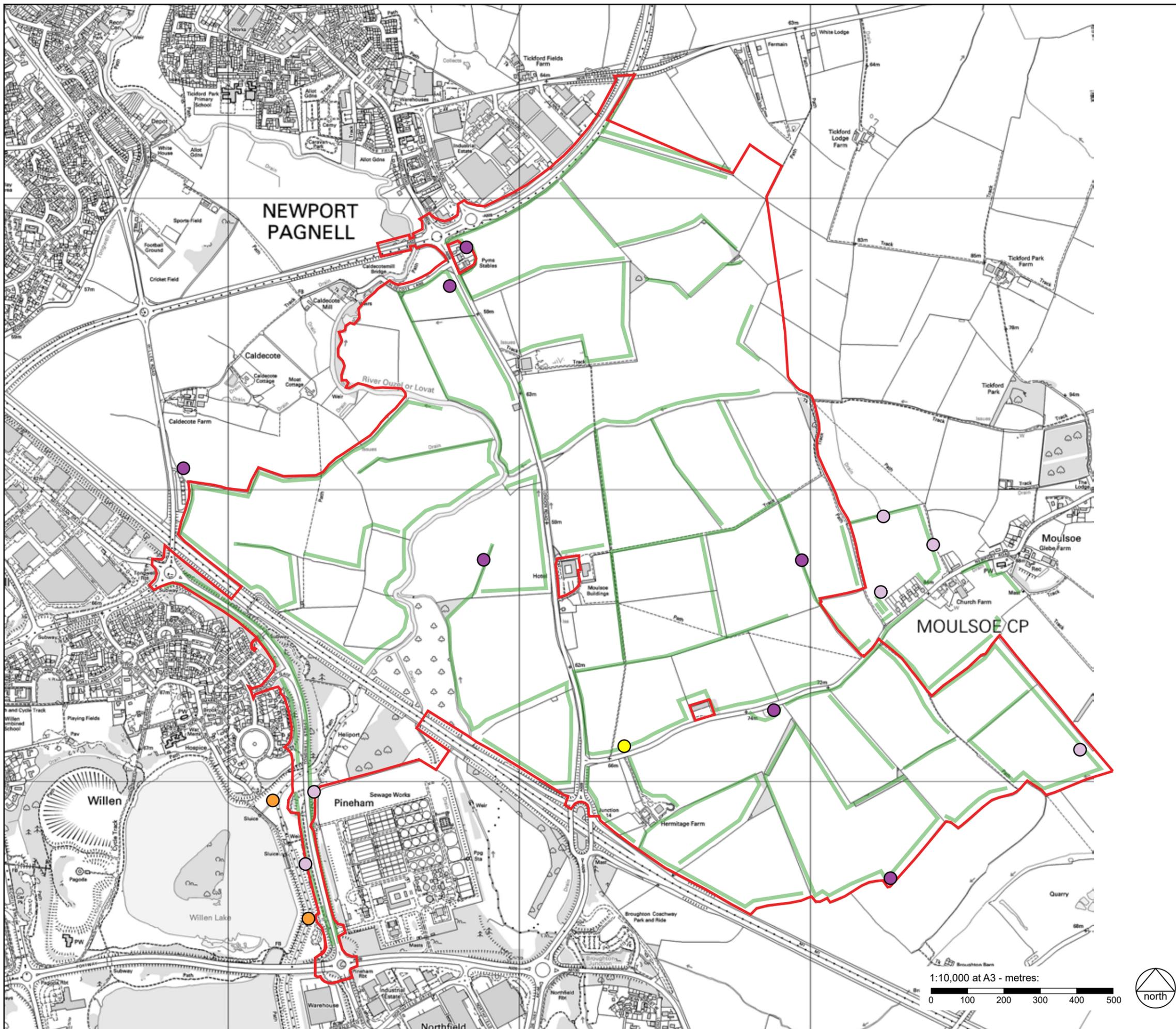
2090.52 / 16 **FIGURE F6**

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- KEY**
- Site boundary
 - Reptile mat locations
 - Slow-worm record (recorded 2018/2020)
 - Grass Snake record (recorded 2012)
 - Grass Snake record (recorded 2018/2020)
 - Incidental Grass Snake record made during wider survey in 2020

CLIENT:
St James

PROJECT:
Milton Keynes East

TITLE:
Reptile Survey Summary Plan

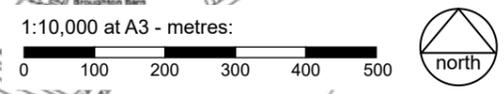
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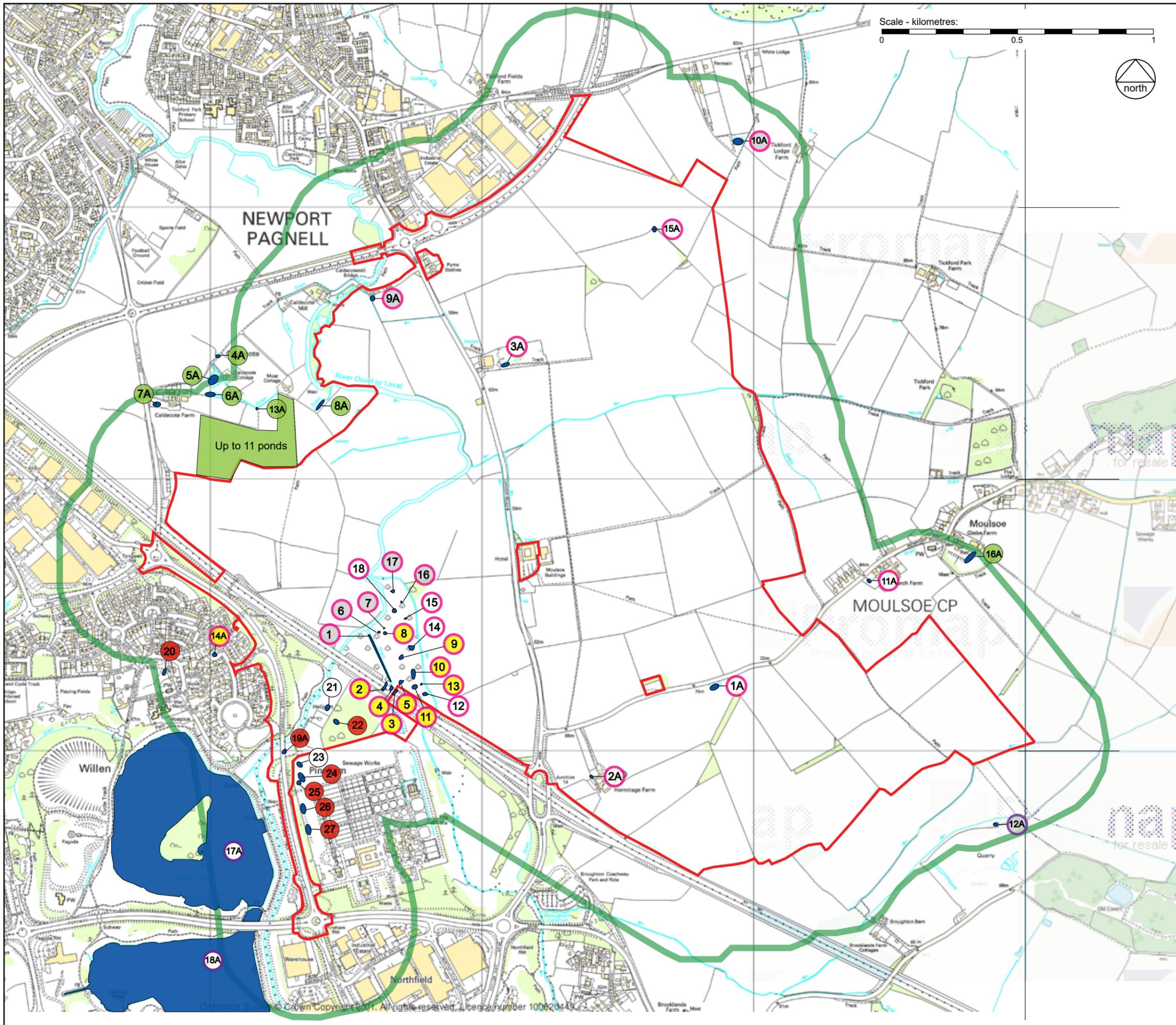
2090.52 / 11 **FIGURE F7**

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KEY

- Site boundary
- 300m radius of site*
- Waterbody*
- Waterbody subject to HDA survey in 2018/2019
- Waterbody subject to HDA survey in 2020
- Waterbody dry
- No access available for survey in 2020
- GCN presence confirmed through HDA presence/absence or eDNA survey**
- GCN presence identified through desk study**

*No further waterbodies have been identified within 300m of the site.

**No GCN have been recorded in any of the other identified waterbodies

Further details of the 2018/2019 GCN Surveys carried out are provided in the Great Crested Newt HSI and eDNA Survey Report (HDA, 2020a).

CLIENT:
St James

PROJECT:
Milton Keynes East

TITLE:
Great Crested Newt Survey Summary Plan

SCALE AT A3: NTS (ref. scale bar) DATE: March 2021

2090.52 / 33 **FIGURE F8**

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KEY

- Site boundary
- ★ New opportunities for roosting bats and breeding birds provided within new buildings, bridges and retained trees*
- ★ Log and brush piles installed around scrub and hedgerow edges to provide opportunities for reptiles and other wildlife*
- ★ New artificial holt installed to provide additional opportunities for Otter*

* The position and extent of these features are indicative at this stage

CLIENT:
St James
 PROJECT:
Milton Keynes East
 TITLE:
Ecological Opportunities Plan
 SCALE AT A3: NTS DATE: March 2021

2090.52/34 **FIGURE F9**

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Appendix F1

Evaluation Criteria

Criteria used for the evaluation of ecological receptors (based on Ratcliffe, 1977; CIEEM 2018)

Assigning value is relatively straightforward in the case of designated sites, and undesignated sites meeting designation criteria. However, in most cases evaluation of ecological resources is not straightforward and requires a degree of knowledge, experience and professional judgement (Usher, 1986; Spellerberg, 1992). Evaluation of an ecological receptor was based on a number of criteria (Ratcliffe, 1977; CIEEM 2018).

- Site designations; SPA, SAC, Ramsar, SSSI, NNR, LNR, SINC or equivalent.
- Site designation criteria; e.g. Guidelines for the Selection of Biological SSSIs (JNCC, 1989).
- Conservation status; whether a habitat or species is rare, declining or threatened at a given geographic scale.
- Geographic location; the value of a habitat or species may change depending on whether it is being assessed in the south of England or the north of Scotland.
- Distribution; habitats or species on the edge of their distribution, particularly where that distribution is changing as a result of global trends and climate change and endemic species or locally distinct sub-populations of a species are more valuable;
- Rarity; the presence of habitats, species, subspecies or varieties that are rare or uncommon at a given geographic scale.
- Diversity; of habitats, or species, particularly of vascular plants. Species-rich assemblages of plants or animals are likely to be important in terms of biodiversity;
- Naturalness; habitats least affected by human disturbance are normally of relatively higher importance.
- Size; larger areas are generally more valuable than lots of small ones. Notably large populations of animals or concentrations of animals considered uncommon or threatened in a wider context may be important.
- Fragility; sensitivity to, and probability of, human impact.
- Typicalness; a good example of the type, particularly plant communities (and their associated animals) that are considered to be typical of valued natural/semi-natural vegetation types, including examples of naturally species-poor communities.
- Potential value (if restored to favourable conservation status).
- Secondary or supporting value; value of a receptor in supporting the integrity or conservation status of another valued receptor.
- Ability to be recreated; the more difficult a habitat is to re-create, were it to be destroyed, the greater the importance usually attached to it.

Appendix F2

Phase I Habitat Survey Target Notes

Target Notes

1. M1 motorway with steep sided earth verges which are reinforced with gabions and metal walls in places. The southern verge of the M1 motorway was cleared in 2018 and has since been recolonised by tall ruderal vegetation and tree and scrub saplings, with areas of bare ground remaining. Species present include immature Ash, Elder, Hawthorn and Bramble with Cleavers, Common Nettle, Green Alkanet, Bittersweet, Creeping Thistle, Spear Thistle, Cow Parsley, Bush Vetch, Tall Fescue, Yorkshire Fog, Ribwort Plantain, Hogweed, Mugwort, Doves-foot Cranesbill, Spurge sp., Willowherb, Wood Avens, Common Vetch, Red Deadnettle, Fumitory, Prickly Lettuce, Herb Robert, Groundsel and Yarrow with occasional escaped crop plants including Cabbage and Oat. A short section of wet ditch fed by a rainwater drainage pipe is present. The ditch is between 30cm and 1m wide with shallow earth banks. The northern verge of the motorway has also recently been cleared and is mostly dominated by bare earth with dense to scattered tall ruderal vegetation, very similar in composition to the southern verge with additional species including Field Poppy, Common Mouse-ear and Oil-seed Rape.
2. An area of mixed plantation woodland dominated by early-mature Scot's Pine and Silver Birch. The understorey scrub is moderately dense and includes Dogwood, Elder, Ash (saplings), Blackthorn and Dog Rose. The sparse ground flora is dominated by Bramble with Wood Avens, Herb Robert, Yorkshire Fog, Cock's-foot and Male Fern. A network of paths around and through the woodland are lined by mown amenity grassland.
3. An easement below electricity pylons comprising a woodland ride with relatively species-poor damp grassland with abundant tall ruderals and scrub and tree saplings along woodland edges. The dominant grassland species are Cock's-foot and Yorkshire Fog with less frequent Creeping Bent, Meadow Foxtail, Knapweed sp. and Trefoil sp. Frequent ruderal species include Great Willowherb, Common Nettle, Bramble, Cleavers and Broad-leaved Dock. Himalayan Balsam is also abundant, which is an invasive plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). Scrub species include dominant Dogwood with Elder, Laurel sp., Wild Cherry, Hawthorn, Cotoneaster sp. and Rowan.
4. An infrequently mown area of species-poor grassland dominated by Perennial Rye-grass and Rough Meadow-grass. The scrubby margin of the grassland abutting the woodland to the west is dominated by Goat Willow, Dogwood and Hawthorn. A small number of young White Willow trees have also been planted, scattered within the grassland.
5. Tree and scrub planting to both sides of the Tongwell Street road bridge dominated by young and early-mature Field Maple, Alder and Scots Pine with a sparse understorey of Hazel and Elder.
6. The banks of the River Ouzel generally comprise tussocky grasses, tall ruderal vegetation and Common Reed, with frequent Willow trees. The river passes below wide concrete road bridges beneath Tongwell Street and the M1.
7. A strip of tall tussocky grassland running along the southern bank of the River Ouzel both sides of the road bridge. The grassland is unmanaged and dominated by perennial grasses including Cock's-foot, Creeping Bent, Fescue, Common Couch, Tufted Hair-grass and Common Reed. Frequent forb species include Creeping Cinquefoil, Cleavers and Common Vetch. Ruderals are abundant and include Creeping Thistle, Teasel, Common Nettle, Great Willowherb, Hogweed, Mugwort, Ground Elder, Bristly Ox-tongue, Broad-leaved Dock and Himalayan Balsam.
8. A hardstanding track leads from Tongwell Street to an area of public open space. The track is bordered to the west by trees and scrub including young and early-mature Silver Birch, Alder, Wild Cherry and Scot's Pine with a sparse understorey of Cherry Laurel, Field Rose and Osier.

To the east of the track is an area of occasionally managed species-poor grassland. A shipping container bordered by recently planted Cherry Laurel is present within the grassland.

9. The verges of Tongwell Street comprise frequently mown species-poor grassland. Species include Creeping Bent, Perennial Rye-grass, Fescue, White Campion, Red Clover, Bristly Ox-tongue, Dandelion, Selfheal, Hawkbit, Common Ragwort, Creeping Cinquefoil, White Clover, Creeping Buttercup, Ribwort Plantain, Daisy and Yarrow. Scattered trees including young Horse Chestnut are present within the grassland.
10. Tree and shrub planting along the eastern side of Tongwell Street comprising early-mature trees including Silver Birch, Alder, Wild Cherry, Poplar and Scot's Pine with an understorey of Cherry Laurel, Osier, Guelder Rose, Dog Rose, Hazel and Dogwood.
11. Tree and shrub planting along the north-western side of the roundabout in the south of the site comprising early-mature Sycamore, Norway Maple, Alder and Hornbeam with an understorey of Dog Rose, Hazel and Blackthorn.
12. Western verge of Tongwell Street to the north of the river bridge comprising frequently mown amenity grassland similar in species composition to those listed in TN 9, with a rare presence of Bee Orchid. The grassland is lined with dense tree and shrub planting to the west with species including Field Maple, Scots Pine, Birch sp., Dogwood, Hawthorn, Cherry, Dog Rose, Cherry Laurel, Ash and Willow.
13. A large field in the west of the site used for intensive monoculture arable cultivation. At the time of the survey the field had cereal stubble present, with scattered herbs and arable weeds throughout including Cleavers, Field Speedwell, Bristly Ox-tongue, Sow-thistle sp. and Scentless Mayweed. Grassland field margins are approximately 3m wide and dominated by Annual Meadow-grass and Black-grass with occasional Barley, Wild Oat, Field Speedwell and Field Pansy. An abundance of ruderal vegetation along hedgerow bases includes Cleavers, Creeping Thistle, Knotgrass, Field Bindweed, Bristly Ox-tongue, Hogweed, Forget-me-not, Common Nettle, Bramble, Hemlock, Scarlet Pimpernel, Burdock, Hoary Willowherb, Sow-thistle and Dove's-foot Crane's-bill.
14. Small area of planted trees and scrub including early-mature Sycamore with a Hawthorn understorey.
15. Hedgerows running adjacent to the M1 motorway in the west of the site are intact and species-poor, dominated by Hawthorn with occasional Elder and abundant Bramble. A steep bank lies beyond the hedgerow in some places. The hedgerow has been laid in the past but is generally quite sparse and leggy at the base. The hedgerow measures approximately 3-4m high and 1-2m wide. A wet ditch flows below the southern side of the ditch which is approximately 1m wide and 1m deep with 45° sloping earth banks. Water depth at the time of survey was approximately 5cm and the ditch was fed by a rainfall drainage pipe. The banks are dominated by tall ruderal vegetation and Sedges are present within the ditch channel.
16. A small patch of dense scrub protruding from the field boundary comprising Blackthorn, English Elm, Elder and Wild Cherry with abundant Bramble, Common Nettle, Prickly Sow-thistle and Creeping Thistle at the ground layer.
17. Perhaps once a hedgerow, this section of field boundary now comprises occasional Elder and dead, Ivy-covered English Elm trees with abundant Common Nettle, Bramble and Creeping Thistle.
18. A mostly intact outgrown species-poor hedgerow forming the northern boundary of the westernmost arable field within the site. The hedgerow is generally heavily dominated by Hawthorn and in some places by Blackthorn, with occasional Elder, English Elm, Field Maple,

Goat Willow, Crab Apple and an Oak standard. The ground flora is sparse and dominated by Common Nettle and Bramble. The hedgerow measures approximately 3m high and 2-3m wide. Along much of its length is a dry ditch with a channel measuring up to 1.5m and 2-3m wide at the eastern end.

19. A defunct, species-poor hedgerow with substantial gaps dominated by Elder with occasional Hawthorn and English Elm. Some gaps are now filled by Bramble.
20. Mostly defunct, species-poor hedgerows along the boundaries of the western arable field with English Elm, Field Maple, Crab Apple, Elder, Hazel and two mature Crack Willow trees along the northern section of hedgerow. Substantial gaps in the hedgerows often support Bramble. The western section of hedgerow is accompanied by a dry ditch with a channel of approximately 1m deep and 1m wide.
21. A length of seasonally wet ditch, approximately 2m wide and 1m deep, running through the westernmost arable field and supporting dense stands of scrub and ruderal vegetation. To the western end are stands of scrub comprising Hawthorn and Goat Willow and other stretches of the ditch are overgrown with Bramble scrub.
22. An outgrown hedgerow with a few large gaps dominated by Hawthorn with Ash, English Elm, Crack Willow, Elder and abundant Bramble.
23. Infrequently managed, intact, species-poor hedgerow dominated by Hawthorn with occasional Blackthorn and Elder with abundant Bramble. The hedgerow measures approximately 3-4m tall and up to 2m wide.
24. Infrequently managed, intact, species-poor hedgerows dominated by Hawthorn and Blackthorn with occasional Elder, Field Maple and Bramble, and a mature Ash tree. The hedgerows measured approximately 3-4m in height and up to 3m wide. Seasonally wet ditches with channels measuring 3-4m wide and up to 1m deep run beneath the hedgerow and support very occasional Greater Pond-sedge.
25. A damp depression alongside the corner of a hedgerow which is known to fill with water during/following particularly wet weather, but was dry at the time of survey.
26. The River Ouzel flows in a northerly direction through the site. The river channel is approximately 5-10m wide and estimated to be over 1m deep with a soft silt base. The earth banks are generally dominated by rough grass and ruderal vegetation with occasional scrub and trees. Species identified during the survey included Cock's-foot, False Oat-grass, Common Nettle, Teasel, Bramble, Great Willowherb, Hogweed, Broad-leaved Dock and Creeping Thistle. Scrub and tree species include Crack Willow and Hawthorn. Common Reed is also locally abundant.
27. Shallow, seasonally wet ditch running through a field of semi-improved grassland bordered by tussocky grasses.
28. A relatively short section of outgrown, mostly intact, species-poor hedgerow and a seasonally wet ditch with mature Crack Willow trees along its length. The hedgerow is dominated by Hawthorn with frequent Blackthorn and rare occurrences of Guelder Rose and Crab Apple. The ditch channel measures approximately 2m wide and 0.5m deep.
29. A relatively short section of outgrown, mostly-intact, species-poor hedgerow and dry ditch with mature Crack Willow trees. The hedgerow measures up to 5m high and 4m wide and is dominated by Blackthorn with frequent Hawthorn, Elder and English Elm. The ditch channel measures approximately 2m wide and 0.5m deep.

30. A seasonally wet ditch with a channel measuring up to 2-3m wide and 0.5-1m deep supporting dense marginal vegetation dominated by Reed Canary-grass with occasional Common Reed. The banks of the ditch support rough grasses with occasional small Crack Willow trees and Goat Willow. The western end is much shallower with grasses and tall ruderals.
31. A defunct, outgrown, species-poor hedgerow with mature trees and a dry ditch beneath. The hedgerow includes Hawthorn, Field Maple, Elder and Blackthorn with Crack Willow and Field Maple trees. The seasonally wet ditch has a channel measuring approximately 2m wide and up to 1.5m deep and supports dense ruderal vegetation where there is less shading.
32. The westernmost margin of the grassland field dominated by tall ruderal vegetation, in particular Common Nettle.
33. A seasonally wet ditch supporting dense marginal vegetation including dominant Reed Canary-grass and occasional Common Reed, Great Willowherb and Meadowsweet. The banks of the ditch support rough grasses with occasional scrub and trees including Hawthorn, Ash and Crack Willow.
34. Infrequently managed intact boundary hedgerow dominated by Hawthorn and Blackthorn with Dog Rose and Bramble, measuring approximately 2.5m high and 2.5m wide. A narrow semi-improved grassland field margin runs along the southern side of hedgerow and a shallow dry ditch with a channel measuring approximately 1m wide and 0.5m deep runs along the northern side along Newport Road.
35. Intensively farmed arable land used primarily for cereal production. The field margins, comprising species-poor improved and semi-improved grassland, are generally minimal but up to 2m wide along some boundaries and up to 6m where footpaths and tracks occur alongside hedgerows. Typical margin species include abundant Barren Brome with Cock's-foot, Perennial Rye-grass, False Oat-grass, Hogweed, Dove's-foot Crane's-bill, White Clover, Creeping Buttercup, Ribwort Plantain, Field Bindweed, Broad-leaved Dock, Bristly Ox-tongue, Broad-leaved Willowherb and Bramble. Sapling scrub is also abundant along some boundaries. Tracks and footpath margins are subject to periodical mowing.
36. Intact, native, species-poor hedgerow dominated by Blackthorn and Hawthorn with frequent English Elm, occasional Field Maple and Dog Rose, and an early-mature Ash tree. The hedgerow measured approximately 2.5m high and up to 3m wide and had been recently flail cut at the time of survey. A dry ditch runs along the base of the hedgerow with a channel measuring approximately 1m deep and 1m wide and supports Great Willowherb in places.
37. Intact, native hedgerow dominated by Blackthorn and Hawthorn with occasional Elder. The hedgerow measures approximately 2.5m high and 1-2m wide and had been recently flail cut at the time of survey. A dry ditch runs along the base of the hedgerow with a channel measuring approximately 1m deep and 1m wide and supports Great Willowherb in places.
38. Mostly intact, native hedgerow dominated by Blackthorn and Hawthorn with frequent English Elm, Elder and Bramble, and small Ash trees. The hedgerow measures approximately 2.5m high and 1-2m wide and was outgrown at the time of survey. Dry ditch as (TN37).
39. A small area of tree planting just beyond the site boundary including young Ash, Oak, Rowan, Goat Willow and Alder.
40. Field boundary with dry (probably seasonally wet) ditch and regular stands of dense scrub. The ditch channel typically measures 2-3m wide and 1-1.5m deep. Scrub along the southern bank of the ditch includes Hawthorn, Blackthorn, Elder, Goat Willow and Bramble with a small number of early mature Ash trees.

41. Intensively farmed arable land used primarily for cereal production. Along the western margin of the field is a footpath along a 3m wide mown grassland buffer (see TN35).
42. Mostly intact, native, species-poor hedgerow dominated by Hawthorn with English Elm, Elder and Dog Rose. The hedgerow measured approximately 2m high and 1-2m wide and had been recently flail cut at the time of survey. A dry ditch running along the east side of the hedgerow has a channel measuring approximately 1m deep and 1m wide.
43. A small stand of dense scrub and small trees including Horse Chestnut, Blackthorn, Hawthorn, Crab Apple, Poplar and Ash.
44. Intact, native, species-poor hedgerow dominated by Blackthorn and Hawthorn with English Elm, Elder, Ash and Dog Rose and early-mature Ash trees. The hedgerow measures approximately 2m high and 2m wide and had been recently flail cut at the time of survey. A shallow dry ditch running along the north side of the hedgerow has a channel measuring approximately 0.3m deep and 1m wide.
45. Intensively farmed arable land used primarily for cereal production. The grassland field margins are generally very narrow (see TN35).
46. Intact, native, species-poor hedgerow dominated by Blackthorn and Hawthorn with English Elm, Elder, Ash, Field Maple and Crab Apple and early-mature Ash trees. The hedgerow measures approximately 2m high and 2m wide. A shallow dry ditch running along the east side of the hedgerow has a channel measuring approximately 0.3m deep and 1m wide.
47. An area of dense scrub dominated by Bramble with mixed tree planting including Aspen, Pedunculate Oak, Ash, Scot's Pine, Wild Cherry, Blackthorn and domestic Apple.
48. Intact, native, species-poor hedgerow dominated by Blackthorn with English Elm, Hawthorn Field Maple and Bramble. The hedgerow measured approximately 2m high and 1-2m wide and had been recently flail cut at the time of survey. A shallow dry ditch running along the southern side of the hedgerow has a channel measuring approximately 0.5m deep and 1-2m wide and is generally choked with Bramble and tall ruderal vegetation.
49. Intact native hedgerow dominated by Blackthorn with Hawthorn, English Elm, Crab Apple, Dog Rose and Bramble. The hedgerow measures approximately 2m high and 2m wide and had been recently flail cut at the time of survey. Seven mature Ash trees located along the hedgerow have severe decay and support a number of cavities. A shallow dry ditch running along the northern side of the hedgerow has a channel measuring approximately 0.5m deep and 1m wide.
50. A strip of woodland comprising tree planting and regenerated trees and scrub including Ash, Pedunculate Oak, Norway Maple, Scot's Pine, Alder, Aspen, Wild Cherry and Poplar sp. The scrub understorey includes Blackthorn, Bramble and Dogwood. An outgrown Hawthorn and English Elm dominated hedgerow and a dry ditch run along the northern edge of the woodland.
51. Intact, species-poor hedgerow dominated by Hawthorn with Blackthorn, English Elm and Dog Rose. The hedgerow had not recently been cut at the time of survey and measures approximately 2-3m high and 2m wide. A shallow dry ditch running along the eastern side of the hedgerow has a channel measuring approximately 0.5m deep and 1m wide.
52. A small *Rhododendron* sp. plant growing within the field margin.
53. Intensively farmed arable land used primarily for cereal production, cropped with Wheat at time of survey. Narrow grassland field margins (see TN35) are present, along with wider mown grassland tracks. Field margins are between 0.5m and 4m.

54. Mostly intact, species-poor hedgerow dominated by Blackthorn and English Elm. The hedgerow measures approximately 2m high and 1-2m wide. A dry ditch occurs along the hedgerow at the northern end of the boundary and supports dense Bramble scrub and tall ruderal vegetation including Great Willowherb and Nettle.
55. Intact, species-poor hedgerow dominated by Blackthorn with Hawthorn, English Elm, Crab Apple and a mature Pedunculate Oak tree. The hedgerow measures approximately 2.5m high and 1-2m wide and had been recently flail cut on just one side at the time of survey. A dry ditch running along the east side of the hedgerow has a channel measuring approximately 1m deep and 1.5m wide and supports Common Nettle and Great Willowherb in places.
56. Mostly intact, species-poor hedgerow dominated by Blackthorn and English Elm with Hawthorn, Goat Willow, Dog Rose and Bramble. The hedgerow was flailed on the field side and outgrown on top, measuring up to 4m high. A dry ditch running along the boundary has a channel measuring approximately 0.5-1m deep and 1-2m wide.
57. Intact native hedgerow dominated by Blackthorn with Hawthorn, English Elm, Crab Apple, Elder and Ash. The hedgerow measures approximately 2.5m high and 1-2m wide and had been recently flail cut on just one side at the time of survey. A dry ditch running along the east side of the hedgerow has a channel measuring approximately 1m deep and 1.5m wide and supports Common Nettle and Great Willowherb in places.
58. Wide field margin, approximately 4m, at the southern end of an arable field used for cereal production. The area comprises tussocky grassland with species typical of species-poor improved/semi-improved grassland, including dominant Perennial Rye-grass and False Oat-grass with abundant ruderal vegetation including Creeping Thistle, Hogweed, Bristly Ox-tongue and Common Nettle.
59. Intact, species-poor hedgerow dominated by Blackthorn with Hawthorn with a dry ditch running along the eastern side (as TN55).
60. Corner of arable field left fallow comprising grasses and ruderal vegetation. Species include dominant Bristly Ox-tongue with Common Nettle, Fescue sp., Creeping Bent, Cock's-foot and False Oat-grass. The area appeared to have been mown at the time of survey, displaying a short uniform sward.
61. Site boundary bordering the M1 motorway comprising post and rail fence with intact, species-poor hedgerows and dry ditches. The hedgerows are dominated by Hawthorn with occasional Elder.
62. Mostly intact native hedgerow dominated by Blackthorn and Hawthorn with English Elm, Dog Rose, Ash, Elder and a number of early mature Ash trees. The hedgerow measures approximately 2.5m high and 1-2m wide and had not been flail cut at the time of survey. A dry ditch running along the hedgerow base has a channel measuring approximately 1-1.5m deep and 2m wide.
63. A tall earth bund of around two years of age surrounds the western and southern sides of Hermitage Farm and supports recently established species-poor improved grassland grazed by Horses and Cattle. The grassland generally has a short sward and species recorded include Perennial Rye-grass, Cock's-foot, False Oat-grass, Soft Brome, Timothy, Brome sp., Meadow Foxtail, White Clover and Bristly Ox-tongue. The grassland is divided into fenced paddocks which are grazed by Cattle and Horses.
64. Small areas of woodland comprising a mix of tree planting and regenerated trees and scrub including White Poplar, Ash, Pedunculate Oak, Norway Maple and Crab Apple. The scrub

understorey includes Hawthorn, Blackthorn, Elder, Hazel and Bramble. The north-eastern strip of woodland also supports planted Scot's Pine. Very little ground flora is present, which is likely due to heavy shading.

65. An area of species-poor amenity grassland in the corner of an arable field, managed by regular mowing. A band of woodland runs diagonally through the centre of the grassland. Species recorded within the sward include Perennial Rye-grass, Cock's-foot, Yorkshire Fog, Fescue sp., False Oat-grass, Hawkbit, White Clover, Creeping Thistle, Dandelion, Hogweed, Common Vetch and Greater Plantain. The northern section of the grassland is used as a dog agility training area and the southern section is used as a runway for model aircraft.
66. A pond adjacent to Newport Road measuring approximately 30x20m surrounded by dense scrub and occasional trees. Little aquatic or marginal vegetation was recorded although there are small amounts of Greater Reedmace, Greater Pond-sedge and Water Lily. Great Willowherb and Common Nettle dominate less shaded areas of the margins. To the east of the pond is a small area of young to early-mature trees dominated by Ash and Wild Cherry, and dense Blackthorn scrub dominates the western banks. Crack Willow trees and scrub is also present along the banks of the pond. Hedgerow borders the pond to the north (see TN67).
67. Mostly intact, species-poor hedgerow along Newport Road, dominated by Hawthorn with English Elm, Ash, Crab Apple and Bramble. The hedgerow measures approximately 2m high and 1.5m wide. A shallow dry ditch running along the hedgerow base has a channel measuring up to 0.5m deep and 1m wide.
68. Intact, species-poor hedgerow dominated by Hawthorn with English Elm, Ash, Crab Apple and Bramble. The hedgerow measures approximately 2m high and 1.5m wide.
69. The driveway to Hermitage Farm comprising a concrete road and a verge along the eastern edge with amenity grass and scattered trees. The grassland is regularly mown and includes Perennial Rye-grass, Fescue sp., Annual Meadow-grass, Cock's-foot, White Clover, Dandelion, Dove's-foot Crane's-bill and Hogweed. Tree species included Horse Chestnut, Goat Willow, Red Oak, Wild Cherry and Weeping Willow.
70. A small area of amenity grassland (see TN69) with small trees including domestic Apple, Plum, Cypress sp., Norway Spruce and a young Pedunculate Oak tree.
71. A small area of planted semi-mature trees around the eastern edge of the Hermitage Farm buildings. Species include Wild Cherry, Pedunculate Oak, Silver Birch, Rowan, Ash, Whitebeam, Holm Oak and Norway Maple. English Elm is also present in the understory and the ground layer supports Bramble and Common Nettle.
72. Mostly intact, species-poor hedgerow dominated by Blackthorn with Hawthorn, English Elm and Ash. The hedgerow measures approximately 2.5m high and 1.5m wide and was flailed on the northern side only at the time of survey. A dry ditch running along the northern side of the hedgerow has a channel measuring up to 1m deep and 1.5m wide.
73. Line of Pedunculate Oak and Norway Maple trees running along the boundary of Hermitage Farm yard bordering the grassland field/ bund to the south-west.
74. A small area of planted semi-mature trees including Pedunculate Oak, Wild Cherry, Scot's Pine, Cypress, Field Maple and Horse Chestnut.
75. A small natural pond located in the corner of the Hermitage Farm garden. No marginal or aquatic vegetation was recorded but Duckweed was abundant. Pollarded Ash, Crack Willow and Hawthorn are also present on the banks of the pond.

76. Garden of Hermitage Farmhouse comprising amenity grassland with shrub and flower beds on the margins. The southern and eastern boundaries of the garden comprise Cypress, Common Box and Holly hedging. A mature Ash and a Norway Maple tree are present on the northern margin.
77. A small field comprising improved grassland regularly grazed by Horses. Two mature domestic Apple trees and Wild Cherry tree grow within the grassland.
78. Mostly intact native, species-poor hedgerow dominated by Hawthorn with Blackthorn, English Elm and Elder. A small number of early-mature trees including Ash, Wild Cherry and Horse Chestnut also occur within the hedgerow. The hedgerow measures approximately 2m high and 1m wide and was recently flail cut at the time of survey. A large gap in the hedgerow to the north has recently been filled with young Hawthorn. A dry ditch running along the western side of the hedgerow has a channel measuring up to 0.5m deep and 1m wide.
79. Mostly intact native, species-poor hedgerow along Newport Road dominated by Hawthorn with English Elm, Blackthorn, Ash, Elder, Crab Apple and Bramble. A shallow dry ditch running along the hedgerow base has a channel measuring up to 0.5m deep and 1m wide.
80. A fenceline with scattered scrub forms the boundary with a commercial unit located off Newport Road. The scrub comprises mostly Elder and Hawthorn with abundant Ivy.
81. Mostly intact native hedgerow dominated by Hawthorn and Blackthorn with English Elm and Crab Apple. The hedgerow measures approximately 2m high and 1.5m wide. A dry ditch running along the hedgerow base has a channel measuring around 1m deep and 1m wide.
82. A wide section of field margin bordering a commercial unit located off Newport Road comprising Common Nettles with rubble and other waste buildings materials.
83. A small strip of planted early-mature trees and shrubs including Wild Cherry, Field Maple and Rowan. Elder has also colonised and the ground layer comprises Common Nettle and Bramble.
84. A field boundary hedgerow which is species-poor and defunct with large gaps and comprises Hawthorn with occasional Elder.
85. An intact native, species-poor hedgerow dominated by Hawthorn and Blackthorn with English Elm, Ash and Elder. The hedgerow measures approximately 2.5m high and 2.5m wide and had been recently flail cut at the time of survey.
86. An intact native hedgerow dominated by Hawthorn and Blackthorn with English Elm, Ash and Elder. The hedgerow measured approximately 2.5m high and 2.5m wide and had been recently flail cut at the time of survey. A shallow dry ditch running along the hedgerow base has a channel measuring up to 0.5m deep and around 1m wide.
87. A network of gravel tracks running through farmland with narrow rough grassland verges.
88. An intact native, species-poor hedgerow along London Road dominated by Hawthorn with English Elm, Blackthorn, Ash, Elder, Crab Apple and Bramble. A shallow dry ditch running along the hedgerow base has a channel measuring up to 0.5m deep and 1m wide.
89. A section of recently planted Hawthorn and Blackthorn hedgerow along London Road.
90. An area of land comprising relatively recently established species-poor grassland along the western margin of an arable field. The species recorded within the sward included False Oat-

grass, Cock's-foot, Greater Bird's-foot Trefoil, Hogweed, Yarrow, Dandelion, Broadleaved Dock, Knapweed, Common Mouse-ear, Ox-eye Daisy, Red Clover, White Clover and Creeping Thistle. The area in the north-west of the field is fenced and mown for amenity use.

91. A slightly gappy section of species-poor hedgerow running along the boundary of London Road. Species include English Elm, Hawthorn and Blackthorn.
92. Species-poor hedgerows forming the southern and eastern boundaries of the garden of Moulsoe Farmhouse including Blackthorn and Yew with Clematis sp. and a young Birch tree.
93. An intact native, species-poor hedgerow dominated by Hawthorn with English Elm and Blackthorn. The hedgerow measured approximately 2.5m high and 2m wide and had been recently flail cut at the time of survey. A dry ditch running along the hedgerow base has a channel measuring up to 1m deep and 1.5m wide.
94. An intact native, species-poor hedgerow dominated by Hawthorn, Blackthorn and English Elm with Ash, Crab Apple and Elder. The hedgerow measures approximately 2.5m high and 2m wide and had been recently flail cut at the time of survey. A dry ditch running along the hedgerow base has a channel measuring up to 1.5m deep and 2m wide which supports Great Willowherb, Nettle and Bramble. Two mature Ash trees located along the hedgerow have severe decay and a number of cavities.
95. An intact native, species-poor hedgerow dominated by English Elm with Hawthorn, Blackthorn, Ash, Field Maple and Dog Rose. The hedgerow measures approximately 2.5m high and 1.5m wide. A dry ditch running along the hedgerow base has a channel measuring up to 1m deep and 1.5m wide.
96. A mostly intact native, species-poor hedgerow dominated by Hawthorn with abundant English Elm and blackthorn. The hedgerow measures approximately 2.5m high and 1.5m wide. A dry ditch running along the hedgerow base has a channel typically measuring up to 1m deep and 1m wide but it has a steep bank of up to 2m high to field margin to the east. The ditch had recently been dredged and had bare earth banks.
97. An intact native, species-poor hedgerow dominated by Hawthorn with abundant English Elm and Blackthorn, and occasional Oak. The hedgerow measures approximately 2.5m high and 1.5m wide. A dry ditch running along the hedgerow base has a channel measuring around 1m deep and 1m wide with a grassy base.
98. An intact native, species-poor hedgerow dominated by Hawthorn and English Elm with Blackthorn and Norway Maple. A dry ditch with a channel measuring around 1m deep and 1m wide runs along the western end of the hedgerow.
99. A mostly intact native, species-poor hedgerow including Hawthorn, Blackthorn, Dog Rose, Ash, English Elm, Elder and Bramble. The hedgerow measures approximately 2m high and 1.5m wide and had been recently flail cut at the time of survey. A dry ditch running along the northern end of the hedgerow base has a channel measuring around 1m deep and 1m wide.
100. A mostly intact native, species-poor hedgerow measuring approximately 2.5m high and 2m wide and had been recently flail cut at the time of survey. A shallow dry ditch running along the hedgerow base has a channel measuring around 0.5m deep and 1m wide. The northern end of the boundary comprises Bramble scrub.
101. Intensively farmed arable land used primarily for cereal production. These fields have cereal stubble present and appeared to have been planted with a cover crop with minimum tillage at the time of survey. The field margins are generally narrow (see TN35) but along the stream corridor (TN107) are much wider and comprise rough grassland (see TN58).

102. An intact native species-poor hedgerow dominated by Hawthorn and Blackthorn with English Elm and Elder. The hedgerow measures approximately 3m high and 2m wide and had not been recently managed at the time of survey.
103. An intact native species-poor hedgerow dominated by Hawthorn and Blackthorn with Wild Cherry. The hedgerow measured approximately 2.5m high and 1.5m wide. Oak trees are present towards the eastern end of the hedgerow.
104. An intact native hedgerow dominated by Hawthorn with abundant English Elm and Blackthorn. The hedgerow measures approximately 2m high and 1.5m wide and had been recently flail cut at the time of survey. A dry ditch running along the hedgerow base has a channel typically measuring up to 1-1.5m deep and 1m wide and had recently been dredged.
105. A small area of planted woodland with a sparse scrub understorey including Pedunculate Oak, Norway Maple, Scot's Pine, Small-leaved Lime and Wild Cherry. The scrub understorey includes Common Box, Dog Rose and Bramble.
106. An intact native, species-poor hedgerow running along a brook corridor dominated by Hawthorn and Blackthorn with Ash and English Elm, including mature Ash trees. The hedgerow had been flail cut on the sides only and measured approximately 3-5m high and 2m wide.
107. A small unnamed brook flowing westwards into the River Ouzel in the central area of the site. The brook channel measures around 1.5-2m deep and 3-4m wide. At the time of survey, the brook was mostly dry with localised pooling around 10cm deep, but the flow of water is often strong during times of wetter weather. The bankside vegetation, which had been recently cut, includes grasses and ruderal vegetation including Great Willowherb. Fool's Watercress is present within the channel in places.
108. An intact native species-poor hedgerow running along a brook corridor dominated by Hawthorn with Blackthorn, Crab Apple, Crack Willow and mature Ash trees. The hedgerow had been recently flail cut at the time of survey and measured approximately 2.5m high and 1.5m wide.
109. A short section of scrub resembling a defunct hedgerow located along the southern side of a brook corridor which includes dense Blackthorn, Elder, Hawthorn, English Elm and Bramble.
110. A mostly intact native, species-poor hedgerow running along a brook corridor dominated by Hawthorn with Blackthorn with abundant English Elm. The hedgerow had been recently flail cut on the sides and measures around 3-4m high and 1-2m wide.
111. A small area of regenerated English Elm and Elder with a small number of mature Pedunculate Oak and Ash trees and (probably planted) early-mature Whitebeam and Sycamore. The ground flora comprises a sparse covering of Common Nettle.
112. An intact native hedgerow along London Road dominated by Hawthorn with English Elm, Blackthorn, Ash, Elder, Crab Apple and Bramble. A shallow dry ditch running along the hedgerow base has a channel measuring up to 0.5m deep and 1m wide.
113. Semi-detached farmhouses along London Road with gardens comprising amenity grassland with a small number of Apple trees and shrubs and flowers on the margins.
114. A line of outgrown scrub and young trees resembling a defunct hedgerow located along a 2-3m high earth embankment sloping downward from the arable field in the south to a gravel track to the north. The dominant species are Hawthorn, Blackthorn, English Elm and Elder with occasional Crab Apple, Field Maple, Pedunculate Oak and Horse Chestnut. A small number

of mature Ash trees occur at the eastern end of the boundary and dense stands of Bramble dominate the western end.

115. A larger block of woodland comprising a mix of mature and early-mature regenerated trees, and a range of planted trees. Occasional mature Pedunculate Oak trees occur predominantly around the northern and eastern edges of the woodland. Other species include Rowan, Poplar species, White Willow, Beech, Wild Cherry, Norway Maple, Scot's Pine, *Prunus* sp., Lilac, Box Maple, Elder and Goat Willow. Large areas of the woodland have seasonal standing water (TN116). Damper areas in the south-western areas of the woodland support a higher density of Willow species.
116. Parts of the woodland often support seasonal standing water during the winter and early spring. Areas in the north-eastern area of the woodland support dense stands of Greater Pond-sedge and towards the south-west of the woodland damper areas are dominated by White Willow and Goat Willow.
117. A farmyard complex of brick, timber and corrugated metal buildings surrounded by concrete hardstanding and gravel. Frequently there are piles of building materials, rubble, logs and farm machinery. Ruderal vegetation is abundant and includes Common Nettle, Bristly Ox-tongue, White Deadnettle, Bramble, Poppy, Burdock, Cock's-foot and False Oat-grass.
118. A pond located at the south-eastern edge of a farmyard (TN117) measuring approximately 15mx8m and surrounded by dense Pond-sedge and Greater Pond-sedge. No other aquatic or marginal vegetation was recorded other than Duckweed. Common Nettle, Great Willowherb and Bittersweet is also found on the pond banks. The water appears to be heavily polluted due to runoff from the farm, and waste materials such as old tyres were recorded within the water.
119. A small area of grazed improved grassland located between London Road and the farmyard. Along a short section of track to the north is a group of early-mature trees including Scot's Pine, Ash and Apple. On the margins of the area are occasional tall ruderals and scattered scrub including English Elm, Blackthorn and Bramble. A log pile is present.
120. A mostly intact native hedgerow along the western side of London Road dominated by Hawthorn with Blackthorn, English Elm, Ash and Elder. The hedgerow had not been recently managed and measured approximately 2m high and 2m wide at the time of survey. A shallow dry ditch runs along the eastern side of the hedgerow with a channel measuring approximately 0.5m deep and 1m wide.
121. Intensively farmed arable land used primarily for cereal production. The field margins are generally narrow (2-3m) and support common and widespread arable weed species including Common Nettle, Hogweed, Cleavers, Horsetail, Bristly Ox-tongue, Mugwort, Spear Thistle, Creeping Thistle, Cock's-foot, False Oat-grass, White Champion, White Deadnettle, Green Alkanet, Wall Rocket and Forget-me-not.
122. A mostly intact, native species-poor hedgerow dominated by Hawthorn with Blackthorn, English Elm, Ash, Elder and a mature Oak tree. The hedgerow had not been recently managed and measured approximately 2m high and 2m wide at the time of survey. A dry ditch runs along the eastern side of the hedgerow with a channel measuring approximately 1m deep and 1-2m wide supporting dense Common Nettle, Great Willowherb and Bramble.
123. Corner of an arable field supporting a small number of mature Pedunculate Oak trees and young Scot's Pine with a sparse understory dominated by Elder with Hazel, and a ground layer of Bramble and Ivy.

124. Intact hedgerow forming the boundary of the site including Hawthorn, Blackthorn, Elder, Alder, Buckthorn and Crab Apple. Scrub and trees located beyond the boundary adjacent to a single lane road include abundant immature Ash trees.
125. Corner of an arable field supporting a small number of mature Pedunculate Oak and Crack Willow trees with Hawthorn and Blackthorn in the understory. Beneath is a seasonal pond which was dry at the time of survey and supports no aquatic or marginal vegetation.
126. A mostly intact native hedgerow dominated by Blackthorn with Hawthorn, Elder and Ash, Oak and Aspen trees. The hedgerow had not been recently managed and measured approximately 2m high and 2m wide at the time of survey. A dry ditch runs along the western side of the hedgerow with a channel measuring approximately 1m deep and 1m wide. Gaps in the hedgerow support dense Bramble and Cleavers.
127. A wide margin along the River Ouzel corridor, bordering arable fields to the east, comprising mature trees, occasional scrub and a wide rough grassland field margin. Tree species include Crack Willow, Ash, White Willow and Hybrid Black Poplar. The less-shaded banks of the river support rough grassland and ruderals including Cock's-foot, Timothy, Creeping Bent, Perennial Rye-grass, False Oat-grass, Wild Oat and Common Reed. Other abundant species include Common Nettle, Teasel, Hogweed, Cleavers, Spear Thistle, Himalayan Balsam, Broad-leaved Dock and Bramble.
128. A small area of uncultivated ground comprising tussocky grass including Timothy, Cock's-foot and Italian Rye-grass.
129. Brook corridor lined with mature Ash and Crack Willow trees. Rough grass and Bramble grow along the banks of the brook.
130. A short section of defunct native hedgerow dominated by Hawthorn with abundant English Elm and Elder. Substantial gaps in the hedgerow are filled with Bramble.
131. A large riverside field comprising improved grassland established on former arable land. The sward is regularly grazed by Cattle and was short at the time of survey. It is dominated by Perennial Rye-grass with occasional Cock's-foot and White Clover.
132. A field boundary comprising a line of mature Hybrid Black Poplar trees with a defunct outgrown hedgerow beneath including Hawthorn, Blackthorn, English Elm, Elder and Bramble.
133. A mostly intact native hedgerow dominated by Hawthorn and Blackthorn with abundant English Elm, Elder and Bramble. The hedgerow had not been recently cut and no ditch was associated with the boundary.
134. A small wet area in the corner of an arable field adjacent to the Broughton Brook supporting planted Hybrid Black Poplar trees with a ground layer dominated by Cleavers and Common Nettle.
135. A wide field margin along the Broughton Brook comprising rough species-poor grassland. The grassland is dominated by tussocky Cock's-foot with occasional Broad-leaved Dock, Hogweed and Common Nettle.
136. A tributary to the River Ouzel, known as Broughton Brook, with a 4-5m wide channel and a strong northerly flow. The eastern bank had been recently cut and comprises grasses and abundant Common Nettle. The channel itself supports abundant Reed, Canary-grass and Common Club-rush. The western bank comprises rough grass and scrub.
137. A small group of early-mature Crack Willow trees along the bank of Broughton Brook.

138. Intact hedgerow and fenceline running along the site boundary adjacent to the M1 motorway. The hedgerow is dominated by Hawthorn with occasional Elder, English Elm and abundant Bramble. The hedgerow measures approximately 3m high and 2m wide. A seasonally wet ditch runs to the south of the hedgerow and supports Common Reed and Greater Pond-sedge, with Crack Willow and Goat Willow trees along the bank.
139. A small area of regenerated woodland in the corner of an arable field. The area is dominated by early-mature Elm (possibly Smooth-leaved Elm). The understory comprises suckered Elm and occasional Ash and Wild Cherry, with fallen deadwood throughout.
140. An outgrown native hedgerow with adjacent mature scrub dominated by Hawthorn with occasional Blackthorn, English Elm, Elder, Wild Cherry, Pedunculate Oak and an early-mature Ash tree. A ditch running along the eastern side has a channel measuring approximately 1m deep and 1m wide, becoming deeper at the southern end.
141. A mostly defunct native hedgerow dominated by Hawthorn with Blackthorn, English Elm, Elder, Field Maple and Crab Apple. A dry ditch runs along the hedgerow with a channel measuring approximately 0.5m deep and 1m wide, becoming shallower at the western end.
142. A utilities sub-station comprising hardstanding, with a track leading from London Road to the east, and dense scrub on the margins dominated by Bramble.
143. A complex of barns constructed of timber and corrugated metal used for storage and as a shelter for Cattle. The surrounding field margins comprise bare earth, rough grass and tall ruderals.
144. A small field comprising improved species-poor grassland which is regularly grazed by Horses and has a short sward. The grassland may have been relatively recently established over former arable land. The dominant species include Perennial Rye-grass, Creeping Buttercup, White Clover and Dandelion.
145. An intact native hedgerow along London Road dominated by Hawthorn with English Elm, Blackthorn, Ash, Elder, Crab Apple and Bramble. A shallow dry ditch running along the hedgerow base has a channel measuring up to 0.5m deep and 1m wide.
146. Two intact native hedgerows along a gravel track dominated by Hawthorn with English Elm, Blackthorn, Ash, Elder and Bramble. The hedgerows measure approximately 2.5m high and 1.5m wide and had been flail cut on one side at the time of survey. Shallow dry ditches running along the hedgerow bases have channels measuring up to 0.5m deep and 1m wide.
147. Small area of woodland dominated by mature native trees in the north and early-mature specimens in the south which have likely been planted more recently. Tree species include Pedunculate Oak, Ash, Norway Maple, Poplar species, Aspen and Small-leaved Lime, and the understory also includes Blackthorn and Crab Apple. Ground flora is heavily shaded and dominated by Cow Parsley and Common Nettle.
148. An intact native hedgerow dominated by Hawthorn with English Elm, Ash, and Crab Apple, including a small number of mature Ash trees. The hedgerow had recently been flail cut to approximately 2m high and 2m wide at the time of survey. A dry ditch runs along the northern side of the hedgerow with a channel measuring approximately 1m deep and 1m wide and is choked with grasses and tall ruderal vegetation.
149. Corner of an arable field supporting early-mature Ash and Scot's Pine trees.

150. A wide strip of mown improved species-poor grassland along the western margin of an arable field. The grassland may have been relatively recently established over former arable land.
151. A section of the site boundary which borders a row of residential properties comprises wooden post and rail fencing and lines of 8-12m tall Cypress trees.
152. A mostly unmanaged area of land in the corner of an arable field comprising improved grassland with stands of dense tall ruderal vegetation. A section had been mown for amenity use by neighbouring residential properties. Other sections had been used for the dumping of garden waste and trailer storage.
153. Field boundary bordering the A509 to the north comprising a fenceline and hedgerow with a dry ditch and scrub to the north. The hedgerow is intact, heavily dominated by Hawthorn and had been flail cut to approximately 2.5m high and 1.5m wide. The shallow dry ditch running along the hedgerow base to the north has a channel measuring up to 0.5m deep and 1m wide and is heavily overgrown with scrub, in particular Bramble. Scrub and tree planting along the verge of the A509 includes Hawthorn, Wild Cherry and Crack Willow.
154. An intact native hedgerow dominated by Hawthorn with English Elm, Ash, Blackthorn and Crab Apple, including a small number of mature Ash trees. The hedgerow had recently been flail cut to approximately 2m high and 2m wide at the time of survey. A dry ditch runs along the eastern side of the hedgerow with a channel measuring approximately 1m deep and 1m wide and supports frequent Great Willowherb.
155. An intact native hedgerow dominated by Hawthorn with English Elm, Ash, Blackthorn, Crab Apple and Dog Rose. A dry ditch runs along the southern side of the hedgerow with a channel measuring approximately 1m deep and 1m wide. A number of mature Oak and Ash trees occur along the southern bank of the ditch.
156. A small area of woodland within the corner of an arable field just beyond the site boundary. The area supports a couple of mature Oak trees and an abundance of smaller trees and scrub including Field Maple, English Elm, Hawthorn, Ash, Horse Chestnut, Lime, Hawthorn, Blackthorn, Elder and English Elm, some of which are likely to have been planted. Ground flora is dominated by Common Ivy, Ground-ivy and Cleavers.
157. Two mostly intact native hedgerows dominated by Hawthorn with English Elm, Blackthorn and Oak. The hedgerows measure approximately 2.5m high and 1m wide and had been flail cut on one side at the time of survey.
158. A small area between arable fields dominated by early-mature Ash and Norway Maple trees with a ground layer of Bramble and Common Nettle. The foundations and one wall of a former brick farm building remain in the centre of the area.
159. A mostly intact native hedgerow dominated by Hawthorn, Blackthorn and English Elm measuring approximately 2.5m high and 1.5m wide. A dry ditch runs along the eastern side of the hedgerow with a channel measuring approximately 1m deep and 1m wide.
160. A seasonal pond located in the corner of an arable field and surrounded by hedgerow, dense scrub and Ash trees. The pond measures approximately 10mx6m and forms part of the ditch network, being fed from a drainage pipe to the east. The pond was mostly dry at the time of survey and supports no aquatic or marginal vegetation other than Greater Reedmace. Surrounding scrub includes Hawthorn, Blackthorn and Bramble.
161. An intact native hedgerow dominated by Hawthorn, Blackthorn and English Elm, with a number of mature Ash trees. The hedgerow had recently been flail cut on the southern side at the time

of survey. A shallow dry ditch runs along the base of the hedgerow with a channel measuring approximately 0.5m deep and 1m wide.

162. An intact native hedgerow heavily dominated by Hawthorn with Ash and mature Oak trees. The hedgerow had recently been flail cut to approximately 2m high and 1.5m wide at the time of survey. A shallow dry ditch runs along the base of the hedgerow with a channel measuring approximately 0.5m deep and 1m wide.
163. An intact native hedgerow dominated by Hawthorn with English Elm, Blackthorn and Ash. The hedgerow had recently been flail cut at the time of survey. A very shallow dry ditch runs along the base of the hedgerow with a channel measuring up to 0.3m deep and 1m wide.
164. An intact native hedgerow dominated by Hawthorn with English Elm, Blackthorn and Ash. A shallow dry ditch runs along the base of the hedgerow with a channel measuring approximately 0.5m deep and 1m wide.
165. A line of planted early mature trees included Pedunculate Oak, Norway Maple and Wild Cherry, and a dry ditch with a channel measuring approximately 2m wide and 1m deep supporting abundant Great Willowherb and Bramble.
166. A small area in the corner of an arable field supporting mature Oak trees and early-mature Norway Maple with a sparse understory of English Elm and Elder. The ground flora includes Bramble, Nettle and Ivy.
167. Site boundary bordering the off-site hotel complex to the south comprising a dry ditch with a channel measuring approximately 1.5m deep and 2m wide. The southern bank comprises a brick wall and the northern bank was earth with recently cut ruderal vegetation dominated by Bramble, Nettle and Ivy.
168. An area of species-poor grassland used as a campsite and for grazing horses. The grassland is intensively managed through mowing or grazing and has a short sward. The sward is dominated by Perennial Rye-grass with Cock's-foot, Yorkshire Fog, White Clover, Dandelion, Common Chickweed, Red Clover, Creeping Thistle and Forget-me-not. More frequent ruderals occur on the margins of the area including Broad-leaved Dock, Nettle, Mugwort, Bristly Ox-tongue, Green Alkanet and Teasel.
169. A complex of large sheds and agricultural barns surrounded by areas of hardstanding.
170. A line of early-mature Cypress, Oak, Norway Maple and Field Maple of approximately 15m in height.
171. A line of early-mature Cypress trees around 15m in height, forming the boundary between the site and hotel complex to the west.
172. Four mature Pedunculate Oak trees.
173. Two lightly Cattle grazed fields, comprising relatively species-rich semi-improved neutral grassland to the west of the River Ouzel. Its species composition is broadly characteristic of NVC classification MG4 (Meadow Foxtail - Great Burnet grassland), with scattered tussocks of Thistle sp. throughout. Species recorded include Meadow Foxtail, Sweet Vernal-grass, Yorkshire Fog, Red Fescue, Tall Fescue, Tufted Hair-grass, Cock's-foot, Creeping Bent, Rough Meadow-grass, Smooth Meadow-grass, Meadow Oat-grass, Crested Dog's-tail, False Oat-grass, Perennial Rye-grass, Soft Brome, Field Woodrush, Hairy Sedge, Meadow Buttercup, Creeping Buttercup, Dandelion, Cut-leaved Cranesbill, Common Nettle, Common Sorrel, Curled Dock, Broad-leaved Dock, Pignut, Common Mouse-ear, Germander Speedwell, Lesser Stitchwort, Yarrow, Spear Thistle, Creeping Thistle, Red Clover, Cuckoo-flower, Meadow

Vetchling, Greater Burnet, Hogweed, Lady's Bedstraw, Lesser Trefoil and Tormentil. The western area of the southern field shows evidence of ridge and furrow.

- 174.** Species-poor, semi-improved grassland field subject to heavy Cattle grazing with a short sward at the time of survey. The species composition has a high dominance of grasses, in particular Perennial Rye-grass. Other species present include Smaller Cat's-tail, Annual Meadow-grass, Meadow Barley, Common Bent, Meadow Foxtail, Tufted Hair-grass, Yorkshire Fog, White Clover, Creeping Buttercup, Dandelion, Curled Dock, Creeping Thistle, Germander Speedwell and Common Nettle. The western side of the field shows evidence of ridge and furrow.
- 175.** Species-poor, semi-improved grassland field subject to heavy Cattle grazing with a short sward at the time of survey. The species composition has a high dominance of grasses, in particular Perennial Rye-grass. Other species present include Smaller Cat's-tail, Smooth Meadow-grass, Common Bent, Meadow Foxtail, Crested Dog's-tail, Cock's-foot, Yorkshire Fog, White Clover, Lesser Trefoil, Creeping Buttercup, Creeping Thistle, Common Nettle, Thyme-leaved Speedwell, Creeping Cinquefoil, Ground-ivy, Field Speedwell, Yarrow, Spear Thistle and Common Sorrel. Ridge and furrow within this field is conspicuous.
- 176.** Species-poor semi-improved grassland subject to heavy Cattle grazing with a short sward. The sward is heavily dominated by grasses, in particular Perennial Rye-grass, and has a very low occurrence of forb species. Other species present include Yorkshire Fog, Meadow Barley, Red Fescue, Cock's-foot, Common Bent, Crested Dog's-tail, Smaller Cat's-tail, Meadow Foxtail, False Oat-grass and Tufted Hair-grass. Lesser Pond-sedge is also locally frequent within the sward. The low-lying areas of the field support a higher diversity of forb species including Creeping Buttercup, Germander Speedwell, Yarrow, Dandelion, Common Sorrel, Lesser Trefoil, Creeping Cinquefoil, White Clover, Cut-leaved Cranesbill, Knotgrass, Common Nettle, Creeping Thistle, Broadleaved Dock and Spear Thistle. Ridge and furrow is present in a northeast/southwest orientation within the field.
- 177.** Species-poor semi-improved grassland subject to heavy Cattle grazing with a short sward. Grass species dominate the sward with species present including Perennial Rye-grass, Cock's-foot, Red Fescue, Smaller Cat's-tail, Common Bent, Meadow Fescue, Yorkshire Fog, Annual Meadow-grass, Meadow Foxtail, Crested Dog's-tail, Soft Brome, Meadow Barley and Meadow Oat-grass. Forb species are limited, with a higher presence in the south of the field with species including White Clover, Red Clover, Yarrow, Dandelion, Common Mouse-ear, Common Sorrel, Greater Plantain, Creeping Buttercup, Meadow Buttercup, Common Ragwort, Knotgrass and Cut-leaved Cranesbill. A depressed area within the field supports Hard Rush and Lesser Pond-sedge and signs of ridge and furrow are also present.
- 178.** A patch of Himalayan Balsam is present on the western riverbank of the River Ouzel.
- 179.** A small area of bare ground in the south-western corner of an arable field is used for vehicle storage.
- 180.** Slightly undulating species-rich, semi-improved neutral grassland field that is occasionally managed by light sheep grazing. Grass species within the sward include Meadow Barley, Yorkshire Fog, Timothy, Smooth Meadow-grass, Soft Brome, Crested Dog's-tail, Barren Brome, Yellow Oat-grass, False Oat-grass, Sweet Vernal-grass, Red Fescue, Cock's-foot, Common Bent, Perennial Rye-grass, Annual Meadow-grass, Italian Rye-grass, Wall Barley and Common Couch with Field Horsetail and Hard Rush occasionally scattered throughout. Damper areas along the north-eastern, eastern and southern margins of the field have additional species including Tufted Hair-grass, Hard Rush, False Fox Sedge, Marsh Foxtail, and Glaucous Sedge. Forb species throughout the grassland are relatively limited and focussed along the edges in association with hedgerows. Forb species recorded within the grassland include Creeping Cinquefoil, Common Mouse-ear, Autumn Hawkbit, Field Bindweed, Ground-ivy, Cut-leaved Cranesbill, Selfheal, Lesser Trefoil, White Clover, Red Deadnettle,

Smooth Tare, Yarrow, Common Vetch, Creeping Buttercup, Knotted Hedge Parsley, Creeping Thistle, Spear Thistle, Prickly Sow-thistle, Cleavers and Common Nettle.

181. Intact species-poor hedgerow approximately 2.5m tall and 2m wide at the time of survey. Species within the hedgerow include Hawthorn, Elder, English Elm and Bramble with White Bryony. Ground flora immediately below the hedgerow is dominated by Common Nettle.
182. Utilities sub-station bordered by chain-link fencing.
183. Intact species-poor hedgerow approximately 3m tall and 1.5m wide and dominated by Hawthorn and Blackthorn, with a dry ditch running below to the south. The hedgerow widens at its western end into a small area of semi-mature woodland with species including Field Maple, Ash, Pedunculate Oak, Prunus sp., Leyland Cypress, White Poplar, Ash, Pine, Apple, Elder, Dog Rose and Bramble. Ground flora comprises Bramble, Common Ivy, Nipplewort, Broadleaved Dock and Willowherb.
184. Short section of defunct species-poor hedgerow which undergoes regular management and is approximately 1m tall and 1m wide. Species within the hedgerow comprise Hawthorn, Elder, English Elm, Dog Rose and Bramble with Bittersweet.
185. Piles of manure and wood chippings.
186. Post and wire fence.
187. Arable field planted with Wheat at the time of survey. The grassland field margins vary in width between 2m and 4m and support species including Yorkshire Fog, Red Fescue, Soft Brome, False Oat-grass, Cock's-foot, Barren Brome and Meadow Barley with Mayweed, Redshank, Hogweed, Dandelion, Greater Plantain, Shepherd's Purse, Cleavers, Common Nettle, Cow Parsley, Hedge Woundwort, Rough Chervil, Red Deadnettle and Prickly Lettuce. The south-eastern field margin comprises a band of bare ground with scattered vegetation similar in species to those listed above.
188. Intact species-poor hedgerow, approximately 2m tall and 2.5m wide at the time of survey. The hedgerow is dominated by English Elm and Blackthorn with Hawthorn, Elder and Dog Rose also present.
189. Short section of intact species-poor hedgerow along a fenceline, approximately 4m tall and 3m wide, dominated by Blackthorn with Hawthorn, Box and Bramble. Ground flora below the hedge comprises Common Nettle, Cow Parsley and Cleavers.
190. Area of tall ruderal vegetation dominated by Common Nettle, bordered by dense Bramble scrub and unmanaged ornamental shrubs to the north and west and by a defunct, outgrown hedgerow comprising Blackthorn, Hawthorn, Willow, Elder and Bramble.
191. Residential Farmhouse of brick construction with a pitched tiled roof, set within managed gardens comprising heavily managed amenity grassland lawn bordered by scattered trees including Sweet Chestnut, Leyland Cypress, Birch, Monkey Puzzle, Holly, Sycamore, Lawson Cypress and ornamental shrubs, including a Privet hedgerow approximately 1m tall and 0.75m. A possible former orchard comprising scattered Apple trees with Oak and Ash with tall grassland and ruderal vegetation below is present to the west of the farmhouse. To the east of the farmhouse is a collection of agricultural buildings set within hardstanding. Log piles, machinery and scattered piles of debris are located around the buildings.
192. Red brick house with pitched slate roof, set within amenity grassland laws bordered by post and rail fencing. A number of scattered sheds are also present.

- 193.** Intact species-rich hedgerow up to 5m tall and 4m wide which is managed at its western end and becomes unmanaged and outgrown at the eastern end. Species present include Pedunculate Oak, Ash, Blackthorn, Hawthorn and English Elm.
- 194.** Small area of bare ground with scattered vegetation including Creeping Thistle, Field Horsetail and crop plants including Barley.
- 195.** Off-site church and church yard bordered by trees including Lime, Rowan, Alder, Scot's Pine, Holly, Yew and Horse Chestnut.
- 196.** Fallow field comprising recently established species-poor grassland with species including Perennial Rye-grass, Crested Dog's-tail, Timothy, False Oat-grass, Yorkshire Fog, Soft Brome, Upright Brome, Common Bent, Common Couch, Meadow Barley and Cock's-foot with Lesser Trefoil, Selfheal and Field Bindweed.
- 197.** Intact species-poor hedgerows approximately 2m tall and 2m wide border the field. The hedgerows are dominated by Blackthorn with Hawthorn, Privet, Ash and English Elm occasionally present. The ground flora below the hedgerows include field margins of tall grasses including False Oat-grass, Cock's-foot, Tufted Hair Grass, Field Bindweed, Hogweed, Prickly Sow-thistle and Common Ragwort.
- 198.** Scrubby patch of Elm, Blackthorn and Bramble.
- 199.** Mostly intact relatively species-poor hedgerow approximately 2.5m tall and 2m wide, dominated by Blackthorn and Field Maple with Hawthorn, Ash and English Elm. The ground flora below the hedgerow includes False Oat-grass, Cock's-foot, Tufted Hair-grass, Field Bindweed, Hogweed, Prickly Sow-thistle, Common Ragwort, Greater Willowherb, Garlic Mustard, Meadow Vetchling, Bittersweet and Cleavers. A dry ditch is present below the hedgerow which is approximately 1m wide and 1.5m deep and overgrown with tall ruderal vegetation.
- 200.** Small, semi-mature broadleaved woodland copse comprising Pedunculate Oak, Sycamore, Cherry, Hawthorn, English Elm and Bramble. The woodland is located within an area of species-poor semi improved rough grassland which is dominated by False Oat-grass, Cock's-foot, Perennial Rye-grass and Rough Meadow-grass.
- 201.** Intensively farmed arable land used primarily for cereal production, cropped with Wheat at the time of survey. Grassland field margins are dominated by False Oat-grass, Cock's-foot, Perennial Rye-grass, Rough Meadow-grass, Annual Meadow-grass, Field Bindweed, Common Nettle and Doves-foot Cranesbill. Arable weeds have colonised area of bare ground within and on the edges of the field including Swine Cress, Scentless Mayweed, Fumitory sp., Prickly Sow-thistle, Pale Persicaria, Germander Speedwell, Field Speedwell, Borage, Bristly Ox-tongue, Barren Brome, Forget-me-not, Smooth Tare, Cleavers, Shepherd's Purse, Red Deadnettle Teasel, Cow Parsley and Timothy.
- 202.** Mostly intact species-rich hedgerow approximately 2m tall and 1.5m wide, with a dry ditch below. Species within the hedgerow include Hawthorn, Dog Rose, Blackthorn, Field Maple, English Elm and Bramble with an Ash standard. Beyond the hedgerow is an arable field, planted with Oil-seed Rape at the time of survey.
- 203.** Mostly intact, species-poor Blackthorn dominated hedgerow approximately 2m tall and 2m wide with a dry ditch below, approximately 0.75m wide and 1m deep. Further species within the hedgerow include English Elm, Hawthorn, Bramble and Elder.
- 204.** A managed, intact, species-rich hedgerow approximately 2m tall and 1.5m wide, along a residential curtilage. Species within the hedgerow include Hazel, Hornbeam, English Elm,

Hawthorn, Field Maple, Wayfaring Tree, Cherry Laurel and Leyland Cypress. A closeboard fence is present at the southern end of the hedgerow.

- 205.** Area of species-poor semi-improved rough grassland with species including Perennial Rye-grass, Smooth Meadow-grass, Yorkshire Fog, Cock's-foot, Soft Brome, Rough Meadow-grass, False Oat-grass, Tufted Hair-grass and Barren Brome with Common Knapweed, White Clover, Red Clover, Common Mallow, Hedgerow Cranesbill, Creeping Buttercup, Lesser Trefoil, Red Champion, Daisy, Ribwort Plantain, Lucerne, Broad-leaved Dock, Prickly Sow-thistle and Common Nettle.
- 206.** Four mature Pedunculate Oak trees and a very short section of scrubby species-poor hedgerow of Hawthorn and Elder, approximately 2m tall and 1.5m wide.
- 207.** Intact species-poor scrubby hedgerow approximately 2-4m tall and 1.5m wide. Species present include Elder, Bramble and Blackthorn with Common Ivy.
- 208.** Band of trees approximately 15m wide comprising Horse Chestnut, White Poplar, Willow and Wild Cherry with Field Maple, Hawthorn, Dog Rose and Cherry Laurel below. The ground flora is sparse due to heavy shading with occasional patches of Common Nettle.
- 209.** Roadside verge dominated by narrow bands of species-poor semi-improved grassland (c.1m wide) with species including Yorkshire Fog, Cock's-foot, Common Couch, Common Bent, Field Bindweed, Dandelion, Hogweed, Yarrow, Ribwort Plantain, Prickly Sow-thistle, Cow Parsley, Ground-ivy, Teasel and Wild Carrot. The north-western verge has a higher dominance of scrub with patches of dense Bramble with scattered tree saplings.
- 210.** A509 dual carriageway. The central reservation is dominated by perennial, ephemeral and ruderal vegetation including Teasel, Ribwort Plantain, Creeping Cinquefoil, Bristly Ox-tongue, Perforate St John's Wort, Groundsel, Wild Carrot, Ox-eye Daisy and Creeping Thistle with scattered Field Maple saplings.
- 211.** Intensively farmed arable field used primarily for cereal production. The field margins, comprising species-poor improved and semi-improved grassland are generally minimal and up to 1m wide. Species within the field margins include Barren Brome, Soft Brome, Yorkshire Fog, Common Nettle, Cleavers, Broad-leaved Dock, Ivy, Doves-foot Cranesbill, Garlic Mustard, Ground Ivy, Cow Parsley, Field Bindweed, Hogweed, Willowherb, Bristly Ox-tongue, Ragwort and Spear Thistle, with occasional crop plants including Oat.
- 212.** Field margin mostly comprising bare earth with occasional scattered Creeping Thistle, Redshank and Hairy Bittercress.
- 213.** Off-site species-rich defunct hedgerow approximately 2m tall and up to 2m wide comprising Elder, English Elm, Hawthorn, Blackthorn, Dog Rose, Field Maple, Pedunculate Oak and Bramble with Ivy. A dry ditch approximately 0.75m wide and 1m deep is present below the hedgerow.
- 214.** Roundabout with inner circle dominated by managed species-poor grassland with trees and shrubs at centre including Oak, Larch, Birch, Cherry Laurel, Dogwood, Elder and ornamental species.
- 215.** Similar to TN12 with additional ornamental planting including Rose, Snowberry and Hazel.
- 216.** Hardstanding track leading to a car park which is currently not in use. The road and car park are bordered by narrow bands of heavily managed, species-poor amenity grassland with shrub and tree planting similar in composition to TN12, with additional species including Snowberry and Cotoneaster.

- 217.** Wet ditch with a channel width of approximately 0.5m and depth of 1m. A depth of around 3cm of water was present at the time of survey. The banks of the ditch are dominated by grasses and Cleavers.
- 218.** Public footpath bordered by narrow grassland margins beyond which is dense ornamental planting including Snowberry, Cotoneaster and Cherry Laurel with scattered trees including Field Maple and Birch.
- 219.** Planted woodland band dominated by Scot's Pine with an understorey of dense Bramble, Elder, Hawthorn, Field Maple, Cherry and *Viburnum* sp. The ground flora is sparse with occasional Cleavers, Cow Parsley and Red Campion.
- 220.** An area of mixed plantation woodland including Scot's Pine, Alder, Ash, Oak, Hazel, Cherry, Sycamore, Willow and Silver Birch. The understorey scrub is moderately dense and includes Elder, Cherry Laurel, *Viburnum* sp., Hazel and Dogwood. Scattered trees extend from the woodland edge into the grassland.
- 221.** Roundabout with inner circle dominated by managed species-poor grassland with trees and shrubs at the centre including Willow, Maple and Tree-of-Heaven with further ornamental tree and shrub species.
- 222.** Pond located below the Tongwell Street bridge, with shallow earth banks dominated by grassland and a water depth up to approximately 50cm at the time of survey. Duckweed was present on the pond surface.
- 223.** BMX track within an area of managed, species-poor amenity grassland dominated by Rye-grass. Small areas have been planted with ornamental trees and shrubs.
- 224.** Helipad comprising an area of hardstanding bordered by post and rail fencing.
- 225.** An area of species-poor amenity grassland dominated by Rye-grass, which is occasionally managed with tall ruderal vegetation present around the edges. The grassland becomes slightly less managed to the east with patches of tall ruderal vegetation, dominated by Willowherb, present at the eastern end. The eastern area of grassland supports scattered immature to mature Willow trees, which have been planted. Willow scrub has also been planted within two rectangular fenced-off areas to either side of the pylons.
- 226.** Two newly created ponds, approximately 10m x 6m in size with gently sloping grass banks and earth bases covered in leaf litter. Marginal and aquatic vegetation was absent at the time of survey and the water depth was up to approximately 75cm.
- 227.** A shallow wet ditch with gently sloping banks overgrown with Willowherb, Hard Rush and sedges. The channel is approximately 1m wide with a water depth between 2cm and 10cm.
- 228.** Footpath bordered by ornamental shrub planting with scattered trees.
- 229.** Mostly intact, species-poor hedgerow between motorway verge and public footpath. The hedgerow is occasionally managed, more so to the southern side, and is approximately 3m tall and 2-3m wide. Species within the hedgerow include Cherry Laurel, Garden Privet, Elder and Bramble.
- 230.** Steep bank to the south-west of the A509 roundabout, 5 - 10m wide, with a stone retaining wall at the top and a dry ditch at bottom. Thick scrub is present, dominated by Hawthorn and Blackthorn. The ground layer comprises patchy earth with Lords-and-Ladies, Common Nettle, Red Deadnettle, Wood Avens, Dock, Ivy, Cleavers and Primrose.

- 231.** River Ouzel approximately 10m wide. The riverbank adjacent to the road bridge has bankside vegetation with dense scrub comprising Bramble, Teasel, Cow Parsley, Spear Thistle, Dock and Plantain.
- 232.** Steep bank to the south of the A509 with a band of dense scrub 7- 8m wide with semi mature Oak and Poplar trees. Thick Hawthorn and Bramble are present in places with a ground layer of Ivy, Cleavers, Primrose and Common Nettle. A seasonal ditch is present at the bottom of the bank, flowing towards the river.
- 233.** Steep bank to the north of the A509 with a similar species composition to TN3, but with more dense Bramble cover.
- 234.** Stony, steep bank to the north of the roundabout dominated by Bramble and Teasel.
- 235.** Closely cut narrow species-poor semi-improved grassland verge around the A509 roundabout comprising low species diversity. Species present include Plantain, Common Nettle, Red Deadnettle, Primrose, Bristly Ox-tongue, Yarrow, Creeping Buttercup, Dandelion and Violet. On north-east side a 2m strip of Bramble and Dock edge a concrete retaining wall and dry ditch.
- 236.** A509 roundabout comprising closely cut species-poor semi-improved grassland with Silver Birch and small patch of scrub in the centre.
- 237.** Closely flailed Blackthorn-dominated hedgerow with a seasonal ditch at the base.
- 238.** Dense scrub between the roadside verge and adjacent field comprising predominantly Hawthorn and Blackthorn, approximately 6m wide and 3m to 4m high. The ground layer comprises Ground-ivy, Bramble, Plantain, Cow Parsley, Dog Rose, Cleavers, Primrose and Bristly Ox-tongue.
- 239.** Roadside verge on the south side of the A509 comprising species-poor semi-improved grassland dominated by grasses with Groundsel, Bristly Ox-tongue, Plantain and Creeping Buttercup.
- 240.** Mown roadside verge and closely cropped hedgerows on both sides of London Road. The grassland verge is approximately 3-4m wide on both sides. The hedgerow comprises Hawthorn, Ash, Oak and Blackthorn approximately 2-3m wide and 2m high with species comprising Cleavers, Ground-ivy, Cow Parsley, Dock, Red Deadnettle, Plantain, Lords-and-Ladies, Bramble, Yarrow, Dove's-foot Cranesbill, Bristly Ox-tongue, Snowdrop and Hawkbit.
- 241.** Area of dense scrub on a steep bank to the north-west of the M1 Junction 14 roundabout, approximately 10m wide with a ditch at the bottom of the bank bordering the field. Trees present include Crack Willow, Hawthorn and Ash, with Gorse, Bramble and Teasel scrub next to the road. Ground layer species comprise Wood Avens, Cleavers, Bittercress, Lords-and-Ladies, Cow Parsley, Bristly Ox-tongue, Dock, Dog Rose and Crocus.
- 242.** Area of dense scrub to the north-east of the M1 Junction 14 roundabout, similar in size and composition to TN241 but with a wetter area at the bottom of the bank. Additional species include Pendulous Sedge, Violet, Yarrow, Snowdrop, Hawkbit, Germander Speedwell and Dove's-foot Cranesbill.
- 243.** Recently cleared area measuring approximately 20m x 8m comprising exposed earth with paving and steps down from the motorway.
- 244.** Pineham Nature Reserve comprising an area of rough, wet scrub between the River Ouzel and Broughton Brook. The area is unmanaged and predominantly comprise wet grassland with

ruderal species such as Great Willowherb, Hogweed, Teasel and Bramble and some sporadic semi-mature Willow and Poplar trees. Several ponds are present within the area and marginal species such as Common Reed, Reedmace and Rushes are present in patches. Other species include Spear Thistle, Cow Parsley, Common Nettle, Ground-ivy, Dock, Red Deadnettle and Creeping Buttercup.

- 245.** Broughton Brook with a channel approximately 3-4m wide, with gently sloping banks and a steady water flow. Bankside species are as described at TN244.
- 246.** River Ouzel with a channel approximately 5-6m wide, with gently sloping banks and steady water flow. Bankside species are as described at TN244.
- 247.** Area of water inundation with a depth of 5-10cm at time of survey. Thicker tree cover is present at this point with Poplar and Willow to approximately 10m tall. To the south is a wide shallow drain leading westwards to the River Ouzel.
- 248.** Broughton Brook with a channel approximately 5m wide with steady flow. The banks are moderately sloping and support patchy vegetation including Crack Willow, Bramble, Teasel, Common Reed, Hogweed, Common Nettle and Dock.
- 249.** Large open area of rough tussocky semi-improved grassland. Evidence suggests the area has been maintained recently by mowing, not grazing, with species comprising Creeping Buttercup, Cleavers, Dove's-foot Cranesbill, Plantain, Violet, Cow Parsley, Ground-ivy, Dock, Hawkbit and Creeping Cinquefoil.
- 250.** Plantation woodland adjoining motorway supporting semi-mature Sycamore and Silver Birch. There is little to no shrub layer and a low diversity field layer with species as described at TN249 in addition to Wood Avens.
- 251.** Rough grassland similar to that described at TN249 but with a stand of large mature Hybrid Black-poplar and a narrow plantation woodland on the western boundary comprising Oak and Poplar. To the north of this area the scrub becomes thicker with dense Bramble patches and abundant Teasel and Hogweed.
- 252.** Wide ditch approximately 4m wide with a depth of around 10cm of standing water. Soft Rush, Teasel and Bramble are present on the banks.
- 253.** Field of semi-improved neutral grassland which was damp with signs of recent flooding at the time of survey. The field adjoins the River Ouzel on three sides. The grassland has a largely uniform sward dominated by Rye-grass, with other species such as Creeping Buttercup, White Clover, Hawksbeard, Spear Thistle and Shepherds Purse. The field is managed by Cattle grazing and visited by large flocks of Geese.
- 254.** River Ouzel with a channel approximately 8-10m wide with steady/slow flow. The riverbanks are gently sloping and support common ruderal and water tolerant species where fenced on the northern half such as Crack Willow, Hybrid Black-poplar, Reedmace, Oak, Ground-ivy, Hawthorn, Blackthorn, Common Nettle, Ivy, Cleavers, Red Deadnettle, Spear Thistle, Groundsel, Dock, Teasel and Bramble. Where unfenced to the southern half the banks are subject to Cattle grazing and the species composition largely reflects TN253.
- 255.** Hedgerow approximately 2-2.5m in height and 2-3m in width, comprised of Oak, Blackthorn, Hawthorn and Field Maple interspersed with mature Oak trees. The ground layer hedgerow species include Lords-and-Ladies, Ground-ivy, Cleavers, Bramble and Common Nettle. A ditch is present on the field side which contained a depth of approximately 10cm standing water at the time of survey.

256. Closely mown species-poor semi-improved grassland verges on the roadside to the north-east and north-west of the roundabout and on the roundabout itself. The grassland is dominated by grass species and supports Daisy, White Clover, Dove's-foot Cranesbill and Dandelion. A single pine tree is present on the roundabout.
257. Rougher scrub-dominated road verge leading east from the roundabout, largely comprised of Bramble with Violet and Cleavers at the base.
258. More floristically diverse species-poor semi-improved grassland on the road verge to the south of the roundabout comprising Primrose, Ribwort Plantain, Violet, Teasel, Yarrow, Black Knapweed, White Clover, Meadow Cranesbill and Common Mouse-ear. The verge is approximately 2-4m in width, with a strip of Bramble and a ditch to the south.
259. Mown amenity grassland road verge, approximately 6-8m in width to the north and south of the road. The grassland has a closely cut sward, comprising grasses, Daisy, Creeping Buttercup, Plantain, Dandelion, White Clover and mosses.
260. Small plantation woodland copse comprising semi-mature Sycamore and Dogwood, thinned in parts, with a ground layer comprising Ivy, Lords-and-Ladies, Cow Parsley, Cleavers and Wood Avens. Part of a Holly hedge is present to the southern side with planted Daffodils beyond.
261. Planted copse of semi-mature trees containing Silver Birch, Sycamore, Cherry, Holly and ornamental shrubs. The ground layer comprises Cleavers, Ivy, Lords-and Ladies and Wood Avens.

Species list

Common Name	Latin Name
Ash	<i>Fraxinus excelsior</i>
Aspen	<i>Populus tremula</i>
Alder	<i>Alnus glutinosa</i>
Alder Buckthorn	<i>Rhamnus frangula</i>
Annual Meadow-grass	<i>Poa annua</i>
Autumn Hawkbit	<i>Scorzoneroides autumnalis</i>
Barley	<i>Hordeum vulgare</i>
Barren Brome	<i>Bromus sterilis</i>
Bee Orchid	<i>Ophrys apifera</i>
Beech	<i>Fagus sylvatica</i>
Birch	<i>Betula sp.</i>
Bittercress	<i>Cardamine sp.</i>
Bittersweet	<i>Solanum dulcamara</i>
Black-grass	<i>Alopecurus myosuroides</i>
Blackthorn	<i>Prunus spinosa</i>
Borage	<i>Borago officinalis</i>
Box Maple	<i>Acer negundo</i>
Bramble	<i>Rubus fruticosus</i>
Bristly Ox-tongue	<i>Helminthotheca echinoides</i>
Broad-leaved Dock	<i>Rumex obtusifolius</i>
Broad-leaved Willowherb	<i>Epilobium montanum</i>
Burdock	<i>Arctium sp.</i>
Bush Vetch	<i>Vicia sepium</i>
Cherry	<i>Prunus sp.</i>
Cherry Laurel	<i>Prunus laurocerasus</i>
Cleavers	<i>Galium aparine</i>
Clematis	<i>Clematis sp.</i>

Common Name	Latin Name
Cock's-foot	<i>Dactylis glomerata</i>
Common Bent	<i>Agrostis capillaris</i>
Common Box	<i>Buxus sempervirens</i>
Common Chickweed	<i>Stellaria media</i>
Common Couch	<i>Elymus repens</i>
Common Club-rush	<i>Schoenoplectus lacustris</i>
Common Knapweed	<i>Centaurea nigra</i>
Common Mallow	<i>Malva sylvestris</i>
Common Mouse-ear	<i>Cerastium fontanum</i>
Common Nettle	<i>Urtica dioica</i>
Common Ragwort	<i>Jacobaea vulgaris</i>
Common Reed	<i>Phragmites australis</i>
Common Sorrel	<i>Rumex acetosa</i>
Common Vetch	<i>Vicia sativa</i>
Cotoneaster	<i>Cotoneaster sp.</i>
Cow Parsley	<i>Anthriscus sylvestris</i>
Crab Apple	<i>Malus sylvestris</i>
Crack Willow	<i>Salix fragilis</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Creeping Cinquefoil	<i>Potentilla reptans</i>
Creeping Thistle	<i>Cirsium arvense</i>
Crested Dog's-tail	<i>Cynosurus cristatus</i>
Crocus	<i>Crocus sp.</i>
Cuckoo-flower	<i>Cardamine pratensis</i>
Curled Dock	<i>Rumex crispus</i>

Common Name	Latin Name
Cut-leaved Cranesbill	<i>Geranium dissectum</i>
Cypress	<i>Cupressaceae</i> sp.
Daffodil	<i>Narcissus</i> sp.
Daisy	<i>Bellis perennis</i>
Dandelion	<i>Taraxacum officinale</i> agg.
Dock	<i>Rumex</i> sp.
Dog Rose	<i>Rosa canina</i>
Dogwood	<i>Cornus sanguinea</i>
Domestic Apple	<i>Malus sylvestris</i>
Doves-foot Cranesbill	<i>Geranium molle</i>
Duckweed	<i>Lemna minor</i>
Elder	<i>Sambucus nigra</i>
English Elm	<i>Ulmus procera</i>
False Fox Sedge	<i>Carex otrubae</i>
False Oat-grass	<i>Arrhenatherum elatius</i>
Field Bindweed	<i>Convolvulus arvensis</i>
Field Horsetail	<i>Equisetum arvense</i>
Field Maple	<i>Acer campestre</i>
Field Poppy	<i>Papaver rhoeas</i>
Field Rose	<i>Rosa arvensis</i>
Field Speedwell	<i>Veronica persica</i>
Field Pansy	<i>Viola arvensis</i>
Field Woodrush	<i>Luzula campestris</i>
Fool's Watercress	<i>Apium nodiflorum</i>
Forget-me-not	<i>Myosotis</i> sp.
Fumitory	<i>Fumaria</i> sp.
Garden Privet	<i>Ligustrum ovalifolium</i>
Garlic Mustard	<i>Alliaria petiolata</i>
Germander Speedwell	<i>Veronica chamaedrys</i>
Glaucous Sedge	<i>Carex flacca</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Greater Bird's-foot Trefoil	<i>Lotus pedunculatus</i>
Goat Willow	<i>Salix caprea</i>
Gorse	<i>Ulex europaeus</i>
Greater Burnet	<i>Sanguisorba officinalis</i>
Greater Plantain	<i>Plantago major</i>
Greater Pond-sedge	<i>Carex riparia</i>
Greater Reedmace	<i>Typha latifolia</i>
Green Alkanet	<i>Pentaglottis sempervirens</i>
Ground Elder	<i>Aegopodium podagraria</i>
Ground-ivy	<i>Glechoma hederacea</i>
Groundsel	<i>Senecio vulgaris</i>
Guelder Rose	<i>Viburnum opulus</i>
Hard Rush	<i>Juncus inflexus</i>
Hairy Bittercress	<i>Cardamine hirsuta</i>
Hairy Sedge	<i>Carex hirta</i>
Hazel	<i>Corylus avellana</i>
Hawkbit	<i>Leontodon</i> sp.
Hawksbeard	<i>Crepis</i> sp.
Hawthorn	<i>Crataegus monogyna</i>
Hedge Woundwort	<i>Stachys sylvatica</i>

Common Name	Latin Name
Hedgerow Cranesbill	<i>Geranium pyrenaicum</i>
Herb Robert	<i>Geranium robertianum</i>
Hemlock	<i>Conium maculatum</i>
Himalayan Balsam	<i>Impatiens glandulifera</i>
Hoary Willowherb	<i>Epilobium parviflorum</i>
Hogweed	<i>Heracleum sphondylium</i>
Holm Oak	<i>Quercus ilex</i>
Holly	<i>Ilex aquifolium</i>
Hornbeam	<i>Carpinus betulus</i>
Horse Chestnut	<i>Aesculus hippocastanum</i>
Horsetail	<i>Equisetum</i> sp.
Hybrid Black Poplar	<i>Populus nigra</i> x <i>deltoides</i> = <i>P. x canadensis</i>
Italian Rye-grass	<i>Lolium multiflorum</i>
Ivy	<i>Hedera helix</i>
Knapweed	<i>Centaurea</i> sp.
Knotgrass	<i>Polygonum aviculare</i>
Knotted Hedge Parsley	<i>Torilis nodosa</i>
Lady's Bedstraw	<i>Galium verum</i>
Larch	<i>Larix decidua</i>
Lawson Cypress	<i>Chamaecyparis lawsoniana</i>
Lesser Pond-sedge	<i>Carex acutiformis</i>
Lesser Stitchwort	<i>Stellaria graminea</i>
Lesser Trefoil	<i>Trifolium dubium</i>
Leyland Cypress	<i>Cupressus x leylandii</i>
Lilac	<i>Syringa vulgaris</i>
Lime	<i>Tilia</i> sp.
Lords-and-Ladies	<i>Arum maculatum</i>
Lucerne	<i>Medicago sativa</i>
Male Fern	<i>Dryopteris filix-mas</i>
Maple	<i>Acer</i> sp.
Marsh Foxtail	<i>Alopecurus geniculatus</i>
Mayweed	<i>Matricaria</i> sp.
Meadow Barley	<i>Hordeum brachyantherum</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Meadow Oat-grass	<i>Avenula pratensis</i>
Meadowsweet	<i>Filipendula ulmaria</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Monkey Puzzle	<i>Araucaria araucana</i>
Mugwort	<i>Artemisia vulgaris</i>
Nipplewort	<i>Lapsana communis</i>
Norway Maple	<i>Acer platanoides</i>
Norway Spruce	<i>Picea abies</i>
Oak	<i>Quercus</i> sp.
Oil-seed Rape	<i>Brassica napus</i>
Osier	<i>Salix viminalis</i>
Ox-eye Daisy	<i>Leucanthemum vulgare</i>
Pale Persicaria	<i>Persicaria lapathifolia</i>
Pedunculate Oak	<i>Quercus robur</i>

Common Name	Latin Name
Pendulous Sedge	<i>Carex pendula</i>
Perennial Rye-grass	<i>Lolium perenne</i>
Perforate St John's Wort	<i>Hypericum perforatum</i>
Pignut	<i>Conopodium majus</i>
Pine	<i>Pinus</i> sp.
Plantain	<i>Plantago</i> sp.
Plum	<i>Prunus domestica</i>
Poplar	<i>Populus</i> sp.
Poppy	<i>Papaver</i> sp.
Prickly Lettuce	<i>Lactuca serriola</i>
Prickly Sow-thistle	<i>Sonchus asper</i>
Primrose	<i>Primula vulgaris</i>
Privet	<i>Ligustrum</i> sp.
Red Campion	<i>Silene dioica</i>
Red Clover	<i>Trifolium pratense</i>
Red Deadnettle	<i>Lamium purpureum</i>
Red Fescue	<i>Festuca rubra</i>
Red Oak	<i>Quercus rubra</i>
Redshank	<i>Persicaria maculosa</i>
Reed Canary-grass	<i>Phalaris arundinacea</i>
Reedmace	<i>Typha latifolia</i>
Rhododendron	<i>Rhododendron</i> sp.
Ribwort Plantain	<i>Plantago lanceolata</i>
Rose	<i>Rosa</i> sp.
Rough Chervil	<i>Chaerophyllum temulum</i>
Rough Meadow-grass	<i>Poa trivialis</i>
Rowan	<i>Sorbus aucuparia</i>
Rye-grass	<i>Lolium</i> sp.
Scarlet Pimpernel	<i>Anagallis arvensis</i>
Scentless Mayweed	<i>Tripleurospermum inodorum</i>
Scot's Pine	<i>Pinus sylvestris</i>
Selfheal	<i>Prunella vulgaris</i>
Shepherd's Purse	<i>Capsella bursa-pastoris</i>
Silver Birch	<i>Betula pendula</i>
Small-leaved Lime	<i>Tilia cordata</i>
Smaller Cat's-tail	<i>Phleum bertolonii</i>
Smooth-leaved Elm	<i>Ulmus minor</i>
Smooth Meadow-grass	<i>Poa pratensis</i>
Smooth Tare	<i>Vicia tetrasperma</i>
Snowberry	<i>Symphoricarpos albus</i>
Snowdrop	<i>Galanthus nivalis</i>
Soft Brome	<i>Bromus hordeaceus</i>
Soft Rush	<i>Juncus effusus</i>
Sow-thistle	<i>Sonchus</i> sp.
Spear Thistle	<i>Cirsium vulgare</i>
Spurge	<i>Euphorbia</i> sp.
Sycamore	<i>Acer pseudoplatanus</i>
Sweet Chestnut	<i>Castanea sativa</i>
Sweet Vernal-grass	<i>Anthoxanthum odoratum</i>

Common Name	Latin Name
Swine Cress	<i>Coronopus</i> sp.
Tall Fescue	<i>Festuca arundinacea</i>
Teasel	<i>Dipsacus fullonum</i>
Thyme-leaved Speedwell	<i>Veronica serpyllifolia</i>
Timothy	<i>Phleum pratense</i>
Tormentil	<i>Potentilla erecta</i>
Tree-of-Heaven	<i>Ailanthus altissima</i>
Trefoil	<i>Lotus</i> sp.
Tufted Hair-grass	<i>Deschampsia cespitosa</i>
Upright Brome	<i>Bromus erectus</i>
Violet	<i>Viola</i> sp.
White Bryony	<i>Bryonia alba</i>
White Campion	<i>Silene latifolia</i>
White Clover	<i>Trifolium repens</i>
White Willow	<i>Salix alba</i>
Wall Barley	<i>Hordeum murinum</i>
Wall Rocket	<i>Diploxaxis tenuifolia</i>
Water Lily	<i>Nymphaeaceae</i> sp.
Wayfaring Tree	<i>Viburnum lantana</i>
Weeping Willow	<i>Salix babylonica</i>
White Deadnettle	<i>Lamium album</i>
Whitebeam	<i>Sorbus aria</i>
White Poplar	<i>Populus alba</i>
Wild Carrot	<i>Daucus carota</i>
Wild Cherry	<i>Prunus avium</i>
Wild Oat	<i>Avena fatua</i>
Willow	<i>Salix</i> sp.
Willowherb	<i>Epilobium</i> sp.
Wood Avens	<i>Geum urbanum</i>
Yarrow	<i>Achillea millefolium</i>
Yellow Oat-grass	<i>Trisetum flavescens</i>
Yew	<i>Taxus baccata</i>
Yorkshire Fog	<i>Holcus lanatus</i>

Appendix F3

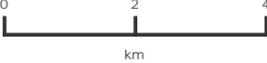
Desk Study Results



Legend

-  Ramsar Sites (England)
-  Special Areas of Conservation (England)
-  Special Protection Areas (England)

Projection = OSGB36
 xmin = 471100
 ymin = 230400
 xmax = 507100
 ymax = 256200



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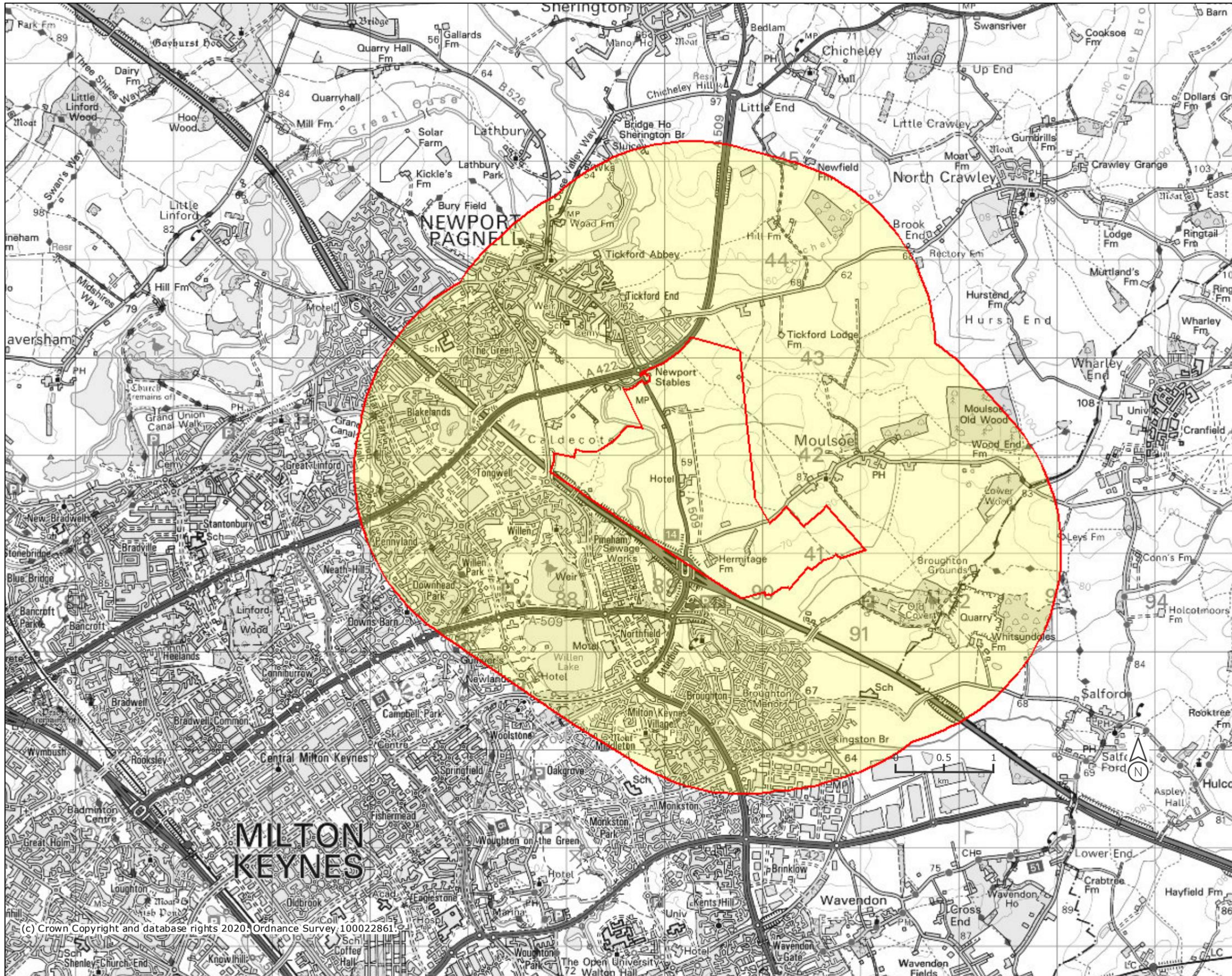
Legend

-  National Nature Reserves (England)
-  Sites of Special Scientific Interest (England)

Projection = OSGB36
 xmin = 479500
 ymin = 235400
 xmax = 499600
 ymax = 249800



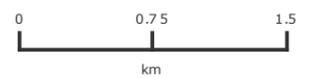
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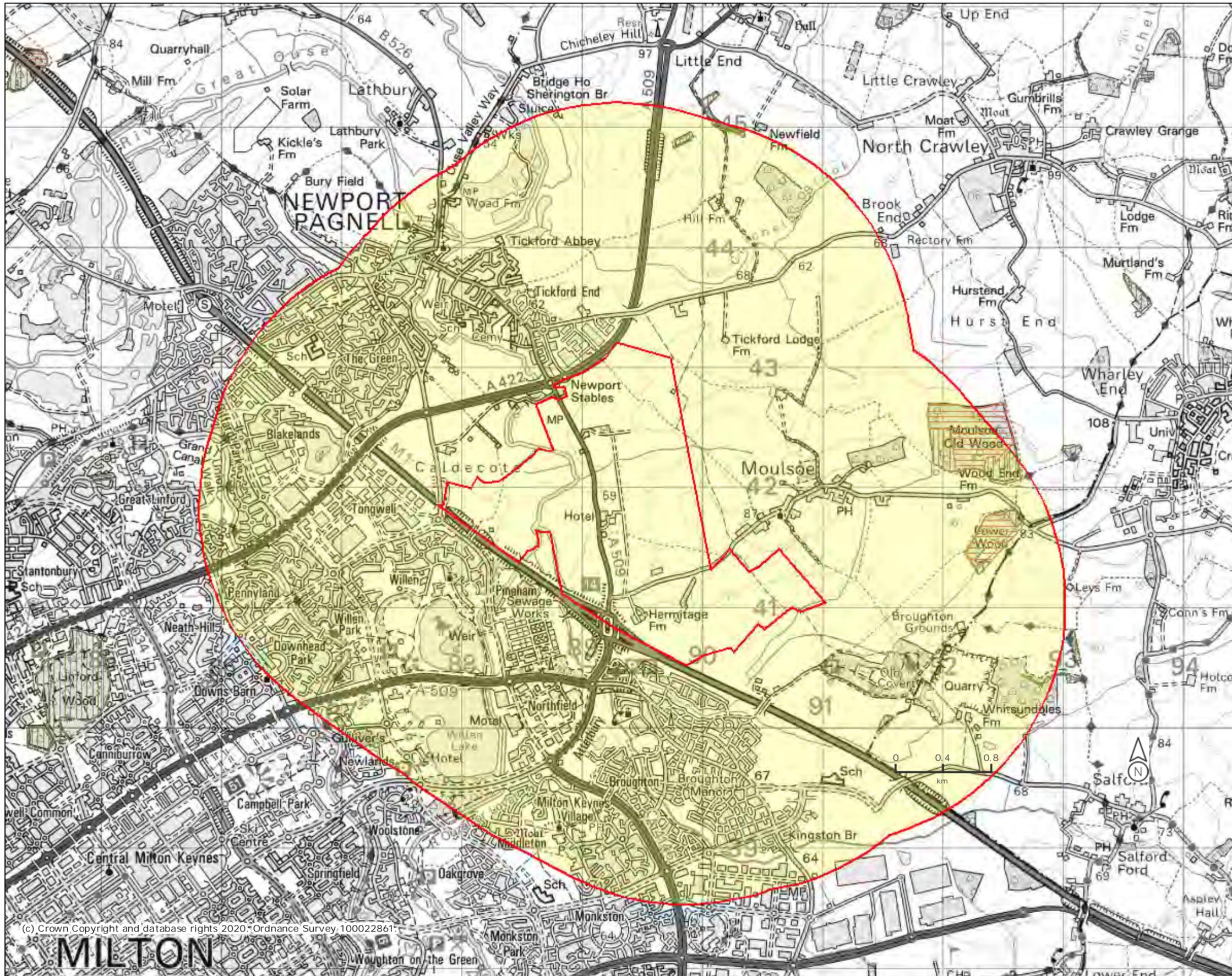
Legend

 Local Nature Reserves (England)

Projection = OSGB36
 xmin = 479400
 ymin = 235700
 xmax = 497800
 ymax = 247500



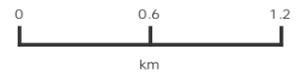
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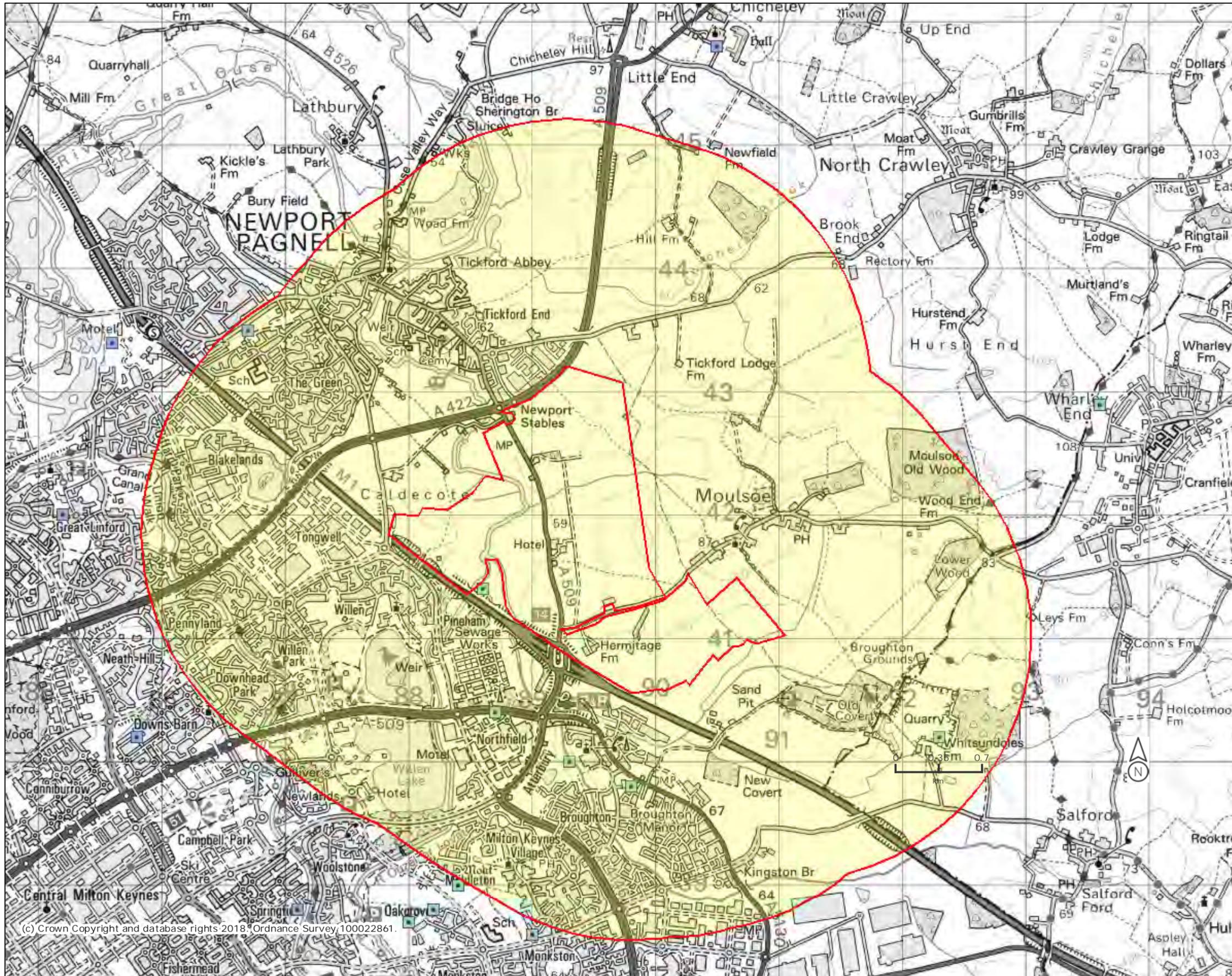
Legend

- Ancient Woodland (England)**
- Ancient and Semi-Natural Woodland
- Ancient Replanted Woodland

Projection = OSGB36
 xmin = 481100
 ymin = 238200
 xmax = 497600
 ymax = 245800



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Legend

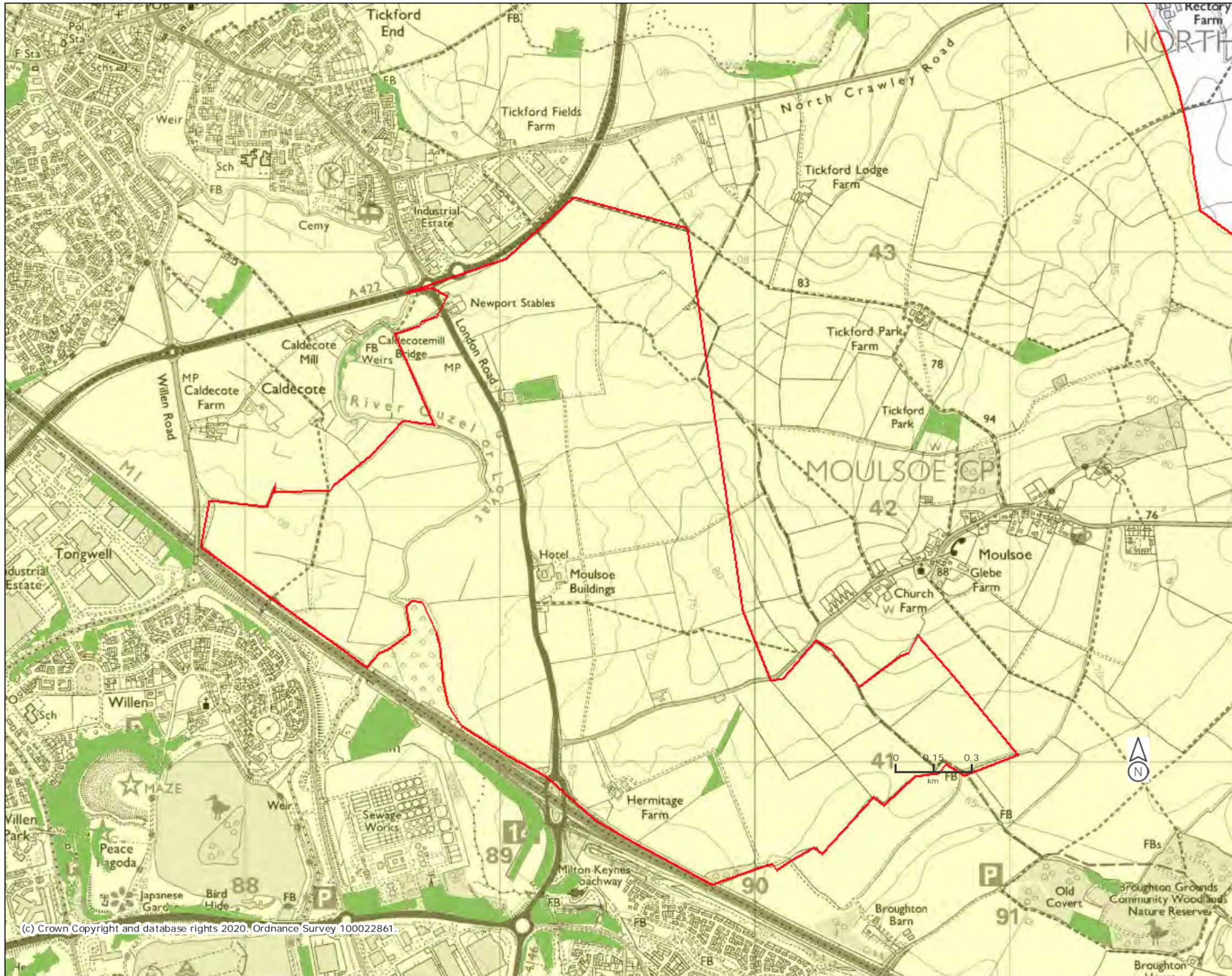
Granted European Protected Species Applications (England)

- Amphibian
- Bat
- Cetacean
- Invertebrate
- Other Mammal
- Plant
- Reptile

Projection = OSGB36
 xmin = 484500
 ymin = 238400
 xmax = 495000
 ymax = 246000



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Legend

- Priority Habitat Inventory - Deciduous Woodland (England)

Projection = OSGB36
 xmin = 485600
 ymin = 240300
 xmax = 493400
 ymax = 243900

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Environmental Records Centre**

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<http://www.bucksmkerc.org.uk/>

Shannon Davies
Hankinson Duckett Associates (HDA)
The Stables, Howbery Park, Benson
Lane, Wallingford, Oxfordshire, OX10
8BA

Your ref Newport Pagnell 2090.52
My ref 18-101
Date 19 June 2018
Contact Claudia Bernardini
Tel 01296 382431
Email [REDACTED]

Dear Shannon Davies,

Re: Newport Pagnell 2090.52 (SP890420)

Thank you for your email of 12 June 2018 agreeing to our terms and requesting information on non-statutory sites and species within 4km of the site above. The information we have is summarised below. A map is provided below showing the locations of sites within the search area, and the relevant species records are detailed below. Please see the 'Definitions' section below for an explanation of the terms used to describe sites and species in this report.

NON-STATUTORY SITES

The search area includes the following Local Wildlife Sites (LWS):

Site Code	Site name
84Y05	A509 Verge East of Sherington
84Q04	Willen Lake
84R01	Tongwell Lake

A citation or survey report for these LWS is given below.

The search area overlaps eight of the Milton Keynes Wildlife Corridors for roads, wetlands and railways (see map below). Wildlife Corridors were identified in 1996 (Milton Keynes Wildlife Corridor Project: The Wildlife Corridors of Milton Keynes) and are given a status equivalent to Local Wildlife Sites in the Milton Keynes Local Plan.

The search area includes the following Local Geological Site (LGS) (formerly known as Locally Important Geological and Geomorphological Site (RIGS)):

Site Code	Site name
MK07	New Bradwell Railway Walk
MK04	Great Linford buildings and stones

A description for this LGS is given below.

The search area includes the following Biological Notification Sites (BNS):

Site Code	Site	Broad habitat	Description
84L07	Great Linford	Small Pond	Old quarry pond with Great Crested Newt (1984).
94A03	Broughton Fields pond 1	Large Pond	Small pond, less than 20 sq. yards. Not shaded.
94G01	Moulsoe Old Wood	Coniferous Woodland	N third coniferised. Remainder young mixed plantation/ coppice. Large central clearing. Rides colourful wide meadows, only central strip close mown. Extensive old Blackthorn thickets in W & fine blackthorn hedge on W & S boundaries. Butterfly potential.
84X05	Sherington Bridge	Large River	Large river.
94C05	Chicheley Brook, Hill Farm	Stream	Good score for water quality based on invertebrate species.
84R05	Bridge south of Newport Pagnell	Large River	Large river.
94B02	Moulsoe Old Wood, Pond and Scrub	Scrub	Large pond completely surrounded by bushes. Also a smaller pond.
83U12	Grand Union Canal, Woolstone	Canal or Wet Ditch	Canal.
84Q03	Grand Union Canal, Downhead Park	Canal or Wet Ditch	Canal.
84Q07	Grand Union Canal, Great Linford	Canal or Wet Ditch	Canal.
84L01	Great Linford Gravel Pits	Large Lake	A series of lakes and ponds formed from old gravel-workings. Some lakes well-vegetated with a range of wildlife. Well-used by waterfowl and waders, especially in winter. Surrounding grassland and ditch has variety of plant species.
84S08	Wet area south side of Lathbury Park		No description available
84X01	Newport Pagnell Gravel Pits	Open Water	A series of several disused gravel pits filled with water.

PROTECTED AND NOTABLE SPECIES

Records of protected and/or notable species within the search area are shown in the table below.

The Buckinghamshire Badger Group (www.bucks-badgers.org.uk) also has records for this area, for further information contact Bob Simpson, the Buckinghamshire Badger Group Recorder, at 27 Waine Close, Buckingham, MK18 1FF.

According to our records, the area does not overlap an area identified (by BBOWT, the Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust) as a Key Area for Water Voles. For further details please contact BBOWT, 01865 775476, web: www.bbowl.org.uk

As agreed, I will forward an invoice for £213.75 + VAT for the time taken to extract this information and put together the report.

Please do not hesitate to contact me if you have any questions arising from this report.

Yours sincerely,



Claudia Bernardini

Environmental Records Officer

TERMS AND CONDITIONS

Copyrights

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- BMERC does not guarantee the accuracy of any information supplied and shall have no liability for any loss, damage or expense incurred as the result of reliance on any information supplied.
- BMERC can only provide information based on the data held by us. In particular, the absence of records for a species does not necessarily indicate that the species itself is absent, merely that we have not received records for it.
- Please note that this data search does NOT include Archaeological or Heritage data, please contact the Buckinghamshire Heritage Team if you require this.
<http://old.buckscc.gov.uk/leisure-and-culture/archaeology/historic-environment-records/>

Protected Species

- We will not release records where it might be to the detriment of wildlife or where we suspect that the information will be used to interfere illegally with protected species. Some records are classified as sensitive and can only be supplied in summary form

Access and use of data

- The data in this report is only licenced for use by the applicant and for the purpose outlined in this data search. It must not be used for other commercial purposes or passed other third parties.
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- Protected species records should be kept out of the public domain.

Planning applications

- BMERC does not provide planning advice and will not offer an opinions on planning applications and planning related matters.



Site Name A509 East of Sherington	File Code 84Y05	Date surveyed 18/06/03
Parish Sherington	District Milton Keynes	Area (ha) Approx.0.3
Grid Ref. SP897465	Recorder(s) Mr C Coppock & Mr M Olozulu	

Location, Topography, Boundaries and Surrounding Land Use

These roadside verges are approximately 1.5 km long and are about 0.6 km east of Sherington. The verges referred to are on both sides of the A509. The geology is Clay underlying typical calcareous pelosols. The terrain of both verges is steep, rising at an incline away from the road. Fences border the entire verge on either side of the road. Semi-improved grasslands are present to the west of the verge and to the east are arable fields. A remnant of woodland is present in the middle of the verge on the western side of the road.

Detailed Description

Both sides of the roadside verge are rough neutral grassland with scattered scrub. There is a higher diversity of species on the verge to the east of the road, and there are also pockets of species rich areas occurring sporadically along the western verge. The northern section of both verges is more species rich.

Creeping Cinquefoil (*Potentilla reptans*) is abundant. Bird's-foot-trefoil (*Lotus corniculatus*), Black Knapweed (*Centaurea nigra*), False Oat-grass (*Arrhenatherum elatius*), Creeping Bent (*Agrostis stolonifera*) and Wild Carrot (*Daucus carota*) occur frequently on both sides of the road verge.

Common Spotted Orchid (*Dactylorhiza fuchsii*), Cowslip (*Primula veris*), Glaucous Sedge (*Carex flacca*), Greater Burnet Saxifrage (*Pimpinella major*), Lesser Trefoil (*Trifolium dubium*), Hairy Tare (*Vicia hirsuta*), Red Bartsia (*Odontites vernus*), Yellow Oat-grass (*Trisetum flavescens*), Barren Brome (*Anisantha sterilis*), and Wild Basil (*Clinopodium vulgare*) were recorded as occasional.

There are a few damper areas on the eastern section, characteristic species occurring here include Hard Rush (*Juncus inflexus*), False Fox-sedge (*Carex otrubae*) and Selfheal (*Prunella vulgaris*).

Bee Orchid (*Ophrys apifera*)¹, Common Centaury (*Centaureum erythraea*), Meadow Vetchling (*Lathyrus pratensis*), Wild Marjoram (*Origanum vulgare*) and Wild Liquorice (*Astragalus glycyphyllos*)¹ are all locally abundant, and occur mainly to the north of the verge suggesting this section is more calcareous than the rest of the site.

This community most closely resembles National Vegetation Classification (NVC) MG1e *Arrhenatherum elatius* grassland *Centaurea nigra* sub-community.

The wooded section consists mostly of Ash (*Fraxinus excelsior*) and Pedunculate Oak (*Quercus robur*) with Blackthorn (*Prunus spinosa*), Dog Rose (*Rosa canina*), Field Rose (*Rosa arvensis*), Wayfaring Tree (*Viburnum lantana*) and Oregon Grape (*Mahonia aquifolium*) amongst the scrub species. There is scattered scrub along the entire length of the verge, which consists mostly of Blackthorn.

On this visit, 92 plant species were recorded.

¹ Uncommon in Bucks

Due to the mosaic and structure of the habitat, some invertebrate fauna will be supported. Ringlet (*Aphantopus hyperantus*), Meadow Brown (*Maniola jurtina*), Marbled White (*Melanargia galathea*), Meadow Grasshopper (*Chorthippus parallelus*), Five-spot Burnet (*Zygaena trifolii*) and Common Blue Damselfly (*Enallagma cyathigerum*) were recorded on this visit. Anthills are distributed along the verge and are occupied by Black Ants.

Other species recorded on this visit are Green Woodpecker (*Picus viridis*) and Rabbit (*Oryctolagus cuniculus*).

Priority/local UK BAP species recorded

Cowslip
Green Woodpecker

Red Data Book (RDB) species recorded

None recorded

Nationally Scarce species recorded

None recorded

Current/Past Management Regime

The Highways Department of Milton Keynes Council manages the verge by mowing. Due to the abundance of False Oat-grass it can be deduced that the mowing regime is not conducive to maintaining a species-rich sward.

Ideal Management Regime

- The mowing regime should be implemented in August onwards, this allows for the wildflowers to seed.
- Try to avoid low cutting heights, as bare patches will provide favourable areas for the invasion of species such as Creeping Thistle. This should be done sensitively to ensure that the anthills are not damaged.
- Discourage machinery access to grassland when conditions are damp.

Other Issues

None

Useful Information

Wildlife Trust Tel: 01865 775476
English Nature Tel: 01635 268881

Site Name Willen Lake	File Code 84Q04	Grid Ref. SP878404	Date Surveyed 13/10/2015	Area (ha) c 93.63ha
District Milton Keynes	Parish Campbell Park		Recorder(s) Fiona Everingham	
Soils 813b Fladbury 1 572t Bishampton 2	Superficial Deposits River Terrace Deposits		Bedrock Brick Clay, Peterborough Member	
Ownership Details The Parks Trust, 1300 Silbury Boulevard, Campbell Park, Milton Keynes, MK9 4AD			JCA (Joint Character Area) 88 Bedfordshire & Cambridgeshire Claylands	

Qualifying LWS Criteria

Core Criteria	Evidence from Surveys
1. Naturalness (habitats) – Presence of UK BAP Priority Habitats	Site supports lowland meadow, open water with associated habitats of swamp, tall-herb fen and flowing water.
2. Rare or exceptional features (principally for species) - Presence of substantial population or assemblage of species as defined by the species criteria.	The endangered Grass-poly (<i>Lythrum hyssopifolia</i>) is present on the island, the only county site for this species. The area supports significant non-breeding numbers of qualifying bird species as defined within the selection criteria. 61 species meeting BTO Birds of Conservation Concern 4 Red and Amber status have been recorded, many wintering and on passage in significant numbers.
3. Size or extent of features (habitat or population) - Does the site hold a substantial proportion (see figures for %) of county resource of the habitat (or habitat mosaics) or species? OR is it a large site supporting a range of habitat types?	A large site with two lakes and a range of associated habitats including small areas with some diversity that could be managed for greater diversity. There are good fringing aquatic habitats in places, particularly around the northern lake.
4. Diversity (numbers of species or habitats) - Follow species guidelines and consider in context of the number of habitats the site supports.	26 (of 27) bird species in Lowland open waters criteria have been recorded in the last five years, resulting in a score of 77 out of 78.5 (98%). In addition, the mean counts of >500 birds over winter is exceeded. 6 meadow indicator species; 8 swamp indicator species; 9 tall-herb fen indicator species and 14 species typical of flowing water. The site has a total wetland score of 23 different species.

Contextual Criteria	
5. Connectivity within the landscape - Presence of green links or in close proximity to other areas of semi-natural habitat. Part of wider area used by meta-population of a species.	This area is part of the Milton Keynes balancing lakes system and also forms part of the green infrastructure throughout the town
6. Fragility - Sensitive species populations or habitats prone to loss from external influences.	Many grassland species are susceptible to loss through changes to mowing regimes and build-up of soil fertility from grass cuttings being left in situ following mowing. Aquatic habitats are fragile and susceptible to disruption to water supply, excessive shading, eutrophication, pollution and invasive species
7. Recorded history and cultural associations - Historic use of the site known and important to local community. Part of regular survey/monitoring programme.	Identified as BNS but otherwise unknown
8. Value for appreciation of nature - Good access/greatly increases the aesthetics of the area.	This is an extremely popular area with a good network of footpaths and is also well used by fisherman. The southern lake is also used for various water based activities including wakeboarding. The site lies in an urban location and is surrounded by light industry, offices and housing. It is well used and is a valuable asset to people living and working nearby.
9. Value for learning - Current use by schools, local groups or proximity to education centres and access.	The site is eminently suitable for use by a range of user groups including schools. The surfaced pathways throughout the area ensure easy access at all times of the year.

1. Location, Topography, Boundaries and Surrounding Land Use

- 1.1 Willen Lakes lies in an urban location in northeast Milton Keynes close to junction 14 of the M1.
- 1.2 The BNS comprises two linked ponds, part of the Milton Keynes anti-flood balancing lake system. The area surveyed extends beyond the original BNS boundary to include some of the surrounding grassland, scrub and woodland areas.
- 1.3 The majority of the grassland is regularly mown amenity grassland but with some areas apparently less intensively managed, particularly on slopes. There has been extensive planting of shrubs and trees throughout often creating 'woody' barriers between the grassland and the surrounding transport corridors.
- 1.4 The site is crossed by several paved paths and additional non-paved pathways across the grassland.

- 1.5 The site is situated on brick clay, Peterborough member bedrock with superficial deposits of river terrace deposits overlain by both 813b Fladbury 1 and 572t Bishampton 2 soils.

2. Detailed Description

Flora

- 2.1 The majority of the grassland supports a species-poor improved grassland typical of an MG7 *Lolium perenne* ley community dominated by Perennial Rye-grass (*Lolium perenne*), Annual Meadow-grass (*Poa annua*) with White Clover (*Trifolium repens*), Dandelion (*Taraxacum* agg.) and Daisy (*Bellis perennis*). All the grassland areas are cut on a regular basis but some areas appear to be more regularly and closely mown with other areas left to grow slightly longer particularly on more sloping ground. These less intensively managed areas are still grass dominated but with less rye grass and more Yorkshire-fog (*Holcus lanatus*), Cock's-foot (*Dactylis glomerata*) and Creeping Bent (*Agrostis stolonifera*). There are more forb species than in the intensively mown areas but all at low levels and generally only the commoner species such as Hogweed (*Heracleum sphondylium*), Cow Parsley (*Anthriscus sylvestris*), Creeping Buttercup (*Ranunculus repens*) and Ribwort Plantain (*Plantago lanceolata*) occur at anything other than rare. Additional species of interest that are present but rare throughout these areas include Wild Carrot (*Daucus carota*), Ox-eye Daisy (*Leucanthemum vulgare*), Bird's-foot Trefoil (*Lotus corniculatus*), Common Knapweed (*Centaurea nigra*) and Meadow Buttercup (*Ranunculus acris*). Ensuring that all cuttings are removed following mowing of areas where there is some more interest within the sward may help to maintain and increase the species diversity by reducing the soil fertility.



Area along east side of north lake showing less intensively managed grassland on slopes down to lakeside

- 2.2 There are some areas of tall unmanaged vegetation (MG1 type vegetation) around the northern lake which support a more diverse sward in places although some areas are becoming dominated by Common Nettle (*Urtica dioica*). The nationally scarce Greater Dodder (*Cuscuta europaea*) was found in this area, an uncommon species for Buckinghamshire.



Two examples of tall-unmanaged vegetation on the eastern side of the north lake



- 2.3 There is an area at the southwestern corner of the north lake that appears to be managed more like a hay meadow with a late cut. This area had been cut just before the survey so it was difficult to assess the species diversity accurately. Species of interest that were seen include frequent Agrimony (*Agrimonia eupatoria*), Ribwort Plantain and occasional Red Bartsia (*Odontites vernus*) and Common Knapweed.
- 2.4 Both lakes have at least some fringing vegetation but this is most well developed in the northern, less disturbed lake. In places there are extensive beds of Common Reed (*Phragmites australis*) with frequent Branched Bur-reed (*Sparganium erectum*) and Great Willowherb (*Epilobium hirsutum*) with occasional reedmace (predominantly Bulrush (*Typha latifolia*) with small amounts of Lesser Bulrush (*Typha angustifolia*). Other typical species include Water Mint (*Mentha aquatica*), Gipsywort (*Lycopus europaeus*), Purple Loosestrife (*Lythrum salicaria*), Reed Sweet-grass (*Glyceria maxima*) and scattered Angelica (*Angelica sylvestris*), Water Dock (*Rumex hydrolapathum*), Skullcap (*Scutellaria galericulata*), Brooklime (*Veronica beccabunga*) and Water Figwort (*Scrophularia auriculata*).



Two photos of north lake showing well developed fringing habitats



South lake, showing contrasting bank types, one above is highly modified; the one below is more natural with a reasonable area of fringing reed bed



2.5 There are several areas of woodland, much of which is planted although there are some areas of wet woodland that look to be more natural, particularly along the southern edge of the northern lake around the bird hide area. There is also an island with woodland in the northern lake but this was not surveyed. Typically planted tree and shrub species include various willow (*Salix sp.*) and poplar (*Populus sp.*) species, Cherry (*Prunus sp.*), Red-osier Dogwood (*Cornus sericea*), *Cotoneaster* spp. and Sea Buckthorn (*Hippophae rhamnoides*). Other shrubs and trees that may or may not be planted include Field Maple (*Acer campestre*), Hawthorn (*Crataegus monogyna*), Hazel (*Coryllus avellana*), Blackthorn (*Prunus spinosa*), Elder (*Sambucus nigra*) and Bramble (*Rubus fruticosus* agg.) with some Alder (*Alnus glutinosus*).

3. Fauna

3.1 The lake system supports a range of bird species particularly during the winter months. Below is a table showing the number of notable species (as identified by the selection criteria) for the previous 5 years. Against the criteria for the 27 species in Lowland open waters all but one of the species has been recorded in the last five years, resulting in a score of 77 out of 78.5 (98%). In addition, the mean counts of >500 birds over winter is exceeded as can be seen from the tables below.

Average number of birds per record - Summary by species by year

Taxon	Vernacular	Status	2011	2012	2013	2014	2015
<i>Cettia cetti</i>	Cetti's Warbler	Green	1	1	1	1	2
<i>Phalacrocorax carbo</i>	Cormorant	Green	3	22	36	53	53
<i>Anas strepera</i>	Gadwall	Amber	13	18	22	70	12
<i>Bucephala clangula</i>	Goldeneye	Amber	5	9	15	7	4
<i>Mergus merganser</i>	Goosander	Green	1	2	2	1	1
<i>Podiceps cristatus</i>	Great Crested Grebe	Green	4	12	19	23	
<i>Egretta garzetta</i>	Little Egret	Green	3	4	8	4	4

<i>Tachybaptus ruficollis</i>	Little Grebe	Green	3	7	5	6	10
<i>Anas acuta</i>	Pintail	Amber			1		
<i>Aythya ferina</i>	Pochard	Red	9	20	12	9	10
<i>Milvus milvus</i>	Red Kite	Green			1		1
<i>Riparia riparia</i>	Sand Martin	Green		183	4	202	
<i>Anas clypeata</i>	Shoveler	Amber	6	11	14	18	14
<i>Mergus albellus</i>	Smew	Amber		1	1		
<i>Gallinago gallinago</i>	Snipe	Amber	2	7	5	11	6
<i>Anas crecca</i>	Teal	Amber	11	68	65	102	19
<i>Aythya fuligula</i>	Tufted Duck	Green	2	69	57	150	26
<i>Rallus aquaticus</i>	Water Rail	Green		1	1	1	2
<i>Anas penelope</i>	Wigeon	Amber	11	46	85	123	80

3.2 In addition to the species highlighted by the selection criteria the site supports an extensive range of resident, wintering and passage migrants. Over 200 bird species having been recorded since 1974.

3.3 18 species listed as Red status by the BTO Birds of Conservation Concern 4 (Dec 2015) have been recorded in the last 5 years. Of most significance are:

- the winter gull roost, which contains significant number of Herring Gulls.
- wintering habitat for Pochard
- winter roost for Starlings
- roosting for Lapwing
- winter and passage refuge for a number of wader and wildfowl species

The red listed species as follows:

Average number of birds per record - Summary by species by year							
Taxon	Vernacular	Status	2011	2012	2013	2014	2015
<i>Limosa limosa</i>	Black-tailed Godwit	Red		1	1		1
<i>Melanitta nigra</i>	Common Scoter	Red		1			
<i>Cuculus canorus</i>	Cuckoo	Red			1		
<i>Motacilla cinerea</i>	Grey Wagtail	Red			1		2
<i>Larus argentatus</i>	Herring Gull	Red	1	27	198	40	
<i>Passer domesticus</i>	House Sparrow	Red	6				15
<i>Rissa tridactyla</i>	Kittiwake	Red				1	
<i>Vanellus vanellus</i>	Lapwing	Red	258	185	56	128	108
<i>Carduelis cabaret</i>	Lesser Redpoll	Red				3	
<i>Aythya ferina</i>	Pochard	Red	9	20	12	9	10
<i>Turdus iliacus</i>	Redwing	Red			47		
<i>Charadrius hiaticula</i>	Ringed Plover	Red	1		2		2
<i>Philomachus pugnax</i>	Ruff	Red			1		
<i>Aythya marila</i>	Scaup	Red			3		
<i>Podiceps auritus</i>	Slavonian Grebe	Red			1	1	
<i>Sturnus vulgaris</i>	Starling	Red			20000		12500
<i>Passer montanus</i>	Tree Sparrow	Red		1			
<i>Motacilla flava</i>	Yellow Wagtail	Red				1	

- 3.4 43 species listed as Amber status by the BTO Birds of Conservation Concern 4 (Dec 2015) have been recorded in the last 5 years. Of most significance are
- Winter gull roost with significant numbers of Black-Headed, Common and Great and Lesser Black-backed Gulls and occasional Yellow-legged, Iceland and Caspian Gulls.
 - Breeding habitat (rafts) for Common Terns
 - Passage and summer feeding area for swift and hirundines
 - Winter and passage refuge for a number of wader and wildfowl species

The Amber listed species as follows:

Average number of birds per record - Summary by species by year							
Taxon	Vernacular	Status	2011	2012	2013	2014	2015
<i>Sterna paradisaea</i>	Arctic Tern	Amber		10		12	1
<i>Recurvirostra avosetta</i>	Avocet	Amber	1				
<i>Chroicocephalus ridibundus</i>	Black-headed Gull	Amber	20	1460	1006	1	
<i>Podiceps nigricollis</i>	Black-necked Grebe	Amber			1		
<i>Pyrrhula pyrrhula</i>	Bullfinch	Amber		3			
<i>Larus cachinnans</i>	Caspian Gull	Amber		1			
<i>Larus canus</i>	Common Gull	Amber	4	422	240		8
<i>Actitis hypoleucos</i>	Common Sandpiper	Amber	1	1	2	2	3
<i>Sterna hirundo</i>	Common Tern	Amber	5	18	15	12	20
<i>Calidris alpina</i>	Dunlin	Amber		2	1		1
<i>Anas strepera</i>	Gadwall	Amber	13	18	22	70	12
<i>Anas querquedula</i>	Garganey	Amber	1		1		
<i>Bucephala clangula</i>	Goldeneye	Amber	5	9	15	7	4
<i>Larus marinus</i>	Great Black-backed Gull	Amber		9	21	45	77
<i>Tringa ochropus</i>	Green Sandpiper	Amber	2	4	4	3	5
<i>Tringa nebularia</i>	Greenshank	Amber	1	1	2		
<i>Delichon urbicum</i>	House Martin	Amber	120	73	89		61
<i>Larus glaucooides</i>	Iceland Gull	Amber				1	
<i>Falco tinnunculus</i>	Kestrel	Amber			1		
<i>Alcedo atthis</i>	Kingfisher	Amber		1	1	1	1
<i>Larus fuscus</i>	Lesser Black-backed Gull	Amber		188	367		
<i>Anas platyrhynchos</i>	Mallard	Amber	0	71	115	109	
<i>Anthus pratensis</i>	Meadow Pipit	Amber	1				
<i>Larus melanocephalus</i>	Mediterranean Gull	Amber			1		
<i>Cygnus olor</i>	Mute Swan	Amber	47	105	145	138	183
<i>Pandion haliaetus</i>	Osprey	Amber	1				
<i>Haematopus ostralegus</i>	Oystercatcher	Amber	2	2	3	2	2
<i>Anas acuta</i>	Pintail	Amber			1		
<i>Tringa totanus</i>	Redshank	Amber	2	1	2	1	1
<i>Phoenicurus phoenicurus</i>	Redstart	Amber			1		

<i>Emberiza schoeniclus</i>	Reed Bunting	Amber	4		1	1	
<i>Tadorna tadorna</i>	Shelduck	Amber				1	
<i>Anas clypeata</i>	Shoveler	Amber	6	11	14	18	14
<i>Mergus albellus</i>	Smew	Amber		1	1		
<i>Gallinago gallinago</i>	Snipe	Amber	2	7	5	11	6
<i>Columba oenas</i>	Stock Dove	Amber			10	9	13
<i>Apus apus</i>	Swift	Amber	7	143	100	11	16
<i>Anas crecca</i>	Teal	Amber	11	68	65	102	19
<i>Arenaria interpres</i>	Turnstone	Amber		1			1
<i>Anas penelope</i>	Wigeon	Amber	11	46	85	123	80
<i>Phylloscopus trochilus</i>	Willow Warbler	Amber		2	10	2	
<i>Tringa glareola</i>	Wood Sandpiper	Amber			1	1	
<i>Larus michahellis</i>	Yellow-legged Gull	Amber		2	1	1	

Additional fauna records include the following:

Mammals

Mole (*Talpa europaea*), evidence of fresh molehills.

There are past records for Otter (*Lutra lutra*) (2013) and presumably the lakes are used as a bat (*Chiroptera*) feeding area.

4. Past / current management regime

- 4.1 The majority of the site is regularly mown but some areas have a less intensive cutting regime, particularly on slopes. The most diverse area lies at the south-eastern corner of the northern lake and appears to be managed as a hay meadow with a late summer cut.

5. Ideal management regime

This is intended to represent an ideal management regime to maximise the wildlife value of the site. It is recognised that this management may not be achievable or desirable for the landowner but it is hoped that he/she will consider moving towards this prescription. The management options detailed below in no way infer any criticism of the current management of the site and it is acknowledged that the current botanical diversity of the site is due to the sensitivity of the previous actions of the landowner/manager.

- 5.1 Several areas of the site are currently managed in a way that is sympathetic to the existing ecological interest across the area. Where grassland areas are less intensively managed try to ensure that all cuttings are removed as this will help to prevent an increase in soil fertility which is detrimental to many forbs typically found in more diverse swards.
- 5.2 Within any woodland areas any dead wood should be left in situ if this is possible to provide valuable habitats for invertebrate and fungi species.

6. LWS recommendations

6.1 Although there is a range of habitats present none of these meet the required standard for local wildlife site selection. However, the site is of significant importance for birds. Willen provides a significant feeding and roosting habitat for birds, particularly for passage and wintering species, a number of species also breed on the site. When these are taken into account the criteria are significantly exceeded. It is therefore proposed that the site be selected.

Help and advice

Help is available from a number of sources to implement these recommendations:

Bucks & MK Environmental Records Centre (Wildlife records)	01296 382431
Bucks Invertebrate Group (Insect surveys)	c/o 01296 382431
Environmental Stewardship (local Natural England office)	03000 603900
RSPB (Farmland bird advice)	01767 693690

Number of Vascular Plant Species Recorded

Date: 13 & 15/10/15 **Species:** 129 **Recorders:** Fiona Everingham

6 lowland meadow indicator species;

8 swamp indicator species

9 tall-herb fen indicator species

14 species typical of flowing water.

The site has a total wetland score of 23 different species

Ancient Woodland Indicator Species 1 Guelder rose – but this is highly likely to have been planted

County Scarce Plants (BSBI Rare Plants List) 0

County Rare Plants (BSBI Rare Plants List) 1

Nationally Scarce Species 0

Red Data Book Species 1

UK Biodiversity Action Plan (BAP) Species 0

Birds of Conservation Concern (RSPB)

18 Red listed species recorded in the last 5 years.

46 Amber listed species recorded in the last 5 years

Habitats & Species of Principal Importance – Section 41 List from NERC Act (2006)

Lowland meadow, open water with associated habitats of swamp, tall-herb fen and flowing water with score >10

LOCAL WILDLIFE SITE REPORT PRODUCED BY:

Fiona Everingham on behalf of

Buckinghamshire & Milton Keynes Wildlife Sites Project

Buckinghamshire County Council

c/o The Environment Team, 6th Floor, County Hall

Walton Street, Aylesbury, HP20 1UY

Tel. 01296 382431

Email: feveringham@buckscc.gov.uk

Site Name Tongwell Lake	File Code 84R01	Grid Ref. SP868423	Date Surveyed 12/10/2015	Area (ha) 20.90 ha
District Milton Keynes	Parish Campbell Park		Recorder(s) Fiona Everingham	
Soils 572t Bishampton 2	Superficial Deposits River Terrace Deposits		Bedrock Brick Clay, Peterborough Member	
Ownership Details Milton Keynes Council, 1 Saxon Gate East, Central Milton Keynes MK9 3EJ			JCA (Joint Character Area) 88 Bedfordshire & Cambridgeshire Claylands	

Qualifying LWS Criteria

Core Criteria	Evidence from Surveys
1. Naturalness (habitats) – Presence of UK BAP Priority Habitats	None
2. Rare or exceptional features (principally for species) - Presence of substantial population or assemblage of species as defined by the species criteria.	None present from vascular plant survey and bird records examined.
3. Size or extent of features (habitat or population) - Does the site hold a substantial proportion (see figures for %) of county resource of the habitat (or habitat mosaics) or species? OR is it a large site supporting a range of habitat types?	A large site with a range of habitats including reasonably open water and associated wetland habitats.
4. Diversity (numbers of species or habitats) - Follow species guidelines and consider in context of the number of habitats the site supports.	16 (of 27) bird species in Lowland open waters recorded in the last five years, resulting in a score of 49 out of 78.5 (62%). In addition, site supports open water, scrub and woodland. Vascular plants: 2 lowland meadow species 9 swamp species 6 tall-herb fen species 10 flowing water species
Contextual Criteria	
5. Connectivity within the landscape - Presence of green links or in close proximity to other areas of semi-natural habitat. Part of wider area used by meta-population of a species.	The site lies within an urban setting and is surrounded by roads and light industry with few links to other semi-natural habitats apart from along the road verges and shrub and tree corridors that run alongside many of the grid roads in Milton Keynes.

<p>6. Fragility - Sensitive species populations or habitats prone to loss from external influences.</p>	<p>Many of the grassland species are susceptible to loss through changes to mowing regimes and build-up of soil fertility from grass cuttings being left in situ following mowing. Aquatic habitats are fragile and susceptible to disruption to water supply, excessive shading, eutrophication, pollution and invasive species</p>
<p>7. Recorded history and cultural associations - Historic use of the site known and important to local community. Part of regular survey/monitoring programme.</p>	<p>Identified as a BNS, otherwise unknown</p>
<p>8. Value for appreciation of nature - Good access/greatly increases the aesthetics of the area.</p>	<p>This is a popular area with a well used peripheral path providing good access. The site is surrounded by light industry and offices and is a valuable asset to people living and working nearby.</p>
<p>9. Value for learning - Current use by schools, local groups or proximity to education centres and access.</p>	<p>The site is eminently suitable for use by a range of user groups including schools. The surfaced pathways throughout the area ensure easy access at all times of the year.</p>

1. Location, Topography, Boundaries and Surrounding Land Use

- 1.1 This large lake and surrounding area forms part of the Milton Keynes anti-flood balancing lakes system on the northern side of Milton Keynes.
- 1.2 The site comprises a lake with some fringing aquatic vegetation, woodland and regularly mown amenity grassland. There has been extensive planting of shrubs and trees throughout the area with a large area of planted woodland on the slopes at the northern end of the lake. There is a large, wooded island in the centre, this was inaccessible but it would be interesting to survey at some point.
- 1.3 The BNS is restricted to the lake but the survey has been expanded beyond the original BNS boundary to include the surrounding grassland, scrub and woodland areas.
- 1.4 The majority of the grassland is regularly mown. There has been extensive planting of shrubs and trees throughout to create woody barriers between the grassland and the surrounding transport corridors.
- 1.5 Hard paths run around the site with additional soft paths through the woodland.
- 1.6 The site is situated on brick clay, Peterborough member bedrock with superficial deposits of river terrace deposits overlain by 572 t Bishampton 2 soils.



Looking along the northern shore from the east

2. Detailed Description: Flora

2.1 There are only limited areas of open grassland and most is improved Perennial Rye-grass (*Lolium perenne*) and White Clover (*Trifolium repens*) dominated and regularly mown. There are limited areas of slightly more diverse vegetation on the eastern side of the lake with small amounts of Selfheal (*Prunella vulgaris*), Cat's-ear (*Hypochaeris radicata*), Bird's-foot Trefoil (*Lotus corniculatus*), Ox-eye Daisy (*Leucanthemum vulgare*) and Ribwort Plantain (*Plantago lanceolata*).



Buttonweed in concrete overflow

2.2 The western half of the lake has a well-developed fringe of reed beds, particularly in the northwest corner where there is a small area of wet woodland developing. The fringing vegetation is often dominated by Common Reed (*Phragmites australis*) with lesser amounts of Reed Canary-grass (*Phalaris arundinacea*) and Bulrush (*Typha latifolia*). Other species include Gipsywort (*Lycopus europaeus*), Yellow Iris (*Iris pseudacorus*), locally abundant Great Willowherb (*Epilobium hirsutum*) and small amounts of Lesser and Greater Pond-sedge (*Carex acutiformis* & *C. riparia*). One plant of Great Fensedge (*Cladium mariscus*) was found in the northwestern corner of the lake. A small amount of Buttonweed (*Cotula coronopifolia*) has been present for many years at the southeastern end of the lake in the concrete overflow area, this is considered a rare species in Buckinghamshire.

- 2.3 There are numerous trees around the lake edge including Aspen (*Populus tremula*), Silver Birch (*Betula pendula*), various willow species, Goat Willow (*Salix caprea*), Grey Willow (*Salix cinerea*) and Hybrid Crack-willow (*Salix x fragilis sens. lat.*) there is also some Alder (*Alnus glutinosus*).
- 2.4 There is an extensive area of planted Scots Pine (*Pinus sylvestris*) covering the slopes at the northern end of the lake. Other species include Norway Maple (*Acer platanoides*), Pedunculate Oak (*Quercus robur*), Cherry (*Prunus sp.*) with a limited understorey of Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*) and some Bramble (*Rubus fruticosus* agg.) but with little or no ground flora. Betony (*Betonica officinalis*) was found along some of the open rides and a dozen helleborines (*Epipactis sp.*, probably *E. helleborine*) beside one of the paths, a summer visit next year would be useful to confirm the identity.
- 2.5 There are several areas of planted trees and shrubs around the lake including Dogwood (*Cornus sp.*), Cotoneaster, firethorn (*Pyracantha sp.*) and Sea Buckthorn (*Hippophae rhamnoides*).
- 2.6 In the lake there are small amounts of Spiked Water-milfoil (*Myriophyllum spicatum*) a rare species within Buckinghamshire and the non-native Nuttall's Waterweed (*Elodea nuttallii*).

3. Detailed Description: Fauna

- 3.1 The lake system supports a wide range of bird species particularly during the winter months. Below is a table showing the number of notable species (as identified by the selection criteria) for the previous 5 years. Against the criteria for the 27 species in Lowland open waters 16 species have been recorded in the last five years, resulting in a score of 49 out of 78.5 (62%).

Average number of birds per record - Summary by species by year							
<i>Sterna hirundo</i>	Common Tern	Amber		2	2	1	3
<i>Anas strepera</i>	Gadwall	Amber	27	25	39	19	36
<i>Podiceps cristatus</i>	Great Crested Grebe	Green	4	3	2	3	4
<i>Ardea cinerea</i>	Grey Heron	Green	1	2	1	1	1
<i>Motacilla cinerea</i>	Grey Wagtail	Red	1	1	1	1	1
<i>Alcedo atthis</i>	Kingfisher	Amber	1		1	1	1
<i>Egretta garzetta</i>	Little Egret	Green	1	1	1	1	1
<i>Tachybaptus ruficollis</i>	Little Grebe	Green	1	2	2	2	2
<i>Cygnus olor</i>	Mute Swan	Amber	8	10	14	6	9
<i>Aythya ferina</i>	Pochard	Red	9	5	8	2	3
<i>Emberiza schoeniclus</i>	Reed Bunting	Amber	2		2	2	2
<i>Anas clypeata</i>	Shoveler	Amber	14	31	10	3	2
<i>Gallinago gallinago</i>	Snipe	Amber			1	1	
<i>Anas crecca</i>	Teal	Amber	2	5	4	2	2
<i>Aythya fuligula</i>	Tufted Duck	Green	61	58	38	31	47
<i>Rallus aquaticus</i>	Water Rail	Green	1	2	2	2	2

- 3.2 In addition to the species highlighted by the selection criteria the site supports an extensive range of resident, wintering and passage migrants. Over 120 bird species having been recorded since 1974. The site is subject to an annual BTO Wetland Bird Survey.
- 3.3 8 species listed as Red status by the BTO Birds of Conservation Concern 4 (Dec 2015) have been recorded in the last 5 years. Of most significance are:
- wintering habitat for Pochard
 - an occasional winter roost for Starlings

The red listed species as follows:

Average number of birds per record - Summary by species by year							
Taxon	Vernacular	Status	2011	2012	2013	2014	2015
<i>Motacilla cinerea</i>	Grey Wagtail	Red	1	1	1	1	1
<i>Larus argentatus</i>	Herring Gull	Red	1	1	2	1	1
<i>Carduelis cabaret</i>	Lesser Redpoll	Red			2		
<i>Aythya ferina</i>	Pochard	Red	9	5	8	2	3
<i>Turdus iliacus</i>	Redwing	Red			1		
<i>Podiceps auritus</i>	Slavonian Grebe	Red			1		
<i>Sturnus vulgaris</i>	Starling	Red			6000		
<i>Scolopax rusticola</i>	Woodcock	Red			1		

- 3.4 20 species listed as Amber status by the Birds of Conservation Concern 4 (Dec 2015) have been recorded in the last 5 years. Of most significance is the winter and passage refuge for a number of gulls, wildfowl and other species/

The Amber listed species as follows:

Average number of birds per record - Summary by species by year							
Taxon	Vernacular	Status	2011	2012	2013	2014	2015
<i>Botaurus stellaris</i>	Bittern	Amber			1		
<i>Chroicocephalus ridibundus</i>	Black-headed Gull	Amber	53	62	74	44	59
<i>Larus canus</i>	Common Gull	Amber	3	2	3	5	4
<i>Actitis hypoleucos</i>	Common Sandpiper	Amber				1	
<i>Sterna hirundo</i>	Common Tern	Amber		2	2	1	3
<i>Anas strepera</i>	Gadwall	Amber	27	25	39	19	36
<i>Bucephala clangula</i>	Goldeneye	Amber	3	1		7	6
<i>Alcedo atthis</i>	Kingfisher	Amber	1		1	1	1
<i>Larus fuscus</i>	Lesser Black-backed Gull	Amber			1	1	1
<i>Anas platyrhynchos</i>	Mallard	Amber	22	24	20	25	23
<i>Cygnus olor</i>	Mute Swan	Amber	8	10	14	6	9
<i>Pandion haliaetus</i>	Osprey	Amber			1		

<i>Haematopus ostralegus</i>	Oystercatcher	Amber				1	1
<i>Anas acuta</i>	Pintail	Amber			2		
<i>Emberiza schoeniclus</i>	Reed Bunting	Amber	2		2	2	2
<i>Anas clypeata</i>	Shoveler	Amber	14	31	10	3	2
<i>Mergus albellus</i>	Smew	Amber		1			
<i>Gallinago gallinago</i>	Snipe	Amber			1	1	
<i>Anas crecca</i>	Teal	Amber	2	5	4	2	2
<i>Anas penelope</i>	Wigeon	Amber	12	7	6	19	8

4. Past / current management regime

- 4.1 The grassland areas are generally small and are regularly mown.
- 4.2 The planted shrub areas are cut-back regularly but the woodland area at the northern side is largely unmanaged.

5. Ideal management regime

This is intended to represent an ideal management regime to maximise the wildlife value of the site. It is recognised that this management may not be achievable or desirable for the landowner but it is hoped that he/she will consider moving towards this prescription. The management options detailed below in no way infer any criticism of the current management of the site and it is acknowledged that the current botanical diversity of the site is due to the sensitivity of the previous actions of the landowner/manager.

- 5.1 The grassland areas are relatively small and there is probably little scope for changes to the management. Consider leaving some areas uncut for longer periods, particularly near to the lake edge to provide a more natural transition from the water's edge on to the grassland.

6. LWS recommendations

- 6.1 The lake is an important site for birds, and meets the criteria for lowland open waters and margins. It is proposed that this site be adopted as an LWS.

Help and advice

Help is available from a number of sources to implement these recommendations:

Bucks & MK Environmental Records Centre (Wildlife records)	01296 382431
Bucks Invertebrate Group (Insect surveys)	c/o 01296 382431
Environmental Stewardship (local Natural England office)	03000 603900
RSPB (Farmland bird advice)	01767 693690
Chilterns Conservation Board (farming & land use advice Chilterns)	01844 355000
Chiltern Woodlands Project (Woodland management advice in Chilterns)	01844 355503

Number of Vascular Plant Species Recorded

Date: 12/10/2015

Species: 110

Recorders: Fiona Everingham

2 lowland meadow species

9 swamp species

6 tall-herb fen species

10 flowing water species

Total wetland score of 17 species

Ancient Woodland Indicator Species 1 Guelder rose – but this is highly likely to have been planted

County Scarce Plants (BSBI Rare Plants List) 2 – helleborine, probably Broad-leaved Helleborine (*Epipactis helleborine*) and Tansy (*Tanacetum vulgare*)

County Rare Plants (BSBI Rare Plants List) 2 – Buttonweed and Spiked Water-milfoil

Nationally Scarce Species 0

Red Data Book Species 0

UK Biodiversity Action Plan (BAP) Species 0

Birds of Conservation Concern (RSPB) 8 Red listed species, 20 Amber listed species

Habitats & Species of Principal Importance – Section 41 List from NERC Act (2006)

LOCAL WILDLIFE SITE REPORT PRODUCED BY:

Fiona Everingham on behalf of
Buckinghamshire & Milton Keynes Wildlife Sites Project
Buckinghamshire County Council
c/o The Environment Team, 6th Floor, County Hall
Walton Street, Aylesbury, HP20 1UY

BUCKINGHAMSHIRE LGS (RIGS) SITE PROPOSAL FORM		
Database Reference No:		
SITE LOCATION, ACCESS, OWNERSHIP, STATUS & SUITABILITY		
(1) Name of locality: New Bradwell Railway Walk (Milton Keynes Redway 6)		
(2) National Grid Reference(s) (6 Figure; centre point or state if other): 2a) New Bradwell Windmill and adjacent railway cutting [SP832412] 2b) New Bradwell Railway Station and bridge [SP833413] 2c) New Bradwell railway cutting (300 metres west of Saxon Gate bridge, Bradville) [SP837415] 2d) New Bradwell drain and pond [SP843418] 2e) Great Linford railway cutting (north of and below Campion) [SP853427] 2f) Great Linford Railway Station and bridge [SP855427] 2g) Great Ouse Viewpoint [SP846423] How was the grid reference determined? From 1:25,000 geology map and field measurement.		
(3) (a) Local Authority: Milton Keynes		(b) Parish: New Bradwell & Great Linford
(4) Site access & local amenities: Facilities are available close to various sections of the railway walk, but not immediately adjacent to the two main sections. Parking, for access to all sections, is only available within residential areas, restricting any party to a small group unless a coach drop off and pick up and linear route are used. Alternatively, the entire route can be cycled. As it lies on the Wolverton to Newport Pagnell cycle (Redway 6) route north of Milton Keynes town centre. To reach the southwesterly section by motor vehicle use the H3 following the New Bradwell signs around several turns and roundabouts. In New Bradwell turn into Bradwell Road, cross the canal and park up as soon as possible – the bridge after the canal marks the railway walk beneath. Limited residential parking only. The sections can be walked to and from here. To start at the northeasterly section parking is anywhere from St Leger’s Drive to the Wilderness, in the Arts Centre and stone circle area. Walk to the canal and entry point to the Railway Walk is very close to the stone circle slightly to the west of the circle.		
(5) Site ownership: Milton Keynes Borough Council		
(6) Mineral rights ownership: n/a		
(7) Is permission needed for access to site?	a. No: <input checked="" type="checkbox"/>	b. Yes: <input type="checkbox"/>
If yes, from whom?		
Address & Tel:		
(8) Locality status: Active[<input type="checkbox"/>] Disused[<input type="checkbox"/>] Historical[<input type="checkbox"/>] Managed[<input checked="" type="checkbox"/>] Restored[<input type="checkbox"/>] New[<input type="checkbox"/>] Other[<input type="checkbox"/>]		
(9) Suitable for visits by: <input checked="" type="checkbox"/>	a. General public	b. Small parties <input checked="" type="checkbox"/>
school <input checked="" type="checkbox"/>	d. Primary	e. Nat. Curriculum
	g. Adult <input checked="" type="checkbox"/>	h. Undergrad. Teaching <input checked="" type="checkbox"/>
		c. Large parties
		f. AS/A-Level <input checked="" type="checkbox"/>
		i. Research

Site Name..... New Bradwell (Redway 6) Railway Walk

(10) Site suitable for frequent visits by parties?	a. No	b. Yes ✓
(11) Should collecting and hammering be encouraged at the site?	a. No ✓	b. Yes
SITE DESCRIPTION		
(12) Exposure type:	a. Inland natural outcrop	b. Road cutting
	c. Railway cutting ✓	d. Active quarry/pit
	e. Disused quarry/pit	f. Old mine workings
	g. Mine dump	h. Active mine
j. Other (please specify) Geology of railway structures (platforms, revetments and bridges) ✓		
(13) Dimensions of exposure of interest (m):		
(14) Main interest(s)	a. Structural	b. Geomorphological
	c. Mineralogical	d. Palaeontological
	e. Petrological ✓	f. Stratigraphical ✓
g. Other (please specify)		
(15) Summary description: A number of isolated rocks sections occur (of two Jurassic limestone formations) along the course of the old railway; these expose Blisworth Limestone, Blisworth Clay and Cornbrash at outcrop with all being nearly horizontal – dip cannot be accurately measured at most of the small sections. The importance of the outcrops lies in the opportunity to see the local rocks and the stratigraphic occurrence of the Blisworth Limestone/Cornbrash boundary. However, the Blisworth clay is not obvious at outcrop, but can be observed in a section at nearby Great Linford, and it is generally marked by a break in slope at various points along the cuttings. Additionally, there are opportunities to examine ‘building stone’ and aspects of engineering geology along the railway path.		
(16) What threats exist for the site? Slope degradation and overgrowth by vegetation. Damage by root penetration, especially as the trees grow larger (a few are already some 22 metres high). Vandalism if interpretation boards and/or fencing are to be considered. The site is maintained as a public right of way on foot and cycle and has high usage by local residents and casual recreationalists.		
(17) What additional work(s) are required to enhance/clear/further research the site? Overall, some small outcrops are currently exposed and other sections could be readily exposed; this work would mainly require hand clearance of scrub, ivy, grass, felling of a few semi-mature and mature trees (up to 20 metres in height), and dumped items – all followed by the removal of downwash materials. 2a) New Bradwell Windmill and adjacent railway cutting: This section presently clearly exposes Blisworth Limestone at the base but the Cornbrash is not so obvious. Indeed, it is difficult to actually locate much rock <i>in situ</i> on this cutting. It is a much degraded section with tipped and dumped materials covering any <i>in situ</i> material. It is a probable stable location, ideal for opening up on a small scale but the top would require fencing off for safety reasons, and lies adjacent and to the west of the windmill. This work would require the services of professional tree surgeons (the trees are up to 20 metres in height) and a mechanical excavator and team of workers. A small, perhaps 5 metre wide, section would be adequate to expose the boundary between the Cornbrash and the Blisworth Limestone, although the degradation of the intervening Blisworth Clay would pose an issue for site maintenance; this would need annual attention. This section would be some 7 metres high. Ideally, the prepared exposure should be bound on each side by a talus slope to avoid issues of slope stability		

Site Name..... New Bradwell (Redway 6) Railway Walk

post-excitation. The provision of steps would not necessarily improve or make access to the exposure safer. Setting aside the issue of vandalism, a small rock store could be provided below the windmill exposure from the site clearance spoil material for amateur collecting purposes. Some 150 metres east of this section the cutting has a revetment on the southern side to prevent slope failure from the mass of the windmill immediately above – a good geo-engineering feature – and any excavation and clearance work must be mindful of the constraints thereby created. The windmill itself is made of local limestone and could provide the ideal location for a small fixed interpretative panel. A mill-wheel is propped against the mill.

On the south side this deep (c. 6m) cutting has a limestone (presumably Cornbrash but possibly with Blisworth below) at all heights. As a long-term major project it is desirable to cut a full-height section, with steps for safe access. There is open space above in MKC ownership. – see note above.

2b) New Bradwell Railway Station and bridge: Immediately west of the road-bridge on the north side of the cutting is a small (2 metres x 1 metre) section has been recently cleared; it exposes some 1.5 metres of massive to flaggy limestones with a thin clay parting of Blisworth Limestone. It shows the influence of tree roots in breaking up solid rock and could be an element in a soil trail along the railway walk. The station platform and revetment, together with the road-bridge also provide some geological interest with the use of local limestone, imported NRS sandstones and bricks. The cutting to the east of the station is very degraded and completely overgrown. Hence the geology cannot presently be seen *in situ*. It is probably not worth the expense of clearing and follow-up maintenance work. On the south side this same cutting, is some level ground abutting the gardens of a house; no clearance on this section is advisable due to the possibility of slope instability.

South side for c.150m E of Bradwell Rd bridge has well-covered Cornbrash exposure along extreme cutting top. A change of slope halfway up could indicate the boundary with Blisworth clay. As a long-term major project it is desirable to cut a full-height section, with steps for safe access. This should be in the E half which has open space (school field) above, rather than nearer the bridge which has Melbourne Terrace above. - See note above.

Immediately W of the bridge on the N side is a small limestone exposure cleared by volunteers in 2011. – see note above.

2c) New Bradwell railway cutting (300 metres west of Saxon Gate bridge, Bradville): On the southern side of the cutting is a low overgrown exposure of what appears to be Blisworth Limestone. The whole cutting is obscured by extensive ground ivy, shrubs and trees (up to around 15 metres in height). A small area was hand cleared of vegetation and troweled back to assess and record the section; a 1 metre high section was recorded. A 6 metres wide exposure of this section easily could be hand cleared and troweled back, without the need to remove any semi-mature trees, to reveal an instructive approximately 2 metres high section of variable but mainly flaggy (4 – 12 centimetres thick) beds of Blisworth Limestone. A small temporary interpretation plaque would be appropriate.

2d) New Bradwell drain and pond: In the field immediately east of the Bradwell Cemetery a number of large Blisworth Limestone blocks (some 2 metres x 2 metres and 0.75 metres thick have been laid out around a drainage pond, seemingly in the past three years. Some of these blocks show various evid,m,x,m,ent bedding features, shelly fossils, and trace fossils (infilled burrows). It would make an ideal new interpreted local geological site. No good evidence of Quaternary deposits is evident along the adjacent redway cycle track.

2e) Great Linford Railway Cutting (north of and below Campion): This section lies immediately west of Great Linford Railway Station, although the best element is some 200 metres from it. On the southern side of the cutting is a low semi-overgrown exposure of what appears to be some 2 metres plus of exposed Blisworth Limestone. The whole cutting was obscured by extensive ground ivy, shrubs and trees (up to around 15 metres in height) but was recently cleared by the BTCV. A small section was recorded and it clearly demonstrates the variability of the Blisworth Limestone from being thinly laminated to massive, with intercalated clay bands. It is worthy of some interpretation.

South side for c.50m W of Marsh Drive bridge has several existing exposures of Blisworth Limestone, the best around a large multi-stemmed sycamore. This is backed by public open space. Cleared by volunteers in 2011. – see note above.

Site Name..... New Bradwell (Redway 6) Railway Walk

A small contribution toward any possible interpretation (board or leaflet) might be useful. I don't think a board onsite would be justified or even viable, but I will talk to BTCV about their interpretation plans for the RW and come back to you.

On the N side c.30m W of the bridge there is a more disturbed exposure with some fallen debris. This has a private garden above. Only very limited action is possible without risk of undermining garden above. – this should not be cleared.

2f) Great Linford Railway Station and bridge: The only geological interest here is the use of stone, brick and reconstituted stone in the road-bridge and platform. Some of the materials have been imported; the bridge appears to have some sandstone or sandy limestone elements, although this could not be verified by close inspection, together with local Blisworth Limestone. The area is extensively overgrown and requires tidying up. The cutting section is very degraded and the geology is not obvious at outcrop. Additionally, there is a Victorian lime-kiln about 1 kilometre to the south. The Great Linford quarries are considered in a separate site report.

2g) Great Ouse Viewpoint: An interpretation board or leaflet with interpretations would be excellent for the view over the Great Ouse Valley, by the Railway Walk section at SP 846 423.

Overall, there is presently a missed opportunity to link – along a route from Wolverton to Newport Pagnell – local topography, geology and railway construction with the history of the railway; this holistic approach would be most suitable for the sites' present users which consists of residents, together with recreational cyclists and walkers.

The most suitable and cost-effective form of interpretation would be a small on-site plaque giving details of how to access a web-site and a downloadable pdf of leaflet. Additionally, temporary A3 laminated panels could be stapled onto a suitable panel, and these exist at the two station sites and elsewhere along the route.

(18) Published/unpublished references to the locality (full citation, add sheets if necessary).

Eyers, J. (1999) Great Linford: geological report. Unpublished report prepared for MKBC

Eyers, J. (2002) Geological walks in North Buckinghamshire. Rocks Afoot Series, pp. 32-33.

Horton, A., Shepherd-Thorn, E.R. & Thurrell, R.G. (1974) The geology of the new town of Milton Keynes. HMSO: London.

Simpson, B. (1995) The Wolverton to Newport Pagnell Branch. Lamplight Publications: Witney.

Woodfield, P. (1986) A Guide to the Historic Buildings of Milton Keynes. Milton Keynes Development Corporation: Milton Keynes.

SCIENTIFIC SIGNIFICANCE:			
(19) Does the site exhibit features of local/regional importance?		a. No	b. Yes ✓
(20) Is the site already a geological or geomorphological or biological SSSI?		a. No ✓	b. Yes
c. Uncertain		d. Other (specify)	
(21) Collector interest:	a. Rare species	b. Common species	c. World significance
	d. British significance	e. Regional significance	f. Local significance ✓
(22) List of confirmed species, mineralogical/palaeontological/petrological:(attach separate list)			
HISTORICAL/AESTHETIC:			
(23) Does the site have important historical associations?		a. No ✓	b. Yes
(24) Does the site form a key part of an attractive or evocative landscape?		a. No ✓	b. Yes
(25) Full description of site and its significance			
<p>This is a geological interesting locality. The banks of the old railway cutting lend themselves to an ideal exposure of the underlying Middle Jurassic rocks. The cutting is formed of the Blisworth Limestone and Cornbrash, but they are not currently well exposed along the walk. The lithology of both the Blisworth Limestone and Cornbrash is quite variable making field identification in small isolated outcrops difficult when typical facies are absent.</p> <p>Geological boundaries are of critical importance as they represent more time than the metres of rocks that are laid down either side. Important changes in geological history occur at boundaries. This boundary represents a change in sea-level which occurred regularly during the Jurassic. The sea shallowed to allow a much coarser sediment ('brash') to form in a very near shore environment. The sediment of the Cornbrash is usually full of broken shell and sand (quartz) grains where wave energy pounded the sediment. This is in stark contrast to the finer, often muddy (micritic) limestones of the Blisworth unit beneath. There are several types of Blisworth Limestone and an opportunity to view this section would undoubtedly provide a good story.</p> <p>A second interest (from the Linford end) is the geological interpretation across the Great Ouse Valley. This shows how geology and landscape are intimately related. An interpretation based on what underlies the present view, plus a reconstruction of that view during the Quaternary as a major ice sheet came and went and the river cut its valley would be a valuable asset to this site.</p> <p>The Railway Walk along the redway could be used to link several local geological sites into a themed walk for general public, school and geological society enjoyment.</p>			
<i>If additional sheets attached please add with reference No:</i>			

Site Name..... **New Bradwell (Redway 6) Railway Walk**

RECORDER'S DETAILS	
(26) Name: Dr Jill Eyers	(27) Organisation: Consultant BEHG
(28) Qualifications: BSc (Hons), PhD	
(29) Address & Tel No: 13 Pusey Way, Lane End, Bucks, HP14 3LG 01494 881325	
(30) Signature & date	
(31) Date of last visit: 2012?	
Monitoring report	
(32) Date of visit: 2012 Monitored by: J. Eyers Condition and recommendations: The geology is described in a geo-trail prepared by Dr T. Hose. The 2011 site maintenance has made recognition and designation of specific sections possible, although much is still obscured. Correlating the various isolated sections is difficult and the Cornbrash is barely evident.. Some further small-scale clearance and interpretation, is recommended.	
(33) Identification/adoption/reasons for notificaton: Site identified as meeting RIGS criteria by BEHG Yes Date: 11 th March 2008 Reasons for identification as RIGS: The site presents an important lithological boundary and is a rare opportunity to see such a boundary and at least two of the local rock types: Blisworth Limestone and Cornbrash from the Middle Jurassic. Site adopted as RIGS by Local Planning Authority: Yes/No Date: Authority:	

Site Name: Great Linford: St Andrew's Church, the Arts Centre, Stone Circle & Stone Pit

BUCKINGHAMSHIRE LGS (RIGS) SITE PROPOSAL FORM		
Database Reference No:		
SITE LOCATION, ACCESS, OWNERSHIP, STATUS & SUITABILITY		
(1) Name of locality: Great Linford: St Andrew's Church, the Arts Centre, Stone circle and the stone pit.		
(2) National Grid Reference (6 Figure; centre point or state if other): 2a) St. Andrew's Church and the Arts Centre [SP851423] 2b) Great Linford Stone Circle and Stone Pit [SP846423] How was the grid reference determined? 1:25,000 geology map		
(3) (a) Local Authority: Milton Keynes		(b) Parish: Great Linford
(4) Site access & local amenities: These sites are all conveniently very close together. They are adjacent to the canal. They can be reached along the canal path by walking from the direction of the Manor House, and car parking is either in Old Linford [near SP850420] or other location as available but mainly within residential areas off St. Ledger Drive or Marsh Drive. They are also accessible by a small diversion off the Redway 6 cycleway (the Bradwell railway walk) a few hundred metres to the north via the track off the railway bridge over the canal some 200 metres to the west of the sites. St. Andrew's church and the Arts Centre are well signed, and the Stone Circle and Stone Pit are a couple of hundred metres west of them along the canal path. There are no amenities such, as shops, toilets or cafés, in the immediate but there is a nearby public house (The Black Horse) 0.5 kilometres away across the canal, together with benches and picnic tables provided adjacent to the Stone Circle.		
(5) Site ownership: MK Parks Trust for Great Linford Stone Circle and Stone Pit?		
(6) Mineral rights ownership: n/a		
(7) Is permission needed for access to site?	a. No: <input checked="" type="checkbox"/>	b. Yes: <input type="checkbox"/>
If yes, from whom?		
Address & Tel:		
(8) Locality status: Active[<input type="checkbox"/>] Disused[<input type="checkbox"/>] Historical[<input type="checkbox"/>] Managed[<input checked="" type="checkbox"/>] Restored[<input type="checkbox"/>] New[<input type="checkbox"/>] Other[<input type="checkbox"/>]		
(9) Suitable for visits by: <input checked="" type="checkbox"/>	a. General public	b. Small parties <input checked="" type="checkbox"/>
	c. Large parties	
school	d. Primary	e. Nat. Curriculum <input checked="" type="checkbox"/>
	f. AS/A-Level <input checked="" type="checkbox"/>	
	g. Adult <input checked="" type="checkbox"/>	h. Undergrad. Teaching <input checked="" type="checkbox"/>
		i. Research

Site Name: Great Linford: St Andrew's Church, the Arts Centre, Stone Circle & Stone Pit

(10) Site suitable for frequent visits by parties?	a. No	b. Yes ✓
(11) Should collecting and hammering be encouraged at the site?	a. No ✓	b. Yes
SITE DESCRIPTION		
(12) Exposure type:	a. Inland natural outcrop	b. Road cutting
	c. Railway cutting	d. Active quarry/pit
	e. Disused quarry/pit ✓	
	f. Old mine workings	g. Mine dump
	h. Active mine	
	j. Other (please specify): building stones	
(13) Dimensions of exposure of interest (m): Church building (outer walls), Arts Centre building (outer walls), stones of stone circle and c. 60 m of faces in the old stone pit.		
(14) Main interest(s)	a. Structural	b. Geomorphological
	c. Mineralogical	
	d. Palaeontological	e. Petrological ✓
	f. Stratigraphical	
	g. Other (please specify) Use of local and imported stone in buildings	
(15) Summary description: A close collection of geological locations with two buildings composed of the local (and out-county equivalents) limestone, a stone circle, and a disused stone pit. Different varieties of the local Blisworth Limestone can be seen in each. The buildings show in construction terms a better quality Blisworth Limestone that must have come from further north in Buckinghamshire or most likely, by its colour, from Northamptonshire. The rocks seen in the Stone Circle (but excavated nearby) and in the Stone Pit (<i>in-situ</i>) is the same stone. Many interesting geological features can be seen in this collection of sites, which provide information about the area's geological history and something of its economic geology.		
(16) What threats exist for the site? 2a) St. Andrew's church and the Arts Centre: no immediate obvious threats. 2b) Great Linford Stone Pit: overgrowth and face degradation. 2b) Great Linford Stone Circle: vandalism, accidental damage due to visitors climbing on the stones, weathering and erosion.		
(17) What additional work(s) are required to enhance/clear/further research the site? 2a) St. Andrew's church and the Arts centre: Both could benefit from a more intense research and interpretative programme with the resulting material made available to the general public and interested groups through a website, as a downloadable pdf, or perhaps through a leaflet linked to a suggested walking and/or cycling route. Presently there is a permanent very detailed archaeological information panel between the two buildings. 2b) Great Linford Stone circle: needs a little overall site cleaning and tidying.		

Site Name: Great Linford: St Andrew's Church, the Arts Centre, Stone Circle & Stone Pit

2b) Great Linford Stone Pit: requires annual maintenance to keep the faces clear of vegetation and down-washed materials. The vegetation is low-growing herbs, shrubs, bushes and some semi-mature and mature trees. The trees are not a problem at present, although they will need to be checked for public safety due to their condition. A more intense research programme is now possible with the newly cleared faces of the Stone Pit; it is opportune to undertake a detailed petrological analysis of the section. The resulting information could be made available to the general public and interested groups through a website, as a downloadable pdf, or perhaps through a leaflet linked to a suggested walking and/or cycling route.
Both the Stone Circle and the Stone Pit could have an interpretative board placed near them.

(18) Published/unpublished references to the locality (full citation, add sheets if necessary).

Eyers, J. (1999) Great Linford: geological report. Unpublished report prepared for MKBC
Eyers, J. (2002) Geological walks in North Buckinghamshire. Rocks Afoot Series, pp. 32-33.
Horton, A., Shpeherd-Thorn, E.R. & Thurrell, R.G. (1974) The geology of the new town of Milton Keynes. HMSO: London.
Pesvener, N. & Williamson, E. (1994) The Buildings of England: Buckinghamshire (revised edn.). Penguin: London.
Woodfield, P. (1986) A Guide to the Historic Buildings of Milton Keynes. Milton Keynes Development Corporation: Milton Keynes.

Site Name: Great Linford: St Andrew’s Church, the Arts Centre, Stone Circle & Stone Pit

SCIENTIFIC SIGNIFICANCE:		
(19) Does the site exhibit features of local/regional importance?	a. No	b. Yes ✓
(20) Is the site already a geological or geomorphological or biological SSSI?	a. No ✓	b. Yes
c. Uncertain	d. Other (specify)	
(21) Collector interest:	a. Rare species	b. Common species
	d. British significance	e. Regional significance
		c. World significance
		f. Local significance
(22) List of confirmed species, mineralogical/palaeontological/petrological:(attach separate list)		
HISTORICAL/AESTHETIC:		
(23) Does the site have important historical associations?	a. No ✓	b. Yes
(24) Does the site form a key part of an attractive or evocative landscape?	a. No ✓	b. Yes
<p>(25) Full description of site and its significance</p> <p>The four linked sites are each notable locations of the Blisworth Limestone; each show a variety of the typical types and features of this variable rock. They are all easily accessible locations, making them useful for local schoolchildren, students and casual recreationalists.</p> <p>2a) St. Andrew’s Church and the Art Centre: The church has been built over many centuries, but dates from 1215. The oldest surviving part is the 12th century tower (partly rebuilt and heightened in 1708 and with many other repairs since then), whilst the nave is essentially of the 13th century, and the north porch is of the 14th century (circa 1320) with 15th century windows. The different building phases and the various repairs are interesting as the builders have been forced to use whatever stone was available and affordable at the time. This has resulted in an interesting mix of local stones and dressings, together with materials brought in from further afield in later times – especially with the arrival of the canal. The stonework shows evidence of weathering and repair. Some of the building stones also show abundant fossils (brachiopods, oysters and other bivalves). The church is very worthy of a detailed interpretation on its own. The Arts Centre is based in the outbuildings of the 17th century Manor House. Within the Arts Centre is an obviously red-stained variety, which is a Northamptonshire variety. There are several observational exercises that children and undergraduates could undertake at these sites: basic rock identification, comparisons, which are the best building stones and why, and lots more.</p> <p>2b) Great Linford Stone Circle and Stone Pit:</p> <p>The natural outcrop in the Stone Pit can be compared to the blocks of the Stone Circle, together with those chosen and worked for the buildings. In the Stone Pit and on some of the Stone Circle blocks, the limestone beds can be sometimes be seen to be cross-bedded and to alternate with clay layers; these clay layers are very obvious because they are associated with a wavy boundary (although the reason for this is unknown) between the two.</p> <p>There are several lithological types of Blisworth Limestone to be found within the sites: oolitic, shelly, micritic (clay-rich) and others. The recent clearance work has exposed what appears to be the boundary between the Blisworth Limestone and the overlying Blisworth Clay; this has been recorded in a section log (with photographs) is included herein because of its potential significance:</p>		

Site Name: Great Linford: St Andrew's Church, the Arts Centre, Stone Circle & Stone Pit

30cm+ clay (green at the base changing upwards to dark blue-grey) BLISWORTH CLAY

12cm pellitoid limestone (buff weathering to a light brown)

1cm thin clay parting (with wavy surface above)

50cm nodular massive limestone (pale buff)

BLISWORTH LIMESTONE

2-3cm clay/limestone (in an obvious notch)

20cm+ nodular massive limestone (buff) – base not seen

However, no close inspection of the section's petrology was undertaken and the section could be readily refined with cleaner faces and specimen sampling. The rocks appear to have a very gentle dip (around 3-6 degrees) to the north-east. The Stone Pit could provide the basis for a local soils trail, especially if linked with other sites in the area.

(As a note of interest the stones for the circle came from the ground just beneath the surface next to the canal during Anglian Water work under the direction of MKDC – see the e-mail in file from Brian Lintern). When the stones could not be used as large rockery material in central MK Mr. Lintern was asked to dump them. Access was problematic in the first chosen location, so they were left by the side of the canal close to where they were extracted. So that they formed a more attractive 'feature' the groundstaff simply rearranged them as we see today; the line of manholes now mark their former location! This makes the old stone pit and the rock from the stone circle useful indicators of how conditions changed over time – as the stone circle rocks are much larger and of a different type to the rock seen in the pit.)

RECORDER'S DETAILS

(26) **Name:** Dr. Thomas A. Hose

(27) **Organisation:** Consultant geologist on behalf of Buckinghamshire Earth Heritage Group

(28) **Qualifications:** BSc (Hons), PhD

(29) **Address & Tel No:** 14 Forge Close, Chalton, Bedfordshire, LU4 9UT

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(30)

9th November, 2011

(31) **Date of last visit:** 15.10.2011

Monitoring report

(32) **Date of visit:** 11.10.2011 & 15.10.2011

Monitored by: T.A. Hose

Condition and recommendations:

All are in generally good condition except for the stone circle which is gradually deteriorating due to weathering and erosion, resulting in flaking of the limestone layers leaving a residual clay layer; this process releases the fossil brachiopods from some blocks. The Stone Pit face, behind the Stone Circle, was formerly much overgrown and obscured with downwash and small scree slopes. However, this year, two of the main faces, totaling some 75 metres in length and up to 2 metres high, have been cleared by the BCTV, although a further metre could still be revealed by further trenching. The new clearance has revealed an excellent section through the Blisworth Limestone and the overlying Blisworth Clay; this has provided an opportunity to record the faces in sketches and photographs, but further detailed studies are required. The site is ripe for some small-scale interpretative

Site Name

provision.

(33) Identification/adoption/reasons for notificaton:

Site identified as meeting RIGS criteria by BEHG Yes **Date:** 11th March 2008

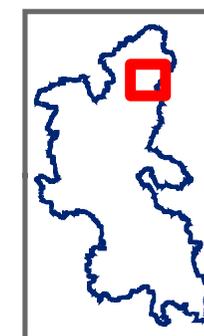
Reasons for identification as RIGS:

Four related sites showing several varieties of Blisworth Limestone in buildings, a stone circle and *in-situ* in an old stone pit. There are a number of sedimentary features and fossils to be seen and the easy, safe accessibility of the sites make this a very suitable location for public engagement with the local geology and an educational resource for schools and colleges/universities.

Site adopted as RIGS by Local Planning Authority: Yes/No **Date:** Authority:



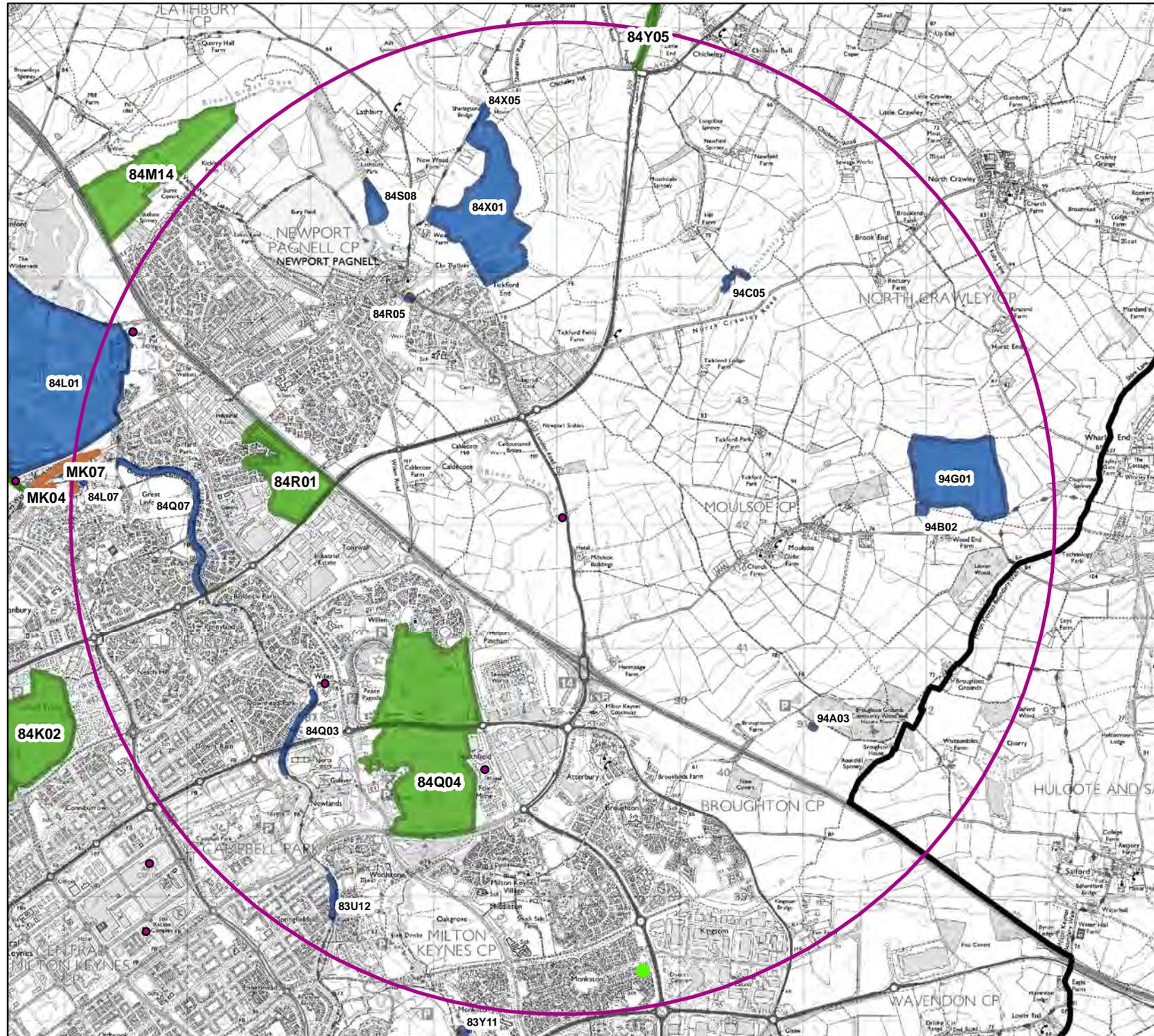
Local, Non-Statutory Sites within 2km to Newport Pagnell (SP890420)



Legend

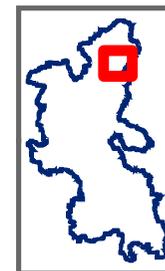
-  Polygons
-  Local_Wildlife_Sites
-  Local_Geological_Sites
-  Biological_Notification_Sites
-  County Boundaries

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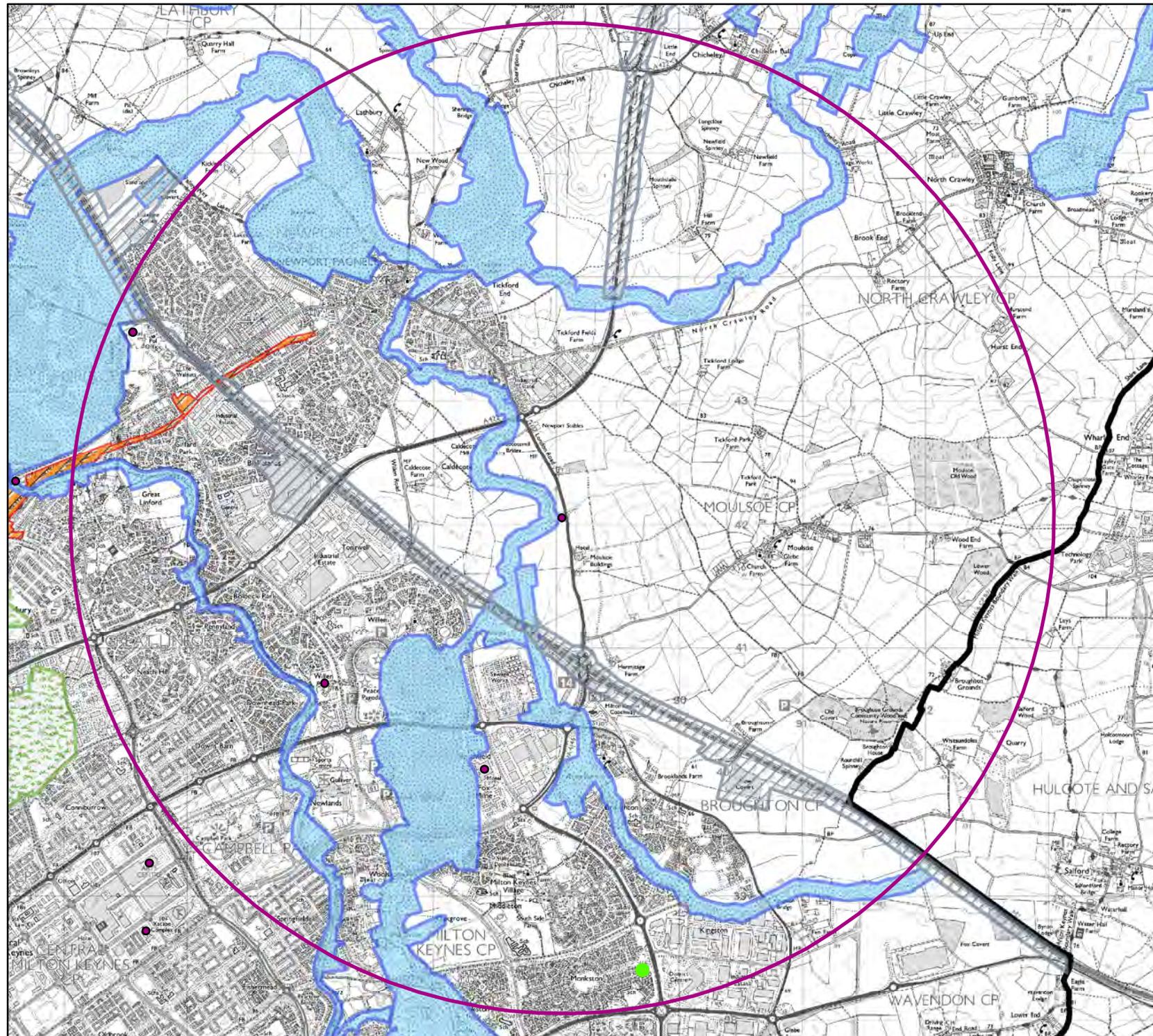
Local, Non-Statutory Sites - MK Wildlife Corridors within 2km to Newport Pagnell (SP890420)



Legend

-  Polygons
- MK_wildlife_corridors**
- type**
-  Rail Corridors
-  Road Corridors
-  Wet Corridors
-  Wood Corridors
-  County Boundaries

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Protected and notable species records

Taxon column:

* = species recorded as not native (e.g. introduced plants or escaped birds)

(against badger *Meles meles*) = record of sett

Table sorted by group and taxon

Only includes records since 1990; contact BMERC if you need records from before this

Some records may have further details (e.g. information on quantity, sex and stage), contact BMERC if you need this additional detail

Data supplied by BMERC may include data from the following organisations: Botanical Society of Britain and Ireland; Bucks Amphibian and Reptile Group;

Bucks Bird Club; some National Recording Schemes; plus many individual recorders

group	species	English name	European legislation	UK legislation	Species of Principal Importance	Red List (GB unless stated)	Rare / Scarce	local status	site	grid ref	precision	latest record
Amphibians and reptiles	Bufo bufo	Common Toad		WACA-Sch5_sect9.5a	England_NERC_S.41 & UKBAP-2007				Atterbury Pond A1	SP890398	100	2009
Amphibians and reptiles	Bufo bufo	Common Toad		WACA-Sch5_sect9.5a	England_NERC_S.41 & UKBAP-2007				Atterbury Pond A2	SP892398	100	2009
Amphibians and reptiles	Bufo bufo	Common Toad		WACA-Sch5_sect9.5a	England_NERC_S.41 & UKBAP-2007				Cotton Valley Sewage Works	SP884406	100	2010
Amphibians and reptiles	Bufo bufo	Common Toad		WACA-Sch5_sect9.5a	England_NERC_S.41 & UKBAP-2007				Great Linford, pond	SP851423	100	1992
Amphibians and reptiles	Bufo bufo	Common Toad		WACA-Sch5_sect9.5a	England_NERC_S.41 & UKBAP-2007				Great Linford: Manor Park ponds	SP852424	100	1992
Amphibians and reptiles	Bufo bufo	Common Toad		WACA-Sch5_sect9.5a	England_NERC_S.41 & UKBAP-2007				Great Linford: Marsh Drive	SP8552042077	1	2014
Amphibians and reptiles	Bufo bufo	Common Toad		WACA-Sch5_sect9.5a	England_NERC_S.41 & UKBAP-2007				M1 (Middleton E & W)	SP8865039250	1	2013
Amphibians and reptiles	Bufo bufo	Common Toad		WACA-Sch5_sect9.5a	England_NERC_S.41 & UKBAP-2007				M14 New (Middleton E & W)	SP8853039220	1	2013
Amphibians and reptiles	Bufo bufo	Common Toad		WACA-Sch5_sect9.5a	England_NERC_S.41 & UKBAP-2007				M17 New (Middleton E & W)	SP8835039250	1	2012
Amphibians and reptiles	Bufo bufo	Common Toad		WACA-Sch5_sect9.5a	England_NERC_S.41 & UKBAP-2007				M18 New (Middleton E & W)	SP8885038750	1	2012
Amphibians and reptiles	Bufo bufo	Common Toad		WACA-Sch5_sect9.5a	England_NERC_S.41 & UKBAP-2007				M9 (Middleton E & W)	SP8861839344	1	2012
Amphibians and reptiles	Bufo bufo	Common Toad		WACA-Sch5_sect9.5a	England_NERC_S.41 & UKBAP-2007				Manor Park Ponds, Great Linford	SP852424	100	1998
Amphibians and reptiles	Bufo bufo	Common Toad		WACA-Sch5_sect9.5a	England_NERC_S.41 & UKBAP-2007				Medieval Moat & Fishponds, Milton Keynes	SP885392	100	1993
Amphibians and reptiles	Bufo bufo	Common Toad		WACA-Sch5_sect9.5a	England_NERC_S.41 & UKBAP-2007				Medieval Moat & Fishponds, Milton Keynes	SP886393	100	2007
Amphibians and reptiles	Bufo bufo	Common Toad		WACA-Sch5_sect9.5a	England_NERC_S.41 & UKBAP-2007				Middelton Pond M1	SP886392	100	2007
Amphibians and reptiles	Bufo bufo	Common Toad		WACA-Sch5_sect9.5a	England_NERC_S.41 & UKBAP-2007				Middleton Pond M2	SP891387	100	2007
Amphibians and reptiles	Bufo bufo	Common Toad		WACA-Sch5_sect9.5a	England_NERC_S.41 & UKBAP-2007				Middleton Pond M9	SP887394	100	2007
Amphibians and reptiles	Bufo bufo	Common Toad		WACA-Sch5_sect9.5a	England_NERC_S.41 & UKBAP-2007				Milton Keynes Village, Milton Keynes	SP88853876	10	2011

group	species	English name	European legislation	UK legislation	Species of Principal Importance	Red List (GB unless stated)	Rare / Scarce	local status	site	grid ref	precision	latest record
Amphibians and reptiles	Bufo bufo	Common Toad		WACA-Sch5_sect9.5a	England_NERC_S.41 & UKBAP-2007				Moulsoe: pond south of Woodend Farm	SP92154185	10	2008
Amphibians and reptiles	Bufo bufo	Common Toad		WACA-Sch5_sect9.5a	England_NERC_S.41 & UKBAP-2007				Newfield Farm, Chicheley	SP905450	100	2014
Amphibians and reptiles	Bufo bufo	Common Toad		WACA-Sch5_sect9.5a	England_NERC_S.41 & UKBAP-2007				TETRAD SP84Q - Vague Site(SP879411)	SP879411	100	2010
Amphibians and reptiles	Bufo bufo	Common Toad		WACA-Sch5_sect9.5a	England_NERC_S.41 & UKBAP-2007				Willen Lake - North	SP879410	100	2011
Amphibians and reptiles	Bufo bufo	Common Toad		WACA-Sch5_sect9.5a	England_NERC_S.41 & UKBAP-2007				Woughton-on-the-Green linear park: pond	SP877383	100	1993
Amphibians and reptiles	Natrix natrix	Grass Snake		WACA-Sch5_sect9.1,WACA-	England_NERC_S.41 & UKBAP-2007				Broughton Grounds	SP9140	1000	2010
Amphibians and reptiles	Natrix natrix	Grass Snake		WACA-Sch5_sect9.1,WACA-	England_NERC_S.41 & UKBAP-2007				Cotton Valley Sewage Works	SP884406	100	2010
Amphibians and reptiles	Natrix natrix	Grass Snake		WACA-Sch5_sect9.1,WACA-	England_NERC_S.41 & UKBAP-2007				Dovecote Croft, Great Linford, MK	SP8515442106	1	2014
Amphibians and reptiles	Natrix natrix	Grass Snake		WACA-Sch5_sect9.1,WACA-	England_NERC_S.41 & UKBAP-2007				Lakes lane, Newport Pagnell	SP865445	100	2010
Amphibians and reptiles	Natrix natrix	Grass Snake		WACA-Sch5_sect9.1,WACA-	England_NERC_S.41 & UKBAP-2007				River Ouzel, Pineham	SP883414	100	2010
Amphibians and reptiles	Natrix natrix	Grass Snake		WACA-Sch5_sect9.1,WACA-	England_NERC_S.41 & UKBAP-2007				St Andrews Great Linford Church Yard	SP852424	100	2010
Amphibians and reptiles	Natrix natrix	Grass Snake		WACA-Sch5_sect9.1,WACA-	England_NERC_S.41 & UKBAP-2007				TETRAD SP84V - Vague Site(SP883414)	SP883414	100	2010
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					Atterbury Pond A1	SP890398	100	2009
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					Atterbury Pond A2	SP892398	100	2009
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					Campbell Park Pond CP1	SP86513974	10	2008
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					Dovecote Croft, Great Linford, MK	SP8515442106	1	2014
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					Fields south of Broughton Manor	SP900393	100	2003
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					Great Linford, pond	SP851423	100	2003
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					Great Linford: pond by lime (=brick) kilns	SP860416	100	2003
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					Land west of Willen Lake, Newlands	SP871397	100	2004
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					M1 (Middleton E & W)	SP8865039250	1	2013
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					M14 New (Middleton E & W)	SP8853039220	1	2012
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					M16 New (Middleton E & W)	SP8853039240	1	2012
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					M17 (Middleton E & W)	SP8853339000	1	2012
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					M17 New (Middleton E & W)	SP8853039250	1	2012

group	species	English name	European legislation	UK legislation	Species of Principal Importance	Red List (GB unless stated)	Rare / Scarce	local status	site	grid ref	precision	latest record
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					M18 New (Middleton E & W)	SP8885038750	1	2012
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					M19 (Middleton E & W)	SP8885853906	1	2013
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					M2 (Middleton E & W)	SP8915038750	1	2012
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					M20 New (Middleton E & W)	SP88865039050	1	2013
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					M21 Middleton South Claridge Park	SP8883938766	1	2012
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					M22 Middleton South Claridge Park	SP8901438695	1	2012
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					M23 (Middleton E&W)	SP8834939034	1	2012
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					M9 (Middleton E & W)	SP8861839344	1	2012
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					Manor Park Ponds, Great Linford	SP852424	100	1998
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					Medieval Moat & Fishponds, Milton Keynes	SP885392	100	1993
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					Medieval Moat & Fishponds, Milton Keynes	SP886393	100	2007
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					Middelton Pond M1	SP886392	100	2007
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					Middelton Pond M20	SP886390	100	2007
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					Middleton Pond M17	SP883392	100	2007
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					Middleton Pond M18	SP888387	100	2007
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					Middleton Pond M2	SP891387	100	2007
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					Middleton Pond M9	SP887394	100	2007
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					Milton Keynes Village, Milton Keynes	SP88553923	10	2011
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					Milton Keynes Village, Milton Keynes	SP88573926	10	2011
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					Milton Keynes Village, Milton Keynes	SP88593922	10	2011
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					Milton Keynes Village, Milton Keynes	SP88853876	10	2011
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					Moulsoe: pond south of Woodend Farm	SP92154185	10	2008
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					Pond near Grand Union Canal, Great	SP860415	100	1993
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					Pond northwest of Willen Lake	SP874412	100	2003
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					Pond, Great Linford Cricket Ground	SP854423	100	2003

group	species	English name	European legislation	UK legislation	Species of Principal Importance	Red List (GB unless stated)	Rare / Scarce	local status	site	grid ref	precision	latest record
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					TETRAD SP84Q - Vague Site(SP879411)	SP879411	100	2010
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					TETRAD SP84V - Vague Site(SP880410)	SP880410	100	2010
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					Woughton-on-the-Green linear park: pond	SP877383	100	1994
Amphibians and reptiles	Rana temporaria	Common Frog	HabDir-A5	WACA-Sch5_sect9.5a					Woughton-on-the-Green: pond	SP875383	100	1994
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b, WACA-	England_NERC_S.41 & UKBAP-2007				A1 (Atterbury)	SP890398	100	2009
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b, WACA-	England_NERC_S.41 & UKBAP-2007				A2 (Atterbury)	SP892398	100	2009
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b, WACA-	England_NERC_S.41 & UKBAP-2007				A3 (Atterbury)	SP891398	100	2009
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b, WACA-	England_NERC_S.41 & UKBAP-2007				A4 (Atterbury)	SP8915139745	1	2009
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b, WACA-	England_NERC_S.41 & UKBAP-2007				Atterbury Ditch A3	SP891398	100	2009
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b, WACA-	England_NERC_S.41 & UKBAP-2007				Atterbury Ditch A4	SP8915139745	1	2009
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b, WACA-	England_NERC_S.41 & UKBAP-2007				Atterbury Pond A1	SP890398	100	2009
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b, WACA-	England_NERC_S.41 & UKBAP-2007				Atterbury Pond A2	SP892398	100	2009
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b, WACA-	England_NERC_S.41 & UKBAP-2007				Atterbury, Pond A3	SP891398	100	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b, WACA-	England_NERC_S.41 & UKBAP-2007				Atterbury, Pond A4	SP8915139745	1	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b, WACA-	England_NERC_S.41 & UKBAP-2007				B1/B2 (Broughton)	SP89453975	10	2009
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b, WACA-	England_NERC_S.41 & UKBAP-2007				B2 (Broughton)	SP89493970	10	2004
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b, WACA-	England_NERC_S.41 & UKBAP-2007				B3 (Broughton)	SP89603942	10	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b, WACA-	England_NERC_S.41 & UKBAP-2007				B3 (Broughton)	SP89603945	10	2008
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b, WACA-	England_NERC_S.41 & UKBAP-2007				Broughton, field between Newport Road and M1	SP907398	100	2013
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b, WACA-	England_NERC_S.41 & UKBAP-2007				Broughton, Pond B1/B2	SP89453975	10	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b, WACA-	England_NERC_S.41 & UKBAP-2007				Broughton, Pond B3	SP89603942	10	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b, WACA-	England_NERC_S.41 & UKBAP-2007				Broughton: Channel close to M1	SP908398	100	2014
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b, WACA-	England_NERC_S.41 & UKBAP-2007				Campbell Park Pond CP1	SP86513974	10	2008
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b, WACA-	England_NERC_S.41 & UKBAP-2007				Cotton Valley Sewage Works	SP884406	100	2010
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b, WACA-	England_NERC_S.41 & UKBAP-2007				Cotton Valley Waste Water Recycling Centre Pond 1	SP8838540672	1	2016

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Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Cotton Valley Waste Water Recycling Centre Pond 2	SP8837440696	1	2016
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Cotton Valley Waste Water Recycling Centre Pond 3	SP8835440763	1	2016
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Cotton Valley Waste Water Recycling Centre Pond 4	SP8835340790	1	2016
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				CP1 (Campbell Park)	SP8652839786	1	2008
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				CPW (Woolstone)	SP8734539250	1	2010
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Great Linford, pond	SP851423	100	1992
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Great Linford: Manor Park ponds	SP852424	100	1998
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Great Linford: pond by lime (=brick) kilns	SP860416	100	1990
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Great Linford: pond, Cottisford Crescent	SP854422	100	2002
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Great Linford: pond, cricket ground	SP854422	100	1990
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Great Linford: Wood Lane	SP853417	100	2003
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Hobart Crescent pond	SP867410	100	1993
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				M1 (Middleton E & W)	SP8865039250	1	2015
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				M1 (Middleton E & W)	SP8865039250	1	2014
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				M11 (Middleton E & W)	SP8842238914	1	2013
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				M14 New (Middleton E & W)	SP8853039220	1	2015
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				M16 New (Middleton E & W)	SP8853039240	1	2015
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				M17 (Middleton E & W)	SP8853339000	1	2012
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				M17 New (Middleton E & W)	SP8835039250	1	2015
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				M17 New (Middleton E & W)	SP8835039250	1	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				M18 New (Middleton E & W)	SP8885038750	1	2013
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				M18 New (Middleton E & W)	SP8885038750	1	2011
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				M19 (Middleton E & W)	SP8858539066	1	2015
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				M2 (Middleton E & W)	SP8915038750	1	2014
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				M20 New (Middleton E & W)	SP8865039050	1	2012

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Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				M23 (Middleton E&W)	SP8834939034	1	2013
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				M24 (Middleton SP89138 38936)	SP88913838936	1	2015
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				M3 (Middleton E & W)	SP8889739467	1	2015
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				M4 (Middleton E & W)	SP8891539495	1	2015
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				M5 (Middleton E & W)	SP8878739535	1	2015
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				M6 (Middleton E & W)	SP8913539345	1	2015
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				M7 (Middleton E & W)	SP8917539135	1	2004
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				M8 Middleton	SP8842038914	1	2014
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				M9 (Middleton E & W)	SP8861839344	1	2014
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Manor Park Ponds, Great Linford	SP852424	100	1998
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Medieval Moat & Fishponds, Milton Keynes	SP885392	100	2003
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Medieval Moat & Fishponds, Milton Keynes	SP886393	100	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Middelton Pond M1	SP886392	100	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Middelton Pond M20	SP886390	100	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Middleton E&W, Pond M1	SP886392	100	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Middleton E&W, Pond M14	SP886393	100	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Middleton E&W, Pond M15	SP886393	100	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Middleton E&W, Pond M16	SP886393	100	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Middleton E&W, Pond M17	SP883392	100	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Middleton E&W, Pond M2	SP891387	100	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Middleton E&W, Pond M20	SP886390	100	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Middleton E&W, Pond M3	SP88903945	10	2004
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Middleton E&W, Pond M4	SP88903946	10	2004
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Middleton E&W, Pond M5	SP888395	100	2004
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Middleton E&W, Pond M6	SP89133934	10	2004

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Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Middleton E&W, Pond M7	SP89173913	10	2004
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Middleton E&W, Pond M9	SP887394	100	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Middleton Pond M17	SP883392	100	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Middleton Pond M2	SP891387	100	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Middleton Pond M9	SP887394	100	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Milton Keynes Village, Milton Keynes	SP88553923	10	2011
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Milton Keynes Village, Milton Keynes	SP88573926	10	2011
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Milton Keynes Village, Milton Keynes	SP88593922	10	2011
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Milton Keynes Village, Milton Keynes	SP88853876	10	2011
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Milton Keynes Village: Walton Rd: The Dell	SP89043875	10	2012
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Monkston Park	SP880385	100	2014
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Monkston Park, Pond MP1	SP87963833	10	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Monkston Park, Pond MP2	SP879384	100	2004
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Monkston Park, Pond MP3	SP879384	100	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Monkston Park, Pond MP4	SP879384	100	2004
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Moulsoe: pond 250m south of Woodend Farm	SP921417	100	2002
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Moulsoe: pond south of Woodend Farm	SP92154185	10	2008
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				MP1 (Monkston Park)	SP8795438354	1	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				MP2 (Monkston Park)	SP8795038450	1	2004
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				MP3 (Monkston Park)	SP8790638409	1	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				MP4 (Monkston Park)	SP8795038450	1	2004
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				N1 (Newlands)	SP8706339563	1	2003
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Newlands	SP871395	100	2003
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				O1 (Oakgrove)	SP8805538785	1	2006
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				O10-New (Oakgrove)	SP8845038550	1	2008

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Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				O14-New (Oakgrove)	SP8795038550	1	2008
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				O2 (Oakgrove)	SP8775038830	1	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				O3 (Oakgrove)	SP8765438908	1	2008
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				O4 (Oakgrove)	SP8766738976	1	2008
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				O5-New (Oakgrove)	SP8773838833	1	2008
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				O7 (Oakgrove)	SP8774038950	1	2008
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				O8 (Oakgrove)	SP8777039120	1	2008
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				O9 (Oakgrove)	SP8781838803	1	2008
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Oakgrove, Pond O1	SP88053878	10	2006
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Oakgrove, Pond O2	SP87753882	10	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Oakgrove, Pond O3	SP87603880	10	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Oakgrove, Pond O7	SP8773338957	1	2006
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Oakgrove, Pond O8	SP8774839105	1	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Parks Trust, Pineham, Pond 1	SP8869941281	1	2016
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Parks Trust, Pineham, Pond 2	SP8873341258	1	2016
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Parks Trust, Pineham, Pond 8	SP8867141602	1	2016
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Pineham, WB1	SP8863141237	1	2016
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Pineham, WB3	SP8862541041	1	2016
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Pond by Great Linford Lime Kilns	SP860416	100	1990
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Pond by Milton Keynes Cricket Ground	SP892392	100	1990
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Pond in Woughton-on-the-Green	SP875383	100	1990
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Pond south of Milton Keynes village	SP886382	100	1990
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Pond west of Kingston	SP898385	100	2003
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Pond, Great Linford Cricket Ground	SP854422	100	1990
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Pond, Hartigan Gravel Pits	SP891398	100	2003

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Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*,HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Pond, Newlands	SP870396	100	1990
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*,HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Pond, Woughton-on-the-Green linear park	SP877383	100	1990
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*,HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Pond, Woughton-on-the-Green linear park	SP878382	100	1990
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*,HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Ponds near Moulsoe Old Wood	SP919421	100	2002
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*,HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				WF1 (Woodend Farm)	SP92154186	10	2002
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*,HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				WF3 (Woodend Farm)	SP92104167	10	2002
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*,HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				WF4 (Woodend Farm)	SP919574211 1	1	2002
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*,HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				WF5 (Woodend Farm)	SP919114209 6	1	2002
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*,HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Willen Church pond	SP878413	100	2003
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*,HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Willen Playing Field pond	SP874411	100	2003
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*,HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Willen: Southfield Close	SP880413	100	2003
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*,HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Woughton on the Green, Pond WG1	SP878382	100	2007
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*,HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Woughton-on-the-Green linear park: pond	SP877383	100	1990
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*,HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Woughton-on-the-Green linear park: pond	SP878382	100	1990
Amphibians and reptiles	Triturus cristatus	Great Crested Newt	EPS-HabReg-Sch2 & HabDir-A2*,HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Woughton-on-the-Green: pond	SP875383	100	1990
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Atterbury Ditch A3	SP891398	100	2009
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Atterbury Ditch A4	SP891513974 5	1	2009
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Atterbury Pond A1	SP890398	100	2009
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Atterbury Pond A2	SP892398	100	2009
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Campbell Park Pond CP1	SP86513974	10	2008
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Campbell Park Pond CP2	SP86343970	10	2008
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Campbell Park Pond CP3	SP86203954	10	2008
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Campbell Park Pond CP4	SP86143954	10	2008
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Cotton Valley Sewage Works	SP884406	100	2010
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Cotton Valley Waste Water Recycling Centre Pond 1	SP883854067 2	1	2016

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Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Cotton Valley Waste Water Recycling Centre Pond 2	SP8837440696	1	2016
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Cotton Valley Waste Water Recycling Centre Pond 3	SP8835440763	1	2016
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Cotton Valley Waste Water Recycling Centre Pond 4	SP8835340790	1	2016
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Dovecote Croft, Great Linford, MK	SP8515442106	1	2014
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Fields south of Broughton Manor	SP900393	100	2003
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Great Linford, pond	SP851423	100	2003
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Great Linford: pond by lime (=brick) kilns	SP860416	100	1993
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					M1 (Middleton E & W)	SP8865039250	1	2015
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					M11 (Middleton E & W)	SP8842238914	1	2013
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					M14 New (Middleton E & W)	SP8853039220	1	2015
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					M16 New (Middleton E & W)	SP8853039240	1	2015
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					M17 (Middleton E & W)	SP8853339000	1	2012
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					M17 New (Middleton E & W)	SP8835039250	1	2015
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					M18 New (Middleton E & W)	SP8885038750	1	2012
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					M19 (Middleton E & W)	SP8858539066	1	2015
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					M2 (Middleton E & W)	SP8915038750	1	2012
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					M20 New (Middleton E & W)	SP8865039050	1	2015
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					M21 Middleton South Claridge Park	SP8883938766	1	2012
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					M22 Middleton South Claridge Park	SP8901438695	1	2012
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					M23 (Middleton E&W)	SP8834939034	1	2013
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					M24 (Middleton SP89138 38936)	SP8913838936	1	2015
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					M3 (Middleton E & W)	SP8889739467	1	2015
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					M4 (Middleton E & W)	SP8891539495	1	2015
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					M5 (Middleton E & W)	SP8878739535	1	2015
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					M6 (Middleton E & W)	SP8913539345	1	2015

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Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					M9 (Middleton E & W)	SP8861839344	1	2015
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Manor Park Ponds, Great Linford	SP852424	100	1998
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Medieval Moat & Fishponds, Milton Keynes	SP886393	100	2007
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Middelton Pond M1	SP886392	100	2007
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Middelton Pond M20	SP886390	100	2007
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Middleton Pond M17	SP883392	100	2007
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Middleton Pond M18	SP888387	100	2007
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Middleton Pond M2	SP891387	100	2007
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Middleton Pond M9	SP887394	100	2007
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Milton Keynes Village, Milton Keynes	SP88553923	10	2011
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Milton Keynes Village, Milton Keynes	SP88573926	10	2011
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Milton Keynes Village, Milton Keynes	SP88593922	10	2011
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Milton Keynes Village, Milton Keynes	SP88853876	10	2011
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Moulsoe: pond south of Woodend Farm	SP92154185	10	2008
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Parks Trust, Pineham, Pond 1	SP8869941281	1	2016
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Parks Trust, Pineham, Pond 2	SP8873341258	1	2016
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Parks Trust, Pineham, Pond 8	SP8867141602	1	2016
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Pineham, WB1	SP8863141237	1	2016
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Pineham, WB3	SP8862541041	1	2016
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					TETRAD SP84V - Vague Site(SP880410)	SP880410	100	2010
Amphibians and reptiles	Triturus vulgaris	Smooth Newt		WACA-Sch5_sect9.5a					Woughton-on-the-Green linear park: pond	SP878382	100	1993
Birds	Actitis hypoleucos	Common Sandpiper				Bird-Amber			Broughton Grounds	SP890390	100	2003
Birds	Actitis hypoleucos	Common Sandpiper				Bird-Amber			Great Linford	SP8541	1000	2013
Birds	Actitis hypoleucos	Common Sandpiper				Bird-Amber			Tongwell Lake	SP867423	100	2014
Birds	Actitis hypoleucos	Common Sandpiper				Bird-Amber			Tongwell Lake	SP868423	100	2000

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Birds	Actitis hypoleucos	Common Sandpiper				Bird-Amber			Tongwell, MK	SP869423	100	2008
Birds	Actitis hypoleucos	Common Sandpiper				Bird-Amber			Willen Lake North	SP877407	100	2016
Birds	Actitis hypoleucos	Common Sandpiper				Bird-Amber			Willen Lake South	SP877397	100	2016
Birds	Actitis hypoleucos	Common Sandpiper				Bird-Amber			Willen Lakes	SP877407	100	2016
Birds	Actitis hypoleucos	Common Sandpiper				Bird-Amber			Willen Lakes, MK	SP877407	100	2011
Birds	Actitis hypoleucos	Common Sandpiper				Bird-Amber			Willen Lakes, MK	SP880406	100	2010
Birds	Actitis hypoleucos	Common Sandpiper				Bird-Amber			Willen Road Excavations	SP873423	100	2013
Birds	Actitis hypoleucos	Common Sandpiper				Bird-Amber			Willen, MK	SP880405	100	2006
Birds	Actitis hypoleucos	Common Sandpiper				Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Alauda arvensis	Skylark			England_NERC_S.41 & UKBAP-2007	Bird-Red			Broughton Grounds	SP8939	1000	2002
Birds	Alauda arvensis	Skylark			England_NERC_S.41 & UKBAP-2007	Bird-Red			Broughton Grounds	SP9140	1000	2013
Birds	Alauda arvensis	Skylark			England_NERC_S.41 & UKBAP-2007	Bird-Red			Broughton, MK	SP894396	100	2015
Birds	Alauda arvensis	Skylark			England_NERC_S.41 & UKBAP-2007	Bird-Red			Bury Fields, Newport Pagnell - (Central Site Grid Ref)	SP8713644431	1	2011
Birds	Alauda arvensis	Skylark			England_NERC_S.41 & UKBAP-2007	Bird-Red			Field west of Caldecote Farm, Newport Pagnell	SP875423	100	2001
Birds	Alauda arvensis	Skylark			England_NERC_S.41 & UKBAP-2007	Bird-Red			Hartigans Pits, Newport Pagnell	SP881447	100	2003
Birds	Alauda arvensis	Skylark			England_NERC_S.41 & UKBAP-2007	Bird-Red			Lathbury	SP875455	100	2015
Birds	Alauda arvensis	Skylark			England_NERC_S.41 & UKBAP-2007	Bird-Red			Lee Common	SP905405	100	2010
Birds	Alauda arvensis	Skylark			England_NERC_S.41 & UKBAP-2007	Bird-Red			Newport Pagnell Gravel Pits	SP885445	100	1999
Birds	Alauda arvensis	Skylark			England_NERC_S.41 & UKBAP-2007	Bird-Red			TETRAD SP84V - Vague Site (SP893416)	SP893416	100	2010
Birds	Alauda arvensis	Skylark			England_NERC_S.41 & UKBAP-2007	Bird-Red			tickfordfields farm, Newport Pagnell	SP890437	100	2000
Birds	Alauda arvensis	Skylark			England_NERC_S.41 & UKBAP-2007	Bird-Red			Woughton on the Green	SP875385	100	2011
Birds	Alcedo atthis	Kingfisher		WACA-Sch1_part1		Bird-Amber			Farm Field, Broughton	SP893404	100	2002
Birds	Alcedo atthis	Kingfisher		WACA-Sch1_part1		Bird-Amber			Great Linford	SP8541	1000	2014
Birds	Alcedo atthis	Kingfisher		WACA-Sch1_part1		Bird-Amber			Lathbury	SP873450	100	2007
Birds	Alcedo atthis	Kingfisher		WACA-Sch1_part1		Bird-Amber			Lathbury	SP875455	100	2012

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Birds	Alcedo atthis	Kingfisher		WACA-Sch1_part1		Bird-Amber			Monkston Park	SP8838	1000	2012
Birds	Alcedo atthis	Kingfisher		WACA-Sch1_part1		Bird-Amber			Newport Pagnell	SP870430	100	2015
Birds	Alcedo atthis	Kingfisher		WACA-Sch1_part1		Bird-Amber			Newport Pagnell	SP8743	1000	2013
Birds	Alcedo atthis	Kingfisher		WACA-Sch1_part1		Bird-Amber			Newport Pagnell GPs	SP870430	100	2011
Birds	Alcedo atthis	Kingfisher		WACA-Sch1_part1		Bird-Amber			Newport Pagnell, Tongwell Brook	SP872425	100	2015
Birds	Alcedo atthis	Kingfisher		WACA-Sch1_part1		Bird-Amber			Oakgrove, MK	SP8738	1000	2012
Birds	Alcedo atthis	Kingfisher		WACA-Sch1_part1		Bird-Amber			Oakgrove, MK	SP880387	100	2010
Birds	Alcedo atthis	Kingfisher		WACA-Sch1_part1		Bird-Amber			River Ouzel, S of Willen Lake	SP880393	100	2016
Birds	Alcedo atthis	Kingfisher		WACA-Sch1_part1		Bird-Amber			Sherington	SP884453	100	2011
Birds	Alcedo atthis	Kingfisher		WACA-Sch1_part1		Bird-Amber			TETRAD SP84V - Vague Site (SP883411)	SP883411	100	2010
Birds	Alcedo atthis	Kingfisher		WACA-Sch1_part1		Bird-Amber			Tongwell	SP869423	100	2016
Birds	Alcedo atthis	Kingfisher		WACA-Sch1_part1		Bird-Amber			Tongwell Lake	SP867423	100	2016
Birds	Alcedo atthis	Kingfisher		WACA-Sch1_part1		Bird-Amber			Tongwell Lake, MK	SP869423	100	2004
Birds	Alcedo atthis	Kingfisher		WACA-Sch1_part1		Bird-Amber			Tongwell lakeside shrub beds	SP867421	100	2000
Birds	Alcedo atthis	Kingfisher		WACA-Sch1_part1		Bird-Amber			Tongwell, MK	SP869423	100	2004
Birds	Alcedo atthis	Kingfisher		WACA-Sch1_part1		Bird-Amber			Willen Lake (master site)	SP879400	100	2000
Birds	Alcedo atthis	Kingfisher		WACA-Sch1_part1		Bird-Amber			Willen Lake East (Wier)	SP882407	100	2012
Birds	Alcedo atthis	Kingfisher		WACA-Sch1_part1		Bird-Amber			Willen Lake North	SP877407	100	2016
Birds	Alcedo atthis	Kingfisher		WACA-Sch1_part1		Bird-Amber			Willen Lake South	SP877397	100	2016
Birds	Alcedo atthis	Kingfisher		WACA-Sch1_part1		Bird-Amber			Willen Lakes	SP877407	100	2014
Birds	Alcedo atthis	Kingfisher		WACA-Sch1_part1		Bird-Amber			Willen Lakes, MK	SP877407	100	2009
Birds	Alcedo atthis	Kingfisher		WACA-Sch1_part1		Bird-Amber			Willen Lakes, MK	SP880406	100	2010
Birds	Alcedo atthis	Kingfisher		WACA-Sch1_part1		Bird-Amber			Willen, MK	SP880405	100	2010
Birds	Alcedo atthis	Kingfisher		WACA-Sch1_part1		Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Anas acuta	Pintail		WACA-Sch1_part2		Bird-Amber			Great Linford	SP8541	1000	2014

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Birds	Anas acuta	Pintail		WACA-Sch1_part2		Bird-Amber			Tongwell Lake	SP867423	100	2013
Birds	Anas acuta	Pintail		WACA-Sch1_part2		Bird-Amber			Willen Lake North	SP877407	100	2016
Birds	Anas acuta	Pintail		WACA-Sch1_part2		Bird-Amber			Willen Lakes	SP877407	100	2013
Birds	Anas acuta	Pintail		WACA-Sch1_part2		Bird-Amber			Willen Lakes, MK	SP877407	100	2009
Birds	Anas acuta	Pintail		WACA-Sch1_part2		Bird-Amber			Willen Lakes, MK	SP880406	100	2002
Birds	Anas acuta	Pintail		WACA-Sch1_part2		Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Anas clypeata	Shoveler				Bird-Amber			Great Linford	SP8541	1000	2013
Birds	Anas clypeata	Shoveler				Bird-Amber			Great Linford	SP855415	100	2015
Birds	Anas clypeata	Shoveler				Bird-Amber			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Anas clypeata	Shoveler				Bird-Amber			TETRAD SP84V - Vague Site (SP880410)	SP880410	100	2010
Birds	Anas clypeata	Shoveler				Bird-Amber			Tongwell	SP869423	100	2013
Birds	Anas clypeata	Shoveler				Bird-Amber			Tongwell Lake	SP867423	100	2016
Birds	Anas clypeata	Shoveler				Bird-Amber			Tongwell Lake, MK	SP869423	100	2008
Birds	Anas clypeata	Shoveler				Bird-Amber			Tongwell, MK	SP869423	100	2009
Birds	Anas clypeata	Shoveler				Bird-Amber			Willen Lake (master site)	SP879400	100	1998
Birds	Anas clypeata	Shoveler				Bird-Amber			Willen Lake East (Weir)	SP882407	100	2016
Birds	Anas clypeata	Shoveler				Bird-Amber			Willen Lake North	SP877407	100	2016
Birds	Anas clypeata	Shoveler				Bird-Amber			Willen Lake South	SP877397	100	2013
Birds	Anas clypeata	Shoveler				Bird-Amber			Willen Lake, north basin	SP879404	100	2011
Birds	Anas clypeata	Shoveler				Bird-Amber			Willen Lake, South Basin	SP878403	100	2011
Birds	Anas clypeata	Shoveler				Bird-Amber			Willen Lakes	SP877407	100	2016
Birds	Anas clypeata	Shoveler				Bird-Amber			Willen Lakes, MK	SP877407	100	2011
Birds	Anas clypeata	Shoveler				Bird-Amber			Willen Lakes, MK	SP880406	100	2010
Birds	Anas clypeata	Shoveler				Bird-Amber			Willen, MK	SP880405	100	2008
Birds	Anas clypeata	Shoveler				Bird-Amber			Willen, MK	SP880406	100	2003

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Birds	Anas crecca	Teal				Bird-Amber			Broughton Grounds	SP8939	1000	2004
Birds	Anas crecca	Teal				Bird-Amber			Great Linford	SP8541	1000	2014
Birds	Anas crecca	Teal				Bird-Amber			Lathbury	SP873450	100	2008
Birds	Anas crecca	Teal				Bird-Amber			Newport Pagnell	SP870430	100	2015
Birds	Anas crecca	Teal				Bird-Amber			Newport Pagnell	SP8743	1000	2013
Birds	Anas crecca	Teal				Bird-Amber			Oakgrove, MK	SP880387	100	2002
Birds	Anas crecca	Teal				Bird-Amber			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Anas crecca	Teal				Bird-Amber			Tongwell	SP869423	100	2013
Birds	Anas crecca	Teal				Bird-Amber			Tongwell Lake	SP867423	100	2016
Birds	Anas crecca	Teal				Bird-Amber			Tongwell Lake, MK	SP869423	100	2009
Birds	Anas crecca	Teal				Bird-Amber			Willen Lake (master site)	SP879400	100	1998
Birds	Anas crecca	Teal				Bird-Amber			Willen Lake North	SP877407	100	2016
Birds	Anas crecca	Teal				Bird-Amber			Willen Lake South	SP877397	100	2016
Birds	Anas crecca	Teal				Bird-Amber			Willen Lakes	SP877407	100	2016
Birds	Anas crecca	Teal				Bird-Amber			Willen Lakes, MK	SP877407	100	2011
Birds	Anas crecca	Teal				Bird-Amber			Willen Lakes, MK	SP880406	100	2010
Birds	Anas crecca	Teal				Bird-Amber			Willen Road Excavations	SP873423	100	2013
Birds	Anas crecca	Teal				Bird-Amber			Willen, MK	SP880405	100	2006
Birds	Anas crecca	Teal				Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Anas penelope	Wigeon				Bird-Amber			Great Linford	SP8541	1000	2014
Birds	Anas penelope	Wigeon				Bird-Amber			Great Linford	SP855415	100	2011
Birds	Anas penelope	Wigeon				Bird-Amber			Newport Pagnell	SP870430	100	2015
Birds	Anas penelope	Wigeon				Bird-Amber			Newport Pagnell GPs	SP870430	100	2011
Birds	Anas penelope	Wigeon				Bird-Amber			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Anas penelope	Wigeon				Bird-Amber			TETRAD SP84V - Vague Site (SP880410)	SP880410	100	2010

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Birds	Anas penelope	Wigeon				Bird-Amber			Tongwell	SP869423	100	2012
Birds	Anas penelope	Wigeon				Bird-Amber			Tongwell Lake	SP867423	100	2016
Birds	Anas penelope	Wigeon				Bird-Amber			Tongwell Lake	SP869423	100	2006
Birds	Anas penelope	Wigeon				Bird-Amber			Willen Lake (master site)	SP879400	100	1998
Birds	Anas penelope	Wigeon				Bird-Amber			Willen Lake North	SP877407	100	2016
Birds	Anas penelope	Wigeon				Bird-Amber			Willen Lake South	SP877397	100	2013
Birds	Anas penelope	Wigeon				Bird-Amber			Willen Lake, north basin	SP879404	100	2011
Birds	Anas penelope	Wigeon				Bird-Amber			Willen Lake, South Basin	SP878403	100	2011
Birds	Anas penelope	Wigeon				Bird-Amber			Willen Lakes	SP877407	100	2014
Birds	Anas penelope	Wigeon				Bird-Amber			Willen Lakes, MK	SP877407	100	2011
Birds	Anas penelope	Wigeon				Bird-Amber			Willen Lakes, MK	SP880406	100	2010
Birds	Anas penelope	Wigeon				Bird-Amber			Willen, MK	SP880405	100	2006
Birds	Anas penelope	Wigeon				Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Anas platyrhynchos	Mallard				Bird-Amber			Campbell Park Pond CP6	SP86843988	10	2008
Birds	Anas platyrhynchos	Mallard				Bird-Amber			Field west of Caldecote Farm, Newport Pagnell	SP875423	100	2001
Birds	Anas platyrhynchos	Mallard				Bird-Amber			Grand Union Canal, Downhead Park	SP869403	100	1992
Birds	Anas platyrhynchos	Mallard				Bird-Amber			Lee Common	SP905405	100	2010
Birds	Anas platyrhynchos	Mallard				Bird-Amber			Manor Park Ponds, Great Linford	SP852424	100	1998
Birds	Anas platyrhynchos	Mallard				Bird-Amber			Medieval Moat & Fishponds, Milton Keynes	SP885392	100	1990
Birds	Anas platyrhynchos	Mallard				Bird-Amber			Newport Pagnell	SP870430	100	2015
Birds	Anas platyrhynchos	Mallard				Bird-Amber			Newport Pagnell GPs	SP870430	100	2011
Birds	Anas platyrhynchos	Mallard				Bird-Amber			Newport Pagnell GPs	SP885445	100	2010
Birds	Anas platyrhynchos	Mallard				Bird-Amber			Newport Pagnell Gravel Pits	SP885445	100	1998
Birds	Anas platyrhynchos	Mallard				Bird-Amber			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Anas platyrhynchos	Mallard				Bird-Amber			TETRAD SP84V - Vague Site (SP880410)	SP880410	100	2010

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Birds	Anas platyrhynchos	Mallard				Bird-Amber			tickfordfields farm, Newport Pagnell	SP890437	100	2000
Birds	Anas platyrhynchos	Mallard				Bird-Amber			Tongwell	SP869423	100	2012
Birds	Anas platyrhynchos	Mallard				Bird-Amber			Tongwell Lake	SP867423	100	2016
Birds	Anas platyrhynchos	Mallard				Bird-Amber			Tongwell Lake	SP868423	100	2000
Birds	Anas platyrhynchos	Mallard				Bird-Amber			Tongwell Lake, MK	SP869423	100	2008
Birds	Anas platyrhynchos	Mallard				Bird-Amber			Tongwell, MK	SP869423	100	2009
Birds	Anas platyrhynchos	Mallard				Bird-Amber			Willen Lake (master site)	SP879400	100	1998
Birds	Anas platyrhynchos	Mallard				Bird-Amber			Willen Lake North	SP877407	100	2016
Birds	Anas platyrhynchos	Mallard				Bird-Amber			Willen Lake South	SP877397	100	2016
Birds	Anas platyrhynchos	Mallard				Bird-Amber			Willen Lake, north basin	SP879404	100	2011
Birds	Anas platyrhynchos	Mallard				Bird-Amber			Willen Lake, South Basin	SP878403	100	2011
Birds	Anas platyrhynchos	Mallard				Bird-Amber			Willen Lakes	SP877407	100	2014
Birds	Anas platyrhynchos	Mallard				Bird-Amber			Willen Lakes, MK	SP877407	100	2009
Birds	Anas platyrhynchos	Mallard				Bird-Amber			Willen, MK	SP880405	100	2004
Birds	Anas platyrhynchos	Mallard				Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Anas querquedula	Garganey		WACA-Sch1_part1		Bird-Amber			Great Linford	SP8541	1000	2014
Birds	Anas querquedula	Garganey		WACA-Sch1_part1		Bird-Amber			Willen Lake North	SP877407	100	2016
Birds	Anas querquedula	Garganey		WACA-Sch1_part1		Bird-Amber			Willen Lakes	SP877407	100	2013
Birds	Anas querquedula	Garganey		WACA-Sch1_part1		Bird-Amber			Willen Lakes, MK	SP877407	100	2011
Birds	Anas querquedula	Garganey		WACA-Sch1_part1		Bird-Amber			Willen Lakes, MK	SP880406	100	2008
Birds	Anas querquedula	Garganey		WACA-Sch1_part1		Bird-Amber			Willen, MK	SP880405	100	2004
Birds	Anas querquedula	Garganey		WACA-Sch1_part1		Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Anas strepera	Gadwall				Bird-Amber			Great Linford	SP8541	1000	2013
Birds	Anas strepera	Gadwall				Bird-Amber			Great Linford	SP855415	100	2011
Birds	Anas strepera	Gadwall				Bird-Amber			Newport Pagnell	SP870430	100	2015

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Birds	Anas strepera	Gadwall				Bird-Amber			Newport Pagnell GPs	SP870430	100	2011
Birds	Anas strepera	Gadwall				Bird-Amber			Newport Pagnell GPs	SP885445	100	2010
Birds	Anas strepera	Gadwall				Bird-Amber			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Anas strepera	Gadwall				Bird-Amber			TETRAD SP84V - Vague Site (SP880410)	SP880410	100	2010
Birds	Anas strepera	Gadwall				Bird-Amber			Tongwell	SP869423	100	2013
Birds	Anas strepera	Gadwall				Bird-Amber			Tongwell Lake	SP867423	100	2016
Birds	Anas strepera	Gadwall				Bird-Amber			Tongwell Lake, MK	SP869423	100	2009
Birds	Anas strepera	Gadwall				Bird-Amber			Tongwell, MK	SP869423	100	2009
Birds	Anas strepera	Gadwall				Bird-Amber			Willen Lake North	SP877407	100	2016
Birds	Anas strepera	Gadwall				Bird-Amber			Willen Lake South	SP877397	100	2014
Birds	Anas strepera	Gadwall				Bird-Amber			Willen Lake, north basin	SP879404	100	2011
Birds	Anas strepera	Gadwall				Bird-Amber			Willen Lakes	SP877407	100	2015
Birds	Anas strepera	Gadwall				Bird-Amber			Willen Lakes, MK	SP877407	100	2011
Birds	Anas strepera	Gadwall				Bird-Amber			Willen Lakes, MK	SP880406	100	2010
Birds	Anas strepera	Gadwall				Bird-Amber			Willen, MK	SP880405	100	2006
Birds	Anas strepera	Gadwall				Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Anser albifrons	White-fronted Goose			England_NERC_S.41 & UKBAP-2007	Bird-Red			Newport Pagnell GPs	SP870430	100	2009
Birds	Anser anser	Greylag Goose		WACA-Sch1_part2		Bird-Amber			Lathbury	SP873450	100	2002
Birds	Anser anser	Greylag Goose		WACA-Sch1_part2		Bird-Amber			Newport Pagnell	SP870430	100	2015
Birds	Anser anser	Greylag Goose		WACA-Sch1_part2		Bird-Amber			Newport Pagnell	SP8743	1000	2013
Birds	Anser anser	Greylag Goose		WACA-Sch1_part2		Bird-Amber			Newport Pagnell GPs	SP870430	100	2011
Birds	Anser anser	Greylag Goose		WACA-Sch1_part2		Bird-Amber			TETRAD SP84Q - Vague Site (SP879411)	SP879411	100	2010
Birds	Anser anser	Greylag Goose		WACA-Sch1_part2		Bird-Amber			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Anser anser	Greylag Goose		WACA-Sch1_part2		Bird-Amber			TETRAD SP84V - Vague Site (SP880410)	SP880410	100	2010
Birds	Anser anser	Greylag Goose		WACA-Sch1_part2		Bird-Amber			Tongwell	SP869423	100	2013

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Birds	Anser anser	Greylag Goose		WACA-Sch1_part2		Bird-Amber			Tongwell Lake	SP867423	100	2016
Birds	Anser anser	Greylag Goose		WACA-Sch1_part2		Bird-Amber			Tongwell Lake	SP868423	100	2000
Birds	Anser anser	Greylag Goose		WACA-Sch1_part2		Bird-Amber			Tongwell Lake, MK	SP869423	100	2009
Birds	Anser anser	Greylag Goose		WACA-Sch1_part2		Bird-Amber			Willen Lake North	SP877407	100	2016
Birds	Anser anser	Greylag Goose		WACA-Sch1_part2		Bird-Amber			Willen Lake South	SP877397	100	2016
Birds	Anser anser	Greylag Goose		WACA-Sch1_part2		Bird-Amber			Willen Lake, South Basin	SP878403	100	2011
Birds	Anser anser	Greylag Goose		WACA-Sch1_part2		Bird-Amber			Willen Lakes	SP877407	100	2014
Birds	Anser anser	Greylag Goose		WACA-Sch1_part2		Bird-Amber			Willen Lakes, MK	SP880406	100	2010
Birds	Anser anser	Greylag Goose		WACA-Sch1_part2		Bird-Amber			Willen, MK	SP880405	100	2004
Birds	Anser anser	Greylag Goose		WACA-Sch1_part2		Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Anser brachyrhynchus	Pink-footed Goose				Bird-Amber			Lathbury	SP873450	100	2002
Birds	Anser brachyrhynchus	Pink-footed Goose				Bird-Amber			Willen, MK	SP880405	100	2005
Birds	Anthus pratensis	Meadow Pipit				Bird-Amber			Broughton Grounds	SP8939	1000	2010
Birds	Anthus pratensis	Meadow Pipit				Bird-Amber			Broughton Grounds	SP910400	100	2009
Birds	Anthus pratensis	Meadow Pipit				Bird-Amber			Broughton Grounds	SP9140	1000	2014
Birds	Anthus pratensis	Meadow Pipit				Bird-Amber			Broughton, MK	SP894396	100	2015
Birds	Anthus pratensis	Meadow Pipit				Bird-Amber			Lathbury	SP875455	100	2012
Birds	Anthus pratensis	Meadow Pipit				Bird-Amber			Lee Common	SP905405	100	2010
Birds	Anthus pratensis	Meadow Pipit				Bird-Amber			Newport Pagnell	SP870430	100	2016
Birds	Anthus pratensis	Meadow Pipit				Bird-Amber			Newport Pagnell	SP8743	1000	2014
Birds	Anthus pratensis	Meadow Pipit				Bird-Amber			Oakgrove, MK	SP880387	100	2002
Birds	Anthus pratensis	Meadow Pipit				Bird-Amber			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Anthus pratensis	Meadow Pipit				Bird-Amber			Tongwell Lake, MK	SP869423	100	2008
Birds	Anthus pratensis	Meadow Pipit				Bird-Amber			Tongwell, MK	SP869423	100	2008
Birds	Anthus pratensis	Meadow Pipit				Bird-Amber			Willen Lakes, MK	SP877407	100	2011

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Birds	Anthus pratensis	Meadow Pipit				Bird-Amber			Willen Lakes, MK	SP880406	100	2007
Birds	Anthus pratensis	Meadow Pipit				Bird-Amber			Willen, MK	SP880405	100	2004
Birds	Anthus pratensis	Meadow Pipit				Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Anthus trivialis	Tree Pipit			England_NERC_S.41 & UKBAP-2007	Bird-Red			Broughton Grounds	SP8939	1000	2004
Birds	Anthus trivialis	Tree Pipit			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen Lakes, MK	SP880406	100	2006
Birds	Apus apus	Swift				Bird-Amber			Great Linford	SP855415	100	2015
Birds	Apus apus	Swift				Bird-Amber			Hartigans Pits, Newport Pagnell	SP881447	100	2003
Birds	Apus apus	Swift				Bird-Amber			Lathbury	SP875455	100	2015
Birds	Apus apus	Swift				Bird-Amber			TETRAD SP84Q - Vague Site (SP879411)	SP879411	100	2010
Birds	Apus apus	Swift				Bird-Amber			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Apus apus	Swift				Bird-Amber			TETRAD SP84R - Vague Site (SP872432)	SP872432	100	2010
Birds	Apus apus	Swift				Bird-Amber			TETRAD SP84V - Vague Site (SP880410)	SP880410	100	2010
Birds	Apus apus	Swift				Bird-Amber			tickfordfields farm, Newport Pagnell	SP890437	100	2000
Birds	Apus apus	Swift				Bird-Amber			Willen Lake North	SP877407	100	2016
Birds	Apus apus	Swift				Bird-Amber			Willen Lake South	SP877397	100	2016
Birds	Apus apus	Swift				Bird-Amber			Willen Lakes	SP877407	100	2015
Birds	Apus apus	Swift				Bird-Amber			Willen Lakes, MK	SP877407	100	2011
Birds	Apus apus	Swift				Bird-Amber			Willen Lakes, MK	SP880406	100	2010
Birds	Apus apus	Swift				Bird-Amber			Willen, MK	SP880405	100	2007
Birds	Apus apus	Swift				Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Apus apus	Swift				Bird-Amber			Woughton on the Green	SP875385	100	2012
Birds	Arenaria interpres	Turnstone				Bird-Amber			Willen Lake South	SP877397	100	2015
Birds	Arenaria interpres	Turnstone				Bird-Amber			Willen Lakes, MK	SP877407	100	2009
Birds	Arenaria interpres	Turnstone				Bird-Amber			Willen Lakes, MK	SP880406	100	2008
Birds	Arenaria interpres	Turnstone				Bird-Amber			Willen, MK	SP880405	100	2005

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Birds	Asio flammeus	Short-eared Owl				Bird-Amber			Broughton Grounds	SP8939	1000	2006
Birds	Asio flammeus	Short-eared Owl				Bird-Amber			Broughton Grounds	SP910400	100	2009
Birds	Asio flammeus	Short-eared Owl				Bird-Amber			Great Linford	SP855415	100	2011
Birds	Asio flammeus	Short-eared Owl				Bird-Amber			Newport Pagnell	SP870430	100	2016
Birds	Aythya ferina	Pochard				Bird-Red			Great Linford	SP8541	1000	2013
Birds	Aythya ferina	Pochard				Bird-Red			Great Linford	SP855415	100	2016
Birds	Aythya ferina	Pochard				Bird-Red			Newport Pagnell	SP870430	100	2015
Birds	Aythya ferina	Pochard				Bird-Red			Newport Pagnell GPs	SP870430	100	2011
Birds	Aythya ferina	Pochard				Bird-Red			Newport Pagnell GPs	SP885445	100	2010
Birds	Aythya ferina	Pochard				Bird-Red			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Aythya ferina	Pochard				Bird-Red			TETRAD SP84V - Vague Site (SP880410)	SP880410	100	2010
Birds	Aythya ferina	Pochard				Bird-Red			Tongwell	SP869423	100	2013
Birds	Aythya ferina	Pochard				Bird-Red			Tongwell Lake	SP867423	100	2016
Birds	Aythya ferina	Pochard				Bird-Red			Tongwell Lake	SP868423	100	2000
Birds	Aythya ferina	Pochard				Bird-Red			Tongwell Lake, MK	SP869423	100	2009
Birds	Aythya ferina	Pochard				Bird-Red			Tongwell, MK	SP869423	100	2009
Birds	Aythya ferina	Pochard				Bird-Red			Willen Lake (master site)	SP879400	100	1998
Birds	Aythya ferina	Pochard				Bird-Red			Willen Lake North	SP877407	100	2016
Birds	Aythya ferina	Pochard				Bird-Red			Willen Lake South	SP877397	100	2016
Birds	Aythya ferina	Pochard				Bird-Red			Willen Lake, north basin	SP879404	100	2011
Birds	Aythya ferina	Pochard				Bird-Red			Willen Lake, South Basin	SP878403	100	2011
Birds	Aythya ferina	Pochard				Bird-Red			Willen Lakes	SP877407	100	2016
Birds	Aythya ferina	Pochard				Bird-Red			Willen Lakes, MK	SP877407	100	2011
Birds	Aythya ferina	Pochard				Bird-Red			Willen Lakes, MK	SP880406	100	2010
Birds	Aythya ferina	Pochard				Bird-Red			Willen, MK	SP880405	100	2006

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Birds	<i>Aythya ferina</i>	Pochard				Bird-Red			Willen, MK	SP880406	100	2003
Birds	<i>Aythya marila</i>	Scaup		WACA-Sch1_part1	England_NERC_S.41 & UKBAP-2007	Bird-Red			Tongwell Lake	SP867423	100	2009
Birds	<i>Aythya marila</i>	Scaup		WACA-Sch1_part1	England_NERC_S.41 & UKBAP-2007	Bird-Red			Tongwell Lake, MK	SP869423	100	2009
Birds	<i>Aythya marila</i>	Scaup		WACA-Sch1_part1	England_NERC_S.41 & UKBAP-2007	Bird-Red			Tongwell, MK	SP869423	100	2009
Birds	<i>Aythya marila</i>	Scaup		WACA-Sch1_part1	England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen Lake South	SP877397	100	2013
Birds	<i>Aythya marila</i>	Scaup		WACA-Sch1_part1	England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen Lakes, MK	SP880405	100	2004
Birds	<i>Aythya marila</i>	Scaup		WACA-Sch1_part1	England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen Lakes, MK	SP880406	100	2007
Birds	<i>Aythya marila</i>	Scaup		WACA-Sch1_part1	England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen, MK	SP880405	100	2004
Birds	<i>Aythya marila</i>	Scaup		WACA-Sch1_part1	England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen, MK	SP880406	100	2003
Birds	<i>Botaurus stellaris</i>	Bittern		WACA-Sch1_part1	England_NERC_S.41 & UKBAP-2007	Bird-Amber			Tongwell	SP869423	100	2013
Birds	<i>Botaurus stellaris</i>	Bittern		WACA-Sch1_part1	England_NERC_S.41 & UKBAP-2007	Bird-Amber			Tongwell Lake	SP867423	100	2013
Birds	<i>Botaurus stellaris</i>	Bittern		WACA-Sch1_part1	England_NERC_S.41 & UKBAP-2007	Bird-Amber			Tongwell Lake	SP868423	100	2000
Birds	<i>Botaurus stellaris</i>	Bittern		WACA-Sch1_part1	England_NERC_S.41 & UKBAP-2007	Bird-Amber			Tongwell Lake	SP869423	100	2006
Birds	<i>Botaurus stellaris</i>	Bittern		WACA-Sch1_part1	England_NERC_S.41 & UKBAP-2007	Bird-Amber			Tongwell Lake, MK	SP869423	100	2008
Birds	<i>Botaurus stellaris</i>	Bittern		WACA-Sch1_part1	England_NERC_S.41 & UKBAP-2007	Bird-Amber			Tongwell, MK	SP869423	100	2008
Birds	<i>Botaurus stellaris</i>	Bittern		WACA-Sch1_part1	England_NERC_S.41 & UKBAP-2007	Bird-Amber			Willen Lakes, MK	SP877407	100	2009
Birds	<i>Botaurus stellaris</i>	Bittern		WACA-Sch1_part1	England_NERC_S.41 & UKBAP-2007	Bird-Amber			Willen Lakes, MK	SP880406	100	2008
Birds	<i>Botaurus stellaris</i>	Bittern		WACA-Sch1_part1	England_NERC_S.41 & UKBAP-2007	Bird-Amber			Willen, MK	SP880405	100	2008
Birds	<i>Branta bernicla</i>	Brent Goose				Bird-Amber			Willen Lakes, MK	SP880406	100	2008
Birds	<i>Branta leucopsis</i>	Barnacle Goose				Bird-Amber			Lathbury	SP873450	100	2010
Birds	<i>Branta leucopsis</i>	Barnacle Goose				Bird-Amber			Willen Lake North	SP877407	100	2013
Birds	<i>Branta leucopsis</i>	Barnacle Goose				Bird-Amber			Willen Lake South	SP877397	100	2012
Birds	<i>Branta leucopsis</i>	Barnacle Goose				Bird-Amber			Willen Lakes	SP877407	100	2012
Birds	<i>Branta leucopsis</i>	Barnacle Goose				Bird-Amber			Willen Lakes, MK	SP877407	100	2009
Birds	<i>Branta leucopsis</i>	Barnacle Goose				Bird-Amber			Willen Lakes, MK	SP880406	100	2008

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Birds	Branta leucopsis	Barnacle Goose				Bird-Amber			Willen, MK	SP880405	100	2002
Birds	Bucephala clangula	Goldeneye		WACA-Sch1_part2		Bird-Amber			Great Linford	SP855415	100	2016
Birds	Bucephala clangula	Goldeneye		WACA-Sch1_part2		Bird-Amber			Milton Keynes: Willen Lake: South	SP880400	100	2016
Birds	Bucephala clangula	Goldeneye		WACA-Sch1_part2		Bird-Amber			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Bucephala clangula	Goldeneye		WACA-Sch1_part2		Bird-Amber			Tongwell	SP869423	100	2015
Birds	Bucephala clangula	Goldeneye		WACA-Sch1_part2		Bird-Amber			Tongwell Lake	SP867423	100	2016
Birds	Bucephala clangula	Goldeneye		WACA-Sch1_part2		Bird-Amber			Tongwell Lake	SP869423	100	2006
Birds	Bucephala clangula	Goldeneye		WACA-Sch1_part2		Bird-Amber			Tongwell Lake, MK	SP869423	100	2008
Birds	Bucephala clangula	Goldeneye		WACA-Sch1_part2		Bird-Amber			Tongwell, MK	SP869423	100	2008
Birds	Bucephala clangula	Goldeneye		WACA-Sch1_part2		Bird-Amber			Willen Lake (master site)	SP879400	100	1998
Birds	Bucephala clangula	Goldeneye		WACA-Sch1_part2		Bird-Amber			Willen Lake East (Weir)	SP882407	100	2016
Birds	Bucephala clangula	Goldeneye		WACA-Sch1_part2		Bird-Amber			Willen Lake North	SP877407	100	2016
Birds	Bucephala clangula	Goldeneye		WACA-Sch1_part2		Bird-Amber			Willen Lake South	SP877397	100	2016
Birds	Bucephala clangula	Goldeneye		WACA-Sch1_part2		Bird-Amber			Willen Lake, South Basin	SP878403	100	2011
Birds	Bucephala clangula	Goldeneye		WACA-Sch1_part2		Bird-Amber			Willen Lakes	SP877407	100	2016
Birds	Bucephala clangula	Goldeneye		WACA-Sch1_part2		Bird-Amber			Willen Lakes, MK	SP877397	100	2009
Birds	Bucephala clangula	Goldeneye		WACA-Sch1_part2		Bird-Amber			Willen Lakes, MK	SP877407	100	2011
Birds	Bucephala clangula	Goldeneye		WACA-Sch1_part2		Bird-Amber			Willen Lakes, MK	SP880406	100	2010
Birds	Bucephala clangula	Goldeneye		WACA-Sch1_part2		Bird-Amber			Willen, MK	SP880405	100	2008
Birds	Bucephala clangula	Goldeneye		WACA-Sch1_part2		Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Calidris alba	Sanderling				Bird-Amber			Willen Lake (master site)	SP879400	100	1990
Birds	Calidris alba	Sanderling				Bird-Amber			Willen Lakes	SP877407	100	2016
Birds	Calidris alba	Sanderling				Bird-Amber			Willen Lakes, MK	SP880406	100	2008
Birds	Calidris alba	Sanderling				Bird-Amber			Willen, MK	SP880405	100	2006
Birds	Calidris alpina	Dunlin				Bird-Amber			Great Linford	SP855415	100	2016

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Birds	Calidris alpina	Dunlin				Bird-Amber			Willen Lake North	SP877407	100	2016
Birds	Calidris alpina	Dunlin				Bird-Amber			Willen Lakes	SP877407	100	2016
Birds	Calidris alpina	Dunlin				Bird-Amber			Willen Lakes, MK	SP880406	100	2008
Birds	Calidris alpina	Dunlin				Bird-Amber			Willen, MK	SP880405	100	2011
Birds	Calidris alpina	Dunlin				Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Calidris canutus	Knot				Bird-Amber			Willen Lake (master site)	SP879400	100	1990
Birds	Calidris temminckii	Temminck's Stint		WACA-Sch1_part1					Willen Lake (master site)	SP879400	100	1990
Birds	Calidris temminckii	Temminck's Stint		WACA-Sch1_part1					Willen Lakes, MK	SP880406	100	2010
Birds	Carduelis cabaret	Lesser Redpoll			England_NERC_S.41 & UKBAP-2007	Bird-Red			Broughton Grounds	SP910400	100	2015
Birds	Carduelis cabaret	Lesser Redpoll			England_NERC_S.41 & UKBAP-2007	Bird-Red			Great Linford	SP8541	1000	2014
Birds	Carduelis cabaret	Lesser Redpoll			England_NERC_S.41 & UKBAP-2007	Bird-Red			Kingston, Milton Keynes	SP905385	100	2013
Birds	Carduelis cabaret	Lesser Redpoll			England_NERC_S.41 & UKBAP-2007	Bird-Red			Lathbury	SP875455	100	2015
Birds	Carduelis cabaret	Lesser Redpoll			England_NERC_S.41 & UKBAP-2007	Bird-Red			Newport Pagnell	SP870430	100	2015
Birds	Carduelis cabaret	Lesser Redpoll			England_NERC_S.41 & UKBAP-2007	Bird-Red			Oakgrove, MK	SP8738	1000	2012
Birds	Carduelis cabaret	Lesser Redpoll			England_NERC_S.41 & UKBAP-2007	Bird-Red			Tongwell	SP869423	100	2013
Birds	Carduelis cabaret	Lesser Redpoll			England_NERC_S.41 & UKBAP-2007	Bird-Red			Tongwell, MK	SP869423	100	2010
Birds	Carduelis cabaret	Lesser Redpoll			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen Lake North	SP877407	100	2014
Birds	Carduelis cabaret	Lesser Redpoll			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen Lake South	SP877397	100	2016
Birds	Carduelis cabaret	Lesser Redpoll			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen, MK	SP880405	100	2010
Birds	Carduelis cannabina	Linnet				Bird-Red			Broughton Grounds	SP8939	1000	2007
Birds	Carduelis cannabina	Linnet				Bird-Red			Broughton Grounds	SP910400	100	2015
Birds	Carduelis cannabina	Linnet				Bird-Red			Broughton Grounds	SP9140	1000	2014
Birds	Carduelis cannabina	Linnet				Bird-Red			Broughton, MK	SP894396	100	2012
Birds	Carduelis cannabina	Linnet				Bird-Red			Campbell Park	SP865395	100	2015
Birds	Carduelis cannabina	Linnet				Bird-Red			Field west of Caldecote Farm, Newport Pagnell	SP875423	100	2001

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Birds	Carduelis cannabina	Linnet				Bird-Red			Lathbury	SP875455	100	2015
Birds	Carduelis cannabina	Linnet				Bird-Red			Lee Common	SP905405	100	2010
Birds	Carduelis cannabina	Linnet				Bird-Red			Newport Pagnell	SP870430	100	2016
Birds	Carduelis cannabina	Linnet				Bird-Red			Tongwell Lake	SP868423	100	1995
Birds	Carduelis cannabina	Linnet				Bird-Red			Whitsundoles Farm, Salford MK	SP91763990	10	2013
Birds	Carduelis flammaea	Mealy Redpoll				Bird-Amber			Hedges south of Tongwell	SP868414	100	2000
Birds	Carduelis flammaea	Mealy Redpoll				Bird-Amber			Tongwell Lake	SP868423	100	1995
Birds	Cettia cetti	Cetti's Warbler		WACA-Sch1_part1					Great Linford	SP8541	1000	2014
Birds	Cettia cetti	Cetti's Warbler		WACA-Sch1_part1					Great Linford	SP855415	100	2016
Birds	Cettia cetti	Cetti's Warbler		WACA-Sch1_part1					TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Cettia cetti	Cetti's Warbler		WACA-Sch1_part1					Tongwell Lake, MK	SP869423	100	2009
Birds	Cettia cetti	Cetti's Warbler		WACA-Sch1_part1					Tongwell, MK	SP869423	100	2010
Birds	Cettia cetti	Cetti's Warbler		WACA-Sch1_part1					Willen Lake North	SP8740	1000	2016
Birds	Cettia cetti	Cetti's Warbler		WACA-Sch1_part1					Willen Lake North	SP877407	100	2016
Birds	Cettia cetti	Cetti's Warbler		WACA-Sch1_part1					Willen Lake South	SP877397	100	2014
Birds	Cettia cetti	Cetti's Warbler		WACA-Sch1_part1					Willen Lakes	SP877407	100	2016
Birds	Cettia cetti	Cetti's Warbler		WACA-Sch1_part1					Willen Lakes, MK	SP877407	100	2011
Birds	Cettia cetti	Cetti's Warbler		WACA-Sch1_part1					Willen Lakes, MK	SP880406	100	2010
Birds	Cettia cetti	Cetti's Warbler		WACA-Sch1_part1					Willen, MK	SP880405	100	2009
Birds	Cettia cetti	Cetti's Warbler		WACA-Sch1_part1					Willen, MK	SP880406	100	2003
Birds	Charadrius dubius	Little Ringed Plover		WACA-Sch1_part1					Broughton Grounds	SP8939	1000	2008
Birds	Charadrius dubius	Little Ringed Plover		WACA-Sch1_part1					Broughton Grounds	SP910400	100	2009
Birds	Charadrius dubius	Little Ringed Plover		WACA-Sch1_part1					Lathbury	SP873450	100	2008
Birds	Charadrius dubius	Little Ringed Plover		WACA-Sch1_part1					Newport Pagnell	SP8743	1000	2012
Birds	Charadrius dubius	Little Ringed Plover		WACA-Sch1_part1					Willen Lake North	SP877407	100	2016

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Birds	Charadrius dubius	Little Ringed Plover		WACA-Sch1_part1					Willen Lakes	SP877407	100	2016
Birds	Charadrius dubius	Little Ringed Plover		WACA-Sch1_part1					Willen Lakes, MK	SP877407	100	2011
Birds	Charadrius dubius	Little Ringed Plover		WACA-Sch1_part1					Willen Lakes, MK	SP880406	100	2010
Birds	Charadrius dubius	Little Ringed Plover		WACA-Sch1_part1					Willen Road Excavations	SP873423	100	2014
Birds	Charadrius dubius	Little Ringed Plover		WACA-Sch1_part1					Willen, MK	SP880405	100	2011
Birds	Charadrius hiaticula	Ringed Plover				Bird-Red			Broughton Grounds	SP910400	100	2009
Birds	Charadrius hiaticula	Ringed Plover				Bird-Red			Newport Pagnell	SP8743	1000	2012
Birds	Charadrius hiaticula	Ringed Plover				Bird-Red			Willen Lake North	SP877407	100	2016
Birds	Charadrius hiaticula	Ringed Plover				Bird-Red			Willen Lakes	SP877407	100	2016
Birds	Charadrius hiaticula	Ringed Plover				Bird-Red			Willen Lakes, MK	SP877407	100	2011
Birds	Charadrius hiaticula	Ringed Plover				Bird-Red			Willen Lakes, MK	SP880406	100	2010
Birds	Charadrius hiaticula	Ringed Plover				Bird-Red			Willen Road Excavations	SP873423	100	2012
Birds	Charadrius hiaticula	Ringed Plover				Bird-Red			Willen, MK	SP880405	100	2005
Birds	Charadrius hiaticula	Ringed Plover				Bird-Red			Willen, MK	SP880406	100	2003
Birds	Chlidonias niger	Black Tern		WACA-Sch1_part1					Willen Lake South	SP877397	100	2016
Birds	Chlidonias niger	Black Tern		WACA-Sch1_part1					Willen Lakes	SP877407	100	2016
Birds	Chlidonias niger	Black Tern		WACA-Sch1_part1					Willen Lakes, MK	SP877407	100	2009
Birds	Chlidonias niger	Black Tern		WACA-Sch1_part1					Willen Lakes, MK	SP880406	100	2010
Birds	Chlidonias niger	Black Tern		WACA-Sch1_part1					Willen, MK	SP880405	100	2011
Birds	Chroicocephalus ridibundus	Black-headed Gull				Bird-Amber			Lee Common	SP905405	100	2010
Birds	Chroicocephalus ridibundus	Black-headed Gull				Bird-Amber			TETRAD SP84Q - Vague Site (SP879411)	SP879411	100	2010
Birds	Chroicocephalus ridibundus	Black-headed Gull				Bird-Amber			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Chroicocephalus ridibundus	Black-headed Gull				Bird-Amber			TETRAD SP84R - Vague Site (SP872432)	SP872432	100	2010
Birds	Chroicocephalus ridibundus	Black-headed Gull				Bird-Amber			TETRAD SP84W - Vague Site (SP876435)	SP876435	100	2010
Birds	Chroicocephalus ridibundus	Black-headed Gull				Bird-Amber			Tongwell Lake	SP867423	100	2016

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Birds	Chroicocephalus ridibundus	Black-headed Gull				Bird-Amber			Willen Lake North	SP877407	100	2016
Birds	Chroicocephalus ridibundus	Black-headed Gull				Bird-Amber			Willen Lake South	SP877397	100	2016
Birds	Chroicocephalus ridibundus	Black-headed Gull				Bird-Amber			Willen Lake, north basin	SP879404	100	2011
Birds	Chroicocephalus ridibundus	Black-headed Gull				Bird-Amber			Willen Lake, South Basin	SP878403	100	2011
Birds	Chroicocephalus ridibundus	Black-headed Gull				Bird-Amber			Willen Lakes	SP877407	100	2013
Birds	Chroicocephalus ridibundus	Black-headed Gull				Bird-Amber			Willen Lakes, MK	SP877407	100	2011
Birds	Chroicocephalus ridibundus	Black-headed Gull				Bird-Amber			Willen Lakes, MK	SP880406	100	2008
Birds	Chroicocephalus ridibundus	Black-headed Gull				Bird-Amber			Willen, MK	SP880405	100	2005
Birds	Chroicocephalus ridibundus	Black-headed Gull				Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Chroicocephalus ridibundus	Black-headed Gull				Bird-Amber			Woughton on the Green	SP875385	100	2011
Birds	Circus aeruginosus	Marsh Harrier				Bird-Amber			Broughton Grounds	SP8939	1000	2007
Birds	Circus aeruginosus	Marsh Harrier				Bird-Amber			Willen Lakes, MK	SP880406	100	2006
Birds	Circus aeruginosus	Marsh Harrier				Bird-Amber			Willen, MK	SP880405	100	2006
Birds	Circus cyaneus	Hen Harrier			England_NERC_S.41	Bird-Red			Broughton Grounds	SP8939	1000	2004
Birds	Columba oenas	Stock Dove				Bird-Amber			Broughton Grounds	SP9140	1000	2013
Birds	Columba oenas	Stock Dove				Bird-Amber			Great Linford	SP855415	100	2016
Birds	Columba oenas	Stock Dove				Bird-Amber			Lee Common	SP905405	100	2010
Birds	Columba oenas	Stock Dove				Bird-Amber			Oakgrove, MK	SP880387	100	2008
Birds	Columba oenas	Stock Dove				Bird-Amber			Roadside plantation H6 (Enmore Gate/Overgate)	SP867392	100	1996
Birds	Columba oenas	Stock Dove				Bird-Amber			Willen Lake North	SP877407	100	2015
Birds	Columba oenas	Stock Dove				Bird-Amber			Willen Lake South	SP877397	100	2013
Birds	Columba oenas	Stock Dove				Bird-Amber			Willen, MK	SP880405	100	2007
Birds	Cuculus canorus	Cuckoo			England_NERC_S.41 & UKBAP-2007	Bird-Red			Broughton Grounds	SP8939	1000	2004
Birds	Cuculus canorus	Cuckoo			England_NERC_S.41 & UKBAP-2007	Bird-Red			Cotton Valley Sewage Works	SP884406	100	2010
Birds	Cuculus canorus	Cuckoo			England_NERC_S.41 & UKBAP-2007	Bird-Red			Great Linford	SP855415	100	2015

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Birds	Cuculus canorus	Cuckoo			England_NERC_S.41 & UKBAP-2007	Bird-Red			Lathbury	SP875455	100	2016
Birds	Cuculus canorus	Cuckoo			England_NERC_S.41 & UKBAP-2007	Bird-Red			Lee Common	SP905405	100	2010
Birds	Cuculus canorus	Cuckoo			England_NERC_S.41 & UKBAP-2007	Bird-Red			Tongwell, MK	SP869423	100	2007
Birds	Cuculus canorus	Cuckoo			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen Lake North	SP877407	100	2013
Birds	Cygnus columbianus	Bewick's Swan		WACA-Sch1_part1	England_NERC_S.41	Bird-Amber			Lathbury	SP875455	100	2014
Birds	Cygnus columbianus	Bewick's Swan		WACA-Sch1_part1	England_NERC_S.41	Bird-Amber			Willen, MK	SP880405	100	2006
Birds	Cygnus cygnus	Whooper Swan		WACA-Sch1_part1		Bird-Amber			Lathbury	SP873450	100	2006
Birds	Cygnus olor	Mute Swan				Bird-Amber			Great Linford	SP855415	100	2011
Birds	Cygnus olor	Mute Swan				Bird-Amber			Lathbury	SP873450	100	2010
Birds	Cygnus olor	Mute Swan				Bird-Amber			Lathbury	SP875455	100	2014
Birds	Cygnus olor	Mute Swan				Bird-Amber			Medieval Moat & Fishponds, Milton Keynes	SP885392	100	1990
Birds	Cygnus olor	Mute Swan				Bird-Amber			Milton Keynes: Willen Lake: South	SP880400	100	2016
Birds	Cygnus olor	Mute Swan				Bird-Amber			Monkston Park	SP8838	1000	2012
Birds	Cygnus olor	Mute Swan				Bird-Amber			Newport Pagnell	SP870430	100	2015
Birds	Cygnus olor	Mute Swan				Bird-Amber			Newport Pagnell	SP8743	1000	2012
Birds	Cygnus olor	Mute Swan				Bird-Amber			Newport Pagnell GPs	SP870430	100	2011
Birds	Cygnus olor	Mute Swan				Bird-Amber			Newport Pagnell GPs	SP885445	100	2010
Birds	Cygnus olor	Mute Swan				Bird-Amber			TETRAD SP84Q - Vague Site (SP879411)	SP879411	100	2010
Birds	Cygnus olor	Mute Swan				Bird-Amber			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Cygnus olor	Mute Swan				Bird-Amber			TETRAD SP84V - Vague Site (SP880410)	SP880410	100	2010
Birds	Cygnus olor	Mute Swan				Bird-Amber			TETRAD SP84W - Vague Site (SP876435)	SP876435	100	2010
Birds	Cygnus olor	Mute Swan				Bird-Amber			Tongwell	SP869423	100	2015
Birds	Cygnus olor	Mute Swan				Bird-Amber			Tongwell Lake	SP867423	100	2016
Birds	Cygnus olor	Mute Swan				Bird-Amber			Tongwell Lake	SP868423	100	2000
Birds	Cygnus olor	Mute Swan				Bird-Amber			Tongwell Lake, MK	SP869423	100	2009

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Birds	Cygnus olor	Mute Swan				Bird-Amber			Tongwell, MK	SP869423	100	2009
Birds	Cygnus olor	Mute Swan				Bird-Amber			Willen Lake (master site)	SP879400	100	1998
Birds	Cygnus olor	Mute Swan				Bird-Amber			Willen Lake North	SP8740	1000	2016
Birds	Cygnus olor	Mute Swan				Bird-Amber			Willen Lake North	SP877407	100	2016
Birds	Cygnus olor	Mute Swan				Bird-Amber			Willen Lake South	SP877397	100	2016
Birds	Cygnus olor	Mute Swan				Bird-Amber			Willen Lake, north basin	SP879404	100	2011
Birds	Cygnus olor	Mute Swan				Bird-Amber			Willen Lake, South Basin	SP878403	100	2011
Birds	Cygnus olor	Mute Swan				Bird-Amber			Willen Lakes	SP877407	100	2014
Birds	Cygnus olor	Mute Swan				Bird-Amber			Willen Lakes, MK	SP877407	100	2011
Birds	Cygnus olor	Mute Swan				Bird-Amber			Willen Lakes, MK	SP880406	100	2010
Birds	Cygnus olor	Mute Swan				Bird-Amber			Willen, MK	SP880405	100	2004
Birds	Cygnus olor	Mute Swan				Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Cygnus olor	Mute Swan				Bird-Amber			Woughton on the Green	SP875385	100	2012
Birds	Delichon urbicum	House Martin				Bird-Amber			Farm Field, Broughton	SP893404	100	2002
Birds	Delichon urbicum	House Martin				Bird-Amber			Field west of Caldecote Farm, Newport Pagnell	SP875423	100	2001
Birds	Delichon urbicum	House Martin				Bird-Amber			Great Linford	SP8541	1000	2012
Birds	Delichon urbicum	House Martin				Bird-Amber			Lee Common	SP905405	100	2010
Birds	Delichon urbicum	House Martin				Bird-Amber			TETRAD SP84Q - Vague Site (SP879411)	SP879411	100	2010
Birds	Delichon urbicum	House Martin				Bird-Amber			TETRAD SP84V - Vague Site (SP880410)	SP880410	100	2010
Birds	Delichon urbicum	House Martin				Bird-Amber			Tongwell, MK	SP869423	100	2009
Birds	Delichon urbicum	House Martin				Bird-Amber			Willen Lake North	SP877407	100	2016
Birds	Delichon urbicum	House Martin				Bird-Amber			Willen Lake South	SP877397	100	2016
Birds	Delichon urbicum	House Martin				Bird-Amber			Willen Lakes	SP877407	100	2015
Birds	Delichon urbicum	House Martin				Bird-Amber			Willen Lakes, MK	SP877407	100	2011
Birds	Delichon urbicum	House Martin				Bird-Amber			Willen Lakes, MK	SP880406	100	2008

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Birds	Delichon urbicum	House Martin				Bird-Amber			Willen, MK	SP880405	100	2006
Birds	Delichon urbicum	House Martin				Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Delichon urbicum	House Martin				Bird-Amber			Woughton on the Green	SP875385	100	2012
Birds	Dendrocopos minor	Lesser Spotted Woodpecker			England_NERC_S.41	Bird-Red			Broughton Grounds	SP8939	1000	2002
Birds	Dendrocopos minor	Lesser Spotted Woodpecker			England_NERC_S.41	Bird-Red			Newfield Farm, Chicheley	SP905450	100	2013
Birds	Emberiza calandra	Corn Bunting			England_NERC_S.41 & UKBAP-2007	Bird-Red			Field west of Caldecote Farm, Newport Pagnell	SP875423	100	2001
Birds	Emberiza calandra	Corn Bunting			England_NERC_S.41 & UKBAP-2007	Bird-Red			Newport Pagnell Gravel Pits	SP885445	100	1999
Birds	Emberiza calandra	Corn Bunting			England_NERC_S.41 & UKBAP-2007	Bird-Red			Tongwell lakeside shrub beds	SP867421	100	2000
Birds	Emberiza citrinella	Yellowhammer			England_NERC_S.41 & UKBAP-2007	Bird-Red			Broughton Grounds	SP8939	1000	2002
Birds	Emberiza citrinella	Yellowhammer			England_NERC_S.41 & UKBAP-2007	Bird-Red			Broughton Grounds	SP910400	100	2011
Birds	Emberiza citrinella	Yellowhammer			England_NERC_S.41 & UKBAP-2007	Bird-Red			Broughton Grounds	SP9140	1000	2012
Birds	Emberiza citrinella	Yellowhammer			England_NERC_S.41 & UKBAP-2007	Bird-Red			Broughton, MK	SP894396	100	2015
Birds	Emberiza citrinella	Yellowhammer			England_NERC_S.41 & UKBAP-2007	Bird-Red			Lee Common	SP905405	100	2010
Birds	Emberiza citrinella	Yellowhammer			England_NERC_S.41 & UKBAP-2007	Bird-Red			Newport Pagnell	SP870430	100	2015
Birds	Emberiza citrinella	Yellowhammer			England_NERC_S.41 & UKBAP-2007	Bird-Red			Newport Pagnell	SP8743	1000	2013
Birds	Emberiza citrinella	Yellowhammer			England_NERC_S.41 & UKBAP-2007	Bird-Red			tickfordfields farm, Newport Pagnell	SP890437	100	2000
Birds	Emberiza schoeniclus	Reed Bunting			England_NERC_S.41 & UKBAP-2007	Bird-Amber			Broughton Grounds	SP890390	100	2003
Birds	Emberiza schoeniclus	Reed Bunting			England_NERC_S.41 & UKBAP-2007	Bird-Amber			Broughton Grounds	SP8939	1000	2005
Birds	Emberiza schoeniclus	Reed Bunting			England_NERC_S.41 & UKBAP-2007	Bird-Amber			Monkston Park	SP8838	1000	2012
Birds	Emberiza schoeniclus	Reed Bunting			England_NERC_S.41 & UKBAP-2007	Bird-Amber			Newport Pagnell	SP870430	100	2016
Birds	Emberiza schoeniclus	Reed Bunting			England_NERC_S.41 & UKBAP-2007	Bird-Amber			Newport Pagnell	SP8743	1000	2012
Birds	Emberiza schoeniclus	Reed Bunting			England_NERC_S.41 & UKBAP-2007	Bird-Amber			Newport Pagnell Gravel Pits	SP885445	100	1999
Birds	Emberiza schoeniclus	Reed Bunting			England_NERC_S.41 & UKBAP-2007	Bird-Amber			TETRAD SP84Q - Vague Site (SP876406)	SP876406	100	2010
Birds	Emberiza schoeniclus	Reed Bunting			England_NERC_S.41 & UKBAP-2007	Bird-Amber			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Emberiza schoeniclus	Reed Bunting			England_NERC_S.41 & UKBAP-2007	Bird-Amber			Tongwell	SP869423	100	2013

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Birds	Emberiza schoeniclus	Reed Bunting			England_NERC_S.41 & UKBAP-2007	Bird-Amber			Tongwell Lake	SP867423	100	2016
Birds	Emberiza schoeniclus	Reed Bunting			England_NERC_S.41 & UKBAP-2007	Bird-Amber			Tongwell Lake	SP868423	100	1995
Birds	Emberiza schoeniclus	Reed Bunting			England_NERC_S.41 & UKBAP-2007	Bird-Amber			Tongwell lakeside shrub beds	SP867421	100	2000
Birds	Emberiza schoeniclus	Reed Bunting			England_NERC_S.41 & UKBAP-2007	Bird-Amber			Tongwell, MK	SP869423	100	2008
Birds	Emberiza schoeniclus	Reed Bunting			England_NERC_S.41 & UKBAP-2007	Bird-Amber			Whitsundoles Farm, Salford MK	SP91763990	10	2013
Birds	Emberiza schoeniclus	Reed Bunting			England_NERC_S.41 & UKBAP-2007	Bird-Amber			Willen Lake North	SP877407	100	2016
Birds	Emberiza schoeniclus	Reed Bunting			England_NERC_S.41 & UKBAP-2007	Bird-Amber			Willen Lake, north basin	SP879404	100	2000
Birds	Emberiza schoeniclus	Reed Bunting			England_NERC_S.41 & UKBAP-2007	Bird-Amber			Willen Lakes, MK	SP877407	100	2011
Birds	Emberiza schoeniclus	Reed Bunting			England_NERC_S.41 & UKBAP-2007	Bird-Amber			Willen Lakes, MK	SP880406	100	2010
Birds	Emberiza schoeniclus	Reed Bunting			England_NERC_S.41 & UKBAP-2007	Bird-Amber			Willen, MK	SP880405	100	2007
Birds	Emberiza schoeniclus	Reed Bunting			England_NERC_S.41 & UKBAP-2007	Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Falco columbarius	Merlin		WACA-Sch1_part1		Bird-Red			Broughton Grounds	SP8939	1000	2008
Birds	Falco columbarius	Merlin		WACA-Sch1_part1		Bird-Red			Great Linford	SP855415	100	2015
Birds	Falco columbarius	Merlin		WACA-Sch1_part1		Bird-Red			Tongwell Lake, MK	SP869423	100	2005
Birds	Falco peregrinus	Peregrine		WACA-Sch1_part1					Broughton Grounds	SP9140	1000	2013
Birds	Falco peregrinus	Peregrine		WACA-Sch1_part1					Lathbury	SP873450	100	2007
Birds	Falco peregrinus	Peregrine		WACA-Sch1_part1					Lathbury	SP875455	100	2015
Birds	Falco peregrinus	Peregrine		WACA-Sch1_part1					Lee Common	SP905405	100	2008
Birds	Falco peregrinus	Peregrine		WACA-Sch1_part1					Newport Pagnell	SP870430	100	2015
Birds	Falco peregrinus	Peregrine		WACA-Sch1_part1					Tongwell Lake	SP867423	100	2013
Birds	Falco peregrinus	Peregrine		WACA-Sch1_part1					Willen Lakes, MK	SP880406	100	2008
Birds	Falco subbuteo	Hobby		WACA-Sch1_part1					Blakelands, MK	SP865424	100	2008
Birds	Falco subbuteo	Hobby		WACA-Sch1_part1					Broughton Grounds	SP8939	1000	2006
Birds	Falco subbuteo	Hobby		WACA-Sch1_part1					Broughton Grounds	SP910400	100	2015
Birds	Falco subbuteo	Hobby		WACA-Sch1_part1					Broughton Grounds	SP9140	1000	2014

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Birds	Falco subbuteo	Hobby		WACA-Sch1_part1					Broughton, MK	SP894396	100	2016
Birds	Falco subbuteo	Hobby		WACA-Sch1_part1					Campbell Park	SP865395	100	2015
Birds	Falco subbuteo	Hobby		WACA-Sch1_part1					Great Linford	SP8541	1000	2014
Birds	Falco subbuteo	Hobby		WACA-Sch1_part1					Lathbury	SP873450	100	2010
Birds	Falco subbuteo	Hobby		WACA-Sch1_part1					Lathbury	SP875455	100	2016
Birds	Falco subbuteo	Hobby		WACA-Sch1_part1					Lee Common	SP905405	100	2008
Birds	Falco subbuteo	Hobby		WACA-Sch1_part1					Newport Pagnell	SP870430	100	2015
Birds	Falco subbuteo	Hobby		WACA-Sch1_part1					Newport Pagnell	SP8743	1000	2013
Birds	Falco subbuteo	Hobby		WACA-Sch1_part1					Tongwell Lake	SP867423	100	2015
Birds	Falco subbuteo	Hobby		WACA-Sch1_part1					Tongwell Lake, MK	SP869423	100	2004
Birds	Falco subbuteo	Hobby		WACA-Sch1_part1					Tongwell, MK	SP869423	100	2008
Birds	Falco subbuteo	Hobby		WACA-Sch1_part1					Willen Lake North	SP877407	100	2015
Birds	Falco subbuteo	Hobby		WACA-Sch1_part1					Willen Lake South	SP877397	100	2016
Birds	Falco subbuteo	Hobby		WACA-Sch1_part1					Willen Lakes	SP877407	100	2013
Birds	Falco subbuteo	Hobby		WACA-Sch1_part1					Willen Lakes, MK	SP877407	100	2011
Birds	Falco subbuteo	Hobby		WACA-Sch1_part1					Willen Lakes, MK	SP880406	100	2008
Birds	Falco subbuteo	Hobby		WACA-Sch1_part1					Willen, MK	SP880405	100	2007
Birds	Falco subbuteo	Hobby		WACA-Sch1_part1					Willen, MK	SP880406	100	2003
Birds	Falco subbuteo	Hobby		WACA-Sch1_part1					Woughton on the Green	SP875385	100	2012
Birds	Falco tinnunculus	Kestrel				Bird-Amber			Broughton Grounds	SP8939	1000	2007
Birds	Falco tinnunculus	Kestrel				Bird-Amber			Broughton Grounds	SP910400	100	2016
Birds	Falco tinnunculus	Kestrel				Bird-Amber			Field west of Caldecote Farm, Newport Pagnell	SP875423	100	2001
Birds	Falco tinnunculus	Kestrel				Bird-Amber			Great Linford	SP855415	100	2015
Birds	Falco tinnunculus	Kestrel				Bird-Amber			Lee Common	SP905405	100	2010
Birds	Falco tinnunculus	Kestrel				Bird-Amber			Newfield Farm, Chicheley	SP905450	100	2014

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Birds	Falco tinnunculus	Kestrel				Bird-Amber			Newport Pagnell	SP870430	100	2016
Birds	Falco tinnunculus	Kestrel				Bird-Amber			Newport Pagnell	SP8743	1000	2014
Birds	Falco tinnunculus	Kestrel				Bird-Amber			Newport Pagnell Gravel Pits	SP885445	100	1999
Birds	Falco tinnunculus	Kestrel				Bird-Amber			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Falco tinnunculus	Kestrel				Bird-Amber			TETRAD SP84R - Vague Site (SP872432)	SP872432	100	2010
Birds	Falco tinnunculus	Kestrel				Bird-Amber			TETRAD SP84V - Vague Site (SP883403)	SP883403	100	2010
Birds	Falco tinnunculus	Kestrel				Bird-Amber			TETRAD SP84W - Vague Site (SP884436)	SP884436	100	2010
Birds	Falco tinnunculus	Kestrel				Bird-Amber			tickfordfields farm, Newport Pagnell	SP890437	100	2000
Birds	Falco tinnunculus	Kestrel				Bird-Amber			Tongwell Lake	SP867423	100	2016
Birds	Falco tinnunculus	Kestrel				Bird-Amber			Willen Lake North	SP877407	100	2013
Birds	Falco tinnunculus	Kestrel				Bird-Amber			Willen Lakes, MK	SP880406	100	2010
Birds	Ficedula hypoleuca	Pied Flycatcher				Bird-Red			Campbell Park, MK	SP865395	100	2003
Birds	Fringilla montifringilla	Brambling		WACA-Sch1_part1					Broughton Grounds	SP8939	1000	2005
Birds	Fringilla montifringilla	Brambling		WACA-Sch1_part1					Giffard Park, MK	SP857427	100	2009
Birds	Gallinago gallinago	Snipe				Bird-Amber			Atterbury, MK	SP895395	100	2006
Birds	Gallinago gallinago	Snipe				Bird-Amber			Broughton Grounds	SP890390	100	2003
Birds	Gallinago gallinago	Snipe				Bird-Amber			Broughton Grounds	SP8939	1000	2004
Birds	Gallinago gallinago	Snipe				Bird-Amber			Broughton Grounds	SP9140	1000	2014
Birds	Gallinago gallinago	Snipe				Bird-Amber			Lathbury	SP873450	100	2008
Birds	Gallinago gallinago	Snipe				Bird-Amber			Newport Pagnell Gravel Pits	SP885445	100	1999
Birds	Gallinago gallinago	Snipe				Bird-Amber			Oakgrove, MK	SP880387	100	2008
Birds	Gallinago gallinago	Snipe				Bird-Amber			Pond, Oakgrove	SP878388	100	2000
Birds	Gallinago gallinago	Snipe				Bird-Amber			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Gallinago gallinago	Snipe				Bird-Amber			TETRAD SP84V - Vague Site (SP880410)	SP880410	100	2010
Birds	Gallinago gallinago	Snipe				Bird-Amber			Tongwell	SP869423	100	2013

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Birds	Gallinago gallinago	Snipe				Bird-Amber			Tongwell Lake	SP867423	100	2014
Birds	Gallinago gallinago	Snipe				Bird-Amber			Tongwell Lake	SP868423	100	2000
Birds	Gallinago gallinago	Snipe				Bird-Amber			Tongwell Lake, MK	SP869423	100	2003
Birds	Gallinago gallinago	Snipe				Bird-Amber			Tongwell, MK	SP869423	100	2009
Birds	Gallinago gallinago	Snipe				Bird-Amber			Willen Lake (master site)	SP879400	100	2000
Birds	Gallinago gallinago	Snipe				Bird-Amber			Willen Lake North	SP8740	1000	2016
Birds	Gallinago gallinago	Snipe				Bird-Amber			Willen Lake North	SP877407	100	2016
Birds	Gallinago gallinago	Snipe				Bird-Amber			Willen Lake South	SP877397	100	2015
Birds	Gallinago gallinago	Snipe				Bird-Amber			Willen Lakes	SP877407	100	2016
Birds	Gallinago gallinago	Snipe				Bird-Amber			Willen Lakes, MK	SP877407	100	2011
Birds	Gallinago gallinago	Snipe				Bird-Amber			Willen Lakes, MK	SP880406	100	2010
Birds	Gallinago gallinago	Snipe				Bird-Amber			Willen Road Excavations	SP873423	100	2013
Birds	Gallinago gallinago	Snipe				Bird-Amber			Willen, MK	SP880405	100	2011
Birds	Gallinago gallinago	Snipe				Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Haematopus ostralegus	Oystercatcher				Bird-Amber			Great Linford	SP8541	1000	2014
Birds	Haematopus ostralegus	Oystercatcher				Bird-Amber			Great Linford	SP855415	100	2016
Birds	Haematopus ostralegus	Oystercatcher				Bird-Amber			Lathbury	SP873450	100	2008
Birds	Haematopus ostralegus	Oystercatcher				Bird-Amber			Newport Pagnell	SP8743	1000	2014
Birds	Haematopus ostralegus	Oystercatcher				Bird-Amber			Tongwell	SP869423	100	2016
Birds	Haematopus ostralegus	Oystercatcher				Bird-Amber			Tongwell Lake	SP867423	100	2015
Birds	Haematopus ostralegus	Oystercatcher				Bird-Amber			Willen Lake North	SP877407	100	2016
Birds	Haematopus ostralegus	Oystercatcher				Bird-Amber			Willen Lake South	SP877397	100	2016
Birds	Haematopus ostralegus	Oystercatcher				Bird-Amber			Willen Lakes	SP877407	100	2016
Birds	Haematopus ostralegus	Oystercatcher				Bird-Amber			Willen Lakes, MK	SP877407	100	2011
Birds	Haematopus ostralegus	Oystercatcher				Bird-Amber			Willen Lakes, MK	SP880406	100	2010

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Birds	Haematopus ostralegus	Oystercatcher				Bird-Amber			Willen Road Gravel Pits	SP879423	100	2011
Birds	Haematopus ostralegus	Oystercatcher				Bird-Amber			Willen, MK	SP880405	100	2010
Birds	Haematopus ostralegus	Oystercatcher				Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Haematopus ostralegus	Oystercatcher				Bird-Amber			Woughton on the Green	SP875385	100	2012
Birds	Hydrocoloeus minutus	Little Gull		WACA-Sch1_part1					Willen Lake North	SP877407	100	2014
Birds	Hydrocoloeus minutus	Little Gull		WACA-Sch1_part1					Willen Lake South	SP877397	100	2015
Birds	Hydrocoloeus minutus	Little Gull		WACA-Sch1_part1					Willen Lakes	SP877407	100	2013
Birds	Hydrocoloeus minutus	Little Gull		WACA-Sch1_part1					Willen Lakes, MK	SP877407	100	2009
Birds	Hydrocoloeus minutus	Little Gull		WACA-Sch1_part1					Willen Lakes, MK	SP880406	100	2008
Birds	Hydrocoloeus minutus	Little Gull		WACA-Sch1_part1					Willen, MK	SP880405	100	2007
Birds	Hydrocoloeus minutus	Little Gull		WACA-Sch1_part1					Willen, MK	SP880406	100	2003
Birds	Jynx torquilla	Wryneck		WACA-Sch1_part1	UKBAP-2007				Lathbury	SP875455	100	2009
Birds	Larus argentatus	Herring Gull			England_NERC_S.41	Bird-Red			TETRAD SP84R - Vague Site (SP858425)	SP858425	100	2010
Birds	Larus argentatus	Herring Gull			England_NERC_S.41	Bird-Red			Tongwell Lake	SP867423	100	2016
Birds	Larus argentatus	Herring Gull			England_NERC_S.41	Bird-Red			Willen Lake North	SP877407	100	2016
Birds	Larus argentatus	Herring Gull			England_NERC_S.41	Bird-Red			Willen Lake South	SP877397	100	2014
Birds	Larus argentatus	Herring Gull			England_NERC_S.41	Bird-Red			Willen Lakes	SP877407	100	2013
Birds	Larus argentatus	Herring Gull			England_NERC_S.41	Bird-Red			Willen Lakes, MK	SP877407	100	2011
Birds	Larus argentatus	Herring Gull			England_NERC_S.41	Bird-Red			Willen Lakes, MK	SP880406	100	2008
Birds	Larus argentatus	Herring Gull			England_NERC_S.41	Bird-Red			Willen, MK	SP880405	100	2005
Birds	Larus argentatus	Herring Gull			England_NERC_S.41	Bird-Red			Willen, MK	SP880406	100	2003
Birds	Larus cachinnans	Caspian Gull				Bird-Amber			Willen Lake South	SP877397	100	2016
Birds	Larus cachinnans	Caspian Gull				Bird-Amber			Willen Lakes	SP877407	100	2012
Birds	Larus cachinnans	Caspian Gull				Bird-Amber			Willen Lakes, MK	SP877407	100	2009
Birds	Larus cachinnans	Caspian Gull				Bird-Amber			Willen Lakes, MK	SP880406	100	2008

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Birds	Larus cachinnans	Caspian Gull				Bird-Amber			Willen, MK	SP880405	100	2006
Birds	Larus canus	Common Gull				Bird-Amber			Great Linford	SP8541	1000	2013
Birds	Larus canus	Common Gull				Bird-Amber			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Larus canus	Common Gull				Bird-Amber			TETRAD SP84V - Vague Site (SP880410)	SP880410	100	2010
Birds	Larus canus	Common Gull				Bird-Amber			Tongwell Lake	SP867423	100	2016
Birds	Larus canus	Common Gull				Bird-Amber			Tongwell, MK	SP869423	100	2008
Birds	Larus canus	Common Gull				Bird-Amber			Willen Lake North	SP877407	100	2016
Birds	Larus canus	Common Gull				Bird-Amber			Willen Lake South	SP877397	100	2016
Birds	Larus canus	Common Gull				Bird-Amber			Willen Lakes	SP877407	100	2013
Birds	Larus canus	Common Gull				Bird-Amber			Willen Lakes, MK	SP877407	100	2011
Birds	Larus canus	Common Gull				Bird-Amber			Willen Lakes, MK	SP880406	100	2010
Birds	Larus canus	Common Gull				Bird-Amber			Willen, MK	SP880405	100	2006
Birds	Larus canus	Common Gull				Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Larus fuscus	Lesser Black-backed Gull				Bird-Amber			Broughton Grounds	SP8939	1000	2005
Birds	Larus fuscus	Lesser Black-backed Gull				Bird-Amber			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Larus fuscus	Lesser Black-backed Gull				Bird-Amber			TETRAD SP84V - Vague Site (SP880410)	SP880410	100	2010
Birds	Larus fuscus	Lesser Black-backed Gull				Bird-Amber			Tongwell Lake	SP867423	100	2016
Birds	Larus fuscus	Lesser Black-backed Gull				Bird-Amber			Willen Lake North	SP877407	100	2016
Birds	Larus fuscus	Lesser Black-backed Gull				Bird-Amber			Willen Lake South	SP877397	100	2016
Birds	Larus fuscus	Lesser Black-backed Gull				Bird-Amber			Willen Lakes	SP877407	100	2013
Birds	Larus fuscus	Lesser Black-backed Gull				Bird-Amber			Willen Lakes, MK	SP877407	100	2009
Birds	Larus fuscus	Lesser Black-backed Gull				Bird-Amber			Willen Lakes, MK	SP880406	100	2008
Birds	Larus fuscus	Lesser Black-backed Gull				Bird-Amber			Willen, MK	SP880405	100	2006
Birds	Larus fuscus	Lesser Black-backed Gull				Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Larus glaucoides	Iceland Gull				Bird-Amber			Willen Lake North	SP877407	100	2014

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Birds	Larus glaucoides	Iceland Gull				Bird-Amber			Willen Lakes, MK	SP877407	100	2009
Birds	Larus glaucoides	Iceland Gull				Bird-Amber			Willen Lakes, MK	SP880406	100	2008
Birds	Larus glaucoides	Iceland Gull				Bird-Amber			Willen, MK	SP880405	100	2006
Birds	Larus hyperboreus	Glaucous Gull				Bird-Amber			Willen Lakes, MK	SP880406	100	2008
Birds	Larus marinus	Great Black-backed Gull				Bird-Amber			Broughton Grounds	SP8939	1000	2008
Birds	Larus marinus	Great Black-backed Gull				Bird-Amber			Willen Lake North	SP877407	100	2015
Birds	Larus marinus	Great Black-backed Gull				Bird-Amber			Willen Lake South	SP877397	100	2016
Birds	Larus marinus	Great Black-backed Gull				Bird-Amber			Willen Lakes	SP877407	100	2015
Birds	Larus marinus	Great Black-backed Gull				Bird-Amber			Willen Lakes, MK	SP877407	100	2009
Birds	Larus marinus	Great Black-backed Gull				Bird-Amber			Willen Lakes, MK	SP880406	100	2008
Birds	Larus marinus	Great Black-backed Gull				Bird-Amber			Willen, MK	SP880405	100	2009
Birds	Larus marinus	Great Black-backed Gull				Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Larus melanocephalus	Mediterranean Gull		WACA-Sch1_part1		Bird-Amber			Willen Lake (master site)	SP879400	100	2000
Birds	Larus melanocephalus	Mediterranean Gull		WACA-Sch1_part1		Bird-Amber			Willen Lake South	SP877397	100	2013
Birds	Larus melanocephalus	Mediterranean Gull		WACA-Sch1_part1		Bird-Amber			Willen Lakes, MK	SP880406	100	2008
Birds	Larus melanocephalus	Mediterranean Gull		WACA-Sch1_part1		Bird-Amber			Willen, MK	SP880405	100	2006
Birds	Larus melanocephalus	Mediterranean Gull		WACA-Sch1_part1		Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Larus michahellis	Yellow-legged Gull				Bird-Amber			Broughton Grounds	SP890390	100	2003
Birds	Larus michahellis	Yellow-legged Gull				Bird-Amber			Willen Lake (master site)	SP879400	100	2000
Birds	Larus michahellis	Yellow-legged Gull				Bird-Amber			Willen Lake North	SP877407	100	2013
Birds	Larus michahellis	Yellow-legged Gull				Bird-Amber			Willen Lake South	SP877397	100	2016
Birds	Larus michahellis	Yellow-legged Gull				Bird-Amber			Willen Lakes	SP877407	100	2013
Birds	Larus michahellis	Yellow-legged Gull				Bird-Amber			Willen Lakes, MK	SP877407	100	2009
Birds	Larus michahellis	Yellow-legged Gull				Bird-Amber			Willen Lakes, MK	SP880406	100	2008
Birds	Larus michahellis	Yellow-legged Gull				Bird-Amber			Willen, MK	SP880405	100	2008

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Birds	Larus michahellis	Yellow-legged Gull				Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Limosa lapponica	Bar-tailed Godwit				Bird-Amber			Broughton Grounds	SP8939	1000	2007
Birds	Limosa lapponica	Bar-tailed Godwit				Bird-Amber			Willen Lakes, MK	SP880406	100	2004
Birds	Limosa limosa	Black-tailed Godwit		WACA-Sch1_part1	England_NERC_S.41	Bird-Red			TETRAD SP84R - Vague Site (SP858425)	SP858425	100	2010
Birds	Limosa limosa	Black-tailed Godwit		WACA-Sch1_part1	England_NERC_S.41	Bird-Red			Willen Lake North	SP877407	100	2015
Birds	Limosa limosa	Black-tailed Godwit		WACA-Sch1_part1	England_NERC_S.41	Bird-Red			Willen Lakes	SP877407	100	2013
Birds	Limosa limosa	Black-tailed Godwit		WACA-Sch1_part1	England_NERC_S.41	Bird-Red			Willen Lakes, MK	SP877407	100	2009
Birds	Limosa limosa	Black-tailed Godwit		WACA-Sch1_part1	England_NERC_S.41	Bird-Red			Willen Lakes, MK	SP880406	100	2010
Birds	Limosa limosa	Black-tailed Godwit		WACA-Sch1_part1	England_NERC_S.41	Bird-Red			Willen, MK	SP880405	100	2002
Birds	Limosa limosa	Black-tailed Godwit		WACA-Sch1_part1	England_NERC_S.41	Bird-Red			Willen, MK	SP880406	100	2003
Birds	Locustella naevia	Grasshopper Warbler			England_NERC_S.41 & UKBAP-2007	Bird-Red			Atterbury, MK	SP892400	100	2005
Birds	Locustella naevia	Grasshopper Warbler			England_NERC_S.41 & UKBAP-2007	Bird-Red			Atterbury, MK	SP895395	100	2007
Birds	Locustella naevia	Grasshopper Warbler			England_NERC_S.41 & UKBAP-2007	Bird-Red			Broughton Grounds	SP890390	100	2003
Birds	Locustella naevia	Grasshopper Warbler			England_NERC_S.41 & UKBAP-2007	Bird-Red			Broughton Grounds	SP8939	1000	2005
Birds	Luscinia megarhynchos	Nightingale				Bird-Red			Campbell Park, MK	SP865395	100	1991
Birds	Melanitta fusca	Velvet Scoter		WACA-Sch1_part1		Bird-Red			Willen Lakes, MK	SP880406	100	2006
Birds	Melanitta nigra	Common Scoter		WACA-Sch1_part1	England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen Lake South	SP877397	100	2016
Birds	Melanitta nigra	Common Scoter		WACA-Sch1_part1	England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen Lakes	SP877407	100	2016
Birds	Melanitta nigra	Common Scoter		WACA-Sch1_part1	England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen Lakes, MK	SP880406	100	2008
Birds	Melanitta nigra	Common Scoter		WACA-Sch1_part1	England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen, MK	SP880405	100	2006
Birds	Mergellus albellus	Smew				Bird-Amber			Tongwell	SP869423	100	2012
Birds	Mergellus albellus	Smew				Bird-Amber			Tongwell Lake	SP867423	100	2002
Birds	Mergellus albellus	Smew				Bird-Amber			Tongwell Lake	SP868423	100	2000
Birds	Mergellus albellus	Smew				Bird-Amber			Willen Lake (master site)	SP879400	100	2000
Birds	Mergellus albellus	Smew				Bird-Amber			Willen Lake North	SP877407	100	2013

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Birds	Mergellus albellus	Smew				Bird-Amber			Willen Lakes	SP877407	100	2013
Birds	Mergellus albellus	Smew				Bird-Amber			Willen Lakes, MK	SP877407	100	2009
Birds	Mergellus albellus	Smew				Bird-Amber			Willen Lakes, MK	SP880406	100	2010
Birds	Milvus milvus	Red Kite		WACA-Sch1_part1					Broughton Grounds	SP8939	1000	2006
Birds	Milvus milvus	Red Kite		WACA-Sch1_part1					Broughton, MK	SP894396	100	2016
Birds	Milvus milvus	Red Kite		WACA-Sch1_part1					Campbell Park	SP865395	100	2012
Birds	Milvus milvus	Red Kite		WACA-Sch1_part1					Garden, London Road, Newport Pagnell	SP886430	100	2004
Birds	Milvus milvus	Red Kite		WACA-Sch1_part1					Lathbury	SP873450	100	2007
Birds	Milvus milvus	Red Kite		WACA-Sch1_part1					Lathbury	SP875455	100	2013
Birds	Milvus milvus	Red Kite		WACA-Sch1_part1					Lee Common	SP905405	100	2010
Birds	Milvus milvus	Red Kite		WACA-Sch1_part1					Newfield Farm, Chicheley	SP905450	100	2013
Birds	Milvus milvus	Red Kite		WACA-Sch1_part1					Newport Pagnell	SP870430	100	2016
Birds	Milvus milvus	Red Kite		WACA-Sch1_part1					Willen Lake North	SP877407	100	2015
Birds	Milvus milvus	Red Kite		WACA-Sch1_part1					Willen Lake South	SP877397	100	2013
Birds	Milvus milvus	Red Kite		WACA-Sch1_part1					Willen Lakes	SP877407	100	2016
Birds	Milvus milvus	Red Kite		WACA-Sch1_part1					Willen Lakes, MK	SP877407	100	2009
Birds	Milvus milvus	Red Kite		WACA-Sch1_part1					Willen Lakes, MK	SP880406	100	2005
Birds	Morus bassanus	Gannet				Bird-Amber			Newport Pagnell, Lakes Lane	SP867440	100	2010
Birds	Morus bassanus	Gannet				Bird-Amber			Willen	SP8841	1000	2002
Birds	Motacilla cinerea	Grey Wagtail				Bird-Red			Broughton Grounds	SP9140	1000	2013
Birds	Motacilla cinerea	Grey Wagtail				Bird-Red			Great Linford	SP855415	100	2010
Birds	Motacilla cinerea	Grey Wagtail				Bird-Red			Lathbury	SP873450	100	2007
Birds	Motacilla cinerea	Grey Wagtail				Bird-Red			Lee Common	SP905405	100	2008
Birds	Motacilla cinerea	Grey Wagtail				Bird-Red			Newport Pagnell Gravel Pits	SP885445	100	2000
Birds	Motacilla cinerea	Grey Wagtail				Bird-Red			Oakgrove, MK	SP880387	100	2008

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Birds	Motacilla cinerea	Grey Wagtail				Bird-Red			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Motacilla cinerea	Grey Wagtail				Bird-Red			Tongwell	SP869423	100	2016
Birds	Motacilla cinerea	Grey Wagtail				Bird-Red			Tongwell Lake	SP867423	100	2016
Birds	Motacilla cinerea	Grey Wagtail				Bird-Red			Tongwell Lake	SP868423	100	1995
Birds	Motacilla cinerea	Grey Wagtail				Bird-Red			Tongwell Lake	SP869423	100	2006
Birds	Motacilla cinerea	Grey Wagtail				Bird-Red			Tongwell Lake, MK	SP869423	100	2009
Birds	Motacilla cinerea	Grey Wagtail				Bird-Red			Tongwell, MK	SP869423	100	2010
Birds	Motacilla cinerea	Grey Wagtail				Bird-Red			Willen Lake East (Weir)	SP882407	100	2016
Birds	Motacilla cinerea	Grey Wagtail				Bird-Red			Willen Lake East (Wier)	SP882407	100	2013
Birds	Motacilla cinerea	Grey Wagtail				Bird-Red			Willen Lake North	SP8740	1000	2016
Birds	Motacilla cinerea	Grey Wagtail				Bird-Red			Willen Lake North	SP877407	100	2016
Birds	Motacilla cinerea	Grey Wagtail				Bird-Red			Willen Lake South	SP877397	100	2016
Birds	Motacilla cinerea	Grey Wagtail				Bird-Red			Willen Lakes	SP877407	100	2016
Birds	Motacilla cinerea	Grey Wagtail				Bird-Red			Willen Lakes, MK	SP877407	100	2009
Birds	Motacilla cinerea	Grey Wagtail				Bird-Red			Willen Lakes, MK	SP880406	100	2010
Birds	Motacilla cinerea	Grey Wagtail				Bird-Red			Willen Spinney	SP874413	100	2000
Birds	Motacilla cinerea	Grey Wagtail				Bird-Red			Willen, MK	SP880405	100	2010
Birds	Motacilla cinerea	Grey Wagtail				Bird-Red			Willen, MK	SP880406	100	2003
Birds	Motacilla cinerea	Grey Wagtail				Bird-Red			Woughton on the Green	SP875385	100	2014
Birds	Motacilla flava	Yellow Wagtail			England_NERC_S.41	Bird-Red			Lathbury	SP875455	100	2016
Birds	Motacilla flava	Yellow Wagtail			England_NERC_S.41	Bird-Red			Newport Pagnell Gravel Pits	SP885445	100	1999
Birds	Motacilla flava	Yellow Wagtail			England_NERC_S.41	Bird-Red			Willen Lake South	SP877397	100	2014
Birds	Motacilla flava flavissima	Yellow Wagtail			England_NERC_S.41 & UKBAP-2007	Bird-Red			Broughton Grounds	SP8939	1000	2008
Birds	Motacilla flava flavissima	Yellow Wagtail			England_NERC_S.41 & UKBAP-2007	Bird-Red			Lathbury	SP875455	100	2009
Birds	Motacilla flava flavissima	Yellow Wagtail			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen Lakes, MK	SP880406	100	2006

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Birds	Motacilla flava flavissima	Yellow Wagtail			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen, MK	SP880405	100	2006
Birds	Motacilla flava flavissima	Yellow Wagtail			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen, MK	SP880406	100	2003
Birds	Muscicapa striata	Spotted Flycatcher			England_NERC_S.41 & UKBAP-2007	Bird-Red			Broughton Grounds	SP910400	100	2009
Birds	Muscicapa striata	Spotted Flycatcher			England_NERC_S.41 & UKBAP-2007	Bird-Red			Broughton Grounds	SP9140	1000	2014
Birds	Muscicapa striata	Spotted Flycatcher			England_NERC_S.41 & UKBAP-2007	Bird-Red			Campbell Park, MK	SP865395	100	2006
Birds	Muscicapa striata	Spotted Flycatcher			England_NERC_S.41 & UKBAP-2007	Bird-Red			Lathbury	SP873450	100	2010
Birds	Muscicapa striata	Spotted Flycatcher			England_NERC_S.41 & UKBAP-2007	Bird-Red			Lathbury	SP875455	100	2012
Birds	Muscicapa striata	Spotted Flycatcher			England_NERC_S.41 & UKBAP-2007	Bird-Red			Lee Common	SP905405	100	2010
Birds	Muscicapa striata	Spotted Flycatcher			England_NERC_S.41 & UKBAP-2007	Bird-Red			Roadside plantation H6 (canal/Paterson Lane)	SP871393	100	1996
Birds	Muscicapa striata	Spotted Flycatcher			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen Lakes, MK	SP880406	100	2008
Birds	Muscicapa striata	Spotted Flycatcher			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen, MK	SP880405	100	2004
Birds	Muscicapa striata	Spotted Flycatcher			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen, MK	SP880406	100	2003
Birds	Muscicapa striata	Spotted Flycatcher			England_NERC_S.41 & UKBAP-2007	Bird-Red			Woughton on the Green	SP875385	100	2011
Birds	Numenius arquata	Curlew			England_NERC_S.41 & UKBAP-2007	Bird-Red			Broughton Grounds	SP8939	1000	2006
Birds	Numenius arquata	Curlew			England_NERC_S.41 & UKBAP-2007	Bird-Red			Great Linford	SP8541	1000	2014
Birds	Numenius arquata	Curlew			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen Lakes, MK	SP877407	100	2009
Birds	Numenius arquata	Curlew			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen, MK	SP880406	100	2003
Birds	Numenius phaeopus	Whimbrel		WACA-Sch1_part1		Bird-Red			Broughton Grounds	SP8939	1000	2006
Birds	Numenius phaeopus	Whimbrel		WACA-Sch1_part1		Bird-Red			Willen Lakes, MK	SP880406	100	2005
Birds	Numenius phaeopus	Whimbrel		WACA-Sch1_part1		Bird-Red			Willen, MK	SP880405	100	2007
Birds	Pandion haliaetus	Osprey		WACA-Sch1_part1		Bird-Amber			Tongwell Lake	SP867423	100	2013
Birds	Pandion haliaetus	Osprey		WACA-Sch1_part1		Bird-Amber			Willen Lakes, MK	SP877407	100	2011
Birds	Passer domesticus	House Sparrow			England_NERC_S.41 & UKBAP-2007	Bird-Red			Broughton Grounds	SP8939	1000	2006
Birds	Passer domesticus	House Sparrow			England_NERC_S.41 & UKBAP-2007	Bird-Red			Cotton Valley Sewage Works	SP884406	100	2010
Birds	Passer domesticus	House Sparrow			England_NERC_S.41 & UKBAP-2007	Bird-Red			Lee Common	SP905405	100	2010

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Birds	Passer domesticus	House Sparrow			England_NERC_S.41 & UKBAP-2007	Bird-Red			Milton Keynes, Kingston, Maidstone Road	SP904387	100	2016
Birds	Passer domesticus	House Sparrow			England_NERC_S.41 & UKBAP-2007	Bird-Red			Mulberry Park Rough (Portfields)	SP857440	100	1990
Birds	Passer domesticus	House Sparrow			England_NERC_S.41 & UKBAP-2007	Bird-Red			Pagnell Grange	SP868437	100	2008
Birds	Passer domesticus	House Sparrow			England_NERC_S.41 & UKBAP-2007	Bird-Red			TETRAD SP84Q - Vague Site (SP879411)	SP879411	100	2010
Birds	Passer domesticus	House Sparrow			England_NERC_S.41 & UKBAP-2007	Bird-Red			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Passer domesticus	House Sparrow			England_NERC_S.41 & UKBAP-2007	Bird-Red			TETRAD SP84R - Vague Site (SP872432)	SP872432	100	2010
Birds	Passer domesticus	House Sparrow			England_NERC_S.41 & UKBAP-2007	Bird-Red			TETRAD SP84V - Vague Site (SP880410)	SP880410	100	2010
Birds	Passer domesticus	House Sparrow			England_NERC_S.41 & UKBAP-2007	Bird-Red			TETRAD SP84W - Vague Site (SP884436)	SP884436	100	2010
Birds	Passer domesticus	House Sparrow			England_NERC_S.41 & UKBAP-2007	Bird-Red			Whitsundoles Farm, Salford MK	SP91763990	10	2013
Birds	Passer domesticus	House Sparrow			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen Lakes	SP877407	100	2015
Birds	Passer domesticus	House Sparrow			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen Lakes, MK	SP877407	100	2011
Birds	Passer montanus	Tree Sparrow			England_NERC_S.41 & UKBAP-2007	Bird-Red			Broughton Grounds	SP8939	1000	2002
Birds	Passer montanus	Tree Sparrow			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen Lake North	SP877407	100	2012
Birds	Perdix perdix	Grey Partridge			England_NERC_S.41 & UKBAP-2007	Bird-Red			Broughton Grounds	SP890390	100	2003
Birds	Perdix perdix	Grey Partridge			England_NERC_S.41 & UKBAP-2007	Bird-Red			Broughton Grounds	SP8939	1000	2010
Birds	Perdix perdix	Grey Partridge			England_NERC_S.41 & UKBAP-2007	Bird-Red			Broughton Grounds	SP910400	100	2011
Birds	Perdix perdix	Grey Partridge			England_NERC_S.41 & UKBAP-2007	Bird-Red			Broughton Grounds	SP9140	1000	2014
Birds	Perdix perdix	Grey Partridge			England_NERC_S.41 & UKBAP-2007	Bird-Red			Lathbury	SP873450	100	2008
Birds	Perdix perdix	Grey Partridge			England_NERC_S.41 & UKBAP-2007	Bird-Red			Lathbury	SP875455	100	2015
Birds	Perdix perdix	Grey Partridge			England_NERC_S.41 & UKBAP-2007	Bird-Red			Moulsoe	SP910420	100	2007
Birds	Phalacrocorax aristotelis	Shag				Bird-Red			TETRAD SP84Q - Vague Site (SP879411)	SP879411	100	2010
Birds	Phalacrocorax aristotelis	Shag				Bird-Red			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Phalacrocorax aristotelis	Shag				Bird-Red			TETRAD SP84V - Vague Site (SP880410)	SP880410	100	2010
Birds	Phalacrocorax aristotelis	Shag				Bird-Red			TETRAD SP84W - Vague Site (SP876435)	SP876435	100	2010
Birds	Phalacrocorax aristotelis	Shag				Bird-Red			Willen Lakes, MK	SP880406	100	2005

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Birds	Phalacrocorax aristotelis	Shag				Bird-Red			Willen, MK	SP880405	100	2005
Birds	Phalaropus lobatus	Red-necked Phalarope		WACA-Sch1_part1	UKBAP-2007	Bird-Red			Willen Lake (master site)	SP879400	100	1990
Birds	Philomachus pugnax	Ruff		WACA-Sch1_part1		Bird-Red			Willen Lake North	SP877407	100	2016
Birds	Philomachus pugnax	Ruff		WACA-Sch1_part1		Bird-Red			Willen Lakes	SP877407	100	2013
Birds	Philomachus pugnax	Ruff		WACA-Sch1_part1		Bird-Red			Willen Lakes, MK	SP880406	100	2006
Birds	Philomachus pugnax	Ruff		WACA-Sch1_part1		Bird-Red			Willen, MK	SP880405	100	2006
Birds	Philomachus pugnax	Ruff		WACA-Sch1_part1		Bird-Red			Willen, MK	SP880406	100	2003
Birds	Phoenicurus ochruros	Black Redstart		WACA-Sch1_part1		Bird-Red			Broughton, MK	SP894396	100	2015
Birds	Phoenicurus ochruros	Black Redstart		WACA-Sch1_part1		Bird-Red			Newlands, MK	SP872398	100	2004
Birds	Phoenicurus ochruros	Black Redstart		WACA-Sch1_part1		Bird-Red			Tongwell, MK	SP869423	100	2005
Birds	Phoenicurus phoenicurus	Redstart				Bird-Amber			Broughton Grounds	SP8939	1000	2008
Birds	Phoenicurus phoenicurus	Redstart				Bird-Amber			Campbell Park, MK	SP865395	100	2003
Birds	Phoenicurus phoenicurus	Redstart				Bird-Amber			Newport Pagnell	SP8744	1000	2016
Birds	Phoenicurus phoenicurus	Redstart				Bird-Amber			Willen Lake North	SP877407	100	2013
Birds	Phylloscopus sibilatrix	Wood Warbler			England_NERC_S.41 & UKBAP-2007	Bird-Red			Campbell Park, MK	SP865395	100	1991
Birds	Phylloscopus trochilus	Willow Warbler				Bird-Amber			Broughton Grounds	SP8939	1000	2008
Birds	Phylloscopus trochilus	Willow Warbler				Bird-Amber			Campbell Park, MK	SP865395	100	2007
Birds	Phylloscopus trochilus	Willow Warbler				Bird-Amber			Cotton Valley Sewage Works	SP884406	100	2010
Birds	Phylloscopus trochilus	Willow Warbler				Bird-Amber			Great Linford	SP8541	1000	2014
Birds	Phylloscopus trochilus	Willow Warbler				Bird-Amber			Newport Pagnell	SP870430	100	2016
Birds	Phylloscopus trochilus	Willow Warbler				Bird-Amber			Roadside plantation H6 (canal/Paterson Lane)	SP871393	100	1996
Birds	Phylloscopus trochilus	Willow Warbler				Bird-Amber			Roadside plantation H6 (Enmore Gate/Overgate)	SP867392	100	1996
Birds	Phylloscopus trochilus	Willow Warbler				Bird-Amber			TETRAD SP84Q - Vague Site (SP874411)	SP874411	100	2010
Birds	Phylloscopus trochilus	Willow Warbler				Bird-Amber			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Phylloscopus trochilus	Willow Warbler				Bird-Amber			TETRAD SP84V - Vague Site (SP880410)	SP880410	100	2010

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Birds	Phylloscopus trochilus	Willow Warbler				Bird-Amber			Tongwell Lake	SP868423	100	1995
Birds	Phylloscopus trochilus	Willow Warbler				Bird-Amber			Tongwell, MK	SP869423	100	2008
Birds	Phylloscopus trochilus	Willow Warbler				Bird-Amber			Willen Lake North	SP877407	100	2016
Birds	Phylloscopus trochilus	Willow Warbler				Bird-Amber			Willen Lakes	SP877407	100	2012
Birds	Phylloscopus trochilus	Willow Warbler				Bird-Amber			Willen Lakes, MK	SP877407	100	2009
Birds	Phylloscopus trochilus	Willow Warbler				Bird-Amber			Willen Lakes, MK	SP880406	100	2008
Birds	Phylloscopus trochilus	Willow Warbler				Bird-Amber			Willen, MK	SP880405	100	2007
Birds	Phylloscopus trochilus	Willow Warbler				Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Platalea leucorodia	Spoonbill		WACA-Sch1_part1		Bird-Amber			Willen Lakes, MK	SP877407	100	2009
Birds	Pluvialis squatarola	Grey Plover				Bird-Amber			Willen Lake (master site)	SP879400	100	1990
Birds	Pluvialis squatarola	Grey Plover				Bird-Amber			Willen Lakes, MK	SP880406	100	2004
Birds	Podiceps auritus	Slavonian Grebe		WACA-Sch1_part1		Bird-Red			Tongwell	SP869423	100	2013
Birds	Podiceps auritus	Slavonian Grebe		WACA-Sch1_part1		Bird-Red			Tongwell Lake	SP867423	100	2013
Birds	Podiceps auritus	Slavonian Grebe		WACA-Sch1_part1		Bird-Red			Willen Lake South	SP877397	100	2014
Birds	Podiceps auritus	Slavonian Grebe		WACA-Sch1_part1		Bird-Red			Willen Lakes	SP877407	100	2014
Birds	Podiceps grisegena	Red-necked Grebe				Bird-Red			Willen	SP8841	1000	2002
Birds	Podiceps grisegena	Red-necked Grebe				Bird-Red			Willen Lakes, MK	SP880406	100	2006
Birds	Podiceps grisegena	Red-necked Grebe				Bird-Red			Willen, MK	SP880405	100	2006
Birds	Podiceps nigricollis	Black-necked Grebe		WACA-Sch1_part1		Bird-Amber			Willen Lake South	SP877397	100	2013
Birds	Podiceps nigricollis	Black-necked Grebe		WACA-Sch1_part1		Bird-Amber			Willen Lakes	SP877407	100	2013
Birds	Podiceps nigricollis	Black-necked Grebe		WACA-Sch1_part1		Bird-Amber			Willen Lakes, MK	SP877407	100	2009
Birds	Poecile montana	Willow Tit			England_NERC_S.41	Bird-Red			Great Linford	SP8541	1000	2013
Birds	Poecile palustris	Marsh Tit			England_NERC_S.41	Bird-Red			Lathbury	SP875455	100	2016
Birds	Poecile palustris	Marsh Tit			England_NERC_S.41	Bird-Red			Moulsoe	SP910420	100	2009
Birds	Poecile palustris	Marsh Tit			England_NERC_S.41	Bird-Red			Willen Lake North	SP8740	1000	2016

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Birds	Prunella modularis	Duncock			England_NERC_S.41 & UKBAP-2007	Bird-Amber			Field west of Caldecote Farm, Newport Pagnell	SP875423	100	2001
Birds	Prunella modularis	Duncock			England_NERC_S.41 & UKBAP-2007	Bird-Amber			Land west of Willen Lake, Newlands	SP871397	100	2004
Birds	Prunella modularis	Duncock			England_NERC_S.41 & UKBAP-2007	Bird-Amber			Pagnell Grange	SP868437	100	2008
Birds	Prunella modularis	Duncock			England_NERC_S.41 & UKBAP-2007	Bird-Amber			Roadside plantation H6 (canal/Paterson Lane)	SP871393	100	1996
Birds	Prunella modularis	Duncock			England_NERC_S.41 & UKBAP-2007	Bird-Amber			Roadside plantation H6 (Enmore Gate/Overgate)	SP867392	100	1996
Birds	Prunella modularis	Duncock			England_NERC_S.41 & UKBAP-2007	Bird-Amber			TETRAD SP84Q - Vague Site (SP879411)	SP879411	100	2010
Birds	Prunella modularis	Duncock			England_NERC_S.41 & UKBAP-2007	Bird-Amber			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Prunella modularis	Duncock			England_NERC_S.41 & UKBAP-2007	Bird-Amber			TETRAD SP84R - Vague Site (SP872432)	SP872432	100	2010
Birds	Prunella modularis	Duncock			England_NERC_S.41 & UKBAP-2007	Bird-Amber			TETRAD SP84V - Vague Site (SP880410)	SP880410	100	2010
Birds	Prunella modularis	Duncock			England_NERC_S.41 & UKBAP-2007	Bird-Amber			TETRAD SP84W - Vague Site (SP884436)	SP884436	100	2010
Birds	Prunella modularis	Duncock			England_NERC_S.41 & UKBAP-2007	Bird-Amber			tickfordfields farm, Newport Pagnell	SP890437	100	2000
Birds	Prunella modularis	Duncock			England_NERC_S.41 & UKBAP-2007	Bird-Amber			Tongwell Lake	SP868423	100	1995
Birds	Prunella modularis	Duncock			England_NERC_S.41 & UKBAP-2007	Bird-Amber			Whitsundoles Farm, Salford MK	SP91763990	10	2013
Birds	Pyrrhula pyrrhula	Bullfinch			England_NERC_S.41	Bird-Amber			Broughton Grounds	SP8939	1000	2002
Birds	Pyrrhula pyrrhula	Bullfinch			England_NERC_S.41	Bird-Amber			Campbell Park	SP865395	100	2012
Birds	Pyrrhula pyrrhula	Bullfinch			England_NERC_S.41	Bird-Amber			Campbell Park, MK	SP865395	100	2007
Birds	Pyrrhula pyrrhula	Bullfinch			England_NERC_S.41	Bird-Amber			Great Linford	SP8541	1000	2014
Birds	Pyrrhula pyrrhula	Bullfinch			England_NERC_S.41	Bird-Amber			Great Linford	SP855415	100	2016
Birds	Pyrrhula pyrrhula	Bullfinch			England_NERC_S.41	Bird-Amber			Lee Common	SP905405	100	2010
Birds	Pyrrhula pyrrhula	Bullfinch			England_NERC_S.41	Bird-Amber			Roadside plantation H6 (canal/Paterson Lane)	SP871393	100	1996
Birds	Pyrrhula pyrrhula	Bullfinch			England_NERC_S.41	Bird-Amber			Roadside plantation H6 (Enmore Gate/Overgate)	SP867392	100	1996
Birds	Pyrrhula pyrrhula	Bullfinch			England_NERC_S.41	Bird-Amber			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Pyrrhula pyrrhula	Bullfinch			England_NERC_S.41	Bird-Amber			TETRAD SP84V - Vague Site (SP880410)	SP880410	100	2010
Birds	Pyrrhula pyrrhula	Bullfinch			England_NERC_S.41	Bird-Amber			Tongwell Lake	SP868423	100	1995
Birds	Pyrrhula pyrrhula	Bullfinch			England_NERC_S.41	Bird-Amber			Tongwell Lake, MK	SP869423	100	2009

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Birds	Pyrrhula pyrrhula	Bullfinch			England_NERC_S.41	Bird-Amber			Willen Lake North	SP877407	100	2016
Birds	Pyrrhula pyrrhula	Bullfinch			England_NERC_S.41	Bird-Amber			Willen Lakes, MK	SP877407	100	2009
Birds	Pyrrhula pyrrhula	Bullfinch			England_NERC_S.41	Bird-Amber			Woughton on the Green	SP875385	100	2011
Birds	Recurvirostra avosetta	Avocet		WACA-Sch1_part1		Bird-Amber			Willen Lakes, MK	SP877407	100	2011
Birds	Recurvirostra avosetta	Avocet		WACA-Sch1_part1		Bird-Amber			Willen Lakes, MK	SP880406	100	2008
Birds	Recurvirostra avosetta	Avocet		WACA-Sch1_part1		Bird-Amber			Willen, MK	SP880405	100	2004
Birds	Regulus ignicapilla	Firecrest		WACA-Sch1_part1					Campbell Park, MK	SP865395	100	1991
Birds	Regulus ignicapilla	Firecrest		WACA-Sch1_part1					Lathbury	SP875455	100	2015
Birds	Regulus ignicapilla	Firecrest		WACA-Sch1_part1					Willen, MK	SP880405	100	2002
Birds	Rissa tridactyla	Kittiwake				Bird-Red			Willen Lake South	SP877397	100	2014
Birds	Rissa tridactyla	Kittiwake				Bird-Red			Willen Lakes, MK	SP880406	100	2007
Birds	Rissa tridactyla	Kittiwake				Bird-Red			Willen, MK	SP880406	100	2003
Birds	Saxicola rubetra	Whinchat				Bird-Red			Broughton Grounds	SP8939	1000	2007
Birds	Saxicola rubetra	Whinchat				Bird-Red			Broughton Grounds	SP910400	100	2016
Birds	Saxicola rubetra	Whinchat				Bird-Red			Middleton, MK	SP884391	100	2006
Birds	Saxicola rubetra	Whinchat				Bird-Red			Oakgrove, MK	SP880387	100	2007
Birds	Scolopax rusticola	Woodcock				Bird-Red			Broughton Grounds	SP890390	100	2003
Birds	Scolopax rusticola	Woodcock				Bird-Red			Broughton Grounds	SP8939	1000	2005
Birds	Scolopax rusticola	Woodcock				Bird-Red			Broughton Grounds	SP910400	100	2015
Birds	Scolopax rusticola	Woodcock				Bird-Red			Broughton Grounds	SP9140	1000	2014
Birds	Scolopax rusticola	Woodcock				Bird-Red			Lathbury	SP875455	100	2015
Birds	Scolopax rusticola	Woodcock				Bird-Red			Little Linford Wood	SP854435	100	1995
Birds	Scolopax rusticola	Woodcock				Bird-Red			Oakgrove, MK	SP880387	100	2002
Birds	Scolopax rusticola	Woodcock				Bird-Red			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Scolopax rusticola	Woodcock				Bird-Red			Tongwell Lake	SP867423	100	2013

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Birds	<i>Scolopax rusticola</i>	Woodcock				Bird-Red			Tongwell, MK	SP869423	100	2009
Birds	<i>Scolopax rusticola</i>	Woodcock				Bird-Red			Willen Lakes, MK	SP877407	100	2009
Birds	<i>Sterna hirundo</i>	Common Tern				Bird-Amber			TETRAD SP84Q - Vague Site (SP878409)	SP878409	100	2010
Birds	<i>Sterna hirundo</i>	Common Tern				Bird-Amber			TETRAD SP84V - Vague Site (SP881407)	SP881407	100	2010
Birds	<i>Sterna hirundo</i>	Common Tern				Bird-Amber			Tongwell Lake	SP867423	100	2016
Birds	<i>Sterna hirundo</i>	Common Tern				Bird-Amber			Tongwell, MK	SP869423	100	2004
Birds	<i>Sterna hirundo</i>	Common Tern				Bird-Amber			Willen Lake North	SP877407	100	2016
Birds	<i>Sterna hirundo</i>	Common Tern				Bird-Amber			Willen Lake South	SP877397	100	2016
Birds	<i>Sterna hirundo</i>	Common Tern				Bird-Amber			Willen Lakes	SP877407	100	2016
Birds	<i>Sterna hirundo</i>	Common Tern				Bird-Amber			Willen Lakes, MK	SP877407	100	2011
Birds	<i>Sterna hirundo</i>	Common Tern				Bird-Amber			Willen Lakes, MK	SP880406	100	2010
Birds	<i>Sterna hirundo</i>	Common Tern				Bird-Amber			Willen, MK	SP880405	100	2007
Birds	<i>Sterna hirundo</i>	Common Tern				Bird-Amber			Willen, MK	SP880406	100	2003
Birds	<i>Sterna paradisaea</i>	Arctic Tern				Bird-Amber			Tongwell Lake, MK	SP869423	100	2004
Birds	<i>Sterna paradisaea</i>	Arctic Tern				Bird-Amber			Willen Lake North	SP877407	100	2016
Birds	<i>Sterna paradisaea</i>	Arctic Tern				Bird-Amber			Willen Lake South	SP877397	100	2016
Birds	<i>Sterna paradisaea</i>	Arctic Tern				Bird-Amber			Willen Lakes	SP877407	100	2014
Birds	<i>Sterna paradisaea</i>	Arctic Tern				Bird-Amber			Willen Lakes, MK	SP877407	100	2009
Birds	<i>Sterna paradisaea</i>	Arctic Tern				Bird-Amber			Willen Lakes, MK	SP880406	100	2008
Birds	<i>Sterna paradisaea</i>	Arctic Tern				Bird-Amber			Willen, MK	SP880405	100	2007
Birds	<i>Sternula albifrons</i>	Little Tern		WACA-Sch1_part1		Bird-Amber			Willen Lakes, MK	SP877407	100	2009
Birds	<i>Sternula albifrons</i>	Little Tern		WACA-Sch1_part1		Bird-Amber			Willen Lakes, MK	SP880406	100	2006
Birds	<i>Sternula albifrons</i>	Little Tern		WACA-Sch1_part1		Bird-Amber			Willen, MK	SP880405	100	2007
Birds	<i>Streptopelia turtur</i>	Turtle Dove			England_NERC_S.41 & UKBAP-2007	Bird-Red			Broughton Grounds	SP8939	1000	2008
Birds	<i>Streptopelia turtur</i>	Turtle Dove			England_NERC_S.41 & UKBAP-2007	Bird-Red			Lathbury	SP873450	100	2008

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Birds	Streptopelia turtur	Turtle Dove			England_NERC_S.41 & UKBAP-2007	Bird-Red			Moulsoe	SP910420	100	2007
Birds	Streptopelia turtur	Turtle Dove			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen Lakes, MK	SP880406	100	2004
Birds	Streptopelia turtur	Turtle Dove			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen, MK	SP880405	100	2007
Birds	Strix aluco	Tawny Owl				Bird-Amber			Great Linford	SP855415	100	2016
Birds	Strix aluco	Tawny Owl				Bird-Amber			Lee Common	SP905405	100	2010
Birds	Strix aluco	Tawny Owl				Bird-Amber			Newfield Farm, Chicheley	SP905450	100	2013
Birds	Sturnus vulgaris	Starling			England_NERC_S.41	Bird-Red			Cotton Valley Sewage Works	SP884406	100	2010
Birds	Sturnus vulgaris	Starling			England_NERC_S.41	Bird-Red			Field west of Caldecote Farm, Newport Pagnell	SP875423	100	2001
Birds	Sturnus vulgaris	Starling			England_NERC_S.41	Bird-Red			Great Linford	SP855415	100	2011
Birds	Sturnus vulgaris	Starling			England_NERC_S.41	Bird-Red			Land west of Willen Lake, Newlands	SP871397	100	2004
Birds	Sturnus vulgaris	Starling			England_NERC_S.41	Bird-Red			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Sturnus vulgaris	Starling			England_NERC_S.41	Bird-Red			TETRAD SP84R - Vague Site (SP872432)	SP872432	100	2010
Birds	Sturnus vulgaris	Starling			England_NERC_S.41	Bird-Red			TETRAD SP84V - Vague Site (SP880410)	SP880410	100	2010
Birds	Sturnus vulgaris	Starling			England_NERC_S.41	Bird-Red			TETRAD SP84W - Vague Site (SP881436)	SP881436	100	2010
Birds	Sturnus vulgaris	Starling			England_NERC_S.41	Bird-Red			TETRAD SP84W - Vague Site (SP884436)	SP884436	100	2010
Birds	Sturnus vulgaris	Starling			England_NERC_S.41	Bird-Red			tickfordfields farm, Newport Pagnell	SP890437	100	2000
Birds	Sturnus vulgaris	Starling			England_NERC_S.41	Bird-Red			Tongwell	SP869423	100	2013
Birds	Sturnus vulgaris	Starling			England_NERC_S.41	Bird-Red			Whitsundoles Farm, Salford MK	SP91763990	10	2013
Birds	Sturnus vulgaris	Starling			England_NERC_S.41	Bird-Red			Willen Lake North	SP877407	100	2015
Birds	Sturnus vulgaris	Starling			England_NERC_S.41	Bird-Red			Willen Lakes, MK	SP880406	100	2010
Birds	Sturnus vulgaris	Starling			England_NERC_S.41	Bird-Red			Willen, MK	SP880406	100	2003
Birds	Sylvia undata	Dartford Warbler		WACA-Sch1_part1		Bird-Amber			Willen Lakes, MK	SP880406	100	2006
Birds	Tadorna tadorna	Shelduck				Bird-Amber			Great Linford	SP855415	100	2015
Birds	Tadorna tadorna	Shelduck				Bird-Amber			Willen Lake (master site)	SP879400	100	2000
Birds	Tadorna tadorna	Shelduck				Bird-Amber			Willen Lake North	SP877407	100	2016

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Birds	Tadorna tadorna	Shelduck				Bird-Amber			Willen Lake South	SP877397	100	2014
Birds	Tadorna tadorna	Shelduck				Bird-Amber			Willen Lakes, MK	SP877407	100	2009
Birds	Tadorna tadorna	Shelduck				Bird-Amber			Willen Lakes, MK	SP880406	100	2010
Birds	Tadorna tadorna	Shelduck				Bird-Amber			Willen, MK	SP880405	100	2010
Birds	Tadorna tadorna	Shelduck				Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Tringa erythropus	Spotted Redshank				Bird-Amber			Willen Lake (master site)	SP879400	100	1990
Birds	Tringa glareola	Wood Sandpiper		WACA-Sch1_part1		Bird-Amber			Willen Lake North	SP877407	100	2014
Birds	Tringa glareola	Wood Sandpiper		WACA-Sch1_part1		Bird-Amber			Willen Lakes, MK	SP880406	100	2008
Birds	Tringa nebularia	Greenshank		WACA-Sch1_part1		Bird-Amber			Broughton Grounds	SP9140	1000	2014
Birds	Tringa nebularia	Greenshank		WACA-Sch1_part1		Bird-Amber			Willen Lake North	SP877407	100	2013
Birds	Tringa nebularia	Greenshank		WACA-Sch1_part1		Bird-Amber			Willen Lakes	SP877407	100	2013
Birds	Tringa nebularia	Greenshank		WACA-Sch1_part1		Bird-Amber			Willen Lakes, MK	SP877407	100	2011
Birds	Tringa nebularia	Greenshank		WACA-Sch1_part1		Bird-Amber			Willen Lakes, MK	SP880406	100	2008
Birds	Tringa nebularia	Greenshank		WACA-Sch1_part1		Bird-Amber			Willen, MK	SP880405	100	2007
Birds	Tringa nebularia	Greenshank		WACA-Sch1_part1		Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Tringa ochropus	Green Sandpiper		WACA-Sch1_part1		Bird-Amber			Broughton Grounds	SP8939	1000	2008
Birds	Tringa ochropus	Green Sandpiper		WACA-Sch1_part1		Bird-Amber			Broughton Grounds	SP910400	100	2015
Birds	Tringa ochropus	Green Sandpiper		WACA-Sch1_part1		Bird-Amber			Broughton Grounds	SP9140	1000	2013
Birds	Tringa ochropus	Green Sandpiper		WACA-Sch1_part1		Bird-Amber			Great Linford	SP8541	1000	2013
Birds	Tringa ochropus	Green Sandpiper		WACA-Sch1_part1		Bird-Amber			Newport Pagnell	SP8743	1000	2012
Birds	Tringa ochropus	Green Sandpiper		WACA-Sch1_part1		Bird-Amber			Willen Lake East (Weir)	SP882407	100	2016
Birds	Tringa ochropus	Green Sandpiper		WACA-Sch1_part1		Bird-Amber			Willen Lake East (Wier)	SP882407	100	2015
Birds	Tringa ochropus	Green Sandpiper		WACA-Sch1_part1		Bird-Amber			Willen Lake North	SP877407	100	2016
Birds	Tringa ochropus	Green Sandpiper		WACA-Sch1_part1		Bird-Amber			Willen Lakes	SP877407	100	2015
Birds	Tringa ochropus	Green Sandpiper		WACA-Sch1_part1		Bird-Amber			Willen Lakes, MK	SP877407	100	2011

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Birds	Tringa ochropus	Green Sandpiper		WACA-Sch1_part1		Bird-Amber			Willen Lakes, MK	SP880406	100	2010
Birds	Tringa ochropus	Green Sandpiper		WACA-Sch1_part1		Bird-Amber			Willen Road Excavations	SP873423	100	2013
Birds	Tringa ochropus	Green Sandpiper		WACA-Sch1_part1		Bird-Amber			Willen Road Gravel Pits	SP879423	100	2011
Birds	Tringa ochropus	Green Sandpiper		WACA-Sch1_part1		Bird-Amber			Willen, MK	SP880405	100	2007
Birds	Tringa ochropus	Green Sandpiper		WACA-Sch1_part1		Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Tringa totanus	Redshank				Bird-Amber			Broughton Grounds	SP8939	1000	2008
Birds	Tringa totanus	Redshank				Bird-Amber			Lathbury	SP873450	100	2008
Birds	Tringa totanus	Redshank				Bird-Amber			Newport Pagnell Gravel Pits	SP885445	100	1999
Birds	Tringa totanus	Redshank				Bird-Amber			Tongwell Lake	SP869423	100	2006
Birds	Tringa totanus	Redshank				Bird-Amber			Willen Lake North	SP8740	1000	2016
Birds	Tringa totanus	Redshank				Bird-Amber			Willen Lake North	SP877407	100	2016
Birds	Tringa totanus	Redshank				Bird-Amber			Willen Lake South	SP877397	100	2014
Birds	Tringa totanus	Redshank				Bird-Amber			Willen Lakes	SP877407	100	2016
Birds	Tringa totanus	Redshank				Bird-Amber			Willen Lakes, MK	SP877407	100	2011
Birds	Tringa totanus	Redshank				Bird-Amber			Willen Lakes, MK	SP880406	100	2010
Birds	Tringa totanus	Redshank				Bird-Amber			Willen, MK	SP880405	100	2011
Birds	Tringa totanus	Redshank				Bird-Amber			Willen, MK	SP880406	100	2003
Birds	Turdus iliacus	Redwing		WACA-Sch1_part1		Bird-Red			Broughton Grounds	SP8939	1000	2006
Birds	Turdus iliacus	Redwing		WACA-Sch1_part1		Bird-Red			Broughton Grounds	SP9140	1000	2012
Birds	Turdus iliacus	Redwing		WACA-Sch1_part1		Bird-Red			Campbell Park	SP865395	100	2012
Birds	Turdus iliacus	Redwing		WACA-Sch1_part1		Bird-Red			Campbell Park, MK	SP865395	100	2007
Birds	Turdus iliacus	Redwing		WACA-Sch1_part1		Bird-Red			Great Linford	SP8541	1000	2014
Birds	Turdus iliacus	Redwing		WACA-Sch1_part1		Bird-Red			Lathbury	SP875455	100	2013
Birds	Turdus iliacus	Redwing		WACA-Sch1_part1		Bird-Red			Lee Common	SP905405	100	2010
Birds	Turdus iliacus	Redwing		WACA-Sch1_part1		Bird-Red			Newport Pagnell	SP8743	1000	2013

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Birds	Turdus iliacus	Redwing		WACA-Sch1_part1		Bird-Red			Newport Pagnell GPs	SP870430	100	2011
Birds	Turdus iliacus	Redwing		WACA-Sch1_part1		Bird-Red			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Turdus iliacus	Redwing		WACA-Sch1_part1		Bird-Red			TETRAD SP84R - Vague Site (SP872432)	SP872432	100	2010
Birds	Turdus iliacus	Redwing		WACA-Sch1_part1		Bird-Red			Tongwell	SP869423	100	2013
Birds	Turdus iliacus	Redwing		WACA-Sch1_part1		Bird-Red			Tongwell, MK	SP869423	100	2008
Birds	Turdus iliacus	Redwing		WACA-Sch1_part1		Bird-Red			Willen Lake North	SP877407	100	2016
Birds	Turdus iliacus	Redwing		WACA-Sch1_part1		Bird-Red			Willen Lake South	SP877397	100	2013
Birds	Turdus iliacus	Redwing		WACA-Sch1_part1		Bird-Red			Willen Lakes	SP877407	100	2013
Birds	Turdus iliacus	Redwing		WACA-Sch1_part1		Bird-Red			Willen Lakes, MK	SP880406	100	2008
Birds	Turdus iliacus	Redwing		WACA-Sch1_part1		Bird-Red			Willen, MK	SP880405	100	2004
Birds	Turdus iliacus	Redwing		WACA-Sch1_part1		Bird-Red			Willen, MK	SP880406	100	2003
Birds	Turdus iliacus	Redwing		WACA-Sch1_part1		Bird-Red			Wood, Willen (north)	SP874415	100	2000
Birds	Turdus iliacus	Redwing		WACA-Sch1_part1		Bird-Red			Woughton on the Green	SP875385	100	2013
Birds	Turdus philomelos	Song Thrush			England_NERC_S.41	Bird-Red			Beverley Place, Springfield, MK	SP871386	100	2000
Birds	Turdus philomelos	Song Thrush			England_NERC_S.41	Bird-Red			Broughton Grounds	SP8939	1000	2007
Birds	Turdus philomelos	Song Thrush			England_NERC_S.41	Bird-Red			Campbell Park	SP865395	100	2012
Birds	Turdus philomelos	Song Thrush			England_NERC_S.41	Bird-Red			Cotton Valley Sewage Works	SP884406	100	2010
Birds	Turdus philomelos	Song Thrush			England_NERC_S.41	Bird-Red			Great Linford	SP8541	1000	2014
Birds	Turdus philomelos	Song Thrush			England_NERC_S.41	Bird-Red			Lee Common	SP905405	100	2010
Birds	Turdus philomelos	Song Thrush			England_NERC_S.41	Bird-Red			Roadside plantation H6 (canal/Paterson Lane)	SP871393	100	1996
Birds	Turdus philomelos	Song Thrush			England_NERC_S.41	Bird-Red			Roadside plantation H6 (Enmore Gate/Overgate)	SP867392	100	1996
Birds	Turdus philomelos	Song Thrush			England_NERC_S.41	Bird-Red			TETRAD SP84Q - Vague Site (SP879411)	SP879411	100	2010
Birds	Turdus philomelos	Song Thrush			England_NERC_S.41	Bird-Red			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Turdus philomelos	Song Thrush			England_NERC_S.41	Bird-Red			TETRAD SP84V - Vague Site (SP880410)	SP880410	100	2010
Birds	Turdus philomelos	Song Thrush			England_NERC_S.41	Bird-Red			tickfordfields farm, Newport Pagnell	SP890437	100	2000

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Birds	Turdus philomelos	Song Thrush			England_NERC_S.41	Bird-Red			Tongwell Lake	SP868423	100	1995
Birds	Turdus philomelos	Song Thrush			England_NERC_S.41	Bird-Red			Willen Lakes, MK	SP880406	100	2007
Birds	Turdus philomelos	Song Thrush			England_NERC_S.41	Bird-Red			Willen, Milton Rd	SP878413	100	2000
Birds	Turdus philomelos	Song Thrush			England_NERC_S.41	Bird-Red			Willen, Milton Rd redway	SP873413	100	2000
Birds	Turdus pilaris	Fieldfare		WACA-Sch1_part1		Bird-Red			Broughton Grounds	SP890390	100	2003
Birds	Turdus pilaris	Fieldfare		WACA-Sch1_part1		Bird-Red			Broughton Grounds	SP8939	1000	2008
Birds	Turdus pilaris	Fieldfare		WACA-Sch1_part1		Bird-Red			Broughton Grounds	SP910400	100	2009
Birds	Turdus pilaris	Fieldfare		WACA-Sch1_part1		Bird-Red			Broughton, MK	SP894396	100	2015
Birds	Turdus pilaris	Fieldfare		WACA-Sch1_part1		Bird-Red			Lathbury	SP873450	100	2005
Birds	Turdus pilaris	Fieldfare		WACA-Sch1_part1		Bird-Red			Lee Common	SP905405	100	2010
Birds	Turdus pilaris	Fieldfare		WACA-Sch1_part1		Bird-Red			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Turdus pilaris	Fieldfare		WACA-Sch1_part1		Bird-Red			TETRAD SP84R - Vague Site (SP872432)	SP872432	100	2010
Birds	Turdus pilaris	Fieldfare		WACA-Sch1_part1		Bird-Red			TETRAD SP84V - Vague Site (SP880410)	SP880410	100	2010
Birds	Turdus pilaris	Fieldfare		WACA-Sch1_part1		Bird-Red			Woughton on the Green	SP875385	100	2012
Birds	Turdus torquatus	Ring Ouzel			England_NERC_S.41 & UKBAP-2007	Bird-Red			Campbell Park, MK	SP865395	100	1991
Birds	Turdus torquatus	Ring Ouzel			England_NERC_S.41 & UKBAP-2007	Bird-Red			Lathbury	SP875455	100	2016
Birds	Turdus torquatus	Ring Ouzel			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen Lakes, MK	SP877407	100	2009
Birds	Turdus viscivorus	Mistle Thrush				Bird-Red			Great Linford	SP855415	100	2016
Birds	Turdus viscivorus	Mistle Thrush				Bird-Red			Lathbury	SP873450	100	2006
Birds	Turdus viscivorus	Mistle Thrush				Bird-Red			Lathbury	SP875455	100	2015
Birds	Turdus viscivorus	Mistle Thrush				Bird-Red			Lee Common	SP905405	100	2010
Birds	Turdus viscivorus	Mistle Thrush				Bird-Red			TETRAD SP84R - Vague Site (SP868425)	SP868425	100	2010
Birds	Turdus viscivorus	Mistle Thrush				Bird-Red			TETRAD SP84V - Vague Site (SP880409)	SP880409	100	2010
Birds	Turdus viscivorus	Mistle Thrush				Bird-Red			Tongwell, MK	SP869423	100	2007
Birds	Turdus viscivorus	Mistle Thrush				Bird-Red			Woughton on the Green	SP875385	100	2012

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Birds	Tyto alba	Barn Owl		WACA-Sch1_part1					Broughton Grounds	SP8939	1000	2010
Birds	Tyto alba	Barn Owl		WACA-Sch1_part1					Bury Fields, Newport Pagnell - (Central Site Grid Ref)	SP8713644431	1	2011
Birds	Tyto alba	Barn Owl		WACA-Sch1_part1					Chicheley Road - near Hall Lane	SP90564553	10	2013
Birds	Tyto alba	Barn Owl		WACA-Sch1_part1					Lathbury	SP873450	100	2008
Birds	Tyto alba	Barn Owl		WACA-Sch1_part1					Lee Common	SP905405	100	2006
Birds	Tyto alba	Barn Owl		WACA-Sch1_part1					Newfield Farm, Chicheley	SP905450	100	2013
Birds	Tyto alba	Barn Owl		WACA-Sch1_part1					Newport Pagnell	SP870430	100	2016
Birds	Tyto alba	Barn Owl		WACA-Sch1_part1					Newport Pagnell	SP8743	1000	2013
Birds	Tyto alba	Barn Owl		WACA-Sch1_part1					Newport Pagnell GPs	SP870430	100	2011
Birds	Tyto alba	Barn Owl		WACA-Sch1_part1					TETRAD SP84V - Vague Site (SP883403)	SP883403	100	2010
Birds	Tyto alba	Barn Owl		WACA-Sch1_part1					Willen Lakes, MK	SP880406	100	2008
Birds	Tyto alba	Barn Owl		WACA-Sch1_part1					Woughton on the Green	SP875385	100	2011
Birds	Vanellus vanellus	Lapwing			England_NERC_S.41 & UKBAP-2007	Bird-Red			Broughton Grounds	SP890390	100	2003
Birds	Vanellus vanellus	Lapwing			England_NERC_S.41 & UKBAP-2007	Bird-Red			Broughton Grounds	SP8939	1000	2010
Birds	Vanellus vanellus	Lapwing			England_NERC_S.41 & UKBAP-2007	Bird-Red			Broughton Grounds	SP910400	100	2009
Birds	Vanellus vanellus	Lapwing			England_NERC_S.41 & UKBAP-2007	Bird-Red			Lathbury	SP873450	100	2008
Birds	Vanellus vanellus	Lapwing			England_NERC_S.41 & UKBAP-2007	Bird-Red			Lee Common	SP905405	100	2010
Birds	Vanellus vanellus	Lapwing			England_NERC_S.41 & UKBAP-2007	Bird-Red			Newport Pagnell	SP870430	100	2015
Birds	Vanellus vanellus	Lapwing			England_NERC_S.41 & UKBAP-2007	Bird-Red			Newport Pagnell Gravel Pits	SP885445	100	1999
Birds	Vanellus vanellus	Lapwing			England_NERC_S.41 & UKBAP-2007	Bird-Red			TETRAD SP84V - Vague Site (SP880410)	SP880410	100	2010
Birds	Vanellus vanellus	Lapwing			England_NERC_S.41 & UKBAP-2007	Bird-Red			Whitsundoles Farm, Salford MK	SP91763990	10	2013
Birds	Vanellus vanellus	Lapwing			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen Lake (master site)	SP879400	100	2000
Birds	Vanellus vanellus	Lapwing			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen Lake North	SP877407	100	2016
Birds	Vanellus vanellus	Lapwing			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen Lake South	SP877397	100	2016
Birds	Vanellus vanellus	Lapwing			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen Lake, north basin	SP879404	100	2011

group	species	English name	European legislation	UK legislation	Species of Principal Importance	Red List (GB unless stated)	Rare / Scarce	local status	site	grid ref	precision	latest record
Birds	Vanellus vanellus	Lapwing			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen Lake, South Basin	SP878403	100	2011
Birds	Vanellus vanellus	Lapwing			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen Lakes	SP877407	100	2014
Birds	Vanellus vanellus	Lapwing			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen Lakes, MK	SP877407	100	2011
Birds	Vanellus vanellus	Lapwing			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen Lakes, MK	SP880406	100	2010
Birds	Vanellus vanellus	Lapwing			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen Road Excavations	SP873423	100	2015
Birds	Vanellus vanellus	Lapwing			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen, MK	SP880405	100	2006
Birds	Vanellus vanellus	Lapwing			England_NERC_S.41 & UKBAP-2007	Bird-Red			Willen, MK	SP880406	100	2003
Birds	Vanellus vanellus	Lapwing			England_NERC_S.41 & UKBAP-2007	Bird-Red			Woughton on the Green	SP875385	100	2011
Fish	Anguilla anguilla	Eel			England_NERC_S.41 & UKBAP-2007				River Great Ouse, Newport Pagnell	SP882441	100	2006
Fish	Anguilla anguilla	Eel			England_NERC_S.41 & UKBAP-2007				River Ouzel, Caldecote Mill	SP886428	100	2002
Fish	Anguilla anguilla	Eel			England_NERC_S.41 & UKBAP-2007				River Ouzel, M1 road bridge	SP884412	100	2004
Fish	Anguilla anguilla	Eel			England_NERC_S.41 & UKBAP-2007				River Ouzel, Newport Pagnell	SP878438	100	2006
Fish	Anguilla anguilla	Eel			England_NERC_S.41 & UKBAP-2007				River Ouzel, Newport Pagnell	SP879439	100	1990
Fish	Barbus barbus	Barbel	HabReg-Sch4 & HabDir-A5						River Ouzel, Caldecote Mill	SP886428	100	2005
Fish	Cobitis taenia	Spined Loach	HabDir-A2*		England_NERC_S.41 & UKBAP-2007				Grand Union Canal, Woolstone	SP872390	100	1990
Fish	Cobitis taenia	Spined Loach	HabDir-A2*		England_NERC_S.41 & UKBAP-2007				River Great Ouse, Newport Pagnell	SP882441	100	1991
Fish	Cobitis taenia	Spined Loach	HabDir-A2*		England_NERC_S.41 & UKBAP-2007				River Ouzel, Newport Pagnell	SP880434	100	2004
Fish	Cottus gobio	Bullhead	HabDir-A2*						River Ouzel, Caldecote Mill	SP886428	100	2002
Fish	Cottus gobio	Bullhead	HabDir-A2*						River Ouzel, Newport Pagnell	SP878438	100	2005
Fish	Salmo trutta	Brown Trout			England_NERC_S.41 & UKBAP-2007				River Ouzel, Newport Pagnell	SP878438	100	2003
Insects: ants, bees, wasps	Auplopus carbonarius	a spider-hunter wasp					Notable-B		TETRAD SP84Q - Vague Site (SP879411)	SP879411	100	2010
Insects: ants, bees, wasps	Auplopus carbonarius	a spider-hunter wasp					Notable-B		Willen: The Cottage	SP879411	100	2009
Insects: ants, bees, wasps	Lasioglossum leucopus	a mining bee				RedList_GB_Pre94-R			Cotton Valley Sewage Works	SP884406	100	2010
Insects: ants, bees, wasps	Lasioglossum pauxillum	a mining bee					Notable-A		Cotton Valley Sewage Works	SP884406	100	2010
Insects: beetles	Achenium humile						Notable-B		Neath Hill, roadside plantation	SP856405	100	1999

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Insects: beetles	Curculio rubidus						Notable-B		Cotton Valley Sewage Works	SP884406	100	2010
Insects: beetles	Curculio rubidus						Notable-B		Cotton Valley Treatment Works Site	SP883407	100	2010
Insects: beetles	Gyrinus distinctus						NS-excludes		River Ouzel, Lovat Bank	SP878439	100	1999
Insects: beetles	Longitarsus ballotae						NS-excludes		Cotton Valley Sewage Works	SP884406	100	2010
Insects: beetles	Longitarsus dorsalis						Notable-B		Cotton Valley Sewage Works	SP884406	100	2010
Insects: beetles	Microplontus campestris						Notable-B		Cotton Valley Sewage Works	SP884406	100	2010
Insects: beetles	Microplontus campestris						Notable-B		Cotton Valley Treatment Works Site	SP883406	100	2010
Insects: beetles	Nebrioporus depressus					RedList_GB_post2001-NT	Notable-B		River Ouzel, Lovat Bank	SP878439	100	1999
Insects: beetles	Nebrioporus depressus					RedList_GB_post2001-NT	Notable-B		River Ouzel, Willen gauge	SP882409	100	1999
Insects: beetles	Notaris scirpi						Notable-B		Cotton Valley Sewage Works	SP884406	100	2010
Insects: beetles	Notaris scirpi						Notable-B		Cotton Valley Treatment Works Site	SP883407	100	2010
Insects: beetles	Ophonus ardosiacus						Notable-B		Cotton Valley Sewage Works	SP884406	100	2010
Insects: beetles	Pyrochroa coccinea	Black-headed Cardinal Beetle					Notable-B		TETRAD SP84V - Vague Site (SP880410)	SP880410	100	2010
Insects: beetles	Xantholinus elegans						Notable-A		Great Linford, roadside plantation	SP854412	100	1999
Insects: earwigs	Forficula lesnei						NS-excludes		Cotton Valley Sewage Works	SP884406	100	2010
Insects: flies	Acinia corniculata					RedList_GB_Pre94-EN			Cotton Valley Sewage Works	SP884406	100	2010
Insects: flies	Campiglossa malaris					RedList_GB_Pre94-EN			Cotton Valley Sewage Works	SP884406	100	2010
Insects: flies	Chorisops nagatomi						Notable		Cotton Valley Sewage Works	SP884406	100	2010
Insects: flies	Merzomyia westermanni						Notable		Cotton Valley Sewage Works	SP884406	100	2010
Insects: flies	Neoascia geniculata	a hoverfly					Notable		Cotton Valley Sewage Works	SP884406	100	2010
Insects: flies	Pherbellia dorsata						Notable		Cotton Valley Sewage Works	SP884406	100	2010
Insects: flies	Sapromyza quadricincta						Notable		Cotton Valley Sewage Works	SP884406	100	2010
Insects: flies	Tipula peliostigma						Notable		Cotton Valley Sewage Works	SP884406	100	2010
Insects: flies	Triglyphus primus	a hoverfly					NS-excludes		Cotton Valley Sewage Works	SP884406	100	2010
Insects: flies	Vanoyia tenuicornis						Notable		Cotton Valley Sewage Works	SP884406	100	2010

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Insects: Lepidoptera:	Coenonympha pamphilus	Small Heath			England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-NT			1km square - Cotton Valley Sewage Works	SP84V	2000	1998
Insects: Lepidoptera:	Coenonympha pamphilus	Small Heath			England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-NT			1km square - south of Newport Pagnell	SP84W	2000	1999
Insects: Lepidoptera:	Coenonympha pamphilus	Small Heath			England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-NT			Campbell Park, Milton Keynes	SP865397	100	2009
Insects: Lepidoptera:	Coenonympha pamphilus	Small Heath			England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-NT			Fen Farm	SP905389	100	1992
Insects: Lepidoptera:	Coenonympha pamphilus	Small Heath			England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-NT			Grassland West of Lathbury Park	SP869451	100	2006
Insects: Lepidoptera:	Coenonympha pamphilus	Small Heath			England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-NT			Kingstone Bridge/ Fen Farm	SP9038	1000	1990
Insects: Lepidoptera:	Coenonympha pamphilus	Small Heath			England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-NT			Milton Keynes Village	SP8838	1000	1990
Insects: Lepidoptera:	Coenonympha pamphilus	Small Heath			England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-NT			Monkston and Oakgrove Parks	SP882385	100	2003
Insects: Lepidoptera:	Coenonympha pamphilus	Small Heath			England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-NT			Moulsoe Old Wood	SP9042	1000	2013
Insects: Lepidoptera:	Coenonympha pamphilus	Small Heath			England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-NT			Moulsoe Old Wood	SP9242	1000	2000
Insects: Lepidoptera:	Coenonympha pamphilus	Small Heath			England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-NT			Ouzel Valley Park, Milton Keynes	SP873394	100	2004
Insects: Lepidoptera:	Coenonympha pamphilus	Small Heath			England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-NT			South Newport Pagnell	SP84R	2000	1997
Insects: Lepidoptera:	Coenonympha pamphilus	Small Heath			England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-NT			South Newport Pagnell	SP8642	1000	1996
Insects: Lepidoptera:	Coenonympha pamphilus	Small Heath			England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-NT			Tickford Fields Farm	SP894434	100	1992
Insects: Lepidoptera:	Coenonympha pamphilus	Small Heath			England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-NT			Willen Lake, Milton Keynes	SP879405	100	1990
Insects: Lepidoptera:	Coenonympha pamphilus	Small Heath			England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-NT			Willen, Milton Keynes	SP879413	100	1990
Insects: Lepidoptera:	Coenonympha pamphilus	Small Heath			England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-NT			Woolstone, Milton Keynes	SP871393	100	1991
Insects: Lepidoptera:	Lasiommata megera	Wall			England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-NT		Medium Priority butterflies	Cotton Valley Sewage Works	SP885404	100	1992
Insects: Lepidoptera:	Lasiommata megera	Wall			England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-NT		Medium Priority butterflies	Fen Farm	SP905389	100	1992
Insects: Lepidoptera:	Lasiommata megera	Wall			England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-NT		Medium Priority butterflies	Kingstone Bridge/ Fen Farm	SP9038	1000	1990
Insects: Lepidoptera:	Lasiommata megera	Wall			England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-NT		Medium Priority butterflies	Lower Wood & adjacent hedges	SP9241	1000	1991
Insects: Lepidoptera:	Lasiommata megera	Wall			England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-NT		Medium Priority butterflies	Milton Keynes Village	SP8838	1000	1990
Insects: Lepidoptera:	Lasiommata megera	Wall			England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-NT		Medium Priority butterflies	Mulberry Park Rough (Portfields)	SP857440	100	1990
Insects: Lepidoptera:	Lasiommata megera	Wall			England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-NT		Medium Priority butterflies	Willen Lake, Milton Keynes	SP8740	1000	1996
Insects: Lepidoptera:	Lasiommata megera	Wall			England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-NT		Medium Priority butterflies	Willen, Milton Keynes	SP879413	100	1990

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Insects: Lepidoptera:	Limenitis camilla	White Admiral			England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-VU			Moulsoe Old Wood	SP9242	1000	2000
Insects: Lepidoptera:	Satyrrium pruni	Black Hairstreak		WACA-Sch5_sect9.5a		RedList_GB_post2001-EN		High Priority butterflies	Moulsoe Old Wood	SP919421	100	2009
Insects: Lepidoptera:	Satyrrium pruni	Black Hairstreak		WACA-Sch5_sect9.5a		RedList_GB_post2001-EN		High Priority butterflies	Moulsoe Old Wood	SP923424	100	2009
Insects: Lepidoptera:	Satyrrium w-album	White-letter Hairstreak		WACA-Sch5_sect9.5a	England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-EN		Medium Priority butterflies	Parson's Spinney, Great Linford	SP851422	100	1996
Insects: Lepidoptera:	Thymelicus lineola	Essex Skipper						Low Priority butterflies	Cotton Valley Sewage Works	SP8840	1000	1990
Insects: Lepidoptera:	Thymelicus lineola	Essex Skipper						Low Priority butterflies	Cotton Valley Sewage Works	SP884406	100	2010
Insects: Lepidoptera:	Thymelicus lineola	Essex Skipper						Low Priority butterflies	Fen Farm	SP905389	100	1992
Insects: Lepidoptera:	Thymelicus lineola	Essex Skipper						Low Priority butterflies	Lathbury (SP84S)	SP8644	1000	2013
Insects: Lepidoptera:	Thymelicus lineola	Essex Skipper						Low Priority butterflies	Lower Wood & adjacent hedges	SP9241	1000	1991
Insects: Lepidoptera:	Thymelicus lineola	Essex Skipper						Low Priority butterflies	Milton Keynes Village	SP8838	1000	1990
Insects: Lepidoptera:	Thymelicus lineola	Essex Skipper						Low Priority butterflies	Monkston and Oakgrove Parks	SP882385	100	2003
Insects: Lepidoptera:	Thymelicus lineola	Essex Skipper						Low Priority butterflies	Monkstone & Oakgrove Park	SP877390	100	2002
Insects: Lepidoptera:	Thymelicus lineola	Essex Skipper						Low Priority butterflies	Monkstone & Oakgrove Park	SP878385	100	2002
Insects: Lepidoptera:	Thymelicus lineola	Essex Skipper						Low Priority butterflies	Moulsoe Old Wood	SP919424	100	1991
Insects: Lepidoptera:	Thymelicus lineola	Essex Skipper						Low Priority butterflies	TETRAD SP84R - Vague Site	SP8742	1000	2013
Insects: Lepidoptera:	Thymelicus lineola	Essex Skipper						Low Priority butterflies	Tickford Fields Farm	SP894434	100	1992
Insects: Lepidoptera:	Thymelicus lineola	Essex Skipper						Low Priority butterflies	Willen, Milton Keynes	SP879413	100	1990
Insects: Lepidoptera:	Thymelicus lineola	Essex Skipper						Low Priority butterflies	Woolstone, Milton Keynes	SP871393	100	1991
Insects: Lepidoptera: moths	Acronicta psi	Grey Dagger			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Acronicta psi	Grey Dagger			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Acronicta rumicis	Knot Grass			England_NERC_S.41 & UKBAP-2007				Crawley Hills Field	SP903437	100	1997
Insects: Lepidoptera: moths	Acronicta rumicis	Knot Grass			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2016
Insects: Lepidoptera: moths	Acronicta rumicis	Knot Grass			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Acronicta rumicis	Knot Grass			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2013
Insects: Lepidoptera: moths	Acronicta rumicis	Knot Grass			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovatt Fields	SP871403	100	2015

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Insects: Lepidoptera: moths	Acronicta rumicis	Knot Grass			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Acronicta rumicis	Knot Grass			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2005
Insects: Lepidoptera: moths	Agrochola litura	Brown-spot Pinion			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2016
Insects: Lepidoptera: moths	Agrochola litura	Brown-spot Pinion			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Agrochola litura	Brown-spot Pinion			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Agrochola litura	Brown-spot Pinion			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2004
Insects: Lepidoptera: moths	Agrochola lychnidis	Beaded Chestnut			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2016
Insects: Lepidoptera: moths	Agrochola lychnidis	Beaded Chestnut			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Agrochola lychnidis	Beaded Chestnut			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2014
Insects: Lepidoptera: moths	Agrochola lychnidis	Beaded Chestnut			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Agrochola lychnidis	Beaded Chestnut			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2005
Insects: Lepidoptera: moths	Allophyes oxyacanthae	Green-brindled Crescent			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2015
Insects: Lepidoptera: moths	Allophyes oxyacanthae	Green-brindled Crescent			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Allophyes oxyacanthae	Green-brindled Crescent			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2014
Insects: Lepidoptera: moths	Allophyes oxyacanthae	Green-brindled Crescent			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovatt Fields	SP871403	100	2015
Insects: Lepidoptera: moths	Allophyes oxyacanthae	Green-brindled Crescent			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Allophyes oxyacanthae	Green-brindled Crescent			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2005
Insects: Lepidoptera: moths	Amphipoea oculea	Ear Moth			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2008
Insects: Lepidoptera: moths	Amphipoea oculea	Ear Moth			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	1990
Insects: Lepidoptera: moths	Amphipyra tragopoginis	Mouse Moth			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2016
Insects: Lepidoptera: moths	Amphipyra tragopoginis	Mouse Moth			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Amphipyra tragopoginis	Mouse Moth			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2014
Insects: Lepidoptera: moths	Amphipyra tragopoginis	Mouse Moth			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovatt Fields	SP871403	100	2015
Insects: Lepidoptera: moths	Amphipyra tragopoginis	Mouse Moth			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Amphipyra tragopoginis	Mouse Moth			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2005

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Insects: Lepidoptera: moths	Ancylosis oblitella						Notable		Willen: The Cottage	SP879411	100	2003
Insects: Lepidoptera: moths	Apamea anceps	Large Nutmeg			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2016
Insects: Lepidoptera: moths	Apamea anceps	Large Nutmeg			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Apamea anceps	Large Nutmeg			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2014
Insects: Lepidoptera: moths	Apamea anceps	Large Nutmeg			England_NERC_S.41 & UKBAP-2007				Moulsoe: Old Wood	SP924421	100	2010
Insects: Lepidoptera: moths	Apamea anceps	Large Nutmeg			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Apamea anceps	Large Nutmeg			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2005
Insects: Lepidoptera: moths	Apamea remissa	Dusky Brocade			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2011
Insects: Lepidoptera: moths	Apamea remissa	Dusky Brocade			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Apamea remissa	Dusky Brocade			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2010
Insects: Lepidoptera: moths	Apamea remissa	Dusky Brocade			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Apamea remissa	Dusky Brocade			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2003
Insects: Lepidoptera: moths	Aporophyla lutulenta	Deep-brown Dart			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2016
Insects: Lepidoptera: moths	Aporophyla lutulenta	Deep-brown Dart			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Aporophyla lutulenta	Deep-brown Dart			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2010
Insects: Lepidoptera: moths	Aporophyla lutulenta	Deep-brown Dart			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2005
Insects: Lepidoptera: moths	Archanara sparganii	Webb's Wainscot					Scarce-B		Garden in Newport Pagnell	SP859437	100	2016
Insects: Lepidoptera: moths	Archanara sparganii	Webb's Wainscot					Scarce-B		Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2014
Insects: Lepidoptera: moths	Archanara sparganii	Webb's Wainscot					Scarce-B		Milton Keynes: Willen Park: Lovatt Fields	SP871403	100	2015
Insects: Lepidoptera: moths	Archanara sparganii	Webb's Wainscot					Scarce-B		Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Archanara sparganii	Webb's Wainscot					Scarce-B		Willen: The Cottage	SP879411	100	2005
Insects: Lepidoptera: moths	Arctia caja	Garden Tiger			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2009
Insects: Lepidoptera: moths	Arctia caja	Garden Tiger			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Arctia caja	Garden Tiger			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2006
Insects: Lepidoptera: moths	Arctia caja	Garden Tiger			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2005

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Insects: Lepidoptera: moths	Asteroscopus sphinx	Sprawler			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2014
Insects: Lepidoptera: moths	Asteroscopus sphinx	Sprawler			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Asteroscopus sphinx	Sprawler			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2012
Insects: Lepidoptera: moths	Asteroscopus sphinx	Sprawler			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Asteroscopus sphinx	Sprawler			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2005
Insects: Lepidoptera: moths	Atethmia centrago	Centre-barred Sallow			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2016
Insects: Lepidoptera: moths	Atethmia centrago	Centre-barred Sallow			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Atethmia centrago	Centre-barred Sallow			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2014
Insects: Lepidoptera: moths	Atethmia centrago	Centre-barred Sallow			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovatt Fields	SP871403	100	2015
Insects: Lepidoptera: moths	Atethmia centrago	Centre-barred Sallow			England_NERC_S.41 & UKBAP-2007				Moulsoe: Old Wood	SP924421	100	2010
Insects: Lepidoptera: moths	Atethmia centrago	Centre-barred Sallow			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Atethmia centrago	Centre-barred Sallow			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2005
Insects: Lepidoptera: moths	Bembecia ichneumoniformis	Six-belted Clearwing					Scarce-B	Medium Priority moths	Cotton Valley Sewage Works	SP884406	100	2010
Insects: Lepidoptera: moths	Bembecia ichneumoniformis	Six-belted Clearwing					Scarce-B	Medium Priority moths	Willen lake - between the two	SP879404	100	2005
Insects: Lepidoptera: moths	Blepharita adusta	Dark Brocade			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	1994
Insects: Lepidoptera: moths	Brachylochia viminalis	Minor Shoulder-knot			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2004
Insects: Lepidoptera: moths	Brachylochia viminalis	Minor Shoulder-knot			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Brachylochia viminalis	Minor Shoulder-knot			England_NERC_S.41 & UKBAP-2007				Moulsoe: Old Wood	SP924421	100	2010
Insects: Lepidoptera: moths	Brachylochia viminalis	Minor Shoulder-knot			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2005
Insects: Lepidoptera: moths	Calamotropha paludella						Notable-B	Medium Priority moths	Garden in Newport Pagnell	SP859437	100	1997
Insects: Lepidoptera: moths	Calamotropha paludella						Notable-B	Medium Priority moths	Moulsoe: Old Wood	SP924421	100	2010
Insects: Lepidoptera: moths	Calamotropha paludella						Notable-B	Medium Priority moths	Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Calamotropha paludella						Notable-B	Medium Priority moths	Willen: The Cottage	SP879411	100	2005
Insects: Lepidoptera: moths	Calophasia lumula	Toadflax Brocade				RedList_GB_Pre94-R			Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Caradrina morpheus	Mottled Rustic			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2016

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Insects: Lepidoptera: moths	Caradrina morpheus	Mottled Rustic			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Caradrina morpheus	Mottled Rustic			England_NERC_S.41 & UKBAP-2007			Milton Keynes: Willen Park: Lovat Fields	SP871403	100		2014
Insects: Lepidoptera: moths	Caradrina morpheus	Mottled Rustic			England_NERC_S.41 & UKBAP-2007			Milton Keynes: Willen Park: Lovatt Fields	SP871403	100		2015
Insects: Lepidoptera: moths	Caradrina morpheus	Mottled Rustic			England_NERC_S.41 & UKBAP-2007			Willen, The Cottage	SP879411	100		2011
Insects: Lepidoptera: moths	Caradrina morpheus	Mottled Rustic			England_NERC_S.41 & UKBAP-2007			Willen: The Cottage	SP879411	100		2005
Insects: Lepidoptera: moths	Catarhoe rubidata	Ruddy Carpet					Scarce-B	Medium Priority moths	Willen: The Cottage	SP879411	100	2004
Insects: Lepidoptera: moths	Catoptria furcatellus						Notable-B		Garden in Newport Pagnell	SP859437	100	2010
Insects: Lepidoptera: moths	Celaena leucostigma	Crescent			England_NERC_S.41 & UKBAP-2007			Milton Keynes	SP8738	1000		1999
Insects: Lepidoptera: moths	Cerastis leucographa	White-marked						Medium Priority moths	Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Chesias legatella	Streak			England_NERC_S.41 & UKBAP-2007			Milton Keynes	SP8738	1000		1999
Insects: Lepidoptera: moths	Chesias legatella	Streak			England_NERC_S.41 & UKBAP-2007			Willen, The Cottage	SP879411	100		2006
Insects: Lepidoptera: moths	Chesias legatella	Streak			England_NERC_S.41 & UKBAP-2007			Willen: The Cottage	SP879411	100		2002
Insects: Lepidoptera: moths	Chiasmia clathrata	Latticed Heath			England_NERC_S.41 & UKBAP-2007			Milton Keynes	SP8738	1000		1999
Insects: Lepidoptera: moths	Chiasmia clathrata	Latticed Heath			England_NERC_S.41 & UKBAP-2007			Willen: The Cottage	SP879411	100		1997
Insects: Lepidoptera: moths	Chilodes maritimus	Silky Wainscot						Medium Priority moths	Garden in Newport Pagnell	SP859437	100	2011
Insects: Lepidoptera: moths	Chilodes maritimus	Silky Wainscot						Medium Priority moths	Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Chilodes maritimus	Silky Wainscot						Medium Priority moths	Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2013
Insects: Lepidoptera: moths	Chilodes maritimus	Silky Wainscot						Medium Priority moths	Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Chilodes maritimus	Silky Wainscot						Medium Priority moths	Willen: The Cottage	SP879411	100	2004
Insects: Lepidoptera: moths	Chortodes fluxa	Mere Wainscot					Scarce-B	Medium Priority moths	Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Chortodes fluxa	Mere Wainscot					Scarce-B	Medium Priority moths	Moulsoe: Old Wood	SP924421	100	2010
Insects: Lepidoptera: moths	Chortodes fluxa	Mere Wainscot					Scarce-B	Medium Priority moths	Willen, The Cottage	SP879411	100	2010
Insects: Lepidoptera: moths	Chortodes fluxa	Mere Wainscot					Scarce-B	Medium Priority moths	Willen: The Cottage	SP879411	100	2004
Insects: Lepidoptera: moths	Chrysoclista linneella							Medium Priority moths	Willen: The Cottage	SP879411	100	2003
Insects: Lepidoptera: moths	Cymatophorima diluta	Oak Lutestring			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	1995

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Insects: Lepidoptera: moths	Diarsia rubi	Small Square-spot			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2016
Insects: Lepidoptera: moths	Diarsia rubi	Small Square-spot			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Diarsia rubi	Small Square-spot			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2012
Insects: Lepidoptera: moths	Diarsia rubi	Small Square-spot			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2010
Insects: Lepidoptera: moths	Diarsia rubi	Small Square-spot			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2005
Insects: Lepidoptera: moths	Diloba caeruleocephala	Figure of Eight			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Diloba caeruleocephala	Figure of Eight			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2005
Insects: Lepidoptera: moths	Earias clorana	Cream-bordered Green Pea					Scarce-B	Medium Priority moths	Garden in Newport Pagnell	SP859437	100	2013
Insects: Lepidoptera: moths	Earias clorana	Cream-bordered Green Pea					Scarce-B	Medium Priority moths	Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Earias clorana	Cream-bordered Green Pea					Scarce-B	Medium Priority moths	Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Earias clorana	Cream-bordered Green Pea					Scarce-B	Medium Priority moths	Willen: The Cottage	SP879411	100	2005
Insects: Lepidoptera: moths	Ecliptopera silaceata	Small Phoenix			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2009
Insects: Lepidoptera: moths	Ecliptopera silaceata	Small Phoenix			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Ecliptopera silaceata	Small Phoenix			England_NERC_S.41 & UKBAP-2007				Moulsoe: Old Wood	SP924421	100	2010
Insects: Lepidoptera: moths	Ecliptopera silaceata	Small Phoenix			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2008
Insects: Lepidoptera: moths	Ecliptopera silaceata	Small Phoenix			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2004
Insects: Lepidoptera: moths	Eilema complana	Scarce Footman				RedList_GB_Pre94-R			Garden in Newport Pagnell	SP859437	100	2015
Insects: Lepidoptera: moths	Eilema complana	Scarce Footman				RedList_GB_Pre94-R			Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Eilema complana	Scarce Footman				RedList_GB_Pre94-R			Moulsoe: Old Wood	SP924421	100	2010
Insects: Lepidoptera: moths	Eilema complana	Scarce Footman				RedList_GB_Pre94-R			Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Eilema complana	Scarce Footman				RedList_GB_Pre94-R			Willen: The Cottage	SP879411	100	2004
Insects: Lepidoptera: moths	Eilema sororcula	Orange Footman						Medium Priority moths	Garden in Newport Pagnell	SP859437	100	2016
Insects: Lepidoptera: moths	Eilema sororcula	Orange Footman						Medium Priority moths	Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2014
Insects: Lepidoptera: moths	Eilema sororcula	Orange Footman						Medium Priority moths	Willen, The Cottage	SP879411	100	2008
Insects: Lepidoptera: moths	Ennomos fuscantaria	Dusky Thorn			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2016

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Insects: Lepidoptera: moths	Ennomos fuscantaria	Dusky Thorn			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2009
Insects: Lepidoptera: moths	Ennomos fuscantaria	Dusky Thorn			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Ennomos fuscantaria	Dusky Thorn			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2004
Insects: Lepidoptera: moths	Epirrhoe galiata	Galium Carpet			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	1996
Insects: Lepidoptera: moths	Eudonia delunella						Notable-B		Garden in Newport Pagnell	SP859437	100	2016
Insects: Lepidoptera: moths	Euleioptilus carphodactyla							Medium Priority moths	Moulsoe: Old Wood	SP924421	100	2010
Insects: Lepidoptera: moths	Eulithis mellinata	Spinach			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2009
Insects: Lepidoptera: moths	Eulithis mellinata	Spinach			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	1990
Insects: Lepidoptera: moths	Euxoa nigricans	Garden Dart			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2012
Insects: Lepidoptera: moths	Euxoa nigricans	Garden Dart			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Euxoa nigricans	Garden Dart			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	1998
Insects: Lepidoptera: moths	Euxoa tritici	White-line Dart			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	1996
Insects: Lepidoptera: moths	Euzophera cinerosella						Notable-B		Willen: The Cottage	SP879411	100	1991
Insects: Lepidoptera: moths	Graphiphora augur	Double Dart			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Graphiphora augur	Double Dart			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2002
Insects: Lepidoptera: moths	Hecatera dysodea	Small Ranunculus				RedList_GB_Pre94-EX			Garden in Newport Pagnell	SP859437	100	2015
Insects: Lepidoptera: moths	Hecatera dysodea	Small Ranunculus				RedList_GB_Pre94-EX			Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2014
Insects: Lepidoptera: moths	Hecatera dysodea	Small Ranunculus				RedList_GB_Pre94-EX			Newport Pagnell: telephone exchange	SP876438	100	2010
Insects: Lepidoptera: moths	Hecatera dysodea	Small Ranunculus				RedList_GB_Pre94-EX			Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Hemistola chrysoprasaria	Small Emerald			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2016
Insects: Lepidoptera: moths	Hemistola chrysoprasaria	Small Emerald			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	1993
Insects: Lepidoptera: moths	Hepialus humuli	Ghost Moth			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2015
Insects: Lepidoptera: moths	Hepialus humuli	Ghost Moth			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Hepialus humuli	Ghost Moth			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2014
Insects: Lepidoptera: moths	Hepialus humuli	Ghost Moth			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovatt Fields	SP871403	100	2015

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Insects: Lepidoptera: moths	Hepialus humuli	Ghost Moth			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2010
Insects: Lepidoptera: moths	Hepialus humuli	Ghost Moth			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2005
Insects: Lepidoptera: moths	Hoplodrina blanda	Rustic			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Hoplodrina blanda	Rustic			England_NERC_S.41 & UKBAP-2007				Moulsoe: Old Wood	SP924421	100	2010
Insects: Lepidoptera: moths	Hoplodrina blanda	Rustic			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Hoplodrina blanda	Rustic			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2005
Insects: Lepidoptera: moths	Hydraecia micacea	Rosy Rustic			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2016
Insects: Lepidoptera: moths	Hydraecia micacea	Rosy Rustic			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Hydraecia micacea	Rosy Rustic			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2014
Insects: Lepidoptera: moths	Hydraecia micacea	Rosy Rustic			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovatt Fields	SP871403	100	2015
Insects: Lepidoptera: moths	Hydraecia micacea	Rosy Rustic			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Hydraecia micacea	Rosy Rustic			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2005
Insects: Lepidoptera: moths	Idaea dilutaria	Silky Wave			England_NERC_S.41 & UKBAP-2007	RedList_GB_Pre94-R			Garden in Newport Pagnell	SP859437	100	2004
Insects: Lepidoptera: moths	Idaea rusticata	Least Carpet						Medium Priority moths	Garden in Newport Pagnell	SP859437	100	2015
Insects: Lepidoptera: moths	Idaea rusticata	Least Carpet						Medium Priority moths	Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2014
Insects: Lepidoptera: moths	Idaea rusticata	Least Carpet						Medium Priority moths	Willen: The Cottage	SP879411	100	1999
Insects: Lepidoptera: moths	Loxostege sticticalis					RedList_GB_Pre94-EX			Willen: The Cottage	SP879411	100	1995
Insects: Lepidoptera: moths	Lycia hirtaria	Brindled Beauty			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2016
Insects: Lepidoptera: moths	Lycia hirtaria	Brindled Beauty			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Lycia hirtaria	Brindled Beauty			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2012
Insects: Lepidoptera: moths	Lycia hirtaria	Brindled Beauty			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Lycia hirtaria	Brindled Beauty			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2003
Insects: Lepidoptera: moths	Macaria wauaria	V-Moth			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2011
Insects: Lepidoptera: moths	Macaria wauaria	V-Moth			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2003
Insects: Lepidoptera: moths	Malacosoma neustria	Lackey			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2016

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Insects: Lepidoptera: moths	Malacosoma neustria	Lackey			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Malacosoma neustria	Lackey			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2012
Insects: Lepidoptera: moths	Malacosoma neustria	Lackey			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovatt Fields	SP871403	100	2015
Insects: Lepidoptera: moths	Malacosoma neustria	Lackey			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Malacosoma neustria	Lackey			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2005
Insects: Lepidoptera: moths	Melanchra persicariae	Dot Moth			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2016
Insects: Lepidoptera: moths	Melanchra persicariae	Dot Moth			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Melanchra persicariae	Dot Moth			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2014
Insects: Lepidoptera: moths	Melanchra persicariae	Dot Moth			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovatt Fields	SP871403	100	2015
Insects: Lepidoptera: moths	Melanchra persicariae	Dot Moth			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Melanchra persicariae	Dot Moth			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2005
Insects: Lepidoptera: moths	Melanchra pisi	Broom Moth			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2006
Insects: Lepidoptera: moths	Melanchra pisi	Broom Moth			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Melanchra pisi	Broom Moth			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovatt Fields	SP871403	100	2015
Insects: Lepidoptera: moths	Melanchra pisi	Broom Moth			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	1999
Insects: Lepidoptera: moths	Mompha jurassicella							Medium Priority moths	Willen, The Cottage	SP879411	100	2012
Insects: Lepidoptera: moths	Mythimna comma	Shoulder-striped Wainscot			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2005
Insects: Lepidoptera: moths	Mythimna comma	Shoulder-striped Wainscot			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	1990
Insects: Lepidoptera: moths	Noctua orbona	Lunar Yellow Underwing			England_NERC_S.41 & UKBAP-2007		Scarce-B	High Priority moths	Garden in Newport Pagnell	SP859437	100	2005
Insects: Lepidoptera: moths	Orthosia gracilis	Powdered Quaker			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2014
Insects: Lepidoptera: moths	Orthosia gracilis	Powdered Quaker			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Orthosia gracilis	Powdered Quaker			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2011
Insects: Lepidoptera: moths	Orthosia gracilis	Powdered Quaker			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Orthosia gracilis	Powdered Quaker			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2005
Insects: Lepidoptera: moths	Pelurga comitata	Dark Spinach			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2011

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Insects: Lepidoptera: moths	Pelurga comitata	Dark Spinach			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2004
Insects: Lepidoptera: moths	Perizoma albulata	Grass Rivulet			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2006
Insects: Lepidoptera: moths	Rhizedra lutosa	Large Wainscot			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2016
Insects: Lepidoptera: moths	Rhizedra lutosa	Large Wainscot			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2011
Insects: Lepidoptera: moths	Rhizedra lutosa	Large Wainscot			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovatt Fields	SP871403	100	2015
Insects: Lepidoptera: moths	Rhizedra lutosa	Large Wainscot			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Rhizedra lutosa	Large Wainscot			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2005
Insects: Lepidoptera: moths	Schoenobius gigantella						Notable-B		Garden in Newport Pagnell	SP859437	100	2016
Insects: Lepidoptera: moths	Schoenobius gigantella						Notable-B		Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Scotopteryx chenopodiata	Shaded Broad-bar			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2016
Insects: Lepidoptera: moths	Scotopteryx chenopodiata	Shaded Broad-bar			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Scotopteryx chenopodiata	Shaded Broad-bar			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2013
Insects: Lepidoptera: moths	Scotopteryx chenopodiata	Shaded Broad-bar			England_NERC_S.41 & UKBAP-2007				Moulsoe: Old Wood	SP924421	100	2010
Insects: Lepidoptera: moths	Scotopteryx chenopodiata	Shaded Broad-bar			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Scotopteryx chenopodiata	Shaded Broad-bar			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2005
Insects: Lepidoptera: moths	Sesia apiformis	Hornet Moth					Scarce-B	Medium Priority moths	Milton Keynes: Peace Pagoda car park	SP873405	100	2013
Insects: Lepidoptera: moths	Sesia apiformis	Hornet Moth					Scarce-B	Medium Priority moths	Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Sitochroa palealis						Notable	Medium Priority moths	Garden in Newport Pagnell	SP859437	100	2008
Insects: Lepidoptera: moths	Spilosoma lubricipeda	White Ermine			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2015
Insects: Lepidoptera: moths	Spilosoma lubricipeda	White Ermine			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Spilosoma lubricipeda	White Ermine			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2013
Insects: Lepidoptera: moths	Spilosoma lubricipeda	White Ermine			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovatt Fields	SP871403	100	2015
Insects: Lepidoptera: moths	Spilosoma lubricipeda	White Ermine			England_NERC_S.41 & UKBAP-2007				Moulsoe: Old Wood	SP924421	100	2010
Insects: Lepidoptera: moths	Spilosoma lubricipeda	White Ermine			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Spilosoma lubricipeda	White Ermine			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2005

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Insects: Lepidoptera: moths	Spilosoma luteum	Buff Ermine			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2016
Insects: Lepidoptera: moths	Spilosoma luteum	Buff Ermine			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Spilosoma luteum	Buff Ermine			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2014
Insects: Lepidoptera: moths	Spilosoma luteum	Buff Ermine			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovatt Fields	SP871403	100	2015
Insects: Lepidoptera: moths	Spilosoma luteum	Buff Ermine			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Spilosoma luteum	Buff Ermine			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2005
Insects: Lepidoptera: moths	Synanthedon flaviventris	Sallow Clearwing					Scarce-B	Medium Priority moths	Willen Lake - North	SP879410	100	2005
Insects: Lepidoptera: moths	Synanthedon myopaeformis	Red-belted Clearwing					Scarce-B	Medium Priority moths	Willen, The Cottage	SP879411	100	2010
Insects: Lepidoptera: moths	Synanthedon myopaeformis	Red-belted Clearwing					Scarce-B	Medium Priority moths	Willen: The Cottage	SP879411	100	2005
Insects: Lepidoptera: moths	Thera juniperata	Juniper Carpet						Medium Priority moths	Garden in Newport Pagnell	SP859437	100	2008
Insects: Lepidoptera: moths	Thera juniperata	Juniper Carpet						Medium Priority moths	Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Thera juniperata	Juniper Carpet						Medium Priority moths	Willen: The Cottage	SP879411	100	1994
Insects: Lepidoptera: moths	Tholera decimalis	Feathered Gothic			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2013
Insects: Lepidoptera: moths	Tholera decimalis	Feathered Gothic			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Tholera decimalis	Feathered Gothic			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2009
Insects: Lepidoptera: moths	Tholera decimalis	Feathered Gothic			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	1999
Insects: Lepidoptera: moths	Timandra comae	Blood-vein			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2016
Insects: Lepidoptera: moths	Timandra comae	Blood-vein			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Timandra comae	Blood-vein			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2013
Insects: Lepidoptera: moths	Timandra comae	Blood-vein			England_NERC_S.41 & UKBAP-2007				Moulsoe: Old Wood	SP924421	100	2010
Insects: Lepidoptera: moths	Timandra comae	Blood-vein			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Timandra comae	Blood-vein			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2005
Insects: Lepidoptera: moths	Trichiura crataegi	Pale Eggar			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	1999
Insects: Lepidoptera: moths	Tyria jacobaeae	Cinnabar			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2016
Insects: Lepidoptera: moths	Tyria jacobaeae	Cinnabar			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999

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Insects: Lepidoptera: moths	Tyria jacobaeae	Cinnabar			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Tyria jacobaeae	Cinnabar			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2005
Insects: Lepidoptera: moths	Tyta luctuosa	Four-spotted			England_NERC_S.41 & UKBAP-2007	RedList_GB_Pre94-VU	Scarce-A	High Priority moths	Willen: The Cottage	SP879411	100	1999
Insects: Lepidoptera: moths	Watsonalla binaria	Oak Hook-tip			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2016
Insects: Lepidoptera: moths	Watsonalla binaria	Oak Hook-tip			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Watsonalla binaria	Oak Hook-tip			England_NERC_S.41 & UKBAP-2007				Moulsoe: Old Wood	SP924421	100	2010
Insects: Lepidoptera: moths	Watsonalla binaria	Oak Hook-tip			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2009
Insects: Lepidoptera: moths	Watsonalla binaria	Oak Hook-tip			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2005
Insects: Lepidoptera: moths	Xanthia gilvago	Dusky-lemon Sallow			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2010
Insects: Lepidoptera: moths	Xanthia gilvago	Dusky-lemon Sallow			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2014
Insects: Lepidoptera: moths	Xanthia gilvago	Dusky-lemon Sallow			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2006
Insects: Lepidoptera: moths	Xanthia icteritia	Sallow			England_NERC_S.41 & UKBAP-2007				Garden in Newport Pagnell	SP859437	100	2015
Insects: Lepidoptera: moths	Xanthia icteritia	Sallow			England_NERC_S.41 & UKBAP-2007				Milton Keynes	SP8738	1000	1999
Insects: Lepidoptera: moths	Xanthia icteritia	Sallow			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovat Fields	SP871403	100	2014
Insects: Lepidoptera: moths	Xanthia icteritia	Sallow			England_NERC_S.41 & UKBAP-2007				Milton Keynes: Willen Park: Lovatt Fields	SP871403	100	2015
Insects: Lepidoptera: moths	Xanthia icteritia	Sallow			England_NERC_S.41 & UKBAP-2007				Moulsoe: Old Wood	SP924421	100	2010
Insects: Lepidoptera: moths	Xanthia icteritia	Sallow			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2011
Insects: Lepidoptera: moths	Xanthia icteritia	Sallow			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	2005
Insects: Lepidoptera: moths	Xanthorhoe ferrugata	Dark-barred Twin-spot Carpet			England_NERC_S.41 & UKBAP-2007				Willen, The Cottage	SP879411	100	2008
Insects: Lepidoptera: moths	Xanthorhoe ferrugata	Dark-barred Twin-spot Carpet			England_NERC_S.41 & UKBAP-2007				Willen: The Cottage	SP879411	100	1999
Insects: true bugs	Cicadula flori						Notable-B		Cotton Valley Sewage Works	SP884406	100	2010
Insects: true bugs	Lygus pratensis					RedList_GB_Pre94-R			Cotton Valley Sewage Works	SP884406	100	2010
Insects: true bugs	Stictopleurus punctatonevrosus					RedList_GB_Pre94-EX			Cotton Valley Sewage Works	SP884406	100	2010
Invertebrates: molluscs	Potamopyrgus antipodarum	Jenkins' Spire Snail				RedList_GB_post2001-NA			River Ouzel, Lovat Bank	SP878439	100	2006
Invertebrates: molluscs	Potamopyrgus antipodarum	Jenkins' Spire Snail				RedList_GB_post2001-NA			River Ouzel, Willen gauge	SP882409	100	2008

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Mammals	# Meles meles	Badger		Protection_of_Badgers_Act_1992					Brooklands Farm Cottages, near	SP903403	100	2016
Mammals	# Meles meles	Badger		Protection_of_Badgers_Act_1992					Brooklands Farm Cottages, near	SP905402	100	2016
Mammals	# Meles meles	Badger		Protection_of_Badgers_Act_1992					Milton Keynes, Pineham	SP882413	100	2016
Mammals	# Meles meles	Badger		Protection_of_Badgers_Act_1992					Milton Keynes, Pineham	SP888406	100	2016
Mammals	# Meles meles	Badger		Protection_of_Badgers_Act_1992					Milton Keynes, Pineham	SP890406	100	2016
Mammals	# Meles meles	Badger		Protection_of_Badgers_Act_1992					Milton Keynes, Pineham	SP891405	100	2016
Mammals	# Meles meles	Badger		Protection_of_Badgers_Act_1992					Milton Keynes, Pineham	SP891407	100	2016
Mammals	# Meles meles	Badger		Protection_of_Badgers_Act_1992					Milton Keynes, Pineham	SP892406	100	2016
Mammals	# Meles meles	Badger		Protection_of_Badgers_Act_1992					Milton Keynes, Pineham	SP892407	100	2016
Mammals	Arvicola amphibius	Water Vole		WACA-Sch5_sect9.4.a,WACA	England_NERC_S.41 & UKBAP-2007				Great Linford, fishing lake	SP854429	100	1997
Mammals	Erinaceus europaeus	Western Hedgehog			England_NERC_S.41 & UKBAP-2007				Downhead Park, MK: Brickhill Street (V10)	SP8725240659	1	2014
Mammals	Erinaceus europaeus	Western Hedgehog			England_NERC_S.41 & UKBAP-2007				Downhead Park, MK: Brickhill Street (V10)	SP87274054	10	2014
Mammals	Erinaceus europaeus	Western Hedgehog			England_NERC_S.41 & UKBAP-2007				Downs Barn School	SP860401	100	2012
Mammals	Erinaceus europaeus	Western Hedgehog			England_NERC_S.41 & UKBAP-2007				Near School	SP853411	100	2009
Mammals	Erinaceus europaeus	Western Hedgehog			England_NERC_S.41 & UKBAP-2007				TETRAD SP84Q - Vague Site(SP871414)	SP871414	100	2010
Mammals	Erinaceus europaeus	Western Hedgehog			England_NERC_S.41 & UKBAP-2007				TETRAD SP84W - Vague Site(SP884436)	SP884436	100	2010
Mammals	Erinaceus europaeus	Western Hedgehog			England_NERC_S.41 & UKBAP-2007				Woolstone, MK: Brickhill Street (V10)	SP8771339309	1	2014
Mammals	Lepus europaeus	Brown Hare			England_NERC_S.41 & UKBAP-2007				A509 road	SP895449	100	2013
Mammals	Lepus europaeus	Brown Hare			England_NERC_S.41 & UKBAP-2007				Chicheley: Hill Farm field	SP90524478	10	2014
Mammals	Lepus europaeus	Brown Hare			England_NERC_S.41 & UKBAP-2007				Tickford Lodge Farm	SP899429	100	2000
Mammals	Lepus europaeus	Brown Hare			England_NERC_S.41 & UKBAP-2007				tickfordfields farm, Newport Pagnell	SP890437	100	2000
Mammals	Lutra lutra	Otter	EPS-HabReg-Sch2 & HabDir-A2*,HabDir-A4	WACA-Sch5_sect9.4b,WACA	England_NERC_S.41 & UKBAP-2007				River Ouse, Sherington Bridge	SP884454	100	2009
Mammals	Lutra lutra	Otter	EPS-HabReg-Sch2 & HabDir-A2*,HabDir-A4	WACA-Sch5_sect9.4b,WACA	England_NERC_S.41 & UKBAP-2007				River Ouzel, M1 road bridge	SP884413	100	2009
Mammals	Lutra lutra	Otter	EPS-HabReg-Sch2 & HabDir-A2*,HabDir-A4	WACA-Sch5_sect9.4b,WACA	England_NERC_S.41 & UKBAP-2007				River Ouzel, Pineham	SP883414	100	2009
Mammals	Lutra lutra	Otter	EPS-HabReg-Sch2 & HabDir-A2*,HabDir-A4	WACA-Sch5_sect9.4b,WACA	England_NERC_S.41 & UKBAP-2007				TETRAD SP84V - Vague Site(SP880410)	SP880410	100	2010

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Mammals	Lutra lutra	Otter	EPS-HabReg-Sch2 & HabDir-A2*, HabDir-A4	WACA-Sch5_sect9.4b, WACA-	England_NERC_S.41 & UKBAP-2007				Willen Lake	SP881405	100	2013
Mammals	Meles meles	Badger		Protection_of_Badgers_Act_1992					A422 road River Ouzel, Caldecote Mill	SP887428	100	2013
Mammals	Meles meles	Badger		Protection_of_Badgers_Act_1992					A509 heading north up to Chicheley Hill	SP8958144815	1	2014
Mammals	Meles meles	Badger		Protection_of_Badgers_Act_1992					A509 Newport Pagnell bypass	SP896453	100	2013
Mammals	Meles meles	Badger		Protection_of_Badgers_Act_1992					A509 road South of Little End, Sherrington	SP897454	100	2012
Mammals	Meles meles	Badger		Protection_of_Badgers_Act_1992					A509 South of Moulsoe Buildings	SP893413	100	2012
Mammals	Meles meles	Badger		Protection_of_Badgers_Act_1992					Atterbury	SP891400	100	2008
Mammals	Meles meles	Badger		Protection_of_Badgers_Act_1992					B526 Lathbury	SP876454	100	2010
Mammals	Meles meles	Badger		Protection_of_Badgers_Act_1992					Brook Furlong, M1 junction 14	SP893407	100	2008
Mammals	Meles meles	Badger		Protection_of_Badgers_Act_1992					Caldecote Lane	SP885426	100	2004
Mammals	Meles meles	Badger		Protection_of_Badgers_Act_1992					Fields south of Broughton Manor	SP900393	100	2002
Mammals	Meles meles	Badger		Protection_of_Badgers_Act_1992					Great Linford, fishing lake	SP854429	100	2004
Mammals	Meles meles	Badger		Protection_of_Badgers_Act_1992					Lealand House	SP857430	100	2004
Mammals	Meles meles	Badger		Protection_of_Badgers_Act_1992					Middleton	SP884395	100	2008
Mammals	Meles meles	Badger		Protection_of_Badgers_Act_1992					Newlands	SP871395	100	2008
Mammals	Meles meles	Badger		Protection_of_Badgers_Act_1992					Newport Pagnell: London Road	SP88954241	10	2014
Mammals	Meles meles	Badger		Protection_of_Badgers_Act_1992					Newport Pagnell: London Road	SP90913857	10	2014
Mammals	Meles meles	Badger		Protection_of_Badgers_Act_1992					South of Newport Stables	SP890424	100	2013
Mammals	Meles meles	Badger		Protection_of_Badgers_Act_1992					TETRAD SP84V - Vague Site(SP880410)	SP880410	100	2010
Mammals	Meles meles	Badger		Protection_of_Badgers_Act_1992					West side of A509 (M1 Pineham)	SP892406	100	2008
Mammals	Meles meles	Badger		Protection_of_Badgers_Act_1992					Whitsundoles Farm, Salford MK	SP91763990	10	2013
Mammals	Meles meles	Badger		Protection_of_Badgers_Act_1992					Willen Road, near Tongwell roundabout	SP878418	100	2008
Mammals	Myotis daubentonii	Daubenton's Bat	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b, WACA-					Grand Union Canal, Great Linford Church	SP852424	100	1998
Mammals	Myotis daubentonii	Daubenton's Bat	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b, WACA-					Lathbury / River Great Ouse	SP871440	100	2005
Mammals	Myotis daubentonii	Daubenton's Bat	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b, WACA-					Manor Park, Great Linford	SP8542	1000	1998

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Mammals	Myotis daubentonii	Daubenton's Bat	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					Oakgrove Grid Square	SP878033879 1	1	2008
Mammals	Myotis daubentonii	Daubenton's Bat	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					Oakgrove, MK	SP880387	100	2004
Mammals	Myotis daubentonii	Daubenton's Bat	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					River Ouzel, Newport Pagnell Castle	SP879440	100	1998
Mammals	Myotis nattereri	Natterer's Bat	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					Caldecote Mill	SP885427	100	1990
Mammals	Myotis nattereri	Natterer's Bat	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					River Ouzel, Caldecote Mill	SP886427	100	1990
Mammals	Myotis sp.	Myotis bat sp.	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					Fields south of Broughton Manor	SP900393	100	2002
Mammals	Nyctalus noctula	Noctule Bat	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Atterbury, MK	SP892400	100	2002
Mammals	Nyctalus noctula	Noctule Bat	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Oakgrove Grid Square	SP878033879 1	1	2008
Mammals	Nyctalus noctula	Noctule Bat	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Oakgrove, MK	SP880387	100	2004
Mammals	Nyctalus noctula	Noctule Bat	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Pond west of Kingston	SP898385	100	1999
Mammals	Nyctalus noctula	Noctule Bat	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				St Mary's Church, Willen	SP878524122 0	1	2009
Mammals	Pipistrellus pipistrellus	Common Pipistrelle	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					Atterbury, MK	SP892400	100	2002
Mammals	Pipistrellus pipistrellus	Common Pipistrelle	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					Gardens, Cowper Close, Newport Pagnell	SP865439	100	1995
Mammals	Pipistrellus pipistrellus	Common Pipistrelle	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					Gardens, Wheelwrights Mews, Neath Hill	SP857408	100	1999
Mammals	Pipistrellus pipistrellus	Common Pipistrelle	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					Great Linford Churchyard (St Andrew)	SP851424	100	1994
Mammals	Pipistrellus pipistrellus	Common Pipistrelle	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					Green Park	SP875431	100	1998
Mammals	Pipistrellus pipistrellus	Common Pipistrelle	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					Hedge South of Downs Barn Estate	SP862401	100	1998
Mammals	Pipistrellus pipistrellus	Common Pipistrelle	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					House - Great Linford	SP852422	100	1990
Mammals	Pipistrellus pipistrellus	Common Pipistrelle	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					Manor Park, Great Linford	SP8542	1000	1999
Mammals	Pipistrellus pipistrellus	Common Pipistrelle	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					Milton Keynes: Atterbury Park	SP890447	100	2002
Mammals	Pipistrellus pipistrellus	Common Pipistrelle	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					Milton Keynes: Barn, Downhead Park	SP862407	100	2002
Mammals	Pipistrellus pipistrellus	Common Pipistrelle	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					Milton Keynes: Middleton	SP885392	100	2004
Mammals	Pipistrellus pipistrellus	Common Pipistrelle	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					Oakgrove Grid Square	SP878033879 1	1	2008
Mammals	Pipistrellus pipistrellus	Common Pipistrelle	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					Oakgrove, MK	SP880387	100	2004
Mammals	Pipistrellus pipistrellus	Common Pipistrelle	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					Pond, Great Linford Cricket Ground	SP854422	100	1990

group	species	English name	European legislation	UK legislation	Species of Principal Importance	Red List (GB unless stated)	Rare / Scarce	local status	site	grid ref	precision	latest record
Mammals	Pipistrellus pipistrellus	Common Pipistrelle	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					River Ouse, North Bridge, Newport Pagnell	SP877441	100	1992
Mammals	Pipistrellus pipistrellus	Common Pipistrelle	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					St Andrews C of E Infant School, Great Linford, Milton Keynes	SP8526941985	1	2013
Mammals	Pipistrellus pipistrellus	Common Pipistrelle	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					St Mary's Church, Willen	SP8785241220	1	2011
Mammals	Pipistrellus pipistrellus	Common Pipistrelle	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					TETRAD SP84R - Vague Site(SP868425)	SP868425	100	2010
Mammals	Pipistrellus pipistrellus	Common Pipistrelle	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					The Mill House, Newport Pagnell	SP873430	100	1995
Mammals	Pipistrellus pygmaeus	Soprano Pipistrelle	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Gardens, Linden Grove, Great Linford	SP85484193	10	2009
Mammals	Pipistrellus pygmaeus	Soprano Pipistrelle	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Newport Pagnell	SP877441	100	2009
Mammals	Pipistrellus pygmaeus	Soprano Pipistrelle	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Oakgrove, MK	SP880387	100	2004
Mammals	Pipistrellus pygmaeus	Soprano Pipistrelle	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				St Andrews C of E Infant School, Great Linford, Milton Keynes	SP8526941985	1	2013
Mammals	Pipistrellus sp.	Pipistrelle species	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					Cranfield Road, Mousloe	SP910420	100	1997
Mammals	Pipistrellus sp.	Pipistrelle species	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					Fields south of Broughton Manor	SP900393	100	2002
Mammals	Pipistrellus sp.	Pipistrelle species	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					Moulsoe	SP915419	100	1991
Mammals	Pipistrellus sp.	Pipistrelle species	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					Newport Pagnell	SP877441	100	2008
Mammals	Pipistrellus sp.	Pipistrelle species	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					Newport Pagnell, Wolverton Rd	SP86664365	10	2015
Mammals	Pipistrellus sp.	Pipistrelle species	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					St Mary's Church, Willen	SP8785241220	1	2008
Mammals	Plecotus auritus	Brown Long-eared Bat	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				4 Finch Close	SP884391	100	2000
Mammals	Plecotus auritus	Brown Long-eared Bat	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Cranfield Road, Mousloe	SP910420	100	1997
Mammals	Plecotus auritus	Brown Long-eared Bat	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Great Linford Churchyard (St Andrew)	SP851424	100	1994
Mammals	Plecotus auritus	Brown Long-eared Bat	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Milton Keynes: Atterbury Park	SP890447	100	2002
Mammals	Plecotus auritus	Brown Long-eared Bat	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Newport Pagnell	SP8743	1000	1992
Mammals	Plecotus auritus	Brown Long-eared Bat	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				Pagnell Grange	SP868437	100	2008
Mammals	Plecotus auritus	Brown Long-eared Bat	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				River Ouse, North Bridge, Newport Pagnell	SP854422	100	1992
Mammals	Plecotus auritus	Brown Long-eared Bat	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-	England_NERC_S.41 & UKBAP-2007				St Mary's Church, Willen	SP8785241220	1	2008
Mammals	Plecotus sp.	Long-eared bats	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					Newport Pagnell, Wolverton Rd	SP86664365	10	2015
Mammals	Plecotus sp.	Long-eared bats	EPS-HabReg-Sch2 & HabDir-A4	WACA-Sch5_sect9.4b,WACA-					Wilford Close	SP874385	100	2012

group	species	English name	European legislation	UK legislation	Species of Principal Importance	Red List (GB unless stated)	Rare / Scarce	local status	site	grid ref	precision	latest record
Plants	Brassica oleracea	Wild Cabbage					NS-excludes		Fields south of Broughton Manor	SP900393	100	2003
Plants	Briza media	Quaking-grass				RedList_GB_post2001-NT (England)			Broughton (SP84V)	SP8940	1000	2015
Plants	Bromus x pseudohominei	Lesser Soft-brome						County Scarce	Lathbury (SP84S)	SP8644	1000	1993
Plants	Buxus sempervirens	Box				RedList_GB_post2001-DD	NR-excludes		TETRAD SP84V - Vague Site (SP880410)	SP880410	100	2010
Plants	Buxus sempervirens	Box				RedList_GB_post2001-DD	NR-excludes		Willen (SP84Q)	SP879411	100	2010
Plants	Catabrosa aquatica	Whorl-grass				RedList_GB_post2001-VU (England)			Springfield (SP83U)	SP83U	2000	2001
Plants	Cuscuta europaea	Greater Dodder					NS-excludes		Broughton (SP84V)	SP8840	1000	1990
Plants	Cuscuta europaea	Greater Dodder					NS-excludes		Springfield (SP83U)	SP83U	2000	1991
Plants	Cuscuta europaea	Greater Dodder					NS-excludes		Springfield (SP83U)	SP8739	1000	2003
Plants	Cuscuta europaea	Greater Dodder					NS-excludes		Springfield (SP83U)	SP878385	100	2011
Plants	Cuscuta europaea	Greater Dodder					NS-excludes		Springfield (SP83U)	SP87903921	10	2009
Plants	Cyperus longus	Galingale				RedList_GB_post2001-NT (GB) &	NS-excludes		Willen (SP84Q)	SP84Q	2000	1996
Plants	Erophila glabrescens	Glabrous Whitlowgrass						County Rare	Lathbury (SP84S)	SP84S	2000	1995
Plants	Euphorbia exigua	Dwarf Spurge				RedList_GB_post2001-NT (GB) &			Mulberry Park Rough (Portfields)	SP857440	100	1990
Plants	Fragaria vesca	Wild Strawberry				RedList_GB_post2001-NT (England)			Lathbury (SP84S)	SP84S	2000	1996
Plants	Fragaria vesca	Wild Strawberry				RedList_GB_post2001-NT (England)			Near School	SP853411	100	2000
Plants	Fragaria vesca	Wild Strawberry				RedList_GB_post2001-NT (England)			Willen (SP84Q)	SP84Q	2000	2000
Plants	Fragaria vesca	Wild Strawberry				RedList_GB_post2001-NT (England)			Willen Lake Island	SP878406	100	2016
Plants	Fragaria vesca	Wild Strawberry				RedList_GB_post2001-NT (England)			Willen Lake Island [SP84Q]	SP879406	100	2000
Plants	Glebionis segetum	Corn Marigold				RedList_GB_post2001-VU (GB) &			Hartigan Gravel Pits, Broughton (master site)	SP897395	100	1994
Plants	Helleborus foetidus	Stinking Hellebore					NS-excludes		Central Milton Keynes (SP83P)	SP896395	100	1997
Plants	Helleborus foetidus	Stinking Hellebore					NS-excludes		Willen, Millington Gate & Newport Rd	SP877413	100	2010
Plants	Hyacinthoides non-scripta	Bluebell		WACA-Sch8					Lathbury (SP84S)	SP84S	2000	1996
Plants	Hyacinthoides non-scripta	Bluebell		WACA-Sch8					Moulsoe Old Wood	SP923424	100	1991
Plants	Hyacinthoides non-scripta	Bluebell		WACA-Sch8					Springfield (SP83U)	SP83U	2000	1995

group	species	English name	European legislation	UK legislation	Species of Principal Importance	Red List (GB unless stated)	Rare / Scarce	local status	site	grid ref	precision	latest record
Plants	Hyacinthoides non-scripta	Bluebell		WACA-Sch8					The Green, Newport Pagnell (SP84R)	SP84R	2000	1995
Plants	Hyacinthoides non-scripta	Bluebell		WACA-Sch8					Tickford Park (SP94B)	SP94B	2000	1995
Plants	Juncus compressus	Round-fruited Rush				RedList_GB_post2001-NT (GB) &			Grassland, Gt Linford (G18)	SP851427	100	1992
Plants	Knautia arvensis	Field Scabious				RedList_GB_post2001-NT (England)			Broughton (SP84V)	SP8940	1000	2015
Plants	Knautia arvensis	Field Scabious				RedList_GB_post2001-NT (England)			Tickfordend (SP84W)	SP84W	2000	1994
Plants	Lepidium campestre	Field Pepperwort				RedList_GB_post2001-NT (England)			Milton Keynes Village (SP83Z)	SP8839	1000	2010
Plants	Lythrum hyssopifolia	Grass-poly		WACA-Sch8	England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-EN (GB) &	NR-excludes	County Rare	Willen (SP84Q)	SP879406	100	2010
Plants	Lythrum hyssopifolia	Grass-poly		WACA-Sch8	England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-EN (GB) &	NR-excludes	County Rare	Willen (SP84Q)	SP880404	100	1999
Plants	Lythrum hyssopifolia	Grass-poly		WACA-Sch8	England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-EN (GB) &	NR-excludes	County Rare	Willen Lake Island [SP84Q]	SP879406	100	2000
Plants	Mentha arvensis	Corn Mint				RedList_GB_post2001-NT (England)			Bridge House (SP84X)	SP84X	2000	1994
Plants	Mentha arvensis	Corn Mint				RedList_GB_post2001-NT (England)			Lathbury (SP84S)	SP84S	2000	1993
Plants	Mentha arvensis	Corn Mint				RedList_GB_post2001-NT (England)			The Green, Newport Pagnell (SP84R)	SP8642	1000	2014
Plants	Myosurus minimus	Mousetail				RedList_GB_post2001-VU (GB) &		County Rare	Milton Keynes Village (SP83Z)	SP880390	100	2010
Plants	Oenanthe fistulosa	Tubular Water-dropwort			England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-VU (GB) &			Lathbury (SP84S)	SP84S	2000	1993
Plants	Pinus sylvestris	Scots Pine					NS-excludes		Fields south of Broughton Manor	SP900393	100	2003
Plants	Pinus sylvestris	Scots Pine					NS-excludes		Milton Keynes Village Churchyard	SP888392	100	2000
Plants	Plantago media	Hoary Plantain				RedList_GB_post2001-NT (England)			Great Linford, canal paddock	SP856424	100	1997
Plants	Plantago media	Hoary Plantain				RedList_GB_post2001-NT (England)			Great Woolstone Churchyard	SP875386	100	2000
Plants	Plantago media	Hoary Plantain				RedList_GB_post2001-NT (England)			Lathbury (SP84S)	SP84S	2000	1995
Plants	Plantago media	Hoary Plantain				RedList_GB_post2001-NT (England)			North Crawley Road	SP84W	2000	2016
Plants	Populus nigra subsp. betulifolia	Black Poplar						Locally Important	Lathbury (SP84S)	SP84S	2000	1999
Plants	Potamogeton friesii	Flat-stalked Pondweed				RedList_GB_post2001-NT (GB) &	NS-excludes	County Scarce	Grand Union Canal, Downhead Park	SP869403	100	1992
Plants	Potamogeton friesii	Flat-stalked Pondweed				RedList_GB_post2001-NT (GB) &	NS-excludes	County Scarce	Springfield (SP83U)	SP83U	2000	1992
Plants	Potamogeton friesii	Flat-stalked Pondweed				RedList_GB_post2001-NT (GB) &	NS-excludes	County Scarce	Willen (SP84Q)	SP84Q	2000	1992
Plants	Potamogeton obtusifolius	Blunt-leaved Pondweed						County Rare	Newport Pagnell Gravel Pits	SP885445	100	1999

group	species	English name	European legislation	UK legislation	Species of Principal Importance	Red List (GB unless stated)	Rare / Scarce	local status	site	grid ref	precision	latest record
Plants	<i>Primula x digenea</i>	<i>P. elatior x vulgaris</i>						County Rare	Springfield (SP83U)	SP872385	100	1994
Plants	<i>Pyrus pyraeaster</i>	Wild Pear						County Scarce	Springfield (SP83U)	SP83U	2000	1991
Plants	<i>Ranunculus arvensis</i>	Corn Buttercup			England_NERC_S.41 & UKBAP-2007	RedList_GB_post2001-CR (GB) &			Woodland, Woughton Canalside	SP871385	100	2000
Plants	<i>Rumex maritimus</i>	Golden Dock						County Scarce	Broughton (SP84V)	SP84V	2000	1999
Plants	<i>Rumex maritimus</i>	Golden Dock						County Scarce	Willen (SP84Q)	SP84Q	2000	2000
Plants	<i>Rumex maritimus</i>	Golden Dock						County Scarce	Willen Lake Island [SP84Q]	SP879406	100	2000
Plants	<i>Schoenoplectus tabernaemontani</i>	Grey Club-rush						County Rare	Pineham Nature Reserve	SP886414	100	2016
Plants	<i>Senecio aquaticus</i>	Marsh Ragwort				RedList_GB_post2001-NT (England)			Brooklands Farm Cottages	SP904403	100	1992
Plants	<i>Silene flos-cuculi</i>	Ragged-Robin				RedList_GB_post2001-NT (England)			Kickles Lodge Meadows	SP866447	100	2000
Plants	<i>Silene flos-cuculi</i>	Ragged-Robin				RedList_GB_post2001-NT (England)			Milton Keynes Village (SP83Z)	SP8939	1000	2015
Plants	<i>Silene flos-cuculi</i>	Ragged-Robin				RedList_GB_post2001-NT (England)			Moulsoe Old Wood	SP923424	100	1991
Plants	<i>Silene flos-cuculi</i>	Ragged-Robin				RedList_GB_post2001-NT (England)			Willen (SP84Q)	SP879407	100	2011
Plants	<i>Stachys arvensis</i>	Field Woundwort				RedList_GB_post2001-NT (GB) &			Fields south of Broughton Manor	SP900393	100	2003
Plants	<i>Tilia platyphyllos</i>	Large-leaved Lime					NS-excludes		Fields south of Broughton Manor	SP900393	100	2003
Plants	<i>Trifolium fragiferum</i>	Strawberry Clover				RedList_GB_post2001-VU (England)			Chicheley Hall (SP94C)	SP9044	1000	2014
Plants	<i>Typha x glauca</i>	<i>T. angustifolia x latifolia</i>						County Scarce	Willen (SP84Q)	SP84Q	2000	2002

Definitions

Sites of importance for wildlife and geology in Buckinghamshire and Milton Keynes

The following statutory designations are used in Buckinghamshire and Milton Keynes:

- **Special Areas of Conservation (SAC)**

Special Areas of Conservation are sites of international nature conservation importance and are designated under the EC Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna (the Habitats Directive).

- **National Nature Reserves (NNR)**

National Nature Reserves are sites of national importance and are declared under section 19 of the National Parks and Access to the Countryside Act 1949 or section 35 of the Wildlife and Countryside Act 1981.

- **Local Nature Reserves (LNR)**

Local Nature Reserves are sites of local importance and are declared under section 21 of the National Parks and Access to the Countryside Act 1949.

- **Sites of Special Scientific Interest (SSSI)**

Sites of Special Scientific Interest are sites of national nature conservation or geological importance and are declared under section 28 of the Wildlife and Countryside Act 1981.

The following non-statutory sites have been identified in Buckinghamshire and Milton Keynes:

- **Local Wildlife Sites (LWS)**

Local Wildlife Sites are local non-statutory nature conservation sites, formerly called County Wildlife Site and equivalent to Sites of Importance for Nature Conservation. The aim of the selection process is to identify sites that support the most important habitats and species in Buckinghamshire and Milton Keynes. A selection panel, in consultation with local authorities, designates the sites. Summary citations or survey reports are available for most, but not all, Local Wildlife Sites.

- **Milton Keynes Wildlife Sites (MKWS)**

Sites identified as Local Wildlife Sites are referred to as Milton Keynes Wildlife Sites when they fall within the administrative area of Milton Keynes Council.

- **Milton Keynes Wildlife Corridors**

These have been identified along the major road, rail, woodland and waterway corridors running through the Milton Keynes area. They are treated as being equivalent to Milton Keynes Wildlife Sites.

- **Biological Notification Sites (BNS)**

Biological Notification Sites preceded Local Wildlife Sites as a local non-statutory designation. They were first designated in the late 1980s and have since been revised. There are no formal citations and for some sites we have no survey data. All Biological Notification Sites are in the process of being re-surveyed and assessed by Local Wildlife Site criteria; until this process is complete the two designations will continue to be in use. (Unfortunately, BNS within the administrative area of Milton Keynes Council have sometimes been called Local Wildlife Sites, this terminology will be phased out as soon as possible.)

- **Local Geological Sites (LGS)**

Local Geological Sites are local non-statutory sites that recognise important earth science and landscape features. The Buckinghamshire Earth Heritage Group, in consultation with local authorities, designates the sites. They were previously known as Regionally Important Geological and Geomorphological Sites (RIGS).

- **Key Areas for Water Vole**

Following surveys in 1997/8, the Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust have labelled some waterways as Key Areas for Water Vole. The boundaries of Key Areas are taken to be 10m from the bank-top each side of a watercourse and the buffer area is taken to be 500m from each side of the watercourse. For further information contact the Wildlife Trust on 01865 775476.

Buckinghamshire & Milton Keynes Notable Species List

Records held come from myriad sources including professional consultants' surveys, volunteer recorders and recording groups, national recording schemes and members of the public. In particular, we hold records from Bucks recorders for Plants, Moths and Mammals and from BucksARG and Bucks Bird Club. We also receive records from North Bucks Bat Group although they may hold more up-to-date records for an area.

The Buckinghamshire and Milton Keynes Notable Species List has been compiled in response to data requests from ecological consultants and developers. Although records of protected species are most commonly requested, national and local BAP species records and records of other notable species are often required.

As part of our standard data search we now include records of species defined by the following legislation and criteria.

1. European legislation

This column in our reports includes species listed in Regulations 39 (European protected animal species) and 42 (European protected plant species) of *The Conservation (Natural Habitats, &c.) Regulations 1994*. These provide protection for key species and habitat types and enact the EU Habitats Directive into UK Law. The Habitats Directive requires the formation of a network of protected areas and the direct protection of specific species. It is an offence to deliberately capture, kill or disturb a wild animal of a European protected species or to deliberately take or destroy the eggs or destroy a breeding site or resting place of such an animal. It is also an offence to deliberately pick, collect, cut, uproot or destroy a wild plant of a European protected species.

On 21 August 2007 an amendment to the Habitats Directive came into force. The *Conservation (Natural Habitats &c.) (Amendment) Regulations 2007* have a variety of consequences for the protection of European Protected Species, including the removal of many defences that were previously allowed. This includes the commonly relied upon 'incidental result defence', which previously covered acts that were the incidental result of an otherwise lawful activity and which could not reasonably have been avoided. For more details see:

<http://www.naturalengland.org.uk/conservation/wildlife-management/licensing/habsregs.htm#houseguidance>

2. W+C Act

This column includes species listed in The Wildlife & Countryside Act 1981 (and later amendments), plus Badger (see below). The Wildlife and Countryside Act consolidates and amends existing national legislation to implement the Bern Convention and the EU Birds Directive in Great Britain. Various amendments have been made to the Act, e.g. in the Countryside and Rights of Way (CRoW) Act 2000.

- *Schedule 1 (protected birds)* – It is an offence (with exception to certain species) to intentionally kill, injure, or take any wild bird or the eggs or nests of species listed in Part 1. Part 2 lists birds protected during the closed season.
- *Schedule 5 (protected animals, other than birds)* – The intentional or reckless killing, injuring, taking, possessing, disturbing or selling, of animals listed in Schedule 5 is prohibited, along with the damaging or disturbing of the places used for their shelter or protection. Protection of some species is limited to certain sections:
 - Section 9(1) – Limited to intentional killing, injury or taking.
 - Section 9(2) – Limited to processing and controlling.
 - Section 9(4a) – Limited to damaging, destroying or obstructing access to any structure or place used by the animal for shelter or protection.
 - Section 9(4b) – Limited to disturbing an animal whilst it is occupying any structure or place used for shelter or protection.
 - Section 9(5) – Limited to selling, offering for sale, possessing or transporting for sale or advertising for sale of any live or dead animal, part of or derived from. (Not included in list)
- *Schedule 8 (protected plants and fungi)* – The intentional picking, uprooting, trade in, or possessing of any wild plant listed in Schedule 8 is prohibited. Also, all wild plants are protected from intentional uprooting by an unauthorised person.

This column also shows records for badgers, which are protected under The Protection of Badgers Act 1992. This makes it an offence to wilfully kill, injure or take, or attempt to kill, injure or take, a badger and to interfere with a badger sett either by intent or by negligence. A licence, issued by English Nature, is required for works within 30 metres of a badger sett.

3. Priority Species

This column shows species listed as Species of Principal Importance under Section 41 of the Natural Environment and Rural Communities Act (2006). These were formerly called UK Biodiversity Action Plan (UK BAP) Priority Species. The UK BAP listed Priority Species for conservation in the UK and was reviewed and extended in 2007. The UK BAP has been replaced by the UK Post-2010 Biodiversity Framework. The list of Species of Principal Importance is very similar to the list of Priority Species in the UK BAP (there are some species that are BAP Priority but not Species of Principal Importance, and there is one species – Hen Harrier – that is a Species of Principal Importance but not a BAP Priority). Priority Species are referred to in paragraph 117 of the National Planning Policy Framework which states that planning policies should ‘...promote the...protection and recovery of priority species populations, linked to national and local targets’

4. National status

This column shows all species that have been listed in Red Data Books, or in reviews of Nationally Scarce species, or are red- or amber-listed birds. A number of criteria have been devised for assessing the conservation status of species. In the UK, official lists of Red Data Book species are published by the government's Joint Nature Conservation Committee (JNCC). NB that the Red Data Books use different criteria for different groups, e.g. for plants the criteria give priority to declining and threatened species, whereas those for invertebrates are based more on rarity in terms of distribution. The more recent Red Data Book lists use international criteria developed by the World Conservation Union (IUCN), and include these categories:

- Extinct (EX)
- Extinct in the wild (EW)
- Critically endangered (CR)
- Endangered (EN)
- Vulnerable (VU)
- Near threatened (NT)
- Data deficient (DD)

The CR, EN and VU categories are considered to be threatened categories. Near threatened species are close to qualifying for one of these categories. Data deficient is not a threatened category, but indicates a need for more information in order to determine the appropriate category.

In addition to IUCN criteria, there are older Red Data Book and Nationally Scarce criteria used to define nationally rare and nationally scarce species:

- Red Data Book (= Nationally Rare): Occurring in 15 or fewer 10km-squares in Great Britain
- Nationally Scarce: Occurring in 16–100 10km-squares in Great Britain. For some groups this is further subdivided:
 - Nationally Scarce/Na: Occurring in 16–30 10km-squares
 - Nationally Scarce/Nb: Occurring in 31–100 10km-squares

For birds, the following categories apply, taken from *Birds of Conservation Concern 2002–2007* (RSPB):

- *Red List* – Species that are globally threatened according to IUCN criteria; those whose population or range has declined rapidly in recent years; and those that have declined historically and not shown a substantial recent recovery.
- *Amber List* – Species with an unfavourable conservation status in Europe; those whose population or range has declined moderately in recent years; those whose population has declined historically but made a substantial recovery; rare breeders; and those with internationally important or localised populations.

Nationally rare plants

This column uses distribution data from the Botanical Society of the British Isles to show those plants that have restricted national distributions, i.e. equivalent to the old Red Data Book categories.

5. Local status

This column shows the local statuses that have been applied to plants, butterflies and moths. For the plants the source is the BSBI County Rare Plant List for Bucks, compiled by Roy Maycock in 2007 (NB this is a substantial change from the previous county rare/scarce plant list of the 1980s). The categories are:

- County Rare: generally confined to three or fewer tetrads (2km × 2km squares) in the county
- County Scarce: generally confined to between four and ten tetrads in the county

For butterflies and moths the source is Butterfly Conservation's Regional Action Plan for the Thames Region (Clarke and Bourn 2000). Species are given a High, Medium or Low priority based on rarity, decline and threat (NB that the "Low Priority" category does include species of conservation importance, but simply those which are considered a lower priority than the others).

- **Bird records**

Under the EC Birds Directive and the Wildlife and Countryside Act it an offence to intentionally kill, injure, or take any wild bird or their eggs or nests (with the exception of certain species). Records of wild birds in general are not included in BMERC reports unless they are of species falling into one of the other categories listed here.

A full Notable Species list is available on request.

International and European Obligations

In the UK, species receiving protection under international legislation and agreements are protected through the Wildlife and Countryside Act, so are not shown separately in the BMERC notable species lists. For reference, the relevant categories are shown below.

- **Bern Convention on the Conservation of European Wildlife and Natural Habitats**

The Bern Convention aims to ensure the conservation of wild flora and fauna species and their habitats.

- *Appendix 1 (strictly protected flora)* – Plants for which contracting parties will prohibit deliberate picking, collecting, cutting or uprooting.
- *Appendix 2 (strictly protected fauna)* – Animals for which contracting parties will prohibit deliberate capture, possession, killing, damage to or destruction of breeding or resting sites, disturbance or destruction or taking of eggs.
- *Appendix 3 (protected fauna)* – Animals for which contracting parties will include closed seasons and regulate their sale, keeping for sale, transport for sale or offering for sale of live and dead wild animals. (Not included in Notable Species List)

- **Bonn Convention on Migratory Species**

The Bonn Convention aims to conserve terrestrial, marine and avian migratory species throughout their range.

- *Appendix 1 (migratory species threatened with extinction)* – Species for which contracting parties will strictly protect and endeavour to conserve or restore the places where they live, mitigating obstacles to migration and controlling other factors that might endanger them.
- *Appendix 2 (migratory species that need or would benefit from international co-operation)* – Species for which contracting parties will be encouraged to conclude global or regional agreements for the conservation and management of individual species or, more often, of a group of species. (Not included in Notable Species List)

- **The EC Council Directive on the Conservation of Wild Birds**

The Birds Directive provides a framework for the conservation and management of all wild birds in Europe. As well as designating important sites for birds as Special Protection Areas, birds are generally protected from deliberate killing or capture and destruction of or damage to their nests or eggs, and deliberate disturbance. Allowances are made for game birds.

Appendix F4

Hedgerow Survey Report



MILTON KEYNES EAST
HEDGEROW SURVEY REPORT

Prepared for St James

by

Hankinson Duckett Associates

HDA ref: 2090.52

March 2021

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APPENDICES

- A Summary of Ecological and Historical Criteria from Hedgerow Regulations 1997
- B Hedgerow Survey Data Sheets (Ecology and Landscape Criteria)
- C Hedgerow Survey Results Plan

1 INTRODUCTION

1.1 Introduction and Site Description

1.1.1 This report describes an assessment of hedgerows against the Archaeological, Historical, Wildlife and Landscape Criteria of the 1997 Hedgerow Regulations. The hedgerows are located within approximately 437ha of land east of Milton Keynes, Buckinghamshire, hereinafter referred to as 'the site'. The site centre is located by National Grid Reference SP893419. The study was commissioned by St James in April 2020.

1.1.2 The site is located to the south of Newport Pagnell, on the north-eastern edge of Milton Keynes, Buckinghamshire. The site is dominated by a series of arable fields bordered by hedgerows, treelines, ditches and fencing. Other habitats include grazed grassland fields, small areas of amenity grassland and small pockets of deciduous woodland. The River Ouzel and its tributary, the Broughton Brook, flow in a northerly direction through the western and central areas of the site and, associated with these watercourses, the Pineham Nature Reserve in the south of the site supports a mosaic of scrub, rough grassland, tall ruderal vegetation and ponds. Other features within the site include a number of agricultural, commercial and residential buildings, generally associated with working farms, and roads including the M1 motorway and Tongwell Street which run through a corridor of woodland, scattered trees and scrub in the south-west of the site, and several smaller roads running through the site to the east.

1.1.3 The site is bordered to the north by a construction site for residential development and the A422, beyond which lie the Interchange Park industrial estate and the town of Newport Pagnell; to the east by arable farmland and the settlement of Moulsoe; to the south-west by residential development and Willen Lake on the outskirts of Milton Keynes, the M1 Motorway and Pineham sewage works; and to the south-east by arable farmland.

1.1.4 The location and boundary of the site are shown on the *Hedgerow Survey Results Plan* in *Appendix C*. Detailed descriptions of the habitats within the site are given in the Ecological Appraisal (HDA, 2020).

1.2 Scope and Purpose of the Report

1.2.1 A hedgerow assessment was undertaken at the site by Keystone Environmental Ltd (on behalf of WSP) in July 2011 (WSP, 2011). The 2011 study included hedgerows situated within the central and western parts of the site together with some additional areas of adjacent land which now fall off-site. The 2011 assessment included hedgerow numbers 1-85 (*Appendices B and C*).

1.2.2 Following alteration of the site boundary ahead of a planning application for development at the site, the study was expanded by HDA during 2020 to include all the hedgerows within

new areas of the site that had not been previously assessed. This comprised an assessment of all the previously unsurveyed hedgerows (hedgerow numbers 86-153) against the criteria used for the protection of hedgerows under the 1997 Hedgerow Regulations, and identification of hedgerows classified as 'important' under these criteria. This report describes the full methodology and results of the 2020 hedgerow assessment, and consolidates this with the findings of the 2011 hedgerow assessment to provide a summary of the status of all the hedgerows within the site under the 1997 Hedgerows Regulations.

2 METHODOLOGY

2.1 Evaluation Criteria

2.1.1 The 1997 Hedgerow Regulations apply to any hedgerow over 20m long growing on, or adjacent to, any common land, protected land or land used for agriculture, forestry or the breeding or keeping of horses, ponies or donkeys, but not to hedgerows forming the boundary of a dwelling.

2.1.2 The Archaeological, Historical, Wildlife and Landscape Criteria (the 'criteria') used to assess hedgerows are contained within Schedule 1, Part II, Paragraphs 1 – 8 of the Regulations. For a hedgerow to classify as 'important' under the criteria, it must: (i) have existed for 30 years or more, and (ii) satisfy at least one of the criteria listed in Paragraphs 1 – 8. Further detail on the criteria contained within Paragraphs 1 – 8 is identified in *Sections 2.2 and 2.3* below and *Appendix A*.

2.2 Historical Considerations (Historical and Archaeological Criteria)

2.2.1 Paragraphs 1 – 5 of the Regulations relate to the archaeological and historical criteria used to assess hedgerows. According to the criteria, a hedgerow is qualified as 'important' if:

- 1) The hedgerow marks the boundary, or part of the boundary, of at least one historic parish or township; and for this purpose, "historic" means existing before 1850;
- 2) The hedgerow incorporates an archaeological feature which is:
 - a) included in the schedule of monuments compiled by the Secretary of State under section 1 (schedule of monuments) of the Ancient Monuments and Archaeological Areas Act 1979; or
 - b) recorded on or prior to the 24th March 1997 in a Sites and Monuments Record.
- 3) The hedgerow:
 - a) is situated wholly or partly within an archaeological site included or recorded as mentioned in paragraph 2, or on land adjacent to and associated with such a site; and
 - b) is associated with any monument or feature on that site.
- 4) The hedgerow:
 - a) marks the boundary of a pre-1600 AD estate or manor recorded on or prior to the 24th March 1997 in a Sites and Monuments Record or in a document held at that date at a Record Office; or

- b) is visibly related to any building or other feature of such an estate or manor.
- 5) The hedgerow:
- a) is recorded in a document held on 24th March 1997 at a Record Office as an integral part of a field system pre-dating the Inclosure Acts¹; or
 - b) is part of, or visibly related to, any building or other feature associated with such a system, and that system:
 - i. is substantially complete; or
 - ii. is of a pattern which is recorded in a document prepared by a local planning authority, within the meaning of the 1990 Town and Country Planning Act, for the purposes of development control within the authority's area, as a key landscape characteristic.

2.2.2 Documentation relevant to the historical criteria cited in the Hedgerow Regulations 1997 was sourced, where possible, from the Archaeological Desk Based Assessment (ADBA) (CgMs, December 2018), local records offices and other appropriate authorities including Buckinghamshire Archives, the Vision of Britain website (www.visionofbritain.org.uk), online map websites (www.old-maps.co.uk and <https://maps.nls.uk/os/>), the Historic England Archive (website), the Parks and Gardens website (www.parksandgardens.org) and the MAGIC online database (www.magic.defra.gov.uk).

2.2.3 The 2020 archaeological and historical assessment included a full assessment of all the previously unsurveyed hedgerows located within the site (hedgerows 86-153), and a review of the assessment of the hedgerows that had been subject to survey in 2011 (hedgerows 1-85) in light of newly obtained desk study data.

2.2.4 The findings of the archaeological and historical assessment are given in *Section 3.1*.

2.3 Ecological Considerations (Wildlife and Landscape Criteria)

2.3.1 Paragraphs 6–8 of the Regulations relate to the Wildlife and Landscape criteria used to qualify a hedgerow as 'important'.

'Paragraph 6' Assessment

2.3.2 Paragraph 6 of the Regulations relates to the presence, or historical presence, of certain plant and animal species within the hedgerow. Relevant species include:

- Birds listed on Schedule 1, animals listed on Schedule 5 and plants listed on Schedule 8 of the 1981 Wildlife and Countryside Act (as amended);
- Bird species categorised as a 'declining breeder' (category 3) in '*Red Data Birds in Britain*' (Batten *et al.* 1990); and
- Species categorised as 'endangered', 'extinct', 'rare' or 'vulnerable' in Britain, within key reference documents, as listed in the Regulations.

¹ This text reflects the wording of the 1997 Regulations but the subsequent '1845' case law implication is factored into the assessment.

2.3.3 The results of a desk study carried out in 2018 (HDA, 2020) were used to inform the present study of any historical records of species listed or categorised within Paragraph 6 within the surveyed hedgerows. The desk study obtained existing and historical records of rare or protected species from various sources, including the 'Multi Agency Geographic Information for the Countryside' (MAGIC) online database, the Buckinghamshire and Milton Keynes Environmental Records Centre (BMERC) and the Buckinghamshire and Milton Keynes Nature Environment Partnership (<https://bucksmknep.co.uk/>), along with information regarding statutory and non-statutory designations pertaining to the hedgerows.

2.3.4 The results of the desk study are provided in *Section 3.2* of this report. The Paragraph 6 assessment is provided in *Section 3.3*.

'Paragraphs 7-8' Assessment

2.3.5 Paragraphs 7–8 of the Regulations relate to the species diversity of the hedgerow in combination with a range of other factors, including the presence of specific features along the length of the hedge.

2.3.6 In order to conduct a Paragraphs 7–8 assessment, a field survey of hedgerows 86-153 (i.e. those hedgerows which had not previously been subject to survey [WSP, 2011]) was conducted by Anna Senior MCIEEM of HDA between 15th and 26th June 2020, using a methodology adapted from '*The Hedgerow Regulations 1997: A guide to the law and good practice*' (Department of the Environment, 1997) and '*Hedgerow Survey Handbook: a standard procedure for local surveys in the UK*' (Defra, 2007).

2.3.7 During the surveys, data required in order to assess the importance of hedgerows under Paragraphs 7–8 were collected and recorded on hedgerow data sheets. The extent of each hedgerow was determined, measured, and then divided into sample lengths of 30 metres. The ecological attributes of each sample, and the entire hedgerow, where appropriate, were then recorded. These include:

- 'Woodland species' listed on Schedule 2 of the Regulations;
- 'Woody species' listed on Schedule 3 of the Regulations;
- The presence of standard trees;
- The presence of Small-leaved Lime (*Tilia cordata*), Large-leaved Lime (*Tilia platyphyllos*), Wild Black Poplar (*Populus nigra* sub-species *betulifolia*) or Wild Service-tree (*Sorbus torminalis*);
- The presence of a bank or wall supporting the hedgerow along at least one half of its length;
- The presence of gaps which aggregate to more than 10% of hedgerow length;

- The presence and frequency of any standard trees within the hedgerow;
- The presence of a ditch exceeding at least one half of the length of the hedgerow;
- Connections to other hedgerows, woodlands or ponds;
- The presence of a parallel hedge within 15m of the hedgerow; and
- The presence of an adjacent designated Public Right of Way (PRoW).

2.3.8 The results of the field survey and Paragraphs 7–8 assessment are given in *Section 3.3* of this report together with a summary of the results of the earlier 2011 survey. Botanical names follow Stace (2019) for higher plants. Further information pertaining to the ecological criteria of the Hedgerow Regulations is provided in *Appendix A*.

3 RESULTS AND ASSESSMENT

3.1 Historical Results and Evaluation

3.1.1 Each hedgerow was assessed against the historical and archaeological criteria outlined in *Section 2.2* using the information gained through the desk study. An overview of the survey results and a summary description of hedgerows identified as ‘important’ under the Paragraph 1-5 criteria are provided below, together with a summary table (*Table 1*). The *Hedgerow Survey Results Plan (Appendix C)* identifies the location of all hedgerows subject to assessment and highlights those qualifying as ‘important’ under historic criteria (Paragraphs 1–5).

3.1.2 **Paragraph 1** - Hedgerows 4-6, 17, 44, 55-57, 103, 131, 134, 142-143 and 145 within the site mark historic parish or township boundaries between Newport Pagnell to the north, Moulsoe and Broughton to the south, and Willen to the west. This was confirmed by reference to www.old-maps.co.uk and the Archaeological Desk Based Assessment (CgMs, December 2018) including the 1st edition Ordnance Survey (OS) map from 1886. Therefore, these hedgerows are assessed as being ‘important’ under the requirements of the Paragraph 1 criterion.

3.1.3 **Paragraph 2** - None of the hedgerows within the site incorporate an archaeological feature included in the schedule of monuments compiled by the Secretary of State under section 1 (schedule of monuments) of the Ancient Monuments and Archaeological Areas Act 1979, or recorded in a Sites and Monuments Record. Any archaeological features present on site (discussed below) survive only as buried features with no above ground elements and are therefore not incorporated by the hedge. This is confirmed by Buckinghamshire Archives, the Historic England Archive, Heritage Gateway, and focussed reports within the Milton Keynes East Environmental Statement which assess the likely impacts of proposals on archaeological and built heritage features relating to the site (Archaeological Desk Based Assessment by CgMs, December 2018 and Built Heritage Baseline Assessment by

RPS, July 2020). Therefore, no hedgerows on the site are assessed as being 'important' under the requirements of Paragraph 2 criterion.

- 3.1.4 **Paragraph 3** – None of the hedgerows within the site are situated wholly or partly within, or are associated with², an archaeological site included in the schedule of monuments compiled by the Secretary of State under section 1 (schedule of monuments) of the Ancient Monuments and Archaeological Areas Act 1979, or recorded in a Sites and Monuments Record (Archaeological Desk Based Assessment and Built Heritage Baseline Assessment). This is further confirmed by Buckinghamshire Archives, the Historic England Archive and Heritage Gateway.
- 3.1.5 It is noted that there is evidence for occupation of the site since the Neolithic, with finds such as Neolithic/Bronze Age flintwork, a Bronze Age ring ditch, Iron Age and Roman ditches and pits associated with possible occupation, Roman pottery sherds, particularly associated with the projected route of a Roman Road (across the western part of the site and possibly fording the River Ouzel) and Medieval ridge and furrow. Apart from the presence of ridge and furrow (R&F) and the London Road (a former turnpike from 1728), there is no association between these features/archaeological sites and the surrounding hedgerows beyond presence alone. In summary, no hedgerows on the site are assessed as being 'important' under the requirements of Paragraph 3 criterion.
- 3.1.6 **Paragraph 4** – The site is associated with the late Saxon estates of Moulsoe (to the south), Tickford (to the north) and Caldecote (to the west) as recorded in the Domesday Survey of 1086. However, none of the hedgerows within the site mark the boundary of, or are visibly related to, these pre-1600 estates or manors as recorded on or prior to 24th March 1997 in a Sites and Monuments Record or in a document held at that date at a Record Office (Archaeological Desk Based Assessment). This is further confirmed by the Vision of Britain website, the Historic England Archive, Heritage Gateway and the Parks and Gardens website. Therefore, no hedgerows on the site are assessed as being 'important' under the requirements of Paragraph 4 criterion.
- 3.1.7 **Paragraph 5** - The field pattern in the western part of the site, to the west of the London Road, is described as a fragmentary historic landscape, whereas to the east of London Road is an area of well-preserved Parliamentary Enclosure (PE). Thus, some of the hedgerows within the western part of the site are suggested as being part of a field system predating the Enclosure Acts, whereas those to east of London Road are visibly related to

² Historic England guidance defines 'associated with' as "it marks an archaeological feature of a site that is a scheduled monument or noted on the Historic Environment Record"

buildings and other features associated with that system (such as Moulsoe Buildings, now the Holiday Inn).

3.1.8 Early 19th century enclosure maps exist for Moulsoe (1802) and Tickford (1808, part of the Newport Pagnell Parish) (CgMs, 2018), but the hedgerow positions on these (no boundary divisions are shown on the Moulsoe map) bear little resemblance to the earliest drawn OS map from 1814-15 (CgMs, 2018), which shows evidence of hedgerows across the whole site. The accuracy of this early OS drawn map is questionable, as whilst some hedgerow positions closely match those as shown on the 1822 map of the Manor and parish of Willen to the west (with additional subdivisions of fields), the correlation with the 1st edition OS map of 1886 is limited.

3.1.9 The earliest map consulted (as part of the Archaeological Desk Based Assessment), the 1768 Jeffrey's map of Buckinghamshire, is not detailed enough to show evidence of hedges. However, it can be concluded that the main road crossing the site, the London Road, was present before this date (a turnpike road set up in 1728, probably on an already established route), though the map does not confirm that any hedgerows were present either within the site or along the road boundaries. Therefore, it cannot be concluded from this 1768 map that any of the hedgerows within the site were an integral part of a field system prior to the Enclosures Act. However, some of the hedgerows to the west of the London Road follow irregular alignments suggesting a pre-enclosure pattern, whereas, many of the hedges to the east of the London Road are of similar species composition and have the characteristics of a post-enclosure layout, being straight and broadly forming a rectangular field pattern. This suggests they were planted at the same time as part of the Act. Therefore, some hedgerows within the site are assessed as being 'important' under the requirements of Paragraph 5 criterion.

3.1.10 *Table 1* below summarises the hedgerows on site against the Paragraph 1-5 historic criteria:

Table 1: Hedgerow Assessment against Historical and Archaeological Criteria

Hedge No ³	Description	Criteria 1 Marks a pre-1850 parish or township boundary	Criteria 2 Incorporates an archaeological feature	Criteria 3 Is part of, or associated with, an archaeological site	Criteria 4 Marks boundary of, or is associated with, a pre-1600 estate or manor	Criteria 5 Forms an integral part of a field system pre-dating the Inclosure Acts	Important (Yes/No)
1	West side of A509	x	x	x	x	✓	Yes
2	Perpendicular to west of A509 (southern boundary of area of R&F)	x	x	x	x	✓	Yes
3	West side of A509	x	x	x	x	✓	Yes
4	Southern boundary of single field of Willen parish lying to east of river	✓	x	x	x	x	Yes
5	West side of A509 and PB	✓	x	x	x	✓	Yes
6	Along ditch forming northern boundary of single field of Willen parish lying to east of river	✓	x	x	x	✓	Yes
7	West side of A509	x	x	x	x	✓	Yes
8	Perpendicular to west of A509	x	x	x	x	x	No
9	West side of A509	x	x	x	x	✓	Yes
10	South side of Caldecote Lane	x	x	x	x	✓	Yes
12	Around south-west quadrant of roundabout between A509 and A422	x	x	x	x	x	No
15	Perpendicular to south of Caldecote Lane	x	x	x	x	x	No
16	North of river towards Caldecote Lane	x	x	x	x	x	No
17	Eastern bank of River Ouzel – river formed PB	✓	x	x	x	✓	Yes
18	Middle of field to west of A509 (western boundary of area of R&F)	x	x	x	x	✓	Yes
19	3 sides of triangular field; A509 to east, M1 to south-west and field to north.	x	x	x	x	x	No

³ Sequential hedgerow numbers not shown in the table relate to off-site hedgerows which are not included in the current assessment

Hedge No ³	Description	Criteria 1 Marks a pre-1850 parish or township boundary	Criteria 2 Incorporates an archaeological feature	Criteria 3 Is part of, or associated with, an archaeological site	Criteria 4 Marks boundary of, or is associated with, a pre-1600 estate or manor	Criteria 5 Forms an integral part of a field system pre-dating the Inclosure Acts	Important (Yes/No)
44	Between Willen Road and River Ouzel – western part coincides with PB	✓	✗	✗	✗	✓	Yes
45	West of River Ouzel (area of R&F)	✗	✗	✗	✗	✓	Yes
46	West of River Ouzel (area of R&F)	✗	✗	✗	✗	✓	Yes
47	West of River Ouzel (area of R&F)	✗	✗	✗	✗	✓	Yes
48	West of River Ouzel (area of R&F)	✗	✗	✗	✗	✓	Yes
49	West of River Ouzel (area of R&F)	✗	✗	✗	✗	✓	Yes
50	West of River Ouzel (area of R&F)	✗	✗	✗	✗	✓	Yes
51	West of River Ouzel (area of R&F)	✗	✗	✗	✗	✓	Yes
52	Northern boundary of M1	✗	✗	✗	✗	✗	No
53	East of Willen Road	✗	✗	✗	✗	✓	Yes
54	Perpendicular to west of A509 (northern boundary of allotments - 1808)	✗	✗	✗	✗	✓	Yes
55	Perpendicular to west of A509 along ditch forming PB	✓	✗	✗	✗	✓	Yes
56	Along ditch forming PB	✓	✗	✗	✗	✓	Yes
57	Along ditch forming PB	✓	✗	✗	✗	✓	Yes
58	Middle of field (through Mill Field -1808)	✗	✗	✗	✗	✗	No
59	Western end of hedge adjacent to Footpath 017	✗	✗	✗	✗	✓	Yes
60	Through Middle Field on 1808 map	✗	✗	✗	✗	✗	No
61	Through Middle Field on 1808 map	✗	✗	✗	✗	✗	No
62	Adjacent to Footpath 017	✗	✗	✗	✗	✓	Yes
63	Perpendicular to west of A509 (northern boundary of Mill Field - 1808)	✗	✗	✗	✗	✓	Yes

Hedge No ³	Description	Criteria 1 Marks a pre-1850 parish or township boundary	Criteria 2 Incorporates an archaeological feature	Criteria 3 Is part of, or associated with, an archaeological site	Criteria 4 Marks boundary of, or is associated with, a pre-1600 estate or manor	Criteria 5 Forms an integral part of a field system pre-dating the Inclosure Acts	Important (Yes/No)
64	Around Newport Stables	x	x	x	x	x	No
65	South side of A422	x	x	x	x	x	No
66	South side of A422	x	x	x	x	x	No
67	East side of A509	x	x	x	x	✓	Yes
68	East side of A509	x	x	x	x	✓	Yes
69	East side of A509	x	x	x	x	✓	Yes
70	East side of A509	x	x	x	x	✓	Yes
71	East side of A509	x	x	x	x	✓	Yes
72	North side of Newport Road and east side of A509	x	x	x	x	✓	Yes
73	South side of Newport Road and east side of A509 on approach to Junction 14 of M1.	x	x	x	x	✓	Yes
74	Two sections north of Newport Road, one west-east and the other north-south, which overlays the western edge of a field of R&F.	x	x	x	x	✓	Yes
75	Perpendicular to east side of A509 (PE associated with Moulsoe Buildings)	x	x	x	x	✓	Yes
76	Perpendicular to east side of A509, south of Moulsoe Buildings (Adjacent to Footpath 002) (PE associated with Moulsoe Buildings)	x	x	x	x	x	No
77	Parallel to east side of A509 (PE associated with Moulsoe Buildings)	x	x	x	x	✓	Yes
78	Perpendicular to east side of A509 (PE associated with Moulsoe Buildings)	x	x	x	x	x	No
79	Parallel to east side of A509 (PE associated with Moulsoe Buildings)	x	x	x	x	✓	Yes

Hedge No ³	Description	Criteria 1 Marks a pre-1850 parish or township boundary	Criteria 2 Incorporates an archaeological feature	Criteria 3 Is part of, or associated with, an archaeological site	Criteria 4 Marks boundary of, or is associated with, a pre-1600 estate or manor	Criteria 5 Forms an integral part of a field system pre-dating the Inclosure Acts	Important (Yes/No)
80	Perpendicular to east side of A509 (PE associated with Moulsoe Buildings)	x	x	x	x	x	No
81	Perpendicular to south of PB (PE associated with Moulsoe Buildings)	x	x	x	x	x	No
82	Perpendicular to east side of A509 (PE associated with Moulsoe Buildings)	x	x	x	x	✓	Yes
83	Parallel to east side of A509 (PE associated with Moulsoe Buildings)	x	x	x	x	✓	Yes
84	Parallel to east side of A509 (PE associated with Moulsoe Buildings)	x	x	x	x	✓	Yes
85	South of Moulsoe Buildings (Holiday Inn)	x	x	x	x	x	No
86	Adjacent to Footpath 018	x	x	x	x	✓	Yes
87	Adjacent to Bridleway 003	x	x	x	x	✓	Yes
88	Adjacent to Bridleway 003	x	x	x	x	✓	Yes
89	Adjacent to Bridleway 003	x	x	x	x	✓	Yes
90	Eastern end outside the RLB	x	x	x	x	x	No
91	Eastern end outside the RLB	x	x	x	x	x	No
92	Adjacent to Bridleway 003	x	x	x	x	✓	Yes
93	Adjacent to Bridleway 003	x	x	x	x	✓	Yes
96	Adjacent to Bridleway 003	x	x	x	x	✓	Yes
100	Adjacent to Bridleway 003	x	x	x	x	✓	Yes
101	Perpendicular to east side of A509 (PE associated with Moulsoe Buildings)	x	x	x	x	x	No
102	Perpendicular to south of PB (PE associated with Moulsoe Buildings, though northern	x	x	x	x	x	No

Hedge No ³	Description	Criteria 1 Marks a pre-1850 parish or township boundary	Criteria 2 Incorporates an archaeological feature	Criteria 3 Is part of, or associated with, an archaeological site	Criteria 4 Marks boundary of, or is associated with, a pre-1600 estate or manor	Criteria 5 Forms an integral part of a field system pre-dating the Inclosure Acts	Important (Yes/No)
	section of hedge overlays western boundary of area of former R&F)						
103	Along ditch forming PB	✓	x	x	x	✓	Yes
104	Perpendicular to east side of A509 (PE associated with Moulsoe Buildings)	x	x	x	x	x	No
105	Perpendicular to east side of A509 (PE associated with Moulsoe Buildings). Southern end coincided with Drake's Gorse.	x	x	x	x	x	No
106	Parallel to north side of Newport Road (PE associated with Moulsoe Buildings). Eastern end coincided with Drake's Gorse.	x	x	x	x	✓	Yes
107	Adjacent to Footpath 002 (but not on 1808 map; PE associated with Moulsoe Buildings)	x	x	x	x	✓	Yes
108	Parallel to east side of A509 (PE associated with Moulsoe Buildings)	x	x	x	x	✓	Yes
109	Parallel to north side of Newport Road, (PE associated with Moulsoe Buildings, but overlaid on northern boundary of field of R&F).	x	x	x	x	✓	Yes
110	Short section in middle of field, perpendicular to north side of Newport Road (PE associated with Moulsoe Buildings)	x	x	x	x	x	No
111	Perpendicular to north side of Newport Road (PE associated with Moulsoe Buildings)	x	x	x	x	x	No
112	North side of Newport Road	x	x	x	x	✓	Yes
113	North side of Newport Road	x	x	x	x	✓	Yes
114	Perpendicular to north side of Newport Road; shown on 1802 map	x	x	x	x	✓	Yes
115	Parallel to north side of Newport Road; shown on 1802 map	x	x	x	x	✓	Yes

Hedge No ³	Description	Criteria 1 Marks a pre-1850 parish or township boundary	Criteria 2 Incorporates an archaeological feature	Criteria 3 Is part of, or associated with, an archaeological site	Criteria 4 Marks boundary of, or is associated with, a pre-1600 estate or manor	Criteria 5 Forms an integral part of a field system pre-dating the Inclosure Acts	Important (Yes/No)
116	North side of Newport Road	x	x	x	x	✓	Yes
117	Perpendicular to south side of Newport Road. Adjacent to Bridleway 003	x	x	x	x	✓	Yes
118	Adjacent to Bridleway 003	x	x	x	x	✓	Yes
119	Adjacent to Bridleway 003	x	x	x	x	✓	Yes
120	Parallel to south side of Newport Road, shown on 1802 map	x	x	x	x	✓	Yes
127	Perpendicular to south side of Newport Road, south of Moulsoe (PE)	x	x	x	x	x	No
128	Parallel to south side of Newport Road, south of Moulsoe (PE)	x	x	x	x	x	No
129	Perpendicular to south side of Newport Road, south of Moulsoe (PE)	x	x	x	x	x	No
130	Perpendicular to south side of Newport Road, south of Moulsoe (PE)	x	x	x	x	x	No
131	PB between Moulsoe and Broughton	✓	x	x	x	✓	Yes
132	Adjacent to Bridleway 003	x	x	x	x	✓	Yes
133	Adjacent to Bridleway 003	x	x	x	x	✓	Yes
134	PB between Moulsoe and Broughton	✓	x	x	x	✓	Yes
135	Perpendicular to south side of Newport Road, (PE possibly associated with Hermitage Farm/ formerly Moulshoe Barn)	x	x	x	x	x	No
136	Parallel to south side of Newport Road (PE possibly associated with Hermitage Farm)	x	x	x	x	x	No
137	Perpendicular to south side of Newport Road, (PE possibly associated with Hermitage Farm)	x	x	x	x	x	No

Hedge No ³	Description	Criteria 1 Marks a pre-1850 parish or township boundary	Criteria 2 Incorporates an archaeological feature	Criteria 3 Is part of, or associated with, an archaeological site	Criteria 4 Marks boundary of, or is associated with, a pre-1600 estate or manor	Criteria 5 Forms an integral part of a field system pre-dating the Inclosure Acts	Important (Yes/No)
138	Parallel to south side of Newport Road (PE possibly associated with Hermitage Farm)	x	x	x	x	x	No
139	Perpendicular to south side of Newport Road, (PE possibly associated with Hermitage Farm)	x	x	x	x	x	No
140	South side of Newport Road	x	x	x	x	✓	Yes
141	South side of Newport Road	x	x	x	x	✓	Yes
142	PB between Moulsoe and Broughton	✓	x	x	x	✓	Yes
143	PB between Moulsoe and Broughton	✓	x	x	x	✓	Yes
144	Perpendicular to south side of Newport Road, (PE possibly associated with Hermitage Farm)	x	x	x	x	x	No
145	PB between Moulsoe and Broughton	✓	x	x	x	✓	Yes
146	Parallel to south side of Newport Road, (PE associated with Hermitage Farm, but overlaid on southern boundary of a field of R&F).	x	x	x	x	x	No
147	Perpendicular to south side of Newport Road (PE associated with Hermitage Farm)	x	x	x	x	x	No
148	Parallel to south side of Newport Road, (PE associated with Hermitage Farm, but overlaid on northern boundary of a field of R&F).	x	x	x	x	x	No
149	West side of strip field north of Hermitage Farm	x	x	x	x	x	No
150	East side of strip field north of Hermitage Farm	x	x	x	x	x	No
151	South side of Newport Road	x	x	x	x	✓	Yes
152	Adjacent to Bridleway 003	x	x	x	x	✓	Yes
153	Adjacent to Footpath 018; shown on 1808 map	x	x	x	x	✓	Yes

3.2 Ecological Results and Evaluation

3.2.1 Results from the desk study indicate that no statutory or non-statutory nature conservation designations pertain to land adjacent to any of the hedgerows (HDA, 2020). Therefore, the hedgerows are not protected through their inclusion in a statutory or non-statutory nature reserve.

'Paragraph 6' Assessment

3.2.2 Each hedgerow was assessed against the ecological and landscape criteria outlined in *Section 2.3* and *Appendix A* using the information gained through the desk study and specialist surveys carried out by HDA in 2018.

3.2.3 The desk study did not return any records of rare, protected or notable species (as outlined in *Section 2.3.2*) associated with any of the surveyed hedgerows and it is therefore expected that none of the hedgerows surveyed would be classified as 'important' under Paragraph 6 criteria.

'Paragraphs 7-8' Assessment

3.2.4 Hedgerows 86-153 were assessed against the ecological criteria outlined in *Section 2.3* and *Appendix A* using the information gained through the 2020 field survey.

3.2.5 The results of the 2020 survey, together with the findings of the previous survey of hedgerows 1-85 carried out in 2011 (WSP, 2011), identify that a total of 35 hedgerow sections within the site can be classed as 'important' under Paragraph 7 and 8 criteria. The hedgerow sections, namely Hedgerows 1, 3, 5, 7, 9, 10, 19, 54-57, 62, 63, 65-73, 75-77, 80, 82-84, 88, 89, 119, 132, 133 and 147 are primarily located on the field boundaries bordering the 509 London Road and adjacent fields in the centre of the site and also include a small number of hedgerows in the far south-east and north-east corners of the site.

3.2.6 The full results of the Paragraphs 7 – 8 assessment are provided in *Appendix B*. The *Hedgerow Survey Summary Plan (Appendix C)* identifies the location of all hedgerows subject to assessment and highlights those qualifying as 'important' or 'non-important'. *Table 2* below summarises all the hedgerows within the site against the Paragraph 7-8 Wildlife and Landscape criteria:

Table 2: Hedgerow Assessment against Wildlife and Landscape Criteria

Hedge No ⁴	Criteria 6 Contains species protected by Schedules 1, 5 or 8 of the Wildlife and Countryside Act or listed on relevant JNCC publications	Criteria 7 Contains 7 woody species	Criteria 8 Contains 6 woody species and 3 associated features	Criteria 9 Contains 5 woody species and 4 associated features	Criteria 10 Runs along a bridleway, footpath or byway, contains 4 woody species and 2 features	Important (Yes/No)
1	x	x	x	x	✓	Yes
2	x	x	x	x	x	No
3	x	x	x	x	✓	Yes
4	x	x	x	x	x	No
5	x	x	x	x	✓	Yes
6	x	x	x	x	x	No
7	x	x	x	x	✓	Yes
8	x	x	x	x	x	No
9	x	x	x	x	✓	Yes
10	x	x	✓	✓	✓	Yes
12	x	x	x	x	x	No
15	x	x	x	x	x	No
16	x	x	x	x	x	No
17	x	x	x	x	x	No
18	x	x	x	x	x	No
19	x	x	x	x	✓	Yes
44	x	x	x	x	x	No
45	x	x	x	x	x	No
46	x	x	x	x	x	No
47	x	x	x	x	x	No

⁴ Sequential hedgerow numbers not shown in the table relate to off-site hedgerows which are not included in the current assessment.

Hedge No ⁴	Criteria 6 Contains species protected by Schedules 1, 5 or 8 of the Wildlife and Countryside Act or listed on relevant JNCC publications	Criteria 7 Contains 7 woody species	Criteria 8 Contains 6 woody species and 3 associated features	Criteria 9 Contains 5 woody species and 4 associated features	Criteria 10 Runs along a bridleway, footpath or byway, contains 4 woody species and 2 features	Important (Yes/No)
48	x	x	x	x	x	No
49	x	x	x	x	x	No
50	x	x	x	x	x	No
51	x	x	x	x	x	No
52	x	x	x	x	x	No
53	x	x	x	x	x	No
54	x	x	x	x	✓	Yes
55	x	x	x	✓	x	Yes
56	x	x	x	✓	x	Yes
57	x	x	x	✓	x	Yes
58	x	x	x	x	x	No
59	x	x	x	x	x	No
60	x	x	x	x	x	No
61	x	x	x	x	x	No
62	x	x	x	✓	✓	Yes
63	x	x	x	✓	x	Yes
64	x	x	x	x	x	No
65	x	x	x	x	✓	Yes
66	x	x	x	x	✓	Yes
67	x	x	x	x	✓	Yes
68	x	x	x	x	✓	Yes
69	x	x	x	x	✓	Yes
70	x	x	x	x	✓	Yes
71	x	x	x	x	✓	Yes

Hedge No ⁴	Criteria 6 Contains species protected by Schedules 1, 5 or 8 of the Wildlife and Countryside Act or listed on relevant JNCC publications	Criteria 7 Contains 7 woody species	Criteria 8 Contains 6 woody species and 3 associated features	Criteria 9 Contains 5 woody species and 4 associated features	Criteria 10 Runs along a bridleway, footpath or byway, contains 4 woody species and 2 features	Important (Yes/No)
72	x	x	x	x	✓	Yes
73	x	x	x	x	✓	Yes
74	x	x	x	x	x	No
75	x	x	x	✓	x	Yes
76	x	x	x	x	✓	Yes
77	x	x	x	x	✓	Yes
78	x	x	x	x	x	No
79	x	x	x	x	x	No
80	x	x	x	x	✓	Yes
81	x	x	x	x	x	No
82	x	x	x	x	✓	Yes
83	x	x	x	x	✓	Yes
84	x	x	x	x	✓	Yes
85	x	x	x	x	x	No
86	x	x	x	x	x	No
87	x	x	x	x	x	No
88	x	x	x	x	✓	Yes
89	x	x	x	x	✓	Yes
90	x	x	x	x	x	No
91	x	x	x	x	x	No
92	x	x	x	x	x	No
93	x	x	x	x	x	No
96	x	x	x	x	x	No
100	x	x	x	x	x	No

Hedge No ⁴	Criteria 6 Contains species protected by Schedules 1, 5 or 8 of the Wildlife and Countryside Act or listed on relevant JNCC publications	Criteria 7 Contains 7 woody species	Criteria 8 Contains 6 woody species and 3 associated features	Criteria 9 Contains 5 woody species and 4 associated features	Criteria 10 Runs along a bridleway, footpath or byway, contains 4 woody species and 2 features	Important (Yes/No)
101	x	x	x	x	x	No
102	x	x	x	x	x	No
103	x	x	x	x	x	No
104	x	x	x	x	x	No
105	x	x	x	x	x	No
106	x	x	x	x	x	No
107	x	x	x	x	x	No
108	x	x	x	x	x	No
109	x	x	x	x	x	No
110	x	x	x	x	x	No
111	x	x	x	x	x	No
112	x	x	x	x	x	No
113	x	x	x	x	x	No
114	x	x	x	x	x	No
115	x	x	x	x	x	No
116	x	x	x	x	x	No
117	x	x	x	x	x	No
118	x	x	x	x	x	No
119	x	x	x	x	✓	Yes
120	x	x	x	x	x	No
127	x	x	x	x	x	No
128	x	x	x	x	x	No
129	x	x	x	x	x	No
130	x	x	x	x	x	No

Hedge No ⁴	Criteria 6 Contains species protected by Schedules 1, 5 or 8 of the Wildlife and Countryside Act or listed on relevant JNCC publications	Criteria 7 Contains 7 woody species	Criteria 8 Contains 6 woody species and 3 associated features	Criteria 9 Contains 5 woody species and 4 associated features	Criteria 10 Runs along a bridleway, footpath or byway, contains 4 woody species and 2 features	Important (Yes/No)
131	x	x	x	x	x	No
132	x	x	x	x	✓	Yes
133	x	x	x	x	✓	Yes
134	x	x	x	x	x	No
135	x	x	x	x	x	No
136	x	x	x	x	x	No
137	x	x	x	x	x	No
138	x	x	x	x	x	No
139	x	x	x	x	x	No
140	x	x	x	x	x	No
141	x	x	x	x	x	No
142	x	x	x	x	x	No
143	x	x	x	x	x	No
144	x	x	x	x	x	No
145	x	x	x	x	x	No
146	x	x	x	x	x	No
147	x	x	x	✓	x	Yes
148	x	x	x	x	x	No
149	x	x	x	x	x	No
150	x	x	x	x	x	No
151	x	x	x	x	x	No
152	x	x	x	x	x	No
153	x	x	x	x	x	No

3.3 Survey Limitations

3.3.1 No limitations were encountered during the hedgerow survey and it is considered that the combination of desk study searches and field survey allow a robust assessment of the likely 'importance' of all qualifying hedgerows under the Criteria.

4 SUMMARY AND CONCLUSIONS

4.1 Important Hedgerows

4.1.1 The *Hedgerow Survey Summary Plan* provided in *Appendix C* identifies the location of all hedgerows subject to assessment and identifies those qualifying as 'important' or 'non-important'.

4.1.2 The following hedgerows located within or immediately adjacent to the site were identified as 'important' under the Historical (Historical and Archaeological) Criteria of the Hedgerows Regulations:

- 1-7, 9-10, 17-18, 44-51, 53-57, 59, 62-63, 67-75, 77, 79, 82-83, 86-89, 92-93, 96, 100, 103, 106-109, 112-120, 131-134, 140-143, 145 and 151-153.

4.1.3 The following hedgerows meet criteria to be considered 'important' under the Wildlife and Landscape Criteria of the 1997 Hedgerow Regulations (Schedule 1, Part II):

- 1, 3, 5, 7, 9, 10, 19, 54-57, 62, 63, 65-73, 75-77, 80, 82-84, 88, 89, 119, 132, 133 and 147.

4.1.4 Unless otherwise permitted under planning consent, any person who wishes to remove a hedgerow, either entirely or in part, must submit a Hedgerow Removal Notice to the local planning authority. Before submitting a formal notice, it may be advisable to discuss the proposal informally with the local authority as early discussion, and possibly a site visit, may save time later. After a formal notice has been submitted, the local authority has 42 days (which may be extended if the applicant agrees) to decide whether to issue a Hedgerow Retention Notice. During this time the local planning authority may make a site visit and will consult the local parish council or community council and consider their views. All applications are kept on a public register, but there is no requirement to publicise the order or put up signs.

4.1.5 If a hedgerow is considered 'important' under the Regulations, the local authority may (but does not have to) issue a Hedgerow Retention Notice. If the authority does not issue a notice for an important hedgerow it is usually on the condition that the removal is mitigated, such as the reinstatement or replanting to a predetermined standard, or the creation of an equivalent boundary elsewhere.

- 4.1.6 Although 55 hedgerows within the site qualify for consideration as ‘important’ under the 1997 Hedgerow Regulations, attention should be given to the intrinsic ecological and historic value of each individual hedgerow in their own right, as well as their function within the wider hedgerow network.
- 4.1.7 In addition to providing habitat for a wealth of species, hedgerows form corridors for the movement of wildlife and are important in the maintenance of landscape-scale habitat linkages through both countryside and urban areas. As such, and in accordance with the 2019 National Planning Policy Framework (NPPF) and the provisions of the 2006 Natural Environment and Rural Communities Act (NERC) Act, any development proposals for the site should seek to retain and enhance such corridors for the future benefit of wildlife. In this context, all hedgerows (even though not classified as ‘important’ under the criteria) have an intrinsic value and should, where possible, be retained and enhanced within the development proposals. Where hedgerow removal is required in order to facilitate the proposed development (e.g. at road crossing points), the masterplanning process should seek to offset any losses with the creation of new habitats and wildlife linkages which preserve and, where possible, enhance habitat connectivity within and around the site.

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	Personnel	Position
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APPENDIX A

Summary of Ecological and Historical Criteria from Hedgerow Regulations 1997

Summary of Ecological Criteria (Department of the Environment, 1997)

A hedgerow may be classified as 'important' due to the presence/recorded presence of particular animal and plant species (see Criteria in Paragraph 6, sub-paragraphs (1)-(4) of the Regulations for details).

Paragraph 7 – (1) Subject to sub-paragraph (2), the hedgerow includes:

- at least 7 woody species;
- at least 6 woody species, and has associated with it at least 3 of the features specified in sub-paragraph (4);
- at least 6 woody species, including one of the following: Pn/Sot/Tic/Tip (see below);
- at least 5 woody species, and has associated with it at least 4 of the features specified in sub-paragraph (4);

and the number of woody species in a hedgerow shall be ascertained in accordance with sub-paragraph (3).

Paragraph 8 considers a hedgerow 'important' where it is adjacent to a bridleway or footpath and includes at least 4 woody species, ascertained in accordance with paragraph 7(3) and at least 2 of the features specified in paragraph 7(4)(a) to (g).

Schedule 3 – Woody Species

The **woody species** recognised by the Hedgerows Regulations, are set out below together with the species codes used on the Data Sheets.

Spp.	Latin name	English name	Spp.	Latin name	English code
Ac	<i>Acer campestre</i>	Field Maple	Pp	<i>Prunus padus</i>	Bird Cherry
Ag	<i>Alnus glutinosa</i>	Alder	Ps	<i>Prunus spinosa</i>	Blackthorn
Bpe	<i>Betula pendula</i>	Silver Birch	Pyc	<i>Pyrus cordata</i>	Plymouth Pear
Bpu	<i>Betula pubescens</i>	Downy Birch	Pyp	<i>Pyrus pyraeter</i>	Wild Pear
Bxs	<i>Buxus sempervirens</i>	Box	Qp	<i>Quercus petraea</i>	Sessile Oak
Cb	<i>Carpinus betulus</i>	Hornbeam	Qr	<i>Quercus robur</i>	Pedunculate Oak
Cos	<i>Cornus sanguinea</i>	Dogwood	Rc	<i>Rhamnus cathartica</i>	Buckthorn
Ca	<i>Corylus avellana</i>	Hazel	Ra	<i>Ribes alpinus</i>	Mountain Currant
Cla	<i>Crataegus laevigata</i>	Midland Hawthorn	Rs	<i>Ribes spicatum</i>	Downy Currant
Cm	<i>Crataegus monogyna</i>	Hawthorn	Ruv	<i>Ribes uva-crispa</i>	Gooseberry
Cys	<i>Cytisus scoparius</i>	Broom	Ros	<i>Rosa</i> sp(p)	Rose
DI	<i>Daphne laureola</i>	Spurge-laurel	Rac	<i>Ruscus aculeatus</i>	Butcher's-broom
Dm	<i>Daphne mezereum</i>	Mezereon	Sx	<i>Salix</i> sp(p)	Willow
Ee	<i>Euonymus europaeus</i>	Spindle	Sxv	<i>Salix viminalis</i>	Osier
Fs	<i>Fagus sylvatica</i>	Beech	Sn	<i>Sambucus nigra</i>	Elder
Fa	<i>Frangula alnus</i>	Alder Buckthorn	Sac	<i>Sorbus aucuparia</i>	Rowan
Fe	<i>Fraxinus excelsior</i>	Ash	Sor	<i>Sorbus</i> sp(p)	Whitebeam
Hr	<i>Hippophae rhamnoides</i>	Sea-buckthorn	Sot	<i>Sorbus torminalis</i>	Wild Service-tree
la	<i>Ilex aquifolium</i>	Holly	Tb	<i>Taxus baccata</i>	Yew
Jr	<i>Juglans regia</i>	Walnut	Tic	<i>Tilia cordata</i>	Small-leaved Lime
Jc	<i>Juniperus communis</i>	Common Juniper	Tip	<i>Tilia platyphyllos</i>	Large-leaved Lime
Liv	<i>Ligustrum vulgare</i>	Wild Privet	Ue	<i>Ulex europaeus</i>	Gorse
Ms	<i>Malus sylvestris</i>	Crab Apple	Ug	<i>Ulex gallii</i>	Western Gorse
Pal	<i>Populus alba</i>	White Poplar	Umi	<i>Ulex minor</i>	Dwarf Gorse
Pn	<i>Populus nigra</i> sub-species <i>betulifolia</i>	Wild Black Poplar	Um	<i>Ulmus</i> sp(p)	Elm
Pot	<i>Populus tremula</i>	Aspen	VI	<i>Viburnum lantana</i>	Wayfaring-tree
Pcan	<i>Populus x canescens</i>	Grey Poplar	Vop	<i>Viburnum opulus</i>	Guelder Rose
Pa	<i>Prunus avium</i>	Wild Cherry			

Summary of Historical Criteria (Department of the Environment, 1997)

A hedgerow is considered important if it meets the following criteria:

1. Any hedgerow that marks the boundary or part of the boundary, of at least one historic parish or township; and for this purpose "historic" means existing before 1850.
2. Any hedgerow that incorporates an archaeological feature which is:
 - (a) included in the schedule of monuments compiled by the Secretary of State under section 1 (schedule of monuments) of the Ancient Monuments and Archaeological Areas Act 1979; or
 - (b) recorded on or prior to the 24th March 1997 in a Sites and Monuments record.
3. Any hedgerow that:
 - (a) is situated wholly or partly within an archaeological site included or recorded as mentioned in paragraph 2, or on land adjacent to and associated with such a site; and
 - (b) is associated with any monument or features on that site.
4. Any hedgerow that:
 - (a) marks the boundary of a pre-1600 AD estate or manor recorded on or prior to the 24th March 1997 in a Sites and Monuments Record or in a document held at that date at a Record Office; or
 - (b) is visibly related to any building or other feature of such an estate or manor.
5. Any hedgerow that:
 - (a) is recorded in a document held on 24th March 1997 at a Record Office as an integral part of a field system pre-dating the Inclosure Acts; or
 - (b) is part of, or visibly related to, any building or other feature associated with such a system, and that system:
 - (i) is substantially complete; or
 - (ii) is of a pattern which is recorded in a document prepared by a local planning authority, within the meaning of the 1990 Town and Country Planning Act, for the purposes of development control within the authority's area, as a key landscape characteristic.

APPENDIX B

Hedgerow Survey Data Sheets (Ecology and Landscape Criteria)

Hedgerow Survey Record

Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	20/07/11
Client:	WSP	OS Grid Reference:	SP 885, 415
Hedge Reference:	1	Length (m):	335
Photo No:	1507		



Keystone Environmental
Practical Ecological Solutions

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	1.5	Average width of vegetation (m)	1.5
Side surveyed			W

Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable – Un-cropped margin	<input type="checkbox"/>
		Improved Grass	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
		Woodland - Young	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
		Road (Major / Minor)	<input checked="" type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
		Canal	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
		Other	

Woody species/ trees			
	<30m	>30m<100m	>100m <200m
			>200m
Number of woody Species ¹			4 5 4 Av. 4
No. Standard tree / 50m			0

Connectivity² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	3	Connections to woodland	0
		Connections to ponds	0

Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input checked="" type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
		Gaps as % of length	5 %
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>

Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
		Bark sap runs	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record

Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	20/07/11
Client:	WSP	OS Grid Reference:	SP 890, 416
Hedge Reference:	2	Length (m):	276
Photo No:	1508		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	1.5	Average width of vegetation (m)	1.5
Side surveyed	S		

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop <input checked="" type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ⁴			4 3 4 Av. 3.75
No. Standard tree / 50m			0

Connectivity⁵ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	3	Connections to woodland	2
Connections to ponds	0		

Additional Criteria		
Bank ⁶ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁴ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁵ Connections within 10m in line with hedge

⁶ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	20/07/11
Client:	WSP	OS Grid Reference:	SP 890, 418
Hedge Reference:	3	Length (m):	381
Photo No:	1509		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	1.5	Average width of vegetation (m)	1.5
Side surveyed			W

Hedgerow Type		
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop	<input checked="" type="checkbox"/>	Arable – Un-cropped margin
		Improved Grass
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass
		Woodland - Young
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature
		Road (Major / Minor)
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail
		Canal
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond
		Other

Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ⁷			
No. Standard tree / 50m			

Connectivity ⁸ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	0
		Connections to ponds	0

Additional Criteria		
Bank ⁹ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)
		Protected species (add details to comments)
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree
		Gaps as % of length
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees
		At least 3 Woodland species (within 1m of hedge)

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long
		Bark sap runs
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs
		Major rot sites, any more than 15cm across

Comments (Inc. Limitations & Protected species):

⁷ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁸ Connections within 10m in line with hedge

⁹ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	20/07/11
Client:	WSP	OS Grid Reference:	SP 889, 420
Hedge Reference:	4	Length (m):	95
Photo No:	15010		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	1.5	Average width of vegetation (m)	1.5
Side surveyed			S

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop <input checked="" type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input checked="" type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹⁰		3	
No. Standard tree / 50m		0	

Connectivity ¹¹ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	2	Connections to woodland	0
		Connections to ponds	0

Additional Criteria		
Bank ¹² (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 20 %
Ditch ³ (Dry) <input type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

¹⁰ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

¹¹ Connections within 10m in line with hedge

¹² Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	20/07/11
Client:	WSP	OS Grid Reference:	SP 890, 420
Hedge Reference:	5	Length (m):	68
Photo No:	1511		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	1.5	Average width of vegetation (m)	1.5
Side surveyed			W

Hedgerow Type		
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)

Arable - crop	<input type="checkbox"/>	Arable – Un-cropped margin	<input type="checkbox"/>	Improved Grass	<input checked="" type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>	Woodland - Young	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>	Road (Major / Minor)	<input checked="" type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>	Canal	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>	Other	

Woody species/ trees

	<30m	>30m<100m	>100m <200m	>200m	Av.
Number of woody Species ¹³		1			
No. Standard tree / 50m		0			

Connectivity¹⁴ (hedge connection = 1 pt, wood or pond connection = 2pts)

Connections to hedges	4	Connections to woodland		Connections to ponds	
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Additional Criteria

Bank ¹⁵ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input checked="" type="checkbox"/>	Protected species (add details to comments)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>	Gaps as % of length	0 %
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>

Veteran Tree Features

Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>	Bark sap runs	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>	Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

¹³ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

¹⁴ Connections within 10m in line with hedge

¹⁵ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	20/07/11
Client:	WSP	OS Grid Reference:	SP 889, 420
Hedge Reference:	6	Length (m):	98
Photo No:	1512 & 1513		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)		Average width of vegetation (m)	
		Side surveyed	S

Hedgerow Type		
Shrubby hedgerow <input type="checkbox"/>	Line of trees <input checked="" type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other: Trees <input checked="" type="checkbox"/>

Hedgerow Base Management: None

Adjacent land use / Management (can be more than one)

Arable - crop <input checked="" type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input checked="" type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other

Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹⁶		2	
No. Standard tree / 50m		4	

Connectivity¹⁷ (hedge connection = 1 pt, wood or pond connection = 2pts)

Connections to hedges	3	Connections to woodland	0	Connections to ponds	0
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Additional Criteria

Bank ¹⁸ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input checked="" type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input type="checkbox"/>	Veteran trees <input checked="" type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features

Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input checked="" type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input checked="" type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input checked="" type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

¹⁶ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

¹⁷ Connections within 10m in line with hedge

¹⁸ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	20/07/11
Client:	WSP	OS Grid Reference:	SP 889, 424
Hedge Reference:	7	Length (m):	554
Photo No:	1514		



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Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	1.5	Average width of vegetation (m)	1.5
Side surveyed		W	

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop <input checked="" type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input checked="" type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹⁹			2 4 3 Av. 3
No. Standard tree / 50m			1

Connectivity ²⁰ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	0
Connections to ponds			0

Additional Criteria		
Bank ²¹ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input checked="" type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input checked="" type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

¹⁹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

²⁰ Connections within 10m in line with hedge

²¹ Along at least half length of hedgerow

Hedgerow Survey Record

Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	20/07/11
Client:	WSP	OS Grid Reference:	SP 886, 425
Hedge Reference:	8	Length (m):	219
Photo No:	1515		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	1.5	Average width of vegetation (m)	1.5
Side surveyed			S

Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable – Un-cropped margin	<input type="checkbox"/>
		Improved Grass	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
		Woodland - Young	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
		Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
		Canal	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
		Other	

Woody species/ trees			
	<30m	>30m<100m	>100m <200m
			>200m
Number of woody Species ²²			3 2 3 Av. 2.5
No. Standard tree / 50m			1

Connectivity²³ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	0
		Connections to ponds	0

Additional Criteria			
Bank ²⁴ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
		Gaps as % of length	5 %
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>

Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
		Bark sap runs	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

²² If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

²³ Connections within 10m in line with hedge

²⁴ Along at least half length of hedgerow

Hedgerow Survey Record

Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	20/07/11
Client:	WSP	OS Grid Reference:	SP 887, 427
Hedge Reference:	9	Length (m):	188
Photo No:	1516		



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Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary					
Average height of vegetation (m)	1.5	Average width of vegetation (m)	1.5	Side surveyed	W

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop <input checked="" type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input checked="" type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees				
	<30m	>30m<100m	>100m <200m	>200m
Number of woody Species ²⁵			3 4 Av. 3.5	Av.
No. Standard tree / 50m			0	

Connectivity²⁶ (hedge connection = 1 pt, wood or pond connection = 2pts)					
Connections to hedges	4	Connections to woodland	0	Connections to ponds	0

Additional Criteria		
Bank ²⁷ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input checked="" type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input checked="" type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

²⁵ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

²⁶ Connections within 10m in line with hedge

²⁷ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	20/07/11
Client:	WSP	OS Grid Reference:	SP 886, 427
Hedge Reference:	10	Length (m):	210
Photo No:	1517		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	10	Average width of vegetation (m)	2.5
Side surveyed			N

Hedgerow Type		
Shrubby hedgerow	<input type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other (trees)	<input checked="" type="checkbox"/>

Hedgerow Base Management: None

Adjacent land use / Management (can be more than one)

Arable - crop	<input checked="" type="checkbox"/>	Arable – Un-cropped margin	<input type="checkbox"/>	Improved Grass	<input checked="" type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>	Woodland - Young	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>	Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway	<input checked="" type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>	Canal	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>	Other	

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ²⁸					4	7	7
No. Standard tree / 50m					6		

Connectivity²⁹ (hedge connection = 1 pt, wood or pond connection = 2pts)

Connections to hedges	4	Connections to woodland	0	Connections to ponds	0
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Additional Criteria

Bank ³⁰ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input checked="" type="checkbox"/>	Protected species (add details to comments)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>	Gaps as % of length	5 %
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees	<input checked="" type="checkbox"/>	At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>

Veteran Tree Features

Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input checked="" type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>	Bark sap runs	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>	Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

²⁸ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

²⁹ Connections within 10m in line with hedge

³⁰ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	20/07/11
Client:	WSP	OS Grid Reference:	SP 886, 427
Hedge Reference:	11	Length (m):	222
Photo No:	1517		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	10	Average width of vegetation (m)	2.5
Side surveyed			S

Hedgerow Type		
Shrubby hedgerow	<input type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other: Trees	<input checked="" type="checkbox"/>

Hedgerow Base Management: None

Adjacent land use / Management (can be more than one)

Arable - crop	<input checked="" type="checkbox"/>	Arable – Un-cropped margin	<input type="checkbox"/>	Improved Grass	<input checked="" type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>	Woodland - Young	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>	Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway	<input checked="" type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>	Canal	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>	Other	

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ³¹					4	7	7
No. Standard tree / 50m					6		

Connectivity³² (hedge connection = 1 pt, wood or pond connection = 2pts)

Connections to hedges	4	Connections to woodland	0	Connections to ponds	0
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Additional Criteria

Bank ³³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input checked="" type="checkbox"/>	Protected species (add details to comments)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>	Gaps as % of length	5 %
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees	<input checked="" type="checkbox"/>	At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>

Veteran Tree Features

Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input checked="" type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>	Bark sap runs	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>	Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

³¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

³² Connections within 10m in line with hedge

³³ Along at least half length of hedgerow

Hedgerow Survey Record

Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	20/07/11
Client:	WSP	OS Grid Reference:	SP 887, 428
Hedge Reference:	12	Length (m):	124
Photo No:	1518		



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Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>	

Hedgerow Summary			
Average height of vegetation (m)	5	Average width of vegetation (m)	2.5
Side surveyed	W		

Hedgerow Type			
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>	

Hedgerow Shape			
Trimmed & dense <input type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input checked="" type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)			
Arable - crop <input type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input checked="" type="checkbox"/>	
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>	
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input checked="" type="checkbox"/> / <input type="checkbox"/>	
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>	
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other	

Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ³⁴			3 3 3 Av. 3
No. Standard tree / 50m			0

Connectivity ³⁵ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	2	Connections to woodland	0
Connections to ponds	0		

Additional Criteria			
Bank ³⁶ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>	
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length	5 %
Ditch ³ (Dry) <input type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>

Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>	
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>	

Comments (Inc. Limitations & Protected species):

³⁴ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

³⁵ Connections within 10m in line with hedge

³⁶ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	20/07/11
Client:	WSP	OS Grid Reference:	SP 886, 427
Hedge Reference:	13	Length (m):	65
Photo No:	1519 & 1520		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	5	Average width of vegetation (m)	3
Side surveyed			E

Hedgerow Type		
Shrubby hedgerow	<input type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input checked="" type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other: Trees	<input checked="" type="checkbox"/>

Hedgerow Base Management: None

Adjacent land use / Management (can be more than one)		
Arable - crop	<input type="checkbox"/>	Arable – Un-cropped margin
		Improved Grass
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass
		Woodland - Young
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature
		Road (Major / Minor)
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail
		Canal
River / Stream	<input type="checkbox"/> / <input checked="" type="checkbox"/>	Lake / Pond
		Other

Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ³⁷		5	
No. Standard tree / 50m		5	

Connectivity ³⁸ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	2	Connections to woodland	0
		Connections to ponds	0

Additional Criteria		
Bank ³⁹ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)
		Protected species (add details to comments)
Ditch ³ (wet)	<input checked="" type="checkbox"/>	Black poplar, lime or service tree
		Gaps as % of length
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees
		At least 3 Woodland species (within 1m of hedge)

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input checked="" type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long
		Bark sap runs
Tears, splits, scars, lightning strikes more than 30 cm long	<input checked="" type="checkbox"/>	Hollow trunks or hollow major limbs
		Major rot sites, any more than 15cm across

Comments (Inc. Limitations & Protected species):

³⁷ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

³⁸ Connections within 10m in line with hedge

³⁹ Along at least half length of hedgerow

Hedgerow Survey Record

Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	20/07/11
Client:	WSP	OS Grid Reference:	SP 883, 425
Hedge Reference:	14	Length (m):	312
Photo No:	1538		



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Practical Ecological Solutions

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	20	Average width of vegetation (m)	15
Side surveyed	E		

Hedgerow Type		
Shrubby hedgerow <input type="checkbox"/>	Line of trees <input checked="" type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other: Trees <input checked="" type="checkbox"/>

Hedgerow Base Management: None

Adjacent land use / Management (can be more than one)		
Arable - crop <input type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input checked="" type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input checked="" type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other

Woody species/ trees								
	<30m	>30m<100m	>100m <200m		>200m			
Number of woody Species ⁴⁰					4	5	3	Av. 4
No. Standard tree / 50m					5			

Connectivity ⁴¹ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	3	Connections to woodland	0
Connections to ponds	0		

Additional Criteria		
Bank ⁴² (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 15 %
Ditch ³ (Dry) <input type="checkbox"/>	Veteran trees <input checked="" type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input checked="" type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁴⁰ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁴¹ Connections within 10m in line with hedge

⁴² Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	20/07/11
Client:	WSP	OS Grid Reference:	SP 886, 426
Hedge Reference:	15	Length (m):	120
Photo No:	1521		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	1.5	Average width of vegetation (m)	1.5
Side surveyed			E

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)

Arable - crop <input checked="" type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input checked="" type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees

	<30m	>30m<100m	>100m <200m			>200m		
Number of woody Species ⁴³			4	7	Av. 5.5			
No. Standard tree / 50m			1					

Connectivity⁴⁴ (hedge connection = 1 pt, wood or pond connection = 2pts)

Connections to hedges	4	Connections to woodland	0	Connections to ponds	0
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Additional Criteria

Bank ⁴⁵ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input checked="" type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features

Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁴³ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁴⁴ Connections within 10m in line with hedge

⁴⁵ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	20/07/11
Client:	WSP	OS Grid Reference:	SP 887, 423
Hedge Reference:	16	Length (m):	297
Photo No:	1522		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	1.5	Average width of vegetation (m)	1.5
Side surveyed	E		

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop <input checked="" type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input checked="" type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ⁴⁶			5
No. Standard tree / 50m			1

Connectivity ⁴⁷ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	2	Connections to woodland	0
Connections to ponds	0		

Additional Criteria		
Bank ⁴⁸ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input checked="" type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁴⁶ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁴⁷ Connections within 10m in line with hedge

⁴⁸ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	20/07/11
Client:	WSP	OS Grid Reference:	SP 889, 421
Hedge Reference:	17	Length (m):	276
Photo No:	1523		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	10	Average width of vegetation (m)	5
Side surveyed	E		

Hedgerow Type		
Shrubby hedgerow <input type="checkbox"/>	Line of trees <input checked="" type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other: Trees <input checked="" type="checkbox"/>

Hedgerow Base Management: None

Adjacent land use / Management (can be more than one)

Arable - crop <input checked="" type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input checked="" type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other

Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ⁴⁹			2 3 2 Av. 2.5
No. Standard tree / 50m			6

Connectivity⁵⁰ (hedge connection = 1 pt, wood or pond connection = 2pts)

Connections to hedges	1	Connections to woodland	0	Connections to ponds	0
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Additional Criteria

Bank ⁵¹ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input checked="" type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 10 %
Ditch ³ (Dry) <input type="checkbox"/>	Veteran trees <input checked="" type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features

Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input checked="" type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁴⁹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁵⁰ Connections within 10m in line with hedge

⁵¹ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	20/07/11
Client:	WSP	OS Grid Reference:	SP 889, 417
Hedge Reference:	18	Length (m):	194
Photo No:	1524		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	15	Average width of vegetation (m)	1.5
Side surveyed			W

Hedgerow Type		
Shrubby hedgerow	<input type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other: Trees	<input checked="" type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)

Arable - crop	<input checked="" type="checkbox"/>	Arable – Un-cropped margin	<input type="checkbox"/>	Improved Grass	<input checked="" type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>	Woodland - Young	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>	Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>	Canal	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>	Other	

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ⁵²					2	4	2
No. Standard tree / 50m					3		

Connectivity⁵³ (hedge connection = 1 pt, wood or pond connection = 2pts)

Connections to hedges	1	Connections to woodland	2	Connections to ponds	0
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Additional Criteria

Bank ⁵⁴ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>	Protected species (add details to comments)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>	Gaps as % of length	10 %
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees	<input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>

Veteran Tree Features

Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>	Bark sap runs	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>	Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁵² If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁵³ Connections within 10m in line with hedge

⁵⁴ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	20/07/11
Client:	WSP	OS Grid Reference:	SP 891, 409
Hedge Reference:	19	Length (m):	1166
Photo No:	1525		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	2	Average width of vegetation (m)	1.5
Side surveyed	N		

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop <input checked="" type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input checked="" type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ⁵⁵					3	4	5
No. Standard tree / 50m					0		

Connectivity ⁵⁶ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	1	Connections to woodland	0
Connections to ponds	0		

Additional Criteria		
Bank ⁵⁷ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input checked="" type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input checked="" type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁵⁵ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁵⁶ Connections within 10m in line with hedge

⁵⁷ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	20/07/11
Client:	WSP	OS Grid Reference:	SP 887, 429
Hedge Reference:	20	Length (m):	457
Photo No:	1526		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	2	Average width of vegetation (m)	1
Side surveyed	E		

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input checked="" type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)

Arable - crop <input type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input checked="" type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other: Industrial

Woody species/ trees	<30m	>30m<100m	>100m <200m	>200m			
Number of woody Species ⁵⁸				5	4	3	Av. 4
No. Standard tree / 50m				0			

Connectivity⁵⁹ (hedge connection = 1 pt, wood or pond connection = 2pts)

Connections to hedges	0	Connections to woodland	0	Connections to ponds	0
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Additional Criteria

Bank ⁶⁰ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 10 %
Ditch ³ (Dry) <input type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features

Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁵⁸ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁵⁹ Connections within 10m in line with hedge

⁶⁰ Along at least half length of hedgerow

Hedgerow Survey Record

Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	20/07/11
Client:	WSP	OS Grid Reference:	SP 886, 432
Hedge Reference:	21	Length (m):	115
Photo No:	1526		



Keystone Environmental
Practical Ecological Solutions

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	2	Average width of vegetation (m)	1
Side surveyed			W

Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense	<input type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input checked="" type="checkbox"/>	Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
		Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)			
Arable - crop	<input type="checkbox"/>	Arable – Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Improved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Road (Major / Minor)	<input type="checkbox"/> / <input checked="" type="checkbox"/>
		Rail	<input type="checkbox"/>
		Canal	<input type="checkbox"/>
		Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
		Other: Industrial	

Woody species/ trees			
	<30m	>30m<100m	>100m <200m
			>200m
Number of woody Species ⁶¹			5 4 3 Av. 4
No. Standard tree / 50m			0

Connectivity⁶² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	0	Connections to woodland	0
		Connections to ponds	0

Additional Criteria			
Bank ⁶³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Protected species (add details to comments)	<input type="checkbox"/>
Ditch ³ (Dry)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
		Gaps as % of length	10 %
		Veteran trees	<input type="checkbox"/>
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>

Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Bark sap runs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>
		Hollow trunks or hollow major limbs	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁶¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁶² Connections within 10m in line with hedge

⁶³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	20/07/11
Client:	WSP	OS Grid Reference:	SP 876, 429
Hedge Reference:	23	Length (m):	594
Photo No:	1527		



Keystone Environmental
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Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	15	Average width of vegetation (m)	1
Side surveyed			E

Hedgerow Type		
Shrubby hedgerow <input type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other: Trees <input checked="" type="checkbox"/>

Hedgerow Base Management: None

Adjacent land use / Management (can be more than one)

Arable - crop <input type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input checked="" type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other: Playing field

Woody species/ trees	<30m	>30m<100m	>100m <200m	>200m
Number of woody Species ⁶⁷				2 1 0 Av. 1
No. Standard tree / 50m				6

Connectivity⁶⁸ (hedge connection = 1 pt, wood or pond connection = 2pts)

Connections to hedges	2	Connections to woodland	2	Connections to ponds	0
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Additional Criteria

Bank ⁶⁹ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input checked="" type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 15 %
Ditch ³ (Dry) <input type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features

Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁶⁷ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁶⁸ Connections within 10m in line with hedge

⁶⁹ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	20/07/11
Client:	WSP	OS Grid Reference:	SP 878, 428
Hedge Reference:	24	Length (m):	159
Photo No:	1529		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	15	Average width of vegetation (m)	1
Side surveyed	E		

Hedgerow Type		
Shrubby hedgerow <input type="checkbox"/>	Line of trees <input checked="" type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other: Trees <input checked="" type="checkbox"/>

Hedgerow Base Management: Mown

Adjacent land use / Management (can be more than one)

Arable - crop <input type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other: Playing fields

Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ⁷⁰			2 1 0 Av. 1
No. Standard tree / 50m			6

Connectivity⁷¹ (hedge connection = 1 pt, wood or pond connection = 2pts)

Connections to hedges	0	Connections to woodland	0	Connections to ponds	0
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Additional Criteria

Bank ⁷² (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 15 %
Ditch ³ (Dry) <input type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features

Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁷⁰ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁷¹ Connections within 10m in line with hedge

⁷² Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	20/07/11
Client:	WSP	OS Grid Reference:	SP 877, 427
Hedge Reference:	25	Length (m):	223
Photo No:	1527		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	5	Average width of vegetation (m)	1
Side surveyed	E		

Hedgerow Type		
Shrubby hedgerow <input type="checkbox"/>	Line of trees <input checked="" type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other: Trees <input checked="" type="checkbox"/>

Hedgerow Base Management: Mown

Adjacent land use / Management (can be more than one)

Arable - crop <input type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other: Playing Fields

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ⁷³					0	0	0
No. Standard tree / 50m					6		

Connectivity⁷⁴ (hedge connection = 1 pt, wood or pond connection = 2pts)

Connections to hedges	0	Connections to woodland	0	Connections to ponds	0
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Additional Criteria

Bank ⁷⁵ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features

Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁷³ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁷⁴ Connections within 10m in line with hedge

⁷⁵ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	20/07/11
Client:	WSP	OS Grid Reference:	SP 878, 430
Hedge Reference:	27	Length (m):	371
Photo No:	1530		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	2.5	Average width of vegetation (m)	1.5
Side surveyed	S		

Hedgerow Type		
Shrubby hedgerow <input type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Mown

Adjacent land use / Management (can be more than one)

Arable - crop <input checked="" type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other: Amenity Grass

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ⁷⁹					2	1	3
No. Standard tree / 50m					0		

Connectivity⁸⁰ (hedge connection = 1 pt, wood or pond connection = 2pts)

Connections to hedges	1	Connections to woodland	2	Connections to ponds	0
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Additional Criteria

Bank ⁸¹ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features

Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁷⁹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁸⁰ Connections within 10m in line with hedge

⁸¹ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	20/07/11
Client:	WSP	OS Grid Reference:	SP 879, 432
Hedge Reference:	28	Length (m):	178
Photo No:	1531		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	15	Average width of vegetation (m)	1
Side surveyed			N

Hedgerow Type		
Shrubby hedgerow	<input type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other: Trees	<input checked="" type="checkbox"/>

Hedgerow Base Management: Mown

Adjacent land use / Management (can be more than one)

Arable - crop	<input type="checkbox"/>	Arable – Un-cropped margin	<input type="checkbox"/>	Improved Grass	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>	Woodland - Young	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>	Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>	Canal	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input checked="" type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>	Other: Amenity Grassland	

Woody species/ trees	<30m	>30m<100m	>100m <200m			>200m	
Number of woody Species ⁸²			1	1	Av. 1		Av.
No. Standard tree / 50m			6				

Connectivity⁸³ (hedge connection = 1 pt, wood or pond connection = 2pts)

Connections to hedges	0	Connections to woodland	0	Connections to ponds	0
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Additional Criteria

Bank ⁸⁴ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>	Protected species (add details to comments)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>	Gaps as % of length	15 %
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees	<input checked="" type="checkbox"/>	At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>

Veteran Tree Features

Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>	Bark sap runs	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input checked="" type="checkbox"/>	Hollow trunks or hollow major limbs	<input checked="" type="checkbox"/>	Major rot sites, any more than 15cm across	<input checked="" type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁸² If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁸³ Connections within 10m in line with hedge

⁸⁴ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	20/07/11
Client:	WSP	OS Grid Reference:	SP 879, 432
Hedge Reference:	29	Length (m):	195
Photo No:	1531		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	15	Average width of vegetation (m)	1
Side surveyed		S	

Hedgerow Type		
Shrubby hedgerow	<input type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
Untrimmed	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>
Tall & leggy	<input type="checkbox"/>	Other: Trees	<input checked="" type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop	<input type="checkbox"/>	Arable – Un-cropped margin
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond
		Improved Grass
		Woodland - Young
		Road (Major / Minor)
		Canal
		Other: Amenity Grassland & Housing

Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ⁸⁵			1 1 Av.1
No. Standard tree / 50m			6
			>200m

Connectivity ⁸⁶ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	0	Connections to woodland	0
		Connections to ponds	0

Additional Criteria		
Bank ⁸⁷ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees
		Protected species (add details to comments)
		Gaps as % of length
		At least 3 Woodland species (within 1m of hedge)

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long
Tears, splits, scars, lightning strikes more than 30 cm long	<input checked="" type="checkbox"/>	Hollow trunks or hollow major limbs
		Bark sap runs
		Major rot sites, any more than 15cm across

Comments (Inc. Limitations & Protected species):

⁸⁵ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁸⁶ Connections within 10m in line with hedge

⁸⁷ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 875, 427
Hedge Reference:	30	Length (m):	609
Photo No:	1532		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	15	Average width of vegetation (m)	3
Side surveyed			S

Hedgerow Type		
Shrubby hedgerow	<input type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input checked="" type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: None

Adjacent land use / Management (can be more than one)

Arable - crop	<input type="checkbox"/>	Arable – Un-cropped margin	<input type="checkbox"/>	Improved Grass	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>	Woodland - Young	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>	Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway	<input checked="" type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>	Canal	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>	Other Housing	

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ⁸⁸					7	9	10
No. Standard tree / 50m					6		
Connectivity⁸⁹ (hedge connection = 1 pt, wood or pond connection = 2pts)							
Connections to hedges	0	Connections to woodland	0	Connections to ponds	0		

Additional Criteria		
Bank ⁹⁰ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)
		Protected species (add details to comments)
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree
		Gaps as % of length
		5 %
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees
		At least 3 Woodland species (within 1m of hedge)
		<input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input checked="" type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long
		Bark sap runs
		<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs
		Major rot sites, any more than 15cm across
		<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁸⁸ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁸⁹ Connections within 10m in line with hedge

⁹⁰ Along at least half length of hedgerow

Hedgerow Survey Record

Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 871, 424
Hedge Reference:	32	Length (m):	298
Photo No:	1533		



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Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>	

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed	N		

Hedgerow Type			
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>	

Hedgerow Shape			
Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)			
Arable - crop <input type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input checked="" type="checkbox"/>	
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>	
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input checked="" type="checkbox"/> / <input type="checkbox"/>	
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>	
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other	

Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ⁹⁴			3 1 2 Av. 2
No. Standard tree / 50m			0

Connectivity ⁹⁵ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	3	Connections to woodland	0
Connections to ponds	0		

Additional Criteria			
Bank ⁹⁶ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>	
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length	5 %
Ditch ³ (Dry) <input checked="" type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>

Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>	
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>	

Comments (Inc. Limitations & Protected species):

⁹⁴ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁹⁵ Connections within 10m in line with hedge

⁹⁶ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 872, 424
Hedge Reference:	33	Length (m):	103
Photo No:	1533		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed			N

Hedgerow Type		
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop	<input type="checkbox"/>	Arable – Un-cropped margin
		Improved Grass
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass
		Woodland - Young
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature
		Road (Major / Minor)
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail
		Canal
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond
		Other

Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			Av.
No. Standard tree / 50m			0

Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	3	Connections to woodland	0
		Connections to ponds	0

Additional Criteria		
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)
		Protected species (add details to comments)
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree
		Gaps as % of length
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees
		At least 3 Woodland species (within 1m of hedge)

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long
		Bark sap runs
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs
		Major rot sites, any more than 15cm across

Comments (Inc. Limitations & Protected species):

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 876, 426
Hedge Reference:	34	Length (m):	458
Photo No:	1534		



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Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	15	Average width of vegetation (m)	5
Side surveyed			N

Hedgerow Type		
Shrubby hedgerow <input type="checkbox"/>	Line of trees <input checked="" type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other: Trees <input checked="" type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop <input type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input checked="" type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input checked="" type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other

Woody species/ trees								
	<30m	>30m<100m	>100m <200m		>200m			
Number of woody Species ⁴				Av.	5	5	6	Av. 5
No. Standard tree / 50m					5			

Connectivity ⁵ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	3	Connections to woodland	0
Connections to ponds			0

Additional Criteria		
Bank ⁶ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input checked="" type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁴ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁵ Connections within 10m in line with hedge

⁶ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 876, 427
Hedge Reference:	35	Length (m):	329
Photo No:	1535		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	5	Average width of vegetation (m)	3
Side surveyed	E		

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input checked="" type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop <input type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input checked="" type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input checked="" type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees							
	<30m	>30m<100m	>100m <200m	>200m			
Number of woody Species ⁷			Av.	1	2	3	Av. 2
No. Standard tree / 50m				0			

Connectivity ⁸ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	2	Connections to woodland	0
Connections to ponds	0		

Additional Criteria		
Bank ⁹ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input checked="" type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁷ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁸ Connections within 10m in line with hedge

⁹ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 874, 424
Hedge Reference:	36	Length (m):	1247
Photo No:	1542		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	5	Average width of vegetation (m)	1.5
Side surveyed		N&E	

Hedgerow Type		
Shrubby hedgerow	<input type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop	<input type="checkbox"/>	Arable – Un-cropped margin
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond
		Improved Grass
		Woodland - Young
		Road (Major / Minor)
		Canal
		Other: Quarry

Woody species/ trees							
	<30m	>30m<100m	>100m <200m	>200m			
Number of woody Species ¹⁰			Av.	4	2	7	Av. 4
No. Standard tree / 50m				1			

Connectivity ¹¹ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	0	Connections to woodland	0
		Connections to ponds	0

Additional Criteria		
Bank ¹² (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees
		Protected species (add details to comments)
		Gaps as % of length
		At least 3 Woodland species (within 1m of hedge)

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs
		Bark sap runs
		Major rot sites, any more than 15cm across

Comments (Inc. Limitations & Protected species):

¹⁰ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

¹¹ Connections within 10m in line with hedge

¹² Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 877, 426
Hedge Reference:	37	Length (m):	772
Photo No:	1541		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	1.5	Average width of vegetation (m)	1.5
Side surveyed		S	

Hedgerow Type		
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)			
Arable - crop	<input type="checkbox"/>	Arable – Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input checked="" type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
		Improved Grass	<input type="checkbox"/>
		Woodland - Young	<input type="checkbox"/>
		Road (Major / Minor)	<input checked="" type="checkbox"/> / <input type="checkbox"/>
		Canal	<input type="checkbox"/>
		Other	

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ¹³				Av.	3	1	3
No. Standard tree / 50m					0		
					Av. 2		

Connectivity ¹⁴ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	2	Connections to woodland	0
		Connections to ponds	0

Additional Criteria		
Bank ¹⁵ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees
		Protected species (add details to comments)
		Gaps as % of length
		At least 3 Woodland species (within 1m of hedge)

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs
		Bark sap runs
		Major rot sites, any more than 15cm across

Comments (Inc. Limitations & Protected species):

¹³ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

¹⁴ Connections within 10m in line with hedge

¹⁵ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 884, 427
Hedge Reference:	38	Length (m):	394
Photo No:	1541		



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Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	1.5	Average width of vegetation (m)	1.5
Side surveyed	S		

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop <input type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input checked="" type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input checked="" type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ¹⁶				Av.	3	1	3
No. Standard tree / 50m					0		

Connectivity ¹⁷ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	2	Connections to woodland	0
Connections to ponds	0		

Additional Criteria		
Bank ¹⁸ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input checked="" type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

¹⁶ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

¹⁷ Connections within 10m in line with hedge

¹⁸ Along at least half length of hedgerow

Hedgerow Survey Record

Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 884, 427
Hedge Reference:	39	Length (m):	438
Photo No:	1537 & 1539		



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Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary					
Average height of vegetation (m)	7.5	Average width of vegetation (m)	3	Side surveyed	S

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape				
Trimmed & dense <input type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>	
Untrimmed, with outgrowth <input checked="" type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>	

Hedgerow Base Management: None

Adjacent land use / Management (can be more than one)			
Arable - crop <input type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>	
Semi-improved Grass <input checked="" type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>	
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>	
Track / Footpath / Bridleway <input checked="" type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>	
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other	

Woody species/ trees								
	<30m	>30m<100m	>100m <200m	>200m				
Number of woody Species ¹⁹			Av.	6	5	3	Av. 5	
No. Standard tree / 50m				3				

Connectivity ²⁰ (hedge connection = 1 pt, wood or pond connection = 2pts)					
Connections to hedges	3	Connections to woodland	0	Connections to ponds	0

Additional Criteria		
Bank ²¹ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input checked="" type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input checked="" type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

¹⁹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

²⁰ Connections within 10m in line with hedge

²¹ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 883, 426
Hedge Reference:	40	Length (m):	203
Photo No:	1537 & 1539		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	7.5	Average width of vegetation (m)	3
Side surveyed	N		

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input checked="" type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: None

Adjacent land use / Management (can be more than one)

Arable - crop <input type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input checked="" type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other: Amenity Grassland

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ²²				Av.	6	5	3
No. Standard tree / 50m					3		

Connectivity²³ (hedge connection = 1 pt, wood or pond connection = 2pts)

Connections to hedges	2	Connections to woodland	0	Connections to ponds	0
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Additional Criteria

Bank ²⁴ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input checked="" type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input checked="" type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features

Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

²² If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

²³ Connections within 10m in line with hedge

²⁴ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 882, 426
Hedge Reference:	41	Length (m):	172
Photo No:	1540		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	5	Average width of vegetation (m)	3
Side surveyed			W

Hedgerow Type		
Shrubby hedgerow	<input type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input checked="" type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)

Arable - crop	<input type="checkbox"/>	Arable – Un-cropped margin	<input type="checkbox"/>	Improved Grass	<input type="checkbox"/>
Semi-improved Grass	<input checked="" type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>	Woodland - Young	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>	Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>	Canal	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>	Other: Amenity Grassland	

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ²⁵				Av.	3	4	3
No. Standard tree / 50m					3		

Connectivity²⁶ (hedge connection = 1 pt, wood or pond connection = 2pts)

Connections to hedges	1	Connections to woodland	0	Connections to ponds	0
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Additional Criteria

Bank ²⁷ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>	Protected species (add details to comments)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>	Gaps as % of length	5 %
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees	<input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>

Veteran Tree Features

Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>	Bark sap runs	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>	Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

²⁵ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

²⁶ Connections within 10m in line with hedge

²⁷ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 879, 424
Hedge Reference:	42	Length (m):	108
Photo No:	1536		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	5	Average width of vegetation (m)	5
Side surveyed		W	

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input checked="" type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)

Arable - crop <input type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input checked="" type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input checked="" type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees

	<30m	>30m<100m	>100m <200m			>200m		
Number of woody Species ²⁸			3	3	Av. 3			Av.
No. Standard tree / 50m			3					

Connectivity²⁹ (hedge connection = 1 pt, wood or pond connection = 2pts)

Connections to hedges	0	Connections to woodland	2	Connections to ponds	2
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Additional Criteria

Bank ³⁰ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 15 %
Ditch ³ (Dry) <input checked="" type="checkbox"/>	Veteran trees <input checked="" type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features

Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input checked="" type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

²⁸ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

²⁹ Connections within 10m in line with hedge

³⁰ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 877, 421
Hedge Reference:	43	Length (m):	337
Photo No:	1543		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	5	Average width of vegetation (m)	1.5
Side surveyed	E		

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop <input type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input checked="" type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input checked="" type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ³¹			Av. 1 7 7 Av. 5
No. Standard tree / 50m			1

Connectivity ³² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	2	Connections to woodland	0
Connections to ponds	0		

Additional Criteria		
Bank ³³ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input checked="" type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

³¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

³² Connections within 10m in line with hedge

³³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 882, 420
Hedge Reference:	44	Length (m):	944
Photo No:	1544		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	4	Average width of vegetation (m)	1
Side surveyed	N		

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: None

Adjacent land use / Management (can be more than one)		
Arable - crop <input checked="" type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input checked="" type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ³⁴				Av.	2	4	5
No. Standard tree / 50m					1		

Connectivity ³⁵ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	2	Connections to woodland	0
Connections to ponds	0		

Additional Criteria		
Bank ³⁶ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input checked="" type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

³⁴ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

³⁵ Connections within 10m in line with hedge

³⁶ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 885, 418
Hedge Reference:	45	Length (m):	284
Photo No:	1546		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	5	Average width of vegetation (m)	1.5
Side surveyed			W

Hedgerow Type		
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop	<input checked="" type="checkbox"/>	Arable – Un-cropped margin
		Improved Grass
Semi-improved Grass	<input checked="" type="checkbox"/>	Unimproved Grass
		Woodland - Young
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature
		Road (Major / Minor)
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail
		Canal
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond
		Other

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ³⁷				Av.	3	7	4
No. Standard tree / 50m					0		

Connectivity ³⁸ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	2	Connections to woodland	0
		Connections to ponds	0

Additional Criteria		
Bank ³⁹ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)
		Protected species (add details to comments)
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree
		Gaps as % of length
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees
		At least 3 Woodland species (within 1m of hedge)

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long
		Bark sap runs
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs
		Major rot sites, any more than 15cm across

Comments (Inc. Limitations & Protected species):

³⁷ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

³⁸ Connections within 10m in line with hedge

³⁹ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 884, 417
Hedge Reference:	46	Length (m):	91
Photo No:	1546		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	5	Average width of vegetation (m)	1.5
Side surveyed			N

Hedgerow Type		
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop	<input checked="" type="checkbox"/>	Arable – Un-cropped margin
		Improved Grass
Semi-improved Grass	<input checked="" type="checkbox"/>	Unimproved Grass
		Woodland - Young
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature
		Road (Major / Minor)
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail
		Canal
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond
		Other

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ⁴⁰				Av.	3	7	4
No. Standard tree / 50m					0		

Connectivity ⁴¹ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	2	Connections to woodland	0
		Connections to ponds	0

Additional Criteria		
Bank ⁴² (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)
		Protected species (add details to comments)
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree
		Gaps as % of length
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees
		At least 3 Woodland species (within 1m of hedge)

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long
		Bark sap runs
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs
		Major rot sites, any more than 15cm across

Comments (Inc. Limitations & Protected species):

⁴⁰ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁴¹ Connections within 10m in line with hedge

⁴² Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 884, 416
Hedge Reference:	47	Length (m):	129
Photo No:	1547		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed		W	

Hedgerow Type		
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)			
Arable - crop	<input type="checkbox"/>	Arable – Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input checked="" type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
		Improved Grass	<input type="checkbox"/>
		Woodland - Young	<input type="checkbox"/>
		Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
		Canal	<input type="checkbox"/>
		Other	

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ⁴³				Av.	3	4	4
No. Standard tree / 50m					1		

Connectivity ⁴⁴ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	0
		Connections to ponds	0

Additional Criteria		
Bank ⁴⁵ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees
		Protected species (add details to comments)
		Gaps as % of length
		At least 3 Woodland species (within 1m of hedge)

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs
		Bark sap runs
		Major rot sites, any more than 15cm across

Comments (Inc. Limitations & Protected species):

⁴³ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁴⁴ Connections within 10m in line with hedge

⁴⁵ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 883, 414
Hedge Reference:	48	Length (m):	303
Photo No:	1547		



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Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed	N		

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop <input type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input checked="" type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ⁴⁶				Av.	3	4	4
No. Standard tree / 50m					1		

Connectivity ⁴⁷ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	0
Connections to ponds	0		

Additional Criteria		
Bank ⁴⁸ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁴⁶ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁴⁷ Connections within 10m in line with hedge

⁴⁸ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 882, 417
Hedge Reference:	50	Length (m):	223
Photo No:	1597		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed			E

Hedgerow Type		
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)			
Arable - crop	<input type="checkbox"/>	Arable – Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input checked="" type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
		Improved Grass	<input type="checkbox"/>
		Woodland - Young	<input type="checkbox"/>
		Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
		Canal	<input type="checkbox"/>
		Other	

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ⁵²				Av.	3	4	4
No. Standard tree / 50m					1		

Connectivity ⁵³ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	2	Connections to woodland	0
		Connections to ponds	0

Additional Criteria		
Bank ⁵⁴ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees
		Protected species (add details to comments)
		Gaps as % of length
		At least 3 Woodland species (within 1m of hedge)

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs
		Bark sap runs
		Major rot sites, any more than 15cm across

Comments (Inc. Limitations & Protected species):

⁵² If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁵³ Connections within 10m in line with hedge

⁵⁴ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 882, 415
Hedge Reference:	51	Length (m):	77
Photo No:	1597		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed		S	

Hedgerow Type		
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop	<input type="checkbox"/>	Arable – Un-cropped margin
		Improved Grass
Semi-improved Grass	<input checked="" type="checkbox"/>	Unimproved Grass
		Woodland - Young
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature
		Road (Major / Minor)
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail
		Canal
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond
		Other

Woody species/ trees							
	<30m	>30m<100m	>100m <200m	>200m			
Number of woody Species ⁵⁵			Av.	3	4	4	Av. 4
No. Standard tree / 50m				1			

Connectivity ⁵⁶ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	0
		Connections to ponds	0

Additional Criteria		
Bank ⁵⁷ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)
		Protected species (add details to comments)
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree
		Gaps as % of length
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees
		At least 3 Woodland species (within 1m of hedge)

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long
		Bark sap runs
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs
		Major rot sites, any more than 15cm across

Comments (Inc. Limitations & Protected species):

⁵⁵ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁵⁶ Connections within 10m in line with hedge

⁵⁷ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 881, 415
Hedge Reference:	52	Length (m):	371
Photo No:	1548		



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Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed	N		

Hedgerow Type		
Shrubby hedgerow <input type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop <input type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input checked="" type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input checked="" type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ⁵⁸				Av.	3	2	3
No. Standard tree / 50m					1		

Connectivity ⁵⁹ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	2	Connections to woodland	0
Connections to ponds	0		

Additional Criteria		
Bank ⁶⁰ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input checked="" type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁵⁸ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁵⁹ Connections within 10m in line with hedge

⁶⁰ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 878, 418
Hedge Reference:	53	Length (m):	619
Photo No:	1548		



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Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed	N		

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop <input checked="" type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input checked="" type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input checked="" type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ⁶¹				Av.	3	2	3
No. Standard tree / 50m					1		

Connectivity ⁶² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	0
Connections to ponds	0		

Additional Criteria		
Bank ⁶³ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input checked="" type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁶¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁶² Connections within 10m in line with hedge

⁶³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 890, 423
Hedge Reference:	54	Length (m):	432
Photo No:	1549		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	5	Average width of vegetation (m)	3
Side surveyed			N

Hedgerow Type		
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input checked="" type="checkbox"/>	Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
		Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: None

Adjacent land use / Management (can be more than one)		
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin
		Improved Grass
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass
		Woodland - Young
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature
		Road (Major / Minor)
Track / Footpath / Bridleway	<input checked="" type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail
		Canal
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond
		Other

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ⁶⁴				Av.	5	3	5
No. Standard tree / 50m					3		

Connectivity ⁶⁵ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	3	Connections to woodland	2
		Connections to ponds	2

Additional Criteria		
Bank ⁶⁶ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)
		Protected species (add details to comments)
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree
		Gaps as % of length
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees
		At least 3 Woodland species (within 1m of hedge)

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input checked="" type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long
		Bark sap runs
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs
		Major rot sites, any more than 15cm across

Comments (Inc. Limitations & Protected species):

⁶⁴ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁶⁵ Connections within 10m in line with hedge

⁶⁶ Along at least half length of hedgerow

Hedgerow Survey Record

Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 891, 421
Hedge Reference:	55	Length (m):	211
Photo No:	1550		



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Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	5	Average width of vegetation (m)	1.5
Side surveyed	N		

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input checked="" type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop <input checked="" type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ⁶⁷				Av.	5	4	6
No. Standard tree / 50m					1		

Connectivity ⁶⁸ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	0
Connections to ponds	0		

Additional Criteria		
Bank ⁶⁹ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input checked="" type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input type="checkbox"/>	Veteran trees <input checked="" type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input checked="" type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁶⁷ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁶⁸ Connections within 10m in line with hedge

⁶⁹ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 893, 422
Hedge Reference:	56	Length (m):	201
Photo No:	1550		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	5	Average width of vegetation (m)	1.5
Side surveyed	N		

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input checked="" type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop <input checked="" type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ⁷⁰				Av.	5	4	6
No. Standard tree / 50m					1		

Connectivity ⁷¹ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	0
Connections to ponds	0		

Additional Criteria		
Bank ⁷² (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input checked="" type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input type="checkbox"/>	Veteran trees <input checked="" type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input checked="" type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁷⁰ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁷¹ Connections within 10m in line with hedge

⁷² Along at least half length of hedgerow

Hedgerow Survey Record

Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 895, 422
Hedge Reference:	57	Length (m):	258
Photo No:	1550		



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Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	5	Average width of vegetation (m)	1.5
Side surveyed	N		

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input checked="" type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop <input checked="" type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ⁷³				Av.	5	4	6
No. Standard tree / 50m					1		

Connectivity ⁷⁴ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	0
Connections to ponds	0		

Additional Criteria		
Bank ⁷⁵ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input checked="" type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input type="checkbox"/>	Veteran trees <input checked="" type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input checked="" type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁷³ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁷⁴ Connections within 10m in line with hedge

⁷⁵ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 893, 425
Hedge Reference:	58	Length (m):	232
Photo No:	1551		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	2	Average width of vegetation (m)	1
Side surveyed	E		

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop <input checked="" type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ⁷⁶				Av.	3	6	3
No. Standard tree / 50m					0		

Connectivity ⁷⁷ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	1	Connections to woodland	2
Connections to ponds	0		

Additional Criteria		
Bank ⁷⁸ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁷⁶ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁷⁷ Connections within 10m in line with hedge

⁷⁸ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 895, 427
Hedge Reference:	59	Length (m):	341
Photo No:	1552		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	2	Average width of vegetation (m)	1
Side surveyed		S	

Hedgerow Type		
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)

Arable - crop	<input checked="" type="checkbox"/>	Arable – Un-cropped margin	<input type="checkbox"/>	Improved Grass	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>	Woodland - Young	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>	Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>	Canal	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>	Other	

Woody species/ trees								
	<30m	>30m<100m	>100m <200m		>200m			
Number of woody Species ⁷⁹				Av.	3	6	3	Av. 4
No. Standard tree / 50m					0			

Connectivity⁸⁰ (hedge connection = 1 pt, wood or pond connection = 2pts)

Connections to hedges	0	Connections to woodland	4	Connections to ponds	0
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Additional Criteria

Bank ⁸¹ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>	Protected species (add details to comments)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>	Gaps as % of length	5 %
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees	<input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>

Veteran Tree Features

Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>	Bark sap runs	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>	Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁷⁹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁸⁰ Connections within 10m in line with hedge

⁸¹ Along at least half length of hedgerow

Hedgerow Survey Record

Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 897, 428
Hedge Reference:	60	Length (m):	164
Photo No:	1553		



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Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>	

Hedgerow Summary			
Average height of vegetation (m)	1.5	Average width of vegetation (m)	1.5
Side surveyed	S		

Hedgerow Type			
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>	

Hedgerow Shape			
Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)			
Arable - crop <input checked="" type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>	
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>	
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>	
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>	
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other	

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ⁸²			Av.	4	3	3	Av. 3
No. Standard tree / 50m				1			

Connectivity ⁸³ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	2	Connections to woodland	2
Connections to ponds	2		

Additional Criteria			
Bank ⁸⁴ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>	
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %	
Ditch ³ (Dry) <input type="checkbox"/>	Veteran trees <input checked="" type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>	

Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>	
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input checked="" type="checkbox"/>	Major rot sites, any more than 15cm across <input checked="" type="checkbox"/>	

Comments (Inc. Limitations & Protected species):

⁸² If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁸³ Connections within 10m in line with hedge

⁸⁴ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 895, 428
Hedge Reference:	61	Length (m):	315
Photo No:	1553		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	1.5	Average width of vegetation (m)	1.5
Side surveyed		S	

Hedgerow Type		
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)

Arable - crop	<input checked="" type="checkbox"/>	Arable – Un-cropped margin	<input type="checkbox"/>	Improved Grass	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>	Woodland - Young	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>	Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>	Canal	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>	Other	

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ⁸⁵				Av.	4	3	3
No. Standard tree / 50m					1		

Connectivity⁸⁶ (hedge connection = 1 pt, wood or pond connection = 2pts)

Connections to hedges	1	Connections to woodland	2	Connections to ponds	2
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Additional Criteria

Bank ⁸⁷ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>	Protected species (add details to comments)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>	Gaps as % of length	5 %
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees	<input checked="" type="checkbox"/>	At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>

Veteran Tree Features

Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>	Bark sap runs	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input checked="" type="checkbox"/>	Major rot sites, any more than 15cm across	<input checked="" type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁸⁵ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁸⁶ Connections within 10m in line with hedge

⁸⁷ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 892, 429
Hedge Reference:	62	Length (m):	313
Photo No:	1554		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed		W	

Hedgerow Type		
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop	<input checked="" type="checkbox"/>	Arable – Un-cropped margin
		Improved Grass
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass
		Woodland - Young
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature
		Road (Major / Minor)
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail
		Canal
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond
		Other

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ⁸⁸				Av.	6	5	4
No. Standard tree / 50m					1		

Connectivity ⁸⁹ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	2
		Connections to ponds	0

Additional Criteria		
Bank ⁹⁰ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)
		Protected species (add details to comments)
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree
		Gaps as % of length
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees
		At least 3 Woodland species (within 1m of hedge)

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input checked="" type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long
		Bark sap runs
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs
		Major rot sites, any more than 15cm across

Comments (Inc. Limitations & Protected species):

⁸⁸ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁸⁹ Connections within 10m in line with hedge

⁹⁰ Along at least half length of hedgerow

Hedgerow Survey Record

Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 892, 427
Hedge Reference:	63	Length (m):	536
Photo No:	1555		



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Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed			N

Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable – Un-cropped margin	<input type="checkbox"/>
		Improved Grass	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
		Woodland - Young	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
		Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
		Canal	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
		Other	

Woody species/ trees			
	<30m	>30m<100m	>100m <200m
			>200m
Number of woody Species ⁹¹			Av. 4 4 7 Av. 5
No. Standard tree / 50m			1

Connectivity⁹² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	3	Connections to woodland	2
		Connections to ponds	0

Additional Criteria			
Bank ⁹³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
		Gaps as % of length	5 %
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input checked="" type="checkbox"/>
		At least 3 Woodland species (within 1m of hedge)	<input checked="" type="checkbox"/>

Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
		Bark sap runs	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input checked="" type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):
Grass Snake

⁹¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁹² Connections within 10m in line with hedge

⁹³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 888, 428
Hedge Reference:	64	Length (m):	243
Photo No:	1556		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed			E

Hedgerow Type		
Shrubby hedgerow	<input type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond
		Improved Grass
		Woodland - Young
		Road (Major / Minor)
		Canal
		Other

Woody species/ trees								
	<30m	>30m<100m	>100m <200m		>200m			
Number of woody Species ⁹⁴				Av.	0	0	0	Av. 0
No. Standard tree / 50m					6			

Connectivity ⁹⁵ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	2	Connections to woodland	0
		Connections to ponds	0

Additional Criteria		
Bank ⁹⁶ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees
		Protected species (add details to comments)
		Gaps as % of length
		At least 3 Woodland species (within 1m of hedge)

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs
		Bark sap runs
		Major rot sites, any more than 15cm across

Comments (Inc. Limitations & Protected species):

⁹⁴ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁹⁵ Connections within 10m in line with hedge

⁹⁶ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 892, 432
Hedge Reference:	65	Length (m):	429
Photo No:	1556		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed		S	

Hedgerow Type		
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop	<input checked="" type="checkbox"/>	Arable – Un-cropped margin
		Improved Grass
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass
		Woodland - Young
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature
		Road (Major / Minor)
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail
		Canal
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond
		Other

Woody species/ trees							
	<30m	>30m<100m	>100m <200m	>200m			
Number of woody Species ¹			Av.	4	4	4	Av. 4
No. Standard tree / 50m				1			

Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	2	Connections to woodland	0
		Connections to ponds	0

Additional Criteria		
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)
		Protected species (add details to comments)
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree
		Gaps as % of length
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees
		At least 3 Woodland species (within 1m of hedge)

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long
		Bark sap runs
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs
		Major rot sites, any more than 15cm across

Comments (Inc. Limitations & Protected species):

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record

Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 889, 429
Hedge Reference:	66	Length (m):	453
Photo No:	1556		



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Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed	S		

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop <input checked="" type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input checked="" type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ⁴				Av.	4	4	4
No. Standard tree / 50m					1		

Connectivity⁵ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	3	Connections to woodland	0
Connections to ponds	0		

Additional Criteria		
Bank ⁶ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input checked="" type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁴ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁵ Connections within 10m in line with hedge

⁶ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 888, 426
Hedge Reference:	67	Length (m):	79
Photo No:	1556		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed			E

Hedgerow Type		
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop	<input checked="" type="checkbox"/>	Arable – Un-cropped margin
		Improved Grass
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass
		Woodland - Young
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature
		Road (Major / Minor)
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail
		Canal
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond
		Other

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ⁷				Av.	4	4	4
No. Standard tree / 50m					1		

Connectivity ⁸ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	3	Connections to woodland	0
		Connections to ponds	0

Additional Criteria		
Bank ⁹ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)
		Protected species (add details to comments)
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree
		Gaps as % of length
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees
		At least 3 Woodland species (within 1m of hedge)

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long
		Bark sap runs
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs
		Major rot sites, any more than 15cm across

Comments (Inc. Limitations & Protected species):

⁷ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁸ Connections within 10m in line with hedge

⁹ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 889, 424
Hedge Reference:	68	Length (m):	320
Photo No:	1556		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed	E		

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop <input checked="" type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input checked="" type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ¹⁰				Av.	4	4	4
No. Standard tree / 50m					1		

Connectivity ¹¹ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	0
Connections to ponds	0		

Additional Criteria		
Bank ¹² (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input checked="" type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

¹⁰ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

¹¹ Connections within 10m in line with hedge

¹² Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 890, 422
Hedge Reference:	69	Length (m):	281
Photo No:	1556		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed			E

Hedgerow Type		
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)

Arable - crop	<input checked="" type="checkbox"/>	Arable – Un-cropped margin	<input type="checkbox"/>	Improved Grass	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>	Woodland - Young	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>	Road (Major / Minor)	<input checked="" type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>	Canal	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>	Other	

Woody species/ trees								
	<30m	>30m<100m	>100m <200m		>200m			
Number of woody Species ¹³				Av.	4	4	4	Av. 4
No. Standard tree / 50m					1			

Connectivity¹⁴ (hedge connection = 1 pt, wood or pond connection = 2pts)

Connections to hedges	3	Connections to woodland	0	Connections to ponds	0
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Additional Criteria

Bank ¹⁵ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>	Protected species (add details to comments)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>	Gaps as % of length	5 %
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>

Veteran Tree Features

Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>	Bark sap runs	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>	Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

¹³ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

¹⁴ Connections within 10m in line with hedge

¹⁵ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 891, 419
Hedge Reference:	70	Length (m):	408
Photo No:	1556		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed		E	

Hedgerow Type		
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop	<input checked="" type="checkbox"/>	Arable – Un-cropped margin
Semi-improved Grass	<input type="checkbox"/>	Improved Grass
Woodland - Semi-mature	<input type="checkbox"/>	Unimproved Grass
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Woodland - Mature
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Road (Major / Minor)
		Canal
		Lake / Pond
		Other

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ¹⁶				Av.	4	4	4
No. Standard tree / 50m					1		

Connectivity ¹⁷ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	0	Connections to woodland	0
		Connections to ponds	0

Additional Criteria		
Bank ¹⁸ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)
Ditch ³ (wet)	<input type="checkbox"/>	Protected species (add details to comments)
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Gaps as % of length
		At least 3 Woodland species (within 1m of hedge)

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Bark sap runs
		Major rot sites, any more than 15cm across

Comments (Inc. Limitations & Protected species):

¹⁶ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

¹⁷ Connections within 10m in line with hedge

¹⁸ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 891, 414
Hedge Reference:	71	Length (m):	210
Photo No:	1556		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed	E		

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop <input checked="" type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input checked="" type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ¹⁹				Av.	4	4	4
No. Standard tree / 50m					1		

Connectivity ²⁰ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	2	Connections to woodland	0
Connections to ponds	0		

Additional Criteria		
Bank ²¹ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input checked="" type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

¹⁹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

²⁰ Connections within 10m in line with hedge

²¹ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 892, 410
Hedge Reference:	72	Length (m):	694
Photo No:	1556		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed	E		

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop <input checked="" type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input checked="" type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ²²				Av.	4	4	4
No. Standard tree / 50m					1		

Connectivity ²³ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	3	Connections to woodland	0
Connections to ponds	0		

Additional Criteria		
Bank ²⁴ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input checked="" type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

²² If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

²³ Connections within 10m in line with hedge

²⁴ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	21/07/11
Client:	WSP	OS Grid Reference:	SP 892, 409
Hedge Reference:	73	Length (m):	298
Photo No:	1556		



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Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed	E		

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop <input checked="" type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input checked="" type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ²⁵				Av.	4	4	4
No. Standard tree / 50m					1		

Connectivity ²⁶ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	1	Connections to woodland	0
Connections to ponds	0		

Additional Criteria		
Bank ²⁷ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input checked="" type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

²⁵ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

²⁶ Connections within 10m in line with hedge

²⁷ Along at least half length of hedgerow

Hedgerow Survey Record

Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	22/07/11
Client:	WSP	OS Grid Reference:	SP 895, 413
Hedge Reference:	74	Length (m):	393
Photo No:	1560		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary					
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5	Side surveyed	W

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop <input checked="" type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees								
	<30m	>30m<100m	>100m <200m		>200m			
Number of woody Species ²⁸				Av.	5	5	5	Av. 5
No. Standard tree / 50m					1			

Connectivity²⁹ (hedge connection = 1 pt, wood or pond connection = 2pts)					
Connections to hedges	3	Connections to woodland	0	Connections to ponds	0

Additional Criteria		
Bank ³⁰ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input checked="" type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

²⁸ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

²⁹ Connections within 10m in line with hedge

³⁰ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	22/07/11
Client:	WSP	OS Grid Reference:	SP 892, 413
Hedge Reference:	75	Length (m):	173
Photo No:	1560		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed			N

Hedgerow Type		
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop	<input checked="" type="checkbox"/>	Arable – Un-cropped margin
		Improved Grass
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass
		Woodland - Young
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature
		Road (Major / Minor)
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail
		Canal
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond
		Other

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ³¹				Av.	5	5	5
No. Standard tree / 50m					1		

Connectivity ³² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	0
		Connections to ponds	0

Additional Criteria		
Bank ³³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)
		Protected species (add details to comments)
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree
		Gaps as % of length
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees
		At least 3 Woodland species (within 1m of hedge)

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long
		Bark sap runs
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs
		Major rot sites, any more than 15cm across

Comments (Inc. Limitations & Protected species):

³¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

³² Connections within 10m in line with hedge

³³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	22/07/11
Client:	WSP	OS Grid Reference:	SP 892, 416
Hedge Reference:	76	Length (m):	141
Photo No:	1558		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed			N

Hedgerow Type		
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop	<input checked="" type="checkbox"/>	Arable – Un-cropped margin
		Improved Grass
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass
		Woodland - Young
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature
		Road (Major / Minor)
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail
		Canal
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond
		Other

Woody species/ trees							
	<30m	>30m<100m	>100m <200m	>200m			
Number of woody Species ³⁴			Av.	3	5	4	Av. 4
No. Standard tree / 50m				0			

Connectivity ³⁵ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	3	Connections to woodland	0
		Connections to ponds	0

Additional Criteria		
Bank ³⁶ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)
		Protected species (add details to comments)
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree
		Gaps as % of length
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees
		At least 3 Woodland species (within 1m of hedge)

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long
		Bark sap runs
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs
		Major rot sites, any more than 15cm across

Comments (Inc. Limitations & Protected species):

³⁴ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

³⁵ Connections within 10m in line with hedge

³⁶ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	22/07/11
Client:	WSP	OS Grid Reference:	SP 893, 414
Hedge Reference:	77	Length (m):	207
Photo No:	1558 & 1559		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed			W

Hedgerow Type		
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop	<input checked="" type="checkbox"/>	Arable – Un-cropped margin
		Improved Grass
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass
		Woodland - Young
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature
		Road (Major / Minor)
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail
		Canal
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond
		Other

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ³⁷				Av.	4	4	3
No. Standard tree / 50m					1		

Connectivity ³⁸ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	5	Connections to woodland	0
		Connections to ponds	0

Additional Criteria		
Bank ³⁹ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)
		Protected species (add details to comments)
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree
		Gaps as % of length
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees
		At least 3 Woodland species (within 1m of hedge)

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input checked="" type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long
		Bark sap runs
Tears, splits, scars, lightning strikes more than 30 cm long	<input checked="" type="checkbox"/>	Hollow trunks or hollow major limbs
		Major rot sites, any more than 15cm across

Comments (Inc. Limitations & Protected species):

³⁷ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

³⁸ Connections within 10m in line with hedge

³⁹ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	22/07/11
Client:	WSP	OS Grid Reference:	SP 895, 416
Hedge Reference:	78	Length (m):	341
Photo No:	1561		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed		SW	

Hedgerow Type		
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop	<input checked="" type="checkbox"/>	Arable – Un-cropped margin
		Improved Grass
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass
		Woodland - Young
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature
		Road (Major / Minor)
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail
		Canal
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond
		Other

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ⁴⁰				Av.	3	5	4
No. Standard tree / 50m					0		

Connectivity ⁴¹ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	0
		Connections to ponds	0

Additional Criteria		
Bank ⁴² (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)
		Protected species (add details to comments)
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree
		Gaps as % of length
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees
		At least 3 Woodland species (within 1m of hedge)

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long
		Bark sap runs
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs
		Major rot sites, any more than 15cm across

Comments (Inc. Limitations & Protected species):

⁴⁰ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁴¹ Connections within 10m in line with hedge

⁴² Along at least half length of hedgerow

Hedgerow Survey Record

Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	22/07/11
Client:	WSP	OS Grid Reference:	SP 896, 417
Hedge Reference:	79	Length (m):	195
Photo No:	1561		



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Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed			W

Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable – Un-cropped margin	<input type="checkbox"/>
		Improved Grass	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
		Woodland - Young	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
		Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
		Canal	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
		Other	

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ⁴³				Av.	3	5	4
No. Standard tree / 50m					0		
							Av. 4

Connectivity⁴⁴ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	3	Connections to woodland	0
		Connections to ponds	0

Additional Criteria			
Bank ⁴⁵ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
		Gaps as % of length	5 %
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>

Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
		Bark sap runs	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁴³ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁴⁴ Connections within 10m in line with hedge

⁴⁵ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	22/07/11
Client:	WSP	OS Grid Reference:	SP 897, 418
Hedge Reference:	80	Length (m):	85
Photo No:	1561		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed	N		

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop <input checked="" type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ⁴⁶				Av.	3	5	4
No. Standard tree / 50m					0		

Connectivity ⁴⁷ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	3	Connections to woodland	0
Connections to ponds	0		

Additional Criteria		
Bank ⁴⁸ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input checked="" type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁴⁶ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁴⁷ Connections within 10m in line with hedge

⁴⁸ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	22/07/11
Client:	WSP	OS Grid Reference:	SP 895, 420
Hedge Reference:	81	Length (m):	447
Photo No:	1563		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed	W		

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop <input checked="" type="checkbox"/>	Arable – Un-cropped margin <input checked="" type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees								
	<30m	>30m<100m	>100m <200m		>200m			
Number of woody Species ⁴⁹				Av.	5	6	4	Av. 5
No. Standard tree / 50m					1			

Connectivity ⁵⁰ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	2	Connections to woodland	0
Connections to ponds	0		

Additional Criteria		
Bank ⁵¹ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input checked="" type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁴⁹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁵⁰ Connections within 10m in line with hedge

⁵¹ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	22/07/11
Client:	WSP	OS Grid Reference:	SP 895, 418
Hedge Reference:	82	Length (m):	324
Photo No:	1561		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed			N

Hedgerow Type		
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop	<input checked="" type="checkbox"/>	Arable – Un-cropped margin
		Improved Grass
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass
		Woodland - Young
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature
		Road (Major / Minor)
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail
		Canal
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond
		Other

Woody species/ trees							
	<30m	>30m<100m	>100m <200m	>200m			
Number of woody Species ⁵²			Av.	3	5	4	Av. 4
No. Standard tree / 50m				0			

Connectivity ⁵³ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	0
		Connections to ponds	0

Additional Criteria		
Bank ⁵⁴ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)
		Protected species (add details to comments)
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree
		Gaps as % of length
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees
		At least 3 Woodland species (within 1m of hedge)

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long
		Bark sap runs
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs
		Major rot sites, any more than 15cm across

Comments (Inc. Limitations & Protected species):

⁵² If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁵³ Connections within 10m in line with hedge

⁵⁴ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	22/07/11
Client:	WSP	OS Grid Reference:	SP 892, 420
Hedge Reference:	83	Length (m):	410
Photo No:	1564		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed			E

Hedgerow Type		
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)		
Arable - crop	<input checked="" type="checkbox"/>	Arable – Un-cropped margin
		Improved Grass
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass
		Woodland - Young
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature
		Road (Major / Minor)
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail
		Canal
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond
		Other

Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ⁵⁵			Av. 5
No. Standard tree / 50m			0

Connectivity ⁵⁶ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	2	Connections to woodland	0
		Connections to ponds	0

Additional Criteria		
Bank ⁵⁷ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)
		Protected species (add details to comments)
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree
		Gaps as % of length
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees
		At least 3 Woodland species (within 1m of hedge)

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long
		Bark sap runs
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs
		Major rot sites, any more than 15cm across

Comments (Inc. Limitations & Protected species):

⁵⁵ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁵⁶ Connections within 10m in line with hedge

⁵⁷ Along at least half length of hedgerow

Hedgerow Survey Record

Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	22/07/11
Client:	WSP	OS Grid Reference:	SP 893, 416
Hedge Reference:	84	Length (m):	170
Photo No:	1361		



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Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>	

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	1.5
Side surveyed	E		

Hedgerow Type			
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>	

Hedgerow Shape			
Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)			
Arable - crop <input checked="" type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>	
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>	
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>	
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>	
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other	

Woody species/ trees							
	<30m	>30m<100m	>100m <200m		>200m		
Number of woody Species ⁵⁸			Av.	3	5	4	Av. 4
No. Standard tree / 50m				0			

Connectivity ⁵⁹ (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	5	Connections to woodland	0
Connections to ponds	0		

Additional Criteria			
Bank ⁶⁰ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>	
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length	5 %
Ditch ³ (Dry) <input checked="" type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>

Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁵⁸ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁵⁹ Connections within 10m in line with hedge

⁶⁰ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	111275	Surveyor Name:	DA
Site Name:	Newport Pagnell	Date:	22/07/11
Client:	WSP	OS Grid Reference:	SP 891, 416
Hedge Reference:	85	Length (m):	111
Photo No:	1562		



Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	5	Average width of vegetation (m)	1
Side surveyed	E		

Hedgerow Type		
Shrubby hedgerow <input type="checkbox"/>	Line of trees <input checked="" type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other: Trees <input checked="" type="checkbox"/>

Hedgerow Base Management: Cut

Adjacent land use / Management (can be more than one)

Arable - crop <input type="checkbox"/>	Arable – Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other: Amenity Grassland

Woody species/ trees								
	<30m	>30m<100m	>100m <200m		>200m			
Number of woody Species ⁶¹				Av.	0	0	0	Av. 0
No. Standard tree / 50m					6			

Connectivity⁶² (hedge connection = 1 pt, wood or pond connection = 2pts)

Connections to hedges	0	Connections to woodland	0	Connections to ponds	0
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Additional Criteria

Bank ⁶³ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 5 %
Ditch ³ (Dry) <input type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features

Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

⁶¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

⁶² Connections within 10m in line with hedge

⁶³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	2090.52	Surveyor Name:	AS
Site Name:	Newport Pagnell	Date:	15-06-2020
Client:		OS Grid Reference:	
Hedge Reference:	86	Length (m):	100
Photo No:	2		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	2
Side surveyed			S

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape <i>Trimmed at sides, untrimmed at top</i>			
Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input checked="" type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: *cut to N, uncut to S. SI grass*

Adjacent land use / Management (can be more than one)			
Arable - crop <input checked="" type="checkbox"/>	Arable - Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>	
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>	
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>	
Track / Footpath / Bridleway <input type="checkbox"/> / <input checked="" type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>	
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>	

Woody species/ trees	<30m	>30m<100m	>100m <200m	>200m
Number of woody Species ¹			2 4 -	Av. 3
No. Standard tree / 50m			1	

Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2 pts)		
Connections to hedges	3	Connections to woodland
		2
		Connections to ponds

Additional Criteria		
Bank ³ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 10
Ditch ³ (Dry) <input type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):
*Native P. Oak trees present
 SI grassland field margins at base - 1.5m wide to S, 5m to N.*

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	2090.52	Surveyor Name:	AS
Site Name:	Newport Project	Date:	15.06.2020
Client:		OS Grid Reference:	
Hedge Reference:	87	Length (m):	120 190
Photo No:	3		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	2.5	Average width of vegetation (m)	2
Side surveyed			E

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape				
Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>	
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>	

Hedgerow Base Management: ~~or~~ V-cut SI grassland

Adjacent land use / Management (can be more than one)			
Arable - crop <input checked="" type="checkbox"/>	Arable - Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>	
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>	
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>	
Track / Footpath / Bridleway <input checked="" type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>	
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>	

Woody species/ trees				
	<30m	>30m<100m	>100m <200m	>200m
Number of woody Species ¹			2 3 -	Av. 2.5
No. Standard tree / 50m			0	

Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)		
Connections to hedges	4	Connections to woodland
		2
		Connections to ponds

Additional Criteria		
Bank ³ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length 10
Ditch ³ (Dry) <input checked="" type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

5m SI grass margins to both sides

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	2090.52	Surveyor Name:	AS
Site Name:	Newport Pagnell	Date:	15-06-2020
Client:		OS Grid Reference:	
Hedge Reference:	88	Length (m):	100
Photo No:	4		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>
Hedgerow Summary			
Average height of vegetation (m)	2.5	Average width of vegetation (m)	2.5
		Side surveyed	SW NE
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Hedgerow Base Management: at Grassland mowed to SW, cut to NE.			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input checked="" type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/>	Lake / Pond	<input type="checkbox"/>
		Improved Grass	<input type="checkbox"/>
		Woodland - Young	<input type="checkbox"/>
		Road (Major / Minor)	<input type="checkbox"/>
		Canal	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹		4	4
No. Standard tree / 50m		0	
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	2	Connections to woodland	2
		Connections to ponds	
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
		Gaps as % of length	0
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
		Bark sap runs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

Arable fields on both sides.
2m S1grass margin to SW, 7m S1grass margin to NE

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	2090-52	Surveyor Name:	AS
Site Name:	Newport Pagwell	Date:	15-06-2020
Client:		OS Grid Reference:	
Hedge Reference:	89	Length (m):	60
Photo No:	5		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	2	Average width of vegetation (m)	2
Side surveyed			E

Hedgerow Type		
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: ~~etc~~ Unmanaged grassland

Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input checked="" type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/>	Lake / Pond	<input type="checkbox"/>
		Improved Grass	<input type="checkbox"/>
		Woodland - Young	<input type="checkbox"/>
		Road (Major / Minor)	<input type="checkbox"/>
		Canal	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Woody species/ trees				
	<30m	>30m<100m	>100m <200m	>200m
Number of woody Species ¹		4		Av. 4
No. Standard tree / 50m		1		

Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)		
Connections to hedges	4	Connections to woodland
		Connections to ponds

Additional Criteria		
Bank ³ (inc height)	<input type="checkbox"/>	Protected species (add details to comments)
Ditch ³ (wet)	<input type="checkbox"/>	Gaps as % of length
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	At least 3 Woodland species (within 1m of hedge)
		Parallel hedge (within 15m)
		Black poplar, lime or service tree
		Veteran trees

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs
		Bark sap runs
		Major rot sites, any more than 15cm across

Comments (Inc. Limitations & Protected species):
7m SI grass margin to E, 4m SI grass margin to W.

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	2090.52	Surveyor Name:	AS
Site Name:	Newport Pagnell	Date:	15-06-2020
Client:		OS Grid Reference:	
Hedge Reference:	90	Length (m):	100
Photo No:	6		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>
Hedgerow Summary			
Average height of vegetation (m)		Average width of vegetation (m)	
		Side surveyed	N
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Hedgerow Base Management: SI Cut SI grass			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
		Improved Grass	<input type="checkbox"/>
		Woodland - Young	<input type="checkbox"/>
		Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
		Canal	<input type="checkbox"/>
		Other	
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			3 3
No. Standard tree / 50m			1
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	2	Connections to woodland	
		Connections to ponds	
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
		Gaps as % of length	0
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
		Bark sap runs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

5m SI grass margin to S, steep ditch + 5m SI grass margin to N.

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	2090.52	Surveyor Name:	AS
Site Name:	Newport Pagnell	Date:	15.06.2020
Client:		OS Grid Reference:	
Hedge Reference:	91	Length (m):	1250 300
Photo No:	7		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>
Hedgerow Summary			
Average height of vegetation (m)	2	Average width of vegetation (m)	2
		Side surveyed	N
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Hedgerow Base Management: cut Cut SI grassland			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
		Improved Grass	<input type="checkbox"/>
		Woodland - Young	<input type="checkbox"/>
		Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
		Canal	<input type="checkbox"/>
		Other	
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			2
No. Standard tree / 50m			2
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	5	Connections to woodland	
		Connections to ponds	
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
		Gaps as % of length	0
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
		Bark sap runs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

steep ditch to S. side
 4 x mature Ash trees in hedgerow
 3m SI grass margins to both sides

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	2090-52	Surveyor Name:	AS
Site Name:	Newport Paget	Date:	15-06-2020
Client:		OS Grid Reference:	
Hedge Reference:	92	Length (m):	120
Photo No:	8		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>
Hedgerow Summary			
Average height of vegetation (m)	2	Average width of vegetation (m)	2
		Side surveyed	E
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Hedgerow Base Management: SE SW Cut SI grass to E - mcut to W			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input checked="" type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/>	Lake / Pond	<input type="checkbox"/>
		Improved Grass	<input type="checkbox"/>
		Woodland - Young	<input type="checkbox"/>
		Road (Major / Minor)	<input type="checkbox"/>
		Canal	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹		4	3
No. Standard tree / 50m		0	
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	3	Connections to woodland	
		Connections to ponds	
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
		Gaps as % of length	10
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
		Bark sap runs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

Steep ditch to E
6m margin to E 4m margin to W, both SI grass

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:	2090.52	Surveyor Name:	AS
Site Name:	Newport Pagnell	Date:	15-06-2020
Client:		OS Grid Reference:	
Hedge Reference:	93	Length (m):	250m
Photo No:	89		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)					
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>

Hedgerow Summary					
Average height of vegetation (m)	3	Average width of vegetation (m)	3	Side surveyed	SW

Hedgerow Type					
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>	Shrubby with line of trees	<input type="checkbox"/>

Hedgerow Shape							
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>	Untrimmed	<input type="checkbox"/>	Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>	Other	<input type="checkbox"/>

Hedgerow Base Management: ~~cut~~ Uncut

Adjacent land use / Management (can be more than one)					
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>	Improved Grass	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>	Woodland - Young	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>	Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Rail	<input type="checkbox"/>	Canal	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>	Other	

Woody species/ trees				
	<30m	>30m<100m	>100m <200m	>200m
Number of woody Species ¹				3 4 4 Av. 3.6
No. Standard tree / 50m				2.1

Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)					
Connections to hedges	3	Connections to woodland	2	Connections to ponds	

Additional Criteria					
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>	Protected species (add details to comments)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>	Gaps as % of length	4.5
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>

Veteran Tree Features					
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>	Bark sap runs	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>	Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

SI field margins, 5m to SW, 3m to NE
grass
Two native pedunculate oak trees present.

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	
Site Name:		Date:	17-06-2020
Client:		OS Grid Reference:	
Hedge Reference:	94	Length (m):	30
Photo No:	1		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
Hedge has been in existence for 30 years or more		<input type="checkbox"/>	
Hedgerow Summary			
Average height of vegetation (m)	2.5	Average width of vegetation (m)	2
Side surveyed	N		
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
Shrubby with line of trees		<input type="checkbox"/>	
Hedgerow Shape			
Trimmed & dense	<input type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
Untrimmed	<input checked="" type="checkbox"/>	Recently coppiced	<input type="checkbox"/>
Tall & leggy	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Hedgerow Base Management: <i>cut wet grass to N, cut to S</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input checked="" type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input checked="" type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/>	Lake / Pond	<input type="checkbox"/>
Improved Grass	<input type="checkbox"/>		
Woodland - Young	<input type="checkbox"/>		
Road (Major / Minor)	<input type="checkbox"/>		
Canal	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹		4	
No. Standard tree / 50m		0	
Av. 4			
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2 pts)			
Connections to hedges	2	Connections to woodland	
Connections to ponds			
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input checked="" type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees	<input type="checkbox"/>
Protected species (add details to comments)		<input type="checkbox"/>	
Gaps as % of length		0	
At least 3 Woodland species (within 1m of hedge)		<input type="checkbox"/>	
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
Bark sap runs		<input type="checkbox"/>	
Major rot sites, any more than 15cm across		<input type="checkbox"/>	

Comments (Inc. Limitations & Protected species):

Outgrowth and unmanaged to N side

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge.

³ Along at least half length of hedgerow.

Hedgerow Survey Record			
Project Code:		Surveyor Name:	
Site Name:		Date:	17-06-20
Client:		OS Grid Reference:	
Hedge Reference:	95	Length (m):	100
Photo No:	2		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
Hedge has been in existence for 30 years or more		<input checked="" type="checkbox"/>	
Hedgerow Summary			
Average height of vegetation (m)	2	Average width of vegetation (m)	2
Side surveyed	W		
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
Shrubby with line of trees		<input type="checkbox"/>	
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
Untrimmed	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>
Tall & leggy	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Hedgerow Base Management: cut uncut grass			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input checked="" type="checkbox"/>
Semi-improved Grass	<input checked="" type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input checked="" type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/>	Lake / Pond	<input type="checkbox"/>
Improved Grass	<input type="checkbox"/>		
Woodland - Young	<input type="checkbox"/>		
Road (Major / Minor)	<input type="checkbox"/>		
Canal	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹		4	4
No. Standard tree / 50m		0	
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	
Connections to ponds			
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
Protected species (add details to comments)		<input type="checkbox"/>	
Gaps as % of length		0	
At least 3 Woodland species (within 1m of hedge)		<input type="checkbox"/>	
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
Bark sap runs		<input type="checkbox"/>	
Major rot sites, any more than 15cm across		<input type="checkbox"/>	

Comments (Inc. Limitations & Protected species):

Long grassland fields on both sides. Arable to NE

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	
Site Name:		Date:	17-06-20
Client:		OS Grid Reference:	
Hedge Reference:	96	Length (m):	180
Photo No:	3		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
Hedge has been in existence for 30 years or more		<input checked="" type="checkbox"/>	
Hedgerow Summary			
Average height of vegetation (m)	2	Average width of vegetation (m)	2
Side surveyed	E		
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
Shrubby with line of trees		<input type="checkbox"/>	
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
Untrimmed	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>
Tall & leggy	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Hedgerow Base Management: <i>cut Grassland cut to saddle, went to N</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input checked="" type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/>	Lake / Pond	<input type="checkbox"/>
Improved Grass	<input type="checkbox"/>		
Woodland - Young	<input type="checkbox"/>		
Road (Major / Minor)	<input type="checkbox"/>		
Canal	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹		4	3
No. Standard tree / 50m			0
			>200m
			Av. 3-5
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	
Connections to ponds			
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
Protected species (add details to comments)		<input type="checkbox"/>	
Gaps as % of length		10%	
At least 3 Woodland species (within 1m of hedge)		<input type="checkbox"/>	
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
Bark sap runs		<input type="checkbox"/>	
Major rot sites, any more than 15cm across		<input type="checkbox"/>	
Comments (Inc. Limitations & Protected species):			
<i>steep ditch to E side</i>			

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	
Site Name:		Date:	17-06-20
Client:		OS Grid Reference:	
Hedge Reference:	98	Length (m):	128m
Photo No:	6		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)		Average width of vegetation (m)	
Side surveyed			

Hedgerow Type		
Shrubby hedgerow <input type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: *cut margin to W, meet to E*

Adjacent land use / Management (can be more than one)		
Arable - crop <input checked="" type="checkbox"/>	Arable - Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees	<30m		>30m<100m		>100m <200m		>200m	
	Number of woody Species ¹			3	2			
No. Standard tree / 50m				0				

Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	3	Connections to woodland	
Connections to ponds			

Additional Criteria		
Bank ³ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length <i>< 5</i>
Ditch ³ (Dry) <input checked="" type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):
*Taller trees at N end - dead elms
 40m recently planted section at S end*

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.
² Connections within 10m in line with hedge
³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	17-06-2020
Client:		OS Grid Reference:	
Hedge Reference:	99	Length (m):	60
Photo No:	5		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
Hedge has been in existence for 30 years or more		<input checked="" type="checkbox"/>	
Hedgerow Summary			
Average height of vegetation (m)	2	Average width of vegetation (m)	2
Side surveyed	2		
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
Shrubby with line of trees		<input type="checkbox"/>	
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
Untrimmed	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>
Tall & leggy	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Hedgerow Base Management: cut mow to 2			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input type="checkbox"/>	Arable - Un-cropped margin	<input checked="" type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
Improved Grass	<input type="checkbox"/>		
Woodland - Young	<input type="checkbox"/>		
Road (Major / Minor)	<input type="checkbox"/> / <input checked="" type="checkbox"/>		
Canal	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹		3	
No. Standard tree / 50m		0	
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	0	Connections to woodland	
Connections to ponds			
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees	<input type="checkbox"/>
Protected species (add details to comments)		Gaps as % of length 30	
At least 3 Woodland species (within 1m of hedge)		<input type="checkbox"/>	
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
Bark sap runs		<input type="checkbox"/>	
Major rot sites, any more than 15cm across		<input type="checkbox"/>	

Comments (Inc. Limitations & Protected species):

Wash field margin to N
 Line of mature oak trees to N
 Storage of farm equipment alongside hedgerow

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	17-06-2020
Client:		OS Grid Reference:	
Hedge Reference:	100	Length (m):	100
Photo No:	7		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
Hedge has been in existence for 30 years or more		<input type="checkbox"/>	
Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	2.5
Side surveyed	W		
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
Shrubby with line of trees		<input type="checkbox"/>	
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
Untrimmed	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>
Tall & leggy	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Hedgerow Base Management: cut Mow grass			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input checked="" type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/>	Lake / Pond	<input type="checkbox"/>
Improved Grass	<input type="checkbox"/>		
Woodland - Young	<input type="checkbox"/>		
Road (Major / Minor)	<input type="checkbox"/>		
Canal	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹		2	4
No. Standard tree / 50m		0	
Av. 3			
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	
Connections to ponds			
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
Protected species (add details to comments)		<input type="checkbox"/>	
Gaps as % of length		0	
At least 3 Woodland species (within 1m of hedge)		<input type="checkbox"/>	
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
Bark sap runs		<input type="checkbox"/>	
Major rot sites, any more than 15cm across		<input type="checkbox"/>	
Comments (Inc. Limitations & Protected species):			
Here ditch to W			

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	17-06-2020
Client:		OS Grid Reference:	
Hedge Reference:	101	Length (m):	100
Photo No:	2		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
Hedge has been in existence for 30 years or more		<input checked="" type="checkbox"/>	
Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	2.5
Side surveyed	N		
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
Shrubby with line of trees		<input type="checkbox"/>	
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
Untrimmed	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>
Tall & leggy	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Hedgerow Base Management: <i>cut grass margins</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
Improved Grass	<input type="checkbox"/>		
Woodland - Young	<input type="checkbox"/>		
Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>		
Canal	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			5 3
No. Standard tree / 50m			<1
			>200m
			Av. 4
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	
Connections to ponds			
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
Protected species (add details to comments)		<input type="checkbox"/>	
Gaps as % of length		0	
At least 3 Woodland species (within 1m of hedge)		<input type="checkbox"/>	
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
Bark sap runs		<input type="checkbox"/>	
Major rot sites, any more than 15cm across		<input type="checkbox"/>	

Comments (Inc. Limitations & Protected species):

2m margin to S, 6m margin + fence track to N
 2 x early native *Prunella* date trees present
 Cultivated cherry present in hedgerow

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	17-06-2020
Client:		OS Grid Reference:	
Hedge Reference:	102	Length (m):	300
Photo No:	9		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
Hedge has been in existence for 30 years or more		<input checked="" type="checkbox"/>	
Hedgerow Summary			
Average height of vegetation (m)	2.5	Average width of vegetation (m)	2
Side surveyed	E		
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
Shrubby with line of trees		<input type="checkbox"/>	
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
Untrimmed	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>
Tall & leggy	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Hedgerow Base Management: cut 100m margins			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
Improved Grass	<input type="checkbox"/>		
Woodland - Young	<input type="checkbox"/>		
Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>		
Canal	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			2 3 4 Av. 3
No. Standard tree / 50m			0
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	5	Connections to woodland	Connections to ponds
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees	<input type="checkbox"/>
Protected species (add details to comments)		Gaps as % of length	
		25	
At least 3 Woodland species (within 1m of hedge)		<input type="checkbox"/>	
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
Bark sap runs		<input type="checkbox"/>	
Major rot sites, any more than 15cm across		<input type="checkbox"/>	

Comments (Inc. Limitations & Protected species):

2m grass margins to either side.

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Woody Species	30m intervals			Woody Species	30m intervals		
	1	2	3		1	2	3
Alder (<i>Ainus glutinosa</i>)				Hawthorn, midland (<i>Crataegus laevigata</i>)			
Apple, crab (<i>Malus sylvestris</i>)				Hazel (<i>Corylus avellana</i>)			
Ash (<i>Fraxinus excelsior</i>)			✓	Holly (<i>Ilex aquifolium</i>)			
Aspen (<i>Populus tremula</i>)				Hornbeam (<i>Carpinus betulus</i>)			
Beech (<i>Fagus sylvatica</i>)				Juniper, common (<i>Juniperus communis</i>)			
Birch, downy (<i>Betula pubescens</i>)				Lime, large-leaved (<i>Tilia platyphyllos</i>)			
Birch, silver (<i>Betula pendula</i>)				Lime, small-leaved (<i>Tilia cordata</i>)			
Black-poplar (<i>Populus nigra</i>)				Maple, field (<i>Acer campestre</i>)			
Blackthorn (<i>Prunus spinosa</i>)			✓	Mezereon (<i>Daphne mezereum</i>)			
Box (<i>Buxus sempervirens</i>)				Oak, pedunculate (<i>Quercus robur</i>)			
Broom (<i>Cytisus scoparius</i>)				Oak, sessile (<i>Quercus petraea</i>)			
Buckthorn (<i>Rhamnus cathartica</i>)				Osier (<i>Salix viminalis</i>)			
Buckthorn, alder (<i>Frangula alnus</i>)				Pear, Plymouth (<i>Pyrus cordata</i>)			
Butcher's-broom (<i>Ruscus aculeatus</i>)				Pear, wild (<i>Pyrus pyraster</i>)			
Cherry, bird (<i>Prunus padus</i>)				Poplar, grey (<i>Populus x canescens</i>)			
Cherry, wild (<i>Prunus avium</i>)				Poplar, white (<i>Populus alba</i>)			
Cotoneaster, wild (<i>Cotoneaster integerrimus</i>)				Privet, wild (<i>Ligustrum vulgare</i>)			
Currant, downy (<i>Ribes spicatum</i>)				Rose (<i>Rosa species</i>)			
Currant, mountain (<i>Ribes alpinum</i>)				Rowan (<i>Sorbus aucuparia</i>)			
Dogwood (<i>Cornus sanguinea</i>)				Sea-buckthorn (<i>Hippophae rhamnoides</i>)			
Elder (<i>Sambucus nigra</i>)	✓	✓	✓	Service-tree, wild (<i>Sorbus torminalis</i>)			
Elm (<i>Ulmus species</i>)		✓	✓	Spindle (<i>Euonymus europaeus</i>)			
Gooseberry (<i>Ribes uva-crispa</i>)				Spurge-laurel (<i>Daphne laureola</i>)			
Gorse (<i>Ulex europaeus</i>)				Walnut (<i>Juglans regia</i>)			
Gorse, dwarf (<i>Ulex minor</i>)				Wayfaring-tree (<i>Viburnum lantana</i>)			
Gorse, western (<i>Ulex gallii</i>)				Whitebeam (<i>Sorbus species</i>)			
Guelder rose (<i>Viburnum opulus</i>)				Willow (<i>Salix species</i>)			
Hawthorn (<i>Crataegus monogyna</i>)	✓	✓	✓	Yew (<i>Taxus baccata</i>)			

Woodland Species	30m Intervals			Woodland Species	30m Intervals		
	1	2	3		1	2	3
Barren strawberry (<i>Potentilla sterilis</i>)				Nettle-leaved bell-flower (<i>Campanula trachelium</i>)			
Bluebell (<i>Hyacinthoides non-scriptus</i>)				Oxlip (<i>Primula elatior</i>)			
Broad buckler fern (<i>Dryopteris dilatata</i>)				Pignut (<i>Conopodium majus</i>)			
Broad-leaved helleborine (<i>Epipactis helleborine</i>)				Primrose (<i>Primula vulgaris</i>)			
Bugle (<i>Ajuga reptans</i>)				Ramsons (<i>Allium ursinum</i>)			
Common cow-wheat (<i>Melampyrum pratense</i>)				Sanicle (<i>Sanicula europaea</i>)			
Common dog violet (<i>Viola riviniana</i>)				Scaly male-fern (<i>Dryopteris affinis</i>)			
Common polypody (<i>Polypodium vulgare</i>)				Small cow-wheat (<i>Melampyrum sylvaticum</i>)			
Dog's mercury (<i>Mercurialis perennis</i>)				Soft shield fern (<i>Polystichum setiferum</i>)			
Early dog violet (<i>Viola reichenbachiana</i>)				Sweet violet (<i>Viola odorata</i>)			
Early purple orchid (<i>Orchis mascula</i>)				Toothwort (<i>Lathraea squamaria</i>)			
Enchanter's nightshade (<i>Circaea lutetiana</i>)				Tormentil (<i>Potentilla erecta</i>)			
Giant fescue (<i>Festuca gigantea</i>)				Wild strawberry (<i>Fragaria vesca</i>)			
Goldlocks buttercup (<i>Ranunculus auricomus</i>)				Wood anemone (<i>Anemone nemorosa</i>)			
Great bell-flower (<i>Campanula latifolia</i>)				Wood avens/Herb bennet (<i>Geum urbanum</i>)			
Greater wood-rush (<i>Luzula sylvatica</i>)				Wood false-brome (<i>Brachypodium sylvaticum</i>)			
Hairy brome (<i>Bromus ramosus</i>)				Wood horsetail (<i>Equisetum sylvaticum</i>)			
Hairy woodrush (<i>Luzula pilosa</i>)				Wood meadow-grass (<i>Poa nemoralis</i>)			
Hard fern (<i>Blechnum spicant</i>)				Wood melick (<i>Melica uniflora</i>)			
Hard shield fern (<i>Polystichum aculeatum</i>)				Wood millet (<i>Millium effusum</i>)			
Hart's tongue (<i>Asplenium scolopendrium</i>)				Wood sage (<i>Teucrium scorodonia</i>)			
Heath bedstraw (<i>Galium saxatile</i>)				Wood sedge (<i>Carex sylvatica</i>)			
Herb paris (<i>Paris quadrifolia</i>)				Wood sorrel (<i>Oxalis acetosella</i>)			
Herb-robert (<i>Geranium robertianum</i>)				Wood speedwell (<i>Veronica montana</i>)			
Lady fern (<i>Athyrium filix-femina</i>)				Wood spurge (<i>Euphorbia amygdaloides</i>)			
Lords-and-ladies (<i>Arum maculatum</i>)				Woodruff (<i>Galium odoratum</i>)			
Male fern (<i>Dryopteris filix-mas</i>)				Yellow archangel (<i>Lamium galeobdolon</i>)			
Moschatel (<i>Adoxa moschatellina</i>)				Yellow pimpernel (<i>Lysimachia nemorum</i>)			
Narrow buckler-fern (<i>Dryopteris carthusiana</i>)							

Ground Flora (% Score)	Quadrat 1			Ground Flora (% Score)	Quadrat 2		
	1	2	3		1	2	3
Barren strawberry	50	40	20	Causes orchard	80	40	10
Bluebell	30	50	50	Wood Dock	10	-	-
Broad-leaved helleborine	20	30	30	Yarrow	5	30	-
Bugle	20	-	-	Red Pimpernel	20	40	20
Butcher's-broom	-	10	-	Caugh	30	-	10
Common cow-wheat	-	10	-	Rough meadow-grass	-	20	10
Common dog violet	-	-	5	Yellow Pimpernel	-	10	10
Common polypody	-	-	20	Woodruff	-	-	20
Dog's mercury				Nettle			
Early dog violet							
Early purple orchid							
Enchanter's nightshade							
Giant fescue							
Goldlocks buttercup							
Great bell-flower							
Greater wood-rush							
Hairy brome							
Hairy woodrush							
Hard fern							
Hard shield fern							
Hart's tongue							
Heath bedstraw							
Herb paris							
Herb-robert							
Lady fern							
Lords-and-ladies							
Male fern							
Moschatel							
Narrow buckler-fern							

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	17-06-2020
Client:		OS Grid Reference:	
Hedge Reference:	103	Length (m):	200
Photo No:	10		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>
Hedgerow Summary			
Average height of vegetation (m)	5	Average width of vegetation (m)	3
		Side surveyed	S
Hedgerow Type			
Shrubby hedgerow	<input type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input checked="" type="checkbox"/>
Hedgerow Shape			
Trimmed & dense	<input type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input checked="" type="checkbox"/>
		Other	<input type="checkbox"/>
Hedgerow Base Management: <i>uncut grass margin</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
		Improved Grass	<input type="checkbox"/>
		Woodland - Young	<input type="checkbox"/>
		Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
		Canal	<input type="checkbox"/>
		Other	
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			7 4 2 Av.4.3
No. Standard tree / 50m			5 in hedge
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2 pts)			
Connections to hedges	4	Connections to woodland	2
		Connections to ponds	
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input checked="" type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees	<input checked="" type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
		Gaps as % of length	
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input checked="" type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input checked="" type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input checked="" type="checkbox"/>	Hollow trunks or hollow major limbs	<input checked="" type="checkbox"/>
		Bark sap runs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

Ditch to N dry out but still puddles present

Large veteran Oak + Ash trees present

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	17.06.2020
Client:		OS Grid Reference:	
Hedge Reference:	104	Length (m):	180
Photo No:	12		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)					
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more	<input type="checkbox"/>

Hedgerow Summary					
Average height of vegetation (m)	2	Average width of vegetation (m)	2	Side surveyed	N

Hedgerow Type					
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>	Shrubby with line of trees	<input type="checkbox"/>

Hedgerow Shape							
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>	Untrimmed	<input type="checkbox"/>	Tail & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>	Other	<input type="checkbox"/>

Hedgerow Base Management: *cut w cut grass*

Adjacent land use / Management (can be more than one)					
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>	Improved Grass	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>	Woodland - Young	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>	Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>	Canal	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>	Other	

Woody species/ trees				
	<30m	>30m<100m	>100m <200m	>200m
Number of woody Species ¹			4	3
No. Standard tree / 50m			0	
				Av. 3.5

Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	5	Connections to woodland	
		Connections to ponds	

Additional Criteria					
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>	Protected species (add details to comments)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>	Gaps as % of length	10
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees	<input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>

Veteran Tree Features					
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>	Bark sap runs	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>	Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

3m margin to W - some trees

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	17-06-2020
Client:		OS Grid Reference:	
Hedge Reference:	105	Length (m):	300
Photo No:	13		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
Hedge has been in existence for 30 years or more		<input type="checkbox"/>	
Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	2.5
Side surveyed	<input checked="" type="checkbox"/>		
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
Shrubby with line of trees		<input type="checkbox"/>	
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
Untrimmed	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>
Tall & leggy	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Hedgerow Base Management: <i>cut wheat grass</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
Improved Grass	<input type="checkbox"/>		
Woodland - Young	<input type="checkbox"/>		
Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>		
Canal	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			3 1 4 Av. 2.6
No. Standard tree / 50m			0
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	6	Connections to woodland	
Connections to ponds			
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
Protected species (add details to comments)		<input type="checkbox"/>	
Gaps as % of length		10	
At least 3 Woodland species (within 1m of hedge)		<input type="checkbox"/>	
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
Bark sap runs		<input type="checkbox"/>	
Major rot sites, any more than 15cm across		<input type="checkbox"/>	

Comments (Inc. Limitations & Protected species):
 2m margins to either side

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.
² Connections within 10m in line with hedge
³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	17-06-2020
Client:		OS Grid Reference:	
Hedge Reference:	106	Length (m):	200
Photo No:	14		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>
Hedgerow Summary			
Average height of vegetation (m)	2.5	Average width of vegetation (m)	2
		Side surveyed	N
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
		Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Hedgerow Base Management: <i>cut uncut grass</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Improved Grass	<input type="checkbox"/>
Unimproved Grass	<input type="checkbox"/>	Woodland - Young	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
		Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
		Canal	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
		Other	
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			4 3 3 Av. 3.3
No. Standard tree / 50m			0
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	5	Connections to woodland	
		Connections to ponds	
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
		Gaps as % of length	15
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees	<input type="checkbox"/>
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
		Bark sap runs	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>
Comments (Inc. Limitations & Protected species):			
<i>Margins = 3 m either side.</i>			

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	17-06-2020
Client:		OS Grid Reference:	
Hedge Reference:	107	Length (m):	40
Photo No:	15		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
Hedge has been in existence for 30 years or more		<input checked="" type="checkbox"/>	
Hedgerow Summary			
Average height of vegetation (m)	2.5	Average width of vegetation (m)	2
Side surveyed	N		
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
Shrubby with line of trees		<input type="checkbox"/>	
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
Untrimmed	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>
Tall & leggy	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Hedgerow Base Management: cut uncut grass			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input checked="" type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/>	Lake / Pond	<input type="checkbox"/>
Improved Grass	<input type="checkbox"/>		
Woodland - Young	<input type="checkbox"/>		
Road (Major / Minor)	<input type="checkbox"/>		
Canal	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Woody species/ trees			
	<30m	>30m<100m ¹	>100m <200m
Number of woody Species ¹		3	
No. Standard tree / 50m		0	
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	
Connections to ponds			
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees	<input type="checkbox"/>
Protected species (add details to comments)		<input type="checkbox"/>	
Gaps as % of length		10	
At least 3 Woodland species (within 1m of hedge)		<input type="checkbox"/>	
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
Bark sap runs		<input type="checkbox"/>	
Major rot sites, any more than 15cm across		<input type="checkbox"/>	

Comments (Inc. Limitations & Protected species):

2 m margins to either side

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.
² Connections within 10m in line with hedge
³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	17-06-20
Client:		OS Grid Reference:	
Hedge Reference:	108	Length (m):	150
Photo No:	16		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
Hedge has been in existence for 30 years or more		<input checked="" type="checkbox"/>	
Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	2.5
Side surveyed	E		
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
Shrubby with line of trees		<input type="checkbox"/>	
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
Untrimmed	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>
Tall & leggy	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Hedgerow Base Management: <i>cut w/out grass</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
Improved Grass	<input type="checkbox"/>		
Woodland - Young	<input type="checkbox"/>		
Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>		
Canal	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹		3	3
No. Standard tree / 50m		0	
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	
Connections to ponds			
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
Protected species (add details to comments)		Gaps as % of length	
		0	
		At least 3 Woodland species (within 1m of hedge)	
		<input type="checkbox"/>	
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
Bark sap runs		<input type="checkbox"/>	
Major rot sites, any more than 15cm across		<input type="checkbox"/>	

Comments (Inc. Limitations & Protected species):

steep ditch to E side
E margin 8m w/out grass
W margin 3m " "

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.
² Connections within 10m in line with hedge.
³ Along at least half length of hedgerow.

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	17-06-20
Client:		OS Grid Reference:	
Hedge Reference:	109	Length (m):	190
Photo No:	16		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
Hedge has been in existence for 30 years or more		<input checked="" type="checkbox"/>	
Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	3
Side surveyed	S		
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
Shrubby with line of trees		<input type="checkbox"/>	
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
Untrimmed	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>
Tall & leggy	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Hedgerow Base Management: <input checked="" type="checkbox"/> uncut grass			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
Improved Grass	<input type="checkbox"/>		
Woodland - Young	<input type="checkbox"/>		
Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>		
Canal	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			2 4
No. Standard tree / 50m			0
Av. 3			
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	
Connections to ponds			
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
Protected species (add details to comments)		<input type="checkbox"/>	
Gaps as % of length		15	
At least 3 Woodland species (within 1m of hedge)		<input type="checkbox"/>	
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
Bark sap runs		<input type="checkbox"/>	
Major rot sites, any more than 15cm across		<input type="checkbox"/>	

Comments (Inc. Limitations & Protected species):

3m grass margins to either side

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	17-06-20
Client:		OS Grid Reference:	
Hedge Reference:	110	Length (m):	30
Photo No:	16		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>
Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	2
		Side surveyed	W
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Hedgerow Base Management: <i>Arable crop. Some recent sward</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
		Improved Grass	<input type="checkbox"/>
		Woodland - Young	<input type="checkbox"/>
		Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
		Canal	<input type="checkbox"/>
		Other	
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹		2	
No. Standard tree / 50m		0	
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	0	Connections to woodland	
		Connections to ponds	
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees	<input type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
		Gaps as % of length	
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs
		Bark sap runs
		Major rot sites, any more than 15cm across

Comments (Inc. Limitations & Protected species):

Small hedgerow. Regrowth + check connections quality +

V. narrow margins

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	17.06.20
Client:		OS Grid Reference:	
Hedge Reference:	111	Length (m):	40
Photo No:	17		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>
Hedgerow Summary			
Average height of vegetation (m)	2.5	Average width of vegetation (m)	2
		Side surveyed	W
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Hedgerow Base Management: <i>cut uncut grassland margins</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
		Canal	<input type="checkbox"/>
		Other	
Improved Grass <input type="checkbox"/>			
Woodland - Young <input type="checkbox"/>			
Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>			
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹		2	
No. Standard tree / 50m		0	
Av. 2			
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	2	Connections to woodland	
		Connections to ponds	
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees	<input type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
		Gaps as % of length	20
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
		Bark sap runs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):
*Hedgerow fragment *checked connections**
2 m margins to either side

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third
² Connections within 10m in line with hedge
³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	17-06-20
Client:		OS Grid Reference:	
Hedge Reference:	112	Length (m):	180
Photo No:	18		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>
Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	2.5
		Side surveyed	11
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Hedgerow Base Management: <i>sub uncult grass</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
		Improved Grass	<input type="checkbox"/>
		Woodland - Young	<input type="checkbox"/>
		Road (Major / Minor)	<input type="checkbox"/> / <input checked="" type="checkbox"/>
		Canal	<input type="checkbox"/>
		Other	
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			4 3
No. Standard tree / 50m		0	
Av 3.5			
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	2	Connections to woodland	
		Connections to ponds	
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input checked="" type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
		Gaps as % of length	5
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
		Bark sap runs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

15m margin to rd

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	17-06-20
Client:		OS Grid Reference:	
Hedge Reference:	113	Length (m):	250
Photo No:	19		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)							
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>		
Hedgerow Summary							
Average height of vegetation (m)	3	Average width of vegetation (m)	25	Side surveyed		~	
Hedgerow Type							
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>	Shrubby with line of trees	<input type="checkbox"/>		
Hedgerow Shape							
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>	Untrimmed	<input type="checkbox"/>	Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>	Other	<input type="checkbox"/>
Hedgerow Base Management: <i>cut uncut grass</i>							
Adjacent land use / Management (can be more than one)							
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>	Improved Grass	<input type="checkbox"/>		
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>	Woodland - Young	<input type="checkbox"/>		
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>	Road (Major / Minor)	<input type="checkbox"/>	<input type="checkbox"/> / <input checked="" type="checkbox"/>	
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>	Canal	<input type="checkbox"/>		
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>	Other			
Woody species/ trees							
	<30m	>30m<100m	>100m <200m	>200m			
Number of woody Species ¹				4	4	2	Av. 3.3
No. Standard tree / 50m				0			
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)							
Connections to hedges	<input checked="" type="checkbox"/>	Connections to woodland		Connections to ponds			
Additional Criteria							
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input checked="" type="checkbox"/>	Protected species (add details to comments)	<input type="checkbox"/>		
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>	Gaps as % of length		0	
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>		
Veteran Tree Features							
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>	Bark sap runs	<input type="checkbox"/>		
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>	Major rot sites, any more than 15cm across	<input type="checkbox"/>		

Comments (Inc. Limitations & Protected species):

1.5m margin to N.

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.
² Connections within 10m in line with hedge
³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	17-06-70
Client:		OS Grid Reference:	
Hedge Reference:	114	Length (m):	200
Photo No:	20		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
Hedge has been in existence for 30 years or more		<input checked="" type="checkbox"/>	
Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	3.5
Side surveyed	W		
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
Shrubby with line of trees		<input type="checkbox"/>	
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
Untrimmed	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>
Tall & leggy	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Hedgerow Base Management: <i>cut mow grass</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
Improved Grass	<input type="checkbox"/>		
Woodland - Young	<input type="checkbox"/>		
Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>		
Canal	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			
No. Standard tree / 50m			
			>200m
			5 3 4 Av. 4
			0
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	5	Connections to woodland	
Connections to ponds			
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
Protected species (add details to comments)		<input type="checkbox"/>	
Gaps as % of length		0	
At least 3 Woodland species (within 1m of hedge)		<input type="checkbox"/>	
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
Bark sap runs		<input type="checkbox"/>	
Major rot sites, any more than 15cm across		<input type="checkbox"/>	

Comments (Inc. Limitations & Protected species):

3m margin to N.

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	17-06-20
Client:		OS Grid Reference:	
Hedge Reference:	115	Length (m):	100
Photo No:	21		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
Hedge has been in existence for 30 years or more		<input type="checkbox"/>	
Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	2.5
Side surveyed	~		
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
Shrubby with line of trees		<input type="checkbox"/>	
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
Untrimmed	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>
Tall & leggy	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Hedgerow Base Management: cut Uncut grass			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input checked="" type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
Improved Grass	<input type="checkbox"/>		
Woodland - Young	<input type="checkbox"/>		
Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>		
Canal	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹		4	5
No. Standard tree / 50m		0	
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	
Connections to ponds			
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
Protected species (add details to comments)		<input type="checkbox"/>	
Gaps as % of length		< 5	
At least 3 Woodland species (within 1m of hedge)		<input type="checkbox"/>	
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
Bark sap runs		<input type="checkbox"/>	
Major rot sites, any more than 15cm across		<input type="checkbox"/>	
Comments (Inc. Limitations & Protected species):			
Narrow margin to sit-up to 2m			

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	22.06.20
Client:		OS Grid Reference:	
Hedge Reference:	116	Length (m):	110
Photo No:	1		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>
Hedgerow Summary			
Average height of vegetation (m)	2.5	Average width of vegetation (m)	2
		Side surveyed	N
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Hedgerow Base Management: cut mow grass			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input checked="" type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
		Improved Grass	<input type="checkbox"/>
		Woodland - Young	<input type="checkbox"/>
		Road (Major / Minor)	<input type="checkbox"/> / <input checked="" type="checkbox"/>
		Canal	<input type="checkbox"/>
		Other	
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			3 3
No. Standard tree / 50m			0
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	
		Connections to ponds	
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input checked="" type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees	<input type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
		Gaps as % of length	0
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
		Bark sap runs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):
 Grassland to the N W - semi-improved grass sward at base
 capped 2m wide
 lots of succulent bladderwort

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third
² Connections within 10m in line with hedge
³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	22-06-20
Client:		OS Grid Reference:	
Hedge Reference:	117	Length (m):	220
Photo No:	2		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>
Hedgerow Summary			
Average height of vegetation (m)	2.5	Average width of vegetation (m)	2.5
		Side surveyed	W
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Hedgerow Base Management: <i>cut uncut SI grass margin</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input checked="" type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/>	Lake / Pond	<input type="checkbox"/>
		Canal	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			2 2 5 Av. 3
No. Standard tree / 50m			1
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	
		Connections to ponds	
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
		Gaps as % of length	0
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>

Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
		Bark sap runs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

6m margin to base
Early native Ash tree present

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	22-06-20
Client:		OS Grid Reference:	
Hedge Reference:	118	Length (m):	120
Photo No:	3		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
Hedge has been in existence for 30 years or more		<input checked="" type="checkbox"/>	
Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	2.5
Side surveyed	W		
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
Shrubby with line of trees		<input type="checkbox"/>	
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
Untrimmed	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>
Tall & leggy	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Hedgerow Base Management: cut uncut sigias?			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input checked="" type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/>	Lake / Pond	<input type="checkbox"/>
Improved Grass	<input type="checkbox"/>		
Woodland - Young	<input type="checkbox"/>		
Road (Major / Minor)	<input type="checkbox"/>		
Canal	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹		3	4
No. Standard tree / 50m			0
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	
Connections to ponds			
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
Protected species (add details to comments)		Gaps as % of length 10%	
At least 3 Woodland species (within 1m of hedge)		<input type="checkbox"/>	
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
Bark sap runs		<input type="checkbox"/>	
Major rot sites, any more than 15cm across		<input type="checkbox"/>	

Comments (Inc. Limitations & Protected species):

Grass margin = 6m to 10m

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	22.06.20
Client:		OS Grid Reference:	
Hedge Reference:	119	Length (m):	50
Photo No:	4		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>
Hedgerow Summary			
Average height of vegetation (m)	2.5	Average width of vegetation (m)	2
		Side surveyed	<input type="checkbox"/>
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Hedgerow Base Management: <input checked="" type="checkbox"/> m cut SJ grass			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> <input type="checkbox"/>
		Improved Grass	<input type="checkbox"/>
		Woodland - Young	<input type="checkbox"/>
		Road (Major / Minor)	<input type="checkbox"/> <input type="checkbox"/>
		Canal	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹		4	
No. Standard tree / 50m		0	
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	
		Connections to ponds	
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
		Gaps as % of length	0
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
		Bark sap runs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

SJ grass margin 6m either side

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	22-06-20
Client:		OS Grid Reference:	
Hedge Reference:	120	Length (m):	250
Photo No:	5		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)															
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>												
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>												
Hedgerow Summary															
Average height of vegetation (m)	25	Average width of vegetation (m)	2												
		Side surveyed	<input checked="" type="checkbox"/>												
Hedgerow Type															
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>												
		Shrubby with line of trees	<input type="checkbox"/>												
Hedgerow Shape															
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>												
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>												
		Untrimmed	<input type="checkbox"/>												
		Recently coppiced	<input type="checkbox"/>												
		Tall & leggy	<input type="checkbox"/>												
		Other	<input type="checkbox"/>												
Hedgerow Base Management: <i>cut 5m margin</i>															
Adjacent land use / Management (can be more than one)															
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>												
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>												
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>												
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>												
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>												
		Canal	<input type="checkbox"/>												
		Other													
Improved Grass <input type="checkbox"/>															
Woodland - Young <input type="checkbox"/>															
Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>															
Woody species/ trees															
	<30m	>30m<100m	>100m <200m												
Number of woody Species ¹															
No. Standard tree / 50m															
<table border="1"> <thead> <tr> <th colspan="3">>200m</th> <th>Av.</th> </tr> </thead> <tbody> <tr> <td>4</td> <td>3</td> <td>3</td> <td>3.3</td> </tr> <tr> <td></td> <td>0</td> <td></td> <td></td> </tr> </tbody> </table>				>200m			Av.	4	3	3	3.3		0		
>200m			Av.												
4	3	3	3.3												
	0														
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)															
Connections to hedges		Connections to woodland													
		Connections to ponds													
Additional Criteria															
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>												
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>												
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>												
		Protected species (add details to comments)	<input type="checkbox"/>												
		Gaps as % of length	0												
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>												
Veteran Tree Features															
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>												
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>												
		Bark sap runs	<input type="checkbox"/>												
		Major rot sites, any more than 15cm across	<input type="checkbox"/>												

Comments (Inc. Limitations & Protected species):
*6m SI margin 1m width, 5m cut across made
 CN*

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.
² Connections within 10m in line with hedge
³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	22-06-20
Client:		OS Grid Reference:	
Hedge Reference:	121	Length (m):	200
Photo No:	6		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
Hedge has been in existence for 30 years or more		<input checked="" type="checkbox"/>	
Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	2.5
Side surveyed			5
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
Shrubby with line of trees		<input type="checkbox"/>	
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
Untrimmed	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>
Tall & leggy			<input type="checkbox"/>
Other		<input type="checkbox"/>	
Hedgerow Base Management: cut with 8I grass			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
Improved Grass			<input type="checkbox"/>
Woodland - Young			<input type="checkbox"/>
Road (Major / Minor)			<input type="checkbox"/> / <input checked="" type="checkbox"/>
Canal			<input type="checkbox"/>
Other			<input type="checkbox"/>
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			2 3 2
No. Standard tree / 50m			0
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	3	Connections to woodland	
Connections to ponds			
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input checked="" type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
Protected species (add details to comments)		<input type="checkbox"/>	
Gaps as % of length		0	
At least 3 Woodland species (within 1m of hedge)		<input type="checkbox"/>	

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs
Bark sap runs		<input type="checkbox"/>
Major rot sites, any more than 15cm across		<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):
 2m margin to S side

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.
² Connections within 10m in line with hedge
³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	22.06.20
Client:		OS Grid Reference:	
Hedge Reference:	122	Length (m):	50
Photo No:	7		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>

Hedgerow Summary			
Average height of vegetation (m)	6	Average width of vegetation (m)	3
Side surveyed			W

Hedgerow Type		
Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>

Hedgerow Shape			
Trimmed & dense <input type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input checked="" type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: Cut *cut field margin to W - Woodland to E*

Adjacent land use / Management (can be more than one)			
Arable - crop <input checked="" type="checkbox"/>	Arable - Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>	
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>	
Woodland - Semi-mature <input checked="" type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>	
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>	
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>	

Woody species/ trees	<30m	>30m<100m	>100m <200m	>200m	Av. +
Number of woody Species ¹		4			
No. Standard tree / 50m		0			

Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	1	Connections to woodland	2
Connections to ponds			

Additional Criteria		
Bank ³ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length <input type="checkbox"/> 0
Ditch ³ (Dry) <input type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

*Possible resi. boundary?
check woodland to W*

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.
² Connections within 10m in line with hedge
³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	22.06.20
Client:		OS Grid Reference:	
Hedge Reference:	123	Length (m):	100
Photo No:	8		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
Hedge has been in existence for 30 years or more		<input checked="" type="checkbox"/>	
Hedgerow Summary			
Average height of vegetation (m)	6	Average width of vegetation (m)	
Side surveyed			
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
Shrubby with line of trees		<input type="checkbox"/>	
Hedgerow Shape			
Trimmed & dense	<input type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input checked="" type="checkbox"/>	Recently laid	<input type="checkbox"/>
Untrimmed	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>
Tall & leggy	<input checked="" type="checkbox"/>		
Other	<input type="checkbox"/>		
Hedgerow Base Management: <i>Ext Grazed meadow</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input checked="" type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
Improved Grass	<input type="checkbox"/>		
Woodland - Young	<input type="checkbox"/>		
Road (Major / Minor)	<input type="checkbox"/> / <input checked="" type="checkbox"/>		
Canal	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			4 9 Av. 4.5
No. Standard tree / 50m			21
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	<input type="checkbox"/>	Connections to woodland	<input type="checkbox"/>
Connections to ponds		<input type="checkbox"/>	
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input checked="" type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees	<input type="checkbox"/>
Protected species (add details to comments)		<input type="checkbox"/>	
Gaps as % of length		<input type="checkbox"/>	
At least 3 Woodland species (within 1m of hedge)		<input type="checkbox"/>	
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
Bark sap runs		<input type="checkbox"/>	
Major rot sites, any more than 15cm across		<input type="checkbox"/>	

Comments (Inc. Limitations & Protected species):

Early native pedunculate oak tree present

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 1.0m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	22-06-20
Client:		OS Grid Reference:	
Hedge Reference:	124	Length (m):	60
Photo No:	9		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>
Hedgerow Summary			
Average height of vegetation (m)	4	Average width of vegetation (m)	
		Side surveyed	
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>
Hedgerow Shape			
Trimmed & dense	<input type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Untrimmed	<input checked="" type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Hedgerow Base Management: <i>Cut in cut meadow</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input checked="" type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input checked="" type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/>	Lake / Pond	<input type="checkbox"/>
		Improved Grass	<input type="checkbox"/>
		Woodland - Young	<input type="checkbox"/>
		Road (Major / Minor)	<input type="checkbox"/>
		Canal	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹		4	
No. Standard tree / 50m		0	
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	1	Connections to woodland	
		Connections to ponds	
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input checked="" type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees	<input type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
		Gaps as % of length	5%
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
		Bark sap runs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>
Comments (Inc. Limitations & Protected species):			
<i>Un cut and bushy</i>			

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	22-06-20
Client:		OS Grid Reference:	
Hedge Reference:	125	Length (m):	100
Photo No:	10		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>
Hedgerow Summary			
Average height of vegetation (m)	6	Average width of vegetation (m)	3
		Side surveyed	N
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>
Hedgerow Shape			
Trimmed & dense	<input type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Untrimmed	<input checked="" type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input checked="" type="checkbox"/>
		Other	<input type="checkbox"/>
Hedgerow Base Management: <i>Un cut meadow</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input checked="" type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
		Improved Grass	<input type="checkbox"/>
		Woodland - Young	<input checked="" type="checkbox"/>
		Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
		Canal	<input type="checkbox"/>
		Other	
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			2 3
No. Standard tree / 50m			4
>200m			
Av. 65			
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	1	Connections to woodland	
		Connections to ponds	
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
		Gaps as % of length	0
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
		Bark sap runs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):
*Includes some trees up to 10m
 Shrubby hedgerow forming boundary of woodland (Aspen, Q, Pine)*

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third
² Connections within 10m in line with hedge
³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	22-06-20
Client:		OS Grid Reference:	
Hedge Reference:	126	Length (m):	50
Photo No:	11		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)					
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>

Hedgerow Summary					
Average height of vegetation (m)	1.5	Average width of vegetation (m)	1.5	Side surveyed	N

Hedgerow Type					
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>	Shrubby with line of trees	<input type="checkbox"/>

Hedgerow Shape							
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>	Untrimmed	<input type="checkbox"/>	Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>	Other	<input type="checkbox"/>

Hedgerow Base Management: *cut must mow to N. wait field margin to S*

Adjacent land use / Management (can be more than one)					
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>	Improved Grass	<input type="checkbox"/>
Semi-improved Grass	<input checked="" type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>	Woodland - Young	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>	Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>	Canal	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>	Other	

Woody species/ trees	<30m	>30m<100m	>100m <200m	>200m	Av.
Number of woody Species ¹		3			3
No. Standard tree / 50m		0			

Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)					
Connections to hedges		Connections to woodland	4	Connections to ponds	

Additional Criteria					
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>	Protected species (add details to comments)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>	Gaps as % of length	10
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees	<input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>

Veteran Tree Features					
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>	Bark sap runs	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>	Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	22-06-20
Client:		OS Grid Reference:	
Hedge Reference:	127	Length (m):	200
Photo No:	12		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>
Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	2
		Side surveyed	W
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Hedgerow Base Management: <i>cut grass near</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
		Improved Grass	<input type="checkbox"/>
		Woodland - Young	<input type="checkbox"/>
		Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
		Canal	<input type="checkbox"/>
		Other	
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			
No. Standard tree / 50m			
		>200m	
		3	3
		3	3
		Av. 3	
		0.5	
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	3	Connections to woodland	2
		Connections to ponds	
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
		Gaps as % of length	0
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
		Bark sap runs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

2m margins at base
2A hedge ABh trees present

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.
² Connections within 10m in line with hedge
³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	22-06-20
Client:		OS Grid Reference:	
Hedge Reference:	128	Length (m):	250
Photo No:	13		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)		
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential
		Hedge has been in existence for 30 years or more

Hedgerow Summary			
Average height of vegetation (m)	2.5	Average width of vegetation (m)	2.5
Side surveyed			N

Hedgerow Type		
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees
		Shrubby with line of trees

Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>

Hedgerow Base Management: uncut grass margin

Adjacent land use / Management (can be more than one)			
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Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>	Improved Grass	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>	Woodland - Young	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>	Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>	Canal	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>	Other	

Woody species/ trees	<30m	>30m <100m	>100m <200m	>200m			
Number of woody Species ¹				3	4	4	AV 3.5
No. Standard tree / 50m				2			

Connectivity² (hedge connection = 1 pt, wood or pond connection = 2pts)

Connections to hedges	4	Connections to woodland		Connections to ponds	
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Additional Criteria		
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Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>	Protected species (add details to comments)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>	Gaps as % of length	10
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>

Veteran Tree Features		
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Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>	Bark sap runs	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>	Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

3m uncut Sl grass margins at back
1x native Ash tree present

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	22-06-20
Client:		OS Grid Reference:	
Hedge Reference:	129	Length (m):	120
Photo No:	14		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
Hedge has been in existence for 30 years or more		<input checked="" type="checkbox"/>	
Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	2.5
Side surveyed	W		
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
Shrubby with line of trees		<input type="checkbox"/>	
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
Untrimmed	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>
Tall & leggy	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Hedgerow Base Management: <i>cut uncut field margin</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
Improved Grass	<input type="checkbox"/>		
Woodland - Young	<input type="checkbox"/>		
Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>		
Canal	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹		3	4
No. Standard tree / 50m			0
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	
Connections to ponds			
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
Protected species (add details to comments)		<input type="checkbox"/>	
Gaps as % of length		0	
At least 3 Woodland species (within 1m of hedge)		<input type="checkbox"/>	

Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
Bark sap runs		<input type="checkbox"/>	
Major rot sites, any more than 15cm across		<input type="checkbox"/>	

Comments (Inc. Limitations & Protected species):

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	22-06-20
Client:		OS Grid Reference:	
Hedge Reference:	130	Length (m):	120
Photo No:	14		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)					
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>

Hedgerow Summary					
Average height of vegetation (m)	2.5	Average width of vegetation (m)	2.5	Side surveyed	<input checked="" type="checkbox"/>

Hedgerow Type					
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>	Shrubby with line of trees	<input type="checkbox"/>

Hedgerow Shape							
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>	Untrimmed	<input type="checkbox"/>	Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>	Other	<input type="checkbox"/>

Hedgerow Base Management: ~~cut~~ AS 129

Adjacent land use / Management (can be more than one)					
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>	Improved Grass	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>	Woodland - Young	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>	Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>	Canal	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>	Other	

Woody species/ trees					
	<30m	>30m<100m	>100m <200m	>200m	
Number of woody Species ¹			4	4	
No. Standard tree / 50m			1	1	
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)					
Connections to hedges	3?	Connections to woodland		Connections to ponds	

Additional Criteria					
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>	Protected species (add details to comments)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>	Gaps as % of length	5.6
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>

Veteran Tree Features					
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>	Bark sap runs	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>	Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third
² Connections within 10m in line with hedge
³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	22-06-20
Client:		OS Grid Reference:	
Hedge Reference:	131	Length (m):	100
Photo No:	15		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>
Hedgerow Summary			
Average height of vegetation (m)	6	Average width of vegetation (m)	2
		Side surveyed	N
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>
Hedgerow Shape			
Trimmed & dense	<input type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input checked="" type="checkbox"/>
		Other	<input type="checkbox"/>
Hedgerow Base Management: <i>cut grass</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/>	Lake / Pond	<input type="checkbox"/>
		Improved Grass	<input type="checkbox"/>
		Woodland - Young	<input type="checkbox"/>
		Road (Major / Minor)	<input type="checkbox"/>
		Canal	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			5 4
No. Standard tree / 50m			0
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	5?	Connections to woodland	2
		Connections to ponds	
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input checked="" type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees	<input type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
		Gaps as % of length	5%
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
		Bark sap runs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

*1x mature Ash tree present
6m wood margin to N.*

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	22-06-20
Client:		OS Grid Reference:	
Hedge Reference:	139	Length (m):	100
Photo No:	16		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input type="checkbox"/>	Not curtilage of residential	<input type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input type="checkbox"/>
Hedgerow Summary			
Average height of vegetation (m)		Average width of vegetation (m)	
		Side surveyed	
Hedgerow Type			
Shrubby hedgerow	<input type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input checked="" type="checkbox"/>
		Other	<input type="checkbox"/>
Hedgerow Base Management: <i>cut meadow grass</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input checked="" type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/>	Lake / Pond	<input type="checkbox"/>
		Canal	<input type="checkbox"/>
		Other	
Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>			
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			4 4
No. Standard tree / 50m			1
Av. 4			
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	2	Connections to woodland	2
		Connections to ponds	
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input checked="" type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
		Gaps as % of length	0
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
		Bark sap runs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

2 native Ash trees present
Rollows lie & stream at E end. Dry ditch at W end

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	22.06.20
Client:		OS Grid Reference:	
Hedge Reference:	133	Length (m):	150
Photo No:	17		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>
Hedgerow Summary			
Average height of vegetation (m)	2	Average width of vegetation (m)	2
		Side surveyed	E
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Hedgerow Base Management: <i>cut with grass</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
		Improved Grass	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
		Woodland - Young	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
		Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway	<input checked="" type="checkbox"/> / <input checked="" type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
		Canal	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
		Other	
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			4
No. Standard tree / 50m			2
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2 pts)			
Connections to hedges	4	Connections to woodland	
		Connections to ponds	
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
		Gaps as % of length	0
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
		Bark sap runs	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>
Comments (Inc. Limitations & Protected species):			
6m S1 grass verge to E, 3m to W.			

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge.

³ Along at least half length of hedgerow.

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	22-06-20
Client:		OS Grid Reference:	
Hedge Reference:	134	Length (m):	250
Photo No:	18		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
Hedge has been in existence for 30 years or more		<input checked="" type="checkbox"/>	
Hedgerow Summary			
Average height of vegetation (m)	6	Average width of vegetation (m)	
Side surveyed			
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
Shrubby with line of trees		<input type="checkbox"/>	
Hedgerow Shape			
Trimmed & dense	<input type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
Untrimmed	<input checked="" type="checkbox"/>	Recently coppiced	<input type="checkbox"/>
Tall & leggy		<input checked="" type="checkbox"/>	
Other		<input type="checkbox"/>	
Hedgerow Base Management: <i>cut every year</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
Improved Grass		<input type="checkbox"/>	
Woodland - Young		<input type="checkbox"/>	
Road (Major / Minor)		<input type="checkbox"/> / <input type="checkbox"/>	
Canal		<input type="checkbox"/>	
Other			
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			
No. Standard tree / 50m			
			2 4 2 Av. 2.6
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	
Connections to ponds			
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
Protected species (add details to comments)		<input type="checkbox"/>	
Gaps as % of length		10	
At least 3 Woodland species (within 1m of hedge)		<input type="checkbox"/>	
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
Bark sap runs		<input type="checkbox"/>	
Major rot sites, any more than 15cm across		<input type="checkbox"/>	
Comments (Inc. Limitations & Protected species):			

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	22-06-20
Client:		OS Grid Reference:	
Hedge Reference:	135	Length (m):	150
Photo No:	19		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
Hedge has been in existence for 30 years or more		<input checked="" type="checkbox"/>	
Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	2.5
Side surveyed	E		
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
Shrubby with line of trees		<input type="checkbox"/>	
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
Untrimmed	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>
Tall & leggy	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Hedgerow Base Management: <i>cut grass margin</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/>	Lake / Pond	<input type="checkbox"/>
Improved Grass	<input type="checkbox"/>		
Woodland - Young	<input type="checkbox"/>		
Road (Major / Minor)	<input type="checkbox"/>		
Canal	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹		4	5
No. Standard tree / 50m		1	
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	2	Connections to woodland	2
Connections to ponds			
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
Protected species (add details to comments)		<input type="checkbox"/>	
Gaps as % of length		0	
At least 3 Woodland species (within 1m of hedge)		<input type="checkbox"/>	
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
Bark sap runs		<input type="checkbox"/>	
Major rot sites, any more than 15cm across		<input type="checkbox"/>	

Comments (Inc. Limitations & Protected species):

4m margin to E.
Native or trees present

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	22-06-20
Client:		OS Grid Reference:	
Hedge Reference:	136	Length (m):	150
Photo No:	20		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
Hedge has been in existence for 30 years or more		<input checked="" type="checkbox"/>	
Hedgerow Summary			
Average height of vegetation (m)	2.5	Average width of vegetation (m)	2.5
Side surveyed	<input checked="" type="checkbox"/>		
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
Shrubby with line of trees		<input type="checkbox"/>	
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
Untrimmed	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>
Tall & leggy	<input type="checkbox"/>		
Other		<input type="checkbox"/>	
Hedgerow Base Management: cut 81 grass margin			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
Improved Grass	<input type="checkbox"/>		
Woodland - Young	<input type="checkbox"/>		
Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>		
Canal	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			Av. 3
No. Standard tree / 50m	2		
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	3	Connections to woodland	2
Connections to ponds			
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
Protected species (add details to comments)		<input type="checkbox"/>	
Gaps as % of length		0	
At least 3 Woodland species (within 1m of hedge)		<input type="checkbox"/>	
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
Bark sap runs		<input type="checkbox"/>	
Major rot sites, any more than 15cm across		<input type="checkbox"/>	
Comments (Inc. Limitations & Protected species):			
Native Ash trees present 2m 81 grass margin			

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	22-06-20
Client:		OS Grid Reference:	
Hedge Reference:	137	Length (m):	300+
Photo No:	21		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)					
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>

Hedgerow Summary					
Average height of vegetation (m)	3	Average width of vegetation (m)	2.5	Side surveyed	E

Hedgerow Type					
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>	Shrubby with line of trees	<input type="checkbox"/>

Hedgerow Shape							
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>	Untrimmed	<input type="checkbox"/>	Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>	Other	<input type="checkbox"/>

Hedgerow Base Management: *cut back grass*

Adjacent land use / Management (can be more than one)					
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>	Improved Grass	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>	Woodland - Young	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>	Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>	Canal	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>	Other	

Woody species/ trees				
	<30m	>30m<100m	>100m <200m	>200m
Number of woody Species ¹				3
No. Standard tree / 50m				1
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)				Av. 3.6

Connections to hedges	3	Connections to woodland	2	Connections to ponds	
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Additional Criteria					
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>	Protected species (add details to comments)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>	Gaps as % of length	0
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>

Veteran Tree Features					
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>	Bark sap runs	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>	Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

couple of native Ash trees present

Grass margin = 3m

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

S:\Survey Sheets & Data templates\Hedgerow\Hedgerow reg\Hedge regs Survey Record Sheet

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	22-06-20
Client:		OS Grid Reference:	
Hedge Reference:	138	Length (m):	190
Photo No:	22		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>
Hedgerow Summary			
Average height of vegetation (m)	7	Average width of vegetation (m)	7.00-10.00
		Side surveyed	N
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>
Hedgerow Shape			
Trimmed & dense	<input type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Untrimmed	<input checked="" type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input checked="" type="checkbox"/>
		Other	<input type="checkbox"/>
Hedgerow Base Management: cut wood grass mow			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input checked="" type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
		Improved Grass	<input type="checkbox"/>
		Woodland - Young	<input type="checkbox"/>
		Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
		Canal	<input type="checkbox"/>
		Other	
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			4 3
No. Standard tree / 50m			0
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	3	Connections to woodland	2
		Connections to ponds	
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
		Gaps as % of length	0
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
		Bark sap runs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

Edge of tree belt
dry ditch on N side

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	22-06-20
Client:		OS Grid Reference:	
Hedge Reference:	139	Length (m):	300
Photo No:	23		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)

Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>
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Hedgerow Summary

Average height of vegetation (m)	4	Average width of vegetation (m)	2.5	Side surveyed	E
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Hedgerow Type

Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>
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Hedgerow Shape

Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: mow cut grass

Adjacent land use / Management (can be more than one)

Arable - crop <input checked="" type="checkbox"/>	Arable - Un-cropped margin <input type="checkbox"/>	Improved Grass <input checked="" type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees

	<30m	>30m<100m	>100m <200m	>200m			Average
Number of woody Species ¹				4	4	5	Av. 4.3
No. Standard tree / 50m							

Connectivity² (hedge connection = 1 pt, wood or pond connection = 2pts)

Connections to hedges	1	Connections to woodland	6	Connections to ponds	
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Additional Criteria

Bank ³ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length
Ditch ³ (Dry) <input type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features

Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

Narrow low field hedge to E
Field maple + Ash trees present

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	22-06-20
Client:		OS Grid Reference:	
Hedge Reference:	140	Length (m):	120
Photo No:	24		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>
Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	25
		Side surveyed	5
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Hedgerow Base Management: Cut <i>Un cut grass</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
		Improved Grass	<input type="checkbox"/>
		Woodland - Young	<input type="checkbox"/>
		Road (Major / Minor)	<input type="checkbox"/> / <input checked="" type="checkbox"/>
		Canal	<input type="checkbox"/>
		Other	
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			4 5
No. Standard tree / 50m			41
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	3	Connections to woodland	2
		Connections to ponds	
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input checked="" type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
		Gaps as % of length	0
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
		Bark sap runs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

narrow 1m SI grass margin

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	22-06-20
Client:		OS Grid Reference:	
Hedge Reference:	141	Length (m):	200
Photo No:	25		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>
Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	25
		Side surveyed	S
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Hedgerow Base Management: cut <i>cut 50 margin</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
		Improved Grass	<input type="checkbox"/>
		Woodland - Young	<input type="checkbox"/>
		Road (Major / Minor)	<input type="checkbox"/> / <input checked="" type="checkbox"/>
		Canal	<input type="checkbox"/>
		Other	
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			5 3 4 Av. 4
No. Standard tree / 50m			0
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	
		Connections to ponds	
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input checked="" type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
		Gaps as % of length	0
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
		Bark sap runs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>
Comments (Inc. Limitations & Protected species):			
<i>In margin at base</i>			

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	26-05-20
Client:		OS Grid Reference:	
Hedge Reference:	142	Length (m):	300
Photo No:	1		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)							
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more	<input type="checkbox"/>		
Hedgerow Summary							
Average height of vegetation (m)	2	Average width of vegetation (m)	2	Side surveyed		2	
Hedgerow Type							
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>	Shrubby with line of trees	<input type="checkbox"/>		
Hedgerow Shape							
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>	Untrimmed	<input type="checkbox"/>	Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>	Other	<input type="checkbox"/>
Hedgerow Base Management: <i>cut muck grass</i>							
Adjacent land use / Management (can be more than one)							
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>	Improved Grass	<input type="checkbox"/>		
Semi-improved Grass	<input checked="" type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>	Woodland - Young	<input type="checkbox"/>		
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>	Road (Major / Minor)	<input type="checkbox"/>	<input type="checkbox"/>	
Track / Footpath / Bridleway	<input type="checkbox"/>	Rail	<input type="checkbox"/>	Canal	<input type="checkbox"/>		
River / Stream	<input type="checkbox"/>	Lake / Pond	<input type="checkbox"/>	Other	<input type="checkbox"/>		
Woody species/ trees							
	<30m	>30m<100m	>100m <200m	>200m			
Number of woody Species ¹				3	4	2	Av. 3.6
No. Standard tree / 50m				0			
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)							
Connections to hedges	4	Connections to woodland	2	Connections to ponds			
Additional Criteria							
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>	Protected species (add details to comments)	<input type="checkbox"/>		
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>	Gaps as % of length	0		
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>		
Veteran Tree Features							
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>	Bark sap runs	<input type="checkbox"/>		
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>	Major rot sites, any more than 15cm across	<input type="checkbox"/>		

Comments (Inc. Limitations & Protected species):
 Woodland at W end
 Wildflower heathland along N edge

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.
² Connections within 10m in line with hedge.
³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	26-06-20
Client:		OS Grid Reference:	
Hedge Reference:	143	Length (m):	100
Photo No:	2		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>		
Hedgerow Summary			
Average height of vegetation (m)	2	Average width of vegetation (m)	3
Side surveyed			N
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Hedgerow Base Management: <i>cut mat grass</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
		Improved Grass	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
		Woodland - Young	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
		Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
		Canal	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
		Other	
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹		2	3
No. Standard tree / 50m		0	
			>200m
			Av. 2.5
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	4	Connections to woodland	4
		Connections to ponds	
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
		Gaps as % of length	0
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
		Bark sap runs	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>
Comments (Inc. Limitations & Protected species):			
<i>0m margin at N side</i>			

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	26-06-20
Client:		OS Grid Reference:	
Hedge Reference:	144	Length (m):	300
Photo No:	3		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
Hedge has been in existence for 30 years or more		<input checked="" type="checkbox"/>	
Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	3
Side surveyed	E		
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
Shrubby with line of trees		<input type="checkbox"/>	
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
Untrimmed	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>
Tall & leggy	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Hedgerow Base Management: cut <i>cut grass</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
Improved Grass	<input type="checkbox"/>		
Woodland - Young	<input type="checkbox"/>		
Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>		
Canal	<input type="checkbox"/>		
Other	<input type="checkbox"/>		
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			4 5 6 Av. 5
No. Standard tree / 50m			0
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	2	Connections to woodland	4
Connections to ponds			
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
Protected species (add details to comments)		<input type="checkbox"/>	
Gaps as % of length		0	
At least 3 Woodland species (within 1m of hedge)		<input type="checkbox"/>	
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
Bark sap runs		<input type="checkbox"/>	
Major rot sites, any more than 15cm across		<input type="checkbox"/>	
Comments (Inc. Limitations & Protected species):			
<i>Low S1 grass margin at base</i>			

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	26-06-20
Client:		OS Grid Reference:	
Hedge Reference:	145	Length (m):	200
Photo No:	4		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>
Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	3
		Side surveyed	N
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Hedgerow Base Management: Cut mat grass			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input checked="" type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
		Canal	<input type="checkbox"/>
		Other	
Improved Grass			
Woodland - Young			
Road (Major / Minor)			
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			2 4 4
No. Standard tree / 50m			0
Average			
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	2	Connections to woodland	2
		Connections to ponds	
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
		Gaps as % of length	0
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
		Bark sap runs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

Forms N edge of woodland
wildflower headland to E end

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	26-06-20
Client:		OS Grid Reference:	
Hedge Reference:	146	Length (m):	350
Photo No:	5		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
Hedge has been in existence for 30 years or more		<input checked="" type="checkbox"/>	
Hedgerow Summary			
Average height of vegetation (m)	2.5	Average width of vegetation (m)	3
Side surveyed		5	
Hedgerow Type			
Shrubby hedgerow	<input type="checkbox"/>	Line of trees	<input type="checkbox"/>
Shrubby with line of trees		<input checked="" type="checkbox"/>	
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
Untrimmed	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>
Tall & leggy	<input type="checkbox"/>	Other	
Other			
Hedgerow Base Management: <i>cut wheat grass margin</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
Improved Grass	<input checked="" type="checkbox"/>	Woodland - Young	<input type="checkbox"/>
Road (Major / Minor)		<input type="checkbox"/> / <input type="checkbox"/>	
Canal		<input type="checkbox"/>	
Other			
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			3 3 5 Av. 3.6
No. Standard tree / 50m			1
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	2	Connections to woodland	2
Connections to ponds			
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
Protected species (add details to comments)		Gaps as % of length 10	
At least 3 Woodland species (within 1m of hedge)		<input type="checkbox"/>	
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
Bark sap runs		<input type="checkbox"/>	
Major rot sites, any more than 15cm across		<input type="checkbox"/>	

Comments (Inc. Limitations & Protected species):

Remove Ash trees present + willow

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	26-06-70
Client:		OS Grid Reference:	
Hedge Reference:	147	Length (m):	80
Photo No:	6		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)					
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>

Hedgerow Summary					
Average height of vegetation (m)	6	Average width of vegetation (m)	3	Side surveyed	E

Hedgerow Type					
Shrubby hedgerow	<input type="checkbox"/>	Line of trees	<input type="checkbox"/>	Shrubby with line of trees	<input checked="" type="checkbox"/>

Hedgerow Shape							
Trimmed & dense	<input type="checkbox"/>	Intensively managed	<input type="checkbox"/>	Untrimmed	<input type="checkbox"/>	Tall & leggy	<input checked="" type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>	Other	<input type="checkbox"/>

Hedgerow Base Management: *cut under signs margin*

Adjacent land use / Management (can be more than one)					
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>	Improved Grass	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>	Woodland - Young	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input checked="" type="checkbox"/>	Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>	Canal	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>	Other	

Woody species/ trees				
	<30m	>30m<100m	>100m <200m	>200m
Number of woody Species ¹		5		
No. Standard tree / 50m				Av. 5

Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)					
Connections to hedges	2	Connections to woodland	2	Connections to ponds	

Additional Criteria					
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>	Protected species (add details to comments)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>	Gaps as % of length	0
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>

Veteran Tree Features					
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>	Bark sap runs	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>	Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):
Hedgerow forms edge of woodland

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	26-06-20
Client:		OS Grid Reference:	
Hedge Reference:	148	Length (m):	250
Photo No:	7		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>
Hedgerow Summary			
Average height of vegetation (m)	2.5	Average width of vegetation (m)	3
		Side surveyed	N
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Untrimmed	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
		Recently laid	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Hedgerow Base Management: Out <i>went 51 grass margin</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Improved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
		Woodland - Mature	<input type="checkbox"/>
		Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>
		Canal	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>
		Other	
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			4
No. Standard tree / 50m			5
			5
			Av. 4.6
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges		Connections to woodland	1
		Connections to ponds	
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
		Gaps as % of length	0
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
		Bark sap runs	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>
Comments (Inc. Limitations & Protected species):			
1 Ash tree present			

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	26-06-20
Client:		OS Grid Reference:	
Hedge Reference:	149	Length (m):	100
Photo No:	8		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)					
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>

Hedgerow Summary					
Average height of vegetation (m)	3	Average width of vegetation (m)	2	Sida surveyed	W

Hedgerow Type					
Shrubby hedgerow	<input type="checkbox"/>	Line of trees	<input type="checkbox"/>	Shrubby with line of trees	<input checked="" type="checkbox"/>

Hedgerow Shape							
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>	Untrimmed	<input type="checkbox"/>	Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>	Other	<input type="checkbox"/>

Hedgerow Base Management: *not grazed*

Adjacent land use / Management (can be more than one)					
Arable - crop	<input type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>	Improved Grass	<input checked="" type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>	Woodland - Young	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>	Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail	<input type="checkbox"/>	Canal	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>	Other	

Woody species/ trees					
	<30m	>30m<100m	>100m <200m	>200m	Av.
Number of woody Species ¹			2	4	3
No. Standard tree / 50m					

Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)					
Connections to hedges	2	Connections to woodland		Connections to ponds	

Additional Criteria					
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>	Protected species (add details to comments)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>	Gaps as % of length	10
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees	<input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>

Veteran Tree Features					
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>	Bark sap runs	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>	Major rot sites, any more than 15cm across	<input type="checkbox"/>

Comments (Inc. Limitations & Protected species):
Horse + cattle grazing on either side

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	26-06-20
Client:		OS Grid Reference:	
Hedge Reference:	150	Length (m):	100
Photo No:	7		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>
Hedgerow Summary			
Average height of vegetation (m)	3	Average width of vegetation (m)	3
		Side surveyed	W
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>
Hedgerow Shape			
Trimmed & dense	<input type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Hedgerow Base Management: <i>cut down to W - SI margin to E</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/>	Lake / Pond	<input type="checkbox"/>
		Improved Grass	<input checked="" type="checkbox"/>
		Woodland - Young	<input type="checkbox"/>
		Road (Major / Minor)	<input type="checkbox"/>
		Canal	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹		2	3
No. Standard tree / 50m		2	
Av. 2.5			
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	1	Connections to woodland	
		Connections to ponds	
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input type="checkbox"/>	Veteran trees	<input type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
		Gaps as % of length	0
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>
Veteran Tree Features			
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs	<input type="checkbox"/>
		Bark sap runs	<input type="checkbox"/>
		Major rot sites, any more than 15cm across	<input type="checkbox"/>
Comments (Inc. Limitations & Protected species):			
<i>Mature Horse chestnut trees present</i>			

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	26-06-20
Client:		OS Grid Reference:	
Hedge Reference:	151	Length (m):	350
Photo No:	10		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)

Hedge >20m or <20 m but junctions at both ends <input checked="" type="checkbox"/>	Not curtilage of residential <input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more <input checked="" type="checkbox"/>
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Hedgerow Summary

Average height of vegetation (m)	3	Average width of vegetation (m)	2.5	Side surveyed	5
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Hedgerow Type

Shrubby hedgerow <input checked="" type="checkbox"/>	Line of trees <input type="checkbox"/>	Shrubby with line of trees <input type="checkbox"/>
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Hedgerow Shape

Trimmed & dense <input checked="" type="checkbox"/>	Intensively managed <input type="checkbox"/>	Untrimmed <input type="checkbox"/>	Tall & leggy <input type="checkbox"/>
Untrimmed, with outgrowth <input type="checkbox"/>	Recently laid <input type="checkbox"/>	Recently coppiced <input type="checkbox"/>	Other <input type="checkbox"/>

Hedgerow Base Management: *Old wall st. field margin*

Adjacent land use / Management (can be more than one)

Arable - crop <input checked="" type="checkbox"/>	Arable - Un-cropped margin <input type="checkbox"/>	Improved Grass <input type="checkbox"/>
Semi-improved Grass <input type="checkbox"/>	Unimproved Grass <input type="checkbox"/>	Woodland - Young <input type="checkbox"/>
Woodland - Semi-mature <input type="checkbox"/>	Woodland - Mature <input type="checkbox"/>	Road (Major / Minor) <input type="checkbox"/> / <input checked="" type="checkbox"/>
Track / Footpath / Bridleway <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/>	Rail <input type="checkbox"/>	Canal <input type="checkbox"/>
River / Stream <input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond <input type="checkbox"/> / <input type="checkbox"/>	Other <input type="checkbox"/>

Woody species/ trees

	<30m	>30m<100m	>100m <200m	>200m		
Number of woody Species ¹				2	3	3
No. Standard tree / 50m						Av. 2.6

Connectivity² (hedge connection = 1 pt, wood or pond connection = 2pts)

Connections to hedges	2	Connections to woodland	2	Connections to ponds	2
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Additional Criteria

Bank ³ (inc height) <input type="checkbox"/>	Parallel hedge (within 15m) <input checked="" type="checkbox"/>	Protected species (add details to comments) <input type="checkbox"/>
Ditch ³ (wet) <input type="checkbox"/>	Black poplar, lime or service tree <input type="checkbox"/>	Gaps as % of length
Ditch ³ (Dry) <input checked="" type="checkbox"/>	Veteran trees <input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge) <input type="checkbox"/>

Veteran Tree Features

Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter <input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long <input type="checkbox"/>	Bark sap runs <input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long <input type="checkbox"/>	Hollow trunks or hollow major limbs <input type="checkbox"/>	Major rot sites, any more than 15cm across <input type="checkbox"/>

Comments (Inc. Limitations & Protected species):

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

Hedgerow Survey Record			
Project Code:		Surveyor Name:	AS
Site Name:		Date:	17.06.2020
Client:		OS Grid Reference:	
Hedge Reference:	W152	Length (m):	200
Photo No:	11		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)			
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>
		Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>
Hedgerow Summary			
Average height of vegetation (m)	2	Average width of vegetation (m)	3
		Side surveyed	W
Hedgerow Type			
Shrubby hedgerow	<input checked="" type="checkbox"/>	Line of trees	<input type="checkbox"/>
		Shrubby with line of trees	<input type="checkbox"/>
Hedgerow Shape			
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>
		Untrimmed	<input type="checkbox"/>
		Recently coppiced	<input type="checkbox"/>
		Tall & leggy	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Hedgerow Base Management: <i>cut uncut grass</i>			
Adjacent land use / Management (can be more than one)			
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>
Track / Footpath / Bridleway	<input checked="" type="checkbox"/>	Rail	<input type="checkbox"/>
River / Stream	<input type="checkbox"/>	Lake / Pond	<input type="checkbox"/>
		Canal	<input type="checkbox"/>
		Other	<input type="checkbox"/>
Woody species/ trees			
	<30m	>30m<100m	>100m <200m
Number of woody Species ¹			3 3 4 Av. 3.3
No. Standard tree / 50m			0
Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)			
Connections to hedges	5	Connections to woodland	
		Connections to ponds	
Additional Criteria			
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>
		Protected species (add details to comments)	<input type="checkbox"/>
		Gaps as % of length	0
		At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>

Veteran Tree Features		
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long
Tears, splits, scars, lightning strikes more than 30 cm long	<input type="checkbox"/>	Hollow trunks or hollow major limbs
		Bark sap runs
		Major rot sites, any more than 15cm across

Comments (Inc. Limitations & Protected species):

*steep ditch to W
steep bank to E. in margin 2m*

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third.

² Connections within 10m in line with hedge

³ Along at least half length of hedgerow

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Hedgerow Survey Record			
Project Code:	2090.52	Surveyor Name:	AS
Site Name:	Newport Pagnell	Date:	15-06-2020
Client:	153	OS Grid Reference:	
Hedge Reference:	82 128	Length (m):	400m
Photo No:	1		

Hedgerow Criteria (If hedge fulfils either criteria above and is not curtilage, proceed)					
Hedge >20m or <20 m but junctions at both ends	<input checked="" type="checkbox"/>	Not curtilage of residential	<input checked="" type="checkbox"/>	Hedge has been in existence for 30 years or more	<input checked="" type="checkbox"/>

Hedgerow Summary					
Average height of vegetation (m)	2	Average width of vegetation (m)	2	Side surveyed	S

Hedgerow Type					
Shrubby hedgerow	<input type="checkbox"/>	Line of trees	<input type="checkbox"/>	Shrubby with line of trees	<input checked="" type="checkbox"/>

Hedgerow Shape							
Trimmed & dense	<input checked="" type="checkbox"/>	Intensively managed	<input type="checkbox"/>	Untrimmed	<input type="checkbox"/>	Tall & leggy	<input type="checkbox"/>
Untrimmed, with outgrowth	<input type="checkbox"/>	Recently laid	<input type="checkbox"/>	Recently coppiced	<input type="checkbox"/>	Other	<input type="checkbox"/>

Hedgerow Base Management: ~~vacant~~ Vacant field margin

Adjacent land use / Management (can be more than one)					
Arable - crop	<input checked="" type="checkbox"/>	Arable - Un-cropped margin	<input type="checkbox"/>	Improved Grass	<input type="checkbox"/>
Semi-improved Grass	<input type="checkbox"/>	Unimproved Grass	<input type="checkbox"/>	Woodland - Young	<input type="checkbox"/>
Woodland - Semi-mature	<input type="checkbox"/>	Woodland - Mature	<input type="checkbox"/>	Road (Major / Minor)	<input type="checkbox"/> / <input type="checkbox"/>
Track / Footpath / Bridleway	<input checked="" type="checkbox"/> / <input checked="" type="checkbox"/> / <input checked="" type="checkbox"/>	Rail	<input type="checkbox"/>	Canal	<input type="checkbox"/>
River / Stream	<input type="checkbox"/> / <input type="checkbox"/>	Lake / Pond	<input type="checkbox"/> / <input type="checkbox"/>	Other	

Woody species/ trees				
	<30m	>30m<100m	>100m <200m	>200m
Number of woody Species ¹				3 3 5 Av. 3.6
No. Standard tree / 50m				1

Connectivity ² (hedge connection = 1 pt, wood or pond connection = 2pts)					
Connections to hedges	2	Connections to woodland	2	Connections to ponds	

Additional Criteria					
Bank ³ (inc height)	<input type="checkbox"/>	Parallel hedge (within 15m)	<input type="checkbox"/>	Protected species (add details to comments)	<input type="checkbox"/>
Ditch ³ (wet)	<input type="checkbox"/>	Black poplar, lime or service tree	<input type="checkbox"/>	Gaps as % of length	5%
Ditch ³ (Dry)	<input checked="" type="checkbox"/>	Veteran trees	<input type="checkbox"/>	At least 3 Woodland species (within 1m of hedge)	<input type="checkbox"/>

Veteran Tree Features					
Dead wood attached to the tree, any piece more than 1m long and 8cm in diameter	<input checked="" type="checkbox"/>	Loose split, missing and dead bark, any piece more than 30cm long	<input checked="" type="checkbox"/>	Bark sap runs	<input type="checkbox"/>
Tears, splits, scars, lightning strikes more than 30 cm long	<input checked="" type="checkbox"/>	Hollow trunks or hollow major limbs	<input checked="" type="checkbox"/>	Major rot sites, any more than 15cm across	<input checked="" type="checkbox"/>

Comments (Inc. Limitations & Protected species):
 Mature Ash + P. Oak trees present
 Arable land on both sides. 4m SI grass margin to S, 1m SI grass margin to N.

¹ If hedge < 30m - count woody spp along entire length. If >30m <100m count woody spp in central 30m section. If >100m <200m divide hedge in two and count woody species in central 30m section of each half. If hedge > 200m divide hedge into 3 and count woody species in central 30m section of each third
² Connections within 10m in line with hedge
³ Along at least half length of hedgerow

S:\Survey Sheets & Data templates\Hedgerow\Hedgerow regs\Hedge regs Survey Record Sheet

+ cherry plum



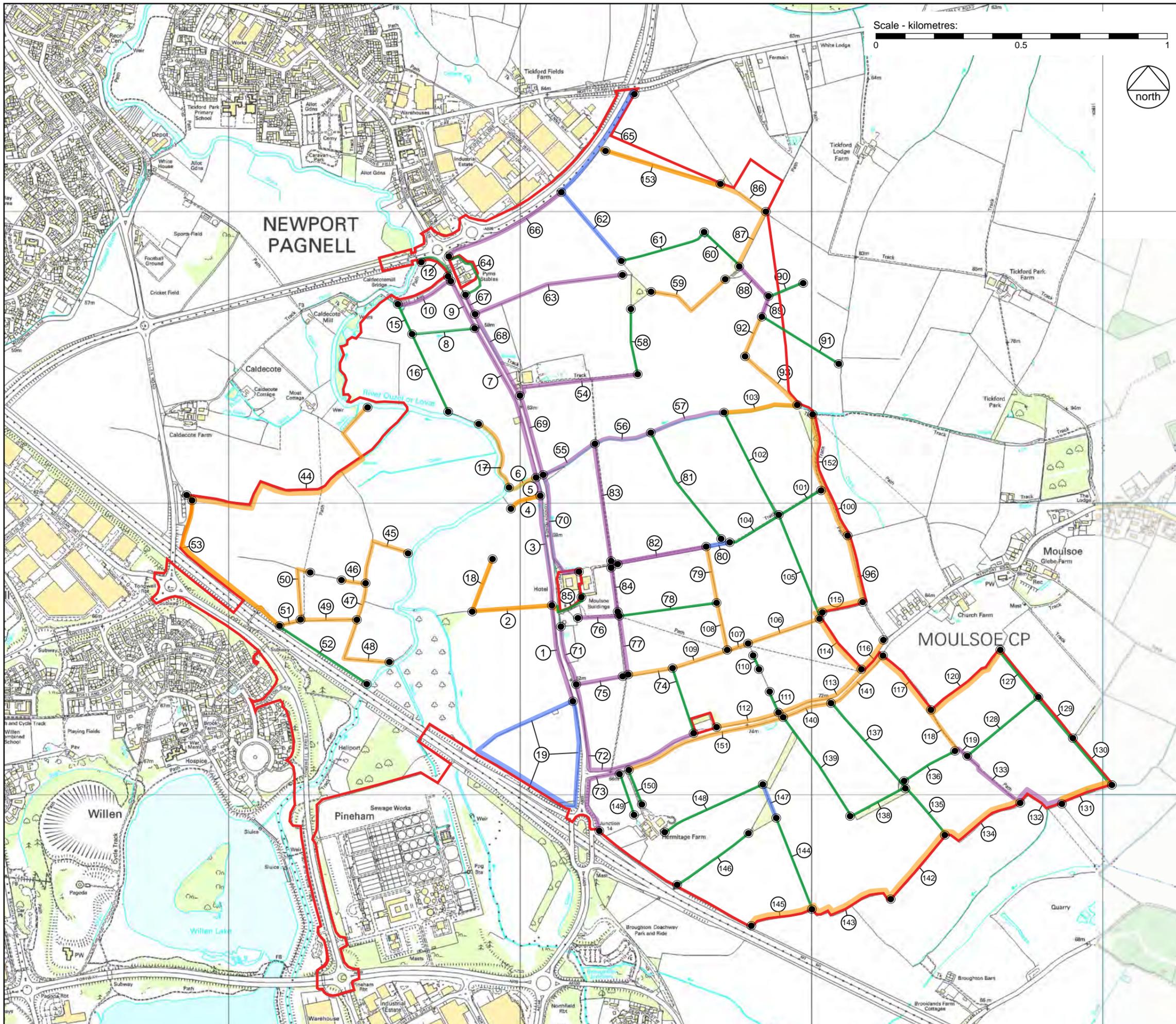
Woody Species	30m intervals			Woody Species	30m intervals		
	1	2	3		1	2	3
Alder (<i>Alnus glutinosa</i>)				Hawthorn, midland (<i>Crataegus laevigata</i>)			
Apple, crab (<i>Malus sylvestris</i>)				Hazel (<i>Corylus avellana</i>)			
Ash (<i>Fraxinus excelsior</i>)				Holly (<i>Ilex aquifolium</i>)			
Aspen (<i>Populus tremula</i>)			✓	Hornbeam (<i>Carpinus betulus</i>)			
Beech (<i>Fagus sylvatica</i>)				Juniper, common (<i>Juniperus communis</i>)			
Birch, downy (<i>Betula pubescens</i>)				Lime, large-leaved (<i>Tilia platyphyllos</i>)			
Birch, silver (<i>Betula pendula</i>)				Lime, small-leaved (<i>Tilia cordata</i>)			
Black-poplar (<i>Populus nigra</i>)				Maple, field (<i>Acer campestre</i>)			✓
Blackthorn (<i>Prunus spinosa</i>)	✓	✓		Mezereon (<i>Daphne mezereum</i>)			
Box (<i>Buxus sempervirens</i>)				Oak, pedunculate (<i>Quercus robur</i>)	✓		
Broom (<i>Cytisus scoparius</i>)				Oak, sessile (<i>Quercus petraea</i>)			
Buckthorn (<i>Rhamnus cathartica</i>)				Osier (<i>Salix viminalis</i>)			
Buckthorn, alder (<i>Frangula alnus</i>)				Pear, Plymouth (<i>Pyrus cordata</i>)			
Butcher's-broom (<i>Ruscus aculeatus</i>)				Pear, wild (<i>Pyrus pyraster</i>)			
Cherry, bird (<i>Prunus padus</i>)				Poplar, grey (<i>Populus x canescens</i>)			
Cherry, wild (<i>Prunus avium</i>)				Poplar, white (<i>Populus alba</i>)			✓
Cotoneaster, wild (<i>Cotoneaster integerrimus</i>)				Privet, wild (<i>Ligustrum vulgare</i>)			
Currant, downy (<i>Ribes spicatum</i>)				Rose (<i>Rosa species</i>)		✓	✓
Currant, mountain (<i>Ribes alpinum</i>)				Rowan (<i>Sorbus aucuparia</i>)			
Dogwood (<i>Cornus sanguinea</i>)				Sea-buckthorn (<i>Hippophae rhamnoides</i>)			
Elder (<i>Sambucus nigra</i>)				Service-tree, wild (<i>Sorbus torminalis</i>)			
Elm (<i>Ulmus species</i>)				Spindle (<i>Euonymus europaeus</i>)			
Gooseberry (<i>Ribes uva-crispa</i>)				Spurge-laurel (<i>Daphne laureola</i>)			
Gorse (<i>Ulex europaeus</i>)				Walnut (<i>Juglans regia</i>)			
Gorse, dwarf (<i>Ulex minor</i>)				Wayfaring-tree (<i>Viburnum lantana</i>)			
Gorse, western (<i>Ulex gallii</i>)				Whitebeam (<i>Sorbus species</i>)			
Gelder rose (<i>Viburnum opulus</i>)				Willow (<i>Salix species</i>)			
Hawthorn (<i>Crataegus monogyna</i>)	✓	✓	✓	Yew (<i>Taxus baccata</i>)			

Woodland Species	30m Intervals			Woodland Species	30m Intervals		
	1	2	3		1	2	3
Barren strawberry (<i>Potentilla sterilis</i>)				Nettle-leaved bell-flower (<i>Campanula trachelium</i>)			
Bluebell (<i>Hyacinthoides non-scriptus</i>)				Oxlip (<i>Primula elatior</i>)			
Broad buckler fern (<i>Dryopteris dilatata</i>)				Pignut (<i>Conopodium majus</i>)			
Broad-leaved helleborine (<i>Epipactis helleborine</i>)				Primrose (<i>Primula vulgaris</i>)			
Bugle (<i>Ajuga reptans</i>)				Ramsons (<i>Allium ursinum</i>)			
Common cow-wheat (<i>Melampyrum pratense</i>)				Sanicle (<i>Sanicula europaea</i>)			
Common dog violet (<i>Viola riviniana</i>)				Scaly male-fern (<i>Dryopteris affinis</i>)			
Common polypody (<i>Polypodium vulgare</i>)				Small cow-wheat (<i>Melampyrum sylvaticum</i>)			
Dog's mercury (<i>Mercurialis perennis</i>)				Soft shield fern (<i>Polystichum setiferum</i>)			
Early dog violet (<i>Viola reichenbachiana</i>)				Sweet violet (<i>Viola odorata</i>)			
Early purple orchid (<i>Orchis mascula</i>)				Toothwort (<i>Lathraea squamaria</i>)			
Enchanter's nightshade (<i>Circaea lutetiana</i>)				Tormentil (<i>Potentilla erecta</i>)			
Giant fescue (<i>Festuca gigantea</i>)				Wild strawberry (<i>Fragaria vesca</i>)			
Goldlocks buttercup (<i>Ranunculus auricomus</i>)				Wood anemone (<i>Anemone nemorosa</i>)			
Great bell-flower (<i>Campanula latifolia</i>)				Wood avens/Herb bennet (<i>Geum urbanum</i>)			
Greater wood-rush (<i>Luzula sylvatica</i>)				Wood false-brome (<i>Brachypodium sylvaticum</i>)			
Hairy brome (<i>Bromus ramosus</i>)				Wood horsetail (<i>Equisetum sylvaticum</i>)			
Hairy woodrush (<i>Luzula pilosa</i>)				Wood meadow-grass (<i>Poa nemoralis</i>)			
Hard fern (<i>Blechnum spicant</i>)				Wood melick (<i>Melica uniflora</i>)			
Hard shield fern (<i>Polystichum aculeatum</i>)				Wood millet (<i>Milium effusum</i>)			
Hart's tongue (<i>Asplenium scolopendrium</i>)				Wood sage (<i>Teucrium scorodonia</i>)			
Heath bedstraw (<i>Galium saxatile</i>)				Wood sedge (<i>Carex sylvatica</i>)			
Herb pans (<i>Paris quadrifolia</i>)				Wood sorrel (<i>Oxalis acetosella</i>)			
Herb-robert (<i>Geranium robertianum</i>)				Wood speedwell (<i>Veronica montana</i>)			
Lady fern (<i>Athyrium filix-femina</i>)				Wood spurge (<i>Euphorbia amygdaloides</i>)			
Lords-and-ladies (<i>Arum maculatum</i>)				Woodruff (<i>Galium odoratum</i>)			
Male fern (<i>Dryopteris filix-mas</i>)				Yellow archangel (<i>Lamium galeobdolon</i>)			
Moschatel (<i>Adoxa moschatellina</i>)				Yellow pimpernel (<i>Lysimachia nemorum</i>)			
Narrow buckler-fern (<i>Dryopteris carthusiana</i>)							

Ground Flora (% Score)	Quadrat 1			Ground Flora (% Score)	Quadrat 2		
	1	2	3		1	2	3
Nettle	50	90	30	Rough meadowgrass	90	20	30
Bramble	30	10	10	Soft brome	20	20	30
False oatgrass	50	10	90	Bramble	10	5	-
Soft brome	20	-	10	Ribwort Plantain	5	-	-
Hogweed	20	30	40	Cocksfoot	10	20	-
Cocksfoot	10	-	-	Perennial Ryegrass	10	-	20
Wood Dock	10	-	-	Crested Dogtail	10	-	-
Cleavers	5	50	-	Red Fescue	30	-	-
R smooth meadowgrass	10	-	-	Hogweed	-	60	60
Great willowherb	-	20	-	Field Bindweed	10	20	-
Field Hedge Bindweed	-	10	40				
Cultured Grasses	-	45	-				
Barren Brome	-	-	5				

APPENDIX C

Hedgerow Survey Results Plan



KEY

- Site boundary
- Hedgerow node
- 107 Hedgerow number*

Hedgerow assessment under Hedgerow Regulations (1997)

- Hedgerow important under Historical & Archaeological Criteria (Paragraphs 1-5)
- Hedgerow important under Wildlife & Landscape Criteria (Paragraphs 6-10)
- Hedgerow important under both Historical & Archaeological and Wildlife & Landscape Criteria (Paragraphs 1-10)
- Hedgerow non-important

*Sequential numbers not shown on the plan relate to off-site hedgerows which are not included in the current assessment

CLIENT:
St James

PROJECT:
Milton Keynes East

TITLE:
Hedgerow Survey Results Plan

SCALE AT A3: 1:12,500 DATE: March 2021

2090.52 / 27

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Landscape Architecture Masterplanning Ecology **hda**

Appendix F5

Botanical Survey Technical Note

Site: Milton Keynes East
Client: St James
Project ref: 2090.52
Date: February 2020

ASSESSMENT OF GRASSLAND HABITAT WEST OF THE RIVER OUZEL AT MILTON KEYNES EAST

The table below provides the results of a Phase 2 botanical assessment of grassland habitat associated with two grassland fields located to the west of the River Ouzel within 362ha of land proposed for development at Milton Keynes East, previously identified as relatively species-rich semi-improved neutral grassland during Phase 1 Habitat Survey work for the Ecological Appraisal (HDA, 2020). The remainder of the grassland within the wider site comprises either heavily grazed species-poor semi-improved grassland, heavily grazed improved grassland or amenity grassland and has therefore been excluded from the detailed assessment. This technical note has been prepared to present the findings of the Phase 2 botanical survey and provide an assessment of its likely nature conservation value.

The survey took the form of a walkover of the grassland fields following the approach given in Natural England's Technical Information Note TIN110 for assessment of whether grassland is a Biodiversity Action Plan (BAP) Priority Habitat (or Habitat of Principal Importance under the 2006 NERC Act). The species present were recorded together with their abundance and general distribution within each field/area. A full list of plant species recorded at the site is included in *Appendix B*. Regular stop samples were made to ensure that smaller species were not being overlooked and to record cover of rye-grasses and White Clover, cover of wildflowers and sedges (excluding White Clover, Creeping Buttercup and injurious weeds); and total number of species within 1m² samples, these results are provided in the table below. Locations at which 1m² samples were taken are shown on the Botanical Survey Quadrat Locations plan accompanying this technical note, provided in *Appendix A*. Additional observations in relation to aspect, soil type and drainage were also made. Consideration was also given to grassland assemblage in line with the National Vegetation Classification (NVC) (Rodwell, 1992). The field survey was led by Hayley Snowdon GradCIEEM, Adrian Meurer MCIEEM and Shannon Davies of Hankinson Duckett Associates on the 29th May 2019 and 20th August 2019. Weather conditions were overcast with occasional showers during the first survey and were generally warm, dry and sunny on the second survey. No significant limitations were encountered during the survey; all relevant areas were accessible and the survey was carried out at optimal times of year to allow assessment of the plant assemblages of the grassland habitats subject to survey.

The information relating to the grassland gathered through the field survey was assessed in two ways. Firstly the conservation status of individual species was assessed by reference to the following criteria:

- Species specially protected under Annex I and IV of the EC Habitats Directive (as transposed into UK law by the 2019 Conservation of Habitats and Species (Amendment) (EU Exit) Regulations);
- Species specially protected under Schedule 8 of the 1981 Wildlife and Countryside Act (as amended);
- Species included on 'A Vascular Plant Red List for England' (BSBI, 2014); and
- Species listed under Section 41 of the 2006 NERC Act and included on the UK Biodiversity Action Plan.

Secondly, the species assemblage of the grassland was compared to Natural England guidance on the assessment of whether the grassland qualifies as BAP Priority Habitat as provided in Technical Information Note 110 (TIN110) (Natural England, 2012). Appendix 2 of the guidance provides a sequential approach to the assessment of the quality of grassland habitat based on the balance of plant species/ groups and the presence/ absence of species indicative of habitat quality. Consideration was also given to grassland assemblage in line with the NVC (Rodwell, 1992).

Details of the survey and assessment of each area are given below. Quadrat locations are shown on the 'Botanical Survey Quadrat Locations' plan accompanying this technical note. In summary, no protected or notable plant species were recorded during the survey. Using the criteria set out in TIN110 the grassland within the site has been identified as being dominated by 'Species-poor Semi-natural' grassland with low species richness with localised areas of Species-poor Semi-improved grassland, Semi-natural Grassland of Moderate Species-richness and Species-poor Improved grassland. The area of grassland surveyed therefore does not meet criteria for consideration as Biodiversity Action Plan (BAP) quality grassland or for consideration as a 'Habitat of Principal Importance' under Section 41 of the 2006 Natural Environment and Rural Communities (NERC) Act. Notwithstanding this, the grassland is relatively species rich in comparison to that occurring elsewhere in the site and in some areas has characteristics of MG4 *Alopecurus pratensis* - *Sanguisorba officinalis* grassland community, which is a regionally characteristic grassland type of floodplain grassland managed by cutting with aftermath grazing.

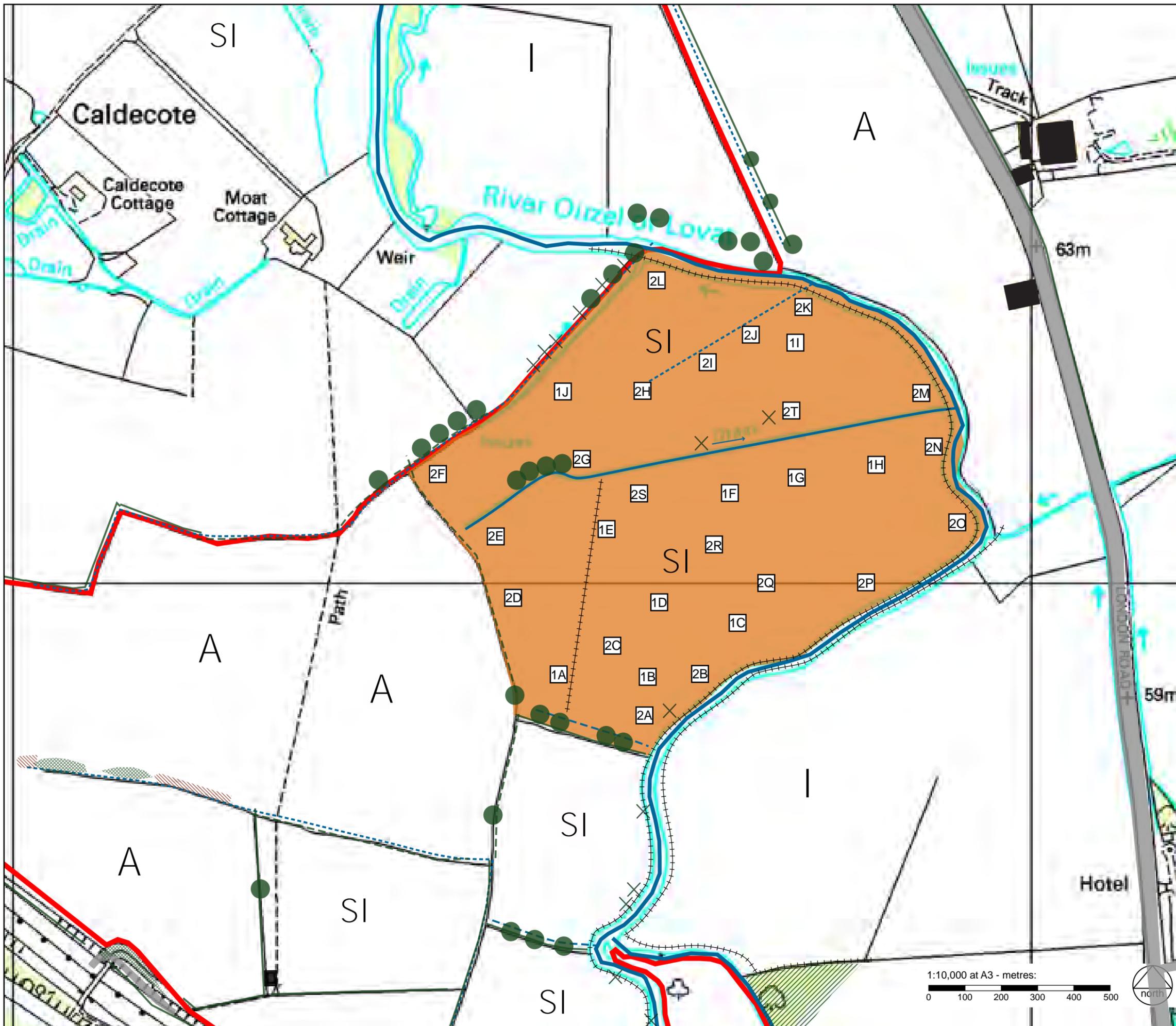
In conclusion, the grassland is not a high quality representative of the MG4 *Alopecurus pratensis* - *Sanguisorba officinalis* grassland community, nor qualifies for consideration as a BAP Priority Habitat or a 2006 NERC Act Habitat of Principal Importance. Notwithstanding this, the grassland is relatively species rich in comparison to that occurring elsewhere in the site and also appears to have potential to be restored to a higher quality. The grassland is subsequently considered as a whole to be of moderate local value in its own right.

ASSESSMENT	<p>BAP/ NERC Act Status: The area of grassland surveyed is classified as 'Species Poor Semi-Natural grassland' under Key 2b of TIN110 and therefore does not qualify for consideration as Biodiversity Action Plan (BAP) quality grassland or for consideration as a 'Habitat of Principal Importance' under Section 41 of the 2006 Natural Environment and Rural Communities (NERC) Act.</p>
	<p>Presence of Notable Species: All species recorded are identified as being of 'Least Concern' in the BSBI's 2014 'A Vascular Plant Red List for England'. No BAP or Species of Principal Importance were recorded. No protected plant species were recorded.</p>
	<p>Notes on flora: The botanical interest of the grassland is relatively limited and the grassland is generally heavily dominated by common grasses (notably Red Fescue and Yorkshire Fog). Bryophytes are scarce and lichens are absent. The majority of quadrats met 'SPSN' (Species-poor Semi-natural) level with low species richness. Quadrats supporting SNMR (Semi-natural Grassland of Moderate Species Richness), SPSI (Species-poor Semi-improved grassland) and I (Species-poor improved grassland) were also recorded across the survey area. Species diversity ranged from poor <9 spp/m² to moderately species-rich 9-15 spp/m² for these habitat types. No areas sampled met 'Species Rich' criteria. Seven indicators of semi-improved grassland were identified within the sward during the quadrat surveys, with 5 of these species recorded as 'occasional'. Two indicator species of lowland meadow were present, although both species were recorded as 'rare' within the sward. Notwithstanding this, the grassland is relatively species rich in comparison to that occurring elsewhere in the site and in some areas has characteristics of MG4 <i>Alopercus pratensis</i> - <i>Sanguisorba officinalis</i> grassland community, which is a regionally characteristic grassland type typical of floodplain grassland managed by cutting with aftermath grazing. Species-richness is generally greatest on higher ground along the western margin of the fields where evidence of ridge and furrow is present.</p>
	<p>Concluding remarks: The grassland is not a high quality representative of the MG4 <i>Alopercus pratensis</i> - <i>Sanguisorba officinalis</i> grassland community, nor qualifies for consideration as a BAP Priority Habitat or a 2006 NERC Act Habitat of Principal Importance. No red list or protected plant species were recorded. Indicators of higher quality grassland are limited in number and abundance. Using Natural England guidance the majority of the quadrats recorded within the grassland key out as 'Species Poor Semi-Natural Grassland' with low species richness. Notwithstanding this, the grassland is relatively species rich in comparison to that occurring elsewhere in the site and also appears to have potential to be restored to a higher quality. The grassland is subsequently considered as a whole to be of moderate local value in its own right.</p>

* Indicators reflect those used for identification of BAP priority grasslands (Natural England Technical Information Note TIN110, June 2012)

** Status determined in accordance with Key 2a Natural England Technical Information Note TIN110, June 2012. SNMR = Semi-natural Grassland of Moderate Species Richness, SPSN = Species-poor Semi-natural Grassland, SPSI = Species-poor Semi-improved grassland and I = Species-poor improved grassland

DAFOR = D: Species is the most common plant by far, in well over 3/4 of the square. **A:** Species very common in many parts of the square. For most species, thousands of individual plants present. **F:** Species in several places in the square and usually more than just a few individuals in each of these places. Also use F if the plant was only present in one part of the square but was very common in that part, with many individuals and covered a substantial area (e.g. between 1/8 and 1/4 of the area of the whole square). **O:** Species occurs in several places within the square that occupied just a small area (e.g. less than 1/8 of the area of the whole square). **R:** Species occurs as a small number of individuals in the square.



KEY

- Site boundary
- A Quadrat location

Phase 1 habitat survey results (HDA, 2020)*

- Semi-natural broadleaved woodland
- Broadleaved planted woodland
- Mixed planted woodland
- Scattered trees
- Intact hedgerow
- Defunct hedgerow
- Dense scrub
- Scattered scrub
- Tall ruderals
- Species-rich, semi-improved neutral grassland
- Species-poor semi-improved grassland
- Improved grassland
- Amenity grassland
- Arable land
- Watercourse and direction of flow
- Dry / seasonally wet ditch
- Standing water
- Fence
- Hardstanding
- Buildings

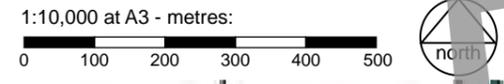
* This plan focuses on the area of the site subject to the botanical survey. Further habitats are present within the wider site.

CLIENT:
St James
PROJECT:
Milton Keynes East
TITLE:
Botanical Survey Quadrat Locations
SCALE AT A3: DATE:
Not to scale February 2020

2090.52/23

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Full Species List

Common name	Scientific name
Amphibious bistort	<i>Persicaria amphibia</i>
Bristly Ox-tongue	<i>Helminthotheca echioides</i>
Broad-leaved Dock	<i>Rumex obtusifolius</i>
Bulbous Buttercup	<i>Ranunculus bulbosus</i>
Cocksfoot	<i>Dactylis glomerata</i>
Common Mouse-ear	<i>Cerastium fontanum</i>
Common Nettle	<i>Urtica dioica</i>
Common Sorrel	<i>Rumex acetosa</i>
Common Bent	<i>Agrostis capillaris</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Creeping cinquefoil	<i>Potentilla reptans</i>
Creeping Thistle	<i>Cirsium arvense</i>
Crested Dogs-tail	<i>Cynosurus cristatus</i>
Cuckoo Flower	<i>Cardamine pratensis</i>
Curled Dock	<i>Rumex crispus</i>
Cut-leaved Cranesbill	<i>Geranium dissectum</i>
Downy Oat-grass	<i>Avenula pubescens</i>
Dandelion	<i>Taraxacum officinale</i>
False Oat-grass	<i>Arrhenatherum elatius</i>
Field Woodrush	<i>Luzula campestris</i>
Germander Speedwell	<i>Veronica chamaedrys</i>
Great Burnet	<i>Sanguisorba officinalis</i>
Ground Ivy	<i>Glechoma hederacea</i>
Hairy Sedge	<i>Carex hirta</i>
Hedgerow Cranesbill	<i>Geranium pyrenaicum</i>
Hogweed	<i>Heracleum sphondylium</i>
Lady's Bedstraw	<i>Galium verum</i>
Lesser Stitchwort	<i>Stellaria graminea</i>
Lesser Trefoil	<i>Trifolium dubium</i>
Meadow Buttercup	<i>Ranunculus acris</i>
Meadow Barley	<i>Hordeum secalinum</i>
Meadow Foxtail	<i>Alopecurus pratensis</i>
Meadow Oat-grass	<i>Avenula pratensis</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Perennial Rye-grass	<i>Lolium perenne</i>
Pignut	<i>Conopodium majus</i>
Red Clover	<i>Trifolium pratense</i>
Red Fescue	<i>Festuca rubra</i>
Rough Meadow-grass	<i>Poa trivialis</i>
Sheep's Fescue	<i>Festuca ovina</i>
Smaller cat's-tail	<i>Phleum bertolonii</i>
Smooth Meadow-grass	<i>Poa pratensis</i>
Soft Brome	<i>Bromus hordeaceus</i>
Spear Thistle	<i>Cirsium vulgare</i>
Sweet Vernal-grass	<i>Anthoxanthum odoratum</i>
Tall Fescue	<i>Festuca arundinacea</i>
Timothy	<i>Phleum pratense</i>
Tormentil	<i>Potentilla erecta</i>
Tufted Hair-grass	<i>Deschampsia cespitosa</i>
Yarrow	<i>Achillea millefolium</i>
Yorkshire Fog	<i>Holcus lanatus</i>

Appendix F6

Bat Survey Report

MILTON KEYNES EAST
BAT SURVEY REPORT

Prepared for St James

by

Hankinson Duckett Associates

HDA ref: 2090.52

February 2020

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HDA Document Control and Quality Assurance Record

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B Bat Roost Survey Summary Plans – B2, B3 and B27	
C Bat Activity Transect Coverage and Automated Detector Location Plan	
D Bat Activity Survey Summary Plan	
E Photographs	

1 INTRODUCTION

1.1 Site location and summary description

1.1.1 This report describes the results of a suite of bat surveys of approximately 362ha of land at Newport Pagnell, Buckinghamshire, hereinafter referred to as 'the site'. The site centre is located by National Grid Reference SP 893 415. The study was commissioned by St James over several phases in July 2018, August 2018 and August 2019.

1.1.2 The site is located to the south of Newport Pagnell, on the north-eastern edge of Milton Keynes, Buckinghamshire. The site is dominated by agricultural land comprising intensively managed arable and grazed grassland fields with associated farmyards, agricultural buildings and residential farmhouses. Field boundaries generally consist of hedgerows, treelines and fencing with occasional ponds and parcels of woodland, and the River Ouzel flows from south to north through the western part of the site. The site is bordered to the north by a construction site for residential development and the A422 beyond which lies the town of Newport Pagnell; to the east by arable farmland; to the west by the Pineham Nature Reserve and the M1 Motorway beyond which lies the town of Milton Keynes; and to the south by arable farmland.

1.1.3 The location and boundary of the site are shown in *Appendix A*. Detailed descriptions of the habitats within the site are given in the Ecological Appraisal (HDA, 2020).

1.2 Legislative context

1.2.1 All UK bat species are 'European Protected Species' (EPS) protected under the 2019 Conservation of Habitats and Species (Amendment) (EU Exit) Regulations. In relation to an EPS, the 2019 Regulations make it an offence to:

- Deliberately capture, injure or kill any wild animal of an EPS;
- Deliberately disturb wild animals of any such species, in particular any disturbance which is likely to: (i) impair their ability to survive, to breed or reproduce, or to rear or nurture their young; or to hibernate or migrate; (ii) affect significantly the local distribution or abundance of the species to which they belong;
- Damage or destroy a breeding site or resting place of such an animal; and/or
- To (a) be in possession of, or to control; (b) to transport any live or dead animal or any part of an animal; (c) to sell or exchange or (d) offer for sale or exchange any live or dead animal or part of an animal of an EPS.

1.2.2 In addition, all UK bats are protected under the 1981 Wildlife and Countryside Act (as amended). All species are listed on Schedule 5 of the Act and are subject to the provisions of Sections 9.4b and 9.4c, which make it an offence to:

- Intentionally or recklessly disturb a bat while it is occupying a structure or place which it uses for shelter or protection; and/or
- Intentionally or recklessly obstruct access to any structure or place used for shelter or protection by a bat.

1.2.3 If works are planned that are likely to constitute an offence under the current legislation, an application for a derogation licence should be made to Natural England.

1.2.4 Seven species of bat (Barbastelle, Bechstein's, Noctule, Soprano Pipistrelle, Brown Long-eared, Greater Horseshoe and Lesser Horseshoe) are also identified as Species of Principal Importance under Section 41 of the 2006 Natural Environment and Rural Communities (NERC) Act. Section 40 of the Act, together with planning policy and guidance, require planning authorities to regard these species as a material consideration in the planning process.

1.3 Development proposals

1.3.1 Proposals for the site include mixed use development with associated landscaping and infrastructure.

1.4 Scope and purpose of the report

1.4.1 An extended Phase 1 habitat survey (HDA, 2020) and previous site work identified habitats suitable for use by roosting, foraging and commuting bats within the site. In addition, records provided by the Buckinghamshire and Milton Keynes Environmental Records Centre (BMERC) during a desk study identified the presence of bats in the surrounding area, including records of Natterer's bats immediately adjacent to the northern site boundary dating from 1992.

1.4.2 In recognition of the proposed development of the site, the potential for the site to be used by bats, and within the legislative context set out in *Section 1.2*, bat surveys were undertaken to determine use of the site by bats and to identify any need for licensing or mitigation. Specifically, the aims of the study were:

- i. To identify potential bat roosts in buildings and trees within the site, where potentially affected by the proposed development;
- ii. To determine the presence/likely absence of bats within potential roosts affected by the proposed works and identify species and numbers;
- iii. To determine levels of bat foraging and commuting activity within habitat potentially affected by the proposed development;
- iv. To determine the requirement, if any, for licensing in respect of bats; and
- v. To identify appropriate mitigation and/or enhancement measures to ensure that the development avoids adverse impacts on bats and, where possible, provides enhancements to support the long-term favourable conservation status of bats in accordance with nature conservation legislation, planning policy and the 2006 NERC Act.

2 METHODOLOGY

2.1 Introduction

2.1.1 The methodology followed in relation to all bat survey work undertaken at the site is consistent with current legislation and good practice guidelines set out by the Bat Conservation Trust (BCT, 2016). The following sections detail the suite of surveys undertaken to inform the proposed development and the results of these surveys are provided in *Section 3*.

2.2 Phase 1 bat scoping survey

2.2.1 The site was initially subject to a Phase 1 bat scoping survey by Hayley Snowdon and Shannon Davies of Hankinson Duckett Associates on the 23rd, 24th and 27th July 2018. All buildings and trees within the site were assessed for their potential to support roosting bats and classified according to their potential.

Phase 1 building survey

2.2.2 All buildings within the site were inspected externally from ground level using binoculars and a powerful torch to identify and investigate any potential entry and exit points such as missing roof tiles, loose fascias and lifted lead flashing, and to look for evidence of entry/exit in the form of staining, discolouration and/or scratch marks.

2.2.3 Internally, buildings were searched exhaustively where possible, to look for evidence of current or former occupation by bats. A powerful torch was used to investigate any accessible cavities, crevices and recesses in each building.

2.2.4 In view of the findings of the internal/external inspections, the potential of the buildings to support roosting bats ('confirmed roost', 'high', 'moderate', 'low' or 'negligible') was assessed in accordance with current best practice guidelines (BCT, 2016). Assessment of bat roosting potential requires consideration of a number of criteria, including the design and construction of the building or structure, the size and location of potential features and access points, the position of the building or structure, aspect, geographical location, surrounding land use and adjacent landscape linkages.

Phase 1 tree survey

2.2.5 All trees within the site were inspected from ground-level with the aid of binoculars and a powerful torch to identify potential features suitable for use by roosting bats. Potential features include splits, cracks and cavities, peeling bark, woodpecker holes, broken branches and a covering of ivy where this is of a sufficient age to provide a suitable microclimate between the tree and ivy stem(s).

2.2.6 In accordance with current best practice guidelines (BCT, 2016), trees were placed into one of five categories. Categorisation was based on the nature, size, location and quality of features present in each tree:

- Negligible suitability - Trees with no or negligible features for roosting bats;
- Low suitability - Trees of sufficient size and age to contain potential roost features but with none seen from the ground or features seen with only very limited roosting potential;
- Moderate suitability - Trees with one or more potential roost sites that could be used by bats but are unlikely to support roost types of high conservation status;
- High suitability - Trees with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time; or
- Known or confirmed bat roost.

2.3 Phase 2 roost surveys

2.3.1 Phase 2 roost surveys, comprising a series of climbed tree inspections and emergence/re-entry surveys, were conducted wherever buildings and trees potentially affected by the proposed development had been identified as having potential to support roosting bats.

Climbed inspections of trees

2.3.2 Where possible, climbed inspections of trees were conducted to investigate all features potentially suitable for use by roosting bats. Inspections were conducted by an experienced licensed bat worker and certified tree climber and an assistant.

2.3.3 Each feature was searched both externally and internally for evidence of current or previous occupation by bats in the form of bats, droppings, staining, feeding signs, and/or remains of bats. A powerful torch and an LED-illuminated fibroscope with high-visibility digital LCD display were used to investigate any cavities, crevices, knot holes, cracked or peeling bark in each tree.

2.3.4 Climbed inspections were conducted by Dan Gordon-Lee and Sanford Hankin between 14th-17th July 2019. Full details of climbed inspections are provided, along with the results of these inspections, in *Section 3*.

Emergence/re-entry surveys of buildings and trees

2.3.5 Phase 2 dusk emergence and dawn re-entry surveys of trees (where not suitable for climbing inspections) and buildings were carried out where these had potential to support roosting bats and were potentially affected by the emerging proposals. Emergence/re-entry surveys were conducted to determine presence/probable absence and, where

present, identify species and numbers. The level of survey effort conducted was determined with reference to the identified bat roosting potential of the building or tree in accordance with best practice guidelines (BCT, 2016).

2.3.6 Surveyors with electronic bat detectors¹ were positioned around each feature to record bats emerging from or entering the building/tree. Surveyors were positioned to provide adequate coverage of all potential emergence points on each feature surveyed. Dusk emergence surveys generally began 15 minutes before sunset, ending approximately 1.5 hours after sunset. Dawn re-entry surveys generally began approximately 1.5 hours before sunrise and ended 15 minutes after sunrise. Records were made of any emergences and entries, and incidental records were also made of bat commuting and foraging activity in the vicinity of each surveyor.

2.3.7 In line with current best practise guidelines (BCT, 2016), Phase 2 bat roost surveys were not conducted on trees which were assessed as having low potential to support roosting bats. Further surveys of these low potential trees are not required, at this stage, in support of a planning application. However, in the event that retention of a tree identified as having low potential to support roosting bats is not possible, the appropriate approach to works is given in *Section 5* below.

2.3.8 Details of the dates and times of Phase 2 emergence/re-entry surveys, along with weather conditions and sunset/sunrise times, are provided in *Table 1* below.

Table 1: Details of Phase 2 roost surveys

Building/ Tree ref	Date / Time	Sunset / Sunrise	Conditions
B2 / B3	Dusk 03/07/2019 21:11 – 22:56	21:26	0% cloud cover, Beaufort Scale = 1, dry, 15-18°C
	Dusk 04/09/2019 19:24 – 21:14	19:44	100% cloud cover, Beaufort Scale = 1, light showers between 19:30 and 19:45, 15°C
	Dawn 17/09/2019 05:08 – 06:53	06:38	50-70% cloud cover, Beaufort Scale = 0, dry, 9-13°C
B20	Dusk 27/06/2019 21:12 – 22:57	21:27	100% cloud cover, Beaufort Scale = 0, dry, 12-14°C
	Dawn 16/07/2019 03:31 – 05:16	05:01	30% cloud cover, Beaufort Scale = 0, dry, 8-9°C
B22	Dawn 27/06/2019 03:14– 04:59	04:44	100% cloud cover, Beaufort Scale = 2, dry, 12-13°C
B27 / B28	Dusk 27/06/2019 21:12 – 22:57	21:27	100% cloud cover, Beaufort Scale = 0, dry, 12-14°C
	Dawn 16/07/2019 03:31 – 05:16	05:01	30% cloud cover, Beaufort Scale = 0, dry, 8-9°C

¹ Pettersson D240x heterodyne and time-expansion detector with MP3 recorder, Anabat Walkabout, Anabat Express and Anabat SD1/SD2 with 'Analook' recording software.

Building/ Tree ref	Date / Time	Sunset / Sunrise	Conditions
	Dusk 16/09/2019 19:01 – 20:46	19:16	90% cloud cover, Beaufort Scale = 0, dry, 14°C
B33	Dawn 28/06/2019 03:15 – 05:00	03:30	100% cloud cover, Beaufort Scale = 4, dry, 10-12°C
	Dusk 15/07/2019 21:02 – 22:47	21:17	<5% cloud cover, Beaufort Scale = 0, dry, 13-15°C
	Dusk 29/07/2019 20:44 – 22:29	20:59	70% cloud cover, Beaufort Scale = 1, dry, 22°C
G1 / 8 / 9	Dusk 25/06/2019 21:13 – 22:58	21:28	100% cloud cover, Beaufort Scale = 0–1, dry, 15-17°C
	Dawn 09/07/2019 03:23 – 05:08	04:53	100% cloud cover, Beaufort Scale = 2, light drizzle between 04:45 and 04:50, 14°C
	Dusk 16/09/2019 19:01 – 20:46	19:16	90% cloud cover, Beaufort Scale = 0, dry, 14°C
11	Dusk 25/06/2019 21:13 – 22:58	21:28	100% cloud cover, Beaufort Scale = 0–1, dry, 15-17°C
	Dawn 09/07/2019 03:23 – 05:08	04:53	100% cloud cover, Beaufort Scale = 2, light drizzle between 04:45 and 04:50, 14°C
16	Dusk 26/06/2019 21:13 – 22:58	21:28	100% cloud cover, Beaufort Scale = 2–3, dry, 13-14°C
	Dawn 16/07/2019 03:31 – 05:16	05:01	30% cloud cover, Beaufort Scale = 0, dry, 8-9°C
17 / 18	Dusk 26/06/2019 21:13 – 22:58	21:28	100% cloud cover, Beaufort Scale = 2–3, dry, 13-14°C
	Dusk 09/07/2019 21:07 – 22:52	21:22	100% cloud cover, Beaufort Scale = 0, dry, 17-20°C
	Dawn 30/07/2019 03:49 – 05:36	05:21	1% cloud cover, Beaufort Scale = 0, dry, 16°C
19 / 20	Dusk 26/06/2019 21:13 – 22:58	21:28	100% cloud cover, Beaufort Scale = 2–3, dry, 13-14°C
	Dawn 10/07/2019 03:24 – 05:09	04:54	95% cloud cover, Beaufort Scale = 0–1, dry, 16-17°C
21 / 23 / 24	Dusk 27/06/2019 21:12 – 22:57	21:27	100% cloud cover, Beaufort Scale = 0, dry, 12-14°C
	Dusk 22/07/2019 20:56 – 22:39	21:09	2% cloud cover, Beaufort Scale = 1, dry, 20-25°C
22	Dusk 27/06/2019 21:12 – 22:57	21:27	100% cloud cover, Beaufort Scale = 0, dry, 12-14°C
	Dawn 23/07/2019 03:41 – 05:26	05:11	30% cloud cover, Beaufort Scale = 0, dry, 16°C
25	Dusk 26/06/2019 21:13 – 22:58	21:28	100% cloud cover, Beaufort Scale = 2–3, dry, 13-14°C
	Dawn 10/07/2019 03:24 – 05:09	04:54	95% cloud cover, Beaufort Scale = 0-1, dry, 16-17°C
	Dawn 30/07/2019 03:49 – 05:36	05:21	1% cloud cover, Beaufort Scale = 0, dry, 16°C
50	Dusk 24/06/2019 21:13 – 22:58	21:28	90% cloud cover, Beaufort Scale = 0, very light rain between 22:45 and 22:55, 19-22°C

Building/ Tree ref	Date / Time	Sunset / Sunrise	Conditions
	Dusk 09/07/2019 21:07 – 22:52	21:22	100% cloud cover, Beaufort Scale = 0, dry, 17-19°C
53 / 95	Dusk 24/06/2019 21:13 – 22:58	21:28	90% cloud cover, Beaufort Scale = 0, very light rain between 22:45 and 22:50, 19-22°C
	Dusk 08/07/2019 21:08 – 22:53	21:23	100% cloud cover, Beaufort Scale = 4, dry, 14-17°C
58	Dusk 24/06/2019 21:13 – 22:58	21:28	90% cloud cover, Beaufort Scale = 0, very light rain between 22:45 and 22:50, 19-22°C
	Dawn 10/07/2019 03:24 – 05:09	04:54	95% cloud cover, Beaufort Scale = 0–1, dry, 15- 17°C
60	Dawn 05/09/2019 04:50 – 06:35	06:20	80% cloud cover, Beaufort Scale = 3-4, dry, 10- 12°C
	Dawn 17/09/2019 05:08 – 06:53	06:38	50-70% cloud cover, Beaufort Scale = 0, dry, 10- 13°C
	Dusk 25/09/2019 18:40 – 21:25	18:55	80% cloud cover, Beaufort Scale = 2, short showers between 18:40 and 19:15, 16°C
72	Dusk 27/06/2019 21:12 – 22:57	21:27	100% cloud cover, Beaufort Scale = 0, dry, 12-14°C
	Dusk 22/07/2019 20:56 – 22:39	21:09	2% cloud cover, Beaufort Scale = 1, dry, 20-25°C
76 / 81 / 85	Dusk 17/06/2019 21:11 – 22:56	21:26	50% cloud cover, Beaufort Scale = 0–1, dry, 16- 17°C
	Dusk 08/07/2019 21:08 – 22:53	21:23	100% cloud cover, Beaufort Scale = 4, dry, 14-17°C
79	Dawn 05/09/2019 04:50 – 06:35	06:20	80% cloud cover, Beaufort Scale = 3-4, dry, 10- 12°C
	Dusk 25/09/2019 18:40 – 21:25	18:55	80% cloud cover, Beaufort Scale = 2, short showers between 18:40 and 19:15, 16°C
96	Dusk 24/06/2019 21:13 – 22:58	21:28	90% cloud cover, Beaufort Scale = 0, very light rain between 22:45 and 22:50, 19-22°C
	Dusk 08/07/2019 21:08 – 22:53	21:23	100% cloud cover, Beaufort Scale = 4, dry, 14-17°C
	Dawn 23/07/2019 03:41 – 05:26	05:11	30% cloud cover, Beaufort Scale = 0, dry, 16°C
99	Dusk 24/06/2019 21:13 – 22:58	21:28	90% cloud cover, Beaufort Scale = 0, very light rain between 22:45 and 22:50, 19-22°C
	Dusk 09/07/2019 21:07 – 22:52	21:22	100% cloud cover, Beaufort Scale = 0, dry, 17-19°C
	Dawn 23/07/2019 03:41 – 05:26	05:11	30% cloud cover, Beaufort Scale = 0, dry, 16°C

2.4 Phase 2 bat activity survey

Bat activity transects

2.4.1 In order to provide an assessment of the importance of the site for foraging and commuting bats, dusk activity surveys were undertaken between July and September 2018 and April and June 2019. Due to the size of the site, the site was divided into six survey area transects. The six survey area transect locations are shown in *Appendix C*.

2.4.2 Transect 1 located in the west of the site in association with the River Ouzel corridor, comprises higher quality habitat for foraging and commuting bats and was subsequently surveyed on six occasions. The remainder of the transects were surveyed on three occasions.

2.4.3 Surveyors carrying hand-held bat detectors walked the transects, with listening stops at regular intervals for periods of up to 5 minutes. Visual observations of bats and bat call registrations were noted, recording time, location, activity and, where known, species. Recordings of foraging and/or commuting activity made using digital devices were subsequently analysed to determine the identity of any unconfirmed species recorded during the surveys. Times and dates of surveys are given in *Table 2* below, along with weather conditions.

Table 2: Details of bat activity surveys

Date	Sunset	Time	Weather conditions
26/07/2018 (Transects 1-6)	21:03	21:00-23:35	10-25% cloud cover, Beaufort Scale = 1-2, dry, 22-27°C
13/08/2018 (Transect 1 only)	20:24	20:24-22:45	0% cloud cover, Beaufort Scale = 1, dry, 17-18°C
04/09/2018 (Transects 1-6)	19:38	19:38 – 22:10	100% cloud cover, Beaufort Scale = 0-1, dry, 16°C
15/04/2019 (Transect 1 only)	20:00	20:00 – 22:05	60% cloud cover, Beaufort Scale = 1, dry, 7-8°C
29/05/2019 (Transects 1-6)	21:08	21:05 – 23:15	100% cloud cover, Beaufort Scale = 0-1, occasional light drizzle, 14°C
17/06/2019 (Transect 1 only)	21:26	21:30 – 23:30	50% cloud cover, Beaufort Scale = 0-1, dry, 16-17°C

Automated surveys

2.4.4 Automated surveys were carried out as a supplement to the activity transect surveys and to gain further information on the species and frequency of bat activity at the site. A programmable electronic bat detector² was positioned in suitable habitat and left in place on six occasions for Transect 1 and three occasions for Transects 2-6 between July and September 2018 and April and June 2019. The detectors were programmed to record all bat activity. Details of the times and dates of automated bat detector deployment are provided in *Table 3* below and the location of each detector deployed is shown in *Appendix C*.

² Anabat SD2 with remote microphone and 'Analook' software

Table 3: Details of automated bat detector deployment

Location	Deployment and collection date	Sunset/Sunrise	Night Temp. Max./Min. (°C)
1-6A *	26/07/2018 – 27/07/2018	21:02 – 05:16	30 / 19
	27/07/2018 – 28/07/2018	21:01 – 05:18	22 / 18
	28/07/2018 – 29/07/2018	20:59 – 05:19	17 / 16
	29/07/2018 – 30/07/2018	20:58 – 05:21	20 / 17
	30/07/2018 – 31/07/2018	20:56 – 05:22	21 / 16
	31/07/2018 – 01/08/2018	20:54 – 05:23	22 / 13
1B	13/08/2018 – 14/08/2018	20:31 – 05:44	19 / 12
	14/08/2018 – 15/08/2018	20:29 – 05:46	21 / 15
	15/08/2018 – 16/08/2018	20:27 – 05:48	21 / 16
	16/08/2018 - 17/08/2018	20:25 – 05:49	21 / 8
	17/08/2018 – 18/08/2018	20:23 – 05:51	18 / 16
	18/08/2018 – 19/08/2018	20:20 – 05:53	20 / 17
	19/08/2018 – 20/08/2018	20:18 – 05:54	22 / 17
1C & 2-6B **	04/09/2018 – 05/09/2018	19:43 – 06:20	22 / 13
	05/09/2018 – 06/09/2018	19:41 – 06:22	19 / 10
	06/09/2018 – 07/09/2018	19:38 – 06:24	14 / 8
	07/09/2018 – 08/09/2018	19:36 – 06:25	15 / 10
	08/09/2018 – 09/09/2018	19:34 – 06:27	18 / 15
	09/09/2018 – 10/09/2018	19:32 – 06:28	19 / 14
1D	15/04/2019 – 16/04/2019	20:00 – 06:04	11 / 4
	16/04/2019 – 17/04/2019	20:00 – 06:03	11 / 6
	17/04/2019 – 18/04/2019	20:03 – 06:00	12 / 6
	18/04/2019 – 19/04/2019	20:05 – 05:58	16 / 6
	19/04/2019 – 20/04/2019	20:07 – 05:56	18 / 4

Location	Deployment and collection date	Sunset/Sunrise	Night Temp. Max./Min. (°C)
	20/04/2019 – 21/04/2019	20:07 – 05:55	17 / 4
1E, 5C & 6C	29/05/2019 – 30/05/2019	21:09 – 04:50	16 / 14
	30/05/2019 – 31/05/2019	21:10 – 04:49	18 / 14
	31/05/2019 – 01/06/2019	21:12 – 04:48	18 / 13
	01/06/2019 – 02/06/2019	21:11 – 04:47	22 / 17
	02/06/2019 – 03/06/2019	21:14 – 04:47	16 / 10
	3C ***	03/06/2019 – 04/06/2019	21:15 – 04:46
04/06/2019 – 05/06/2019		21:16 – 04:45	15 / 11
05/06/2019 – 06/06/2019		21:17 – 04:45	15 / 7
06/06/2019 – 07/06/2019		21:18 – 04:44	15 / 10
07/06/2019 – 08/06/2019		21:19 – 04:44	13 / 11
08/06/2019 – 09/06/2019		21:20 – 04:43	13 / 8
1F & 4C***	17/06/2019 – 18/06/2019	21:25 – 04:41	18 / 10
	18/06/2019 – 19/06/2019	21:26 – 04:41	15 / 8
	19/06/2019 – 20/06/2019	21:26 – 04:41	17 / 13
	20/06/2019 – 21/06/2019	21:26 – 04:42	16 / 9
	21/06/2019 – 22/06/2019	21:27 – 04:42	16 / 7
	22/06/2019 – 23/06/2019	21:27 – 04:42	17 / 9
	23/06/2019 – 24/06/2019	21:27 – 04:42	18 / 14
2C***	27/06/2019 – 28/06/2019	21:27 – 04:44	25 / 23
	28/06/2019 – 29/06/2019	21:27 – 04:45	19 / 13
	29/06/2019 – 30/06/2019	21:27 – 04:45	27 / 12
	30/06/2019 – 01/07/2019	21:25 – 04:47	17 / 13

* The automated detectors at Locations 1-6A were deployed for 6 nights however, due to battery failure the automatic detector at Location 1A recorded for 4 nights and the automatic detectors at Locations 2A, 4A, 5A and 6A recorded for 5 nights.

** The automated detectors at Locations 1C and 2-6B were deployed for 6 nights however, due to battery failure the automatic detector at Location 1C recorded for 4 nights and the automatic detectors at Locations 3B, 4B and 5B recorded for 5 nights.

**** Due to equipment failure the automated bat detectors located at Locations 2C, 3C and 4C were redeployed at a later date. In addition, the automatic detector at Location 4C recorded for 5 nights and the automatic detector at Location 2C recorded for 4 nights.*

2.4.3 The results of the dedicated bat activity and automated surveys are further supported by additional incidental records of bat activity made during the dusk emergence and dawn re-entry surveys of the trees and buildings within the site. Together, these surveys allow a robust assessment of bat foraging and commuting activity throughout the site.

2.5 Limitations of surveys

2.5.1 B33 (Hermitage Farm) comprises a collection of off-site buildings, albeit encompassed by the site, for which access was not granted during either the Phase 1 scoping survey or emergence/re-entry surveys. This collection of buildings were subsequently surveyed as a group and bat roosts associated with Hermitage Farm may have been missed. This limitation is discussed further in *Section 5.2.26* below.

2.5.2 During the Phase 1 bat survey permission was not granted to access some of the buildings for internal inspections. These buildings were however subject to detailed external inspections and in such instances a precautionary approach was taken during assessment of the building's potential to support roosting bats.

2.5.3 Two trees (Trees 60 and 79) were subject to climbing surveys during which no evidence of bats was recorded, however they could not be inspected exhaustively. These trees were subsequently subject to emergence/re-entry surveys, however due to late instruction the emergence/re-entry surveys were carried out in September which is at the end of the bat active season. However, in view of the combination of surveys carried out it is considered unlikely that a significant bat roost (i.e. a maternity roost) was present within either of these trees at the time of survey.

2.5.4 Due to equipment failure the automatic detectors deployed at Locations 1A, 1C and 2C recorded for less than the requisite five nights. However, this was not considered a significant limitation however as recordings were made on four out of the requisite five nights, the automated detector surveys were supplemented by bat activity transect surveys, and greater recording effort than that required under current guidelines was made from adjacent areas of contiguous habitat.

2.5.5 All other surveys followed current best practice guidelines (BCT, 2016) and were conducted at an appropriate time of year, under favourable weather conditions and with an appropriate level of survey effort both in terms of the number of surveyors used and number of survey visits undertaken. Although periods of light drizzle were experienced on one of the activity surveys and 12 of the bat emergence/re-entry surveys this was not found to have affected levels of bat activity and is not considered a constraint to the

findings of the surveys. The surveys are therefore considered sufficient to allow a robust assessment of the likely effects of the proposed development on bats and to inform the recommendations provided in *Section 5* of this report.

3 RESULTS

3.1 Phase 1 bat scoping survey

Buildings

3.2.1 All buildings within the site were inspected during the Phase 1 bat scoping survey. The results of the Phase 1 building survey are summarised in *Table 4* below and the locations of the buildings are shown in *Appendix A*. Photograph references relate to the photographs provided in *Appendix E*.

Table 4: Results of Phase 1 bat scoping building survey

Building	Description	Findings	Bat roost potential
B1 (Photo 1)	Single-storey cowshed constructed of wooden beams with corrugated metal walls and a pitched corrugated metal roof.	<p>External: The building is open sided on the southern elevation and has missing wall panels on the eastern elevation. No suitable features for roosting bats were recorded.</p> <p>Internal: The building is single skinned and light internally.</p> <p>No evidence of bats recorded.</p>	Negligible
B2 (Photos 2 and 3)	Two-storey house of brick construction with a painted pebbledash render and a pitched slate roof with a tiled ridge. A porch with a flat felt roof is located on the eastern elevation. A brick chimney is also present.	<p>External: Potential bat roosting opportunities include a possible gap behind the bargeboard on the southern elevation and possible gaps at the edge of the roof on the eastern and western elevations.</p> <p>Internal: Internal survey not possible due to access constraints</p> <p>No evidence of bats recorded.</p>	Low
B3 (Photo 4)	Single-storey garage with brick and breezeblock walls and a pitched slate tile and corrugated metal roof with tiled ridge.	<p>External: Potential bat roosting opportunities include small gaps under the ridge tiles and a gap between the wooden boarding and brickwork on the southern elevation.</p> <p>Internal: Full internal survey was not possible due to access constraints, however the main area of the garage is well lit due to the building being open-sided.</p> <p>No evidence of bats recorded.</p>	Low

Building	Description	Findings	Bat roost potential
<p>B4 (Photo 5)</p>	<p>Wooden shed with pitched corrugated plastic and bitumen roof. An overhang is present on the eastern elevation.</p>	<p>External: No suitable features for roosting bats recorded.</p> <p>Internal: Internal survey was not possible due to access constraints.</p> <p>No evidence of bats recorded.</p>	<p>Negligible</p>
<p>B5 (Photo 6)</p>	<p>Single-storey stable with single skin brick walls and a sloping, corrugated asbestos roof.</p>	<p>External: No suitable features for roosting bats recorded.</p> <p>Internal: The building was relatively well-lit internally and the roof of the building is partly lined within rotting wooden boarding.</p> <p>No evidence of bats recorded.</p>	<p>Negligible</p>
<p>B6 (Photo 7)</p>	<p>Single-storey office building with breezeblock walls and a sloping felt roof.</p>	<p>External: No suitable features for roosting bats recorded.</p> <p>Internal: The building is well-lit with no loft void present. No opportunities for roosting bats recorded.</p> <p>No evidence of bats recorded.</p>	<p>Negligible</p>
<p>B7 (Photo 8)</p>	<p>Single-storey open-sided barn with a timber frame and corrugated metal walls and roof.</p>	<p>External: No suitable features for roosting bats recorded.</p> <p>Internal: The building is well-lit and open on three sides.</p> <p>No evidence of bats recorded.</p>	<p>Negligible</p>
<p>B8 (Photo 9)</p>	<p>Large single-storey barn constructed of concrete blocks and corrugated metal walls with a pitched corrugated metal roof.</p>	<p>External: No suitable features for roosting bats recorded.</p> <p>Internal: The building is single-skinned.</p> <p>No evidence of bats recorded.</p>	<p>Negligible</p>

Building	Description	Findings	Bat roost potential
<p>B9 (Photo 10)</p>	<p>Single-storey barn comprising a steel frame with corrugated metal and asbestos walls and a pitched asbestos roof.</p>	<p>External: No suitable features for roosting bats recorded.</p> <p>Internal: The building is single-skinned.</p> <p>No evidence of bats recorded.</p>	<p>Negligible</p>
<p>B10 (Photo 11)</p>	<p>Single-storey barn with metal frame and corrugated metal walls and roof.</p>	<p>External: No suitable features for roosting bats recorded.</p> <p>Internal: The building is single-skinned.</p> <p>No evidence of bats recorded.</p>	<p>Negligible</p>
<p>B11 (Off-site) (Photo 12)</p>	<p>A two-storey hotel with brick walls and a pitched slate tiled roof. A chimney and vents are present on the roof.</p>	<p>External: Potential bat roosting opportunities include lifted tiles, lifted metal flashing, loose brickwork and open vents.</p> <p>Internal: Internal survey not possible due to access constraints</p> <p>No evidence of bats recorded.</p>	<p>Moderate</p>
<p>B12 (Photo 13)</p>	<p>Polytunnel constructed of wooden and metal posts with a corrugated metal base and plastic sheeting.</p>	<p>External: No suitable features for roosting bats recorded.</p> <p>Internal: The building is single-skinned and light internally.</p> <p>No evidence of bats recorded.</p>	<p>Negligible</p>
<p>B13 and B14 (Photo 14)</p>	<p>Two static caravans.</p>	<p>External: No suitable features for roosting bats recorded.</p> <p>Internal: Internal survey not possible due to access constraints.</p> <p>No evidence of bats recorded.</p>	<p>Negligible</p>

Building	Description	Findings	Bat roost potential
<p>B15, B16 and B17</p> <p>(Photos 15 & 16)</p>	<p>Three flat roofed, metal shipping containers.</p>	<p>External: No suitable features for roosting bats recorded.</p> <p>Internal: Internal survey not possible due to access constraints.</p> <p>No evidence of bats recorded.</p>	<p>Negligible</p>
<p>B18</p> <p>(Photo 17)</p>	<p>Flat roofed, metal shipping container.</p>	<p>External: No suitable features for roosting bats recorded.</p> <p>Internal: Internal survey not possible due to access constraints.</p> <p>No evidence of bats recorded.</p>	<p>Negligible</p>
<p>B19</p> <p>(Photo 18)</p>	<p>Greenhouse constructed of a metal frame with glass walls and pitched glass roof.</p>	<p>External: No suitable features for roosting bats recorded.</p> <p>Internal: The building is single-skinned and light internally.</p> <p>No evidence of bats recorded.</p>	<p>Negligible</p>
<p>B20</p> <p>(Photos 19 & 20)</p>	<p>Two-storey semi-detached cottages of brick construction with painted render and a pitched tiled roof with tiled ridge. An extension with a sloping tiled roof is present on the eastern elevation. Further features on the house include 3 chimneys and a porch on the western elevation.</p>	<p>External: Potential bat roosting opportunities include gaps under the ridge tiles, a gap at the edge of the roof and lifted tiles on the porch.</p> <p>Internal: Internal survey not possible due to access constraints.</p> <p>No evidence of bats recorded.</p>	<p>Moderate</p>
<p>B21</p> <p>(Photo 21)</p>	<p>Single-storey shed with brick walls and a sloping corrugated metal roof. The building is overgrown with vegetation.</p>	<p>External: Potential bat access opportunities include a gap above the window on the eastern elevation and a gap below the roof on the northern elevation. These features were however considered unsuitable for roosting bats.</p> <p>Internal: No suitable features for roosting bats recorded.</p> <p>No evidence of bats recorded.</p>	<p>Negligible</p>

Building	Description	Findings	Bat roost potential
<p>B22 (Photo 22)</p>	<p>A series of 3 internally connected barns each with a pitched, corrugated metal or asbestos tiled roof. The barns are constructed of breezeblocks, brick, and corrugated metal. Single skinned wooden weatherboarding is located on some elevations.</p>	<p>External: Potential bat access opportunities include large openings in the walls, and open doorways and windows. The edge of the roof on the northern elevation has partially collapsed with slightly lifted tiles.</p> <p>Internal: Timber beams that could not be exhaustively searched are present within the building.</p> <p>No evidence of bats recorded.</p>	<p>Low</p>
<p>B23 (Photo 23)</p>	<p>Open-sided barn with a timber frame and a gently sloping corrugated metal roof.</p>	<p>External: No suitable features for roosting bats recorded.</p> <p>Internal: The building is well-lit and open on all sides.</p> <p>No evidence of bats recorded.</p>	<p>Negligible</p>
<p>B24 (Photo 23)</p>	<p>Elevated metal grain store.</p>	<p>External: No suitable features for roosting bats recorded.</p> <p>Internal: Internal survey not possible due to access constraints.</p> <p>No evidence of bats recorded.</p>	<p>Negligible</p>
<p>B25 (Photo 24)</p>	<p>Metal shipping container with flat, corrugated metal roof.</p>	<p>External: No suitable features for roosting bats recorded.</p> <p>Internal: Internal survey not possible due to access constraints.</p> <p>No evidence of bats recorded.</p>	<p>Negligible</p>
<p>B26 (Photo 25)</p>	<p>Metal tank in state of disrepair.</p>	<p>External: Holes present allowing bats access internally however the tank is constructed of single-skinned metal which is likely to fluctuate in temperature and the smooth metal surface will not allow much purchase for bats.</p> <p>Internal: Internal survey not possible due to access constraints.</p> <p>No evidence of bats recorded.</p>	<p>Negligible</p>

Building	Description	Findings	Bat roost potential
<p>B27 (Photos 26 & 27)</p>	<p>Barn constructed of a timber frame with wooden weatherboard walls and a pitched tiled roof.</p>	<p>External: Potential bat roosting opportunities include gaps under weatherboarding and a gap under a ridge tile.</p> <p>Internal: Full internal survey not possible due to access constraints. The central area of the barn is dark and enclosed with a number of bat access points.</p> <p>No evidence of bats recorded.</p>	<p>Moderate</p>
<p>B28 (Photo 28)</p>	<p>Car port with double-skinned wooden walls and a sloping corrugated metal roof. The building is open-sided on the southern elevation.</p>	<p>External: Potential bat roosting opportunities include a gap between the walls on eastern elevation. The structure is overgrown with vegetation.</p> <p>Internal: No suitable features for roosting bats recorded.</p> <p>No evidence of bats recorded.</p>	<p>Low</p>
<p>B29 (Photo 29)</p>	<p>Barn constructed of wooden weatherboarding with a pitched metal roof.</p>	<p>External: No suitable features for roosting bats recorded.</p> <p>Internal: No suitable features for roosting bats recorded.</p> <p>No evidence of bats recorded.</p>	<p>Negligible</p>
<p>B30 and B31 (Photos 29 & 30)</p>	<p>Two barns constructed of brick, corrugated metal and asbestos walls with arched corrugated iron roofs. A wooden lean-to is present on the northern elevation.</p>	<p>External: No suitable features for roosting bats recorded.</p> <p>Internal: The buildings are single-skinned. No suitable features for roosting bats recorded.</p> <p>No evidence of bats recorded.</p>	<p>Negligible</p>
<p>B32 (Photo 31)</p>	<p>Flat roofed, metal shipping container.</p>	<p>External: No suitable features for roosting bats recorded.</p> <p>Internal: Internal survey not possible due to access constraints.</p> <p>No evidence of bats recorded.</p>	<p>Negligible</p>

Building	Description	Findings	Bat roost potential
B33 (off-site) (Photo 32)	A collection of buildings at Hermitage Farm, including a brick built farmhouse with pitched slate tiled roof and chimneys, outbuildings with brick walls and slate tiled roofs, a number of brick barns with pitched metal or corrugated asbestos rooves, metal barns, open-sided barns and shipping containers.	External: Full external survey not possible due to access constraints. The farmhouse and outbuildings have a number of lifted roof tiles. Internal: Internal survey not possible due to access constraints No evidence of bats recorded.	Probable Negligible to High
B34 (off-site) (Photo 33)	Furniture warehouse constructed of brick walls and corrugated metal and asbestos sheeting with a pitched asbestos roof.	External: No suitable features for roosting bats recorded. Internal: Internal survey not possible due to access constraints No evidence of bats recorded.	Negligible

Trees

3.2.2 All trees identified as having potential to support roosting bats within the site are described in *Table 5* below and their locations are given in *Appendix A*.

Table 5: Results of Phase I bat scoping tree survey

Tree ref	Species	Description of Features	BCT Category
1	Oak	Scar on trunk and lifted bark on northern aspect at 1-2m. Tree is covered in Ivy and of sufficient size and age to contain additional roosting features not visible from the ground.	Low
2	Ash	Hollow stem with multiple cavities on eastern aspect at 1-5m. Small knot hole with possible depth on eastern aspect at 6-7m.	Moderate
3	Oak	Tree is covered in Ivy and of sufficient size and age to contain roosting features not visible from the ground.	Low
4	Ash	Large upward facing knot hole in branch on southern aspect at 6-7m.	Low
5	Oak	Two broken branches with splits and an upward facing trunk cavity on southern aspect at 7m. Branch knot hole with possible depth on southern aspect at 8m.	Low
6	Oak	Hollow branch with cavities on south-eastern aspect at 6-7m. The tree is sufficient size and age which may contain additional roosting features not visible from the ground.	Low
7	Ash	Small knot hole in branch on southern aspect at 6-7m. Cavity at the end of a branch with possible depth on northern aspect at 10m.	Low

Tree ref	Species	Description of Features	BCT Category
8	Willow	Hollow branch with cavity on southern aspect at 3m. Hollow trunk with possible branch cavity on south-eastern aspect at 8m.	Moderate
9	Ash	Main crown missing resulting in upward facing cavity at 10m+. Hollow trunk with large cavity on western aspect at 2m. Occluded wood and branch cavity on south-western aspect at 4m and 6-7m.	High
10	Oak	Dead cracked branches on northern and southern aspects between 5-8m.	Low
11	Ash	Upward facing cavity on northern aspect. Two woodpecker holes on trunk on south-eastern aspect at 4-5m. Dead branches with basal cavity on southern aspect.	Moderate
12	Oak	Deadwood in crown and lifted bark on trunk on southern aspect.	Low
13	Ash	Knot hole on branch on eastern aspect at 6m.	Low
14	Oak	Two very narrow cracked branches on eastern aspect at 8 and 10m+. Branch cavity and occluded wood with possible depth on western aspect at 6m and northern aspect at 8m, respectively.	Low
15	Ash	Occluded wood along trunk scar on northern aspect at 2m.	Low
16	Ash	Woodpecker holes on western aspect at 10m+, on south-western aspect at 7m and on north-eastern aspect at 7-8m. Upward facing branch cavity on northern aspect.	Moderate
17	Ash	Upward facing knot hole on branch and missing crown with large cavity on western aspect at 10m+. Knot hole with possible depth on western aspect at 6m. Woodpecker holes on trunk on northern aspect at 9m and eastern aspect at 7m.	High
18	Ash	Large number of trunk cavities on eastern aspect.	High
19	Ash	Woodpecker hole and trunk cavity on western aspect at 8-9m. Small knot hole with possible depth on southern aspect at 8m.	Moderate
20	Ash	Cavity at base of branch on southern aspect at 7m. Knot hole in branch on eastern aspect.	Moderate
21	Ash	Two woodpecker holes into hollow trunk on south-eastern aspect at 4-5m. Cracked and occluded wood on south-eastern aspect at 1-4m.	Moderate
22	Ash	Possible trunk cavity and occluded wood on south-eastern aspect at 3-5m. Knot hole on northern aspect.	Moderate
23	Ash	Crown of tree missing with rotting wood present. Trunk cavities on eastern aspect at 9m and north-western aspect at 4-5m.	Moderate

Tree ref	Species	Description of Features	BCT Category
24	Ash	Trunk hollow with cavity on north-western aspect at 8m.	Moderate
25	Ash	Woodpecker hole in trunk on southern aspect at 8m. Large trunk cavity and woodpecker hole in branch on southern aspect at 10m+. Cavities and woodpecker hole on north-eastern aspect at 10m.	High
26	Ash	Missing crown.	Low
27 (off-site)	Oak	Tree is covered in Ivy and of sufficient size and age to contain roosting features not visible from the ground.	Low
28	Ash	Woodpecker hole on underside of branch on northern aspect at 6m. Hollowing at base of trunk on southern aspect at 1-2m.	Moderate
29	Ash	Trunk cavities on north-eastern aspect at 6m and eastern aspect at 8m. Woodpecker hole in trunk on southern aspect at 7m.	High
30	Willow	Partly dead with lifted wood on all aspects at 1-7m.	Low
31	Oak	Knot hole with possible depth at 9m on southern aspect.	Low
32	Oak	Trunk cavity on eastern aspect.	Moderate
33	Ash	Woodpecker hole at 5m on southern aspect and large knot hole with possible depth at 5m on western aspect.	Moderate
34	Oak	Crack in trunk on northern aspect and lifted bark on all aspects.	Low
35	Oak	Ivy plating.	Low
36	Oak stump	The tree is covered in Ivy and of sufficient size and age to contain roosting features not visible from the ground.	Low
37	Oak	Two Woodpecker holes and two knot holes of possible depth on western aspect. Dead branches with cracks and splits on northern, eastern and southern aspects.	Moderate
38	Oak	Mature tree with a number of dead branches with rotting wood and shallow cavities.	Low
39	Oak	Possible cavity at end of branch on northern aspect at over 10m.	Low
40	Oak	Branch cavity on southern elevation at 9m, dead branch with lifted bark and cracks on western aspect at 8m and several further branches with deadwood and shallow cavities.	Moderate
41	Willow	Three woodpecker holes present on western and eastern aspects.	Moderate
42	Willow	Split branch on southern aspect.	Low
43	Willow	The crown of the tree has been lost with a number of further fallen branches. Cracks and splits with no apparent depth are present on trunk.	Low
44	Ash	Hollowing and rotting trunk with a potential cavity on eastern aspect, trunk cavity at base of branch, small woodpecker hole on northern aspect and knot hole at end of branch on western aspect.	High

Tree ref	Species	Description of Features	BCT Category
45	Willow	Crack at base of branch with possible cavity on southern aspect.	Low
46	Willow	Broken and fallen limbs on all aspects. The tree is covered in Ivy and of sufficient size and age to contain additional roosting features not visible from the ground.	Low
47	Willow	Possible narrow trunk cavity on northern aspect.	Low
48	Ash	Upward facing trunk cavity with possible depth on north-eastern aspect.	Low
49	Oak	An upward facing woodpecker hole on branch on eastern aspect.	Low
50	Ash	Upward facing branch cavities on western, eastern and northern aspects. Two woodpecker holes on eastern aspect.	Moderate
51	Ash	Dead trunk with possible upward facing cavity.	Low
52	Ash	The tree is missing its crown and is likely open at the top, as such it is likely that the internal areas of the tree are exposed. Cracked wood, a woodpecker hole and upward facing cavity are present.	Low
53	Ash	Three woodpecker holes with possible depth on northern aspect, crack in trunk on northern aspect and possible branch cavity on eastern aspect.	Moderate
54	Willow	Tree is missing part of its crown, is covered in Ivy and of sufficient size and age to contain roosting features not visible from the ground.	Low
55	Ash	Trunk is damaged and split in places, however the features were not considered very suitable for roosting bats.	Low
56	Willow	Cracked trunk with possible depth on southern aspect.	Low
57	Ash	The tree is covered in Ivy and of sufficient size and age to contain roosting features not visible from the ground.	Low
58	Ash	Two woodpecker holes present on northern aspect, trunk cavity on eastern aspect and possible trunk cavity on southern aspect.	Moderate
59	Ash	Very small trunk cavity on northern aspect.	Low
60	Ash	Missing crown with possible opening at top of trunk. Woodpecker hole in trunk on eastern aspect, large trunk cavity on northern aspect and small trunk cavity on southern aspect.	High
61	Ash	Woodpecker hole in broken branch on southern aspect and possible cavity and occluded wood in branch on western aspect.	Moderate
62	Ash	Hollowing at base of trunk.	Low
63	Ash	Four knot holes with possible depth on northern and southern aspects.	Low
64	Ash	Woodpecker holes on eastern and southern aspects. Knot hole present on northern aspect.	Moderate
65	Ash	Knot holes with possible depth present on northern and north-western aspects.	Low
66	Ash	Knot hole with possible depth on western aspect.	Low

Tree ref	Species	Description of Features	BCT Category
67	Dead	Trunk cavities present on western and southern aspects. Fallen branch on northern aspect has left cavity in trunk. Lifted bark is present on all aspects.	High
68	Oak	Dead branches in crown with possible features that could not be viewed from the ground.	Low
69	Oak	Mature tree with Ivy cladding and a number of dead branches in crown. Splits in branches on south-eastern aspect and lifted bark on eastern aspect.	Moderate
70	Oak	Woodpecker hole on western aspect at 8m.	Moderate
71	Dead	Trunk cavity and knot hole on northern aspect, hollow branch with cavity on south-eastern aspect and lifted bark present on all aspects.	High
72	Black Poplar	Hollowing of trunk on northern aspect and knot hole with possible depth on western aspect.	Moderate
73	Oak	Branch cavity on western aspect and split branch on northern aspect.	Low
74	Oak	Trunk cavity on southern aspect and split branch with upward facing knot hole on northern aspect.	Moderate
75	Ash	The tree is covered in Ivy and of sufficient size and age to contain roosting features not visible from the ground.	Low
76	Ash	Hollowing of trunk on eastern aspect.	Moderate
77	Ash	Two knot holes of possible depth, split branch with possible cavity and branch cavity with depth on southern aspect and branch cavity on northern aspect.	High
78	Ash	Small trunk cavity on north-eastern aspect.	Low
79	Ash	Occluded wood with possible depth on southern aspect, woodpecker hole on northern aspect and possible trunk cavity into hollow trunk on western aspect.	Moderate
80	Willow	Split trunk with possible cavities on southern aspect.	Low
81	Dead	Two woodpecker holes on eastern aspect.	Moderate
82	Poplar	Split trunk on north-western aspect of limited bat roost potential.	Low
83	Poplar	Woodpecker hole.	Moderate
84	Willow	Cracked branch with possible cavity on eastern aspect.	Low
85	Willow	Woodpecker hole on northern aspect. Views of the southern and western aspects were restricted and further features could be present.	Moderate
86	Oak	The tree is covered in Ivy and of sufficient size and age to contain roosting features not visible from the ground.	Low
87	Oak	The tree is covered in Ivy and of sufficient size and age to contain roosting features not visible from the ground.	Low
88	Ash	Knot hole and branch cavity with possible depth on northern aspect.	Low
89	Ash	The tree is covered in Ivy and of sufficient size and age to contain roosting features not visible from the ground.	Low
90	Dead tree	The tree is covered in Ivy and of sufficient size and age to contain roosting features not visible from the ground.	Low
91	Oak	Occluded wood on southern aspect.	Low

Tree ref	Species	Description of Features	BCT Category
92	Willow	The tree is covered in Ivy and of sufficient size and age to contain roosting features not visible from the ground.	Low
93	Willow	The tree is covered in Ivy and of sufficient size and age to contain roosting features not visible from the ground.	Low
94	Willow	Lifted bark with possible cavities.	Low
95	Ash	Hollow trunk on eastern aspect and branch cavity on north-eastern aspect.	Moderate
96	Ash	Hollow trunk and trunk cavity on northern aspect.	High
97	Ash	Woodpecker hole, three knot holes, trunk cavity with possible depth and a branch cavity on eastern aspect. Occluded wood and upward facing knot hole on western aspect.	Moderate
98	Ash	Two woodpecker holes on south-eastern aspect and cavity at end of branch on eastern aspect.	Moderate
99	Ash	Trunk cavity, lifted bark and cavity at base of branch on eastern aspect, trunk cavity on north-eastern aspect and hollow trunk on southern aspect.	High
100	Ash	Three woodpecker holes on southern aspect.	Moderate
101	Ash	Hollow branch with woodpecker hole on eastern aspect. The branch is open to the elements reducing its potential to support roosting bats.	Low
102	Elm	Three woodpecker holes on northern aspect.	Moderate
103	Sycamore	Knot hole with possible depth on north-western aspect.	Low
104	Ash	Four woodpecker holes, branch cavity and knot hole in branch on western aspect.	High
G1	Woodland	Woodland comprising mature Oak trees with Ash, Hawthorn and Willow. The majority of the trees have negligible potential to support roosting bats with occasional moderate and high potential trees.	Negligible to High
G2	Woodland	Small area of woodland comprising Poplar, Ash, Oak and Sycamore. The majority of trees are of negligible potential with a small number of low potential trees.	Negligible to Low
G3	Woodland	Woodland comprising Poplar, Ash, Oak and Sycamore. The majority of trees are of negligible potential with 1 high potential White Poplar, 1 moderate potential Ash, 1 moderate potential Sycamore and 1 moderate potential Black Poplar.	Negligible to High

3.2.3 All other trees within and immediately adjacent to the site were assessed as having negligible potential to support roosting bats.

3.3 Phase 2 roost surveys

3.3.1 The results of the Phase 1 bat scoping surveys were used to determine the requirement for Phase 2 bat roost survey work of buildings and trees where these had the potential to be affected by emerging development proposals. The Phase 2 bat roost surveys took the form of climbing inspections of trees and emergence/re-entry surveys of buildings and trees (where not safe to climb).

- 3.3.2 In accordance with best practice guidelines (BCT, 2016), high potential trees and buildings were subject to three emergence/re-entry surveys, moderate potential trees and buildings were subject to two emergence/re-entry surveys and low potential buildings were subject to one emergence/re-entry survey. Where survey findings from B2, B3 and B27 indicated that a bat roost may be present, additional surveys were carried out. Details of the dates and times of Phase 2 emergence/re-entry surveys, along with weather conditions and sunset/sunrise times, are provided in *Table 1* above.
- 3.3.3 In accordance with the guidelines low potential trees potentially affected by the proposed development were not subject to Phase 2 roost surveys at this stage however, in the event that retention of a tree identified as having low potential to support roosting bats is not possible, the appropriate approach to works is given in *Section 5* below.
- 3.3.4 All other buildings and trees within the site with the potential to be affected by the development proposals were identified as having 'negligible' potential to support roosting bats and therefore no further survey of these buildings and trees was required in line with current guidance (BCT, 2016).
- 3.3.5 *Table 6* provides a summary of the results of the Phase 2 bat roost surveys of buildings and trees. Key findings of the Phase 1 survey are also summarised where relevant. Locations of identified emergence/re-entry points described in the table are shown on the 'Bat Roost Survey Summary Plan' in *Appendix A*, further information on the emergence/re-entry locations within B2, B3 and B27 are shown in *Appendix B*, and photographs of the buildings are provided in *Appendix E*.

Table 6: Results of Phase 2 roost surveys

Tree/ building ref	Phase 2 survey type	Date / Type	Results	Updated Roost Status
B2	Emergence/ re-entry survey	Dusk 03/07/2019	Emergence 1 x Common Pipistrelle from under bargeboard on southern elevation.	Confirmed roost Transitional/occasional roost supporting one Common Pipistrelle.
		Dusk 04/09/2019	Emergence 1 x Common Pipistrelle from under bargeboard on southern elevation.	
		Dawn 17/09/2019	No emergences / re-entries.	
B3	Emergence/ re-entry survey	Dusk 03/07/2019	Emergence 1 x Common Pipistrelle from under bargeboard on southern elevation.	Confirmed roost Transitional/occasional roost supporting one Common Pipistrelle.
		Dusk 04/09/2019	No emergences / re-entries.	
		Dawn 17/09/2019	No emergences / re-entries.	
B20	Emergence/ re-entry survey	Dusk 27/06/2019	No emergences / re-entries.	Moderate
		Dawn 16/07/2019	No emergences / re-entries.	
B22	Emergence/ re-entry survey	Dawn 27/06/2019	No emergences / re-entries.	Low
B27	Emergence/ re-entry survey	Dusk 27/06/2019	Emergence of 1 x Common Pipistrelle from missing ridge tile on eastern elevation.	Confirmed roost Transitional/occasional roost supporting one Common Pipistrelle.
		Dawn 16/07/2019	No emergences / re-entries.	
		Dusk 16/09/2019	No emergences / re-entries.	
B28	Emergence/ re-entry survey	Dusk 27/06/2019	No emergences / re-entries.	Low
		Dawn 16/07/2019	No emergences / re-entries.	
		Dusk 16/09/2019	No emergences / re-entries.	

Tree/ building ref	Phase 2 survey type	Date / Type	Results	Updated Roost Status
B33	Emergence/ re-entry survey (Buildings within B33 subject to survey as group from surrounding area due to access constraints)	Dawn 28/06/2019	No emergences / re-entries.	Probable roost Transitional/occasional roost supporting one silent unidentified bat. * Additional bat roosts may have been present within B33 which were not recorded due to access constraints.
		Dusk 15/07/2019	No emergences / re-entries.	
		Dusk 29/07/2019	Probable emergence of 1 x silent bat from north-western elevation of southern-most building within B33 (Hermitage Farm).	
G1	Emergence/ re-entry survey	Dusk 25/06/2019	No emergences / re-entries.	Probable roost Transitional/occasional roost supporting one silent unidentified bat.
		Dawn 09/07/2019	No emergences / re-entries.	
		Dusk 16/09/2019	Probable emergence of 1 x silent bat from woodland.	
2	Climbing inspection	14-17 th July 2019	Long split to main stem between ground level and 5m height, terminating in a small knot hole at 5m height. (i) Lower section near ground level exhaustively inspected with no bats or evidence of use - low potential due to height; (ii) Enclosed middle section beneath occluded wood inspected and found to be highly suitable for bat roost use, but for the presence of bees higher up in the feature. No evidence of bat use. (iii) Uppermost small knot hole feature not inspected as was in use as an active entrance for a honey bee nest. Low potential due to presence of bees.	High
8	Emergence/ re-entry survey	Dusk 25/06/2019	No emergences / re-entries.	Moderate
		Dawn 09/07/2019	No emergences / re-entries.	
		Dusk 16/09/2019	No emergences / re-entries.	

Tree/ building ref	Phase 2 survey type	Date / Type	Results	Updated Roost Status
9	Climbing inspection	14-17 th July 2019	Bent over Ash tree beneath large Oak on corner of woodland, with hazard beam split in main stem and occluding cavity on lower main stem. (i) Lower main stem cavity insufficiently deep to be suitable for roost use. (ii) Feature above first branch junction blind and unsuitable for use by roosting bats. (iii) Hazard beam split a good Potential Roost Feature (PRF), but with cobwebbed ends and no evidence of current or former use. (iv) Cavity on underside also suitable for use, but with no evidence of occupation.	High
		Dusk 25/06/2019	No emergences / re-entries.	
		Dawn 09/07/2019	No emergences / re-entries.	
		Dusk 16/09/2019	No emergences / re-entries.	
11	Emergence/ re-entry survey	Dusk 25/06/2019	No emergences / re-entries.	Moderate
		Dawn 09/07/2019	No emergences / re-entries.	
16	Emergence/ re-entry survey	Dusk 26/06/2019	No emergences / re-entries.	Moderate
		Dawn 16/07/2019	No emergences / re-entries.	
17	Emergence/ re-entry survey	Dusk 26/06/2019	No emergences / re-entries.	Confirmed roost Transitional/occasional roost supporting up to two silent unidentified bats.
		Dusk 09/07/2019	No emergences / re-entries.	
		Dawn 30/07/2019	Re-entry of 2 x silent bats into small hole in branch on western aspect.	
18	Emergence/ re-entry survey	Dusk 26/06/2019	No emergences / re-entries.	Confirmed roost Transitional/occasional roost

Tree/ building ref	Phase 2 survey type	Date / Type	Results	Updated Roost Status
		Dusk 09/07/2019	Emergence of 1 x Common Pipistrelle from western aspect of tree.	supporting up to one Common Pipistrelle (the silent bat is also likely to be a Common Pipistrelle in view of timing of re-entry, character of the bat recorded and the location at which it was seen to re-enter).
		Dawn 30/07/2019	Re-entry of 1 x silent bat into western aspect of tree.	
19	Emergence/ re-entry survey	Dusk 26/06/2019	No emergences / re-entries.	Moderate
		Dawn 10/07/2019	No emergences / re-entries.	
20	Emergence/ re-entry survey	Dusk 26/06/2019	No emergences / re-entries.	Moderate
		Dawn 10/07/2019	No emergences / re-entries.	
21	Emergence/ re-entry survey	Dusk 27/06/2019	No emergences / re-entries.	Moderate
		Dusk 22/07/2019	No emergences / re-entries.	
22	Emergence/ re-entry survey	Dusk 27/06/2019	No emergences / re-entries.	Moderate
		Dawn 23/07/2019	No emergences / re-entries.	
23	Emergence/ re-entry survey	Dusk 27/06/2019	No emergences / re-entries.	Moderate
		Dusk 22/07/2019	No emergences / re-entries.	
24	Emergence/ re-entry survey	Dusk 27/06/2019	No emergences / re-entries.	Moderate
		Dusk 22/07/2019	No emergences / re-entries.	

Tree/ building ref	Phase 2 survey type	Date / Type	Results	Updated Roost Status
25	Emergence/ re-entry survey	Dusk 26/06/2019	Emergence of 1 x Common Pipistrelle from hole in tree trunk.	Confirmed roost Transitional/occasional roost supporting one Common Pipistrelle.
		Dawn 10/07/2019	No emergences / re-entries.	
		Dawn 30/07/2019	No emergences / re-entries.	
32	Climbing inspection	14-17 th July 2019	Oak tree in field boundary with a long partially occluded stem split between 2 and 4 metres on the east side of the tree. Two excellent cavities associated with this feature. (i) Narrow, dry 25cm long cavity at mid-point of feature, where occlusion has closed over the stem scar. Clean and highly suitable for roost use, but evidence would not persist due to nature of feature. (ii) Entrance hole at uppermost point of stem split leads to a cavity extending upwards 30cm forming an excellent potential roost feature, clean and dry, but with no evidence of occupation.	High
33	Climbing inspection	14-17 th July 2019	Hedgerow Ash to north of Tree 32. (i) Small woodpecker hole in central uppermost crown open to the top and unsuitable for roost use. (ii) Upper cavities on branch ends in northern crown all blind or otherwise unsuitable for roost use. (iii) Lowest knot pocket on lower north-north-west-facing branch with surrounding occlusion wood - 10cm deep and dry, with some potential for summer roost use by single crevice-dwelling bats, but no evidence of occupation. (iv) Other features all blind or otherwise unsuitable for roost use but may develop over time.	Moderate
50	Emergence/ re-entry survey	Dusk 24/06/2019	No emergences / re-entries.	Moderate
		Dusk 09/07/2019	No emergences / re-entries.	
53	Emergence/ re-entry survey	Dusk 24/06/2019	No emergences / re-entries.	Moderate
		Dusk 08/07/2019	No emergences / re-entries.	
58	Emergence/ re-entry survey	Dusk 24/06/2019	No emergences / re-entries.	Moderate

Tree/ building ref	Phase 2 survey type	Date / Type	Results	Updated Roost Status
		Dawn 10/07/2019	No emergences / re-entries.	
60	Climbing inspection	14-17 th July 2019	Hedgerow Ash with missing crown and massive stem cavity. (i) Upper crown - missing leader and major decay in upper crown all open and upward facing or otherwise unsuitable for bat roost use. (ii) Woodpecker hole enters large main stem cavity which is open and with limited roost potential due to an absence of small, temperature regulated niches. (iii) Platform cavity on west side of stem found to be upward facing and unsuitable for roost use. (iv) Extensive main stem cavity running downwards from around 4m height into deep basal decay below ground level - could not be exhaustively inspected, especially at base of tree around internal buttress roots. Some roost potential but no evidence of use.	High
			Dawn 05/09/2019	
	Emergence/ re-entry survey	Dawn 17/09/2019	No emergences / re-entries.	
		Dusk 25/09/2019	No emergences / re-entries.	
61	Climbing inspection	14-17 th July 2019	Hedgerow Ash with extensive <i>Inonotus</i> decay in upper crown. (i) Missing upper crown and associated features - blind shallow, upward-facing or otherwise unsuitable for roost use at the time of inspection. (ii) Two features on west side in upper crown - occluded knot hole blind, branch scar to the south shallow and open - both unsuitable for roost use. (iii) South-facing woodpecker hole on west branch 20cm deep dry cavity with a flat base with fresh moss and other passerine nest material from this year - no evidence of bat use. (iv) All stem features facing south-east on the main stem blind or otherwise unsuitable. (v) Branch tear over track on south-east side at mid-height - blind and unsuitable.	Low
64	Climbing inspection	14-17 th July 2019	All cavities found to be too small for use. Tree unsuitable for use by roosting bats.	Negligible
72	Emergence/ re-entry survey	Dusk 27/06/2019	No emergences / re-entries.	Moderate

Tree/ building ref	Phase 2 survey type	Date / Type	Results	Updated Roost Status
		Dusk 22/07/2019	No emergences / re-entries.	
74	Climbing inspection	14-17 th July 2019	Westernmost of two large Oak trees in field boundary. (i) 75cm long branch stub with longitudinal splits on main stem at mid height - all features shallow, open or otherwise unsuitable for roost use at the time of inspection. (ii) Lower feature facing south-east - 10cm deep pocket in branch stub with some potential for use but no evidence. (iii) Large south-facing cavity with evidence of use by Jackdaw or other similar nesting birds this season. Extends west into main branch above - dry but very dusty and full of frass and cobwebs in upper reaches – a good potential roost feature but with no evidence of use.	High
76	Emergence/ re-entry survey	Dusk 17/06/2019	No emergences / re-entries.	Moderate
		Dusk 08/07/2019	No emergences / re-entries.	
77	Climbing inspection	14-17 th July 2019	Tall straight-stemmed Ash on northern field boundary. (i) Upper cavity not visible from ground level - open to one side, but with a distinct roof - two Collared Dove eggs within, but some moderate bat roost potential. (ii) Upward-facing north limb cavity in upper crown - 3ft deep and open at end, heavily used by Jackdaw, but with some roost potential. (iii) Knot hole on west limb connects to a cavity on the upper side of the branch - interior full of frass and decayed wood - potentially suitable but usage very unlikely given interior condition. (iv) Long slit on underside of north-east limb in mid-crown - 40cm deep with sticks and a Collared Dove egg present. (v) 15cm deep small cobwebbed east-facing cavity on northern limb - suitable but no evidence of usage. (vi) Knot hole over field on south-east side - blind and unsuitable. (vii) Small pocket on south-east main stem at 3.5m height - excellent small roost feature for single crevice-dwelling bat - no evidence of occupation.	High

Tree/ building ref	Phase 2 survey type	Date / Type	Results	Updated Roost Status
79	Climbing inspection	14-17 th July 2019	Hollow-stemmed Ash on northern field boundary to west of Tree 77. (i) Upper features all found to be open, blind, upward-facing or otherwise unsuitable for roost use. (ii) Knot holes in upper tree fully occluded or blind and unsuitable for roost use. (iii) Main stem cavity - owl pellets and white staining present - a large complex trunk cavity which also extends upwards some distance into a western leader. No evidence of bat use after a thorough and detailed inspection, but the nature of the feature meant that an exhaustive inspection could not be achieved.	Moderate
	Emergence/ re-entry survey	Dawn 05/09/2019	No emergences / re-entries.	
		Dusk 25/09/2019	No emergences / re-entries.	
81	Emergence/ re-entry survey	Dusk 17/06/2019	No emergences / re-entries.	Moderate
		Dusk 08/07/2019	No emergences / re-entries.	
83	Climbing inspection	14-17 th July 2019	Tree within plantation with a shooting seat currently attached to the lower trunk. (i) Woodpecker hole on main stem at c.8m height above shooting seat - extends downwards 15cm to dry base - evidence of use by nesting birds. No evidence of use by bats, but potentially suitable in absence of birds.	Moderate
85	Emergence/ re-entry survey	Dusk 17/06/2019	No emergences / re-entries.	Moderate
		Dusk 08/07/2019	No emergences / re-entries.	
95	Emergence/ re-entry survey	Dusk 24/06/2019	No emergences / re-entries.	Moderate
		Dusk 08/07/2019	No emergences / re-entries.	
96	Emergence/ re-entry survey	Dusk 24/06/2019	No emergences / re-entries.	High
		Dusk 08/07/2019	No emergences / re-entries.	

Tree/ building ref	Phase 2 survey type	Date / Type	Results	Updated Roost Status
		Dawn 23/07/2019	No emergences / re-entries.	
97	Climbing inspection	14-17 th July 2019	Tree midway along east side of small copse, overhanging field. (i) Small knot hole on eastern limb overhanging field - 15cm deep and dry, with good potential for roost use but no evidence. (ii) Adjacent wider branch-end rot pocket - 10cm deep and more open - some limited potential. (iii) Small knot hole on south-east side - extends 15cm, clean and dry but used by earwigs. Moderate potential. (iv) Woodpecker hole in upper tree clean, dry and suitable for roosting bats but with no evidence of occupation. (v) Dead leader with pockmarked surface on west side of tree – open and currently unsuitable for roost use. (vi) West-facing knot hole above main stem division - upward facing, open and unsuitable for roost use.	High
98	Climbing inspection	14-17 th July 2019	Ash in hedgerow field boundary. (i) Uppermost cavity with vertical 60cm long split down south-east side - extends upwards from open section for 20cm but quite open and draughty. Cobwebs and loose material in upper reaches. No bats or evidence of use. (ii) Frass and funnel web spiders web below open section of same feature - limited potential and no evidence of use. (iii) Crack open and cobwebbed below this, with ash leaves indicative of use by Grey Squirrel in base. (iv) Woodpecker hole below these features occupied by a very aggressive Grey Squirrel. Potentially suitable for roost use in absence of Squirrels.	Moderate
99	Emergence/ re-entry survey	Dusk 24/06/2019	No emergences / re-entries.	High
		Dusk 09/07/2019	No emergences / re-entries.	
		Dawn 23/07/2019	No emergences / re-entries.	

Tree/ building ref	Phase 2 survey type	Date / Type	Results	Updated Roost Status
100	Climbing inspection	14-17 th July 2019	Ash in field boundary hedgerow. (i) Main leader hollow to south-west of hedge line. Woodpecker holes on north side of leader give access to a deep cavity extending 60cm down the hollow main stem. Suitable for roost use but no evidence of occupation. (ii) Obvious woodpecker hole on south side of tree at 3.5m extends downwards to join internally with a second access point 40cm below the woodpecker hole to the east. Dry cavity but with extensive frass and cobwebs, indicating no recent roost use. (iii) Upward-pointing cavity at site of branch tear on south-east side of main stem at 2m height - extends north-west into a dry interior but with only low roost potential.	Moderate
102	Climbing inspection	14-17 th July 2019	No roost potential - three woodpecker holes all found to be blind, shallow or otherwise unsuitable	Negligible
104	Climbing inspection	14-17 th July 2019	Ash above hedgerow field boundary. (i) Upper crown and leaders missing – potential roost features all found to be upward-pointing, blind, shallow or otherwise currently unsuitable for use by roosting bats. (ii) East-central leader in upper crown - some small bark splits and small voids with moderate roost potential for single summer-roosting bats, but no evidence of use. (iii) Branch end feature in lower crown found to be blind and unsuitable for roost use. (iv) Knot hole - shallow and heavily cobwebbed with low roost potential.	Moderate
G3	Emergence/ re-entry survey	Dusk 22/07/2019	During emergence survey of Tree 72, emergence of 2 x Noctules recorded from G3.	Confirmed roost Confirmed roost present within the copse supporting two Noctule bats.

3.3.6 In addition to the trees/buildings subject to Phase 2 surveys, 1 confirmed roost was incidentally recorded within a woodland copse (G3 – see above) and 4 ‘high’ potential trees (29, 44, 67, 71), 6 ‘moderate’ potential trees (28, 37, 40, 41, 69, 70) and 56 ‘low’ potential trees (G2, 1, 3-7, 10, 12-15, 26, 27, 30, 31, 34-36, 38, 39, 42, 43, 46-49, 51, 52, 54-57, 59, 62, 63, 65, 66, 68, 73, 75, 78, 80, 82, 84, 86-89, 90-94, 101, 103) were identified within the site during the Phase 1 scoping survey. In line with current best practice guidelines (BCT, 2016), further surveys of these trees are not required, at this stage, in support of a planning application due to: (i) their retention within the scheme; (ii) their location beyond the site boundary; and/or (iii) their low potential to support roosting bats. However, in the event that the future retention of any of these trees is not possible, the appropriate approach to works is given in *Section 5* below.

3.3.7 All other trees and buildings within the site were identified as having ‘negligible’ potential to support roosting bats.

3.4 Phase 2 activity transect surveys

3.4.1 Details of the date and time of bat activity transect surveys, along with weather conditions and sunset/sunrise times, are provided in *Table 2*. The areas covered during each survey visit included all site boundaries, hedgerows and woodland copses within each transect area.

3.4.2 A visual summary of bat foraging and commuting activity recorded during the surveys has been provided in *Appendix D*. In total, at least six species were recorded during the transect surveys: Common Pipistrelle, Soprano Pipistrelle, Noctule, Serotine, Brown Long-eared bat and *Myotis* sp. bats. A summary of each species/species group recorded, their activity and an estimation of numbers using the site during any one survey is provided in *Table 7* below.

Table 7: Summary of bat activity during transect surveys

Species	Activity summary	Approx. number recorded*
Common Pipistrelle	<p>Common Pipistrelle was the most frequently recorded species during the activity surveys. The majority of Common Pipistrelle activity was associated with the River Ouzel, Pineham Nature Reserve (located off-site) and hedgerows in the west of the site, a small woodland copse in the north of the site and a small woodland copse and mature treeline in the centre of the site. Common Pipistrelles were also recorded on a less frequent basis using hedgerows and woodland bordering the grassland and arable fields in the remainder of the site.</p> <p>It is expected that up to 21 Common Pipistrelle bats could have been using the site at any one time for foraging and commuting.</p>	21
Soprano Pipistrelle	<p>Soprano Pipistrelle was the second most frequently recorded species during the activity surveys. Soprano Pipistrelle activity was scattered across the site, associated with the River Ouzel, Pineham Nature Reserve (located off-site) and hedgerows in the west of the site and woodland copses in the north of the site. Soprano Pipistrelles were also recorded on a less frequent basis using hedgerows and woodland bordering the grassland and arable fields in the remainder of the site.</p> <p>It is expected that up to 10 Soprano Pipistrelle bats could have been using the site at any one time for foraging and commuting.</p>	10
Noctule	<p>Noctule was the third most frequently recorded species during the activity survey. The majority of Noctule activity was associated with the River Ouzel, Pineham Nature Reserve (located off-site) and hedgerows in the west of the site. Noctules were also recorded on a less frequent basis using hedgerows and woodland bordering the grassland and arable fields in the remainder of the site.</p> <p>It is expected that up to 8 Noctules could have been using the site at any one time for foraging and commuting.</p>	8
<i>Myotis</i> sp.	<p>The majority of <i>Myotis</i> species of bat were recorded along hedgerows in the south-east of the site. <i>Myotis</i> species of bat were also recorded on a less frequent basis using hedgerows bordering the grassland and arable fields in the west of the site.</p> <p>It is expected that up to 3 <i>Myotis</i> species of bat could have been using the site at any one time for foraging and commuting.</p>	3
Brown Long-eared bat	<p>Brown Long-eared bats were recorded on two occasions associated with areas of mixed plantation woodland in the south-east of the site.</p> <p>It is likely that no more than 1 Brown Long-eared bat was using the site at any one time during the survey and that the site forms part of a much larger foraging range for individuals of this species.</p> <p>It should be noted however that Brown Long-eared bat calls are very quiet which means that they are less easily recorded by bat detectors. It is therefore possible that higher (but not substantially higher) numbers of Brown Long-eared bats may have been using the site than were recorded.</p>	1(+)
Serotine	<p>Serotine was recorded on one occasion in association with a hedgerow bordered by grassland fields in the west of the site.</p> <p>It is likely that the site was used by no more than 1 Serotine bat at any one time and that the site forms part of a much larger foraging range for a low number of individuals of this species.</p>	1

* This is an approximation of the number of bats of any one species estimated to have been using the site during any one visit.

- 3.4.3 The majority of activity recorded within and adjacent to the site during the transect surveys related to Common Pipistrelle bats, with up to 21 Common Pipistrelle bats considered to be using the site at any one time. The majority of Common Pipistrelle activity was recorded along the River Ouzel, the off-site Pineham Nature Reserve and connected hedgerows in the west of the site, a small woodland copse in the north of the site and a small woodland copse and mature treeline in the centre of the site. Common Pipistrelle was however also recorded less frequently using the hedgerows and woodland copses bordered by grassland and arable fields in the remainder of the site.
- 3.4.4 Soprano Pipistrelle was the second most frequently recorded species during the transect surveys, with up to 10 Soprano Pipistrelle bats considered to be using the site at any one time. The majority of Soprano Pipistrelle activity was associated with the River Ouzel, the off-site Pineham Nature Reserve and hedgerows in the west of the site and woodland copses in the north of the site. Soprano Pipistrelles were also recorded on a less frequent basis using hedgerows and woodland bordering the grassland and arable fields in the remainder of the site.
- 3.4.5 Noctule was the third most frequently recorded species during the transect surveys, with up to 8 Noctule bats considered to be using the site at any one time. The majority of Noctule activity was associated with the River Ouzel, the off-site Pineham Nature Reserve and hedgerows in the west of the site. Noctule were also recorded on a less frequent basis using hedgerows and woodland bordering the grassland and arable fields in the remainder of the site.
- 3.4.6 *Myotis* sp., Brown Long-eared bat and Serotine bats were all recorded on an occasional or individual basis. Activity relating to these species/species group consisted of brief passes by single bats foraging or commuting along hedgerows and woodland edges crossing and bordering the site.

3.5 Phase 2 automated activity surveys

- 3.5.1 The dates during which the automated detector was deployed, along with sunset/sunrise times and temperatures are provided in *Table 3*. The locations in which the automated bat detector was placed during each deployment are shown on the plan in *Appendix C*.
- 3.5.2 The automated detector was placed in 21 separate locations to give an indication of the species using different areas of the site and relative levels of activity throughout the night. A summary of bat activity recorded during the automated surveys in each location is provided below in *Table 8*. In total, ten species or species groups were recorded during the automated surveys; Common Pipistrelle, Soprano Pipistrelle, Nathusius' Pipistrelle, Noctule, Serotine, Leisler's, Brown Long-eared bat, *Myotis* sp., Greater Horseshoe and Barbastelle bats.

Table 8: Summary of bat activity recorded by the automated detector

Location	Activity summary
1A	<p>The automated detector at Location 1A recorded bat activity along a seasonally wet ditch with areas of dense scrub bordered by arable fields located within Transect 1 in the west of the site.</p> <p>A total of 16 bat passes were recorded over 3 nights; an average of 5 bat recordings per night. On one night however no bat recordings were recorded, possibly due to unfavourable weather conditions. Removing this night from the calculations increases the average number of bat recordings per night to 8.</p> <p>Noctule was the most frequently recorded species at Location 1A (56.3% of the bat recordings), with occasional foraging activity recorded during one night. Common Pipistrelle was the second most frequently recorded species at Location 1A (43.8% of the bat recordings), with occasional foraging activity recorded during most nights.</p>
1B	<p>The automated detector at Location 1B recorded bat activity along the River Ouzel where it is bordered by grassland fields between Transects 1 and 4 in the west of the site.</p> <p>A total of 281 bat passes were recorded over 7 nights; an average of 40 bat recordings per night.</p> <p>Common Pipistrelle was the most frequently recorded species at Location 1B (50.2% of the bat recordings), with occasional to regular foraging activity recorded during every night. Soprano Pipistrelle was the second most frequently recorded species at Location 1B (25.3% of the bat recordings), with occasional foraging activity recorded during every night.</p> <p>Occasional passes by Leisler's, Noctule, <i>Myotis</i> sp., Brown Long-eared bat, Barbastelle and Serotine bats were also recorded (9.6%, 9.3%, 3.6%, 1.1%, 0.7% and 0.4% of passes respectively).</p>
1C	<p>The automated detector at Location 1C recorded bat activity along a defunct hedgerow bordered by grassland and arable fields and the western end of a seasonally wet drain located within Transect 1 in the west of the site.</p> <p>A total of 134 bat passes were recorded over 4 nights; an average of 34 bat recordings per night.</p> <p>Common Pipistrelle was the most frequently recorded species at Location 1C (44.0% of the bat recordings), with occasional to regular foraging activity recorded during every night. Soprano Pipistrelle was the second most frequently recorded species at Location 1C (30.6% of recordings), with occasional foraging activity recorded during every night.</p> <p>Occasional passes by Noctule, <i>Myotis</i> sp., Leisler's, Nathusius' Pipistrelle, Barbastelle, Serotine and Brown Long-eared bats were also recorded (11.2%, 5.2%, 4.5%, 1.5%, 1.5%, 0.7% and 0.7% of passes respectively).</p>

Location	Activity summary
1D	<p>The automated detector at Location 1D recorded bat activity along a defunct hedgerow and dry ditch bordered by grassland and arable fields located within Transect 1 in the west of the site.</p> <p>A total of 86 bat passes were recorded over 6 nights; an average of 14 bat recordings per night.</p> <p>Common Pipistrelle was the most frequently recorded species at Location 1D (64.0% of the bat recordings), with occasional foraging activity recorded during every night. Soprano Pipistrelle and Noctule were the second and third most frequently recorded species at Location 1D (16.3% and 12.8% of the bat recordings, respectively), with occasional foraging activity recorded during most nights.</p> <p>Occasional passes by <i>Myotis</i> sp., Nathusius' Pipistrelle and Brown Long-eared bats were also recorded (4.7%, 1.2% and 1.2% of passes respectively).</p>
1E	<p>The automated detector at Location 1E recorded bat activity along a hedgerow bordered by grassland and arable fields located within Transect 1 in the west of the site.</p> <p>A total of 311 bat passes were recorded over 5 nights; an average of 62 bat recordings per night.</p> <p>Common Pipistrelle was the most frequently recorded species at Location 1E (48.2% of the bat recordings), with occasional foraging activity recorded during every night. Soprano Pipistrelle and Noctule were the second and third most frequently recorded species at Location 1E (32.5% and 18.3% of the bat recordings, respectively), with occasional foraging activity recorded during most nights.</p> <p>Individual passes by <i>Myotis</i> sp., Brown Long-eared bat and Serotine bat were also recorded (0.3%, 0.3% and 0.3% of passes respectively).</p>
1F	<p>The automated detector at Location 1F recorded bat activity along a hedgerow and ditch bordered by grassland fields located within Transect 1 in the west of the site.</p> <p>A total of 920 bat passes were recorded over 7 nights; an average of 131 bat recordings per night.</p> <p>Common Pipistrelle was the most frequently recorded species at Location 1F (64.7% of the bat recordings), with occasional to regular foraging activity recorded during every night. Soprano Pipistrelle and Noctule were the second and third most frequently recorded species at Location 1F (17.4% and 11.4% of the bat recordings, respectively), with occasional to regular foraging activity recorded during every night.</p> <p>Occasional passes by <i>Myotis</i> sp., Brown Long-eared bat, Nathusius' Pipistrelle and Serotine bats were also recorded (4.7%, 1.2%, 0.5% and 0.1% of passes respectively).</p>

Location	Activity summary
2A	<p>The automated detector at Location 2A recorded bat activity along an intact hedgerow and dry ditch bordered by arable fields located within Transect 2 in the north-west of the site.</p> <p>A total of 7272 bat passes were recorded over 5 nights; an average of 1454 bat recordings per night.</p> <p>Common Pipistrelle was the most frequently recorded species at Location 2A (91.7% of the bat recordings), with occasional to regular foraging activity recorded during every night. Soprano Pipistrelle and <i>Myotis</i> sp. were the second and third most frequently recorded species at Location 2A (6.0% and 2.1% of the bat recordings, respectively), with occasional foraging activity recorded during most nights.</p> <p>Occasional passes by Noctule, Brown Long-eared bats and Greater Horseshoe bats were also recorded (0.2%, 0.1% and 0.03% of passes respectively).</p>
2B	<p>The automated detector at Location 2B recorded bat activity along a defunct hedgerow bordered by deciduous woodland and an arable field located within Transect 2 in the north of the site.</p> <p>A total of 135 bat passes were recorded over 6 nights; an average of 23 bat recordings per night.</p> <p>Soprano Pipistrelle was the most frequently recorded species at Location 2B (65.2% of the bat recordings), with occasional to regular foraging activity recorded during every night. Common Pipistrelle and Noctule were the second and third most frequently recorded species at Location 2B (20.7% and 10.4% of the bat recordings, respectively), with occasional foraging activity recorded during most nights.</p> <p>Occasional passes by <i>Myotis</i> sp. and Brown Long-eared bats were also recorded (3.0% and 0.7% of passes respectively).</p>
2C	<p>The automated detector at Location 2C recorded bat activity along an intact hedgerow and dry ditch bordered by arable fields located within Transect 2 in the north of the site.</p> <p>A total of 293 bat passes were recorded over 4 nights; an average of 73 bat recordings per night.</p> <p>Common Pipistrelle was the most frequently recorded species at Location 2C (66.9% of the bat recordings), with occasional to regular foraging activity recorded during every night. Soprano Pipistrelle was the second most frequently recorded species at Location 2C (31.1% of the bat recordings), with occasional foraging activity recorded during most nights.</p> <p>Occasional passes by Noctule and Brown Long-eared bats were also recorded (1.7% and 0.3% of passes respectively).</p>

Location	Activity summary
3A	<p>The automated detector at Location 3A recorded bat activity along an intact hedgerow and dry ditch bordered by arable fields located within Transect 3 in the centre of the site.</p> <p>A total of 84 bat passes were recorded over 6 nights; an average of 14 bat recordings per night.</p> <p>Common Pipistrelle was the most frequently recorded species at Location 3A (71.4% of the bat recordings), with occasional to regular foraging activity recorded during every night. Noctule was the second most frequently recorded species at Location 3A (22.6% of the bat recordings), with occasional foraging activity recorded during most nights.</p> <p>Occasional passes by Soprano Pipistrelle, Brown Long-eared bat and Leisler's bat were also recorded (3.6%, 1.2% and 1.2% of passes respectively).</p>
3B	<p>The automated detector at Location 3B recorded bat activity within an area of woodland bordered by an arable field located on the boundary between Transects 2 and 3 in the north of the site.</p> <p>A total of 321 bat passes were recorded over 5 nights; an average of 64 bat recordings per night.</p> <p>Noctule was the most frequently recorded species at Location 3B (36.1% of the bat recordings), with occasional to regular foraging activity recorded during most nights. Soprano Pipistrelle and Common Pipistrelle were the second and third most frequently recorded species at Location 3B (28.3% and 27.1% of the bat recordings, respectively), with occasional foraging activity recorded during every night.</p> <p>Occasional passes by Barbastelle, <i>Myotis</i> sp. and Brown Long-eared bat were also recorded (6.5%, 1.2% and 0.6% of passes respectively).</p>
3C	<p>The automated detector at Location 3C recorded bat activity along a brook and intact hedgerow bordered by arable fields located within Transect 3 in the centre of the site.</p> <p>A total of 272 bat passes were recorded over 6 nights; an average of 45 bat recordings per night.</p> <p>Common Pipistrelle was the most frequently recorded species at Location 3C (78.3% of the bat recordings), with occasional to regular foraging activity recorded during every night.</p> <p>Occasional passes by Soprano Pipistrelle, Noctule, <i>Myotis</i> sp., Leisler's bat, Brown Long-eared bat, Nathusius' Pipistrelle and Greater Horseshoe were also recorded (11.0%, 5.5%, 1.8%, 1.8%, 0.7%, 0.4% and 0.4% of passes respectively).</p>

Location	Activity summary
4A	<p>The automated detector at Location 4A recorded bat activity along a hedgerow and dry ditch bordered by arable fields located within Transect 4 in the south-west of the site.</p> <p>A total of 1375 bat passes were recorded over 5 nights; an average of 275 bat recordings per night.</p> <p>Common Pipistrelle was the most frequently recorded species at Location 4A (53.7% of the bat recordings), with occasional to regular foraging activity recorded during every night. Soprano Pipistrelle and <i>Myotis</i> sp. of bat were the second and third most frequently recorded species/species group at Location 4A (27.9% and 17.2% of the bat recordings, respectively), with occasional to regular foraging activity recorded during every night.</p> <p>Occasional passes by Noctule and Nathusius' Pipistrelle were also recorded (1.1% and 0.1% of passes respectively).</p>
4B	<p>The automated detector at Location 4B recorded bat activity along an intact hedgerow and dry ditch bordered by arable fields located on the boundary between Transect 4 and 6 in the south-east of the site.</p> <p>A total of 622 bat passes were recorded over 5 nights; an average of 124 bat recordings per night.</p> <p>Common Pipistrelle was the most frequently recorded species at Location 4B (76.5% of the bat recordings), with occasional to regular foraging activity recorded during every night. Soprano Pipistrelle was the second most frequently recorded species at Location 4B (16.4% of the bat recordings), with occasional foraging activity recorded during most nights.</p> <p>Occasional passes by <i>Myotis</i> sp., Noctule, Leisler's bat, Brown Long-eared bat and Nathusius' Pipistrelle were also recorded (4.8%, 1.8%, 0.2% and 0.2% of passes respectively).</p>
4C	<p>The automated detector at Location 4C recorded bat activity along an intact hedgerow and dry ditch bordered by arable fields located within Transect 4 in the centre of the site.</p> <p>A total of 128 bat passes were recorded over 5 nights; an average of 26 bat recordings per night.</p> <p>Common Pipistrelle was the most frequently recorded species at Location 4C (75.0% of the bat recordings), with occasional to regular foraging activity recorded during every night.</p> <p>Occasional passes by Soprano Pipistrelle, <i>Myotis</i> sp., Noctule and Brown Long-eared bats were also recorded (14.8%, 7.0%, 2.3% and 0.8% of passes respectively).</p>

Location	Activity summary
5A	<p>The automated detector at Location 5A recorded bat activity within an area of woodland bordered by amenity grassland located within Transect 5 in the south-east of the site.</p> <p>A total of 566 bat passes were recorded over 5 nights; an average of 113 bat recordings per night.</p> <p>Common Pipistrelle was the most frequently recorded species at Location 5A (88.0% of the bat recordings), with occasional to regular foraging activity recorded during every night.</p> <p>Occasional passes by Soprano Pipistrelle, Noctule and <i>Myotis</i> sp. bats were also recorded (8.8%, 1.6% and 1.6% of passes respectively).</p>
5B	<p>The automated detector at Location 5B recorded bat activity along an intact hedgerow and dry ditch bordered by arable fields located within Transect 5 in the south of the site.</p> <p>A total of 636 bat passes were recorded over 5 nights; an average of 127 bat recordings per night.</p> <p>Common Pipistrelle was the most frequently recorded species at Location 5B (67.5% of the bat recordings), with occasional to regular foraging activity recorded during every night. Soprano Pipistrelle was the second most frequently recorded species at Location 5B (27.4% of the bat recordings), with occasional to regular foraging activity recorded during every night.</p> <p>Occasional passes by <i>Myotis</i> sp., Noctule and Brown Long-eared bats were also recorded (3.5%, 1.4% and 0.3% of passes respectively).</p>
5C	<p>The automated detector at Location 5C recorded bat activity along an intact hedgerow and dry ditch bordered by arable fields located within Transect 5 in the south of the site.</p> <p>A total of 188 bat passes were recorded over 5 nights; an average of 38 bat recordings per night.</p> <p>Common Pipistrelle was the most frequently recorded species at Location 5C (71.8% of the bat recordings), with occasional to regular foraging activity recorded during every night. Noctule was the second most frequently recorded species at Location 5C (16.0% of the bat recordings), with occasional foraging activity recorded during most nights.</p> <p>Occasional passes by Soprano Pipistrelle, <i>Myotis</i> sp., Barbastelle, Brown Long-eared bat and Leisler's bat were also recorded (5.3%, 2.7%, 2.1%, 1.6% and 0.5% of passes respectively).</p>

Location	Activity summary
6A	<p>The automated detector at Location 6A recorded bat activity along an intact hedgerow and dry ditch bordered by arable fields located within Transect 6 in the south-east of the site.</p> <p>A total of 131 bat passes were recorded over 5 nights; an average of 26 bat recordings per night.</p> <p>Common Pipistrelle was the most frequently recorded species at Location 6A (78.6% of the bat recordings), with occasional to regular foraging activity recorded during every night. Noctule was the second most frequently recorded species at Location 6A (17.6% of the bat recordings), with occasional foraging activity recorded during most nights.</p> <p>Occasional passes by Soprano Pipistrelle were also recorded (3.8% of passes).</p>
6B	<p>The automated detector at Location 6B recorded bat activity within an area of mixed woodland bordered by arable fields located on the boundary of Transects 5 and 6 in the south-east of the site.</p> <p>A total of 347 bat passes were recorded over 6 nights; an average of 58 bat recordings per night.</p> <p>Soprano Pipistrelle was the most frequently recorded species at Location 6B (43.5% of the bat recordings), with occasional to regular foraging activity recorded during every night. Common Pipistrelle was the second most frequently recorded species at Location 6B (35.7% of the bat recordings), with occasional to regular foraging activity recorded during every night.</p> <p>Occasional passes by Noctule, Brown Long-eared bat, <i>Myotis</i> sp. and Barbastelle bats were also recorded (10.4%, 6.6%, 2.6%, and 1.2% of passes respectively).</p>
6C	<p>The automated detector at Location 6C recorded bat activity along an intact hedgerow and dry ditch bordered by Newport Road and arable fields located within Transect 6 in the south-east of the site.</p> <p>A total of 73 bat passes were recorded over 5 nights; an average of 15 bat recordings per night.</p> <p>Common Pipistrelle was the most frequently recorded species at Location 6C (53.4% of the bat recordings), with occasional foraging activity recorded during most nights. Noctule was the second most frequently recorded species at Location 6C (28.8% of the bat recordings), with occasional foraging activity recorded during most nights.</p> <p>Occasional passes by <i>Myotis</i> sp., Soprano Pipistrelle, Leisler's bat, Brown Long-eared bat and Serotine bat were also recorded (9.6%, 2.7%, 2.7%, 1.4% and 1.4% of passes respectively).</p>

3.5.3

In summary:

- The static detectors recorded Common Pipistrelle and Noctule at all locations the remote detectors were deployed;
- Soprano Pipistrelle was recorded at all locations except Location 1A;
- *Myotis* sp. was recorded at all locations except Locations 1A, 2C, 3A and 6A;

- Brown Long-eared bat was recorded at all locations except Locations 1A, 4A, 5A and 6A;
- Leisler's bat was recorded at Locations 1B, 1C, 1E, 3A, 3C, 4B, 5C and 6C;
- Nathusius' Pipistrelle was recorded at Locations 1C, 1D, 1F, 3C, 4A and 4B;
- Barbastelle was recorded at Locations 1B, 1C, 3B, 5C and 6B.
- Serotine was recorded at Locations 1B, 1C, 1F and 6C; and
- Greater Horseshoe bat was recorded at Locations 2A and 3C.

3.5.4 The greatest number of bat recordings was recorded at Location 2A and the highest diversity of bat species was recorded at Location 1C. The fewest number of bat recordings per night and lowest diversity of bat species was recorded at Location 1A. Common Pipistrelle was the most frequently recorded species relating to 76.8% of all bat passes recorded, with all locations being used by foraging bats of this species on at least an occasional basis on each night. Soprano Pipistrelle, followed by *Myotis* sp., Noctule and Brown Long-eared bats, were the next most recorded bat species (14.3%, 5.1%, 5.1% and 0.4% of all bat recordings, respectively), with similar patterns of activity to the Common Pipistrelle bats however at much lower numbers. Leisler's bat, accounting for 0.4% of all bat recordings, was predominately recorded at Locations 1B, 1C and 3C associated with detectors deployed in close proximity to waterbodies. Barbastelle bat, accounting for 0.2% of all bat recordings, was predominately recorded at Location 3B and to a lesser extent Locations 5C and 6B which are associated with (or in the case of Location 5C in close proximity to) areas of woodland. Nathusius' Pipistrelle recordings, accounting for 0.1% of all bat recordings, were scattered across the site. Only three recordings each of Serotine and Greater Horseshoe bats were made across the site during the automated detector survey.

4 SUMMARY AND IMPACT ASSESSMENT

4.1 Bat roosting habitat

4.1.1 Confirmed and probable bat roosts were recorded within B2, B3, B27, B33 and Trees 17, 18, 25, G1 and G3. Emergence and re-entry locations on buildings are illustrated on the plans in *Appendix B* and photographs of the buildings are provided in *Appendix B* and *E*. In summary:

- **B2:** A confirmed roost for a single Common Pipistrelle was recorded under the bargeboard on the southern elevation of B2 on the first and second surveys. No bats were recorded roosting within the building on the third survey visit. The roost associated with this building is likely to be a low-status non-breeding roost for one Common Pipistrelle used on an occasional/transitory basis.
- **B3:** A confirmed roost for a single Common Pipistrelle was recorded under the bargeboard on the southern elevation of B3 on the first survey. No bats were recorded roosting within the building on the second or third survey visits. The

roost associated with this building is likely to be a low-status non-breeding roost for one Common Pipistrelle used on an occasional/transitory basis.

- **B27:** A confirmed roost for a single Common Pipistrelle was recorded under a missing ridge tile on the eastern elevation of B27 on the first survey. No bats were recorded roosting within the building on the second or third survey visits. The roost associated with this building is likely to be a low-status non-breeding roost for one Common Pipistrelle used on an occasional/transitory basis.
- **B33:** A probable roost for a silent bat of indeterminate species, was recorded from the north-western elevation of the southern-most building within the B33 complex on the third survey. No bats were recorded roosting within the building complex on the first or second survey visits. The surveys indicate that this building supports a low-status non-breeding roost for one bat, however due to the access limitations associated with the B33 complex (discussed in *Section 2.5.1* above), this assessment is subject to re-evaluation once the further surveys recommended in *Section 5.2.26* below have been carried out.
- **Tree 17:** A confirmed roost for two silent bats of indeterminate species, which were recorded emerging from a small hole in a branch on the western aspect on the third survey visit. No bats were recorded roosting within the tree on the first or second survey visits. The roost associated with this tree is likely to be a low-status non-breeding roost for two bats of indeterminate species used on an occasional/transitory basis.
- **Tree 18:** A confirmed roost for one Common Pipistrelle was recorded emerging from the western aspect of the tree on the second survey visit. In addition, on the third survey visit a silent bat was recorded re-entering the same feature. No bats were recorded roosting within the tree on the first survey visit. Due to the size, behaviour and observations made during other surveys, it is likely that the silent bat was also a Common Pipistrelle. The roost associated with this tree is likely to be a low-status non-breeding roost for one Common Pipistrelle used on an occasional/transitory basis.
- **Tree 25:** A confirmed roost for one Common Pipistrelle, which was recorded emerging from a hole in the trunk of the tree on the first survey visit. No bats were recorded roosting within the tree on the second or third survey visits. The roost associated with this tree is likely to be a low-status non-breeding roost for one Common Pipistrelle used on an occasional/transitory basis.
- **G1:** A probable roost for one silent bat of indeterminate species was recorded emerging from the tree group on the third survey visit. No bats were recorded roosting within the tree group on the first or second survey visits. The roost associated with this tree group is likely to be a low-status non-breeding roost for one silent bat of indeterminate species used on an occasional/transitory basis.

- **G3:** A confirmed roost for two Noctule bats was incidentally recorded within this tree group.

4.1.2 The survey results therefore indicate that:

- B2, B3, B27, Tree 18 and Tree 25 support confirmed occasional/transitory roosts for individual Common Pipistrelle bats;
- G1 supports a probable occasional/transitory roost for an individual bat of indeterminate species;
- Tree 17 supports a confirmed occasional/transitory roost for two bats of indeterminate species;
- G3 supports at least two Noctules; and
- B33 supports at least one bat of indeterminate species.

4.1.3 The low numbers of bats recorded roosting within the buildings and trees indicates that these are small low-status non-breeding roosts which may be used by male or non-breeding female bats.

4.1.4 Notwithstanding the low status of the bat roosts recorded, in the event that planning permission is granted for development of the site, it is recommended that B2, B3, B27, B33 and Trees 17, 18, 25, G1 and G3 should, if possible, be retained. It is understood that it may be possible to retain Trees 17, 18, 25, G1 and G3, however B2, B3, B27 and B33 are expected to be demolished. It will not be possible to retain the identified roosts associated with these buildings and therefore proposals have the potential to conflict with the nature conservation legislation afforded to bats (set out in *Section 1.2*). Works to the above buildings with potential to affect roosting bats should therefore be carried out under a full European Protected Species Mitigation (EPSM) licence³. The licence application would need to be supported by a detailed method statement setting out measures by which individual bats would be protected during construction works and opportunities for roosting bats would be maintained thereby ensuring the continued favourable conservation status of the local bat population. Suitable measures by which this can be achieved are provided in *Section 5* below.

4.2 Foraging and commuting activity

4.2.1 At least ten species of bat were recorded using the site for foraging and commuting, with varying levels of activity observed throughout the surveys. The plan in *Appendix D* provides an overview of bat activity recorded during the surveys.

³ The 'Low Impact Licence' approach only covers small numbers of roost sites which is not the case in this instance.

- 4.2.2 The majority of activity recorded related to Common Pipistrelle bats, with up to 21 Common Pipistrelle bats considered to be using the site at any one time during the activity transect survey. The majority of Common Pipistrelle activity was recorded along the River Ouzel, the off-site Pineham Nature Reserve and connected hedgerows in the west of the site, a small woodland copse in the north of the site and a small woodland copse and mature treeline in the centre of the site. Common Pipistrelle was however also recorded less frequently using the hedgerows and woodland copses bordered by grassland and arable fields in the remainder of the site. Common Pipistrelle is a common and widespread bat species in Britain, with an estimated British population of 3,040,000 individuals (Mathews *et. al.*, 2018). The site therefore supports only a very small proportion of the British population of this species.
- 4.2.3 Soprano Pipistrelle was the second most frequently recorded species during the transect surveys, with up to 10 Soprano Pipistrelle bats considered to be using the site at any one time during the activity transect survey. The majority of Soprano Pipistrelle activity was associated with the River Ouzel, the off-site Pineham Nature Reserve and hedgerows in the west of the site and woodland copses in the north of the site. Soprano Pipistrelles were also recorded on a less frequent basis using hedgerows and woodland bordering the grassland and arable fields in the remainder of the site. Soprano Pipistrelle is a common and widespread bat species in the Britain, with an estimated British population of 4,670,000 individuals (Mathews *et. al.*, 2018). The site therefore supports only a very small proportion of the British population of this species.
- 4.2.4 Noctule was the third most frequently recorded species during the transect surveys, with up to 8 Noctule bats considered to be using the site at any one time during the activity transect survey. The majority of Noctule activity was associated with the River Ouzel, the Pineham Nature Reserve and hedgerows in the west of the site. Noctule were also recorded on a less frequent basis using hedgerows and woodland bordering the grassland and arable fields in the remainder of the site. Noctule is a common and widespread bat species in England, with an estimated England's population of 565,000 individuals (Mathews *et.al.*, 2018). The site therefore supports only a very small proportion of England's population of this species.
- 4.2.5 *Myotis* sp., Brown Long-eared bat, Serotine, Barbastelle, Nathusius' Pipistrelle, Leisler's bat and Greater Horseshoe bats were also recorded from similar habitat on a less frequent basis. Of these species, the rarest are considered to be Barbastelle and Nathusius' Pipistrelle which are listed as 'Vulnerable' in Great Britain on the IUCN Red list and Leisler's bat which is listed as 'Near Threatened' in Great Britain on the IUCN Red list⁴. In addition, although Greater Horseshoe bat is listed as being of 'Least Concern' in

⁴ Accurate population estimates currently unavailable for these species (Mathews *et al.*, 2018).

Great Britain on the IUCN Red List it has a restricted range within Britain with the site being located on the northernmost edge of its range, and this species has a relatively small population in Britain comprising an estimated 12,900 individuals (Matthews *et al*, 2018). The survey findings indicate the presence of individual non-breeding bats of these species using the site as part of a wider foraging territory on an occasional basis.

4.2.6 Despite the relatively high number of species recorded and the overall number of bats expected to have been present within the site at any one time during the transect survey, overall the level of bat activity recorded was generally considered to be low to moderate, relative to the size of the site, and similar foraging and commuting opportunities are relatively widespread in the wider area. As a whole the site is therefore considered to be of no more than low district interest for foraging bats. This interest largely relates to habitats associated with the River Ouzel, the off-site Pineham Nature Reserve and associated woodland copse and network of hedgerows, particularly within the west of the site.

4.2.7 In addition to implementing measures to mitigate any negative effects on roosting bats, in accordance with nature conservation legislation, development proposals should therefore also seek to maintain and enhance opportunities for foraging and commuting bats within the site and its surrounds in accordance with planning policy and the 2006 NERC Act. These measures are further discussed in *Section 5* below.

5 RECOMMENDATIONS

5.1 This section identifies measures to be implemented during development of the site in order to avoid, mitigate and compensate potential impacts on bats, and to maintain the favourable conservation status of the local bat population. In addition, recommendations for enhancement of the site for roosting and foraging bats are included in accordance with 2019 NPPF and the 2006 NERC Act.

5.2 Roosting bats

Buildings

5.2.1 The low numbers of bats recorded roosting within the buildings indicates that these are all small low-status non-breeding roosts which may be used by male or non-breeding female bats.

5.2.2 Current knowledge suggests that proposed development of the site will result in the loss of, or damage or disturbance to the roost sites identified in B2, B3, B27 and B33⁵. A

⁵ The survey data for off-site B33 is currently considered to be indicative due to the access constraints associated with this building group. Although this off-site building is located outside the site boundary, it has potential to be isolated by the proposed development and is therefore considered in this section. The assessment of roosting

European Protected Species (EPS) licence would therefore need to be obtained from Natural England prior to the commencement of any works affecting buildings containing bat roost sites. The licence would need to be accompanied by a detailed method statement describing how the favourable conservation status of bats at the site will be maintained, including information on how loss of roost sites will be compensated and timing of works to minimise impacts on bats. Mitigation would centre on:

- Creation of appropriately designed and sited new roosting opportunities for bats, proportionate to those being lost; and
- Implementation of works affecting roost sites at a time of year when bats are least susceptible to disturbance/likely to be present, employing sensitive working practices.

5.2.3 Measures by which this can be achieved are given below. These should be implemented unless otherwise agreed with the local planning authority and/or Natural England.

Replacement of roost sites

5.2.4 A strategy for mitigating the loss of the existing roost sites resulting from the proposed development works is described below. This should be reviewed at an appropriate stage in light of detailed design and/or the findings of updated surveys, if appropriate.

Short-term roost replacement and enhancement: tree-mounted bat boxes

5.2.5 The bat roosts identified above will be lost as a result of the demolition of B2, B3 and B27 and it will not be possible to retain the identified bat roosts during development works. The roost in B33 also has potential to be affected through isolation by surrounding development. However, Common Pipistrelle bats are known to roost in both trees and bat boxes (University of Bristol, 2010), with records of bat boxes having been used for successful breeding. It would therefore be possible to provide suitable replacement opportunities during the construction phase prior to new roosting opportunities being created within the new buildings.

5.2.6 To provide replacement opportunities for bats associated with the identified roost sites prior to construction commencing, bat boxes should be installed on suitable retained trees within the site in the vicinity of the existing roosts to be lost. Initial replacement roost mitigation for each of the roosts to be lost should comprise:

- 2x Schwegler 1FF box⁶; and
- 2x Schwegler 2F box⁷.

bats and associated mitigation given for B33 within this report should be re-assessed following the additional surveys recommended in *Section 5.2.26* below.

⁶ In a study conducted by the Vincent Wildlife Trust (Colin Morris, pers. comm.), Schwegler 1FF bat boxes were identified as the box design that attracts the most species of bat, as well as being the most favoured by rare species such as Bechstein's Bat.

⁷ In the same study, Schwegler 2F bat boxes were identified as the box design most likely to contain bats.

5.2.7 The bat boxes identified above should be located on retained trees within areas away from the proposed construction works affecting each building. The precise positions of the boxes should be determined through consultation with an appropriately qualified and experienced bat ecologist, but will need to integrate the location of suitable retained trees and habitat connections with avoidance of areas with highest potential future lightspill. To provide the opportunity for bats to find and utilise new roost sites prior to development, bat boxes should be put in place at an appropriate stage in advance of works commencing.

Long-term roost replacement and enhancement: crevices

5.2.8 The bat boxes described above should be retained on completion of development in order to mitigate for the loss of bat roosting opportunities during the site demolition works. Measures to ensure the long-term availability of roost sites within the site are described below.

5.2.9 Of the bats confirmed or possibly roosting in the buildings at the site, Common Pipistrelle are considered to be primarily crevice or hole-dwelling bats. To provide replacement and maintain opportunities for this bat species within the completed development, and deliver enhancements to the long-term roosting potential of the site, a number of features suitable for crevice dwelling bats should be incorporated into the new buildings.

5.2.10 The following features should be incorporated into the new buildings to provide long-term replacement roost sites for crevice dwelling bats. Features to be installed to mitigate for loss of roost sites for crevice dwelling species across B2, B3, B27 and B33 should comprise:

- A minimum of eight dedicated features such as Schwegler 1FR Bat Tubes or 'Habibat' type boxes incorporated into south- to west-facing elevations.
- A selection of other opportunities for crevice dwelling bats (a minimum of eight) should be provided in a variety of locations. These may include a selection of:
 - Provision of 20mm x 100mm gaps beneath roof and ridge tiles to allow access by bats to the underfelt below. Alternatively dedicated bat access tiles could be installed to perform a similar function;
 - Provision of gaps to allow access by bats into cavity walls; and
 - Provision of 20mm x 200mm gaps along soffit boards providing access to the soffit box (installing soffit bat boxes if desired) or the internal roof space where appropriate.

5.2.11 Where any features such as crevices for roosting bats are provided in association with the buildings, bitumastic (traditional) roofing felt should be used to avoid entanglement of bats.

5.2.12 All replacement roost sites should be located away from areas most affected by construction and operational phase noise and lighting. The precise position of replacement roost sites should be determined through consultation with an appropriately qualified and experienced ecologist at the detailed design stage, but would in any case need to integrate the location of suitable retained trees and habitat connections with avoidance of areas subject to significant levels of light spill.

Enhancement of roosting opportunities

5.2.13 The proposed development would provide opportunity to enhance the value of the site for roosting bats in the long-term in accordance with the 2019 NPPF and the 2006 NERC Act through the provision of additional opportunities for roosting bats to those described above. The detailed design and location of such features would be determined at an appropriate stage prior to construction, but in addition to the mitigation measures described above, consideration should be given to inclusion of additional roosting opportunities including:

- Erection of additional bat boxes on mature trees across the site; and/or
- Creation of additional bat roosting opportunities on new buildings within the site e.g. through the use of bat bricks within the external walls of buildings, raised tiles, accessible roof voids etc. (suitable opportunities are described in *Section 5.2.9* above).

5.2.14 By providing a variety of roosting opportunities in different locations and orientations within the new buildings and retained trees across the site, a range of roost spaces with varied microclimates will be provided that will offer long-term roosting opportunities for bats throughout the year.

Approach and timing of works

5.2.15 Works affecting confirmed or possible roost sites should ideally be carried out at a time of year when bats are least likely to be present. Little is known about the hibernation habits of Pipistrelles. In view of the difficulties in ruling out use of the roost buildings by small numbers of hibernating bats, works to buildings during the winter hibernation months (November-March) should be avoided, since any bats present during this period may be in torpor and would be particularly sensitive to disturbance. Although the findings of the surveys suggest that only non-breeding bat roosts are present at the site, given that a degree of uncertainty always exists in relation to the exact status of a summer roost, best

practice is to also avoid the peak breeding period (June to August) when young bats, unable to fly, may be present.

- 5.2.16 In the event that building stripping or demolition is required outside of the timeframe described above then works to B2, B3, B27 and in the vicinity of B33 potentially affecting roosting bats should be either: (i) preceded by an updated survey to confirm the continued absence of a breeding roost (for demolition works between June and August); or (ii) be carried out during periods of mild weather when bats are active with minimum night time temperatures exceeding 7°C for five consecutive nights (for demolition works between November and February).
- 5.2.17 As identified above, bat boxes on retained trees should be provided in advance of loss of any roost in order to provide alternative roost sites prior to works commencing.
- 5.2.18 All demolition or stripping works involving the removal of features from B2, B3 and B27⁸ with the potential to conceal roosting bats should be overseen by a licensed bat worker under an Ecological Watching Brief. Potential features on these buildings include lifted barge boards, roof tiles, gaps in brickwork and weatherboarding. Suitable features should be inspected prior to demolition/stripping and a cautious approach should be employed, particularly in the vicinity of the known roosts, with key features removed by hand where appropriate.
- 5.2.19 Should any bat be encountered during these works, it would be moved by the licensed bat worker to one of the pre-installed bat boxes described in *Section 5.2.6*.

Trees

- 5.2.20 The Phase 2 surveys identified the presence of small, low-status bat roosts in Trees 17, 18, 25, G1 and G3. Emerging development proposals for the site indicate that these trees will be retained and therefore current knowledge suggests that no mitigation in relation to these features is required at this time. Any future iterations of the masterplan should have regard to the roost sites identified and the findings of any subsequent survey work (see *Section 5.2.24* below) and be subject to review and comment by a suitably qualified ecologist.
- 5.2.21 Although current knowledge suggests that the identified roost sites in trees can be retained, due to the presence of opportunities for roosting bats within a number of trees across the site and the highly mobile nature of bats, an approach to works affecting trees lost to development or affected by future maintenance works (e.g. for health and safety) is set out below. This involves either further survey prior to works commencing to confirm

⁸ B33 falls outside the site boundary and will not be directly affected.

continued absence of roosting bats or through a sensitive approach to works. In the event that retention of a tree identified as providing opportunities for roosting bats is not possible, due to the transitory nature with which bats may use roost sites in trees, it is recommended that felling works should be carried out in accordance with the following procedure, including where the 2019 Phase 2 surveys have not identified a roost as being present:

1. In the event that future pruning or felling works for reasons of health and safety are required to any tree/tree group with confirmed/probable roosts (Trees 17, 18, 25, G1 and G3) such works have the potential to disturb or destroy any roosts present. If it is not possible to retain the roost site associated with the tree/tree group, a European Protected Species (EPS) licence would need to be obtained from Natural England prior to the commencement of any works affecting the roost sites associated with these trees.
2. Other trees suitable for climbing inspections should first be climbed by a licensed bat worker to inspect potential roost sites for bats. In the event that no bats are encountered during an exhaustive search then any features should be 'soft stopped' to prevent re-occupation prior to felling. In the event that a bat is encountered, where the tree is already covered under an EPS licence, this should be moved to the bat boxes installed prior to felling works commencing. If a bat roost is encountered during survey of a tree not covered under an EPS licence, then felling/works to this tree should be delayed until an EPS licence has been sought and obtained from Natural England. Where bat roosts are present within any tree subject to felling, the tree should be 'soft felled' in accordance with the methodology described under point 5 below.
3. Trees with 'high' potential, for which an exhaustive climbed inspection is not possible or practicable should be subject to three emergence/re-entry surveys following BCT best practice guidelines to confirm the absence of roosting bats prior to any works affecting the tree commencing.
4. Trees with 'moderate' potential, for which an exhaustive climbed inspection is not possible or practicable should be subject to two emergence/re-entry surveys following BCT best practice guidelines to confirm the absence of roosting bats prior to any works affecting the tree commencing.
5. 'Low' potential trees that are unsuitable for climbing inspections and/or have not been subject to an emergence survey immediately in advance of works should be 'soft felled' under the supervision of a suitably qualified ecologist. Soft felling involves progressive removal of the tree, using ropes to gently lower sections of tree potentially supporting roosting bats to the ground for inspection by a suitably qualified ecologist. Where appropriate, features should be left on the ground overnight before clearing to allow any bats present to escape.

5.2.22 In the event that a roosting bat is discovered during any of the above works to trees not covered by an appropriate EPS licence, trimming/felling works must cease and Natural England contacted to agree an appropriate course of action. A licence may need to be applied for, and approved, before works can continue.

Maintenance of roosting opportunities

5.2.23 The integrity of retained roosting opportunities within and adjacent to the site should be conserved through the maintenance of connections to commuting and foraging habitat and sensitive use of lighting throughout the construction and operational phases (see *Section 5.3* below). In addition, trees not supporting roosting bats at the time of survey have potential to support bats in the future and therefore these trees should be retained and their ability to support roosting bats maintained, where possible to do so. Where significant loss of future roosting opportunities arises, this should be offset through alternative roost provision elsewhere within the site.

Further survey

5.2.24 Due to access constraints associated with the B33 group of buildings, it was not possible to carry out a detailed Phase 1 bat scoping survey or to carry out Phase 2 emergence/re-entry surveys in line with published guidelines (BCT, 2016). It is therefore recommended that where possible detailed Phase 1 scoping survey and Phase 2 emergence/re-entry surveys of the buildings associated with B33 are updated prior to a planning application being submitted and accordingly the recommendations included within this document revised.

5.2.25 In addition, bats may occupy roost sites on a seasonal or temporary basis and old roost sites may be abandoned and new roosts occupied within relatively short periods of time. Where appropriate, bat survey work, including emergence/re-entry surveys and/or climbing inspections of buildings and trees with potential to support roosting bats affected by the proposed development should be updated in advance of development commencing. The guidance of a suitably qualified ecologist should be sought to determine if and when surveys should be updated with regard to the development programme. This would ensure that up-to-date information is available to inform the extent of any mitigation and licensing requirements relating to bats.

5.3 Foraging and commuting bats

5.3.1 The site is considered as a whole to be of no more than low district importance for foraging bats. The site is expected to comprise a significant proportion of foraging habitat for moderate numbers of Common Pipistrelle and Soprano Pipistrelle bats and provides foraging habitat for low numbers of at least eight other species/species groups on a more occasional or infrequent basis.

- 5.3.2 A number of the bat species identified at the site (Barbastelle, Soprano Pipistrelle, Noctule, Greater Horseshoe, Lesser Horseshoe and Brown Long-eared bat) are listed as Species of Principal Importance under Section 41 of the 2006 NERC Act and therefore the effects of development on foraging and commuting habitat are a material consideration in the planning process.
- 5.3.3 The development proposals indicated on the *Milton Keynes East Concept Masterplan* (jtp, 2017) show the retention of the majority of hedgerows, treelines and woodlands within the northern and western sections of the site. However, the majority of hedgerows and plantation woodland copses within the central and south-eastern areas of the site, associated with the proposed secondary school and areas of commercial development, will be lost. In the long-term, the loss of species-poor hedgerows and plantation woodland copses could be mitigated through the planting of new hedgerows and scattered trees to re-connect habitats across the site. In addition, the development of the site would result in the loss of further areas of foraging habitats within the development areas where buildings and hardstanding takes the place of areas currently dominated by grazed grassland and arable habitats. Although the field interiors are currently of limited value for foraging bats and it is expected that the proposed gardens and areas of open space within the development areas will provide new opportunities for roosting bats as these mature, consideration should be given to the use of pollen and nectar rich species within the formal planting schemes, enhancement of woodland edge habitats, new shrub and tree planting and inclusion of areas of rough and meadow grassland within areas of open space in order to maximise opportunities for foraging and commuting bats following development.
- 5.3.4 The site is currently subject to very limited light spill, generally associated with car headlights and streetlighting from off-site roads to the north, south and crossing the site. The integrity of retained and new foraging and commuting habitat, both within the proposed development area and its surrounds, should be conserved through the sensitive use of lighting throughout the construction and operational phases of the proposed development. In accordance with the Bat Conservation Trust and Institute of Lighting Practitioners guidance (BCT and ILP, 2018) this could be achieved through employment of a selection of the following measures in the vicinity of retained/newly created areas of suitable foraging habitat and in the vicinity of trees and buildings providing opportunities for roosting bats:
- Use of only the minimum amount of light required for safety and amenity, and minimise upward reflected light.
 - Avoidance of bare bulbs or upward-pointing lights. The spread of light should be kept near to or below the horizontal.

- Use of narrow spectrum bulbs (between 4000 and 2700k) and/or low UV emitting bulb types.
- Avoidance of light-spill into adjacent areas through luminaire design or with accessories, such as hoods, cowls, louvres and shields to direct the light.
- Minimising the height of lighting columns.
- For pedestrian lighting, use of low level lighting that is as directional as possible and below 3 lux at ground level.
- Where necessary, use of embedded road lights to illuminate roadways and light only high-risk stretches of roads such as crossings and merges.
- Limiting the times that lights are on to provide some dark periods for wildlife and/or use automatic dimmers to reduce lighting outside times of peak use.

5.3.5 It is recommended that all detailed external lighting proposals are reviewed at appropriate design stages by a suitably qualified ecologist. This could be secured via a condition of planning consent.

5.3.6 Furthermore, in addition to the above measures to maintain opportunities for foraging and commuting bats within and adjacent to the developed areas of the site, the proposed areas of informal public open space will provide extensive opportunities to enhance these areas of the site for bats through the creation and enhancement of meadow grassland, scrub and woodland habitats and the creation of new wetland features. In order to maximise future opportunities for foraging and commuting bats within these areas of open space, it is recommended that the following measures are included in the landscape strategy for these areas of the site:

- Linear features such as hedgerows and treelines should be retained wherever possible and enhanced through infilling of gaps or provision of complementary scrub and tree planting. Where loss is unavoidable, for example at road or footpath access points, loss should be minimised and compensatory habitat provided at an appropriate location elsewhere.
- Where possible, new linear features such as hedgerows and treelines should be created to improve connectivity between areas of suitable roosting and foraging habitat within the site and the wider area.
- Landscape proposals within areas of open space across site should seek to include high quality habitat for foraging bats. This might include shrub planting, creation of areas of rough and meadow grassland, woodland and marginal vegetation and/or use of native species-rich hedgerows and treelines along boundaries.
- Creation of new wetland habitats including reedbeds, ponds and drains either as stand-alone features or as part of the surface water drainage strategy. These

habitats are capable of supporting large numbers of invertebrates, providing a significant foraging resource for bats.

6 CONCLUSION

- 6.1 The bat survey work carried out at the site identified a number of roost sites associated with individual/small numbers of roosting bats within buildings and trees. The emerging proposals indicate that the bat roosts associated with the on-site buildings (B2, B3, B27) will be lost to the proposed development, and the off-site roost in B33 may be adversely affected in the absence of suitable avoidance measures. The emerging proposals indicate however that it will be possible to retain the tree roosts (Trees 17, 18, 25, G1 and G3) recorded within the site. These are all considered to be low status, non-breeding roosts supporting low numbers of Common Pipistrelle and unidentified bat species.
- 6.2 Although the roosts to be affected by the proposed development works are considered in combination to be of no more than low local value, the proposed works must give due regard to the legal protection afforded to all bats, which protects both individual bats and the conservation status of populations.
- 6.3 Measures to ensure the protection of individual bats during construction works and maintenance of opportunities for roosting bats in the long-term, including provision of a range of new bat roosting opportunities and suitable timing of activities, is described in *Section 5* of this report. The measures described should form the basis of a detailed Method Statement which would accompany an application to Natural England for a licence to permit development works affecting bats
- 6.4 Measures are also described for the maintenance and enhancement of current opportunities provided by the site for foraging and bats. These include sensitive lighting design and development of a suitable landscape strategy for the site, including the retention, enhancement and creation of high value habitats for foraging bats. The proposed development areas are currently dominated by grazed and arable farmland of limited value for foraging bats and it is likely that these measures could maintain and possibly enhance the value of the site in the long-term for this group.
- 6.5 Subject to the implementation of the measures described in *Section 5*, it is considered that the favourable conservation status of the local bat population would be maintained and, through long-term provision of higher quality roosting and foraging habitats, potentially enhanced. This would ensure compliance with the nature conservation objectives of the EC Habitats Directive, the 2006 NERC Act and the guidance underpinning the 2019 National Planning Policy Framework.

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HDA Document Control and Quality Assurance Record

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Project Reference: 2090.52
Document Title: Bat Survey Report
Commissioning Party: St James

Issue	Description	Date of Issue	Signed
1	Bat Survey Report	February 2020	AM

	Personnel	Position
Author	Clare Bird MCIEEM	Senior Ecologist
Approved for issue	Adrian Meurer MCIEEM	Director

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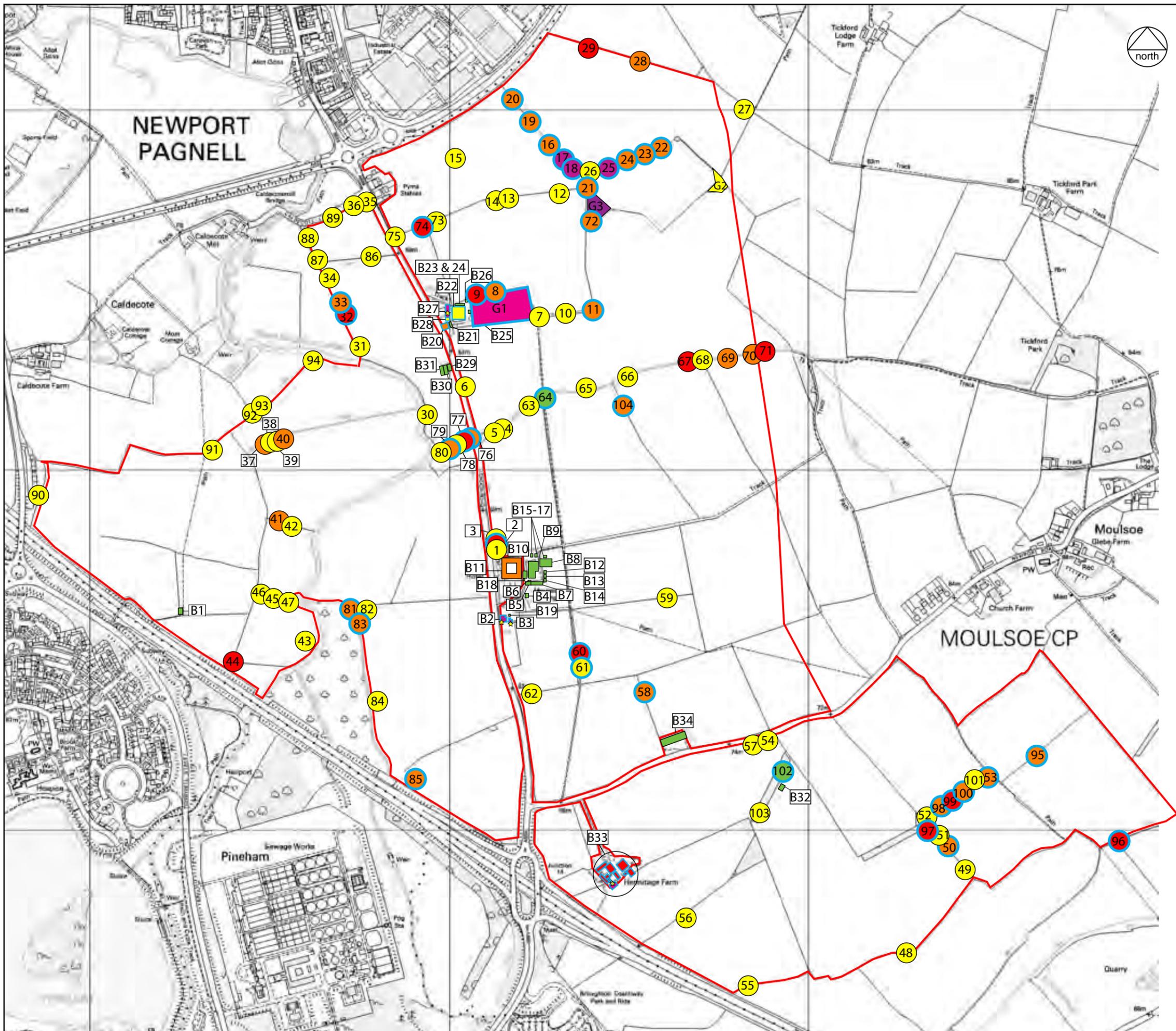
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APPENDIX A

Bat Roost Survey Summary Plan



KEY

- Site boundary
- Tree/building subject to Phase 2 roost survey

BUILDINGS *

- Confirmed bat roost
- Probable bat roost
- High bat roost potential
- Moderate bat roost potential
- Low bat roost potential
- Negligible bat roost potential

TREES *

- Confirmed bat roost
- High bat roost potential
- Moderate bat roost potential
- Low bat roost potential
- Negligible bat roost potential

EMERGENCE/RE-ENTRY RESULTS **

- Common Pipistrelle
- Silent bat

* Roosting categories relate to roost potential in accordance with the BCT 2016 guidelines. All other trees within the site are regarded as having 'negligible' potential to support roosting bats.

** For more detail see Appendix B.

CLIENT:
St James

PROJECT:
Milton Keynes East

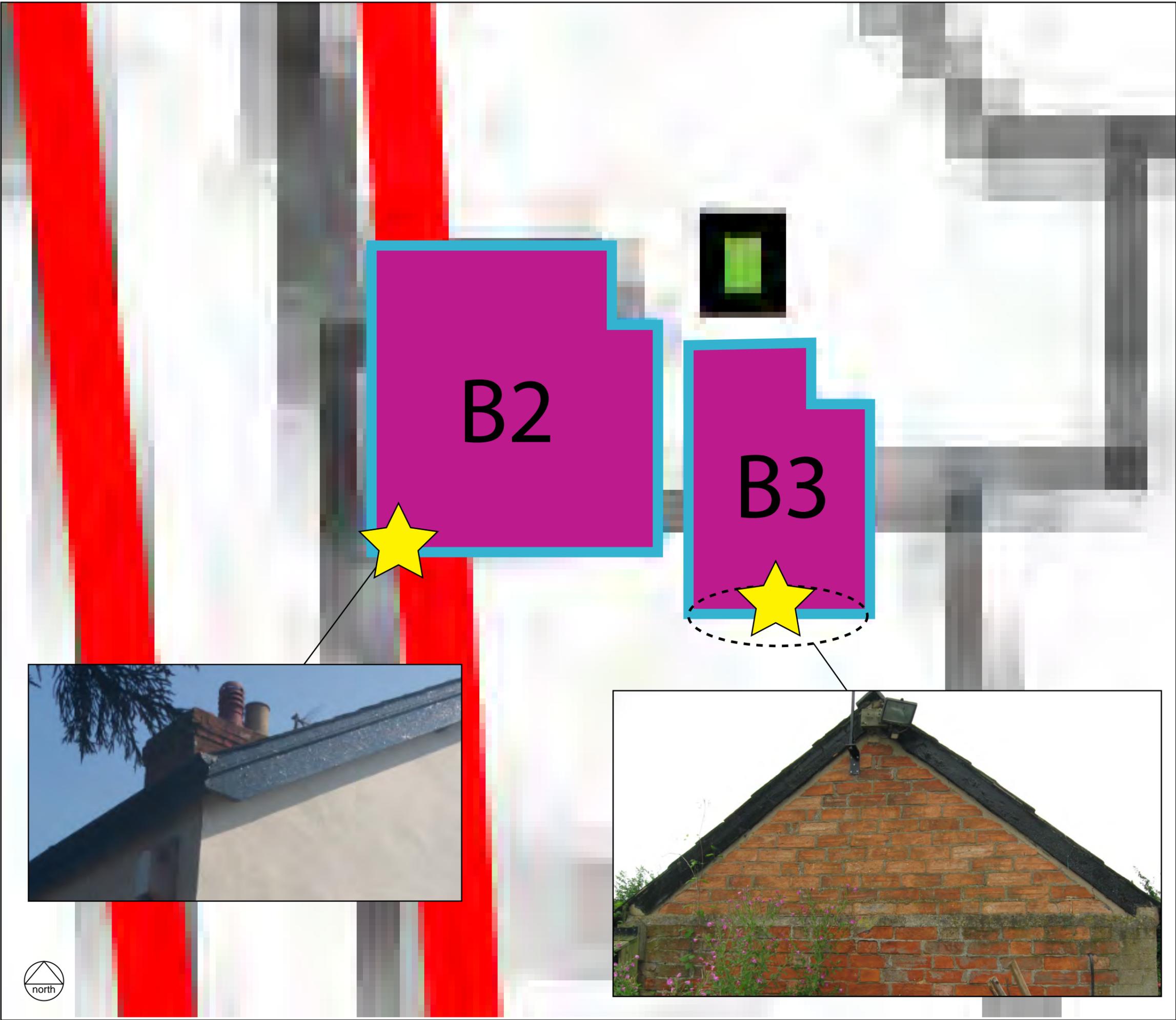
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APPENDIX B

Bat Roost Survey Summary Plans – B2, B3 and B27



KEY

 Site boundary

BUILDINGS

 Confirmed roost

EMERGENCE/RE-ENTRY SURVEY RESULTS

 Common Pipistrelle

B2

B3

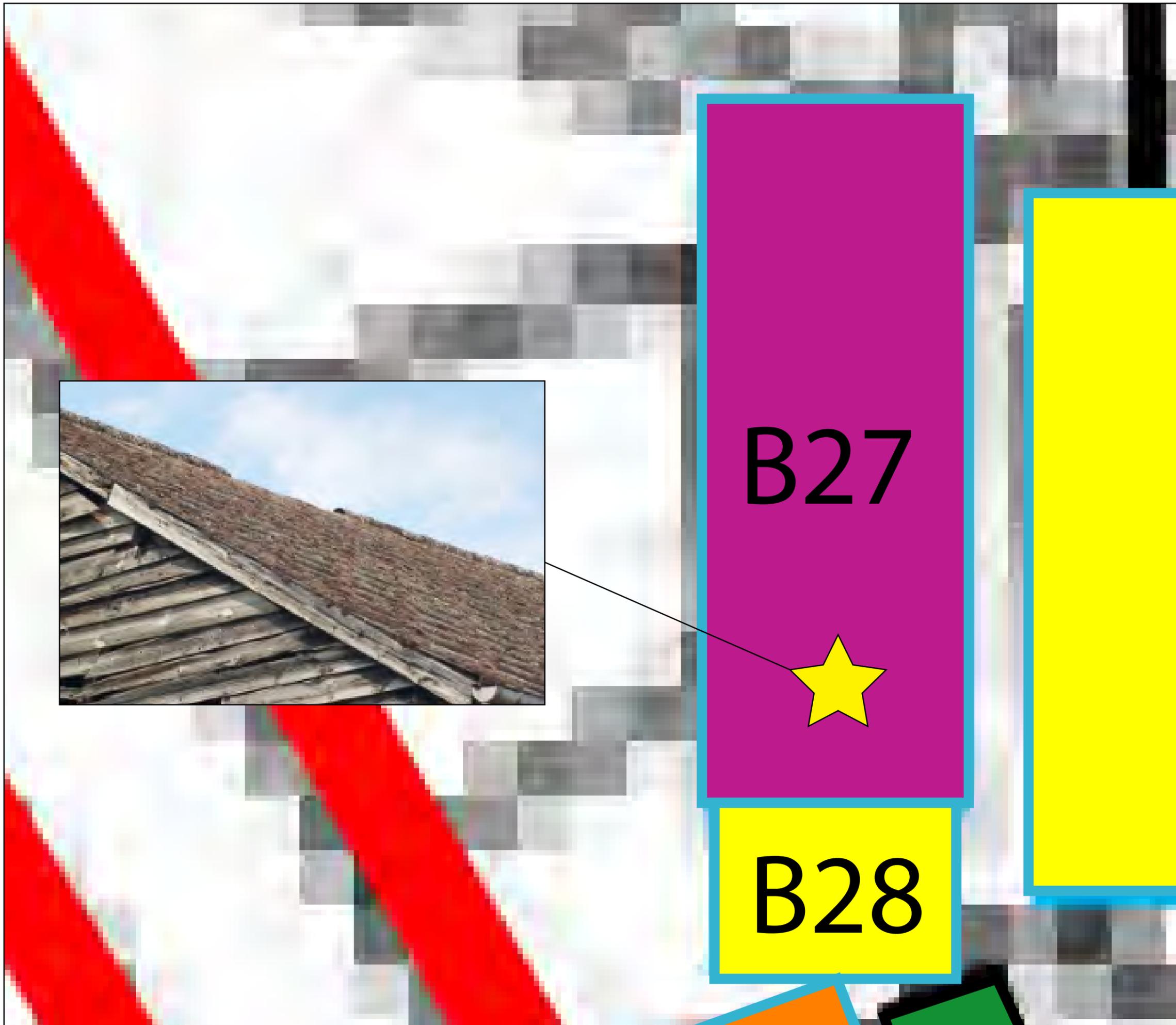
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TITLE:
Bat Roost Survey Summary Plan - B2 & B3
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KEY

 Site boundary

BUILDINGS

 Confirmed roost

EMERGENCE/RE-ENTRY SURVEY RESULTS

 Common Pipistrelle

B27



B28

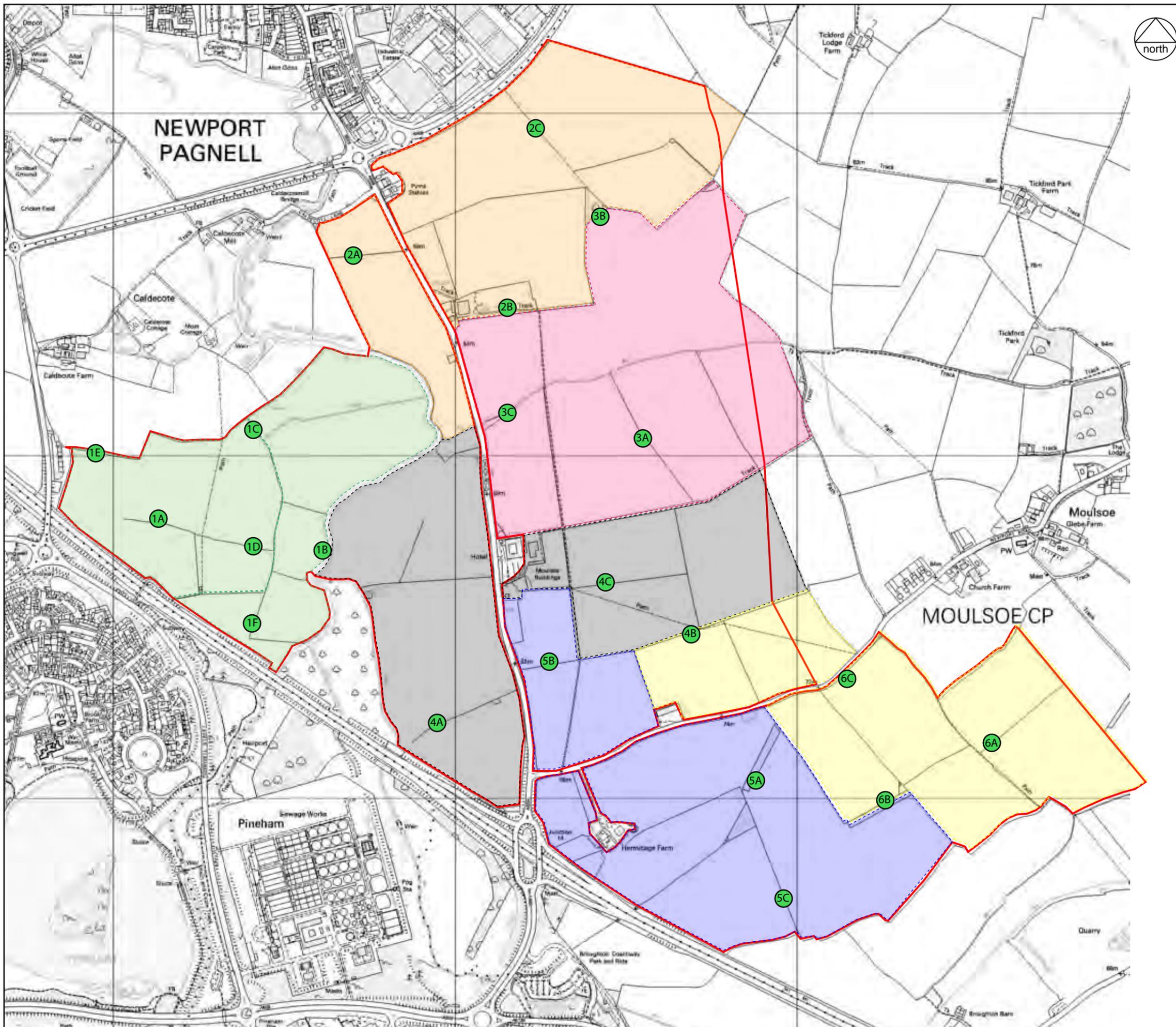


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TITLE:
Bat Roost Survey Summary Plan - B27
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APPENDIX C

Bat Activity Transect Coverage and Automated Detector Location Plan



KEY

-  Site boundary
-  Automated detector location

Transect coverage

-  Transect 1
-  Transect 2
-  Transect 3
-  Transect 4
-  Transect 5
-  Transect 6

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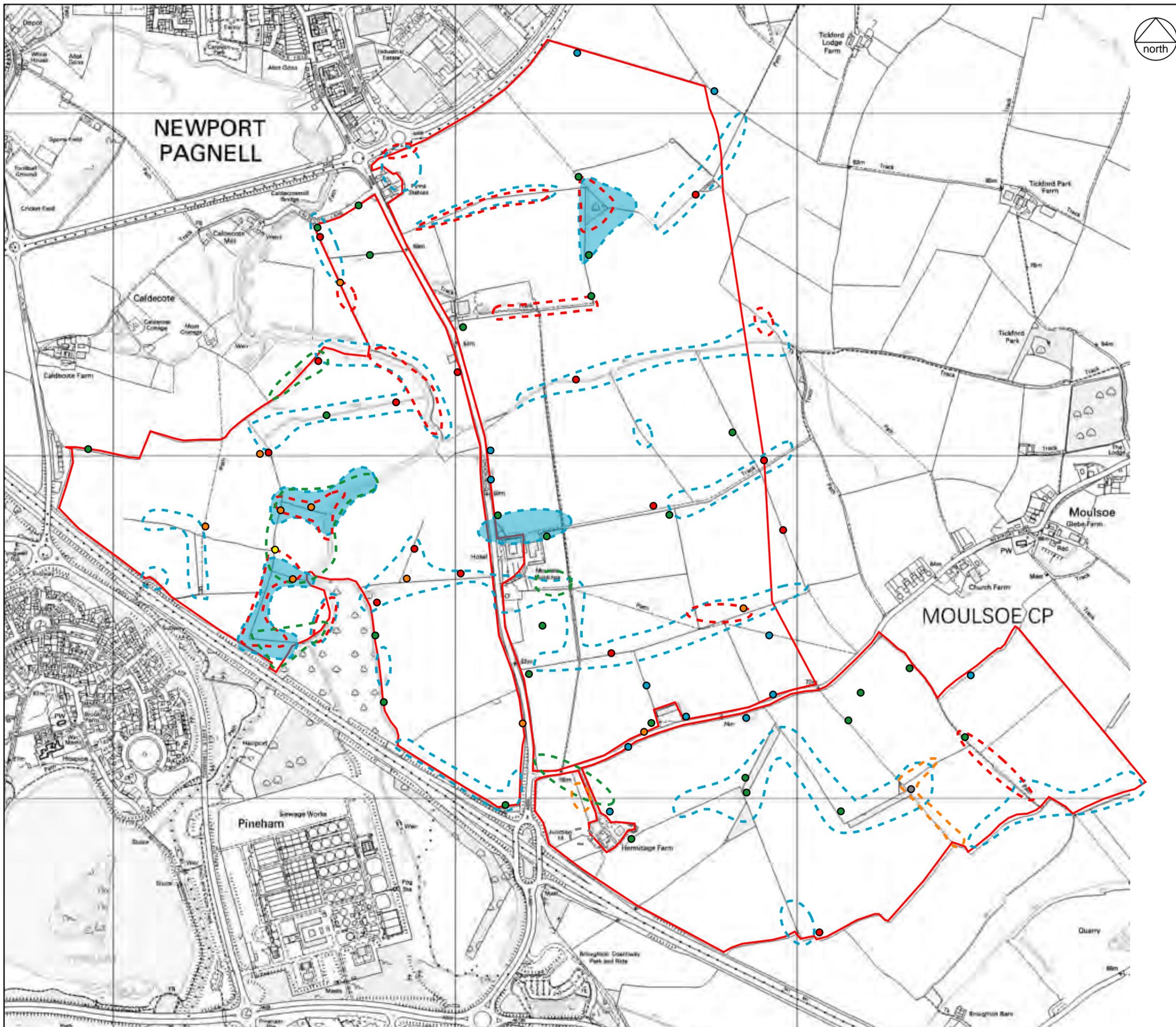
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APPENDIX D

Bat Activity Survey Summary Plan



KEY

 Site boundary

Bat foraging and commuting activity

Common Pipistrelle

 Single bat pass

 Occasional bat pass / foraging

 Moderate foraging activity

Soprano Pipistrelle

 Single bat pass

 Occasional bat pass / foraging

Noctule

 Single bat pass

 Occasional bat pass / foraging

Myotis sp.

 Single bat pass

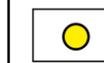
 Occasional bat pass / foraging

Brown Long-eared bat

 Single bat pass

 Occasional bat pass / foraging

Serotine

 Single bat pass

CLIENT:

St James

PROJECT:

Milton Keynes East

TITLE:

Bat Activity Survey Summary Plan

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APPENDIX E

Photographs



Photo 1. Southern elevation of B1.



Photo 2. Northern and eastern elevations of B2.



Photo 3. Southern and western elevations of B2.



Photo 4. Western elevation of B3.



Photo 5. Eastern and southern elevations of B4.



Photo 6. Southern elevation of B5.



Photo 7. Northern elevation of B6.



Photo 8. Northern elevation of B7.



Photo 9. Western and southern elevations of B8.



Photo 10. Northern and eastern elevations of B9.



Photo 11. Southern and eastern elevations of B10.



Photo 12. Northern elevation of B11.



Photo 13. Northern and eastern elevations of B12.



Photo 14. Northern and eastern elevations of B13 and 14.



Photo 15. Northern elevation of B15 and B16 in the foreground with B9 behind.



Photo 16. Northern elevation of B17 in the foreground with B8 behind.



Photo 17. Southern and eastern elevations of B18 in foreground and southern elevation of B10 in rear.



Photo 18. Northern elevation of B19.



Photo 19. Eastern elevation of B20.



Photo 20. Western elevation of B20.



Photo 21. Southern and western elevations of B21.



Photo 22. Southern elevation of B22.



Photo 23. Northern and western elevations of B23 and 24. To the left of the photo is B22.



Photo 24. Northern elevation of B25.



Photo 25. Southern and western elevations of B26.



Photo 26. Northern and eastern elevations of B27.



Photo 27. Southern and eastern elevations of B27 in the right of the photo and eastern elevation of B28 in the left of the photo.



Photo 28. Southern and eastern elevations of B28 in foreground and southern elevation of B27 to rear.



Photo 29. Northern and western elevations of B29 in centre of photo and northern elevation of B30 in right of photo.



Photo 30. Northern elevation of B30 and B31 and western elevation of B31.



Photo 31. Southern and eastern elevations of B32.



Photo 32. Collection of buildings at Hermitage Farm (off-site) (B33).



Photo 33. Southern elevation of B34.

Appendix F7

Bat Survey Report: Additional Areas



MILTON KEYNES EAST

BAT SURVEY REPORT: ADDITIONAL AREAS

Prepared for St James

by

Hankinson Duckett Associates

HDA ref: 2090.52

March 2021

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APPENDICES

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- B Bat Roost Survey Summary Plans – B33-C, B33-G, B33-H and B33-L
- C Bat Activity Transect Coverage and Automated Detector Location Plan
- D Bat Activity Survey Summary Plan
- E Photographs

1 INTRODUCTION

1.1 Site location and summary description

1.1.1 This report describes the results of a suite of bat surveys of approximately 437ha of land at Newport Pagnell, Buckinghamshire, hereinafter referred to as 'the site'. The site centre is located by National Grid Reference SP 893 415. The study was commissioned by St James in phases in April and August 2020 and February 2021.

1.1.2 The site is located to the south of Newport Pagnell, on the north-eastern edge of Milton Keynes, Buckinghamshire. The site is dominated by a series of arable fields bordered by hedgerows, treelines, ditches and fencing. Other habitats include grazed grassland fields, small areas of amenity grassland and small pockets of deciduous woodland. The River Ouzel and its tributary, the Broughton Brook, flow in a northerly direction through the western and central areas of the site and, associated with these watercourses, the Pineham Nature Reserve in the south of the site supports a mosaic of scrub, rough grassland, tall ruderal vegetation and ponds. Other features within the site include a number of agricultural, commercial and residential buildings, generally associated with working farms, and roads including the M1 motorway and Tongwell Street which run through a corridor of woodland, scattered trees and scrub in the south-west of the site, and several smaller roads running through the site to the east.

1.1.3 The site is bordered to the north by a construction site for residential development and the A422, beyond which lie the Interchange Park industrial estate and the town of Newport Pagnell; to the east by arable farmland and the settlement of Moulsoe; to the south-west by residential development and Willen Lake on the outskirts of Milton Keynes, the M1 Motorway and Pineham sewage works; and to the south-east by arable farmland.

1.1.4 The majority of the site was subject to a suite of bat surveys in 2019 (HDA, 2020) however, following expansions to the site boundary in March 2020 and February 2021 and amendments to the highway proposals, further bat surveys were carried out in 2020 and 2021 which are the subject of this report. The areas of the site subject to surveys in 2019 are hereinafter referred to as the '2019 survey area' and the areas of the site subject to survey in 2020/2021 are hereinafter referred to as the '2020/2021 survey area'. A plan showing the location and boundary of the site and 2019 and 2020/2021 survey areas is provided in *Appendix A*.

1.2 Legislative context

1.2.1 All UK bat species are 'European Protected Species' (EPS) protected under the 2019 Conservation of Habitats and Species (Amendment) (EU Exit) Regulations. In relation to an EPS, the 2019 Regulations make it an offence to:

- Deliberately capture, injure or kill any wild animal of an EPS;

- Deliberately disturb wild animals of any such species, in particular any disturbance which is likely to: (i) impair their ability to survive, to breed or reproduce, or to rear or nurture their young; or to hibernate or migrate; (ii) affect significantly the local distribution or abundance of the species to which they belong;
- Damage or destroy a breeding site or resting place of such an animal; and/or
- To (a) be in possession of, or to control; (b) to transport any live or dead animal or any part of an animal; (c) to sell or exchange or (d) offer for sale or exchange any live or dead animal or part of an animal of an EPS.

1.2.2 In addition, all UK bats are protected under the 1981 Wildlife and Countryside Act (as amended). All species are listed on Schedule 5 of the Act and are subject to the provisions of Sections 9.4b and 9.4c, which make it an offence to:

- Intentionally or recklessly disturb a bat while it is occupying a structure or place which it uses for shelter or protection; and/or
- Intentionally or recklessly obstruct access to any structure or place used for shelter or protection by a bat.

1.2.3 If works are planned that are likely to constitute an offence under the current legislation, an application for a derogation licence should be made to Natural England.

1.2.4 Seven species of bat (Barbastelle, Bechstein's, Noctule, Soprano Pipistrelle, Brown Long-eared, Greater Horseshoe and Lesser Horseshoe) are also identified as Species of Principal Importance under Section 41 of the 2006 Natural Environment and Rural Communities (NERC) Act. Section 40 of the Act, together with planning policy and guidance, require planning authorities to regard these species as a material consideration in the planning process.

1.3 Development proposals

1.3.1 Proposals for the site include a large-scale mixed use urban extension incorporating residential development, employment, schools, commercial and community facilities, open space including a new linear park along the River Ouzel corridor, and associated highways infrastructure.

1.4 Scope and purpose of the report

1.4.1 A suite of bat surveys of the majority of the site were conducted in 2019 (2019 survey area) (HDA, 2020). During these surveys confirmed and probable bat roosts were recorded within 4 buildings (B2, B3, B27 and B33) and 5 trees/tree groups (Trees 17, 18, 25, G1 and G3). The roosts recorded in 2019 were all small low-status non-breeding roosts for Common Pipistrelle, Noctule and unidentified bat species.

1.4.2 Following an expansion of the site boundary in March 2020 and February 2021 and amendments to the highway proposals, further bat surveys were carried out in 2020 and 2021 across the 2020/2021 survey area and these are the subject of this report. Bat

surveys were undertaken to determine use of the additional areas and additional features impacted by the amended highway proposals on bats and to identify any need for licensing or mitigation. Specifically, the aims of the study were:

- i. To identify potential bat roosts in buildings and trees within the 2020/2021 survey area, where potentially affected by the proposed development;
- ii. To determine the presence/likely absence of bats within potential roosts affected by the proposed works and identify species and numbers;
- iii. To determine levels of bat foraging and commuting activity within habitat potentially affected by the proposed development within the 2020/2021 survey area;
- iv. To determine the requirement, if any, for licensing in respect of bats; and
- v. To identify appropriate mitigation and/or enhancement measures to ensure that the development avoids adverse impacts on bats and, where possible, provides enhancements to support the long-term favourable conservation status of bats in accordance with nature conservation legislation, planning policy and the 2006 NERC Act.

2 METHODOLOGY

2.1 Introduction

2.1.1 The methodology followed in relation to all bat survey work undertaken is consistent with current legislation and good practice guidelines set out by the Bat Conservation Trust (BCT, 2016). The following sections detail the suite of surveys undertaken to inform the proposed development and the results of these surveys are provided in *Section 3*.

2.2 Phase 1 bat scoping survey

2.2.1 The 2019 survey area was subject to a Phase 1 bat scoping survey by Hayley Snowdon and Shannon Davies of Hankinson Duckett Associates on the 23rd, 24th and 27th July 2018. All buildings and trees were assessed for their potential to support roosting bats and classified according to their potential.

2.2.2 The 2020/2021 survey area and buildings at Hermitage Farm (B33)¹ were subject to a Phase 1 bat scoping survey by Clare Bird MCIEEM, Hayley Snowdon, Anna Potter and Fiona Muir of HDA over the course of several visits on the 5-7th May, 27th July and 17th November 2020 and 17th February 2021. All buildings, bridges and trees within these areas were assessed for their potential to support roosting bats and classified according to their potential².

¹ B33 was subject to limited survey in 2019 due to access constraints. More detailed surveys of the building complex at B33 were therefore carried out in 2020.

² Trees within two areas of the site were not subject to Phase 1 bat scoping tree surveys as these areas of the site are not expected to be impacted by the proposed development works, these are associated with Pineham Nature Reserve and New Moulsoe Wood as shown in *Appendix A*.

Phase 1 structure survey

- 2.2.3 All buildings and built structures were inspected externally from ground level using binoculars and a powerful torch to identify and investigate any potential entry and exit points such as missing roof tiles, loose fascias, lifted lead flashing and expansion joints and to look for evidence of entry/exit in the form of staining, discolouration and/or scratch marks.
- 2.2.4 Internally, buildings were searched exhaustively where possible, to look for evidence of current or former occupation by bats. A powerful torch was used to investigate any accessible cavities, crevices and recesses in each building.
- 2.2.5 In view of the findings of the internal/external inspections, the potential of the buildings and built structures to support roosting bats ('confirmed roost', 'high', 'moderate', 'low' or 'negligible') was assessed in accordance with current best practice guidelines (BCT, 2016). Assessment of bat roosting potential requires consideration of a number of criteria, including the design and construction of the structure, the size and location of potential features and access points, the position of the building or structure, aspect, geographical location, surrounding land use and adjacent landscape linkages.

Phase 1 tree survey

- 2.2.6 Trees within the survey area were inspected from ground-level with the aid of binoculars and a powerful torch to identify potential features suitable for use by roosting bats. Potential features include splits, cracks and cavities, peeling bark, woodpecker holes, broken branches and a covering of Ivy where this is of a sufficient age to provide a suitable microclimate between the tree and Ivy stem(s).
- 2.2.7 In accordance with current best practice guidelines (BCT, 2016), trees were placed into one of five categories. Categorisation was based on the nature, size, location and quality of features present in each tree:
- Negligible suitability - Trees with no or negligible features for roosting bats;
 - Low suitability - Trees of sufficient size and age to contain potential roost features but with none seen from the ground or features seen with only very limited roosting potential;
 - Moderate suitability - Trees with one or more potential roost sites that could be used by bats but are unlikely to support roost types of high conservation status;
 - High suitability - Trees with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time; or
 - Known or confirmed bat roost.

2.3 Phase 2 roost surveys

- 2.3.1 Phase 2 roost surveys, comprising a series of emergence/re-entry surveys, were conducted wherever built structures and trees potentially affected by the proposed development had been identified as having potential to support roosting bats (and had not been subject to survey in 2019)^{3,4}.
- 2.3.2 Phase 2 dusk emergence and dawn re-entry surveys of trees and built structures were carried out where these had potential to support roosting bats and were potentially affected by the emerging development proposals. Emergence/re-entry surveys were conducted to determine presence/probable absence and, where present, identify species and numbers. The level of survey effort conducted was determined with reference to the identified bat roosting potential of the building or tree in accordance with best practice guidelines (BCT, 2016).
- 2.3.3 Surveyors with electronic bat detectors⁵ were positioned around each feature to record bats emerging from or entering the built structure/tree. Surveyors were positioned to provide adequate coverage of all potential emergence points on each feature surveyed. Dusk emergence surveys generally began 15 minutes before sunset, ending approximately 1.5 hours after sunset. Dawn re-entry surveys generally began approximately 1.5 hours before sunrise and ended 15 minutes after sunrise. Records were made of any emergences and entries, and incidental records were also made of bat commuting and foraging activity in the vicinity of each surveyor.
- 2.3.4 In line with current best practice guidelines (BCT, 2016), Phase 2 bat roost surveys were not conducted on trees which were assessed as having low potential to support roosting bats. Further surveys of these low potential trees are not required, at this stage, in support of a planning application. However, in the event that retention of a tree identified as having low potential to support roosting bats is not possible, the appropriate approach to works is given in *Section 5* below.
- 2.3.5 Details of the dates and times of Phase 2 emergence/re-entry surveys, along with weather conditions and sunset/sunrise times, are provided in *Table 1* below.

³ Trees and structures subject to Phase 1 bat roost surveys in the winter of 2020/2021 which will be impacted by the proposed works should be subject to Phase 2 roost surveys in spring/summer 2021 (see *Section 2.5* below).

⁴ In accordance with the recommendation of the Bat Survey Report (HDA, 2020) updated and more detailed Phase 2 bat roost surveys were also carried out at Hermitage Farm (B33) in 2020, to which only limited access had been available during 2019.

⁵ Pettersson D240x heterodyne and time-expansion detector with MP3 recorder, Anabat Walkabout, Anabat Express and Anabat SD1/SD2 with 'Analog' recording software.

Table 1: Details of Phase 2 roost surveys

Building/ Tree ref	Date / Time	Sunset / Sunrise	Conditions
B33-C	Dusk 03/09/2020 19:29 – 21:14	19:44	20% cloud cover, Beaufort Scale = 3, dry, 19°C
B33-E	Dusk 27/08/2020 19:45-21:30	20:00	80% cloud cover, Beaufort Scale = 1, dry, 13.8-13.6°C
B33-F	Dusk 27/08/2020 19:45-21:30	20:00	80% cloud cover, Beaufort Scale = 1, dry, 13.8-13.6°C
	Dusk 24/09/2020 18:40 – 20:25	18:55	40% cloud cover, Beaufort Scale = 1, dry, 11.1-10.1°C
B33-G / 37 / 41	Dusk 27/08/2020 19:45-21:30	20:00	80% cloud cover, Beaufort Scale = 1, dry, 13.8-13.6°C
	Dusk 11/09/2020 19:11 – 20:56	19:26	50% cloud cover, Beaufort Scale = 3, dry, 16°C
B33-H / B33-I / B33-L / B33-O	Dusk 01/09/2020 19:34 – 21:19	19:49	80% cloud cover, Beaufort Scale = 1, dry, 16.2-12°C
B33-J	Dusk 03/09/2020 19:29 – 21:14	19:44	20% cloud cover, Beaufort Scale = 3, dry, 19°C
	Dusk 24/09/2020 18:40 – 20:25	18:55	40% cloud cover, Beaufort Scale = 1, dry, 11.1-10.1°C
29 / 71 / 116	Dusk 24/08/2020 19:53 – 21:37	20:07	70% cloud cover, Beaufort Scale = 1, dry, 19°C
	Dusk 08/09/2020 19:18 – 21:03	19:33	90% cloud cover, Beaufort Scale = 1-2, dry, 21°C
69 / 70	Dawn 24/08/2020 04:32 – 06:17	06:02	70% cloud cover, Beaufort Scale = 0, dry, 12°C
	Dusk 08/09/2020 19:18 – 21:03	19:33	90% cloud cover, Beaufort Scale = 1-2, dry, 21°C
40	Dusk 24/08/2020 19:53 – 21:37	20:07	70% cloud cover, Beaufort Scale = 1, dry, 19°C
	Dusk 11/09/2020 19:11 – 20:56	19:26	50% cloud cover, Beaufort Scale = 3, dry, 16°C

2.4 Phase 2 bat activity survey

Bat activity transects

2.4.1 In order to provide an assessment of the importance of the 2020/2021 survey area for foraging and commuting bats, dusk activity surveys were undertaken between May and September 2020. Due to the large size of the 2020/2021 survey area, the area was divided into two transects (Transects 7 and 8⁶). The two transect locations are shown in *Appendix C* and each was surveyed on three occasions.

2.4.2 Surveyors carrying hand-held bat detectors walked the transects, with listening stops at regular intervals for periods of up to 5 minutes. Visual observations of bats and bat call registrations were noted, recording time, location, activity and, where known, species.

⁶ Transects 1 to 6 are located within the 2019 survey area (HDA, 2020).

Recordings of foraging and/or commuting activity made using digital devices were subsequently analysed to determine the identity of any unconfirmed species recorded during the surveys. Times and dates of surveys are given in *Table 2* below, along with weather conditions.

Table 2: Details of bat activity surveys

Date	Sunset	Time	Weather conditions
19/05/2020 (Transect 7 only)	20:58	20:58 – 22:58	15% cloud cover, Beaufort Scale = 2, dry, 17°C
20/05/2020 (Transect 8 only)	20:59	20:59 – 22:59	10% cloud cover, Beaufort Scale = 2, dry, 17.7 – 16°C
08/07/2020 (Transects 7 and 8)	21:22	21:22 – 23:22	100% cloud cover, Beaufort Scale = 2-3, predominantly dry with occasional drizzle, 16-15°C
29/09/2020 (Transects 7 and 8)	18:43	18:43 – 20:43	25% cloud cover, Beaufort Scale = 1, dry, 15°C

Automated surveys

2.4.3

Automated surveys were carried out as a supplement to the activity transect surveys and to gain further information on the frequency of bat activity within the 2020/2021 survey area and the species present. Programmable electronic bat detectors⁷ were positioned in suitable habitat in both Transects 7 and 8 and left in place on three occasions between May and October 2020. The detectors were programmed to record all bat activity. Details of the times and dates of automated bat detector deployment are provided in *Table 3* below and the location of each detector deployed is shown in *Appendix C*.

Table 3: Details of automated bat detector deployment

Location	Deployment and collection date	Sunset/Sunrise	Night Temp. Max./Min. (°C)
8A*	19/05/2020 – 20/05/2020	20:56 – 05:02	21 / 12
	20/05/2020 – 21/05/2020	20:57 – 05:00	21 / 13
	21/05/2020 – 22/05/2020	20:58 – 04:59	19 / 17
	22/05/2020 – 23/05/2020	21:00 – 04:58	15 / 10
	23/05/2020 – 24/05/2020	21:01 – 04:57	12 / 12
	24/05/2020 – 25/05/2020	21:03 – 04:56	17 / 10
	25/05/2020 – 26/05/2020	21:04 – 04:55	18 / 11
	26/05/2020 – 27/05/2020	21:05 – 04:54	19 / 13
7A	17/06/2020 – 18/06/2020	21:24 – 04:43	17 / 13
	18/06/2020 – 19/06/2020	21:25 – 04:43	16 / 14
	19/06/2020 – 20/06/2020	21:25 – 04:43	15 / 11
	20/06/2020 – 21/06/2020	21:25 – 04:43	17 / 14
	21/06/2020 – 22/06/2020	21:25 – 04:43	16 / 10
7B & 8B	08/07/2020 – 09/07/2020	21:21 – 04:55	18 / 15

⁷ Anabat SD2 with remote microphone and 'Analog' software

Location	Deployment and collection date	Sunset/Sunrise	Night Temp. Max./Min. (°C)
	09/07/2020 – 10/07/2020	21:20 – 04:56	13 / 11
	10/07/2020 – 11/07/2020	21:19 – 04:57	15 / 8
	11/07/2020 – 12/07/2020	21:18 – 04:58	17 / 8
	12/07/2020 – 13/07/2020	21:17 – 04:59	21 / 12
7C & 8C	29/09/2020 – 30/09/2020	18:43 – 07:03	16 / 9
	30/09/2020 – 01/10/2020	18:40 – 07:05	13 / 10
	01/10/2020 – 02/10/2020	18:38 – 07:07	11 / 8
	02/10/2020 – 03/10/2020	18:36 – 07:08	13 / 12
	03/10/2020 – 04/10/2020	18:33 – 07:10	12 / 8
	04/10/2020 – 05/10/2020	18:31 – 07:12	10 / 8

* Due to equipment failure the automated bat detector located at Location 7A was redeployed at a later date.

2.4.4 The results of the dedicated bat activity and automated surveys are further supported by additional incidental records of bat activity made during the dusk emergence and dawn re-entry surveys of the trees and buildings within the 2020/2021 survey area. Together, these surveys allow a robust assessment of bat foraging and commuting activity throughout the 2020/2021 survey area.

2.5 Limitations of surveys

2.5.1 During the Phase 1 bat survey, permission was not granted to access some of the buildings for internal inspections. These buildings were however subject to detailed external inspections and in such instances a precautionary approach was taken during assessment of the building's potential to support roosting bats.

2.5.2 Although the bat survey season runs between May and September inclusive, best practice guidelines (BCT, 2016) recommend that features with moderate potential are surveyed twice, with at least one of the two survey visits carried out during the bat breeding season (May–August inclusive) and features with high potential or confirmed roosts are surveyed three times, with at least two of the three survey visits carried out during the bat breeding season. However, although the Phase 2 surveys were carried out in favourable weather conditions when bats were seen to be active, due to the timing of the instruction of the Phase 2 emergence/re-entry survey work it was only possible to carry out surveys of the trees and buildings during late August/September, when bats are active but at the end of the bat breeding season. The results of the Phase 2 roost surveys of B33-C, B33-F, B33-G, B33-H, B33-I, B33-L and Trees 29 and 71 and subsequent assessment of these features given in this report should therefore be regarded as provisional until the further emergence/re-entry survey work recommended in Section 5.2.25 has been completed in 2021.

2.5.3 Phase 1 bat scoping surveys of limited areas of the site were carried out over the winter of 2020/2021 in response to amendments to the site boundary. Phase 2 emergence/re-

entry surveys can only be carried out in the bat active period (May to September) and subsequently to date it has not been possible to carry out Phase 2 surveys of these features in advance of this assessment. If any of these features will be impacted by the proposed works and have confirmed bat roosts or potential to support roosting bats (i.e. structures with low or greater potential and trees with moderate or greater potential to support roosting bats) they should be subject to Phase 2 roost surveys in spring/summer 2021⁸ in advance of development commencing and recommendations in this regard are given in *Section 5.2.25* below.

2.5.4 Notwithstanding the above limitations, the surveys followed current best practice guidelines (BCT, 2016) and were conducted at an appropriate time of year, under favourable weather conditions and with an appropriate level of survey effort both in terms of the number of surveyors used and number of survey visits undertaken. Although periods of light drizzle were experienced on two of the activity surveys this was not found to have affected levels of bat activity and is not considered a constraint to the findings of the surveys. The surveys are therefore considered sufficient to inform an assessment of the likely effects of the proposed development on bats and to inform the recommendations provided in *Section 5* of this report.

3 RESULTS

3.1 Phase 1 bat scoping survey

Buildings and built structures

3.1.1 All buildings and built structures within the 2020/2021 survey area were inspected during the Phase 1 bat scoping survey. In addition, the survey was extended to cover the building complex at Hermitage Farm (B33) which was only subject to limited Phase 1 bat scoping survey in 2019 due to access constraints. The results of the Phase 1 structure survey are summarised in *Table 4* below and the locations of the structures are shown in *Appendix A*. Photograph references relate to the photographs provided in *Appendix E*.

Table 4: Results of Phase 1 bat scoping structure survey

Building/bridge	Description	Findings	Bat roost potential
Hermitage Farm (B33)			
B33-A (Photo 1)	An open-sided agricultural barn constructed of metal struts with a pitched corrugated asbestos roof.	External: No suitable features for roosting bats recorded. Internal: No suitable features for roosting bats recorded. No evidence of bats recorded.	Negligible

⁸ An assessment of the development proposals indicates that B37 and Trees 170, 171 and G4 should be subject to Phase 2 roost surveys in spring/summer 2021.

Building/ bridge	Description	Findings	Bat roost potential
<p>B33-B (Photos 2 & 3)</p>	<p>An agricultural barn with single skinned walls formed of concrete blocks below with corrugated metal above and a single skinned pitched corrugated metal roof.</p>	<p>External: No suitable features for roosting bats recorded.</p> <p>Internal: No suitable features for roosting bats recorded.</p> <p>No evidence of bats recorded.</p>	<p>Negligible</p>
<p>B33-C (Photos 4, 5 & 6)</p>	<p>Single-storey workshop with brick walls and a single skinned sloping corrugated asbestos roof.</p>	<p>External: Potential bat roosting opportunities include gaps under asbestos sheeting and a missing brick.</p> <p>Internal: There are missing bricks on the eastern and western walls of the building (likely from the removal of a mezzanine level) which may lead into the cavity wall.</p> <p>No evidence of bats recorded.</p>	<p>Moderate</p>
<p>B33-D (Photo 7)</p>	<p>Brick building with a sloped corrugated metal roof. Connected to the southern elevation is a grain processing plant surrounded by corrugated metal.</p>	<p>External: No suitable features for roosting bats recorded.</p> <p>Internal: Internal survey was not possible due to access constraints.</p> <p>No evidence of bats recorded.</p>	<p>Negligible</p>
<p>B33-E (Photos 8-10 & 12)</p>	<p>A single-storey mainly open-sided stable with single skin brick walls and a pitched, corrugated metal roof. Attached to the southern end is an open-sided breezeblock shed with a single skinned sloping corrugated metal roof. B33-E is attached to the southern elevation is B33-F.</p>	<p>External: Potential bat roosting opportunities are limited but include gaps under wooden boarding and between the brick and breezeblock walls.</p> <p>Internal: The building was relatively well-lit internally, however gaps are present between the internal roof beams and corrugated metal roof.</p> <p>No evidence of bats recorded.</p>	<p>Low</p>
<p>B33-F (Photos 11-13)</p>	<p>Single-storey stable block with brick walls and a pitched single-skinned, slate tiled roof with clay ridge tiles.</p>	<p>External: Potential bat roosting opportunities include missing, broken and lifted roof and ridge tiles, gaps above doors and windows, pipe holes in brickwork and gaps around a boarded window.</p> <p>Internal: Internal access was possible to the southern two-thirds of the building. The building is cluttered with no loft void present.</p> <p>No evidence of bats recorded.</p>	<p>High</p>

Building/ bridge	Description	Findings	Bat roost potential
<p>B33-G (Photos 12 & 14-16)</p>	<p>Barn with brick walls and a cross gable slate tiled roof lined with wooden sarking and roofing felt. Attached to the eastern elevation are two buildings with sloped corrugated asbestos (south-eastern building) and tiled (north-eastern building) roofs. Attached to the northern elevation is B33-H.</p>	<p>External: Potential bat roosting opportunities include multiple lifted tiles and gaps under wooden gable end and around barn doors.</p> <p>Internal: Internal access was possible to most of the building with the exception of the north-eastern building which has been converted into part of the residential dwelling (B33-H). In addition, internal concrete lined grain silos along the eastern and western walls of the barn (now used for storage) were only observed from the loft void above.</p> <p>Multiple gaps are present between the roof tiles and the internal wooden sarking and roofing felt linings.</p> <p>A scattering of bat droppings was present within the loft void with a collection of approximately 20 droppings indicative of <i>Pipistrellus</i> sp. below the apex of the roof in the centre of the barn.</p>	<p>Confirmed roost</p>
<p>B33-H (Photos 14-17)</p>	<p>Two storey brick house with a pitched gable slate tiled roof. Attached to the southern elevation is B33-G. On the northern elevation of the building is a single storey brick extension with a pitched gable tiled roof. Connected to the western elevation of the extension is B33-I.</p>	<p>External: Potential bat roosting opportunities include gaps under ridge and roof tiles, lifted lead flashing around a chimney, gaps in brickwork and gaps under a wooden gable end.</p> <p>Internal: Internal survey not possible due to access constraints, however it is understood that the loft voids have been converted into bedrooms.</p> <p>No evidence of bats recorded.</p>	<p>Moderate</p>
<p>B33-I (Photos 18 & 19)</p>	<p>Single-storey stables converted into bed and breakfast accommodation, comprising brick walls lined with wooden weatherboarding on the southern elevation and a cross gable slate tiled roof. Attached to the northern elevation is a sloping plastic porch.</p>	<p>External: Potential bat roosting opportunities include gaps in the wooden weatherboarding, under roof and ridge tiles and under wooden soffit.</p> <p>Internal: Internal survey not possible due to access constraints, however it is understood that small loft voids are present.</p> <p>No evidence of bats recorded.</p>	<p>Moderate</p>
<p>B33-J (Photos 20 & 21)</p>	<p>Pigsty with brick and breezeblock walls and a sloping corrugated asbestos roof.</p>	<p>External: The roof is collapsing in places, with potential bat roosting opportunities limited to gaps under the asbestos sheeting.</p> <p>Internal: The asbestos sheeting is lined with wooden board which occasional gaps between the two.</p> <p>No evidence of bats recorded.</p>	<p>Moderate</p>

Building/ bridge	Description	Findings	Bat roost potential
<p>B33-K (Photo 22)</p>	<p>Open-sided wood shed made of wooden struts with a sloping corrugated metal roof.</p>	<p>External: No suitable features for roosting bats recorded.</p> <p>Internal: Internal survey was not possible due to access constraints.</p> <p>No evidence of bats recorded.</p>	<p>Negligible</p>
<p>B33-L (Photos 23-25)</p>	<p>Single-storey workshop with single-skinned brick and wooden weatherboarding walls and a pitched gable corrugated asbestos roof.</p>	<p>External: Potential bat roosting opportunities are limited but include occasional gaps at the apex of the roof.</p> <p>Internal: The building is single-skinned and light internally, with no loft void present.</p> <p>No evidence of bats recorded.</p>	<p>Low</p>
<p>B33-M, B33-N & B33-R (Photos 25 & 26)</p>	<p>Metal shipping containers.</p>	<p>External: No suitable features for roosting bats recorded.</p> <p>Internal: Internal survey not possible due to access constraints.</p> <p>No evidence of bats recorded.</p>	<p>Negligible</p>
<p>B33-O (Photo 25)</p>	<p>Pigsty with brick and breezeblock walls and a sloping corrugated asbestos roof.</p>	<p>External: Potential bat roosting opportunities limited to gaps under the asbestos sheeting.</p> <p>Internal: The asbestos sheeting is lined with wooden boards which are falling off.</p> <p>No evidence of bats recorded.</p>	<p>Low</p>
<p>B33-P (Photos 25 & 26)</p>	<p>Open-sided cattle shed with brick walls and a sloping corrugated asbestos roof.</p>	<p>External: No suitable features for roosting bats recorded.</p> <p>Internal: No suitable features for roosting bats recorded.</p> <p>No evidence of bats recorded.</p>	<p>Negligible</p>
<p>B33-Q (Photo 27)</p>	<p>Open-sided agricultural barn with single skinned corrugated metal walls and a single skinned pitched corrugated metal roof.</p>	<p>External: No suitable features for roosting bats recorded.</p> <p>Internal: No suitable features for roosting bats recorded.</p> <p>No evidence of bats recorded.</p>	<p>Negligible</p>

Building/bridge	Description	Findings	Bat roost potential
B33-S (Photo 28)	Glass greenhouse.	External: No suitable features for roosting bats recorded. Internal: No suitable features for roosting bats recorded. No evidence of bats recorded.	Negligible
B33-T (Photo 29)	Single-storey open-sided stable with corrugated metal walls and a sloped corrugated metal roof.	External: No suitable features for roosting bats recorded. Internal: No suitable features for roosting bats recorded. No evidence of bats recorded.	Negligible

Structures beyond Hermitage Farm (B33)			
B35 (Photo 30)	Single-storey, disused water gauge station with single skinned brick walls and open windows and door.	External: No suitable features for roosting bats recorded. Internal: No suitable features for roosting bats recorded. No evidence of bats recorded.	Negligible
B36 (Photo 31)	Concrete A422 road bridge crossing River Ouzel comprising 3 stanchions.	External: Potential bat roosting opportunities comprising 5cm wide crevices run the length of the underside of the bridge at 1m intervals leading to an approximately 80cm deep void across the expanse of the bridge. Internal: Internal survey not possible due to access constraints. No evidence of bats recorded.	High
B37 (Photo 32)	Concrete Tongwell Street road bridge crossing River Ouzel comprising 3 stanchions.	External: Potential bat roosting opportunities comprise minor cracks and expansion gaps at each end of bridge. Internal: Internal survey not possible due to access constraints. No evidence of bats recorded.	Low
B38 (Photo 33)	Concrete M1 road bridge crossing River Ouzel comprising 5 stanchions.	External: Potential bat roosting opportunities comprise drainage pipes on the underside of the bridge in association with each stanchion. Internal: Internal survey not possible due to access constraints. No evidence of bats recorded by HDA, however, Highways England provided	Confirmed roost

Building/bridge	Description	Findings	Bat roost potential
		data from 2016 of a known Daubenton's maternity roost associated with B38, B41 and B42 (Highways England, 2017).	
B39 (Photo 34)	Single-storey water gauge station with a flat roof and single skinned, brick walls.	External: No suitable features for roosting bats recorded. Internal: Internal survey not possible due to access constraints. No evidence of bats recorded.	Negligible
B40 (Photo 35)	Single-storey, disused water gauge station with an open roof, no door and single skinned, brick walls.	External: No suitable features for roosting bats recorded. Internal: No suitable features for roosting bats recorded. No evidence of bats recorded.	Negligible
B41 (Photo 36)	Concrete M1 road bridge crossing tributary of River Ouzel comprising 7 stanchions.	External: Potential bat roosting opportunities comprise drainage pipes on the underside of the bridge in association with each stanchion. Internal: Internal survey not possible due to access constraints. No evidence of bats recorded by HDA, however, Highways England provided data from 2016 of a known Daubenton's maternity roost associated with B38, B41 and B42 (Highways England, 2017).	Confirmed roost
B42 (Photo 37)	Concrete M1 road bridge crossing tributary of River Ouzel comprising 5 stanchions.	External: Potential bat roosting opportunities comprise drainage pipes on the underside of the bridge in association with each stanchion. Internal: Internal survey not possible due to access constraints. No evidence of bats recorded by HDA, however, Highways England provided data from 2016 of a known Daubenton's maternity roost associated with B38, B41 and B42 (Highways England, 2017).	Confirmed roost
B43 (Photo 38)	Concrete bridge providing pedestrian access under A509 road.	External: No suitable features for roosting bats recorded. Internal: Internal survey not possible due to access constraints. No evidence of bats recorded	Negligible

Building/bridge	Description	Findings	Bat roost potential
B44	Concrete bridge providing pedestrian access under Tongwell Street.	<p>External: No suitable features for roosting bats recorded.</p> <p>Internal: Internal survey not possible due to access constraints.</p> <p>No evidence of bats recorded</p>	Negligible
B45 (Photo 39)	Concrete bridge providing pedestrian access under A509 road.	<p>External: No suitable features for roosting bats recorded.</p> <p>Internal: Internal survey not possible due to access constraints.</p> <p>No evidence of bats recorded</p>	Negligible

Trees

3.1.2 All trees identified as having potential to support roosting bats within the 2020/2021 survey area are described in *Table 5* below and their locations are given in *Appendix A*.

Table 5: Results of Phase 1 bat scoping tree survey

Tree ref*	Species	Description of Features	BCT Category
28**	Ash	Three holes in branch on northern aspect. Hollowing at base of trunk on southern aspect.	High
29	Ash	Hollowing at base of trunk on northern aspect. Trunk cavity on eastern aspect.	Moderate
34***	Oak	Crack in trunk on northern aspect and lifted bark on all aspects.	Moderate
105	Oak	Two small cracks in dead branches on southern and northern aspects.	Low
106	Oak	Multiple dead and dying limbs with small cracks.	Low
107	Oak	Multiple dead and dying limbs with small cracks.	Low
108	Ash	Two large trunk cavities on southern and western aspects.	High
109	Ash	Woodpecker hole and rot hole in decaying limb on western aspect.	Moderate
110	Oak	Ivy covered tree with small rot hole on southern aspect.	Low
111	Horse Chestnut	Two woodpecker holes in limb on southern aspect.	Moderate
112	Horse Chestnut	Three rot holes in limbs on southern aspect.	Moderate
113	Lime	Dense suckers on all aspects which may be obscuring visibility to potential roosting features.	Low
114	Ash	Small cavity on southern aspect.	Low
115	Ash	Small trunk cavity on northern aspect.	Low
116	Ash	Trunk cavity on eastern aspect. Knot hole on western aspect.	Moderate
117	Oak	Small cavity in branch on northern aspect. Small cavity in branch scar on southern aspect.	Low
118	Scots Pine	Ivy clad tree which may be obscuring visibility to potential roosting features.	Low
119	Silver Birch	Two woodpecker holes in broken branch on eastern aspect.	Low
120	Oak	Peeling bark on decaying branch.	Low
121	Crack Willow	Branch cavity on northern aspect.	Low

Tree ref*	Species	Description of Features	BCT Category
122	Scots Pine	Dead tree with peeling bark and trunk cavities.	Low
123	Silver Birch	Branch cavity on eastern aspect.	Low
124	Field Maple	Ivy clad tree which may be obscuring visibility to potential roosting features.	Low
125	Ash	Multiple trunk cavities on eastern, southern and western aspects. Branch cavity on southern aspect.	Moderate
126	Willow	Branch cavity on eastern aspect of a north facing branch.	Low
127	Sycamore	Ivy clad tree which may be obscuring visibility to potential roosting features.	Low
128	Dead	Limited peeling bark on all aspects.	Low
129	Willow	Trunk cavity on eastern aspect.	Low
130	Sycamore	Multiple basal cavities on northern and southern aspects.	Moderate
131	Poplar	Woodpecker hole in branch on eastern aspect. Ivy clad tree which may be obscuring visibility to other potential roosting features.	Low
132	Ash	Multiple woodpecker holes on branch on south-eastern aspect.	Moderate
133	Dead	Partially dead, tri-boled stem with multiple Woodpecker holes on eastern aspect.	Moderate
134	Ash	Trunk cavity on northern aspect.	Low
135	Dead	Dead tree with multiple trunk cavities on eastern aspect.	Moderate
136	Poplar	Woodpecker holes on northern and eastern aspects.	Moderate
137	Poplar	Multiple cavities on northern aspect including branch cavity, basal cavity and trunk cavity beneath dead branch.	Moderate
138	Poplar	Two small trunk cavities on western aspect.	Low
139	Poplar	Multiple dead and dying features. Trunk cavities on southern and northern aspects with woodpecker holes on northern aspect.	Moderate
140	Ash	Multiple trunk and branch cavities on northern aspect.	Moderate
141	Ash	Trunk cavity on northern aspect.	Moderate
142	Poplar	Trunk cavity on north-eastern aspect. Broken branch with occluded wood on south-western aspect.	Low
143	Willow	Trunk cavity on eastern aspect.	Moderate
144	Willow	Upward facing crack in branch on southern aspect.	Low
145	Willow	Multiple splits in trunk. Basal cavity on north-eastern aspect.	Moderate
146	Willow	Split in trunk and peeling bark on all aspects.	Moderate
147****	Ash	Two trunk cavities on eastern aspect. Branch cavity on northern aspect.	Moderate
149	Willow	Trunk and branch cavities on all aspects.	Moderate
150	Poplar	The tree is of sufficient size and age to contain roosting features not visible from the ground.	Low
151	Willow	Limited peeling bark.	Low
152	Willow	Multiple trunk cavities on northern, eastern and western aspects.	High
153	Willow	2 large woodcrete bat boxes.	High
154	Willow	2 large woodcrete bat boxes.	High
155	Willow	Hollowing trunk with broken branch on eastern aspect with peeling bark.	Moderate
156	Willow	Trunk split from 2-8m on southern aspect.	High
157	Willow	Trunk cavity on western aspect.	Moderate
158	Willow	Woodpecker hole on branch on northern aspect.	Low

Tree ref*	Species	Description of Features	BCT Category
159	Willow	Number of features of limited suitability including thin split in trunk. Broken branch on northern aspect with small trunk cavity below and branch cavity on western aspect.	Low
160	Willow	Small trunk cavities on southern and eastern aspect.	Low
161	Willow	Split trunk on northern aspect.	Low
162	Willow	Hollowing at base of trunk on northern aspect. Ivy clad tree which may be obscuring visibility to other potential roosting features.	Low
163	Willow	Split trunk from base to top on western aspect.	Moderate
164	Willow	Hollow tree with multiple trunk cavities.	Moderate
165	Willow	Split trunk, suitability reduced by considerable decay of tree and feature highly accessible to weather conditions.	Low
166	Willow	Multiple trunk cavities.	High
167	Willow	Trunk cavity on eastern aspect.	High
168	Willow	Hollow trunk.	High
169	Willow	Hollow trunk.	Moderate
170	Ash	Two trunk cavities on western aspect. Two branch cavities on eastern aspect.	Moderate
171	Ash	Trunk cavity on eastern aspect. Branch cavity on northern aspect.	Moderate
G4	Group of trees	Woodland comprising Ash and Oak. The majority of trees are of negligible potential with 2 high potential Ash, 1 moderate potential Ash and 2 moderate potential Oak.	Negligible to High
G5	Group of trees	Group of early mature Ash and Silver Birch trees covered in Ivy which may be obscuring visibility to potential roosting features.	Low
G6	Group of trees	Group of early mature Field Maple trees covered in Ivy which may be obscuring visibility to potential roosting features.	Low
G7	Group of trees	Group of early mature Silver Birch, Horse Chestnut and conifer trees covered in Ivy which may be obscuring visibility to potential roosting features.	Low
G8	Group of trees	Group of early mature Scots Pine trees covered in Ivy which may be obscuring visibility to potential roosting features.	Low
G9	Group of trees	Group of mature Ash trees. The trees are of sufficient size and age to contain roosting features not visible from the ground.	Low
G10	Group of trees	Group of mature Willow and Oak trees covered in Ivy which may be obscuring visibility to potential roosting features.	Low
G11	Group of trees	Group of mature Willow trees covered in Ivy which may be obscuring visibility to potential roosting features.	Low
G12*****	Group of trees	Group of early mature Oak and Pine trees. The trees are of sufficient size and age to contain roosting features not visible from the ground.	Low

* Tree references continue from Tree 104 and G3 as these are located within the 2019 survey area. Where trees were situated on the boundary of 2019 and 2020/2021 survey areas, they were re-assessed in 2020/2021.

** Prior to the 2020/2021 Phase 2 emergence/re-entry surveys being carried out this tree fell over and subsequently was not subject to further bat surveys.

*** As part of the 2020/2021 Phase 1 survey, this tree was reassessed, and its bat roost potential upgraded.

**** Tree 148 does not exist.

***** Tree 88 as shown within the Bat Survey Report (HDA, 2020), is now included within G12.

3.1.3 All other trees within and immediately adjacent to the 2020/2021 survey area were assessed as having negligible potential to support roosting bats⁹.

⁹ It should be noted that two areas of the site (as shown in Appendix A) were not subject to a Phase 1 scoping survey as emerging development proposals indicate that no works will affect trees in these areas of the site.

3.2 Phase 2 roost surveys

- 3.2.1 The results of the Phase 1 bat scoping surveys were used to determine the requirement for Phase 2 bat roost survey work of built structures and trees where these had the potential to be affected by emerging development proposals (and were not subject to survey in 2019). The Phase 2 bat roost surveys took the form of emergence/re-entry surveys of buildings and trees¹⁰.
- 3.2.2 In accordance with best practice guidelines (BCT, 2016), confirmed roosts and high potential trees and buildings were subject to three emergence/re-entry surveys, moderate potential trees and buildings were subject to two emergence/re-entry surveys and low potential buildings were subject to one emergence/re-entry survey. Where survey findings indicated that a bat roost may be present, additional surveys were carried out. Details of the dates and times of Phase 2 emergence/re-entry surveys, along with weather conditions and sunset/sunrise times, are provided in *Table 1* above.
- 3.2.3 In accordance with the guidelines low potential trees potentially affected by the proposed development were not subject to Phase 2 roost surveys at this stage however, in the event that retention of a tree identified as having low potential to support roosting bats is not possible, the appropriate approach to works is given in *Section 5* below.
- 3.2.4 All other buildings and trees within the survey area with the potential to be affected by the development proposals were identified as having 'negligible' potential to support roosting bats and therefore no further survey of these buildings and trees is required in line with current guidance (BCT, 2016).
- 3.2.5 *Table 6* provides a summary of the results of the 2020/2021 Phase 2 bat roost surveys of buildings and trees. Key findings of the Phase 1 bat scoping survey are also summarised where relevant. Locations of identified emergence/re-entry points described in the table (and represented by alphanumeric codes) are shown in *Appendix A*, further information on the emergence/re-entry locations within B33-C, B33-G, B33-H and B33-L are shown in *Appendix B*, and photographs of the buildings are provided in *Appendix E*.

¹⁰ It should be noted that B37 and Trees 170, 171 and G4 have been identified as having potential to support roosting bats and may be impacted by the proposed works, however due to the potential roosting features being identified in the winter of 2020/2021 these have not been subject to Phase 2 roost surveys in advance of this assessment. Surveys of these features are proposed for spring/summer 2021 (*Section 5.2.25*).

Table 6: Results of 2020/2021 Phase 2 roost surveys

Tree/ building ref	Date / Type	Results	Updated Roost Status
B33-C^{*i}	Dusk 03/09/2020	Emergence of 1 x Common Pipistrelle from eastern elevation of building (Ref: B33-C1).	Confirmed roost Roost supporting one Common Pipistrelle.
B33-E	Dusk 27/08/2020	No emergences / re-entries.	Low
B33-F	Dusk 27/08/2020	No emergences / re-entries.	Moderate
	Dusk 24/09/2020	No emergences / re-entries.	
B33-G^{*i}	Phase 1 bat scoping	A scattering of bat droppings was present within the loft void with a collection of approximately 20 droppings indicative of <i>Pipistrellus</i> sp. below the apex of the roof in the centre of the barn.	Confirmed roost Roost supporting two Soprano Pipistrelle, two Common Pipistrelle and two silent bats. In view of the size, emergence times and behaviour of the two silent bats, the bat recorded on the first emergence survey is likely to be a Serotine bat and the bat recorded on the second emergence survey is likely to be either a Common or Soprano Pipistrelle.
	Dusk 27/08/2020	Emergence of 2 x Soprano Pipistrelle from under wood on southern gable end (Ref: B33-G1). Emergence of 1 x silent large bat (behaviour and size indicative of Serotine) from eastern elevation of building (Ref: B33-G2).	
	Dusk 11/09/2020	Emergence of 1 x silent bat (behaviour and size indicative of <i>Pipistrellus</i> sp.) from barn doors on eastern elevation of building (Ref: B33-G3).	
	Incidental emergences recorded during survey of B33-J on 24/09/2020	Emergence of 1 x Common Pipistrelle from edge of roof on western elevation of building (Ref: B33-G4). Emergence of 1 x Common Pipistrelle from edge of wooden door on western elevation of building (Ref: B33-G5).	
B33-H^{*i}	Incidental emergences recorded during survey of B33-G on 27/08/2020	Emergence of 1 x Common Pipistrelle from under lifted lead flashing at base of chimney on southern elevation of building (Ref: B33-H1). Emergence of 1 x Common Pipistrelle from edge of roof on eastern elevation of building (Ref: B33-H2).	Confirmed roost Roost supporting up to four Common Pipistrelle.

Tree/ building ref	Date / Type	Results	Updated Roost Status
	Dusk 01/09/2020	<p>Emergence of 1 x Common Pipistrelle from under lifted lead flashing at base of chimney on southern elevation of building (Ref: B33-H1).</p> <p>Emergence of 1 x Common Pipistrelle from edge of roof on eastern elevation of building (Ref: B33-H2).</p> <p>Emergence of 1 x Common Pipistrelle from edge of roof on western elevation of building (Ref: B33-H3).</p> <p>Probable emergence of 1 x Common Pipistrelle from under wood on northern gable end (Ref: B33-H4).</p>	
B33-I*	Dusk 01/09/2020	No emergences / re-entries.	Moderate
B33-J	Dusk 03/09/2020	No emergences / re-entries.	Moderate
	Dusk 24/09/2020	No emergences / re-entries.	
B33-L*ⁱ	Dusk 01/09/2020	Emergence of 1 x Common Pipistrelle from gap in brick work at apex of gable on western elevation (Ref: B33-L1).	Confirmed roost Roost supporting one Common Pipistrelle.
B33-O	Dusk 01/09/2020	No emergences / re-entries.	Low
29*	Dusk 24/08/2020	Emergence of 1 x Common Pipistrelle from trunk cavity on eastern aspect.	Confirmed roost Day roost supporting one Common Pipistrelle.
	Dusk 08/09/2020	No emergences / re-entries.	
37	Dusk 27/08/2020	No emergences / re-entries.	Moderate
	Dusk 11/09/2020	No emergences / re-entries.	
40	Dusk 24/08/2020	No emergences / re-entries.	Moderate
	Dusk 11/09/2020	No emergences / re-entries.	
41	Dusk 27/08/2020	No emergences / re-entries.	Moderate
	Dusk 11/09/2020	No emergences / re-entries.	
69	Dawn 24/08/2020	No emergences / re-entries.	Moderate
	Dusk 08/09/2020	No emergences / re-entries.	
70	Dawn 24/08/2020	No emergences / re-entries.	Moderate
	Dusk 08/09/2020	No emergences / re-entries.	

Tree/ building ref	Date / Type	Results	Updated Roost Status
71*	Dusk 24/08/2020	No emergences / re-entries.	Confirmed roost Day roost supporting one silent bat. In view of the size, emergence time and behaviour of the bat, the bat is likely to be either Common or Soprano Pipistrelle.
	Dusk 08/09/2020	Emergence of 1 x silent bat from below dead branch on northern aspect.	
116	Dusk 24/08/2020	No emergences / re-entries.	Moderate
	Dusk 08/09/2020	No emergences / re-entries.	

* Assessment of these features should be regarded as provisional until the further emergence/re-entry survey work recommended in Section 5 has been completed in 2021.

ⁱ Reference numbers relate to the numbers given on the plans in Appendix B.

3.2.6 In addition to the trees/buildings identified as supporting roosting bats during the Phase 2 surveys, Highways England provided data from 2016 of a known Daubenton's maternity associated with three M1 road bridges (B38, B41 and B42) over the River Ouzel and its tributaries, located within and adjacent to the site (Highways England, 2017).

3.2.7 In addition to the trees/buildings subject to Phase 2 surveys, the following features with confirmed roosts/bat roost potential were identified within the 2020/2021 survey area during the Phase 1 scoping survey:

- 3 confirmed roosts (B38, B41, B42);
- 9 'high' potential buildings/trees (B36, 108, 152-154, 156, 166-168);
- 24 'moderate' potential trees (109, 111, 112, 125, 130, 132, 133, 135-137, 139-141, 143, 145-147, 155, 157, 163, 164, 169, 170, 171); and
- 41 'low' potential buildings/trees/tree groups (B37, G5-G12, 105-107, 110, 113-115, 117, 118-124, 126-129, 131, 134, 138, 142, 144, 149, 151, 158-162, 165).

In line with current best practice guidelines (BCT, 2016), further surveys of these trees and buildings are not required, at this stage, in support of a planning application due to: (i) their retention within emerging development proposals; (ii) their location beyond the current site boundary; and/or (iii) comprising trees with low potential to support roosting bats. However, in the event that the future retention of any of these trees or structures is not possible, the appropriate approach to works is given in Section 5 below¹¹.

3.2.8 All other trees and structures within the 2020/2021 survey area were identified as having 'negligible' potential to support roosting bats.

¹¹ Phase 2 emergence/re-entry surveys may be required of B36 and Trees 170, 171 and G4 dependant on the extent of detailed development proposals.

3.3 Phase 2 activity transect surveys

3.3.1 Details of the date and time of bat activity transect surveys carried out in 2020, along with weather conditions and sunset times, are provided in *Table 2*. The areas covered during each survey visit included all boundaries, hedgerows and woodland copses within each transect area. Details of the 2019 bat activity surveys are provided in the Bat Survey report (HDA, 2020).

3.3.2 A visual summary of bat foraging and commuting activity recorded across the site during the surveys in 2019 and 2020 has been provided in *Appendix D*. In total, at least seven species were recorded within the site during the combined transect surveys: Common Pipistrelle, Soprano Pipistrelle, Noctule, Serotine, Leisler's, Brown Long-eared bat and *Myotis* sp. bats. A summary of each species/species group recorded, their activity and an estimation of numbers using the site during any one survey is provided in *Table 7* below.

Table 7: Summary of bat activity during transect surveys in 2019 and 2020

Species	Activity summary	Approx. number recorded*
Common Pipistrelle	<p>Common Pipistrelle was the most frequently recorded species during the activity surveys. The majority of Common Pipistrelle activity was associated with the River Ouzel, Pineham Nature Reserve and connected hedgerows in the west of the site, a small woodland copse in the north of the site and a small woodland copse and mature treeline in the centre of the site. Common Pipistrelles were also recorded on a less frequent basis using hedgerows and woodland bordering the grassland and arable fields in the remainder of the site and treelines associated with Tongwell Street and the off-site Willen Lake.</p> <p>It is expected that up to 23 Common Pipistrelle bats could have been using the site at any one time for foraging and commuting.</p>	23
Soprano Pipistrelle	<p>Soprano Pipistrelle was the second most frequently recorded species during the activity surveys. Soprano Pipistrelle activity was scattered across the site, associated with the River Ouzel, Pineham Nature Reserve and connected hedgerows in the west of the site and woodland copses in the north of the site. Soprano Pipistrelles were also recorded on a less frequent basis using hedgerows and woodland bordering the grassland and arable fields in the remainder of the site and treelines associated with Tongwell Street and the off-site Willen Lake.</p> <p>It is expected that up to 11 Soprano Pipistrelle bats could have been using the site at any one time for foraging and commuting.</p>	11
Noctule	<p>Noctule was the third most frequently recorded species during the activity survey. The majority of Noctule activity was associated with the River Ouzel, Pineham Nature Reserve and connected hedgerows in the west of the site and the A509 in the north of the site. Noctules were also recorded on a less frequent basis using hedgerows and woodland bordering the grassland and arable fields in the remainder of the site and treelines associated with Tongwell Street and the off-site Willen Lake.</p> <p>It is expected that up to 10 Noctules could have been using the site at any one time for foraging and commuting.</p>	10

Species	Activity summary	Approx. number recorded*
<i>Myotis</i> sp.	<p>The majority of bats of <i>Myotis</i> species were recorded along hedgerows in the south-east of the site. <i>Myotis</i> bats were also recorded on a less frequent basis using hedgerows bordering the grassland and arable fields in the west of the site.</p> <p>It is expected that up to 3 bats of <i>Myotis</i> species could have been using the site at any one time for foraging and commuting.</p>	3
Brown Long-eared bat	<p>Brown Long-eared bats were recorded on two occasions associated with areas of mixed plantation woodland in the south-east of the site.</p> <p>It is likely that no more than 1 Brown Long-eared bat was using the site at any one time during the survey and that the site forms part of a much larger foraging range for individuals of this species.</p> <p>It should be noted however that Brown Long-eared bat calls are very quiet which means that they are less easily recorded by bat detectors. It is therefore possible that higher (but not substantially higher) numbers of Brown Long-eared bats may have been using the site than were recorded.</p>	1(+)
Serotine	<p>Serotine was recorded on one occasion in association with a hedgerow bordered by grassland fields in the west of the site.</p> <p>It is likely that the site was used by no more than 1 Serotine bat at any one time and that the site forms part of a much larger foraging range for a low number of individuals of this species.</p>	1
Leisler's bat	<p>Leisler's bat was recorded on one occasion in association with the village of Moulsoe to the east of the site.</p> <p>It is likely that the site was used by no more than 1 Leisler's bat at any one time and that the site forms part of a much larger foraging range for a low number of individuals of this species.</p>	1

* This is an approximation of the number of bats of any one species estimated to have been using the site during any one visit.

3.4 Phase 2 automated activity surveys

3.4.1 The dates during which the automated detector was deployed during 2020, along with sunset/sunrise times and temperatures are provided in *Table 3*. The locations in which the automated bat detector was placed during each deployment in 2019 and 2020 are shown on the plan in *Appendix C*. Details of the 2019 automated detector surveys are provided in the Bat Survey Report (HDA, 2020).

3.4.2 The automated detector was placed in 6 separate locations within Transects 7 and 8 to give an indication of the species using different areas of the 2020/2021 survey area and relative levels of activity throughout the night. A summary of bat activity recorded during the automated surveys in each location is provided below in *Table 8*. In total, seven species or species groups were recorded during the automated surveys; Common Pipistrelle, Soprano Pipistrelle, Noctule, Leisler's, Brown Long-eared bat, *Myotis* sp. and Barbastelle bats.

Table 8: Summary of bat activity recorded by the automated detectors in the 2020/2021 survey area

Location	Activity summary
7A	<p>The automated detector at Location 7A recorded bat activity along the Newport Road within Moulsoe where it is bordered by grassland fields associated with Transect 7 to the east of the site.</p> <p>A total of 287 bat passes were recorded over 5 nights; an average of 57 bat recordings per night.</p> <p>Common Pipistrelle was the most frequently recorded species at Location 7A (93.4% of the bat recordings), with occasional to regular foraging activity recorded during every night.</p> <p>Occasional passes by Noctule, Brown Long-eared bat, Soprano Pipistrelle and <i>Myotis</i> sp. bats were also recorded (5.2%, 0.7%, 0.3% and 0.3% of passes respectively).</p>
7B	<p>The automated detector at Location 7B recorded bat activity along an intact hedgerow with a dry drain bordered by arable fields located within Transect 7 to the east of the site.</p> <p>A total of 92 bat passes were recorded over 5 nights; an average of 18 bat recordings per night.</p> <p>Common Pipistrelle was the most frequently recorded species at Location 7B (77.2% of the bat recordings), with occasional to regular foraging activity recorded during every night. Soprano Pipistrelle was the second most frequently recorded species at Location 7B (16.3% of the bat recordings), with occasional foraging activity recorded during most nights.</p> <p>Occasional passes by Brown Long-eared bat, Leisler's, Noctule, <i>Myotis</i> sp. and Barbastelle bats were also recorded (2.2%, 1.1%, 1.1%, 1.1% and 1.1% of passes respectively).</p>
7C	<p>The automated detector at Location 7C recorded bat activity along an intact hedgerow with a dry drain bordered by arable fields between Transects 4 and 7 in the east of the site.</p> <p>A total of 17 bat passes were recorded over 3 nights; an average of 6 bat recordings per night.</p> <p>Occasional passes by Noctule, Soprano Pipistrelle, Common Pipistrelle, Leisler's and Barbastelle bats were recorded (35.3%, 29.4%, 23.5%, 5.9% and 5.9% of passes respectively).</p>
8A	<p>The automated detector at Location 8A recorded bat activity along Tongwell Street where it is bordered by treelines associated with Transect 8 in the south of the site.</p> <p>A total of 17 bat passes were recorded over 6 nights; an average of 3 bat recordings per night.</p> <p>Occasional passes by Common Pipistrelle, Noctule and Soprano Pipistrelle bats were recorded (82.4%, 11.8% and 5.9% of passes respectively).</p>

Location	Activity summary
8B	<p>The automated detector at Location 8B recorded bat activity along a defunct hedgerow bordered by arable fields and a small woodland copse located within Transect 8 in the north-east of the site.</p> <p>A total of 992 bat passes were recorded over 4 nights; an average of 248 bat recordings per night.</p> <p>Common Pipistrelle was the most frequently recorded species at Location 8B (93.1% of the bat recordings), with occasional to regular foraging activity recorded on all nights.</p> <p>Occasional passes by Soprano Pipistrelle, Noctule, Brown Long-eared bats and <i>Myotis</i> sp. bats were also recorded (6.1%, 0.5%, 0.1% and 0.1% of passes respectively).</p>
8C	<p>The automated detector at Location 8C recorded bat activity at the junction between a defunct hedgerow bordered by arable fields and the A509 road located within Transect 8 in the north-east of the site.</p> <p>A total of 33 bat passes were recorded over 5 nights; an average of 7 bat recordings per night.</p> <p>Common Pipistrelle was the most frequently recorded species at Location 8C (48.5% of the bat recordings), with occasional foraging activity recorded during every night. Soprano Pipistrelle was the second most frequently recorded species at Location 8C (33.3% of the bat recordings), with occasional foraging activity recorded during most nights.</p> <p>Occasional passes by Noctule, Leisler's and Brown Long-eared bats were also recorded (9.1%, 6.1% and 3.0% of passes respectively).</p>

3.4.3 In summary:

- Common Pipistrelle, Soprano Pipistrelle and Noctule were recorded at all locations the remote detectors were deployed;
- Brown Long-eared bat was recorded at all locations except Locations 7C and 8A;
- Leisler's were recorded at all locations except Locations 7A, 8A and 8B;
- *Myotis* sp. was recorded at all locations except Locations 7C, 8A and 8C;
- Barbastelle was recorded at Locations 7B and 7C.

3.4.4 The highest number of bat recordings were made at Location 8B and the highest diversity of bat species was recorded at Location 7B. The fewest bat recordings per night and lowest diversity of bat species were recorded at Location 8A. Common Pipistrelle was the most frequently recorded species relating to 90.2% of all bat passes recorded, with all locations being used by foraging bats of this species on at least an occasional basis on each night. Soprano Pipistrelle, followed by Noctule were the next most recorded bat species (6.5% and 2.2% of all bat recordings, respectively), with similar patterns of activity to the Common Pipistrelle bats however at much lower numbers. Brown Long-eared bat, accounting for 0.4% of all bat recordings was recorded at Locations 7A, 7B, 8B and 8C. Leisler's bat was recorded on 4 occasions, *Myotis* sp. bat was recorded on 3

occasions and Barbastelle was recorded on 2 occasions during the 2020/2021 automated detector survey.

3.4.5 In addition to the above, three further species were recorded during the automated surveys carried out in 2019: Nathusius' Pipistrelle, Serotine and Greater Horseshoe. Details of the 2019 automated detector surveys are provided in the Bat Survey Report (HDA, 2020).

4 SUMMARY AND IMPACT ASSESSMENT

4.1 Bat roosting habitat

4.1.1 In addition to those bat roosts recorded in 2019 (detailed within the Bat Survey Report (HDA, 2020)), confirmed bat roosts were recorded within B33-C, B33-G, B33-H and B33-L associated with Hermitage Farm and Trees 29 and 71 within the 2020/2021 survey area. Emergence and re-entry locations on buildings are illustrated on the plans in *Appendix B* (the below reference numbers relate to these plans) and photographs of the buildings are provided in *Appendix B* and *E*. In summary:

- **Hermitage Farm (B33-C, B33-G, B33-H & B33-L):** On a precautionary basis as:
 - i) the surveys to date were carried at the end of the bat survey season, ii) it was not possible to internally access B33-H during the Phase 1 bat scoping survey, and iii) further surveys are proposed for spring/summer 2021 (*Section 5.2.24*); it has been assessed that in combination the group of buildings B33-C, B33-G, B33-H and B33-L may support a maternity roost of Common Pipistrelle. Records of Common Pipistrelle roosting within these buildings comprised:
 - *B33-C*: A single Common Pipistrelle was recorded emerging from the eastern elevation (Ref: B33-C1);
 - *B33-G*: Two Common Pipistrelles (incidentally recorded during a survey of an adjacent building) emerging from the edge of the roof and wooden door on the western elevation (Ref: B33-G4 and B33-G5) and a silent bat from the barn doors on the eastern elevation of the building on the second survey (the silent bat is likely to be a *Pipistrellus* sp. based on its size and behaviour) (Ref: B33-G3);
 - *B33-H*: Four Common Pipistrelle were recorded emerging on the first survey visit associated with lifted lead flashing at the base of the chimney on the southern elevation (Ref: B33-H1), from the edge of the roof on the eastern (Ref: B33-H2) and western (Ref: B33-H3) elevations and under wood on the northern gable end (Ref: B33-H4). In addition, two Common Pipistrelle were incidentally recorded during a survey of an adjacent building emerging from lifted lead flashing at the base of the chimney on

the southern elevation (Ref: B33-H1) and from the edge of the roof on the eastern elevation (Ref: B33-H2); and

- *B33-L*: A single Common Pipistrelle was recorded emerging from a gap in the brickwork at the apex of the gable on the western elevation (Ref: B33-L1).

Further emergence/re-entry surveys are however recommended in the spring/summer 2021 to confirm the assessment of the roost.

- **B33-G**: In addition to the Common Pipistrelle roost discussed above, further bat roosts associated with B33-G comprised:
 - Two Soprano Pipistrelle emerging from under wood on southern gable end on the first survey (Ref: B33-G1);
 - One silent bat emerging from the eastern elevation on the first survey (the silent bat is likely to be a Serotine based on its size and behaviour) (Ref: B33-G2); and
 - A silent bat emerging from the barn doors on the eastern elevation of the building on the second survey (the silent bat is likely to be a *Pipistrellus* sp. based on its size and behaviour) (Ref: B33-G3).

The additional roosts associated with this building are likely to be low-status non-breeding roosts used on an occasional/transitory basis for two Soprano Pipistrelle and two silent bats (likely to be one Serotine and one *Pipistrellus* sp. bat). Further emergence/re-entry surveys are however recommended in the spring/summer 2021 to confirm the assessment of the roost (*Section 5.2.24*).

- **Tree 29**: A confirmed roost for a single Common Pipistrelle was recorded from a trunk cavity on the eastern aspect on the first survey visit. No bats were recorded roosting within the tree on the second survey visit. The roost associated with this tree is likely to be a low-status non-breeding day roost for one Common Pipistrelle. Further emergence/re-entry surveys are however recommended in the spring/summer 2021 to confirm the assessment of the roost.
- **Tree 71**: A confirmed roost for a single silent bat was recorded from below a dead branch on the northern aspect on the second survey visit. No bats were recorded roosting within the tree on the first survey visit. Due to the size and behaviour of the bat it is likely that the silent bat was a Common or Soprano Pipistrelle. The roost associated with this tree is likely to be a low-status non-breeding day roost for one Common or Soprano Pipistrelle. Further emergence/re-entry surveys are however recommended in the spring/summer 2021 to confirm the assessment of the roost.

4.1.2 In addition to the trees/buildings identified as supporting roosting bats during the Phase 2 surveys, Highways England provided data from 2016 of a known Daubenton's maternity roost associated with three M1 road bridges over the River Ouzel and its tributaries (B38, B41 and B42), located within and adjacent to the site (Highways England, 2017).

4.1.3 The 2020 survey results (and data from Highways England) therefore indicate that:

- Hermitage Farm (B33-G, B33-H, B33-C and B33-L) may support a small maternity roost for Common Pipistrelle;
- B33-G at Hermitage Farm also supports confirmed occasional/transitory roosts for two Soprano Pipistrelle, one Serotine and one further *Pipistrellus* sp. bat;
- Tree 29 supports a confirmed day roost for one Common Pipistrelle bat;
- Tree 71 supports a confirmed day roost for an individual *Pipistrellus* sp. bat; and
- B38, B41 and B42 located within and adjacent to the site support a maternity roost for Daubenton's bats.

The UK populations of Soprano Pipistrelle, Common Pipistrelle and Daubenton's bats are 4,670,000, 3,040,000 and [1,030,000]¹² individuals, respectively (Mathews *et. al.*, 2018). Current knowledge suggests that only a very small proportion (<0.001%) of the UK population of these species is therefore likely to be associated with the development area.

4.1.4 Serotine is a rarer bat species, generally restricted to the south and south-east of England and southern Wales, with a UK population estimated to be approximately 136,000 individuals (Mathews *et. al.*, 2018). In a regional context however, this is a relatively frequent occurring species. Furthermore, it is unlikely that a Serotine breeding roost is present in B33-G as evidence of the species was only recorded on one occasion during the Phase 2 emergence bat surveys, suggesting the presence of a low status non-breeding/transitory roost.

4.1.5 With regard to the above, taking into account the species and the nature of the roosts recorded, the roosts are considered in combination to be of no more than moderate local interest for roosting bats.

4.1.6 Although it will be possible to retain the Daubenton's maternity roost associated with the M1 road bridges (B38, B41 and B42). The proposed demolition of Hermitage Farm and construction of the road system will result in the loss of the maternity and transitional/occasional bat roosts associated with B33-C, B33-G, B33-H, B33-L and Trees 29 and 71 and therefore proposals have the potential to conflict with the nature conservation legislation afforded to bats (set out in *Section 1.2*). Works to B33-C, B33-G,

¹² Population size for Daubenton's has a very wide plausible interval of 27,000–4,440,000.

B33-H, B33-L and Trees 29 and 71¹³ with potential to affect roosting bats should therefore be carried out under a full European Protected Species Mitigation (EPSM) licence¹⁴. The licence application would need to be supported by a detailed method statement setting out measures for how individual bats would be protected during construction works and how opportunities for roosting bats would be maintained thereby ensuring the continued favourable conservation status of the local bat population. Suitable measures by which this can be achieved are provided in *Section 5* below.

4.2 Foraging and commuting activity

4.2.1 At least ten species of bat were recorded using the site for foraging and commuting, with varying levels of activity observed throughout the surveys. The plan in *Appendix D* provides an overview of bat activity recorded during the surveys.

4.2.2 The majority of activity recorded related to Common Pipistrelle bats, with up to 23 Common Pipistrelle bats considered to be using the site at any one time during the activity transect survey. The majority of Common Pipistrelle activity was recorded along the River Ouzel, Pineham Nature Reserve and connected hedgerows in the west of the site, a small woodland copse in the north of the site and a small woodland copse and mature treeline in the centre of the site. Common Pipistrelle was also recorded less frequently using the hedgerows and woodland copses bordered by grassland and arable fields in the remainder of the site and treelines associated with Tongwell Street and the off-site Willen Lake. Common Pipistrelle is a common and widespread bat species in Britain, with an estimated British population of 3,040,000 individuals (Mathews *et. al.*, 2018). The site therefore supports only a very small proportion of the British population of this species.

4.2.3 Soprano Pipistrelle was the second most frequently recorded species during the transect surveys, with up to 11 Soprano Pipistrelle bats considered to be using the site at any one time during the activity transect survey. The majority of Soprano Pipistrelle activity was associated with the River Ouzel, Pineham Nature Reserve and connected hedgerows in the west of the site and woodland copses in the north of the site. Soprano Pipistrelles were also recorded on a less frequent basis using hedgerows and woodland bordering the grassland and arable fields in the remainder of the site and treelines associated with Tongwell Street and the off-site Willen Lake. Soprano Pipistrelle is a common and widespread bat species in the Britain, with an estimated British population of 4,670,000 individuals (Mathews *et. al.*, 2018). The site therefore supports only a very small proportion of the British population of this species.

¹³ In addition to those bat roosts identified in 2019 (HDA, 2020).

¹⁴ The 'Low Impact Licence' approach only covers small numbers of roost sites and roosts in buildings which is not the case in this instance.

- 4.2.4 Noctule was the third most frequently recorded species during the transect surveys, with up to 10 Noctule bats considered to be using the site at any one time during the activity transect survey. The majority of Noctule activity was associated with the River Ouzel, Pineham Nature Reserve and connected hedgerows in the west of the site and the A509 in the north of the site. Noctule were also recorded on a less frequent basis using hedgerows and woodland bordering the grassland and arable fields in the remainder of the site and treelines associated with Tongwell Street and the off-site Willen Lake. Noctule is a common and widespread bat species in England, with an estimated England's population of 565,000 individuals (Mathews *et.al.*, 2018). The site therefore supports only a very small proportion of England's population of this species.
- 4.2.5 *Myotis* sp., Brown Long-eared bat, Serotine, Barbastelle, Nathusius' Pipistrelle, Leisler's bat and Greater Horseshoe bats were also recorded from similar habitat on a less frequent basis. Of these species, the rarest are considered to be Barbastelle and Nathusius' Pipistrelle which are listed as 'Vulnerable' in Great Britain on the IUCN Red list and Leisler's bat which is listed as 'Near Threatened' in Great Britain on the IUCN Red list¹⁵. In addition, although Greater Horseshoe bat is listed as being of 'Least Concern' in Great Britain on the IUCN Red List it has a restricted range within Britain with the site being located on the northernmost edge of its range, and this species has a relatively small population in Britain comprising an estimated 12,900 individuals (Mathews *et al.*, 2018). The survey findings indicate the presence of individual non-breeding bats of these species using the site as part of a wider foraging territory on an occasional basis.
- 4.2.6 Despite the relatively high number of species recorded and the number of bats expected to have been present within the site at any one time during the transect survey, overall the level of bat activity recorded was generally considered to be low to moderate, relative to the size of the site, and similar foraging and commuting opportunities are relatively widespread in the wider area. As a whole the site is therefore considered to be of no more than low district interest for foraging bats. This interest largely relates to habitats associated with the River Ouzel, Pineham Nature Reserve and associated woodland copse and network of hedgerows, particularly within the west of the site.
- 4.2.7 In addition to implementing measures to mitigate any negative effects on roosting bats, in accordance with nature conservation legislation, development proposals should also seek to maintain and enhance opportunities for foraging and commuting bats within the site and its surrounds in accordance with planning policy and the 2006 NERC Act. These measures are further discussed in *Section 5* below.

¹⁵ Accurate population estimates are currently unavailable for these species (Mathews *et al.*, 2018).

5 RECOMMENDATIONS

5.1 This section identifies measures to be implemented during development of the 2020/2021 survey area to avoid, mitigate and compensate potential impacts on bats, and to maintain the favourable conservation status of the local bat population. In addition, recommendations for enhancement of the 2020/2021 survey area for roosting and foraging bats are included in accordance with 2019 NPPF and the 2006 NERC Act.

5.2 Roosting bats

5.2.1 The emergence/re-entry surveys carried out to date, together with the third-party survey data supplied by Highways England, identified the presence of maternity roosts for Daubenton's bats within B38, B41 and B42 and Common Pipistrelle within the Hermitage Farm building group B33-C, B33-G, B33-H and B33-L. In addition, occasional/transitional roosts for low numbers of Soprano Pipistrelle, Common Pipistrelle and Serotine were recorded within B33-G and Trees 29 and 71¹⁶.

5.2.2 Emerging development proposals suggest that the proposed development of the 2020/2021 survey area will retain the Daubenton's bat maternity roosts associated with B38, B41 and B42, however they will result in the loss of, or damage or disturbance to the roost sites identified in B33-C, B33-G, B33-H, B33-L, Trees 29 and 71. A European Protected Species (EPS) licence would therefore need to be obtained from Natural England prior to the commencement of any works affecting buildings B33-C, B33-G, B33-H and B33-L and Trees 29 and 71 containing bat roost sites. The licence would need to be accompanied by a detailed method statement describing how the favourable conservation status of bats at the site will be maintained, including information on how loss of roost sites will be compensated and timing of works to minimise impacts on bats. Mitigation would centre on:

- Creation of appropriately designed and sited new roosting opportunities for bats, proportionate to those being lost; and
- Implementation of works affecting roost sites at a time of year when bats are least susceptible to disturbance/likely to be present, employing sensitive working practices.

5.2.3 Measures by which this can be achieved are given below. These should be implemented unless otherwise agreed with the local planning authority and/or Natural England.

¹⁶ The results of the Phase 2 roost surveys of B33-C, B330 F, B33-G, B33-H, B33-I, B33-L and Trees 29 and 71 should be regarded as provisional until the further emergence/re-entry surveys recommended in *Section 5.2.24* have been completed in spring/summer 2021.

Replacement of roost sites

5.2.4 A strategy for mitigating the loss of the existing roost sites resulting from the proposed development works is described below. This should be reviewed at an appropriate stage in light of detailed design and/or the findings of updated surveys.

Short-term roost replacement and enhancement: tree-mounted bat boxes

5.2.5 The bat roosts identified above will be lost as a result of the demolition/felling of B33-C, B33-G, B33-H, B33-L and Trees 29 and 71, and it will not be possible to retain the identified bat roosts during development works. However, Common Pipistrelle, Soprano Pipistrelle and Serotine bats are known to roost in trees and/or bat boxes (University of Bristol, 2010; Schofield & Mitchell-Jones, 2004), with records of bat boxes having been used for successful breeding of Common and Soprano Pipistrelle. It would therefore be possible to provide suitable replacement opportunities during the construction phase prior to new roosting opportunities being created within new buildings.

5.2.6 To provide replacement opportunities for bats associated with the identified roost sites prior to construction commencing, 10 bat boxes should be installed on suitable retained trees within the site in the vicinity of the existing roosts to be lost. Specifically, initial replacement roost mitigation should consist of the following bat boxes or similar as advised by a suitably qualified ecologist:

- 4 x Greenwoods Ecohabitats Two Crevice Bat Box¹⁷;
- 4 x Greenwoods Ecohabitats Small Hollow Bat Box¹⁸; and
- 2 x Greenwoods Ecohabitats Maternity Colony Bat Box – Three Crevices¹⁹.

5.2.7 These should be located within areas away from the proposed construction works. The precise position should be determined through consultation with an appropriately qualified and experienced bat ecologist, but will need to integrate the location of suitable retained buildings/trees and habitat connections with avoidance of areas with highest potential future lightspill. To provide the opportunity for bats to find and utilise new roost sites prior to development, bat boxes should be put in place at an appropriate stage in advance of works commencing.

Long-term roost replacement and enhancement: crevices

5.2.8 The bat boxes described above should be retained on completion of development to mitigate for the loss of bat roosting opportunities during the site demolition works. Measures to ensure the long-term availability of roost sites within the 2020/2021 survey area are described below.

¹⁷ Made with small groups of crevice dwelling bat species in mind, such as Pipistrelles.

¹⁸ Made for small groups of larger crevice dwelling bat species, and those preferring a wider cavity, in mind, such as the Pipistrelles, Brown Long-eared and Noctules.

¹⁹ Made for large maternity colonies of crevice dwelling bat species that use boxes.

5.2.9 Of the bats confirmed or possibly roosting in the buildings and trees at the 2020/2021 survey area, Common Pipistrelle, Soprano Pipistrelle and Serotine are considered to be primarily crevice or hole-dwelling bats. To provide replacement and maintain opportunities for these bat species within the completed development, and deliver enhancements to the long-term roosting potential of the 2020/2021 survey area, a number of features suitable for crevice dwelling bats should be incorporated into the new buildings and retained trees. These should comprise:

- A minimum of 10 dedicated features such as Schwegler 1FR Bat Tubes or 'Habibat' type boxes incorporated into south- to west-facing elevations of new buildings;
- A minimum of 3 dedicated features specifically suitable for year-round occupation (including maternity) such as 1WI Schwegler Summer and Winter Bat Boxes should be incorporated into north- to east-facing elevations of the new buildings;
- A selection of other opportunities for crevice dwelling bats (a minimum of 14) should be provided in a variety of locations. These may include a selection of:
 - Provision of 20mm x 100mm gaps beneath roof and ridge tiles to allow access by bats to the underfelt below. Alternatively dedicated bat access tiles could be installed to perform a similar function;
 - Provision of 20mm x 200mm gaps along soffit boards providing access to the soffit box (installing soffit bat boxes if desired) or the internal roof space where appropriate;
 - Provision of further bat boxes on buildings such as 2FE Schwegler Wall-Mounted Bat Shelter, Beaumaris Woodstone Bat Box or Eco Kent Bat Box; and/or
 - Provision of further bat boxes on trees such as Vincent Pro Bat Box or Miramare Bat Box.

5.2.10 Where any features such as crevices for roosting bats are provided in association with new buildings, bitumastic (traditional) roofing felt should be used to avoid entanglement of bats.

5.2.11 All replacement roost sites should be located away from areas most affected by construction and operational phase noise and lighting. The precise position of replacement roost sites should be determined through consultation with an appropriately qualified and experienced ecologist at the detailed design stage, but would in any case need to integrate the location of suitable retained trees and habitat connections with avoidance of areas subject to significant levels of light spill.

Enhancement of roosting opportunities

5.2.12 The proposed development would provide opportunity to enhance the value of the 2020/2021 survey area for roosting bats in the long-term in accordance with the 2019 NPPF and the 2006 NERC Act through the provision of additional opportunities for roosting bats to those described above. The detailed design and location of such features would be determined at an appropriate stage prior to construction, but in addition to the mitigation measures described above, consideration should be given to inclusion of additional roosting opportunities including:

- Erection of additional bat boxes on mature trees across the site; and/or
- Creation of additional bat roosting opportunities on new buildings within the site e.g. through the use of bat bricks within the external walls of buildings and raised tiles (suitable opportunities are described in *Section 5.2.9* above).

5.2.13 By providing a variety of roosting opportunities in different locations and orientations within the new buildings and retained trees across the site, a range of roost spaces with varied microclimates will be provided that will offer long-term roosting opportunities for bats throughout the year.

Approach and timing of works

5.2.14 Works affecting confirmed or possible roost sites should ideally be carried out at a time of year when bats are least likely to be present. Serotine may use the same roost site throughout the year and little is known about the hibernation habits of Pipistrelles. In view of the difficulties in ruling out use of the roost buildings by small numbers of hibernating bats, works to buildings during the winter hibernation months (November-March) should be avoided, since any bats present during this period may be in torpor and would be particularly sensitive to disturbance. In addition, the findings of the surveys suggest that breeding bats are present at the site and therefore works should also avoid the peak breeding period (June to August) when young bats, unable to fly, may be present. Accordingly, to minimise any adverse impacts, where possible any works affecting the buildings will be conducted during suitable climatic conditions within either the spring (April-May) or autumn (September-October).

5.2.15 In the event that building demolition or tree trimming/felling is required outside of the timeframe described above then works to B33-C, B33-G, B33-H, B33-L and Trees 29 and 71 potentially affecting roosting bats should be either: (i) preceded by an updated survey to confirm the absence of a breeding roost (for demolition works between June and August); or (ii) be carried out during periods of mild weather when bats are active with minimum night time temperatures exceeding 7°C for five consecutive nights (for demolition works between November and February).

- 5.2.16 As identified above, bat boxes on retained trees should be provided in advance of loss of any roost in order to provide alternative roost sites prior to works commencing.
- 5.2.17 All demolition/felling works involving the removal of features from B33-C, B33-G, B33-H, B33-L and Trees 29 and 71 with the potential to conceal roosting bats should be overseen by a licensed bat worker under an Ecological Watching Brief. Potential features on these buildings include lifted gable end, holes on soffit boxes, lifted lead flashing, roof tiles, gaps in brickwork and weatherboarding. Suitable features should be inspected prior to demolition/felling and a cautious approach should be employed, particularly in the vicinity of the known roosts, with key features removed by hand where appropriate.
- 5.2.18 Should any bat be encountered during these works, it would be moved by the licensed bat worker to one of the pre-installed bat boxes described in *Section 5.2.6*.

Retained roosts

- 5.2.19 Current knowledge suggests that proposed development of the site will allow the retention of the Daubenton's bat maternity roosts associated with B38, B41 and B42. The Green Infrastructure Parameter Plan (JTP, 2021) shows that these roosts will be bordered and connected to the surrounding area by a corridor of natural habitats associated with the Pineham Nature Reserve, River Ouzel Linear Park and Open Space. The proposals will subsequently ensure the maintenance and enhancement of a corridor of foraging and commuting habitats for bats (discussed further in *Section 6* below).

Other trees

- 5.2.20 The Phase 2 surveys carried out to date identified the presence of small, low-status bat roosts in Trees 29 and 71 (discussed above). Any future iterations of the masterplan should have regard to the roost sites identified and the findings of any subsequent survey work (see *Section 5.2.24-5.2.26* below) and be subject to review and comment by a suitably qualified ecologist.
- 5.2.21 Due to the presence of opportunities for roosting bats within a number of trees across the site and the highly mobile nature of bats, an approach to works affecting trees lost to development or affected by future maintenance works (e.g. for health and safety) is set out below. This involves either further survey prior to works commencing to confirm continued absence of roosting bats or through a sensitive approach to works. In the event that retention of a tree identified as providing opportunities for roosting bats is not possible, due to the transitory nature with which bats may use roost sites in trees, it is recommended that felling works should be carried out in accordance with the following procedure, including where the 2019/2020 Phase 2 surveys have not identified a roost as being present:

1. Trees suitable for climbing inspections should first be climbed by a licensed bat worker to inspect potential roost sites for bats. In the event that no bats are encountered during an exhaustive search then any features should be 'soft stopped' to prevent re-occupation prior to felling. In the event that a bat is encountered, where the tree is already covered under an EPS licence, this should be moved to the bat boxes installed prior to felling works commencing. If a bat roost is encountered during survey of a tree not covered under an EPS licence, then felling/works to this tree should be delayed until an EPS licence has been sought and obtained from Natural England. Where bat roosts are present within any tree subject to felling, the tree should be 'soft felled' in accordance with the methodology described under point 4 below.
2. Trees with 'high' potential, for which an exhaustive climbed inspection is not possible or practicable should be subject to three emergence/re-entry surveys following BCT best practice guidelines to confirm the absence of roosting bats prior to any works affecting the tree commencing.
3. Trees with 'moderate' potential, for which an exhaustive climbed inspection is not possible or practicable should be subject to two emergence/re-entry surveys following BCT best practice guidelines to confirm the absence of roosting bats prior to any works affecting the tree commencing.
4. 'Low' potential trees that are unsuitable for climbing inspections and/or have not been subject to an emergence survey immediately in advance of works should be 'soft felled' under the supervision of a suitably qualified ecologist. Soft felling involves progressive removal of the tree, using ropes to gently lower sections of tree potentially supporting roosting bats to the ground for inspection by a suitably qualified ecologist. Where appropriate, features should be left on the ground overnight before clearing to allow any bats present to escape.

5.2.22 In the event that a roosting bat is discovered during any of the above works to trees not covered by an appropriate EPS licence, trimming/felling works must cease and Natural England contacted to agree an appropriate course of action. A licence may need to be applied for, and approved, before works can continue.

Maintenance of roosting opportunities

5.2.23 The integrity of retained roosting opportunities within and adjacent to the site should be conserved through the maintenance of connections to commuting and foraging habitat and sensitive use of lighting throughout the construction and operational phases (see *Section 5.3* below). In addition, trees not supporting roosting bats at the time of survey have potential to support bats in the future and therefore these trees should be retained and their ability to support roosting bats maintained, where possible to do so. Where

significant loss of future roosting opportunities arises, this should be offset through alternative roost provision elsewhere within the site.

Further survey

5.2.24 Due to the timing of the instruction of the Phase 2 bat survey work, the results of the Phase 2 roost surveys of B33-C, B33-F, B33-G, B33-H, B33-I, B33-L and Trees 29 and 71 and subsequent assessment of these features given in this report should be regarded as provisional. It is recommended that Phase 2 emergence/re-entry surveys of these buildings and trees are updated prior to commencement of development in spring/summer 2021 to confirm the status of bats within these features and accordingly the recommendations included within this document revised in line with the survey findings.

5.2.25 Phase 1 bat scoping surveys of limited areas of the site were carried out over the winter of 2020/2021 in response to amendments to the site boundary. Development proposals given in the Green Infrastructure Parameter Plan (JTP, 2021) indicate that features within these areas including B37 and Trees 170, 171 and G4, that were recorded as having potential to support roosting bats during these surveys, will be affected by development proposals. As such, Phase 2 emergence/re-entry surveys of these features should also be conducted prior to commencement of development in spring/summer 2021 to confirm the presence/absence of roosting bats, and if present the species and numbers present, and accordingly the recommendations included within this document revised in line with the survey findings.

5.2.26 In addition, bats may occupy roost sites on a seasonal or temporary basis and old roost sites may be abandoned and new roosts occupied within relatively short periods of time. Where appropriate, bat survey work, including emergence/re-entry surveys and/or climbing inspections of buildings and trees with potential to support roosting bats affected by the proposed development should be updated in advance of development commencing. The guidance of a suitably qualified ecologist should be sought to determine if and when surveys should be updated with regard to the development programme. This would ensure that up-to-date information is available to inform the extent of any mitigation and licensing requirements relating to bats.

5.3 Foraging and commuting bats

5.3.1 The site is considered as a whole to be of no more than low district importance for foraging bats. The site is expected to comprise a significant proportion of foraging habitat for moderate numbers of Common Pipistrelle and Soprano Pipistrelle bats and provides foraging habitat for low numbers of at least nine other species/species groups on a more occasional or infrequent basis.

- 5.3.2 A number of the bat species identified at the site (Barbastelle, Soprano Pipistrelle, Noctule, Greater Horseshoe and Brown Long-eared bat) are listed as Species of Principal Importance under Section 41 of the 2006 NERC Act and therefore the effects of development on foraging and commuting habitat are a material consideration in the planning process.
- 5.3.3 The development proposals indicated on the *Green Infrastructure Parameter Plan* (JTP, 2021) and *Illustrative Masterplan* within the *Design and Access Statement* (HTA, 2021) show the retention of the majority of hedgerows, treelines and woodlands within the northern and western sections of the site. However, the majority of hedgerows and plantation woodland copses within the central and south-eastern areas of the site, associated with the proposed secondary school and areas of commercial development, will be lost. New areas of woodland planting are however proposed along the new road system and a corridor of semi-natural habitats is proposed running north-south through the west of the site in association with the River Ouzel Linear Park which will include the enhancement of the existing watercourse through bank reprofiling and creation of backwaters, and provision of new wetlands, meadows and wet woodland habitats. In the long-term, it is likely that the loss of species-poor hedgerows and plantation woodland copses would be mitigated through the planting of new hedgerows, woodlands and scattered trees in association with the River Ouzel Linear Park and other areas of open space.
- 5.3.4 In addition, the development of the site would result in the loss of further areas of foraging habitats within the development areas where buildings and hardstanding take the place of areas currently dominated by grazed grassland and arable habitats. Although the field interiors are currently of limited value for foraging bats and it is expected that the proposed gardens and areas of open space within the development areas will provide new opportunities for roosting bats as these mature. Consideration should however be given to the use of pollen and nectar rich species within the formal planting schemes, enhancement of woodland edge habitats, new shrub and tree planting and inclusion of areas of rough and meadow grassland within areas of open space in order to maximise opportunities for foraging and commuting bats following development.
- 5.3.5 The site is currently subject to very limited light spill, generally associated with car headlights and streetlighting from the A509 in the north of the site, London Road running north-south through the centre of the site and the M1 and Tongwell Street in the south of the site. The integrity of retained and new foraging and commuting habitat, both within the proposed development area and its surrounds, should be conserved through the sensitive use of lighting throughout the construction and operational phases of the

proposed development. In accordance with the Bat Conservation Trust and Institute of Lighting Professionals guidance (BCT and ILP, 2018) this could be achieved through employment of a selection of the following measures in the vicinity of retained/newly created areas of suitable foraging habitat and in the vicinity of trees and buildings providing opportunities for roosting bats:

- Use of only the minimum amount of light required for safety and amenity, and minimise upward reflected light.
- Avoidance of bare bulbs or upward-pointing lights. The spread of light should be kept near to or below the horizontal.
- Use of narrow spectrum bulbs (between 4000 and 2700k) and/or low UV emitting bulb types.
- Avoidance of light-spill into adjacent areas through luminaire design or with accessories, such as hoods, cowls, louvres and shields to direct the light.
- Minimising the height of lighting columns.
- For pedestrian lighting, use of low level lighting that is as directional as possible and below 3 lux at ground level.
- Where necessary, use of embedded road lights to illuminate roadways and light only high-risk stretches of roads such as crossings and merges.
- Limiting the times that lights are on to provide some dark periods for wildlife and/or use automatic dimmers to reduce lighting outside times of peak use.

5.3.6 It is recommended that all detailed external lighting proposals are reviewed at appropriate design stages by a suitably qualified ecologist. This could be secured via a condition of planning consent.

5.3.7 Furthermore, in addition to the above measures to maintain opportunities for foraging and commuting bats within and adjacent to the developed areas of the site, the River Ouzel Linear Park and other areas of informal public open space will provide extensive opportunities to enhance these areas of the site for bats through the creation and enhancement of meadow grassland, scrub and woodland habitats and the creation of new wetland features. In order to maximise future opportunities for foraging and commuting bats within these areas of open space, it is recommended that the following measures are included in the landscape strategy for these areas of the site:

- Linear features such as hedgerows and treelines should be retained wherever possible and enhanced through infilling of gaps or provision of complementary scrub and tree planting. Where loss is unavoidable, for example at road or footpath access points, loss should be minimised and compensatory habitat provided at an appropriate location elsewhere.

- Where possible, new linear features such as hedgerows and treelines should be created to improve connectivity between areas of suitable roosting and foraging habitat within the site and the wider area.
- Landscape proposals within areas of open space across site should seek to include high quality habitat for foraging bats. This might include shrub planting, creation of areas of rough and meadow grassland, woodland and marginal vegetation and/or use of native species-rich hedgerows and treelines along boundaries.
- Creation of new wetland habitats including reedbeds, ponds and drains either as stand-alone features or as part of the surface water drainage strategy. These habitats are capable of supporting large numbers of invertebrates, providing a significant foraging resource for bats.

6 CONCLUSION

- 6.1 The 2020/2021 bat survey work carried out at the site, together with data provided by Highways England (2017), identified maternity roosts of Daubenton's bat and Common Pipistrelle and further occasional/transitional roosts associated with individual/small numbers of roosting bats within the site. The Green infrastructure Parameter Plan (JTP, 2021) and Illustrative Masterplan (HTA, 2021) indicate that the bat roosts associated with B33-C, B33-G, B33-H and B33-L associated with Hermitage Farm and Trees 29 and 71 will be lost to the proposed development. The proposals indicate however that it will be possible to retain the Daubenton's maternity roosts (B38, B41 and B42) recorded by Highways England within and adjacent to the site.
- 6.2 Although the roosts to be affected by the proposed development works are considered in combination to be of no more than moderate local value, the proposed works must give due regard to the legal protection afforded to all bats, which protects both individual bats and the conservation status of populations.
- 6.3 Measures to ensure the protection of individual bats during construction works and maintenance of opportunities for roosting bats in the long-term, including provision of a range of new bat roosting opportunities and suitable timing of activities, are described in *Section 5* of this report. The measures described should form the basis of a detailed Method Statement which would accompany an application to Natural England for a licence to permit development works affecting bats.
- 6.4 Measures are also described for the maintenance and enhancement of current opportunities provided by the site for foraging and bats. These include sensitive lighting design and development of a suitable landscape strategy for the site, including the retention, enhancement and creation of high value habitats for foraging bats. The

proposed development areas are currently dominated by grazed and arable farmland of limited value for foraging bats and it is likely that these measures could maintain and possibly enhance the value of the site in the long-term for this group.

- 6.5 Subject to the implementation of the measures described in *Section 5*, it is considered that the favourable conservation status of the local bat population would be maintained and, through long-term provision of higher quality roosting and foraging habitats, potentially enhanced. This would ensure compliance with the nature conservation objectives of the EC Habitats Directive, the 2006 NERC Act and the guidance underpinning the 2019 National Planning Policy Framework.

7 REFERENCES

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HDA Document Control and Quality Assurance Record

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Project Reference: 2090.52
Document Title: Bat Survey Report: Additional Areas
Commissioning Party: St James

Issue	Description	Date of Issue	Signed
1	Bat Survey Report: Additional Areas	March 2021	AM

	Personnel	Position
Author	Clare Bird MCIEEM	Principal Ecologist
Reviewed by	Anna Senior MCIEEM	Principal Ecologist
Approved for issue	Adrian Meurer MCIEEM	Director

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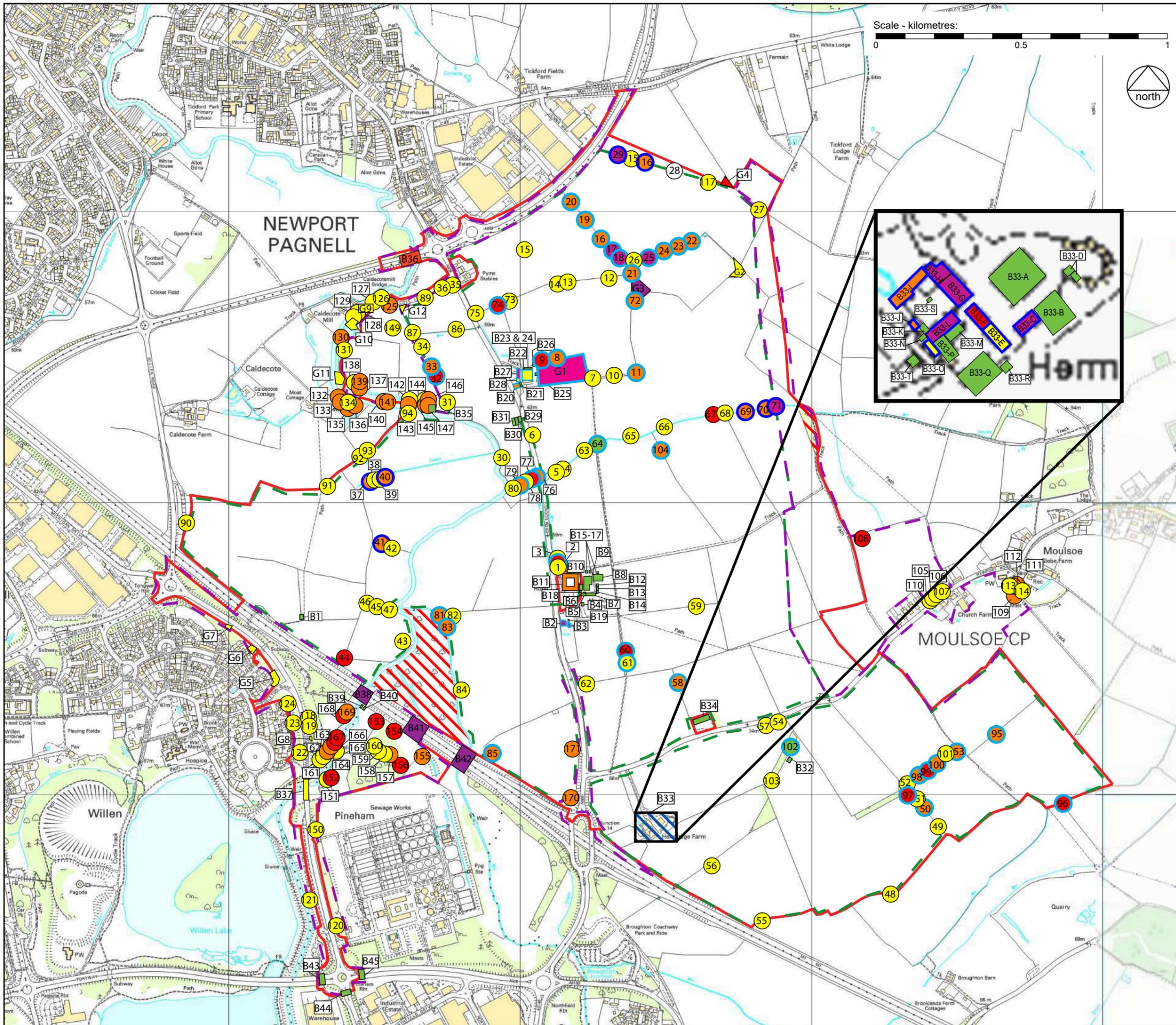
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APPENDIX A

Bat Roost Survey Summary Plan



KEY

- Site boundary
- 2019 survey area*
- 2020/2021 survey area
- Areas of the site not subject to Phase 1 bat scoping survey
- Tree/building subject to Phase 2 roost survey in 2019
- Tree/building subject to Phase 2 roost survey in 2020

BUILDINGS **

- Confirmed bat roost ***
- Probable bat roost
- High bat roost potential
- Moderate bat roost potential
- Low bat roost potential
- Negligible bat roost potential

TREES **

- Confirmed bat roost
- High bat roost potential
- Moderate bat roost potential
- Low bat roost potential
- Tree fell over prior to 2020 Phase 2 roost survey

* Some trees within the 2019 survey area were subject to Phase 2 roost surveys as part of the 2020/2021 suite of surveys.
 ** Roosting categories relate to roost potential in accordance with the BCT 2016 guidelines. All other trees within the site are regarded as having 'negligible' potential to support roosting bats.
 *** For more detail see Appendix B.

CLIENT:
St James

PROJECT:
Milton Keynes East

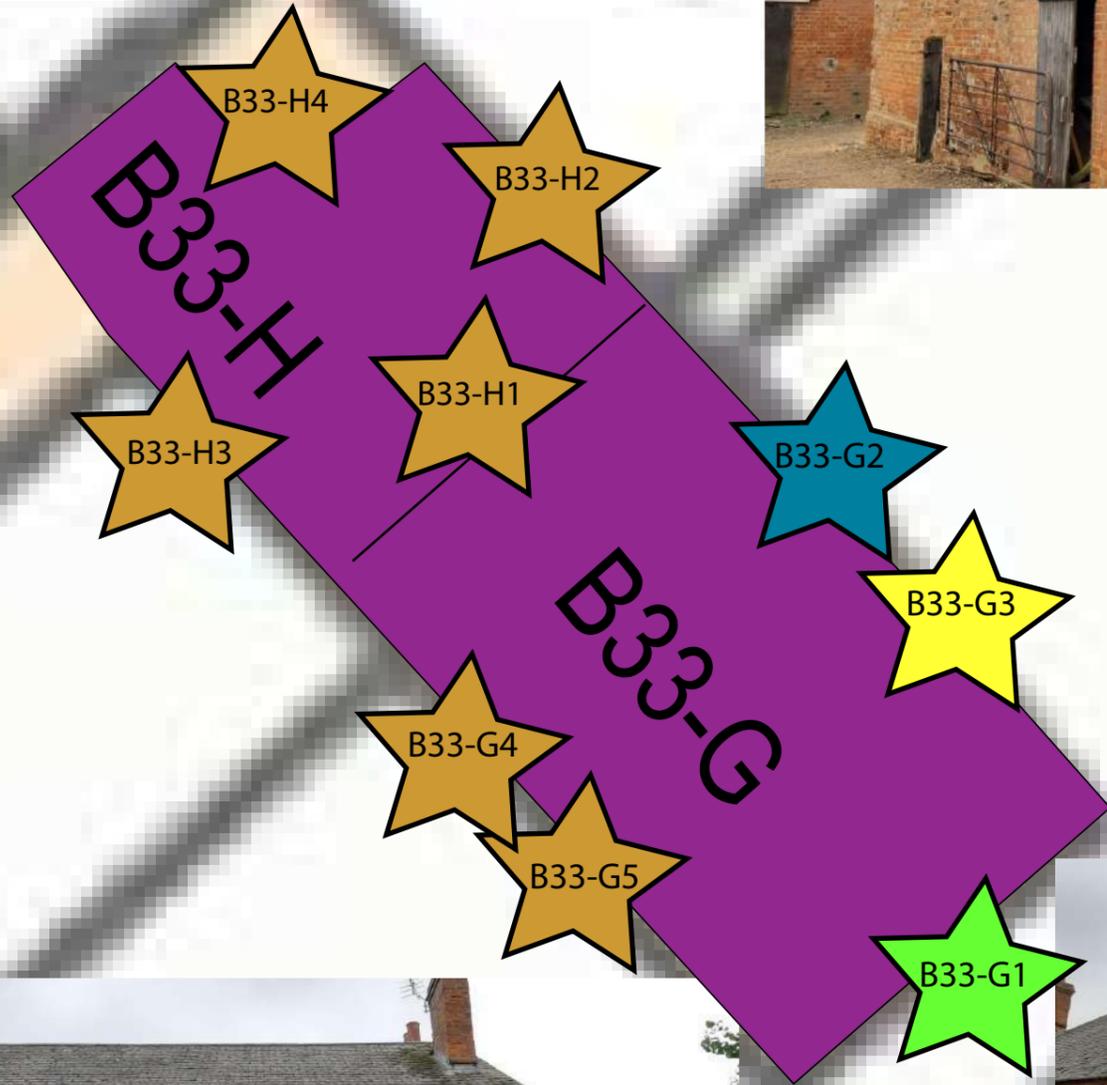
TITLE:
Bat Roost Survey Summary Plan

SCALE AT A3: 1:12,500 DATE: March 2021

2090.52 / 31

APPENDIX B

Bat Roost Survey Summary Plans – B33-C, B33-G, B33-H & B33-L



KEY

BUILDINGS

 Confirmed bat roost

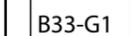
EMERGENCE/RE-ENTRY SURVEY RESULTS

 Soprano Pipistrelle

 Common Pipistrelle

 Silent bat likely Pipistrelle

 Silent bat likely Serotine

 B33-G1 Emergence/Re-entry location

CLIENT:
St James
PROJECT:
Milton Keynes East
TITLE:
Bat Roost Survey Summary Plan B33-G & B33-H
SCALE AT A3: NTS
DATE:
March 2021
2090.52 / 36

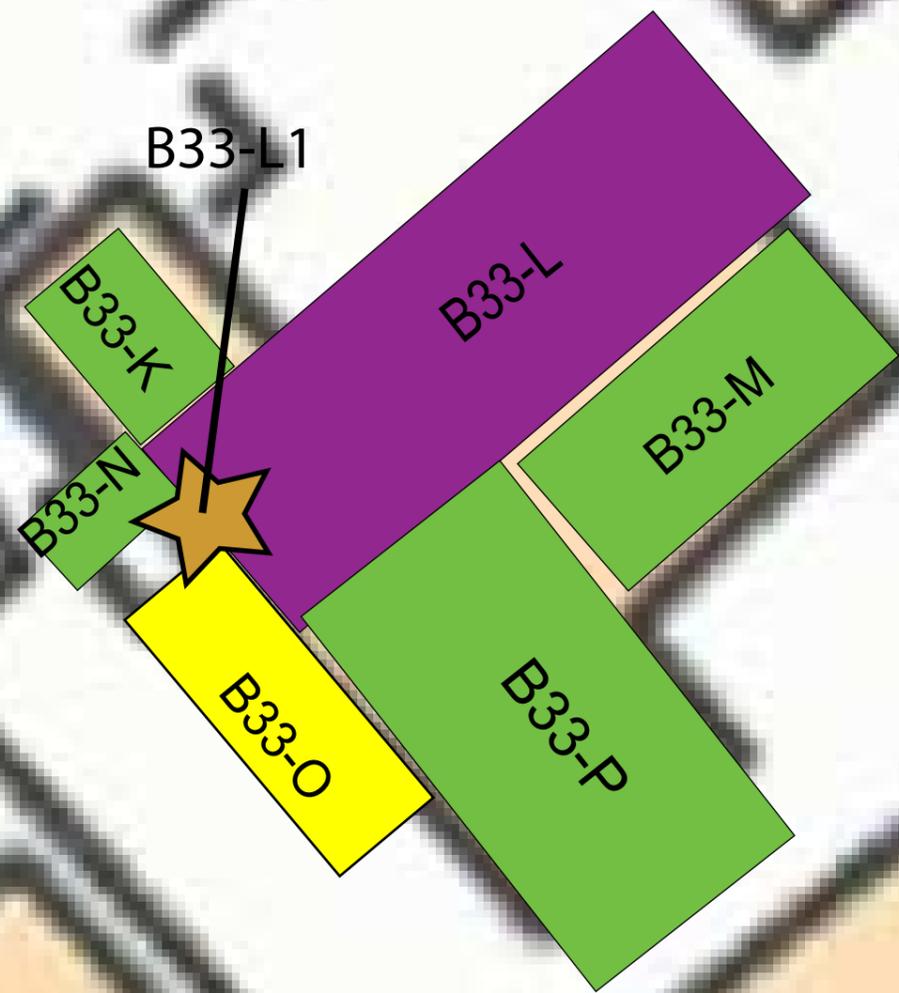
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B33-L1



B33-L1

KEY

BUILDINGS

-  Confirmed bat roost
-  Low bat roost potential
-  Negligible bat roost potential

EMERGENCE/RE-ENTRY SURVEY RESULTS

-  Common Pipistrelle
-  Emergence/Re-entry location reference number

CLIENT:
St James
PROJECT:
Milton Keynes East
TITLE:
Bat Roost Survey Summary Plan B33-L
SCALE AT A3: NTS DATE:
March 2021

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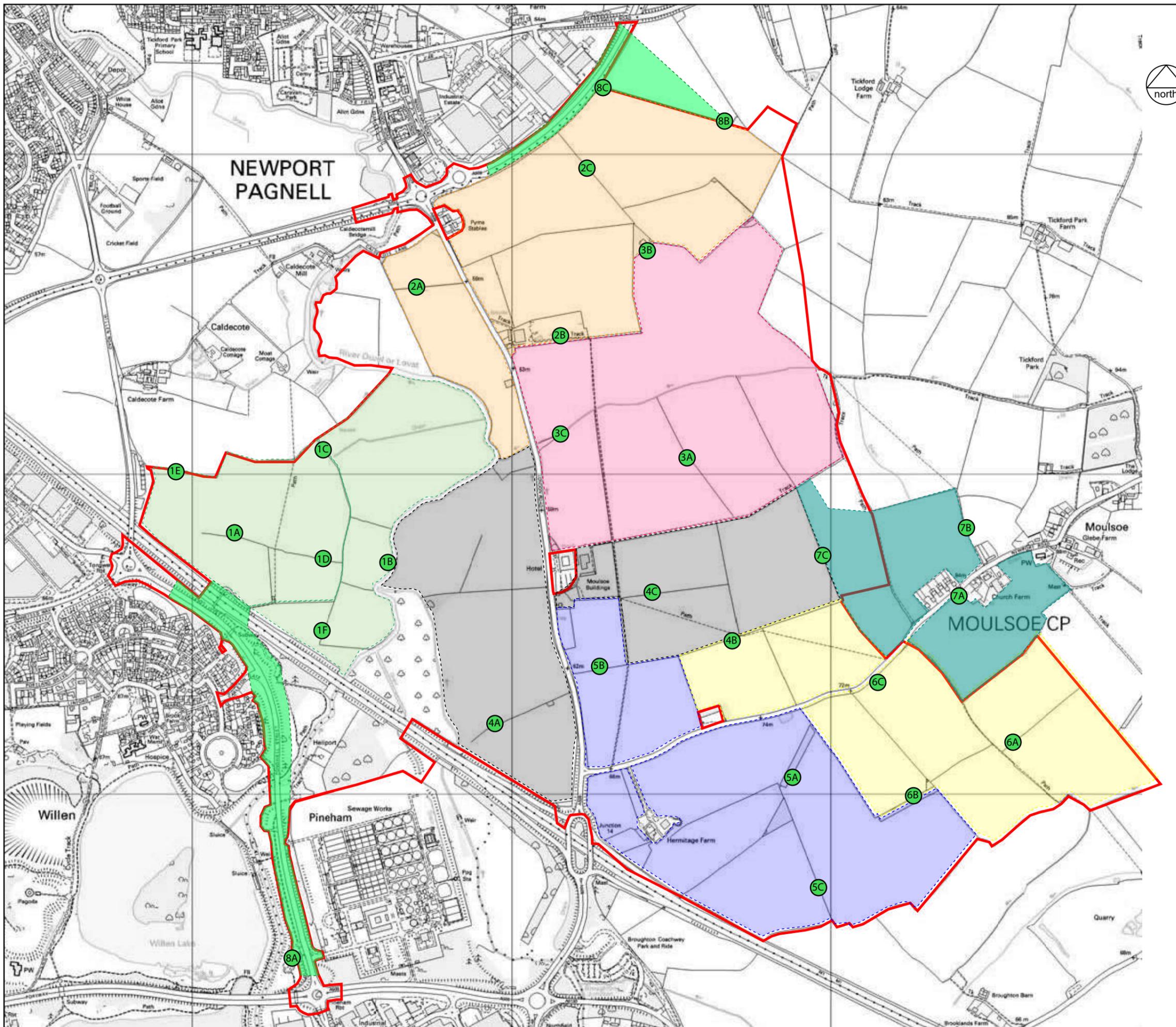
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APPENDIX C

Bat Activity Transect Coverage and Automated Detector Location Plan



KEY

-  Site boundary
-  Automated detector location

Transect coverage in 2019

-  Transect 1
-  Transect 2
-  Transect 3
-  Transect 4
-  Transect 5
-  Transect 6

Transect coverage in 2020

-  Transect 7
-  Transect 8

CLIENT:
St James
 PROJECT:
Milton Keynes East
 TITLE:
**Bat Activity Transect Coverage and Automated
 Detector Location Plan**
 SCALE AT A3: DATE:
 Not to Scale March 2021

2090.52/19

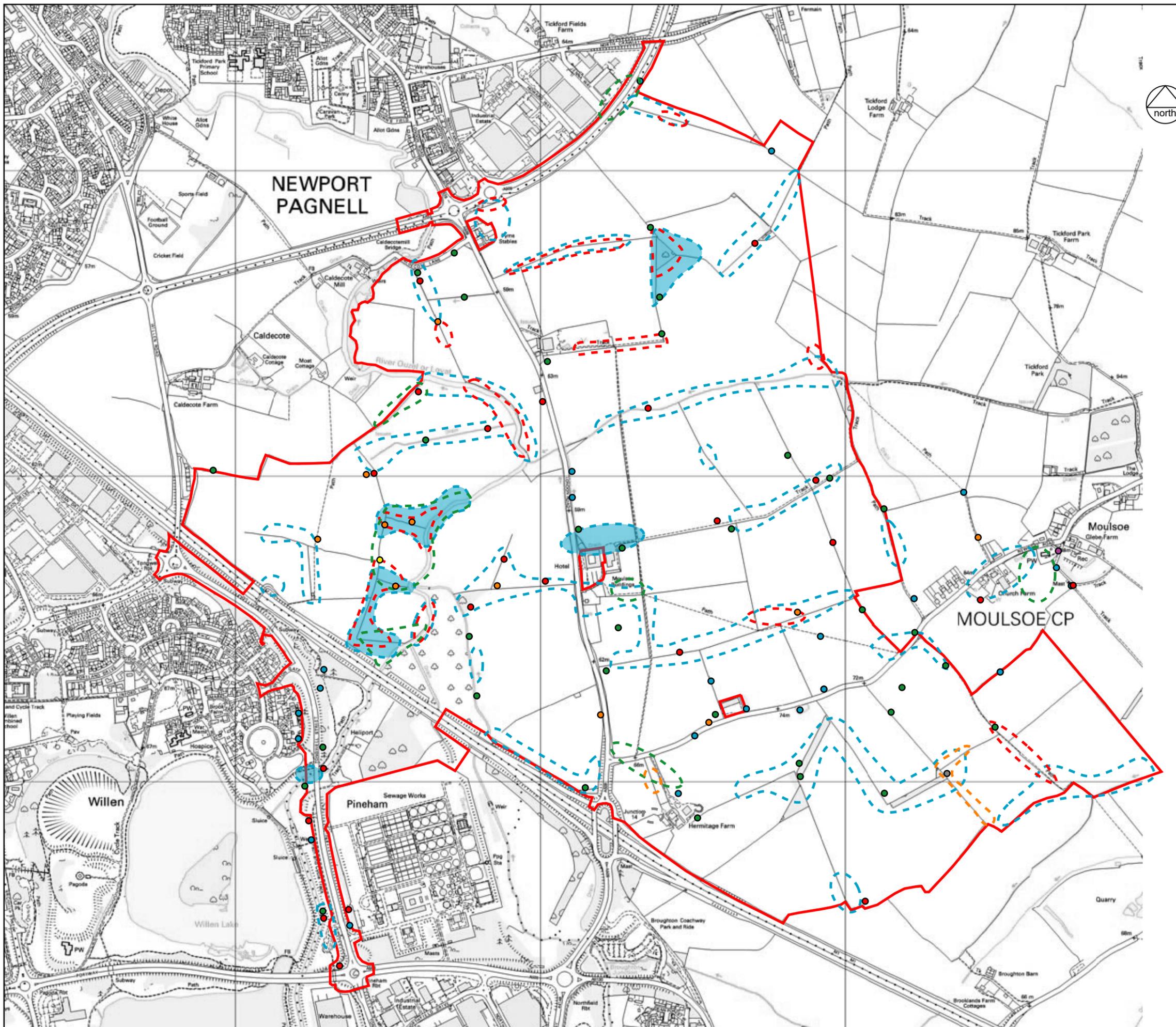
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APPENDIX D

Bat Activity Survey Summary Plan



KEY

- Site boundary

- Bat foraging and commuting activity**
- Common Pipistrelle
 - Single bat pass
 - Occasional bat pass / foraging
 - Moderate foraging activity
- Soprano Pipistrelle
 - Single bat pass
 - Occasional bat pass / foraging
- Noctule
 - Single bat pass
 - Occasional bat pass / foraging
- Myotis* sp.
 - Single bat pass
 - Occasional bat pass / foraging
- Brown Long-eared bat
 - Single bat pass
 - Occasional bat pass / foraging
- Serotine
 - Single bat pass
- Leisler's
 - Single bat pass

CLIENT:
St James

PROJECT:
Milton Keynes East

TITLE:
Bat Activity Survey Summary Plan

SCALE AT A3:
Not to Scale

DATE:
March 2021

2090.52/20

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APPENDIX E

Photographs



Photo 1. Northern and western elevations of B33-A.



Photo 2. Northern elevation of B33-B.



Photo 3. Internal view of B33-B.



Photo 4. Northern and eastern elevations of B33-C.



Photo 5. Southern elevation of B33-C.



Photo 6. Internal view of B33-C.



Photo 7. Northern and western elevations of B33-D (with connected grain machinery in right of photo).



Photo 8. Eastern and southern elevations of B33-E.



Photo 9. Southern and western elevations of B33-E.



Photo 10. Internal view of B33-E.



Photo 11. Northern and eastern elevations of B33-F.



Photo 12. Southern and western elevations of B33-F in centre of photo. Western elevation of B33-E in right of photo and southern and western elevations of B33-G in left of photo.



Photo 13. Interval view of B33-F.



Photo 14. Southern and eastern elevations of B33-G in centre of photo with southern and eastern elevations of B33-H behind.



Photo 15. Western elevation of B33-G in centre of photo. Southern and western elevations of B33-H in left of photo.



Photo 16. Eastern and southern elevations of B33-H in centre of photo. Eastern elevation of B33-G in left of photo.



Photo 17. Western elevation of B33-H.



Photo 18. Northern elevation of B33-I.



Photo 19. Southern elevation of B33-I.



Photo 20. Northern and eastern elevations of B33-J.



Photo 21. Western elevation of B33-J.



Photo 22. Northern elevation of B33-K.



Photo 23. Northern elevation of B33-L.



Photo 24. Internal view of B33-L.



Photo 25. Southern and western elevations of B33-O in centre of photo. Southern elevation of B33-N in left of photo and western elevations of B33-P and B33-L behind.



Photo 26. Southern and eastern elevations of B33-P in centre of photo. Southern elevation of B33-M in right of photo.



Photo 27. Northern and eastern elevations of B33-Q.



Photo 28. Southern and western elevations of B33-S.



Photo 29. Northern and western elevations of B33-T.



Photo 30. Northern and eastern elevations of B35.



Photo 31. Southern elevation of B36.



Photo 32. Western elevation of B37.



Photo 33. Southern elevation of B38.



Photo 34. Western and southern elevations of B39.



Photo 35. Western and northern elevations of B40.



Photo 36. Southern elevation of B41.



Photo 37. Northern elevation of B42.



Photo 38. Northern elevation of B43.



Photo 39: Southern elevation of B45.

Appendix F8

Dormouse Survey Report



MILTON KEYNES EAST

DORMOUSE SURVEY REPORT

Prepared for St James

by

Hankinson Duckett Associates

HDA ref: 2090.52

February 2020

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3 Results	4
4 Impact Assessment	5
5 Conclusion and Recommendations	5
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HDA Document Control and Quality Assurance Record

APPENDICES

A Dormouse Survey Summary Plan

1 INTRODUCTION

1.1 Site location and summary description

1.1.1 This report describes a Hazel Dormouse survey conducted within approximately 362ha of land at Newport Pagnell, Buckinghamshire, hereinafter referred to as 'the site'. The site centre is located by National Grid Reference SP 893 415. The study and subsequent report were commissioned by Berkeley Strategic and St James respectively.

1.1.2 The site is located to the south of Newport Pagnell, on the north-eastern edge of Milton Keynes, Buckinghamshire. The site is dominated by agricultural land comprising intensively managed arable and grazed grassland fields with associated farmyards, agricultural buildings and residential farm houses. Field boundaries generally consist of hedgerows, treelines and fencing with occasional ponds and parcels of woodland, and the River Ouzel flows from south to north through the western part of the site. The site is bordered to the north by a construction site for residential development and the A422 beyond which lies the town of Newport Pagnell; to the east by arable farmland; to the west by the Pineham Nature Reserve and the M1 Motorway beyond which lies the town of Milton Keynes; and to the south by arable farmland.

1.1.3 The location and boundary of the site are shown in *Appendix A*. Detailed descriptions of the habitats within the site are given in the Ecological Appraisal (HDA, 2020).

1.2 Background and Legislative context

1.2.1 The Hazel Dormouse (hereinafter referred to as 'Dormouse') is a nocturnal animal that lives in woody habitats, mainly deciduous woodland and scrub, where it feeds on a wide variety of arboreal foods including flowers, fruits and insects. Habitats supporting a high diversity of tree and shrub species are subsequently beneficial to this species as these provide an unbroken sequence of food throughout the Dormouse active season. The Dormouse lives in the tree and shrub layer throughout the spring, summer and autumn during which time it rarely descends to the ground. During the winter however, when little food is available, Dormice descend to ground level where they save energy by going into hibernation under logs or under vegetation and leaf litter at the base of coppice stumps and thick hedgerows (Bright et al., 2006).

1.2.2 The Dormouse has undergone substantial declines in recent years as a result of habitat loss, deterioration and fragmentation and is consequently protected under the 2019 Conservation of Habitats and Species (Amendment) (EU Exit) Regulations. The 2019 Regulations make it an offence to:

- Deliberately capture, injure or kill Dormice;
- Deliberately disturb Dormice, in particular any disturbance which is likely to: (i) impair their ability to survive, to breed or reproduce, or to rear or nurture their

young; or to hibernate or migrate; (ii) affect significantly the local distribution or abundance of Dormice;

- Damage or destroy a Dormouse breeding site or resting place; or
- To (a) be in possession of, or to control; (b) to transport any live or dead Dormouse or any part of a Dormouse; (c) to sell or exchange or (d) offer for sale or exchange any live or dead Dormouse or part of a Dormouse.

1.2.3 In addition, Dormice are protected under the 1981 Wildlife and Countryside Act (as amended). Dormice are listed on Schedule 5 of the Act and are subject to the provisions of Sections 9.4b and 9.4c, which make it an offence to:

- Intentionally or recklessly disturb a Dormouse while it is occupying a structure or place which it uses for shelter or protection; or
- Intentionally or recklessly obstruct access to any structure or place used for shelter or protection by a Dormouse.

1.2.4 If works are planned that are likely to constitute an offence under the above legislation, a Natural England EPS licence should be applied for, and granted, prior to works commencing.

1.2.5 Dormice are also identified as a Biodiversity Action Plan (BAP) species for the UK and as a Species of Principal Importance under Section 41 of the 2006 NERC Act. This requires planning authorities to regard this species as a material consideration in the planning process.

1.3 Development proposals

1.3.1 Proposals for the site include mixed use development with associated landscaping and infrastructure.

1.4 Scope and purpose of the report

1.4.1 During an initial walkover survey undertaken by HDA in 2012, habitats within and adjacent to the site were identified as suitable for use by Dormice, including mature hedgerows, broadleaved woodland and scrub habitats. In view of the presence of suitable habitat for this species, a Dormouse survey was subsequently undertaken to determine the presence/ likely absence of Dormice at the site and to identify any need for licensing and mitigation in relation to the proposed development. The findings of this work are the subject of this report.

2 METHODOLOGY

2.1 Nest tube survey

2.1.1 A Dormouse nest tube survey was conducted at the site by Ceri Jennings and Adrian Meurer MCIEEM of Hankinson Duckett Associates, in accordance with the methodology described in *Section 3.2.6* of the Dormouse Conservation Handbook (Bright et al., 2006).

2.1.2 A total of 200 Dormouse nest tubes were installed across the site and its surrounds on 3rd May 2012. The distribution of nest tubes across the survey area is shown on the plan provided in *Appendix A*. A series of three subsequent monitoring visits were made. On each visit, all tubes were inspected for the presence of Dormice or evidence of occupation by Dormice such as nests. Evidence of other small mammals using the tubes was also recorded. The dates of all Dormouse survey visits are provided in *Table 1*.

Table 1: Dormouse survey visits

Date	Reason for visit
3 rd May 2012	Installing nest tubes
7 th and 8 th August 2012	Nest tube monitoring
27 th and 28 th September 2012	Nest tube monitoring
16 th and 17 th October 2012	Nest tube monitoring and removal

2.1.3 The Dormouse Conservation Handbook describes a scoring system for nest tube surveys which provides an indicator of the robustness of a survey. The system is based on an 'index of probability', whereby each month of the year in which Dormice are active is assigned a value according to the likelihood of Dormice using nest tubes (and leaving evidence of occupation) in that particular month. *Table 2* identifies the value of each month according to this system.

Table 2: Index of probability of finding Dormice present in nest tubes in any one month (Chanin and Woods, 2003, in Bright *et al.*, 2006).

Month	April	May	June	July	Aug	Sept	Oct	Nov
Index score	1	4	2	2	5	7	2	2

2.1.4 Values for individual months are based on the use of 50 tubes. If the number of tubes used is increased, the score for each month increases proportionately. In accordance with this methodology, the assumed absence of Dormice from a site should not be based on a total search effort score of less than 20 points.

2.1.5 During the survey of the site 200 nest tubes were in place for the months of May, June, July, August, September and October 2012. Although 200 nest tubes were installed, given the size of the site/ extent of habitat present this was broadly equivalent to 50 tubes

being installed across four sample areas. This provided a total score of 22 points. The results are therefore considered to provide a robust assessment of presence/ likely absence of Dormice within the survey area.

2.2 Habitat assessment

2.2.1 As an additional element to the nest tube survey, areas of potentially suitable habitat within the site were assessed for their suitability to support breeding populations of Dormice, or to provide habitat linkages between areas of suitable breeding habitat.

3 RESULTS

3.1 Habitat assessment

3.1.1 The areas of improved and semi-improved grassland, arable farmland, amenity grassland, open waterbodies, hardstanding and buildings that dominate the site generally comprise unsuitable habitats for Dormice.

3.1.2 Suitable Dormouse habitat is however found within limited areas of broadleaved woodland, mature hedgerows and scrub found within the site, including:

- The network of hedgerows bordering and running throughout the site along field boundaries. Although some of the hedgerows are defunct, many are relatively species-rich and intact and comprise a mixture of native species including Hawthorn, Blackthorn, Elder, Field Maple, English Elm and Dog Rose. Many hedgerows also incorporate areas of tree planting and dense Bramble scrub. The hedgerows are considered to provide good connectivity and encompass vegetation in which is likely to provide foraging opportunities for Dormice across the active season. The variety of species present within these hedgerows enhances their suitability for Dormice due to the presence of a range of species useful for foraging Dormice, in particular Bramble, Hawthorn and Blackthorn.
- Small areas of tree planting, scrub and scattered trees are found in the south-east of the site and comprise species including White Poplar, Ash, Pedunculate Oak, Norway Maple and Crab Apple with a scrub understorey.
- In the north-east and east of the site, areas of mixed woodland are present with a mixture of mature and early mature trees. Species present include Pedunculate Oak, Rowan, Poplar sp., White Willow, Beech, Wild Cherry, Norway Maple, Scot's Pine, Ash and Elder, with an understorey typically comprising Dog Rose and Bramble.

3.1.3 In summary, the site is dominated by sub-optimal or unsuitable habitat for Dormice. The site does however support a variety of woody species in association with hedgerows, woodland parcels and small areas of scrub which provide limited areas of good quality Dormouse habitat. Many of the species present produce fruits/ nuts and flowers, and

would support invertebrate populations of value to foraging Dormice throughout the year. The habitats within the site are however somewhat isolated from any substantial areas of high quality Dormouse habitat in the wider area.

3.2 Nest tube survey

3.2.1 No Dormice or evidence of Dormice was recorded during the nest tube survey. Several caches and nests characteristic of Harvest Mouse, Wood Mouse and Vole were recorded in several nest tubes across the site.

4 IMPACT ASSESSMENT

4.1 Dormouse presence/absence

4.1.1 Three elements have been considered in the determination of the presence/ likely absence of Dormice at the site: any existence of local Dormouse records for the wider area, habitat assessment and the nest tube survey results. With regard to these factors:

1. A desk study carried out as part of the Ecological Appraisal (HDA, 2020) identified no records of Dormice for the desk study area.
2. Although the site supports areas of suitable Dormouse habitat, these are generally limited in extent and/or and have limited connectivity with larger areas of habitat in the wider area.
3. No Dormice or evidence of Dormice was recorded during the 2012 nest tube survey.

4.1.2 It is therefore considered that Dormice are highly unlikely to have been present at the site at the time of the 2012 nest tube survey and given the relatively poor dispersal of this species and the absence of significant change in the extent of character of habitat within or adjacent to the site since the survey was undertaken, it is highly unlikely that Dormice have colonised the site in the intervening period.

4.2 Dormouse impact assessment

4.2.1 Given the likely absence of Dormice at the site, the development proposals are considered highly unlikely to have any impact on Dormice and no requirement for mitigation or licensing has been identified.

5 CONCLUSION AND RECOMMENDATIONS

5.1 No evidence of Dormouse was identified during the 2012 nest tube survey. Based on the absence of local Dormouse records, the results of the nest tube survey and habitat assessment, Dormice are considered highly likely to remain absent from the site. No impact avoidance or mitigation measures are therefore recommended in relation to Dormice.

REFERENCES

Bright, P., Morris, P. and Mitchell-Jones, T. (2006) *The Dormouse Conservation Handbook, 2nd Edition*. English Nature, Peterborough.

HDA (2020) *Milton Keynes East: Ecological Appraisal*. Hankinson Duckett Associates, Wallingford.

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Project Reference: 2090.52
Document Title: Dormouse Survey Report
Commissioning Party: St James

Issue	Description	Date of Issue	Signed
1	Dormouse Survey Report	February 2020	AM

	Personnel	Position
Author	Caitlin Coombs	Assistant Ecologist
Approved for issue	Adrian Meurer MCIEEM	Director

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APPENDIX A

Dormouse Survey Summary Plan

Appendix F9

Water Vole and Otter Survey Report

MILTON KEYNES EAST

WATER VOLE AND OTTER SURVEY

Prepared for St James

by

Hankinson Duckett Associates

HDA ref: 2090.52

February 2020

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APPENDICES

- A Water Vole and Otter Survey Plan
- B Field Survey Recording Cards

1 INTRODUCTION

1.1 Site location and summary description

1.1.1 This report describes a Water Vole and Otter survey of watercourses associated with approximately 362ha of land at Newport Pagnell, Buckinghamshire hereinafter referred to as 'the site'. The site can be located by National Grid Reference SP 893419. The study was commissioned by St James in September 2018.

1.1.2 The site is located to the south of Newport Pagnell, on the north-eastern edge of Milton Keynes, Buckinghamshire. The site is dominated by agricultural land comprising intensively managed arable and grazed grassland fields with associated farmyards, agricultural buildings and residential farm houses. Field boundaries generally consist of hedgerows, treelines and fencing with occasional ponds and parcels of woodland. A number of ditches and drains are present and the River Ouzel flows from south to north through the western part of the site.

1.1.3 The site is bordered to the north by a construction site for residential development and the A422 beyond which lies the town of Newport Pagnell; to the east by arable farmland; to the west by the Pineham Nature Reserve and the M1 Motorway beyond which lies the town of Milton Keynes; and to the south by arable farmland.

1.1.4 The location and boundary of the site are shown in *Appendix A*. Detailed descriptions of the habitats within the site are given in the Ecological Appraisal (HDA, 2020).

1.2 Legislative context

1.2.1 Otters are protected under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. The 2019 Regulations make it an offence to:

- Deliberately capture, injure or kill an Otter;
- Deliberately disturb Otters, in particular any disturbance which is likely to: (i) impair their ability to survive, to breed or reproduce, or to rear or nurture their young; or to hibernate or migrate; (ii) affect significantly the local distribution or abundance of Otters;
- Damage or destroy an Otter breeding site or resting place; or
- To (a) be in possession of, or to control; (b) to transport any live or dead Otter or any part of an Otter; (c) to sell or exchange or (d) offer for sale or exchange any live or dead Otter or part of an Otter.

1.2.2 The Water Vole is fully protected through its inclusion on Schedule 5 of the 1981 Wildlife and Countryside Act (as amended). The Otter is subject to the provisions of Sections 9.4b and 9.4c of the Act only. This makes it an offence to:

- Intentionally or recklessly kill, injure or take a Water Vole;

- Possess or control live or dead specimens or anything derived from a Water Vole;
- Intentionally or recklessly damage, destroy or obstruct access to any structure or place which Water Voles or Otters use for shelter or protection; or
- Intentionally or recklessly disturb Water Voles or Otters while they are using such a place, unless permitted under a licence issued by Natural England.

1.2.3 If works are planned that are likely to constitute an offence under the above legislation, a Natural England EPS licence should be applied for, and granted, prior to works commencing.

1.2.4 In addition, the Otter and Water Vole are listed as priority species on the UK Biodiversity Action Plan (BAP) and identified as Species of Principal Importance identified under Section 41 of the 2006 NERC Act. Section 40 of the NERC Act, planning policy and underpinning guidance require that these species are a material consideration in the planning process.

1.3 Development Proposals

1.3.1 Proposals for the site include mixed use development with associated landscaping and infrastructure.

1.4 Scope and purpose of the report

1.4.1 During an initial walkover survey undertaken by HDA in 2012, habitat in the form of the River Ouzel, Broughton Brook and drains within and adjacent to the site were identified as suitable for use by Otter and/ or Water Vole. These watercourses form part a wide network of waterways throughout the site and the wider area and subsequently an Otter and Water Vole Survey was undertaken. The 2012 Otter and Water Vole Survey identified:

- Signs of Water Vole in the form of a burrow, six latrines and feeding remains along Ditch 1 (see *Appendix A*).
- A single Otter spraint beneath a bridge over the River Ouzel approximately 180m to the north of the site.

1.4.2 Given the findings of the Otter and Water Vole 2012 survey and the length of time since the 2012 survey work was undertaken, the Otter and Water Vole Survey was subsequently updated to determine the current status of these species at the site. presence/ likely absence of Dormice at the site and to identify any need for licensing and mitigation in relation to the proposed development. The findings of this work are the subject of this report. Specifically, the aims of the study were:

- i) To identify the continued presence/ likely absence of Otters and Water Voles at the site and, if present, the level and type of activity; and
- ii) If present, to predict potential impacts of development on Otters and Water Voles and inform recommendations for impact avoidance, minimisation and mitigation.

2 METHODOLOGY

2.1 The field survey was carried out on the over two days on the 27th September 2018 by Shannon Davies and Kate Hair of HDA and on the 26th April 2019 by Shannon Davies and Anna Potter of HDA. The survey was based on the methodology described in the Water Vole Mitigation Handbook (Dean et al., 2016) and the method used for the Otter Survey of England 1991-1994 (Strachan 1998, Strachan and Jefferies, 1996). A total of eleven hours was spent carrying out the field survey. Weather conditions were mild and dry.

2.2 During the survey, the channels and banks of all suitable watercourses within and adjacent to the site were examined for signs of Water Vole such as latrines, burrows, footprints, paths, feeding lawns, feeding remains, sightings and sounds of Water Voles entering the water. These areas were also examined for signs of Otter including sightings, footprints, holts, slides, spraints, rolled vegetation (wisps/twists), vegetation mattresses (couches), refuges and feeding remains. Any signs of Mink and Brown Rat were also recorded.

2.3 The locations of the surveyed watercourses are given in *Appendix A*. The survey forms used were adapted from the Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust Water Vole Survey Form. A completed survey form showing site habitats and survey results is given in *Appendix B*.

2.4 Limitations

2.4.1 The entire length of the River Ouzel and Broughton Brook was surveyed in detail from the banks as it was considered unsafe to enter these watercourses due to their depth and flow. This is not considered a significant constraint however as, with minor exceptions (see below), the banks of the watercourses were fully accessible to the water's edge thereby allowing thorough survey of all areas of the bank where field signs may have been present.

2.4.2 Limited sections of the Broughton Brook had steep earth banks and it was not possible to access some short stretches of the banks of the River Ouzel due to encroachment by dense scrub. This is not considered a significant constraint however as over-shaded areas generally provide lower quality habitat for Water Voles due to the absence of marginal vegetation, and it was possible to survey vertical banks from the opposite side of

the watercourse to check for field signs such as burrows/ holts. Given that the vast majority of the river and brook sections provided higher quality habitat, and were surveyed in detail, this is not considered a significant constraint to survey.

- 2.4.3 No other constraints were encountered and the survey is therefore considered to allow a robust assessment of the likely effects of the proposed development on Otters and Water Voles and to inform the recommendations provided in *Section 5* of this report.

3 HABITAT DESCRIPTION

- 3.1 A summary of the habitat provided by suitable watercourses and waterbodies within and immediately adjacent to the site is given below. These are mapped in *Appendix A*.

River Ouzel

- 3.2 The River Ouzel flows in a northerly direction through the western area of the site (survey Section 1, 2 and 3). Farmland borders the majority of the River within the site. The western bank is bordered by grazed grassland and the eastern bank is bordered by grazed grassland and arable fields and Pineham Nature Reserve to the south. The River channel varies from approximately 3m-5m wide and estimated to be over 1m deep with a soft silt base. The river had a slow to fast flow at the time of survey with generally shallow sloping banks to the water's edge.

- 3.3 The banks, especially the western bank, are densely vegetated with rough grassland, tall ruderal vegetation, and marginal vegetation that encroaches into the channel. Species present include Common Nettle, Himalayan Balsam, Hogweed, Yellow Frag Iris, Water Lilies, Bindweed, willowherb, Arrow-head, Bullrush, Spike Rush and Hard Rush. Willow and Hawthorn scrub is also scattered along the banks, in particular along the eastern bank, creating densely shaded areas with limited bankside vegetation.

Broughton Brook

- 3.4 Broughton Brook (survey Sections 4 and 5) is a tributary of the River Ouzel to the south of the site and has a northward flow into the River Ouzel. The brook channel is approximately 2m wide with a deep silt base and steep earth banks up to 2m high.

- 3.5 The western bank of the brook borders the off-site Pineham Nature Reserve and the eastern bank borders on-site arable farmland. Bankside vegetation is dominated rough grassland and tall ruderals in conjunction with scattered willow scrub. Species present include dense areas of Common Nettle, Bramble, thistles, willowherb and False Oat-grass.

Ditch and drain network

3.6 The majority of the on-site ditch and drain network subject to survey lead into the River Ouzel (e.g. Ditches 1, 2 and 3) a notable exception being a drain located in the south-east of the site (Ditch 4). All of the ditches were dry at the time of survey and therefore provide only suboptimal habitat for Water Voles, due to the seasonal drying, limited availability of suitable food and in some cases heavy shading from bankside trees and hedgerows.

Other waterbodies

3.7 A number of ponds are present within the site. These are of limited size, are relatively isolated from the suitable Water Vole or Otter habitat associated with the watercourses described above and, in most instances, have been observed to dry out on a seasonal basis. These ponds were subsequently not subject to full survey due to their lack of suitability of both Otter and Water Vole.

4 RESULTS

4.1 Desk Study

4.1.1 During the desk study carried out as part of the Ecological Appraisal (HDA, 2020), Buckinghamshire and Milton Keynes Environmental Records Centre (BMERC) provided 5 records of Otter for the desk study area, the closest of which pertains to the River Ouzel at a location approximately 80m to the south of the site, dating from 2009.

4.1.2 No records of Water Vole were provided.

4.2 Field Survey

4.2.1 No evidence of Water Voles was encountered during the updated field survey. The ditch from which evidence of Water Vole was recorded in 2012 (Ditch 1) was dry during both the 2018 and 2019 survey visits and therefore unsuitable for this species.

4.2.2 The 2019 survey recorded multiple signs of Otter activity along the western bank of the River Ouzel, including dried and fresh Otter spraints, tracks and potential feeding remains. The level of Otter activity was higher than that recorded in the 2012 survey during which no evidence of this species was recorded from the site itself. In addition during the updated survey, a well-worn mammal path with an Otter footprint leading from the waterbody into the adjacent grassland fields was recorded; the path was in close proximity to the potential Otter feeding sign which comprised the remains of a Signal Crayfish.

4.2.3 Signs of Brown Rat *Rattus norvegicus* and Field Vole *Microtus agrestis*/ Bank Vole *Myodes glareolus*, including burrows, footprints and runs were also frequently recorded along the length of the surveyed watercourses.

5 ASSESSMENT AND RECOMMENDATIONS

5.1 Water Vole

5.1.1 No evidence of Water Voles was encountered during the updated field survey. The ditch from which evidence of Water Vole was recorded in 2012 (Ditch 1) was dry during both the 2018 and 2019 survey visits and was therefore unsuitable for this species. This ditch is intimately connected to the River Ouzel which provides high quality Water Vole habitat, and it would be expected that if this species was still present at the site then evidence would have been recorded along the river. It is therefore considered that this species was absent from the site at the time of the 2018 and 2019 survey visits.

5.1.2 Notwithstanding the above, the site continues to provide suitable habitat for Water Voles and the confirmed presence of Otter indicates the absence of American Mink which may otherwise render the habitat unsuitable as a result of high levels of predation¹. Water Voles are a relatively mobile species and it is therefore conceivable that this species may recolonise the site in the future if populations remain in the wider area.

5.2 Otter

5.2.1 The results of the survey suggest that Otter are routinely using the section of the River Ouzel within the site for foraging and movement. The river and connecting Boughton Brook provide high quality hunting opportunities and the scrub and trees growing along the edges of the watercourses provide potential habitat for laying-up sites or holts (although no evidence of such use was recorded), as well as a sheltered passage along the course of the river.

5.2.2 Otters are usually solitary in riparian habitats and generally have a large home range of up to 40km for males and roughly half that for females, although territories can sometimes be considerably smaller (Harris and Yalden 2008). It is therefore highly likely that the Section of river within the site forms a small part of a larger Otter territory.

5.3 Safe Guarding

5.3.1 Although the survey findings indicate that Water Vole are currently absent from the site and that the site is likely to form only a small part of a more extensive Otter territory, any development proposals for the site should ensure that the ability of the watercourses, in particular the River Ouzel and Boughton Brook, to support these species is maintained. This would enable Water Vole to recolonise the site and allow Otter to continue using the site in addition to using the watercourses for movement across the wider area. This could be achieved through the following measures:

¹ Otter generally outcompete the introduced American Mink. American Mink predate Water Voles and where Mink are established sustainable populations of Water Vole are rarely present.

- The section of the River Ouzel and Broughton Brook flowing through the site should be retained and where possible the existing channels and associated vegetation should be maintained and culverting of banks avoided. The number of crossing points should be minimised and designed with regard to the guidance given in *Section 5.3.2* below.
- Buffer strips of at least 8m in width should be retained between the river, brook, drains and any developed areas.
- Construction and operational phase lighting should be designed to avoid light spill onto river/ brook corridors.
- Mature trees and scrub along the river and brook corridor should be retained and where development occurs in the vicinity of the watercourses, use of dense native scrub planting should be considered to provide screening and reduce disturbance. Scrub planting should be managed by coppicing to encourage dense growth which would have the added benefit of providing opportunities for Otter laying-up sites.
- The root plates of fallen mature trees and piles of logs and brash from management of bankside trees and scrub should be retained as potential holts and laying up sites for Otters.
- Where possible, flood debris such as logs and tree branches should be retained within the river and brook channel to provide resting sites.
- The river and brook corridor should be managed to maintain a good level and diversity of aquatic and marginal vegetation which will benefit invertebrate and fish species and continue to provide a food source for Water Voles and Otters.
- Landscape design should give consideration to provision of sections of the river and brook where disturbance by people and dogs would be minimised, thereby providing quiet, undisturbed areas where Otters and Water Voles can rest during the day.
- Where possible, any hedgerows or woodland currently adjoining the river and/or brook corridor should be retained and complemented by additional native tree planting and the development of scrub/grassland ecotone habitats at their edges.

5.3.2 Where new road bridges are to be constructed over the River Ouzel or Broughton Brook, bridge design should follow the *Nature Conservation Advice in Relation to Otters* outlined in the *Design Manual for Roads and Bridges* (The Highways Agency, 1999) in order to allow the safe passage for both Otters and Water Voles beneath the road and avoid road traffic accidents. In summary, any new bridges should:

- Allow enough space between the abutments of the bridge and the riverbank to enable Otters and Water Voles to pass at times of high water flow. If possible, the bridge abutments should be set back far enough to allow the natural riverbank and riverbed to be retained.
- Where it is not possible to leave a gap between the riverbanks and the bridge abutments, ledges should be incorporated to allow Otters and Water Voles to pass under the bridge at times of high water flow. The ledge should be sited at least 150mm above the highest water level, allowing for 600mm headroom and incorporate an access ramp at each end.

- Where there is not enough space to install a bridge with a ledge of the correct dimensions, an underpass should be incorporated into the bridge design and fencing installed along the road edge. The underpass should be located within 50m of the riverbank and above possible flood levels. The underpass should comprise a 600mm wide cylindrical pipe, or 900mm if the crossing is over 20m in length. The entrance should also be located near the road so animals associate the underpass with crossing the road.

5.3.3 In addition to the measures outlined above, it is important that the current quality of water entering the River Ouzel, Broughton Brook and other watercourses is maintained during the construction and operational phases of the proposed development. In the absence of measures to prevent pollution or sedimentation of the watercourses, impacts on Otters could arise either as a result of poisoning or indirect impacts on food supply. In order to avoid impacts associated with water quality, all construction works should be carried out in accordance with the Environment Agency's Prevention Guidance, available from <http://www.netregs.org.uk/environmental-topics/pollution-prevention-guidelines-ppgs-and-replacement-series/guidance-for-pollution-prevention-gpps-full-list/>; and interceptors should be installed where necessary to prevent pollution and sedimentation entering the aquatic environment. The design of the surface and foul water infrastructure for the operational phase should also ensure that pollution of these watercourses is avoided, where possible giving consideration to the use of SuDS where this might complement the riparian habitat.

5.4 Further survey

5.4.1 Otters and Water Voles are highly mobile creatures and can readily colonise/ abandon sites. It is recommended that the survey is updated prior to works commencing to confirm that the status of Water Vole or Otter at the site has not changed.

5.4.2 Any vegetation clearance to enable development works along the edge of the river and brook (e.g. for bridge crossings) should also only proceed after prior inspection by a suitably qualified ecologist and, if necessary, carried out under supervision, in order to ensure that neither species is likely to be affected by works.

6 CONCLUSION

6.1 No evidence of Water Vole was recorded during the updated survey and it is considered that Water Vole are currently absent from the site. Notwithstanding this, Water Vole were recorded at the site in 2012 and it is conceivable that this mobile species may recolonize the site in the future. Therefore, opportunities for this species should be maintained through inclusion of the measures set out in *Section 5* above.

6.2 Evidence of Otter was recorded during the updated survey, and the section of the River Ouzel that flows through the site is likely to comprise a small part of a larger Otter

territory. The River Ouzel comprises the primary focus of Otter habitat and opportunities for foraging and movement within the site should be retained within any new development through inclusion of the measures set out in *Section 5* above.

6.3 Subject to implementation of the measures set out in *Section 5.3* of this report to maintain the integrity of the River Ouzel and Broughton Brook for Otter and Water Vole it is concluded that development of the site could maintain the favourable conservation status of the local Otter population and maintain opportunities for both Otter and Water Vole at the site in the long-term.

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	Personnel	Position
Author	Shannon Davies	Assistant Ecologist
Approved for issue	Adrian Meurer	Director

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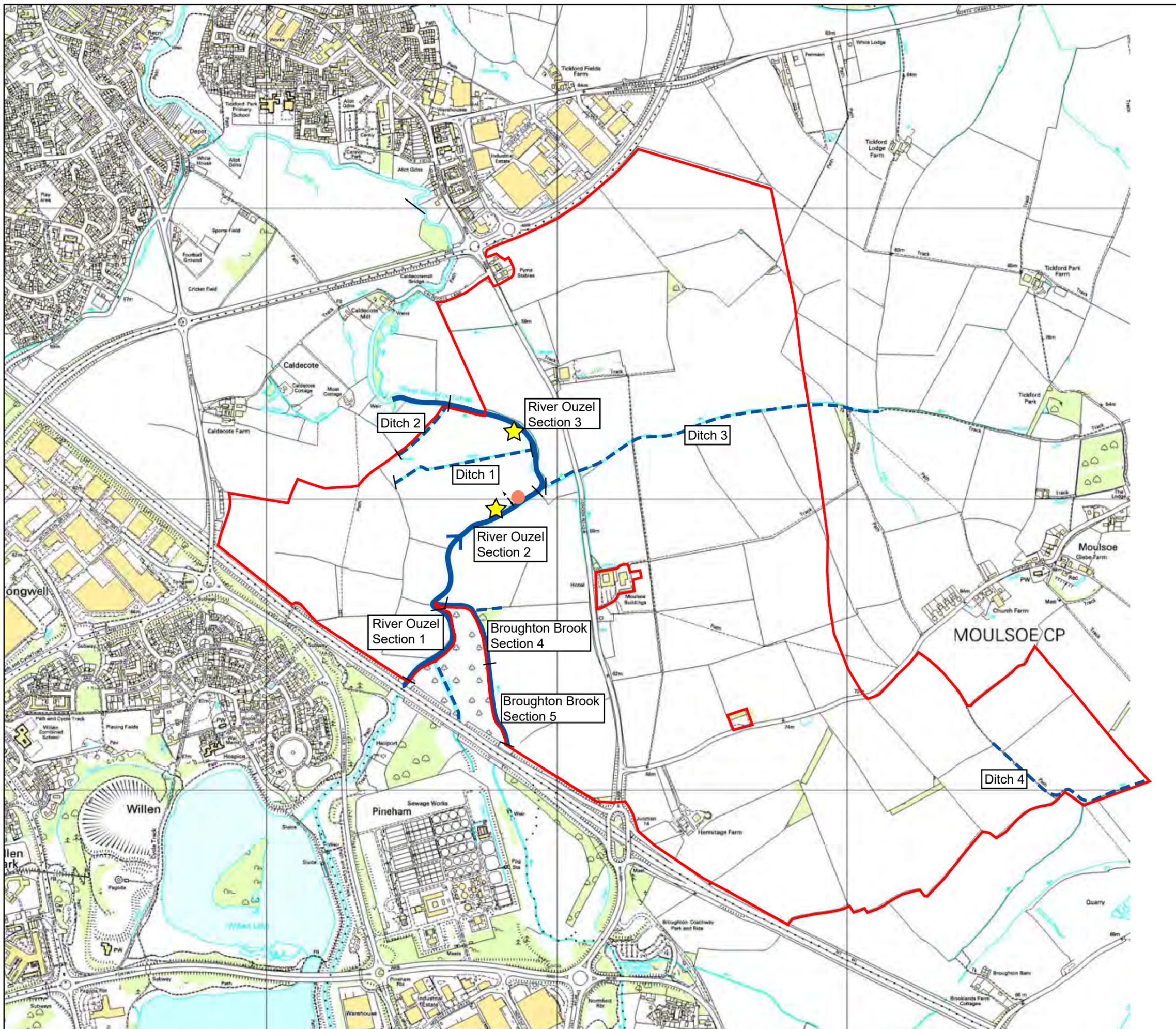
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APPENDIX A

Water Vole and Otter Survey Plan



KEY

- Site boundary
- Running water
- Dry ditch
- ★ Otter spraint
- Otter feeding signs
- Mammal path with Otter tracks

No evidence of Water Vole recorded

CLIENT:
St James
PROJECT:
Milton Keynes East
TITLE:
Water Vole and Otter Survey Plan
SCALE AT A3:
Not to Scale
DATE:
February 2020

2090.52 / 12

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Landscape Architecture
Masterplanning
Ecology



APPENDIX B

Field Survey Recording Card

Water Vole and Otter Survey Form

↑
Arrows
leaves (plant?)

Surveyors Names	SD + KH	Watercourse	Part 1
Date	27.09.2018	Site reference	Newport Pagn.

Habitat Assessment

Main Habitat		Bank profile		Bank Vegetation (DAFORN)		Land Use within 50m		
Ditch / dyke		Flat <10°		Bankside trees	F	Woodland		
Gravel Pit		Shallow <45°	✓	Shrubs	R	Conifer		
Sludge Pool		Steep >45°	✓	Herbs	D	Arable Crop	✓	
Lake		Vertical/ undercut		Reeds / sedges	D	Rough grassland	✓	
Reservoir				Submerged Weed	P	Managed grassland		
Natural Pond		Water Course		Tall Grass	R	Fen / Carr / Marsh		
Artificial Pond		Ave depth (m)	?	Short Grass	R	Urban / industrial		
Running Water	✓	Ave Width (m)	1	Bare Earth	R	Park / garden		
Marsh / bog		Flow		Grazing?		General Comments		
Canal		Static		Cattle		limitation couldn't get to water edge in some places		
	Shore	Base	Slow	✓	Horses			
Boulder			Fast		Sheep			
Stone / Gravel			Water Management		Bank trampled			
Sand		✓	Dredging		Bank fenced off			✓
Silt / clay		✓	Weed cutting					
Earth	✓	✓	Mowing	✗	Level of disturbance			
Earth cliffs			Water level control	✗	Between 1-5			
Reinforced			Boating		(1 = low, 5 = High)			
			Angling					

Field Signs

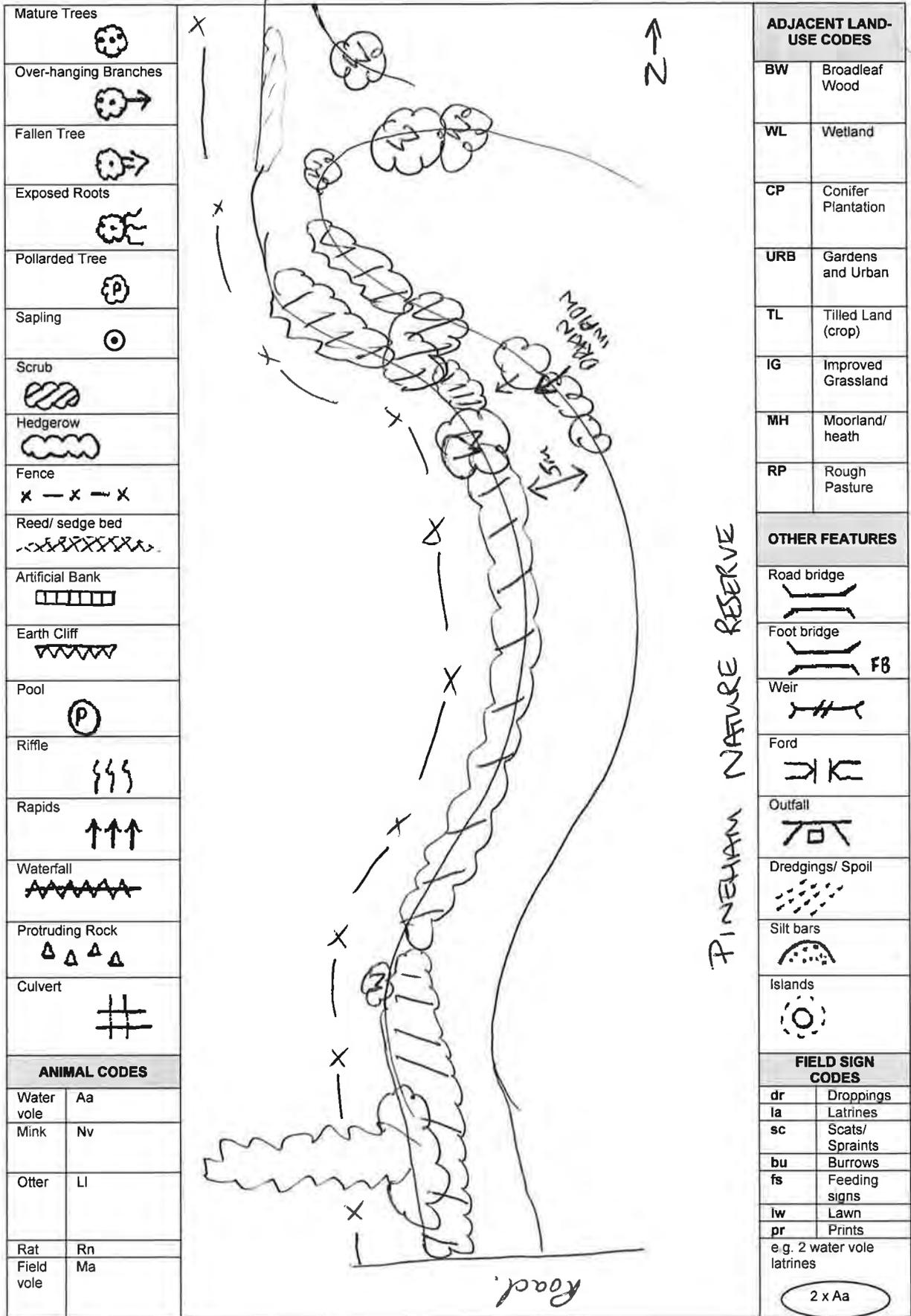
	Tally		Total	Other Animals		
	Water Vole					
Sightings	/			Mink		
Latrines				Sightings		
Droppings				Scats		
Burrows				Tracks		
Feeding signs				Rat		
Tracks				Sightings		
Runs				Droppings		
Lawns				Tracks / runs		
				Otter		Other species / comments:
Sightings				/		
Spraints						
Tracks						

Nettle,
Himalayan Balsam
Reeds, Sedges, Hogweed

Willow
Yellow Iris
Water lilies/l

Bindweed

Sketch of Site (indicating any Water Vole or Otter activity)



Mature Trees	
Over-hanging Branches	
Fallen Tree	
Exposed Roots	
Pollarded Tree	
Sapling	
Scrub	
Hedgerow	
Fence	
Reed/ sedge bed	
Artificial Bank	
Earth Cliff	
Pool	
Riffle	
Rapids	
Waterfall	
Protruding Rock	
Culvert	

ANIMAL CODES	
Water vole	Aa
Mink	Nv
Otter	LI
Rat	Rn
Field vole	Ma

ADJACENT LAND-USE CODES	
BW	Broadleaf Wood
WL	Wetland
CP	Conifer Plantation
URB	Gardens and Urban
TL	Tilled Land (crop)
IG	Improved Grassland
MH	Moorland/heath
RP	Rough Pasture

OTHER FEATURES	
Road bridge	
Foot bridge	
Weir	
Ford	
Outfall	
Dredgings/ Spoil	
Silt bars	
Islands	

FIELD SIGN CODES	
dr	Droppings
la	Latrines
sc	Scats/ Spraints
bu	Burrows
fs	Feeding signs
lw	Lawn
pr	Prints
e.g. 2 x water vole latrines	
(2 x Aa)	

Water Vole and Otter Survey Form

Surveyors Names	SD + KH	Watercourse	2
Date	27.09.18	Site reference	Newport Pgs.

Habitat Assessment

Main Habitat		Bank profile		Bank Vegetation (DAFORN)		Land Use within 50m		
Ditch / dyke		Flat <10°		Bankside trees	R	Woodland		
Gravel Pit		Shallow <45°	✓	Shrubs	R	Conifer		
Sludge Pool		Steep >45°	✓	Herbs	A	Arable Crop		
Lake		Vertical/ undercut		Reeds / sedges	D	Rough grassland	✓	
Reservoir				Submerged Weed	F	Managed grassland	✓	
Natural Pond		Water Course		Tall Grass	R	Fen / Carr / Marsh		
Artificial Pond		Ave depth (m)		Short Grass	R	Urban / industrial		
Running Water	✓	Ave Width (m)	3	Bare Earth	R	Park / garden		
Marsh / bog		Flow		Grazing?		General Comments		
Canal		Static		Cattle		↓		
	Shore	Base	Slow	Horses				
Boulder			Fast	✓ Sheep				
Stone / Gravel			Water Management		Bank trampled			
Sand			Dredging		Bank fenced off			
Silt / clay			Weed cutting					
Earth	✓	✓	Mowing		Level of disturbance			
Earth cliffs			Water level control	Between 1-5	2			
Reinforced			Boating	(1 = low, 5 = High)				
			Angling					

Field Signs

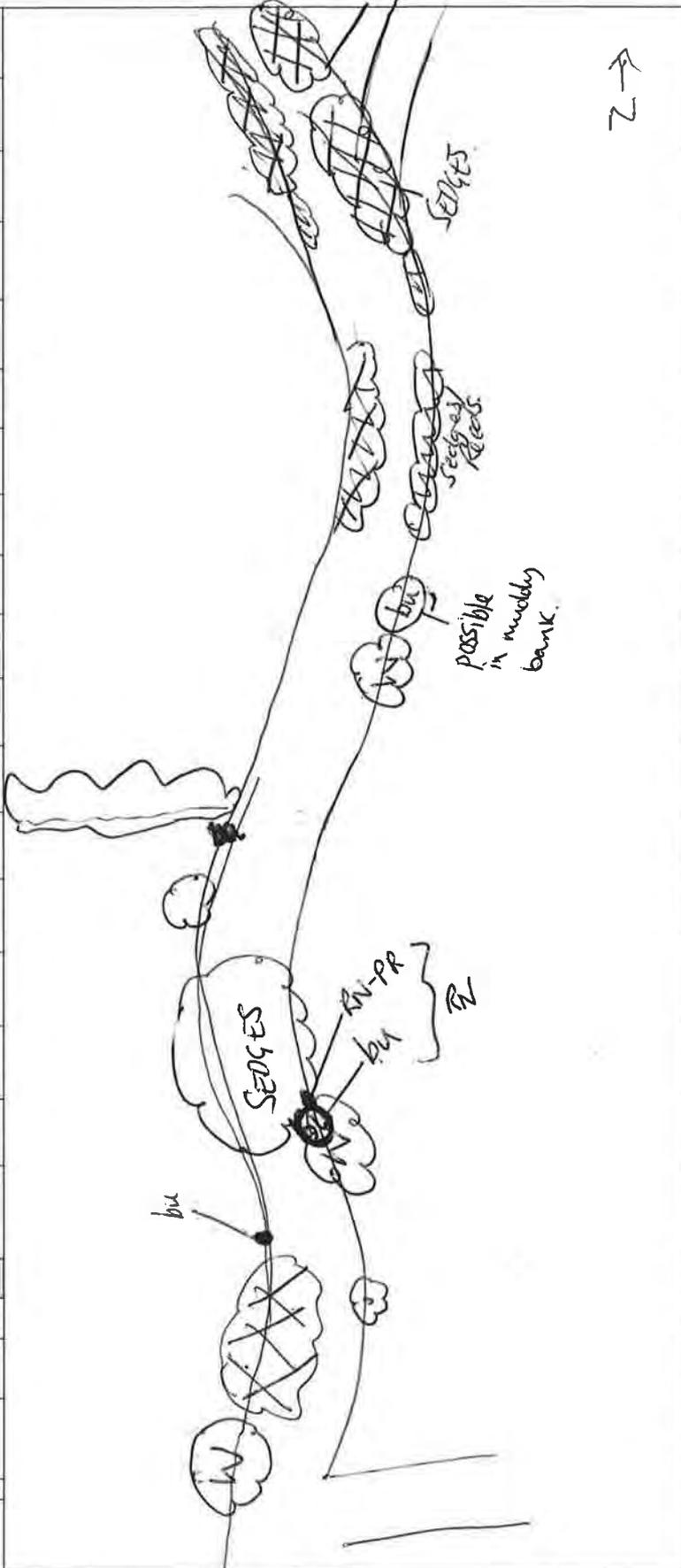
	Tally		Total	Other Animals	
	Water Vole				
Sightings	/			Mink	
Latrines				Sightings	
Droppings				Scats	
Burrows				Tracks	
Feeding signs				Rat	
Tracks				Sightings	
Runs				Droppings	
Lawns	Tracks / runs	1 + burrow			
	Otter		Other species / comments:		
Sightings	/				
Sprints					
Tracks					

mugwort

teasel

Sketch of Site (indicating any Water Vole or Otter activity)

Mature Trees	
Over-hanging Branches	
Fallen Tree	
Exposed Roots	
Pollarded Tree	
Sapling	
Scrub	
Hedgerow	
Fence	
Reed/ sedge bed	
Artificial Bank	
Earth Cliff	
Pool	
Riffle	
Rapids	
Waterfall	
Protruding Rock	
Culvert	
ANIMAL CODES	
Water vole	Aa
Mink	Nv
Otter	Ll
Rat	Rn
Field vole	Ma



ADJACENT LAND-USE CODES	
BW	Broadleaf Wood
WL	Wetland
CP	Conifer Plantation
URB	Gardens and Urban
TL	Tilled Land (crop)
IG	Improved Grassland
MH	Moorland/heath
RP	Rough Pasture
OTHER FEATURES	
Road bridge	
Foot bridge	
Weir	
Ford	
Outfall	
Dredgings/ Spoil	
Silt bars	
Islands	
FIELD SIGN CODES	
dr	Droppings
la	Latrines
sc	Scats/Sprints
bu	Burrows
fs	Feeding signs
lw	Lawn
pr	Prints
e.g 2 water vole latrines	
(2 x Aa)	

Water Vole and Otter Survey Form

Surveyors Names	SD + KH	Watercourse	DITCH 1
Date	27.09.18	Site reference	N. Pag.

Habitat Assessment

Main Habitat		Bank profile		Bank Vegetation (DAFORN)		Land Use within 50m	
Ditch / dyke	✓	Flat <10°		Bankside trees	0	Woodland	
Gravel Pit		Shallow <45°	✓	Shrubs	10	Conifer	
Sludge Pool		Steep >45°		Herbs	10	Arable Crop	
Lake		Vertical/ undercut		Reeds / sedges	10	Rough grassland	
Reservoir			Submerged Weed	2	Managed grassland	✓	
Natural Pond		Water Course		Tall Grass	R	Fen / Carr / Marsh	
Artificial Pond		Ave depth (m)	✓	Short Grass	R	Urban / industrial	
Running Water	✓	Ave Width (m)	1/2	Bare Earth	R	Park / garden	
Marsh / bog		Flow		Grazing?		General Comments	
Canal		Static		Cattle	✓	Dry Stream Bank Fenced off on one side.	
	Shore	Base	Slow	Horses			
Boulder			Fast	Sheep			
Stone / Gravel			Water Management		Bank trampled		
Sand			Dredging				
Silt / clay			Weed cutting		✓		
Earth	✓	✓	Mowing	Level of disturbance			
Earth cliffs			Water level control	Between 1-5	4		
Reinforced			Boating	(1 = low, 5 = High)			
			Angling				

Field Signs

	Tally		Total	Other Animals	
	Water Vole				
Sightings	/			Mink	
Latrines				Sightings	
Droppings				Scats	
Burrows				Tracks	
Feeding signs				Rat	
Tracks				Sightings	
Runs				Droppings	
Lawns				Tracks / runs	
	Otter		Other species / comments:		
Sightings	/				
Sprints					
Tracks					

Sketch of Site (indicating any Water Vole or Otter activity)

Mature Trees			ADJACENT LAND-USE CODES	
Over-hanging Branches			BW	Broadleaf Wood
Fallen Tree			WL	Wetland
Exposed Roots			CP	Conifer Plantation
Pollarded Tree			URB	Gardens and Urban
Sapling			TL	Tilled Land (crop)
Scrub			IG	Improved Grassland
Hedgerow			MH	Moorland/heath
Fence			RP	Rough Pasture
Reed/ sedge bed			OTHER FEATURES	
Artificial Bank			Road bridge	
Earth Cliff			Foot bridge	FB
Pool			Weir	
Riffle			Ford	
Rapids			Outfall	
Waterfall			Dredgings/ Spoil	
Protruding Rock			Silt bars	
Culvert			Islands	
ANIMAL CODES			FIELD SIGN CODES	
Water vole	Aa		dr	Droppings
Mink	Nv	la	Latrines	
Otter	LI	sc	Scats/ Spraints	
Rat	Rn	bu	Burrows	
Field vole	Ma	fs	Feeding signs	
		lw	Lawn	
		pr	Prints	
		e.g. 2 water vole latrines		
		(2 x Aa)		

Water Vole and Otter Survey Form

Surveyors Names	SD + KH	Watercourse	SECTION 3
Date	27.09	Site reference	N. pag

Habitat Assessment

Main Habitat		Bank profile		Bank Vegetation (DAFORN)		Land Use within 50m	
Ditch / dyke		Flat <10°		Bankside trees	F	Woodland	
Gravel Pit		Shallow <45°	✓	Shrubs	R	Conifer	
Sludge Pool		Steep >45°	✓	Herbs	A	Arable Crop	
Lake		Vertical/ undercut	✓	Reeds / sedges	D	Rough grassland	
Reservoir				Submerged Weed	R	Managed grassland	✓
Natural Pond		Water Course		Tall Grass	R	Fen / Carr / Marsh	
Artificial Pond		Ave depth (m)	?	Short Grass	R	Urban / industrial	
Running Water	✓	Ave Width (m)	4	Bare Earth	O	Park / garden	
Marsh / bog		Flow		Grazing?		General Comments	
Canal		Static		Cattle			
	Shore	Slow	✓	Horses			
Boulder		Fast		Sheep			
Stone / Gravel		Water Management		Bank trampled			
Sand		Dredging		Bank fenced off	✓		
Silt / clay		Weed cutting					
Earth		Mowing		Level of disturbance			
Earth cliffs		Water level control		Between 1-5	1		
Reinforced		Boating		(1 = low, 5 = High)			
		Angling					

Field Signs

	Tally		Total	Other Animals	
	Water Vole				
Sightings	/			Mink	
Latrines				Sightings	
Droppings				Scats	
Burrows				Tracks	
Feeding signs				Rat	
Tracks				Sightings	
Runs				Droppings	
Lawns				Tracks / runs	1 Rat prints.
	Otter		Other species / comments:		
Sightings	/				
Spraints					
Tracks					

Sketch of Site (indicating any Water Vole or Otter activity)

Mature Trees			ADJACENT LAND-USE CODES	
Over-hanging Branches			BW	Broadleaf Wood
Fallen Tree			WL	Wetland
Exposed Roots			CP	Conifer Plantation
Pollarded Tree			URB	Gardens and Urban
Sapling			TL	Tilled Land (crop)
Scrub			IG	Improved Grassland
Hedgerow			MH	Moorland/heath
Fence			RP	Rough Pasture
Reed/ sedge bed			OTHER FEATURES	
Artificial Bank			Road bridge	
Earth Cliff			Foot bridge	
Pool			Weir	
Riffle			Ford	
Rapids			Outfall	
Waterfall			Dredgings/ Spoil	
Protruding Rock			Silt bars	
Culvert			Islands	
ANIMAL CODES			FIELD SIGN CODES	
Water vole	Aa		dr	Droppings
Mink	Nv	la	Latrines	
Otter	Li	sc	Scats/Sprints	
Rat	Rn	bu	Burrows	
Field vole	Ma	fs	Feeding signs	
		lw	Lawn	
		pr	Prints	
		e.g. 2 water vole latrines		
		(2 x Aa)		

Water Vole and Otter Survey Form

Surveyors Names	SD+KH	Watercourse	5
Date	27.09.18	Site reference	N. Pag

Habitat Assessment

Main Habitat			Bank profile	Bank Vegetation (DAFORN)	Land Use within 50m
Ditch / dyke			Flat <10°	Bankside trees	Woodland
Gravel Pit			Shallow <45°	Shrubs	Conifer
Sludge Pool			Steep >45°	Herbs	Arable Crop
Lake			Vertical/ undercut	Reeds / sedges	Rough grassland
Reservoir				Submerged Weed	Managed grassland
Natural Pond			Water Course		Fen / Carr / Marsh
Artificial Pond			Ave depth (m)	Short Grass	Urban / industrial
Running Water			Ave Width (m)	Bare Earth	Park / garden
Marsh / bog			Flow		General Comments
Canal			Static	Cattle	
	Shore	Base	Slow	Horses	
Boulder			Fast	Sheep	
Stone / Gravel			Water Management		
Sand			Dredging	Bank trampled	
Silt / clay			Weed cutting	Bank fenced off	
Earth			Mowing	Level of disturbance	
Earth cliffs			Water level control	Between 1-5	
Reinforced			Boating	(1 = low, 5 = High)	
			Angling		

DRY +
V. OVERGRAZED

Field Signs

	Tally	Total	Other Animals
	Water Vole		
Sightings			Mink
Latrines			Sightings
Droppings			Scats
Burrows			Tracks
Feeding signs			Rat
Tracks			Sightings
Runs			Droppings
Lawns			Tracks / runs
	Otter		Other species / comments:
Sightings			
Spraints			
Tracks			

Sweet meadow Sweet -
Bull msh

Sketch of Site (indicating any Water Vole or Otter activity)

Mature Trees		ADJACENT LAND-USE CODES	
Over-hanging Branches		BW	Broadleaf Wood
Fallen Tree		WL	Wetland
Exposed Roots		CP	Conifer Plantation
Pollarded Tree		URB	Gardens and Urban
Sapling		TL	Tilled Land (crop)
Scrub		IG	Improved Grassland
Hedgerow		MH	Moorland/heath
Fence		RP	Rough Pasture
Reed/ sedge bed		OTHER FEATURES	
Artificial Bank		Road bridge	
Earth Cliff		Foot bridge	
Pool		Weir	
Riffle		Ford	
Rapids		Outfall	
Waterfall		Dredgings/ Spoil	
Protruding Rock		Silt bars	
Culvert		Islands	
ANIMAL CODES		FIELD SIGN CODES	
Water vole	Aa	dr	Droppings
Mink	Nv	la	Latrines
Otter	LI	sc	Scats/ Spraints
Rat	Rn	bu	Burrows
Field vole	Ma	fs	Feeding signs
		lw	Lawn
		pr	Prints
		e.g. 2 water vole latrines	
		2 x Aa	

Water Vole and Otter Survey Form

Surveyors Names	SD + KH	Watercourse	SECTION 4
Date	27.09.18	Site reference	N. pag

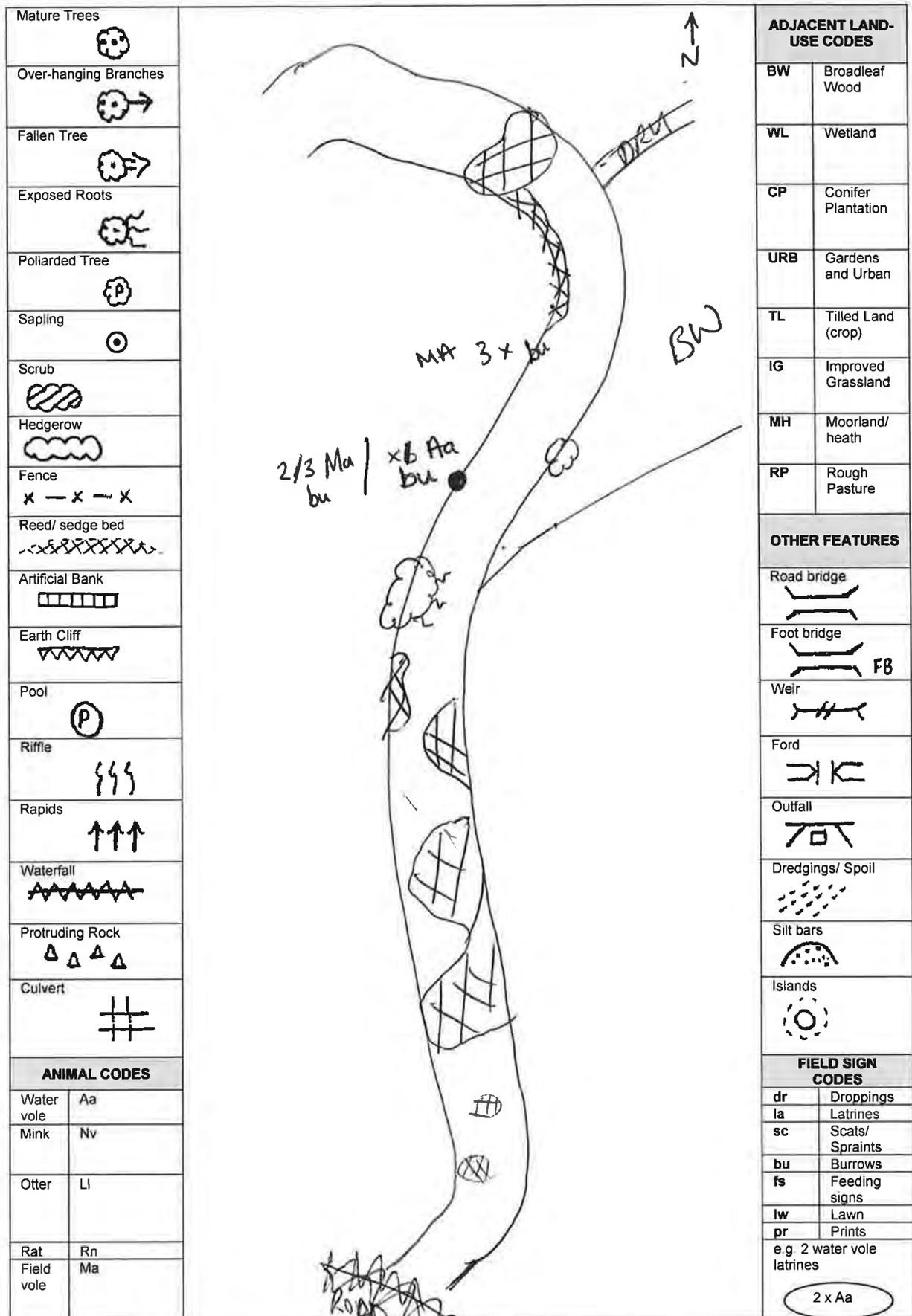
Habitat Assessment

Main Habitat		Bank profile		Bank Vegetation (DAFORN)		Land Use within 50m		
Ditch / dyke		Flat <10°		Bankside trees	F	Woodland		
Gravel Pit		Shallow <45°		Shrubs	R	Conifer		
Sludge Pool		Steep >45°		Herbs	A	Arable Crop		
Lake		Vertical/ undercut		Reeds / sedges	A	Rough grassland	✓	
Reservoir				Submerged Weed	F	Managed grassland	✓	
Natural Pond		Water Course		Tall Grass	R	Fen / Carr / Marsh		
Artificial Pond		Ave depth (m)	✓	Short Grass	R	Urban / industrial		
Running Water	✓	Ave Width (m)	2	Bare Earth	O	Park / garden		
Marsh / bog		Flow		Grazing?		General Comments		
Canal		Static		Cattle				
	Shore	Base	Slow	✓	Horses			
Boulder			Fast		Sheep			
Stone / Gravel		✓	Water Management		Bank trampled			
Sand			Dredging		Bank fenced off			✓
Silt / clay			Weed cutting					
Earth	✓	✓	Mowing		Level of disturbance			
Earth cliffs			Water level control		Between 1-5			
Reinforced			Boating		(1 = low, 5 = High)			1
			Angling					

Field Signs

	Tally		Total	Other Animals
	Water Vole			
Sightings				Mink
Latrines				Sightings
Droppings				Scats
Burrows				Tracks
Feeding signs				Rat
Tracks				Sightings
Runs				Droppings
Lawns				Tracks / runs
	Otter			Other species / comments:
Sightings				Some very small holes, presumed field vole / smaller rodent.
Spraints				
Tracks				

Sketch of Site (indicating any Water Vole or Otter activity)



Mature Trees	
Over-hanging Branches	
Fallen Tree	
Exposed Roots	
Pollarded Tree	
Sapling	
Scrub	
Hedgerow	
Fence	
Reed/ sedge bed	
Artificial Bank	
Earth Cliff	
Pool	
Riffle	
Rapids	
Waterfall	
Protruding Rock	
Culvert	

ANIMAL CODES	
Water vole	Aa
Mink	Nv
Otter	Li
Rat	Rn
Field vole	Ma

ADJACENT LAND-USE CODES	
BW	Broadleaf Wood
WL	Wetland
CP	Conifer Plantation
URB	Gardens and Urban
TL	Tilled Land (crop)
IG	Improved Grassland
MH	Moorland/heath
RP	Rough Pasture

OTHER FEATURES	
Road bridge	
Foot bridge	
Weir	
Ford	
Outfall	
Dredgings/ Spoil	
Silt bars	
Islands	

FIELD SIGN CODES	
dr	Droppings
la	Latrines
sc	Scats/ Spraints
bu	Burrows
fs	Feeding signs
lw	Lawn
pr	Prints
e.g 2 water vole latrines	
(2 x Aa)	

Water Vole and Otter Survey Form

Surveyors Names	SD + KH	Watercourse	SECTION 5
Date	28.09.18	Site reference	Newport. p.

Habitat Assessment

Main Habitat		Bank profile		Bank Vegetation (DAFORN)		Land Use within 50m	
Ditch / dyke		Flat <10°		Bankside trees	F	Woodland	
Gravel Pit		Shallow <45°		Shrubs	R	Conifer	
Sludge Pool		Steep >45°	✓	Herbs	A	Arable Crop	
Lake		Vertical/ undercut		Reeds / sedges	A	Rough grassland	✓
Reservoir				Submerged Weed	F	Managed grassland	✓
Natural Pond		Water Course		Tall Grass	O	Fen / Carr / Marsh	
Artificial Pond		Ave depth (m)	✓	Short Grass	R	Urban / industrial	
Running Water	✓	Ave Width (m)	B	Bare Earth	R	Park / garden	
Marsh / bog		Flow		Grazing?		General Comments	
Canal		Static		Cattle			
	Shore	Base	Slow	Horses			
Boulder			Fast	Sheep			
Stone / Gravel			Water Management		Bank trampled		
Sand			Dredging		Bank fenced off		
Silt / clay			Weed cutting				
Earth	✓	✓	Mowing	Level of disturbance			
Earth cliffs			Water level control	Between 1-5			
Reinforced			Boating	(1 = low, 5 = High)			
			Angling				

Field Signs

	Tally		Total	Other Animals	
	Water Vole				
Sightings	/			Mink	
Latrines				Sightings	
Droppings				Scats	
Burrows				Tracks	✓
Feeding signs				Rat	
Tracks				Sightings	
Runs				Droppings	✓
Lawns			Tracks / runs		
	Otter			Other species / comments:	
Sightings	/			Rat burrows.	
Spraints					
Tracks					

Sketch of Site (indicating any Water Vole or Otter activity)

Mature Trees			ADJACENT LAND-USE CODES	
Over-hanging Branches			BW	Broadleaf Wood
Fallen Tree			WL	Wetland
Exposed Roots			CP	Conifer Plantation
Pollarded Tree			URB	Gardens and Urban
Sapling			TL	Tilled Land (crop)
Scrub			IG	Improved Grassland
Hedgerow			MH	Moorland/heath
Fence			RP	Rough Pasture
Reed/ sedge bed			OTHER FEATURES	
Artificial Bank			Road bridge	
Earth Cliff			Foot bridge	FB
Pool			Weir	
Riffle			Ford	
Rapids			Outfall	
Waterfall			Dredgings/ Spoil	
Protruding Rock			Silt bars	
Culvert			Islands	
ANIMAL CODES			FIELD SIGN CODES	
Water vole	Aa		dr	Droppings
Mink	Nv	la	Latrines	
Otter	LI	sc	Scats/ Spraints	
		bu	Burrows	
		fs	Feeding signs	
		lw	Lawn	
		pr	Prints	
Rat	Rn	e.g 2 water vole latrines		
Field vole	Ma			

Arrow-head
Spike Rush
Hard Rush.

Water Vole and Otter Survey Form

Surveyors Names	SD + AP.	Watercourse	1
Date	26.04.2019	Site reference	Newport Pagnell

Habitat Assessment

Main Habitat		Bank profile		Bank Vegetation (DAFORN)		Land Use within 50m	
Ditch / dyke		Flat <10°		Bankside trees	F	Woodland	
Gravel Pit		Shallow <45°	✓	Shrubs	R	Conifer	
Sludge Pool		Steep >45°	✓	Herbs	D	Arable Crop	✓
Lake		Vertical/ undercut		Reeds / sedges	D	Rough grassland	✓
Reservoir				Submerged Weed	F	Managed grassland	
Natural Pond		Water Course		Tall Grass	R	Fen / Carr / Marsh	
Artificial Pond		Ave depth (m)		Short Grass	R	Urban / industrial	
Running Water	✓	Ave Width (m)	2	Bare Earth	R	Park / garden	
Marsh / bog		Flow		Grazing?		General Comments	
Canal		Static		Cattle		Only did the one bank - Didn't enter the water at any point due to River flow + depth.	
	Shore	Slow	✓	Horses			
Boulder		Fast	✓	Sheep			
Stone / Gravel		Water Management		Bank trampled			
Sand		Dredging	✓	Bank fenced off	✓		
Silt / clay		Weed cutting	✓	Level of disturbance			
Earth	✓	Mowing	✓	Between 1-5	1		
Earth cliffs		Water level control		(1 = low, 5 = High)			
Reinforced		Boating					
		Angling					

Field Signs

	Tally		Total	Other Animals
	Water Vole			
Sightings				Mink
Latrines				Sightings
Droppings				Scats
Burrows	1 - POSSIBLE			Tracks
Feeding signs				Rat
Tracks				Sightings
Runs				Droppings
Lawns				Tracks / runs
	Otter			Other species / comments:
Sightings				4 field vole burrows.
Sprints				
Tracks				

NETTLE
HIMALAYAN BALSAM
HARD RUBUS, SEDGES, HOGWEED

WILLOW
YELLOW FLAG IRIS
WATER LILLIES
BINDWEED

Sketch of Site (indicating any Water Vole or Otter activity)

Mature Trees			ADJACENT LAND-USE CODES	
Over-hanging Branches			BW	Broadleaf Wood
Fallen Tree			WL	Wetland
Exposed Roots			CP	Conifer Plantation
Pollarded Tree			URB	Gardens and Urban
Sapling			TL	Tilled Land (crop)
Scrub			IG	Improved Grassland
Hedgerow			MH	Moorland/heath
Fence			RP	Rough Pasture
Reed/ sedge bed			OTHER FEATURES	
Artificial Bank			Road bridge	
Earth Cliff			Foot bridge	
Pool			Weir	
Riffle			Ford	
Rapids			Outfall	
Waterfall			Dredgings/ Spoil	
Protruding Rock			Silt bars	
Culvert			Islands	
ANIMAL CODES			FIELD SIGN CODES	
Water vole	Aa		dr	Droppings
Mink	Nv	la	Latrines	
Otter	LI	sc	Scats/ Spraints	
		bu	Burrows	
		fs	Feeding signs	
		lw	Lawn	
Rat	Rn	pr	Prints	
Field vole	Ma	e.g. 2 water vole latrines		
		(2 x Aa)		

PINEHAM NATURE RESERVE

Water Vole and Otter Survey Form

Surveyors Names	SD + AP	Watercourse	2
Date	26.09.2019	Site reference	Newport Pagnell

Habitat Assessment

Main Habitat		Bank profile		Bank Vegetation (DAFORN)		Land Use within 50m		
Ditch / dyke		Flat <10°		Bankside trees	R	Woodland		
Gravel Pit		Shallow <45°		Shrubs	R	Conifer		
Sludge Pool		Steep >45°		Herbs	A	Arable Crop		
Lake		Vertical/ undercut		Reeds / sedges	D	Rough grassland	✓	
Reservoir				Submerged Weed	F	Managed grassland	✓	
Natural Pond		Water Course		Tall Grass	R	Fen / Carr / Marsh		
Artificial Pond		Ave depth (m)		Short Grass	R	Urban / industrial		
Running Water	✓	Ave Width (m)	3	Bare Earth	R	Park / garden		
Marsh / bog		Flow		Grazing?		General Comments		
Canal		Static		Cattle				
	Shore	Base	Slow	Horses				
Boulder			Fast	✓	Sheep			
Stone / Gravel			Water Management		Bank trampled			
Sand			Dredging		Bank fenced off			
Silt / clay			Weed cutting					
Earth	✓	✓	Mowing		Level of disturbance			
Earth cliffs			Water level control		Between 1-5			2
Reinforced			Boating		(1 = low, 5 = High)			
			Angling					

Field Signs

	Tally		Total	Other Animals	
	Water Vole				
Sightings				Mink	
Latrines				Sightings	
Droppings				Scats	
Burrows	11	- POSS		Tracks	
Feeding signs				Rat	
Tracks				Sightings	
Runs				Droppings	
Lawns				Tracks / runs	
	Otter			Other species / comments:	
Sightings				Rat + Mouse burrows	
Spraints	1	+ feeding signs (crayfish)			
Tracks	1				

Sketch of Site (indicating any Water Vole or Otter activity)

Mature Trees			ADJACENT LAND-USE CODES	
Over-hanging Branches			BW	Broadleaf Wood
Fallen Tree			WL	Wetland
Exposed Roots			CP	Conifer Plantation
Pollarded Tree			URB	Gardens and Urban
Sapling			TL	Tilled Land (crop)
Scrub			IG	Improved Grassland
Hedgerow			MH	Moorland/heath
Fence			RP	Rough Pasture
Reed/ sedge bed			OTHER FEATURES	
Artificial Bank			Road bridge	
Earth Cliff			Foot bridge	
Pool			Weir	
Riffle			Ford	
Rapids			Outfall	
Waterfall			Dredgings/ Spoil	
Protruding Rock			Silt bars	
Culvert			Islands	
ANIMAL CODES			FIELD SIGN CODES	
Water vole	Aa		dr	Droppings
Mink	Nv	la	Latrines	
Otter	LI	sc	Scats/ Spraints	
Rat	Rn	bu	Burrows	
Field vole	Ma	fs	Feeding signs	
		lw	Lawn	
		pr	Prints	
		e.g. 2 water vole latrines		
		2 x Aa		

Water Vole and Otter Survey Form

Surveyors Names	SD + AP	Watercourse	SECTION 3
Date	26.04.2019	Site reference	Newport Pagnell.

Habitat Assessment

Main Habitat		Bank profile		Bank Vegetation (DAFORN)		Land Use within 50m	
Ditch / dyke		Flat <10°		Bankside trees		Woodland	
Gravel Pit		Shallow <45°	✓	Shrubs		Conifer	
Sludge Pool		Steep >45°	✓	Herbs		Arable Crop	
Lake		Vertical/ undercut	✓	Reeds / sedges		Rough grassland	
Reservoir				Submerged Weed		Managed grassland	✓
Natural Pond		Water Course		Tall Grass		Fen / Carr / Marsh	
Artificial Pond		Ave depth (m)		Short Grass		Urban / industrial	
Running Water	✓	Ave Width (m)	4	Bare Earth		Park / garden	
Marsh / bog		Flow		Grazing?		General Comments	
Canal		Static		Cattle			
	Shore	Base	Slow	Horses			
Boulder			Fast	✓ Sheep			
Stone / Gravel			Water Management		Bank trampled		
Sand			Dredging	Bank fenced off	✓		
Silt / clay			Weed cutting				
Earth	✓	✓	Mowing	Level of disturbance			
Earth cliffs			Water level control	Between 1-5	1		
Reinforced			Boating	(1 = low, 5 = High)			
			Angling				

Field Signs

	Tally		Total	Other Animals		
	Water Vole					
Sightings	/			Mink		
Latrines				Sightings		
Droppings				Scats		
Burrows				Tracks		
Feeding signs				Rat		
Tracks				Sightings		
Runs				Droppings		
Lawns				Tracks / runs		
			Otter		Other species / comments:	
Sightings					Deer prints	
Spraints	1	- LARGE + FRESH				
Tracks						

Sketch of Site (indicating any Water Vole or Otter activity)

Mature Trees			ADJACENT LAND-USE CODES	
Over-hanging Branches			BW	Broadleaf Wood
Fallen Tree			WL	Wetland
Exposed Roots			CP	Conifer Plantation
Pollarded Tree			URB	Gardens and Urban
Sapling			TL	Tilled Land (crop)
Scrub			IG	Improved Grassland
Hedgerow			MH	Moorland/heath
Fence			RP	Rough Pasture
Reed/ sedge bed			OTHER FEATURES	
Artificial Bank			Road bridge	
Earth Cliff			Foot bridge	F8
Pool			Weir	
Riffle			Ford	
Rapids			Outfall	
Waterfall			Dredgings/ Spoil	
Protruding Rock			Silt bars	
Culvert			Islands	
ANIMAL CODES			FIELD SIGN CODES	
Water vole	Aa		dr	Droppings
Mink	Nv	la	Latrines	
Otter	LI	sc	Scats/Spraints	
Rat	Rn	bu	Burrows	
Field vole	Ma	fs	Feeding signs	
		lw	Lawn	
		pr	Prints	
		e.g. 2 water vole latrines		

Water Vole and Otter Survey Form

Surveyors Names	SD + AP	Watercourse	SECTION 4
Date	26.04.2019	Site reference	Newport Pagnell

Habitat Assessment

Main Habitat		Bank profile		Bank Vegetation (DAFORN)		Land Use within 50m	
Ditch / dyke		Flat <10°		Bankside trees	F	Woodland	
Gravel Pit		Shallow <45°		Shrubs	R	Conifer	
Sludge Pool		Steep >45°	✓	Herbs	A	Arable Crop	
Lake		Vertical/ undercut		Reeds / sedges	A	Rough grassland	✓
Reservoir				Submerged Weed	F	Managed grassland	✓
Natural Pond		Water Course		Tall Grass	R	Fen / Carr / Marsh	
Artificial Pond		Ave depth (m)		Short Grass	R	Urban / industrial	
Running Water	✓	Ave Width (m)	2	Bare Earth	O	Park / garden	
Marsh / bog		Flow		Grazing?		General Comments	
Canal		Static		Cattle			
	Shore	Base	Slow	Horses			
Boulder			Fast	Sheep			
Stone / Gravel		✓	Water Management		Bank trampled		
Sand			Dredging	Bank fenced off	✓		
Silt / clay			Weed cutting				
Earth	✓	✓	Mowing	Level of disturbance			
Earth cliffs			Water level control	Between 1-5	1		
Reinforced			Boating	(1 = low, 5 = High)			
			Angling				

Field Signs

	Tally		Total	Other Animals
	Water Vole			
Sightings				Mink
Latrines				Sightings
Droppings				Scats
Burrows				Tracks
Feeding signs				Rat
Tracks				Sightings
Runs				Droppings
Lawns				Tracks / runs
	Otter			Other species / comments:
Sightings				Multiple small rodent pass field vole burrows.
Spraints				
Tracks				

False - Oat-grass
 Willow herb.
 Nettle
 Thistles.

Sketch of Site (indicating any Water Vole or Otter activity)

Mature Trees			ADJACENT LAND-USE CODES	
Over-hanging Branches			BW	Broadleaf Wood
Fallen Tree			WL	Wetland
Exposed Roots			CP	Conifer Plantation
Pollarded Tree			URB	Gardens and Urban
Sapling			TL	Tilled Land (crop)
Scrub			IG	Improved Grassland
Hedgerow			MH	Moorland/heath
Fence			RP	Rough Pasture
Reed/ sedge bed			OTHER FEATURES	
Artificial Bank			Road bridge	
Earth Cliff			FB	
Pool			Weir	
Riffle			Ford	
Rapids			Outfall	
Waterfall		Dredgings/ Spoil		
Protruding Rock		Silt bars		
Culvert		Islands		
ANIMAL CODES		FIELD SIGN CODES		
Water vole	Aa	dr	Droppings	
Mink	Nv	la	Latrines	
Otter	Li	sc	Scats/ Spraints	
		bu	Burrows	
		fs	Feeding signs	
		lw	Lawn	
		pr	Prints	
Rat	Rn	e.g. 2 water vole latrines		
Field vole	Ma	2 x Aa		

Water Vole and Otter Survey Form

Surveyors Names	SD + AP	Watercourse	SECTION 5
Date	26.04.2019	Site reference	Newport Pagwell

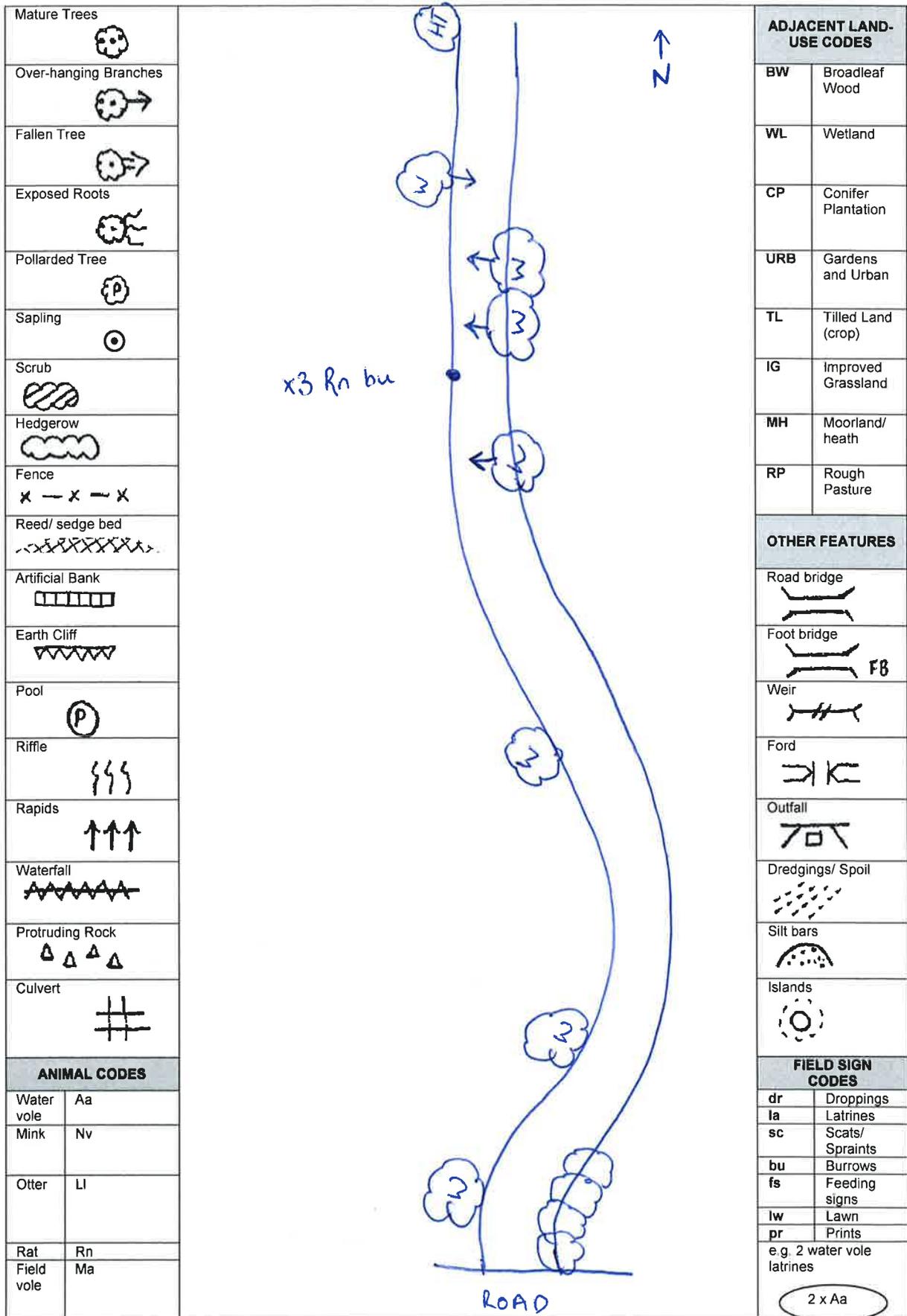
Habitat Assessment

Main Habitat		Bank profile		Bank Vegetation (DAFORN)		Land Use within 50m	
Ditch / dyke		Flat <10°		Bankside trees	F	Woodland	
Gravel Pit		Shallow <45°		Shrubs	R	Conifer	
Sludge Pool		Steep >45°	✓	Herbs	A	Arable Crop	
Lake		Vertical/ undercut		Reeds / sedges	A	Rough grassland	✓
Reservoir				Submerged Weed	F	Managed grassland	✓
Natural Pond		Water Course		Tall Grass	O	Fen / Carr / Marsh	
Artificial Pond		Ave depth (m)		Short Grass	R	Urban / industrial	
Running Water	✓	Ave Width (m)	2	Bare Earth	R	Park / garden	
Marsh / bog		Flow		Grazing?		General Comments	
Canal		Static		Cattle		/	
	Shore	Slow		Horses			
Boulder		Fast	✓	Sheep			
Stone / Gravel		Water Management		Bank trampled			
Sand		Dredging		Bank fenced off			
Silt / clay		Weed cutting					
Earth	✓	Mowing		Level of disturbance			
Earth cliffs		Water level control		Between 1-5	1		
Reinforced		Boating		(1 = low, 5 = High)			
		Angling					

Field Signs

	Tally		Total	Other Animals	
	Water Vole				
Sightings	/			Mink	
Latrines				Sightings	
Droppings				Scats	
Burrows				Tracks	
Feeding signs				Rat	
Tracks				Sightings	
Runs				Droppings	
Lawns				Tracks / runs	
	Otter			Other species / comments:	
Sightings	/			Rat burrows	
Spraints					
Tracks					

Sketch of Site (indicating any Water Vole or Otter activity)



Appendix F10

Water Vole and Otter Survey Report: Additional Areas

MILTON KEYNES EAST

WATER VOLE AND OTTER SURVEY REPORT: ADDITIONAL AREAS

Prepared for St James

by

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HDA ref: 2090.52

March 2021

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HDA Document Control and Quality Assurance Record

APPENDICES

- A Water Vole and Otter Survey Summary Plan
- B Field Survey Recording Cards

1 INTRODUCTION

1.1 Site location and summary description

1.1.1 This report describes the results of further Otter and Water Vole survey work conducted in association with the proposed development of approximately 437ha of land east of Milton Keynes, Buckinghamshire hereinafter referred to as 'the site'. The site can be located by National Grid Reference SP893419. The study was commissioned by St James in two phases in April 2020 and February 2021.

1.1.2 The site is located to the south of Newport Pagnell, on the north-eastern edge of Milton Keynes, Buckinghamshire. The site is dominated by a series of arable fields bordered by hedgerows, treelines, ditches and fencing. Other habitats include grazed grassland fields, small areas of amenity grassland and small pockets of deciduous woodland. The River Ouzel and its tributary, the Broughton Brook, flow in a northerly direction through the western and central areas of the site and, associated with these watercourses, the Pineham Nature Reserve in the south of the site supports a mosaic of scrub, rough grassland, tall ruderal vegetation and ponds. Other features within the site include a number of agricultural, commercial and residential buildings, generally associated with working farms, and roads including the M1 motorway and Tongwell Street which run through a corridor of woodland, scattered trees and scrub in the south-west of the site, and several smaller roads running through the site to the east.

1.1.3 The site is bordered to the north by a construction site for residential development and the A422, beyond which lie the Interchange Park industrial estate and the town of Newport Pagnell; to the east by arable farmland and the settlement of Moulsoe; to the south-west by residential development and Willen Lake on the outskirts of Milton Keynes, the M1 Motorway and Pineham sewage works; and to the south-east by arable farmland.

1.1.4 A Water Vole and Otter survey was conducted on suitable watercourses within the majority of the site (362ha) in 2019 (HDA, 2020) however following the extension of the site boundary into previously unsurveyed parcels of land in March 2020 and again in February 2021, the survey was extended to include these areas and this forms the subject of this report¹. The surveys were carried out in May 2020 and February 2021 and the areas of the site subject to survey in each year are hereinafter referred to as the '2020 survey area' and '2021 survey area'. A plan showing the locations of the site and 2020/2021 survey areas are provided in *Appendix A*.

1.2 Development Proposals

1.2.1 Proposals for the site include a large-scale mixed use urban extension incorporating residential development, employment, schools, commercial and community facilities,

open space including a new linear park along the River Ouzel corridor, and associated highways infrastructure.

1.3 Legislative context

1.3.1 Otters are protected under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. The 2019 Regulations make it an offence to:

- Deliberately capture, injure or kill an Otter;
- Deliberately disturb Otters, in particular any disturbance which is likely to: (i) impair their ability to survive, to breed or reproduce, or to rear or nurture their young; or to hibernate or migrate; (ii) affect significantly the local distribution or abundance of Otters;
- Damage or destroy an Otter breeding site or resting place; or
- To (a) be in possession of, or to control; (b) to transport any live or dead Otter or any part of an Otter; (c) to sell or exchange or (d) offer for sale or exchange any live or dead Otter or part of an Otter.

1.3.2 The Water Vole is fully protected through its inclusion on Schedule 5 of the 1981 Wildlife and Countryside Act (as amended). The Otter is subject to the provisions of Sections 9.4b and 9.4c of the Act only. This makes it an offence to:

- Intentionally or recklessly kill, injure or take a Water Vole;
- Possess or control live or dead specimens or anything derived from a Water Vole;
- Intentionally or recklessly damage, destroy or obstruct access to any structure or place which Water Voles or Otters use for shelter or protection; or
- Intentionally or recklessly disturb Water Voles or Otters while they are using such a place, unless permitted under a licence issued by Natural England.

1.3.3 If works are planned that are likely to constitute an offence under the above legislation, a Natural England EPS licence should be applied for, and granted, prior to works commencing.

1.3.4 In addition, the Otter and Water Vole are listed as priority species on the UK Biodiversity Action Plan (BAP) and identified as Species of Principal Importance under Section 41 of the 2006 NERC Act. Section 40 of the NERC Act, planning policy and underpinning guidance require that these species are a material consideration in the planning process.

¹ Please note that the 2021 survey work did not include extension of the Water Vole Survey. This is discussed further under 'Limitations' in *Section 2.6* below.

1.4 Scope and purpose of the report

1.4.1 Otter and Water Vole surveys of the wider site have been conducted by HDA in 2012 (HDA 2012) and 2018-2019 (HDA, 2020b). The 2012 surveys recorded evidence of Water Vole within a ditch in the north-west of the site and both the 2012 and 2018-2019 surveys recorded evidence of Otter on the River Ouzel. Following the expansion of the site boundary into the 2020/2021 survey areas discussed above, initial review of these additional land parcels identified that habitat suitable for Water Vole and Otter within these areas was limited to additional sections of the River Ouzel in the north-west and south-west of the site.

1.4.2 An Otter and Water Vole survey was subsequently undertaken to identify the presence/ likely absence of these species within these additional sections of the River Ouzel and, together with the findings of the previous surveys carried out within the wider site, inform an assessment of the presence/ likely absence of Otter and Water Vole at the site and to identify any need for licensing and mitigation in relation to the proposed development. The findings of this work are the subject of this report. Specifically, the aims of the study were:

- i) To establish the presence/ likely absence of Otters and Water Voles within the 2020/2021 survey areas and, if present, the level and type of activity; and
- ii) If present, to predict potential impacts of the proposed development of the site on Otters and Water Voles and inform recommendations for impact avoidance, minimisation and mitigation.

2 METHODOLOGY

2.1 The 2020/2021 field surveys were carried out on 20th May 2020 and the 29th September 2020 by Shannon Davies and Anna Potter of HDA (2020 survey area) and on 17th February 2021 by Anna Potter and Nick Chambers of HDA (2021 survey area). The 2020 surveys were based on the methodology described in the Water Vole Mitigation Handbook (Dean et al., 2016) and the method used for the Otter Survey of England 1991-1994 (Strachan 1998, Strachan and Jefferies, 1996). The survey of the section of the River Ouzel carried out in 2021 related to Otter only.

2.2 During the Water Vole surveys, the channels and banks of all suitable watercourses within and adjacent to the survey areas were examined for signs of Water Vole such as latrines, burrows, footprints, paths, feeding lawns, and feeding remains, sightings and sounds of Water Voles entering the water.

2.3 During the Otter surveys the watercourses were examined for signs of Otter including sightings, footprints, holts, slides, spraints, rolled vegetation (wisps/twists), vegetation mattresses (couches), refuges, and feeding remains.

2.4 Any signs of American Mink and Brown Rat were also recorded during the Otter and Water Vole surveys.

2.5 The locations of the watercourses surveyed in 2020 and 2021 are given in *Appendix A*. The survey forms used were adapted from the Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust Water Vole Survey Form. Completed survey forms showing site habitats and survey results are given in *Appendix B*.

2.6 Limitations

2.6.1 During the Water Vole and Otter surveys it was not possible to access some short stretches of the banks of the River Ouzel to carry out an exhaustive survey due to access restrictions such as presence of dense scrub. Specific to the Otter survey carried out in 2021, it was not possible to survey the off-site western bank of the River Ouzel. This is not considered a significant constraint however as over-shaded areas generally provide lower quality habitat for Water Voles due to the absence of marginal vegetation, and where access to one bank was unavailable, in most cases it was possible to survey banks from the opposite side of the watercourse to check for field signs such as burrows/holts. Given that most of the river sections were surveyed in detail, this is not considered a significant constraint to the survey.

2.6.2 Due to the timing of instruction for the 2021 survey, the 2021 survey of Sections 8, 9 and 10 of the River Ouzel was undertaken during February and was therefore restricted to an Otter Survey only². As such it was not possible to confirm the likely absence of Water Voles from the 2021 survey area through the field survey. This limitation is factored into the assessment in *Section 5* below.

2.6.3 No other constraints were encountered during the surveys, and together with the results of the previous surveys conducted within the wider site (HDA, 2012; HDA, 2020b) it is considered that there is sufficient information available to allow a robust assessment of the likely effects of the proposed development of the site on Otters and Water Voles and to inform the recommendations provided in *Section 5* of this report.

3 HABITAT DESCRIPTION

3.1 A summary of the habitat provided by suitable watercourses and waterbodies within and immediately adjacent to the 2020 and 2021 survey areas is given below. These are mapped in *Appendix A* and survey forms are included at *Appendix B*.

² Water Vole Surveys can generally only be undertaken between April and September inclusive.

2020 Survey Area

- 3.2 The only suitable habitat for Water Vole or Otter within the 2020 survey area is in association with the River Ouzel which flows in a northerly direction through an area of public open space in the south-west of the site. The western bank is bordered by rough grassland, a public path and Willen Lake and the eastern bank is bordered by rough grassland, scrub and mature trees leading to Tongwell Street. The river channel varies from approximately 5m-10m wide and is estimated to be over 1-2m deep with a soft silt base. The river had a slow to fast flow at the time of survey with generally shallow sloping banks to the water's edge. The section of river within the 2020 survey area was split into four survey sections 4, 5, 6 and 7 (*Appendices A and B*) and these are described below³.
- 3.3 Sections 4 and 5 are shaded by mature Crack Willow, Alder, Ash and areas of dense scrub. Occasional mature trees overhang the river, and deadwood is scattered along the banks and in the channel. Marginal vegetation is limited due to heavy shading by mature trees, however occasional ground flora is present such as Pendulous Sedge, Himalayan Balsam, Wood Dock, Ground Elder and Common Nettle.
- 3.4 The western banks of Sections 6 and 7 are densely vegetated with rough grassland, tall ruderal vegetation and marginal vegetation that encroaches into the channel. Species present include False Oat-grass, Yorkshire Fog, Perennial Rye-grass, Hogweed, Common Nettle, Bindweed, Great Willowherb, Thistle, Arrow-head, Himalayan Balsam, Yellow Flag Iris, Common Club Rush, Spike Rush, Hard Rush, Common Reed, Pendulous Sedge, Wood Sedge and Water Lily. The eastern banks are dominated with mature Crack Willow, scrub and ruderal vegetation mainly consisting of Common Nettle. The dense vegetation gives way to a large deep concrete weir in the north of Section 6.

2021 Survey Area

- 3.5 The only suitable habitat for Water Vole or Otter within the 2021 survey area is also in association with the River Ouzel watercourse. The river splits into two adjacent to the north-western boundary of the site, the western channel flowing away from the site and the eastern-most channel flowing adjacent to site boundary. The eastern channel was therefore the focus of the survey and split into three survey sections 8, 9 and 10 (*Appendices A and B*). These are described below.
- 3.6 The watercourse within Section 8 is approximately 8-10m wide and had a fast flow at the time of survey. Land to the north and south is managed with Cattle grazing and some evidence of bank trampling is present at the western end. The riverbanks are steep to shallow sloping and occasional mature Crack Willow, Hawthorn and Oak trees line the

water's edge. The northern grass bank had a very short sward at the time of survey and is dominated by Perennial Rye-grass, with some species such as Creeping Buttercup, White Clover, Hawksbeard, Spear Thistle and Shepherds Purse also present. To the south the bank supports ruderal and marginal vegetation which had been recently cut at the time of survey, including Common Nettle, Great Willowherb and Pendulous Sedge. Occasional marginal and aquatic vegetation is present in the channel, with some substantial stands of vegetation present including Common Reed, Common Club Rush and Bull Rush.

3.7 Within Section 9, the watercourse splits towards the eastern end, the main channel continues to the west and outside the survey area through a corridor of large mature trees and scrub. The eastern channel adjacent to the site and forming the focus of the survey was turbid, had a fast flow and high water levels at the time of survey and has an approximate width of 6m and estimated depth of 2-3m. The western bank is shallow to steep in profile and is heavily vegetated with species such as Crack Willow, Hybrid Black-poplar, Oak, Blackthorn, Hawthorn, Ivy and occasional Bramble scrub. The eastern bank predominantly comprises grazed grassland with some bank-side trees and scrub to the north of the section. The channel within Section 9 is highly shaded by bankside trees and scrub but where light does allow, the channel is vegetated with stands of Common Reed, Common Club Rush, Bull Rush and Yellow Flag Iris.

3.8 Section 10 is similar in character to Section 9, however in the central area the western channel flows through a weir and meets the eastern channel in a large pool. The flow of water through the weir was very fast at the time of survey creating strong currents and whorls throughout the pool. The main channel then continues adjacent to Caldecote Lane to the north. The second smaller channel continues adjacent to the grazed grassland and is heavily vegetated with bankside trees and scrub, before passing through a bridge below Caldecote Lane at the northern end of Section 10. The channel has occasional stands of Common Reed throughout.

4 RESULTS

4.1 Desk Study

4.1.1 During the desk study carried out as part of the Ecological Appraisal (HDA, 2020a), Buckinghamshire and Milton Keynes Environmental Records Centre (BMERC) provided records of Otter and Water Vole for the desk study area, including:

- Five records of Otter, the closest of which pertains to the River Ouzel in the south of the site, dating from 2009; and

³ River Ouzel survey sections 1 to 3 are covered in the report for the previous Otter and Water Vole Survey (HDA, 2020b).

- One record of Water Vole from a fishing lake in Great Linford approximately 2.5km to the west of the site, dating from 1997.

4.2 Field Survey

2020 Survey Area

4.2.1 No confirmed evidence of Water Vole was identified within the 2020 Survey Area during the field survey. Several burrows with dimensions and locations suitable for use by Water Vole were recorded within Sections 4, 5 and 7, however, as no other evidence such as feeding signs, latrines or runs of Water Vole were encountered during the survey it is likely that these related to Brown Rat and it is considered that Water Vole were absent from this area at the time of survey.

4.2.2 The 2020 survey recorded multiple signs of Otter activity along the banks of the River Ouzel, including dried and fresh Otter spraints, potential feeding remains comprising Signal Crayfish and mussels, and a well-worn mammal path running directly adjacent to the watercourse with an Otter footprint. A possible lying up site or holt, comprising a refuge beneath a lifted root plate in the river bank with a compacted slide towards the river was recorded within Section 5, along with dry and fresh Otter spraint near the entrance and other scats located nearby.

4.2.3 Mink scat was recorded in Section 4 during the survey. Sightings of American Mink have also been recorded further downstream during other fieldwork carried out at the site by HDA. Signs of Brown Rat and Field Vole/Bank Vole, including burrows, footprints and runs were also frequently recorded along the length of the surveyed watercourses.

2021 Survey Area

4.2.4 The 2021 survey recorded multiple signs of Otter activity along the banks of the River Ouzel. A possible lying up site or holt, comprising a hole in the riverbank and a compacted slide towards the river, was recorded on the northern bank of the river approximately 50m to the west of the site boundary within Section 5. Dry and fresh Otter spraints were found near the entrance, along with various scats located nearby. A well-worn mammal path running directly adjacent to the watercourse with an Otter footprint was also recorded within Section 5.

4.2.5 Other signs of Otter recorded throughout the surveyed sections included dried and fresh Otter spraints, and potential feeding remains of Signal Crayfish and Mussels.

4.2.6 No confirmed evidence of Water Vole was encountered during the 2021 survey however as discussed above, the survey was carried out outside the season during which evidence of Water Vole would be expected to be visible if they were present and

therefore the focus of the 2021 survey work was on Otter. Notwithstanding this, it is noted that no burrows suitable for use by Water Vole were recorded within the 2021 survey area, and in view of the absence of evidence of Water Vole upstream on the River Ouzel during the surveys carried out in 2018/2019 and 2020, and the absence of recent records of this species provided during the desk study, it is considered that Water Vole are likely to also be absent from the 2021 survey area.

- 4.2.7 Signs of Brown Rat and Field Vole/Bank Vole, including burrows, footprints and runs were also frequently recorded along the length of the surveyed watercourses.

5 ASSESSMENT AND RECOMMENDATIONS

5.1 Water Vole

- 5.1.1 No evidence of Water Vole was encountered during the 2020 or 2021 field survey.

- 5.1.2 Notwithstanding the above, the River Ouzel within the 2020 and 2021 survey areas provides suitable habitat for Water Voles. Although the presence of American Mink has been detected within the 2020 survey area, the higher incidence of Otter evidence throughout the surveyed river sections suggests that Otter are more prevalent within the river and appear to be successfully outcompeting the Mink⁴. As Water Voles are a relatively mobile species it is therefore conceivable that this species may recolonise the river within the site in the future if populations remain in the wider area.

5.2 Otter

- 5.2.1 The 2020 survey recorded a possible Otter lying up site or holt on the River Ouzel approximately 50m west of the south-western site boundary. The results of the surveys suggest that Otter are routinely using the majority of the surveyed sections of the River Ouzel for foraging, movement and potentially lying up. The river provides high-quality hunting opportunities and the scrub and trees growing along the edges of the watercourse offer potential habitat for laying-up sites or holts, as well as a concealed passage along the course of the river.

- 5.2.2 Otters are usually solitary in riparian habitats and generally have a broad home range of up to 40km for males and roughly half that for females, although territories can sometimes be considerably smaller (Harris and Yalden 2008). It is therefore highly likely that the sections of the river within the 2020 and 2021 survey areas form a small parts of a larger Otter territory, including within the wider site.

⁴ Otter generally outcompetes the introduced American Mink. American Mink predate Water Voles and where Mink is established sustainable populations of Water Vole are rarely present.

5.3 Safeguarding

5.3.1 The survey findings indicate that Otters are present on the River Ouzel throughout the site and a possible Otter lying up site or holt is present on the riverbank within approximately 50m of the site boundary. Although the identified lying up site/ holt is not expected to be directly affected by the new bridge construction at Tongwell Street proposed as part of the development, there may be potential for disturbance of any Otters present during the bridge construction works. Otter are highly mobile mammals and it is also conceivable that a new Otter holt could be established elsewhere within the site ahead of construction commencing.

5.3.2 In view of the above, it will be necessary to avoid disturbance, injury or killing of any Otters present in the vicinity of the site during the course of construction works to comply with the nature conservation legislation which protects this species. The following measures should be implemented during the course of construction of the proposed development:

- In advance of the commencement of any construction works affecting the River Ouzel or Broughton Brook, the sections of river to be affected by the works should be inspected by a suitably qualified ecologist prior to works commencing in order to confirm locations of any previously identified or new Otter holts. Similarly, any sections of riverbank proposed for enhancement such as reprofiling or creation of backwaters should be also checked prior to works commencing. Where necessary, any vegetation removal to facilitate the above works should be carried out by hand under the supervision of a suitably qualified ecologist to search for any Otter rest sites that might not otherwise have been visible.
- In the event that it is not possible to avoid disturbance to Otters occupying any identified lying up sites/holts, a Natural England licence should be obtained for closure of the holt prior to works commencing. Any such licence application would need to be supported by a Method Statement detailing measures to protect animals and the favourable conservation status of local populations through appropriate working practices and timing of works.
- Where appropriate, temporary fencing should be installed along the River Ouzel and Broughton Brook throughout the construction phase to protect bankside habitats not affected by the proposed development from potential encroachment from heavy machinery, creation of stockpiles etc. The exclusion zone should be set a minimum of 8m from the top of the riverbank. Any incursions into the bankside exclusion zone should be carried out under the supervision of a suitably qualified ecologist following updated survey for Otters where appropriate.
- During the construction phase, in order to prevent entrapment of Otters and other wildlife, any steep sided holes left open overnight should be equipped with a mammal ladder (a reinforced plywood board >60cm wide set at an angle of no greater than 30° to the base of the pit) and any temporarily open pipes with a diameter of >150mm should be plugged.

5.3.3 Although the survey findings indicate that Water Voles are currently absent from the site, and that the site likely only forms a small part of a more extensive Otter territory,

development proposals for the site should ensure that the ability of the watercourses present, in particular the River Ouzel and Broughton Brook, to support both of these species is maintained. This would enable Water Vole to recolonise the site and allow Otter to continue using the site in addition to using the watercourses for movement across the wider area. This could be achieved through the following measures:

- The sections of the River Ouzel and Broughton Brook flowing through the site should be retained and where possible the existing channels and associated vegetation should be maintained and culverting of banks avoided. The number of crossing points should be minimised and designed with regard to the guidance given in *Section 5.3.4* below.
- Buffer strips of at least 8m in width should be retained between the river, brook, drains and any developed areas.
- Construction and operational phase lighting should be designed to avoid light spill onto river/ brook corridors.
- Mature trees and scrub along river and brook corridors within the site should be retained, and where development occurs in the vicinity of the watercourses, use of dense native scrub planting should be considered to provide screening and reduce disturbance. Scrub planting should be managed by coppicing to encourage dense growth which would have the added benefit of providing opportunities for Otter laying-up sites.
- The root plates of fallen mature trees and piles of logs and brash from the management of bankside trees and scrub should be retained as potential holts and laying up sites for Otters.
- Where possible, flood debris such as logs and tree branches should be retained within the river and brook channel to provide resting and sprainting sites.
- The river and brook corridors should be managed to maintain a good level and diversity of aquatic and marginal vegetation which will benefit invertebrate and fish species and continue to provide a food source for Water Voles and Otters.
- Landscape design should consider the provision of sections of the river where disturbance by people and dogs would be minimised, thereby providing quiet, undisturbed areas where Otters and Water Voles can rest during the day.
- Where possible, any hedgerows or woodland currently adjoining the river corridor should be retained and complemented by additional native tree planting and the development of scrub/grassland ecotone habitats at their edges.

5.3.4 Where new road bridges are to be constructed over the River Ouzel, bridge design should follow the *Nature Conservation Advice in Relation to Otters* outlined in the *Design Manual for Roads and Bridges* (The Highways Agency, 1999) in order to allow the safe passage for both Otters and Water Voles beneath the road and avoid road traffic accidents. In summary, any new bridges should:

- Allow enough space between the abutments of the bridge and the riverbank to enable Otters and Water Voles to pass at times of high-water flow. If possible, the bridge abutments should be set back far enough to allow the natural riverbank and riverbed to be retained.

- Where it is not possible to leave a gap between the riverbanks and the bridge abutments, ledges should be incorporated to allow Otters and Water Voles to pass under the bridge at times of high-water flow. The ledge should be sited at least 150mm above the highest water level, allowing for 600mm headroom and incorporate an access ramp at each end.
- Where there is not enough space to install a bridge with a ledge of the correct dimensions, an underpass should be incorporated into the bridge design and fencing installed along the road edge. The underpass should be located within 50m of the riverbank and above possible flood levels. The underpass should comprise a 600mm wide cylindrical pipe, or 900mm if the crossing is over 20m in length. The entrance should also be located near the road, so animals associate the underpass with crossing the road.

5.3.5 In addition to the measures outlined above, it is important that the current quality of water entering the River Ouzel and other watercourses is maintained during the construction and operational phases of the proposed development. In the absence of measures to prevent pollution or sedimentation of the watercourses, impacts on Otters could arise either as a result of poisoning or indirect impacts on food supply. In order to avoid impacts associated with water quality, all construction works should be carried out in accordance with the Environment Agency's Prevention Guidance, available from <http://www.netregs.org.uk/environmental-topics/pollution-prevention-guidelines-ppgs-and-replacement-series/guidance-for-pollution-prevention-gpps-full-list/>; and interceptors should be installed where necessary to prevent pollution and sedimentation entering the aquatic environment. The design of the surface and foul water infrastructure for the operational phase should also ensure that pollution of these watercourses is avoided, where possible giving consideration to the use of SuDS where this might complement the riparian habitat.

5.4 Further survey

5.4.1 Otters and Water Voles are highly mobile creatures and can readily colonise/ abandon sites. It is recommended that the survey is updated prior to works commencing for any construction phase to confirm that the status of Water Vole or Otter at the site has not changed.

6 CONCLUSION

6.1 No evidence of Water Vole was recorded during the survey, and it is considered that Water Vole are currently absent from the survey area. Notwithstanding this, Water Vole was recorded at the site in 2012, and it is conceivable that this mobile species may recolonise the site in the future. Therefore, opportunities for this species should be maintained through the inclusion of the measures set out in *Section 5* above.

- 6.2 Evidence of Otter was recorded during the survey, and the section of the River Ouzel that flows through the site is likely to comprise a small part of a larger Otter territory. The River Ouzel includes the primary focus of Otter habitat within the site and opportunities for foraging and movement within the site should be retained within any new development through the inclusion of the measures set out in *Section 5* above.
- 6.3 Subject to implementation of the measures set out in *Section 5.3* of this report to maintain the integrity of the River Ouzel for Otter and Water Vole it is concluded that development of the site could maintain the favourable conservation status of the local Otter population and maintain opportunities for both Otter and Water Vole at the site in the long-term.

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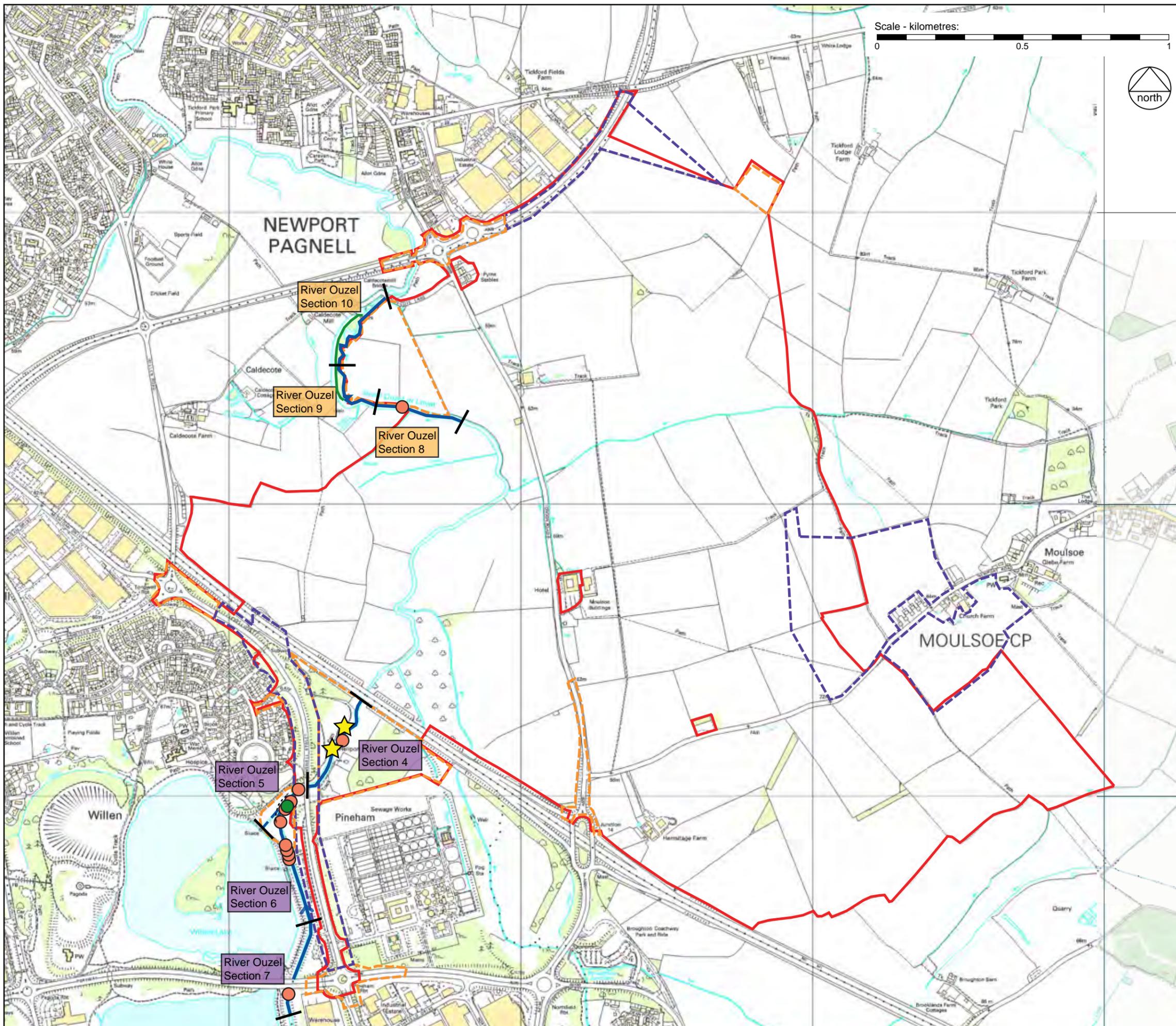
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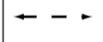
APPENDIX A

Water Vole and Otter Survey Summary Plan



Scale - kilometres:
0 0.5 1



- KEY**
-  Site boundary
 -  2020 survey area boundary
 -  2021 survey area boundary
 -  Limit of survey section
 -  River section surveyed in 2020
 -  River section surveyed in 2021
 -  Running water
 -  Dry ditch
 -  Access unavailable for survey
 -  Otter feeding signs
 -  Potential Otter lying-up site/holt
 -  Otter spraint
 -  Mammal path with Otter tracks

No evidence of Water Vole recorded

CLIENT:
St James
PROJECT:
Milton Keynes East
TITLE:
Water Vole and Otter Survey Summary Plan
SCALE AT A3:
1:12,500
DATE:
March 2021
2090.52 / 31

Based on Ordnance Survey mapping with permission of Her Majesty's Stationery Office Licence no. AR187372
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The Stables, Howbery Park, Benson Lane, Wallingford, OX10 8BA
t 01491 838175 e consult@hda-enviro.co.uk w www.hda-enviro.co.uk

APPENDIX B

Field Survey Recording Cards

Water Vole and Otter Survey Form

Surveyors Names	SD + AP.	Watercourse	RIVER OUZEL SECTION 4
Date	20.05.2020	Site reference	NEWPORT PAGNELL.

Habitat Assessment

Main Habitat		Bank profile		Bank Vegetation (DAFORN)		Land Use within 50m	
Ditch / dyke		Flat <10°		Bankside trees	D.	Woodland	✓
Gravel Pit		Shallow <45°	✓	Shrubs	○	Conifer	
Sludge Pool		Steep >45°	✓	Herbs	F	Arable Crop	
Lake		Vertical/ undercut	✓	Reeds / sedges	○	Rough grassland	
Reservoir				Submerged Weed	R	Managed grassland	
Natural Pond		Water Course		Tall Grass	○	Fen / Carr / Marsh	
Artificial Pond		Ave depth (m)		Short Grass	○	Urban / industrial	✓
Running Water	✓	Ave Width (m)	7	Bare Earth	○	Park / garden	✓
Marsh / bog		Flow		Grazing?		General Comments	
Canal		Static		Cattle		DENSE TALL RUDERAL VEG = LIMITATION SURVEYED FROM BANK. DOGS FROM WALKERS.	
	Shore	Base	Slow	Horses			
Boulder			Fast	Sheep			
Stone / Gravel			Water Management		Bank trampled		
Sand			Dredging		Bank fenced off		
Silt / clay		✓	Weed cutting				
Earth	✓	✓	Mowing		Level of disturbance		
Earth cliffs	✓		Water level control		Between 1-5		
Reinforced			Boating		(1 = low, 5 = High)		
			Angling				

Field Signs

	Tally		Total	Other Animals	
	Water Vole				
Sightings				Mink	
Latrines				Sightings	
Droppings				Scats	1 - Poss
Burrows				Tracks	
Feeding signs				Rat	
Tracks				Sightings	✓
Runs				Droppings	
Lawns				Tracks / runs	✓
	Otter			Other species / comments:	
Sightings				multiple burrows. of rodents.	
Spraints			3		
Tracks			1		

HIMALAYAN BALSAM.

Sketch of Site (indicating any Water Vole or Otter activity)

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Mature Trees</td><td></td></tr> <tr><td>Over-hanging Branches</td><td></td></tr> <tr><td>Fallen Tree</td><td></td></tr> <tr><td>Exposed Roots</td><td></td></tr> <tr><td>Pollarded Tree</td><td></td></tr> <tr><td>Sapling</td><td></td></tr> <tr><td>Scrub</td><td></td></tr> <tr><td>Hedgerow</td><td></td></tr> <tr><td>Fence</td><td></td></tr> <tr><td>Reed/ sedge bed</td><td></td></tr> <tr><td>Artificial Bank</td><td></td></tr> <tr><td>Earth Cliff</td><td></td></tr> <tr><td>Pool</td><td></td></tr> <tr><td>Riffle</td><td></td></tr> <tr><td>Rapids</td><td></td></tr> <tr><td>Waterfall</td><td></td></tr> <tr><td>Protruding Rock</td><td></td></tr> <tr><td>Culvert</td><td></td></tr> <tr><td colspan="2" style="text-align: center;">ANIMAL CODES</td></tr> <tr><td>Water vole</td><td>Aa</td></tr> <tr><td>Mink</td><td>Nv</td></tr> <tr><td>Otter</td><td>LI</td></tr> <tr><td>Rat</td><td>Rn</td></tr> <tr><td>Field vole</td><td>Ma</td></tr> </table>	Mature Trees		Over-hanging Branches		Fallen Tree		Exposed Roots		Pollarded Tree		Sapling		Scrub		Hedgerow		Fence		Reed/ sedge bed		Artificial Bank		Earth Cliff		Pool		Riffle		Rapids		Waterfall		Protruding Rock		Culvert		ANIMAL CODES		Water vole	Aa	Mink	Nv	Otter	LI	Rat	Rn	Field vole	Ma		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td colspan="2" style="text-align: center;">ADJACENT LAND-USE CODES</td></tr> <tr><td>BW</td><td>Broadleaf Wood</td></tr> <tr><td>WL</td><td>Wetland</td></tr> <tr><td>CP</td><td>Conifer Plantation</td></tr> <tr><td>URB</td><td>Gardens and Urban</td></tr> <tr><td>TL</td><td>Tilled Land (crop)</td></tr> <tr><td>IG</td><td>Improved Grassland</td></tr> <tr><td>MH</td><td>Moorland/heath</td></tr> <tr><td>RP</td><td>Rough Pasture</td></tr> <tr><td colspan="2" style="text-align: center;">OTHER FEATURES</td></tr> <tr><td colspan="2">Road bridge </td></tr> <tr><td colspan="2">Foot bridge </td></tr> <tr><td>Weir</td><td></td></tr> <tr><td>Ford</td><td></td></tr> <tr><td>Outfall</td><td></td></tr> <tr><td>Dredgings/ Spoil</td><td></td></tr> <tr><td>Silt bars</td><td></td></tr> <tr><td>Islands</td><td></td></tr> <tr><td colspan="2" style="text-align: center;">FIELD SIGN CODES</td></tr> <tr><td>dr</td><td>Droppings</td></tr> <tr><td>la</td><td>Latrines</td></tr> <tr><td>sc</td><td>Scats/ Spraints</td></tr> <tr><td>bu</td><td>Burrows</td></tr> <tr><td>fs</td><td>Feeding signs</td></tr> <tr><td>lw</td><td>Lawn</td></tr> <tr><td>pr</td><td>Prints</td></tr> <tr><td colspan="2">e.g. 2 water vole latrines</td></tr> <tr><td colspan="2" style="text-align: center;">(2 x Aa)</td></tr> </table>	ADJACENT LAND-USE CODES		BW	Broadleaf Wood	WL	Wetland	CP	Conifer Plantation	URB	Gardens and Urban	TL	Tilled Land (crop)	IG	Improved Grassland	MH	Moorland/heath	RP	Rough Pasture	OTHER FEATURES		Road bridge		Foot bridge		Weir		Ford		Outfall		Dredgings/ Spoil		Silt bars		Islands		FIELD SIGN CODES		dr	Droppings	la	Latrines	sc	Scats/ Spraints	bu	Burrows	fs	Feeding signs	lw	Lawn	pr	Prints	e.g. 2 water vole latrines		(2 x Aa)	
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Water Vole and Otter Survey Form

Surveyors Names	SD + AP	Watercourse	RIVER OUZEL SECTION 5.
Date	20.05.2020	Site reference	Newport Pagnell.

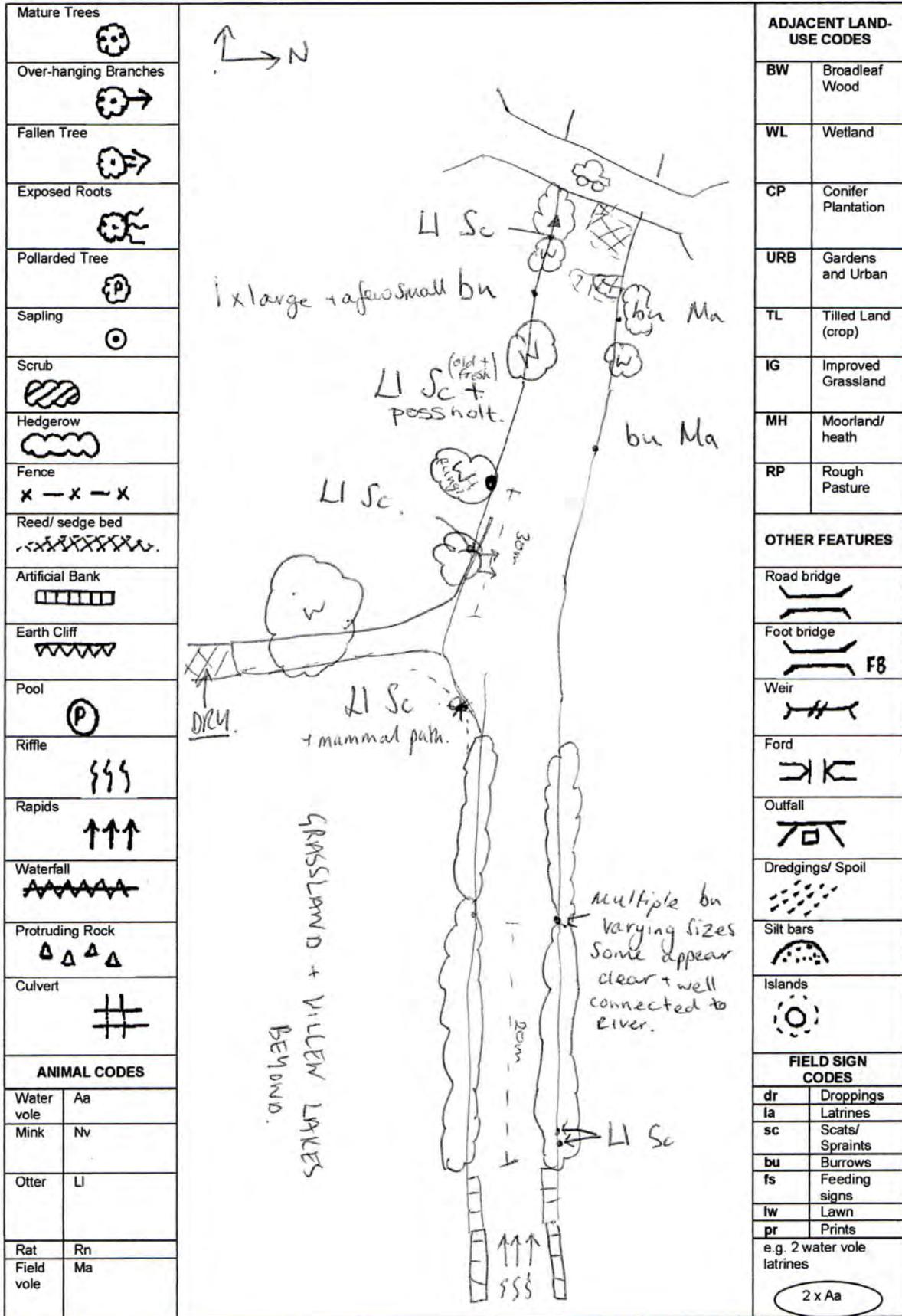
Habitat Assessment

Main Habitat		Bank profile		Bank Vegetation (DAFORN)		Land Use within 50m	
Ditch / dyke		Flat <10°		Bankside trees		Woodland	<input checked="" type="checkbox"/>
Gravel Pit		Shallow <45°		Shrubs		Conifer	
Sludge Pool		Steep >45°	<input checked="" type="checkbox"/>	Herbs		Arable Crop	
Lake		Vertical/ undercut	<input checked="" type="checkbox"/>	Reeds / sedges		Rough grassland	<input checked="" type="checkbox"/>
Reservoir				Submerged Weed		Managed grassland	<input checked="" type="checkbox"/>
Natural Pond		Water Course		Tall Grass		Fen / Carr / Marsh	
Artificial Pond		Ave depth (m)		Short Grass		Urban / industrial	
Running Water	<input checked="" type="checkbox"/>	Ave Width (m)	5-6	Bare Earth		Park / garden	<input checked="" type="checkbox"/>
Marsh / bog		Flow		Grazing?		General Comments	
Canal		Static		Cattle		TALL RUDERAL VEG V. DENSE ON BANK, LIMITATION. SURVEYED FROM BANK.	
	Shore	Base	Slow	Horses			
Boulder			Fast	Sheep			
Stone / Gravel	<input checked="" type="checkbox"/>		Water Management		Bank trampled		
Sand			Dredging		Bank fenced off		
Silt / clay	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Weed cutting				
Earth	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mowing		Level of disturbance		
Earth cliffs	<input checked="" type="checkbox"/>		Water level control		Between 1-5		
Reinforced	<input checked="" type="checkbox"/>		Boating		(1 = low, 5 = High)		
			Angling				

Field Signs

	Tally		Total	Other Animals
	Water Vole			
Sightings				Mink
Latrines				Sightings <input checked="" type="checkbox"/>
Droppings				Scats <input checked="" type="checkbox"/>
Burrows				Tracks <input checked="" type="checkbox"/>
Feeding signs				Rat
Tracks				Sightings <input checked="" type="checkbox"/>
Runs				Droppings <input checked="" type="checkbox"/>
Lawns				Tracks / runs <input checked="" type="checkbox"/>
	Otter			Other species / comments:
Sightings				burrows of varying sizes but no further signs of wv.
Spraints		1	(6)	
Tracks			(1)	

Sketch of Site (indicating any Water Vole or Otter activity)



PENDULOUS SEDGE, WOOD DOCK, GROUND ELDER.

Water Vole and Otter Survey Form

Surveyors Names	SD + AP	Watercourse	RIVER OUZEL SECTION 6.
Date	20.05.2020	Site reference	NEWPORT PAGNELL

Habitat Assessment

Main Habitat		Bank profile		Bank Vegetation (DAFORN)		Land Use within 50m		
Ditch / dyke		Flat <10°		Bankside trees		Woodland	<input checked="" type="checkbox"/>	
Gravel Pit		Shallow <45°	<input checked="" type="checkbox"/>	Shrubs		Conifer		
Sludge Pool		Steep >45°	<input checked="" type="checkbox"/>	Herbs		Arable Crop		
Lake		Vertical/ undercut	<input checked="" type="checkbox"/>	Reeds / sedges		Rough grassland	<input checked="" type="checkbox"/>	
Reservoir				Submerged Weed		Managed grassland	<input checked="" type="checkbox"/>	
Natural Pond		Water Course		Tall Grass		Fen / Carr / Marsh		
Artificial Pond		Ave depth (m)		Short Grass		Urban / industrial	<input checked="" type="checkbox"/>	
Running Water	<input checked="" type="checkbox"/>	Ave Width (m)		Bare Earth		Park / garden	<input checked="" type="checkbox"/>	
Marsh / bog		Flow		Grazing?		General Comments		
Canal		Static		Cattle		TALL RUDEALS ON THE BANKS & STEEP BANKS ARE A LIMITATION SURVEYED FROM BANK. DOGS		
	Shore	Base	Slow	Horses				
Boulder			Fast	Sheep				
Stone / Gravel	<input checked="" type="checkbox"/>		Water Management		Bank trampled			
Sand			Dredging		Bank fenced off			
Silt / clay		<input checked="" type="checkbox"/>	Weed cutting					
Earth	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Mowing		Level of disturbance			
Earth cliffs	<input checked="" type="checkbox"/>		Water level control		Between 1-5			
Reinforced	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Boating		(1 = low, 5 = High)			
			Angling					

Field Signs

	Tally		Total	Other Animals	
	Water Vole				
Sightings				Mink	
Latrines				Sightings	
Droppings				Scats	
Burrows				Tracks	
Feeding signs				Rat	
Tracks				Sightings	<input checked="" type="checkbox"/>
Runs				Droppings	
Lawns				Tracks / runs	<input checked="" type="checkbox"/>
	Otter			Other species / comments:	
Sightings				Small burrows	
Sprints	<input checked="" type="checkbox"/>				
Tracks					

Sketch of Site (indicating any Water Vole or Otter activity)

Mature Trees			ADJACENT LAND-USE CODES	
Over-hanging Branches			BW	Broadleaf Wood
Fallen Tree			WL	Wetland
Exposed Roots			CP	Conifer Plantation
Pollarded Tree			URB	Gardens and Urban
Sapling			TL	Tilled Land (crop)
Scrub			IG	Improved Grassland
Hedgerow			MH	Moorland/heath
Fence			RP	Rough Pasture
Reed/ sedge bed			OTHER FEATURES	
Artificial Bank			Road bridge	
Earth Cliff				
Pool			Foot bridge FB	
Riffle			Weir	
Rapids			Ford	
Waterfall			Outfall	
Protruding Rock			Dredgings/ Spoil	
Culvert			Silt bars	
ANIMAL CODES			Islands	
Water vole	Aa			
Mink	Nv	FIELD SIGN CODES		
Otter	LI	dr	Droppings	
Rat	Rn	la	Latrines	
Field vole	Ma	sc	Scats/ Spraints	
		bu	Burrows	
		fs	Feeding signs	
		lw	Lawn	
		pr	Prints	
		e.g. 2 water vole latrines		
		(2 x Aa)		

Water Vole and Otter Survey Form

Surveyors Names	SD + AP.	Watercourse	River Ouzel SECTION 7.
Date	20.05.2020.	Site reference	NEWPORT PAGNELL

Habitat Assessment

Main Habitat		Bank profile		Bank Vegetation (DAFORN)		Land Use within 50m	
Ditch / dyke		Flat <10°		Bankside trees	D	Woodland	
Gravel Pit		Shallow <45°		Shrubs	F	Conifer	
Sludge Pool		Steep >45°		Herbs - NETTLES	D	Arable Crop	
Lake		Vertical/ undercut		Reeds / sedges	F	Rough grassland	✓
Reservoir				Submerged Weed	O	Managed grassland	✓
Natural Pond		Water Course		Tall Grass	⊙	Fen / Carr / Marsh	
Artificial Pond		Ave depth (m)		Short Grass	⊙	Urban / industrial	✓
Running Water	✓	Ave Width (m)	5.6	Bare Earth	⊙	Park / garden	✓
Marsh / bog		Flow		Grazing?		General Comments	
Canal		Static		Cattle		DENSE TALL RUDDERALS ON BANKS. + STEEP BANKS IS A LIMITATION TO THE SURVEY SURVEYED FROM BANK. Dogs of walker.	
	Shore	Base	Slow	Horses			
Boulder			Fast	Sheep			
Stone / Gravel			Water Management		Bank trampled		
Sand			Dredging		Bank fenced off		
Silt / clay		✓	Weed cutting				
Earth	✓		Mowing	Level of disturbance			
Earth cliffs	✓		Water level control	Between 1-5			
Reinforced	✓		Boating	(1 = low, 5 = High)			
			Angling				

Field Signs

	Tally		Total	Other Animals
	Water Vole			
Sightings				Mink
Latrines				Sightings
Droppings				Scats
Burrows				Tracks
Feeding signs				Rat
Tracks				Sightings
Runs				Droppings
Lawns				Tracks / runs
	Otter			Other species / comments:
Sightings				Feeding signs of Small rodent + multiple burrows.
Spraints	①			
Tracks				

Sketch of Site (indicating any Water Vole or Otter activity)

Mature Trees			ADJACENT LAND-USE CODES	
Over-hanging Branches			BW	Broadleaf Wood
Fallen Tree			WL	Wetland
Exposed Roots			CP	Conifer Plantation
Pollarded Tree			URB	Gardens and Urban
Sapling			TL	Tilled Land (crop)
Scrub			IG	Improved Grassland
Hedgerow			MH	Moorland/heath
Fence			RP	Rough Pasture
Reed/ sedge bed			OTHER FEATURES	
Artificial Bank			Road bridge	
Earth Cliff			Foot bridge	FB
Pool			Weir	
Riffle			Ford	
Rapids			Outfall	
Waterfall			Dredgings/ Spoil	
Protruding Rock			Silt bars	
Culvert			Islands	
ANIMAL CODES			FIELD SIGN CODES	
Water vole	Aa		dr	Droppings
Mink	Nv	la	Latrines	
Otter	LI	sc	Scats/ Spraints	
		bu	Burrows	
		fs	Feeding signs	
Rat	Rn	lw	Lawn	
Field vole	Ma	pr	Prints	
		e.g. 2 water vole latrines		

Water lilies, Hard Rush, Soft Rush, Willowherb,
Common Reed, GIANT HARD RUSH, HIMALAYAN BALSAM.

Water Vole and Otter Survey Form

Surveyors Names	AP +NC	Watercourse	River Ouzel
Date	17/02/2021	Site reference	Newport Pagnell: Section 8

Habitat Assessment

Main Habitat		Bank profile		Bank Vegetation (DAFORN)		Land Use within 50m	
Ditch / dyke		Flat <10°		Bankside trees		Woodland	
Gravel Pit		Shallow <45°	x	Shrubs		Conifer	
Sludge Pool		Steep >45°	x	Herbs		Arable Crop	
Lake		Vertical/ undercut		Reeds / sedges		Rough grassland	
Reservoir				Submerged Weed		Managed grassland	x
Natural Pond		Water Course		Tall Grass		Fen / Carr / Marsh	
Artificial Pond		Ave depth (m)	?	Short Grass		Urban / industrial	
Running Water	x	Ave Width (m)	10	Bare Earth		Park / garden	
Marsh / bog		Flow		Grazing?		General Comments	
Canal		Static		Cattle		No current grazing. However, some bank tramping is present. Very high water level.	
	Shore	Base		Horses			
Boulder			x	Sheep			
Stone / Gravel				Water Management			
Sand				Bank trampled			
Silt / clay				Bank fenced off	x		
Earth	x	x		Level of disturbance			
Earth cliffs				Between 1-5	2		
Reinforced				(1 = low, 5 = High)			

Field Signs

	Tally		Total	Other Animals	
	Water Vole				
Sightings				Mink	
Latrines				Sightings	
Droppings				Scats	
Burrows				Tracks	
Feeding signs				Rat	
Tracks				Sightings	
Runs				Droppings	
Lawns				Tracks / runs	
	Otter			Other species / comments:	
Sightings					
Sprints	1				
Tracks					

Sketch of Site (indicating any Water Vole or Otter activity)

Mature Trees			ADJACENT LAND-USE CODES	
Over-hanging Branches			BW	Broadleaf Wood
Fallen Tree			WL	Wetland
Exposed Roots			CP	Conifer Plantation
Pollarded Tree			URB	Gardens and Urban
Sapling			TL	Tilled Land (crop)
Scrub			IG	Improved Grassland
Hedgerow			MH	Moorland/heath
Fence			RP	Rough Pasture
Reed/ sedge bed			OTHER FEATURES	
Artificial Bank			Road bridge	
Earth Cliff			Foot bridge	
Pool			Weir	
Riffle			Ford	
Rapids			Outfall	
Waterfall			Dredgings/ Spoil	
Protruding Rock			Silt bars	
Culvert			Islands	
ANIMAL CODES			FIELD SIGN CODES	
Water vole	Aa		dr	Droppings
Mink	Nv	la	Latrines	
Otter	LI	sc	Scats/ Spraints	
Rat	Rn	bu	Burrows	
Field vole	Ma	fs	Feeding signs	
		lw	Lawn	
		pr	Prints	
		e.g. 2 water vole latrines		
		(2 x Aa)		

Water Vole and Otter Survey Form

Surveyors Names	AP +NC	Watercourse	River Ouzel
Date	17/02/2021	Site reference	Newport Pagnell: Section 9

Habitat Assessment

Main Habitat		Bank profile		Bank Vegetation (DAFORN)		Land Use within 50m		
Ditch / dyke		Flat <10°		Bankside trees	D	Woodland		
Gravel Pit		Shallow <45°	x	Shrubs	A	Conifer		
Sludge Pool		Steep >45°	x	Herbs	O	Arable Crop		
Lake		Vertical/ undercut		Reeds / sedges	A	Rough grassland		
Reservoir				Submerged Weed	O	Managed grassland	x	
Natural Pond		Water Course		Tall Grass	R	Fen / Carr / Marsh		
Artificial Pond		Ave depth (m)	?	Short Grass	F	Urban / industrial		
Running Water	x	Ave Width (m)	6	Bare Earth	F	Park / garden		
Marsh / bog		Flow		Grazing?		General Comments		
Canal		Static		Cattle		Unable to survey main river body. Lots of vegetation on both sides of side tributary Very high water levels.		
	Shore	Base	Slow	Horses				
Boulder			Fast	x	Sheep			
Stone / Gravel			Water Management		Bank trampled			
Sand			Dredging		Bank fenced off			x
Silt / clay			Weed cutting					
Earth	x	x	Mowing		Level of disturbance			
Earth cliffs			Water level control		Between 1-5			2
Reinforced			Boating Angling		(1 = low, 5 = High)			

Field Signs

	Tally		Total	Other Animals	
	Water Vole				
Sightings				Mink	
Latrines				Sightings	
Droppings				Scats	
Burrows				Tracks	
Feeding signs				Rat	
Tracks				Sightings	
Runs				Droppings	
Lawns				Tracks / runs	
	Otter			Other species / comments:	
Sightings					
Spraints					
Tracks					

Sketch of Site (indicating any Water Vole or Otter activity)

Mature Trees			ADJACENT LAND-USE CODES	
Over-hanging Branches			BW	Broadleaf Wood
Fallen Tree			WL	Wetland
Exposed Roots			CP	Conifer Plantation
Pollarded Tree			URB	Gardens and Urban
Sapling			TL	Tilled Land (crop)
Scrub			IG	Improved Grassland
Hedgerow			MH	Moorland/heath
Fence			RP	Rough Pasture
Reed/ sedge bed			OTHER FEATURES	
Artificial Bank			Road bridge	
Earth Cliff			Foot bridge	FB
Pool			Weir	
Riffle			Ford	
Rapids			Outfall	
Waterfall			Dredgings/ Spoil	
Protruding Rock			Silt bars	
Culvert			Islands	
ANIMAL CODES			FIELD SIGN CODES	
Water vole	Aa		dr	Droppings
Mink	Nv	la	Latrines	
Otter	Li	sc	Scats/Sprints	
Rat	Rn	bu	Burrows	
		fs	Feeding signs	
		lw	Lawn	
		pr	Prints	

Field vole	Ma		e.g. 2 water vole latrines
------------	----	--	----------------------------

2 x Aa

Water Vole and Otter Survey Form

Surveyors Names	AP +NC	Watercourse	River Ouzel
Date	17/02/2021	Site reference	Newport Pagnell: Section 10

Habitat Assessment

Main Habitat		Bank profile		Bank Vegetation (DAFORN)		Land Use within 50m	
Ditch / dyke		Flat <10°	x	Bankside trees	D	Woodland	
Gravel Pit		Shallow <45°	x	Shrubs	F	Conifer	
Sludge Pool		Steep >45°	x	Herbs	R	Arable Crop	
Lake	x	Vertical/ undercut		Reeds / sedges	O	Rough grassland	
Reservoir				Submerged Weed	R	Managed grassland	x
Natural Pond		Water Course		Tall Grass	R	Fen / Carr / Marsh	
Artificial Pond		Ave depth (m)	7	Short Grass	F	Urban / industrial	
Running Water	x	Ave Width (m)	7	Bare Earth	F	Park / garden	
Marsh / bog		Flow		Grazing?		General Comments	
Canal		Static		Cattle		Lots of vegetation, Weirs causing very turbid waters. Lake Very high water levels.	
	Shore	Base		Horses			
Boulder			x	Sheep			
Stone / Gravel				Bank trampled			
Sand				Bank fenced off	x		
Silt / clay				Level of disturbance			
Earth	x	x		Mowing			
Earth cliffs				Water level control			2
Reinforced				Boating			
				Angling			
				(1 = low, 5 = High)			

Field Signs

	Tally		Total	Other Animals	
	Water Vole				
Sightings				Mink	
Latrines				Sightings	
Droppings				Scats	
Burrows				Tracks	
Feeding signs				Rat	
Tracks				Sightings	
Runs				Droppings	
Lawns				Tracks / runs	
	Otter			Other species / comments:	
Sightings					
Sprints					
Tracks					

Sketch of Site (indicating any Water Vole or Otter activity)

Mature Trees			ADJACENT LAND-USE CODES	
Over-hanging Branches			BW	Broadleaf Wood
Fallen Tree			WL	Wetland
Exposed Roots			CP	Conifer Plantation
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Reed/ sedge bed			OTHER FEATURES	
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Riffle			Ford	
Rapids			Outfall	
Waterfall			Dredgings/ Spoil	
Protruding Rock			Silt bars	
Culvert			Islands	
ANIMAL CODES			FIELD SIGN CODES	
Water vole	Aa	dr	Droppings	
Mink	Nv	la	Latrines	
Otter	Li	sc	Scats/ Spraints	
Rat	Rn	bu	Burrows	
Field vole	Ma	fs	Feeding signs	
		lw	Lawn	
		pr	Prints	
		e.g. 2 water vole latrines		
		(2 x Aa)		

Appendix F I I

Badger Survey Report

**NEWPORT PAGNELL ECOLOGY
BADGER SURVEY REPORT**

Prepared for St James

by

Hankinson Duckett Associates

HDA ref: 2090.52

February 2020

hankinson duckett associates

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HDA Document Control and Quality Assurance Record

APPENDICES

- A Badger Survey Summary Plan
- B Field Recording Cards
- C Badger Sett Type Definitions

1 INTRODUCTION

1.1 Site location and summary description

1.1.1 This report describes the results of a survey for Badgers *Meles meles* conducted on approximately 362ha of land at Newport Pagnell, Buckinghamshire, hereinafter referred to as 'the site'. The site centre is located by National Grid Reference SP 893 415. The study was commissioned by St James in August 2019.

1.1.2 The site is located to the south of Newport Pagnell, on the north-eastern edge of Milton Keynes, Buckinghamshire. The site is dominated by agricultural land comprising intensively managed arable and grazed grassland fields with associated farmyards, agricultural buildings and residential farm houses. Field boundaries generally consist of hedgerows, treelines and fencing with occasional ponds and parcels of woodland, and the River Ouzel flows from south to north through the western part of the site. The site is bordered to the north by a construction site for residential development and the A422 beyond which lies the town of Newport Pagnell; to the east by arable farmland; to the west by the Pineham Nature Reserve and the M1 Motorway beyond which lies the town of Milton Keynes; and to the south by arable farmland.

1.1.3 The location and boundary of the site are shown in *Appendix A*. Detailed descriptions of the habitats within the site are given in the Ecological Appraisal (HDA, 2020).

1.2 Legislative context

1.2.1 Badgers and their setts are protected under the 1992 Protection of Badgers Act (HMSO, 1992). Unless permitted under a licence issued by Natural England, this makes it an offence to:

- Kill, injure or capture a Badger;
- Damage, destroy or obstruct access to a Badger sett displaying signs of current use; or
- Disturb Badgers while they are occupying a sett.

1.3 Development proposals

1.3.1 Proposals for the site include mixed use development with associated landscaping and infrastructure.

1.4 Scope and purpose of the report

1.4.1 A Badger survey of the site and wider area was undertaken by HDA in 2013 recorded several Badger setts within the site, and a subsequent walkover survey in 2019 confirmed the continued presence of suitable sett-building and foraging habitat in the form of rough and semi-improved grassland, arable field margins, hedgerow bases, scrub and woodland habitats within and bordering the site. In addition, during a desk study (HAD,

2020) BMERC provided 21 records of Badger within 2km of the site, three of which relate to the site including:

- A record in the central area of the site dating from 2014;
- A record in the southern area of the site dating from 2012; and
- A record in the north of the site dating from 2004.

1.4.2 In recognition of the findings of previous survey work and the time that has passed since this was undertaken, the findings of the desk study, the continued presence of suitable habitat and within the legislative context set out in *Section 1.2* a Badger survey was carried out in order to:

- i) Establish the presence/probable absence of active Badger setts within or adjacent to the site;
- ii) Assess the relative importance of different parts of the site for Badgers; and
- iii) Predict likely impacts potentially arising from development of the site and give recommendations for impact avoidance, minimisation and mitigation.

1.4.3 Where appropriate, the findings of the 2013 Badger survey are referred to in this report.

2 METHODOLOGY

2.1 A detailed walkover survey of the site and, where possible, adjacent land was undertaken on the 25th and 26th April 2019, 4th and 5th June 2019 and 3rd December 2019 by Hayley Snowdon GradCIEEM, Anna Senior MCIEEM and Caitlin Coombs of HDA. The survey involved walking around the site looking for evidence of Badger activity including setts and other field signs such as footprints, latrines, feeding scrapes and hairs. All holes and scrapes were examined to assess what species was using or had dug them. For each confirmed Badger sett a recording card was completed detailing the type of sett, number of entrances and level of activity (from disused to well-used). Completed recording cards are given in *Appendix B* and descriptions of the sett type classifications used are given in *Appendix C*.

2.2 A subjective assessment of the foraging potential of the habitats within the site was also made, based on the availability of potential food sources.

- Good foraging habitat: provides Badgers with a variety of foraging opportunities through the year (e.g. agriculturally improved pasture, hedgerows and gardens).
- Moderate foraging habitat: foraging opportunities can be limited by season and management regime (e.g. cereal crops, rough grassland, woodland and scrub).
- Poor foraging habitat: areas that provide few foraging opportunities for Badgers (e.g. heathland, moorland and wetlands).

2.3 A total of 29 hours was spent carrying out the field survey. Weather conditions were as follows:

- 25th April 2019 - bright and mild
- 26th April 2019 - occasional short showers
- 4th June 2019 - overcast with a light breeze and showers in the afternoon
- 5th June 2019 - mild, sunny with clouds and a light breeze
- 3rd December 2019 - cool, sunny with clouds and a light breeze.

2.4 Limitations

2.4.1 As is often the case with Badger surveys, the density of some areas of scrub within and adjacent to the survey area was such that it was not possible to survey them exhaustively. These areas were circumnavigated and examined for evidence of paths leading into them and other evidence of recent use by Badgers.

2.4.2 A small minority of land outside the survey area, but within 30m of the survey area boundary, could not be accessed or viewed adequately to confirm the absence of Badgers. This includes private land supporting residential dwellings and gardens, grazed fields and woodland to the north of and south of the site. Although these areas do provide suitable sett building habitat, they were separated from the site by either a river, steep ditch or a dual carriageway, and therefore any underground tunnels of setts present in these areas would not encroach into the site. Where appropriate, lack of access or limited visibility of these off-site areas has been considered in the assessment and recommendations provided in this report.

2.4.3 In summary, no significant limitations were encountered during the survey that might otherwise affect the assessment of the importance of the site for Badgers and the recommendations provided in *Section 4* of this report.

3 RESULTS

3.1 Setts

3.1.1 A total of twelve setts were recorded during the Badger survey, two of which were in 'current use' and all of which are located within the site. The location of each sett is shown on the map in *Appendix A* and Sett Recording Cards are given in *Appendix B*. Natural England's 2009 guidance was used to determine whether setts should be regarded as being in 'current use'. Where appropriate, the findings of the Badger survey undertaken in 2013 are referred to, and setts identified in 2013 but not in 2019 are shown on the map in *Appendix A*.

3.1.2 A brief description of each sett encountered during the survey is given below.

- 3.1.3 **Sett A:** A possible outlying sett, not in 'current use' at the time of survey, comprising one disused entrance. The sett is located within a parcel of woodland next to a residential property in the centre of the site, which was being used as a rubbish dump at the time of survey, with loose soil and debris present. The entrance maintains width down the tunnel and is possibly of Badger origin, although is located within an area containing many Rabbit burrows. No signs of Badger activity were observed in the vicinity of the sett. The hole is possibly used by Rabbits.
- 3.1.4 **Sett B:** An outlying sett, not in 'current use' at the time of survey, comprising one disused entrance. The sett is located within a parcel of woodland next to a residential property in the centre of the site, which was being used as a rubbish dump at the time of survey, with loose soil and debris present. The entrance is potentially of Badger origin, although no signs of Badger activity were observed in the vicinity of the sett.
- 3.1.5 **Sett C:** An outlying sett, not in 'current use' at the time of survey, comprising one disused entrance. The sett is located at the edge of a parcel of woodland in the north-east of the site, close to a hedgerow. No signs of Badger activity were observed in the vicinity of the sett.
- 3.1.6 **Sett D:** An outlying sett, not in 'current use' at the time of survey, comprising two partially-used entrances. The sett is located underneath a log pile beside a barn, within a grazed paddock in the central area of the site, immediately east of a main road. Both entrances were relatively clear of debris and large spoil heaps were present. Although potentially of Badger origin, no signs of Badger activity were observed in the vicinity of the sett. Rabbit droppings were present at sett entrances, indicating recent use by this species.
- 3.1.7 **Sett E:** An outlying sett, not in 'current use' at the time of survey, comprising two disused entrances. The sett is located within an area of woodland and scrub immediately east of a main road, and to the north of hotel buildings. Although potentially of Badger origin, no signs of Badger activity were observed in the vicinity of the sett. The hole is possibly occasionally used by Rabbits. This sett was also identified in 2013, at which time it was also not considered to be 'current use' at the time of survey.
- 3.1.8 **Sett F:** An outlying sett, in 'current use' at the time of survey, comprising one partially-used entrance. The sett is located at a hedgerow base in the corner of an arable field in the centre of the site, immediately east of a main road. A clear entrance with paths leading towards it indicated recent use by Badgers.

- 3.1.9 **Sett G:** An outlying sett, not in 'current use' at the time of survey, comprising one disused entrance. The sett is located at a hedgerow base at the edge of an arable field in the north of the site. The entrance is potentially of Badger origin, although no signs of Badger activity were observed in the vicinity of the sett. The hole is appeared to be used by Rabbits.
- 3.1.10 **Sett H:** An outlying sett, not in 'current use' at the time of survey, comprising one disused entrance. The sett is located at the base of a defunct hedgerow at the edge of an arable field in the centre of the site. The entrance was overgrown with vegetation and no signs of Badger were observed in the vicinity of the sett, indicating it was not in current use at the time of survey.
- 3.1.11 **Sett I:** An outlying sett, not in 'current use' at the time of survey, comprising two partially-used entrances. The sett is located at a hedgerow base at the edge of a grassland field in the centre of the site, immediately east of a main road. Although likely to be of Badger origin, no signs of Badger activity were observed in the vicinity of the sett. Fox and Rabbit droppings were observed at one of the entrances, indicating recent use by these species.
- 3.1.12 **Sett J:** An outlying sett, not in 'current use' at the time of survey, comprising one partially-used entrance. The sett is located in an arable field margin, adjacent to a ditch and hedgerow, in the west of the site. No signs of Badger activity were observed in the vicinity of the sett. Rabbit droppings were observed at one of the entrances, indicating recent use by this species.
- 3.1.13 **Sett K:** An outlying sett, not in 'current use' at the time of survey, comprising two disused entrances. The sett is located in a small woodland copse in the south-eastern area of the site, adjacent to an arable field. A large spoil heap was present outside one of the entrances, and the other entrance was internally collapsed. No signs of Badger activity were observed in the vicinity of the sett.
- 3.1.14 **Sett L:** An outlying sett, in 'current use' at the time of survey, comprising two partially-used entrances. The sett is located at the edge of a ditch in an arable field margin, adjacent to a hedgerow, in the south of the site. Tracks leading through vegetation and towards the entrances indicated recent use by Badgers.
- 3.2 Other signs of Badger activity**
- 3.2.1 Badger foraging signs, including dung pits, latrines, ground scrapings and snuffle holes, were recorded across the site, particularly within woodland areas and along field margins.

3.2.2 A number of well used mammal paths were also recorded within the site, particularly passing through areas of scrub and woodland field margins. It is likely that these paths are used by Badgers, as well as Rabbits, Foxes and deer which were also recorded within the survey area.

3.3 Foraging habitat

3.3.1 The grassland, arable field margins, hedgerow, scrub and woodland habitats within the site provide good to moderate quality foraging habitat for Badgers. The intensively managed arable fields which dominated the site however only offer low quality foraging habitat for Badgers. Similar habitats are relatively abundant in the wider area.

4 ASSESSMENT AND RECOMMENDATIONS

4.1 Setts

4.1.1 Two Badger setts in 'current use' were recorded during the survey, both of which are outlying setts and are located within the site. These include Sett F, located at a hedgerow base in the corner of an arable field in the centre of the site, and Sett L, located at the edge of a ditch in an arable field margin, adjacent to a hedgerow, in the south of the site.

4.1.2 Ten outlying setts (Setts A, B, C, D, E, G, H, I, J and K), not showing any signs of current use at the time of survey, were also recorded within the site.

4.1.3 Signs of Badger activity including paths, foraging signs, Badger hairs, latrines and droppings were also recorded across the site.

4.1.4 The Protection of Badgers Act protects Badgers and their setts. Any works involving the disturbance of a Badger occupying a sett, or destruction of a sett displaying signs indicating 'current use' by a Badger (Natural England, 2009), will require a licence from Natural England.

4.1.5 It is recommended that, where possible, all Badger setts are retained within the development scheme for the site, with access to areas of suitable foraging habitat maintained.

Setts F and L

4.1.6 Setts F and L (both outlying setts) displayed signs of current use at the time of survey, and therefore priority should be given to their protection and retention within the development scheme with a minimum stand-off of 20m maintained between active entrances and any proposed excavation works. The stand-off zone should be demarcated using suitable fencing/notices throughout construction works and site staff made aware of its presence. In order to minimise disturbance during the operational

phase consideration should be given to use of fencing and dense scrub planting to limit access to retained setts.

4.1.7 Where this stand-off is not possible, in order to prevent any physical damage or disturbance to the sett(s) during the construction phase, works encroaching into the stand-off zone but beyond 10m from an active hole should be subject to the approval of a suitably qualified ecologist¹. Where appropriate, approved work within this area should be carried out under an Ecological Watching Brief and restrictions placed on night-time working/lighting in the vicinity of the sett.

4.1.8 In the event that it is not possible to retain Setts F & L or works have potential to damage these setts or disturb Badgers present, it would be necessary to apply for a Natural England licence to close and/or damage/destroy the sett(s) prior to works commencing. The recommended method for sett closure involves the affected entrances being “soft stopped” initially to confirm current use, followed by the installation of one-way gates at the sett entrances. The entrance(s) are then monitored until use by Badgers has ceased, after which the sett is destroyed under the supervision of a suitably qualified ecologist. Closure of setts usually takes in the region of three to six weeks and licences are usually only granted for works affecting setts between July and November outside of the Badger breeding season. Where only part of a Badger sett is to be affected by the works, exclusion by use of one-way gates may not be effective due to the presence of interlying tunnels, in which case it may be necessary to proceed to supervised destruction of the affected part of the sett under the supervision of a suitably qualified ecologist even if the entrance remains active. All procedures relating to the closure or damage to a sett or disturbance of occupying Badgers would need to be subject of a detailed method statement and monitored by the licensee and/or accredited agents. The requirement for this would be assessed on finalisation of the scheme design and, if necessary, the detail of any replacement sett provision would be provided in the detailed method statement to be prepared in support of the licence application.

4.1.9 Outlying setts are low-status non-breeding setts that may be occupied on only a temporary basis and therefore alternative setts are expected to be present in the wider area. Loss of these setts is therefore unlikely to have any long-term impact on the local Badger population.

Setts A, B, C, D, E, G, H, I, J and K

4.1.10 Current knowledge suggests that Setts A, B, C, D, E, G, H, I, J and K are not in ‘current use’ in the context of the 1992 Badgers Act (Natural England, 2009) and therefore a

¹ In the event that the suitably qualified ecologist considers there to be a risk of works within the 10-20m zone which could result in damage to the sett or disturbance to occupying Badgers that cannot be avoided, a licence will be required as described in *Section 4.1.6*.

Badger licence would not currently be required for any works affecting these setts. It should be noted however that outlying setts may not be permanently occupied and may be used on a seasonal or irregular basis and it is possible that these setts could be reoccupied prior to development commencing. It is therefore recommended that, where possible, Setts A, B, C, D, E, G, H, I, J and K are also retained within the development scheme for the site, maintaining a suitable standoff and ensuring that areas of foraging habitat remain readily accessible.

Further survey

4.1.11 Badgers are very mobile animals and setts may be abandoned, new setts dug and old setts reclaimed within short periods of time. It would therefore be prudent to resurvey the site in advance of each design stage and prior to works commencing in order to confirm the status of Badgers across the site and inform any need for avoidance, mitigation and licensing measures.

4.2 Foraging and connectivity

4.2.1 The grassland, arable field margins, hedgerow, scrub and woodland habitats within the site provide good to moderate quality foraging habitat for Badgers. The intensively managed arable fields which dominated the site however only offer low quality foraging habitat for Badgers. It is likely that these habitats are used for regular foraging by the local Badger population.

4.2.2 Although the development of the site will result in a loss of foraging habitat where built development takes the place of existing grassland and woodland habitats, habitats of similar and higher quality than those existing within the site are abundant in the wider area. It is also likely that the open space proposals will maintain opportunities at the site for foraging Badgers following development, and that the gardens of the proposed development may also provide opportunities for foraging Badgers as these mature. The landscape scheme for the site should seek to maximise opportunities for foraging Badgers through maintenance of corridors between any retained Badger sett and areas of foraging habitat in the wider area and inclusion of high quality Badger foraging habitats such as tree and scrub planting, establishment of rough and meadow grasslands and use of fruit and nut providing species within planting schemes.

4.2.3 To avoid entrapment of Badgers foraging and moving around the site during the site preparation, earthworks and construction phases, any steep sided holes left open overnight should be equipped with a mammal ladder (a reinforced plywood board >60cm wide set at an angle of no greater than 30° to the base of the pit) and temporarily open pipes with a diameter of >150mm should be plugged.

5 CONCLUSION

5.1 A total of two active Badger setts were recorded within the site, including two active outlying setts located at a hedgerow base in the corner of an arable field in the centre of the site, and at the edge of a ditch in an arable field margin, adjacent to a hedgerow, in the south of the site. In addition, ten disused outlying setts were recorded within the site.

5.2 Measures by which development proposals can protect Badgers associated with these setts are provided in *Section 4* above, in addition to maintenance of opportunities for foraging Badgers at the site following development. Subject to the implementation of these measures to protect individual Badgers during works, and to avoid/ minimise impacts on Badger setts during works, it is unlikely that the proposed development would have any significant long-term impact on the local Badger population.

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Issue	Description	Date of Issue	Signed
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	Personnel	Position
Author	Caitlin Coombs	Assistant Ecologist
Approved for issue	Adrian Meurer MCIEEM	Director

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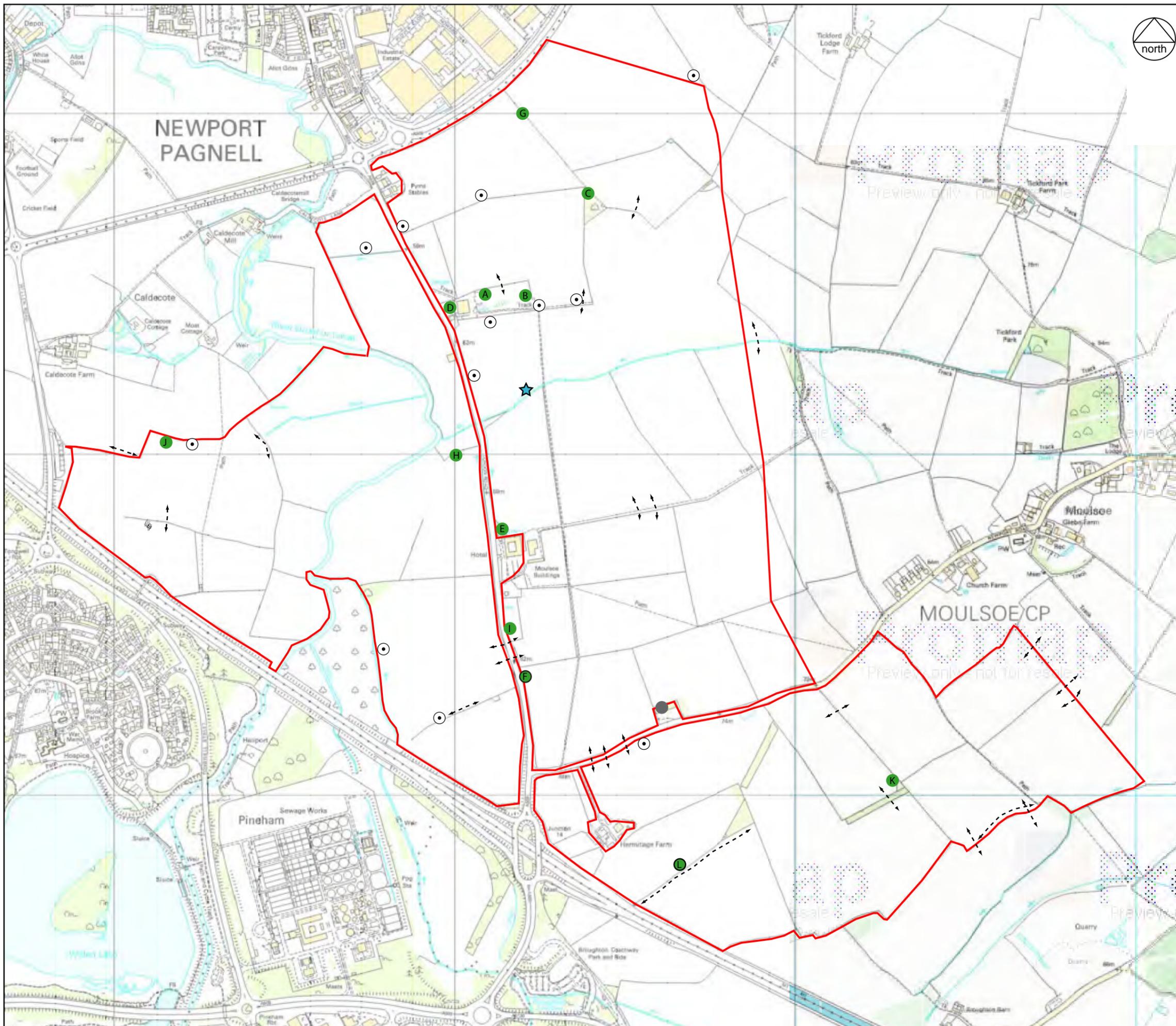
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APPENDIX A

Badger Survey Summary Plan



KEY

-  Site boundary
-  Outlying sett
-  Sett present in 2013 but not in 2019
-  Active sett
-  Mammal path
-  Badger latrine
-  Badger foraging signs
-  Badger Footprint

DO NOT SCALE OFF PLAN

CLIENT:
St James
 PROJECT:
Milton Keynes
 TITLE:
Badger Survey Summary Plan
 SCALE AT A3: DATE:
 Not to Scale February 2020

2090.52 / 16

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APPENDIX B

Field Recording Cards

BADGER SETT RECORDING CARD

Site: Nawport Pannel

Sett ref: (A) A

Grid Reference: SP 89086 42471

Date: 4-6-19

Surveyor AS / CC

Habitat

Woodland Scrub Hedge Ditch Field Garden
Quarry Embankment / Cutting Conifer plantation Other

Notes: In old rubbish dump - loose soil + debris present

Number of Entrances Well used Partially used Disused

Notes: Possible sett of Badger origin - hole maintains with down
'muck' - locate with area of rabbit holes so not likely to
be of rabbit origin.

Sett in Current Use Yes No

Category of Sett

Main (many holes with conspicuous spoil heaps, looks active. Well worn paths. Can be disused)

Annexe (close to main (<150m) usually connected to it by well-worn paths)

Subsidiary (few holes (3-5). At least 50m from main with no obvious paths)

Outlying (one or two holes, used sporadically, no obvious paths)

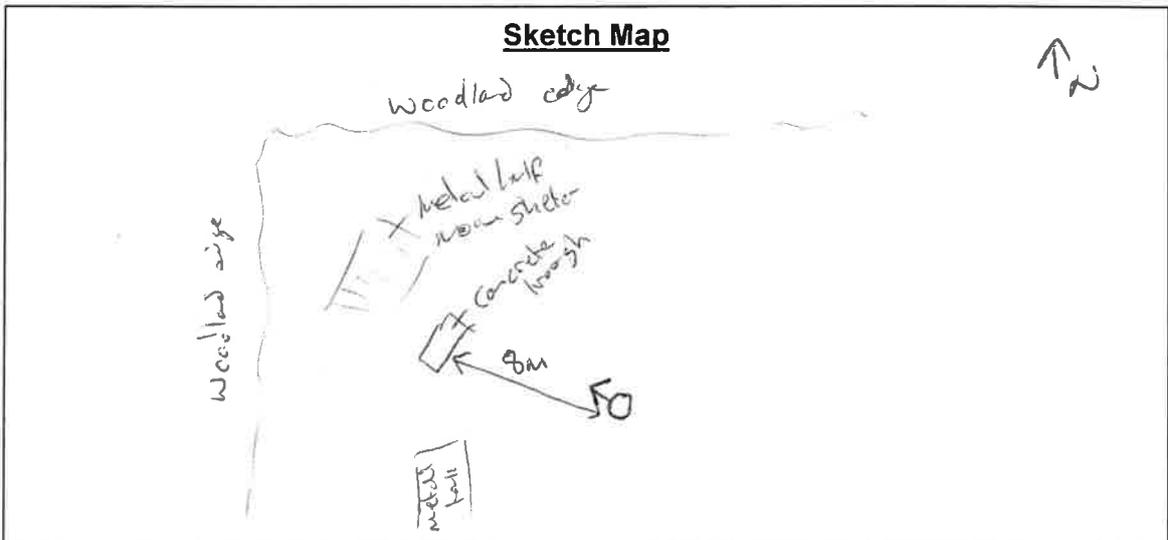
Notes:

Signs of Occupation Bedding Hairs Tracks Dung Pits Scratching

Notes: None

Vulnerability (i.e. ease of public access; obviousness; nearby development)

Notes:



Well used entrance



Disused entrance



Partially used entrance

BADGER SETT RECORDING CARD

Site: *Newport Pagodi*

Sett ref: *B2B*

Grid Reference: *SP 89221 42459*

Date: *04-06-2019*

Surveyor *AB/CC*

Habitat

Woodland Scrub Hedge Ditch Field Garden
 Quarry Embankment / Cutting Conifer plantation Other

Notes: *loose soil + spain - old tip*

Number of Entrances Well used Partially used Disused

Notes:

Sett in Current Use Yes No

Category of Sett

Main (many holes with conspicuous spoil heaps, looks active. Well worn paths. Can be disused)

Annexe (close to main (<150m) usually connected to it by well-worn paths)

Subsidiary (few holes (3-5). At least 50m from main with no obvious paths)

Outlying (one or two holes, used sporadically, no obvious paths)

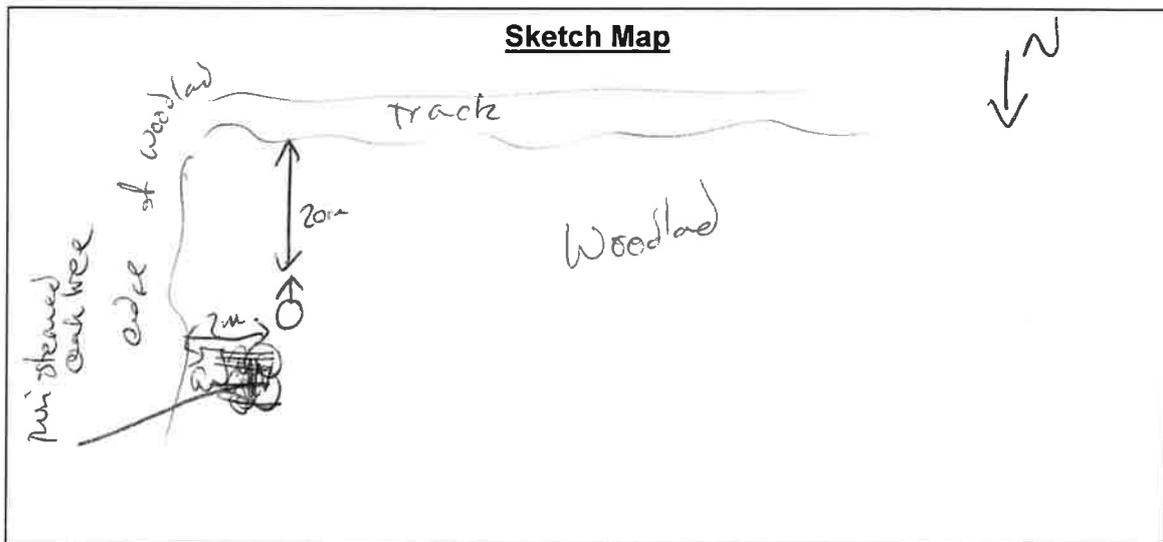
Notes: *Possible hole of badger origin - but no signs of use by badgers*

Signs of Occupation Bedding Hairs Tracks Dung Pits Scratching

Notes: *No signs*

Vulnerability (i.e. ease of public access; obviousness; nearby development)

Notes:



● Well used entrance ○ Disused entrance ◐ Partially used entrance

BADGER SETT RECORDING CARD

Site: Newport Pagnell

Sett ref: ~~2~~ 30C

Date: 04-06-2019

Grid Reference: SP 89383 42751

Surveyor AS/CC

Habitat

Woodland Scrub Hedge Ditch Field Garden
Quarry Embankment / Cutting Conifer plantation Other

Notes: edge of Woodland - close to hedgerow.

Number of Entrances Well used Partially used Disused

Notes: Possible hole of badger origin - in use by badgers

Sett in Current Use Yes No

Category of Sett

- Main (many holes with conspicuous spoil heaps, looks active. Well worn paths. Can be disused)
- Annexe (close to main (<150m) usually connected to it by well-worn paths)
- Subsidiary (few holes (3-5). At least 50m from main with no obvious paths)
- Outlying (one or two holes, used sporadically, no obvious paths)

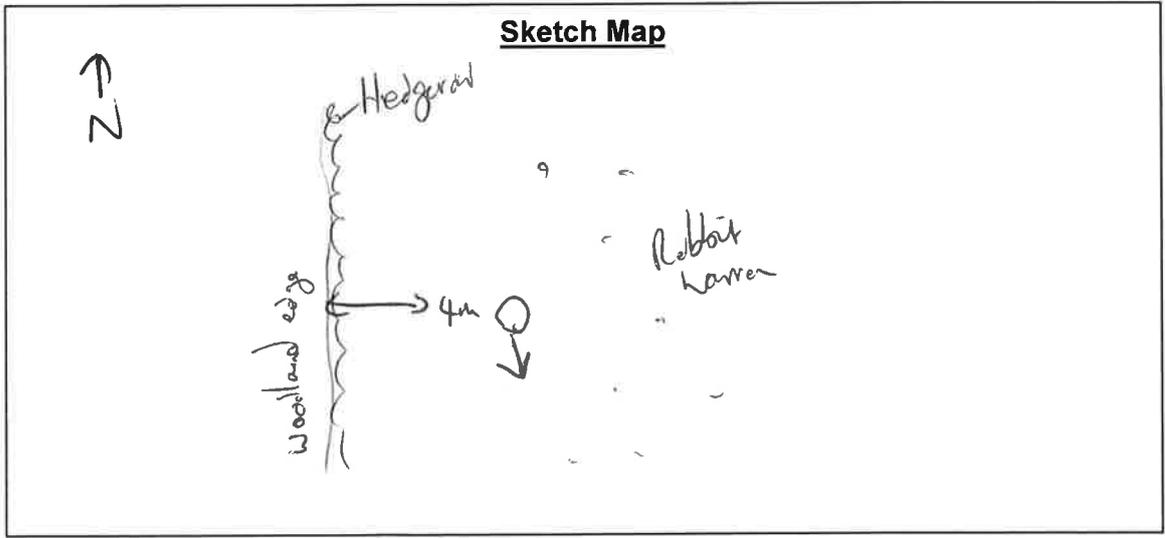
Notes:

Signs of Occupation Bedding Hairs Tracks Dung Pits Scratching

Notes: No recent signs

Vulnerability (i.e. ease of public access; obviousness; nearby development)

Notes:



Well used entrance
 Disused entrance
 Partially used entrance

BADGER SETT RECORDING CARD

Site: Newport Pagnell

Sett ref: 40

Grid Reference: SP 88986 42445

Date: 04-06-2019

Surveyor: AS/CC

Habitat

Woodland Scrub Hedge Ditch Field Garden
Quarry Embankment / Cutting Conifer plantation Other

Notes: Edge of paddock at base of barn - in log pile

Number of Entrances Well used _____ Partially used 2 Disused _____

Notes: Relatively clear holes - could be used by badgers but rabbit droppings noted at entrances. No badger signs nearby.

Sett in Current Use Yes _____ No

Category of Sett

Main (many holes with conspicuous spoil heaps, looks active. Well worn paths. Can be disused)

Annexe (close to main (<150m) usually connected to it by well-worn paths)

Subsidiary (few holes (3-5). At least 50m from main with no obvious paths)

Outlying (one or two holes, used sporadically, no obvious paths)

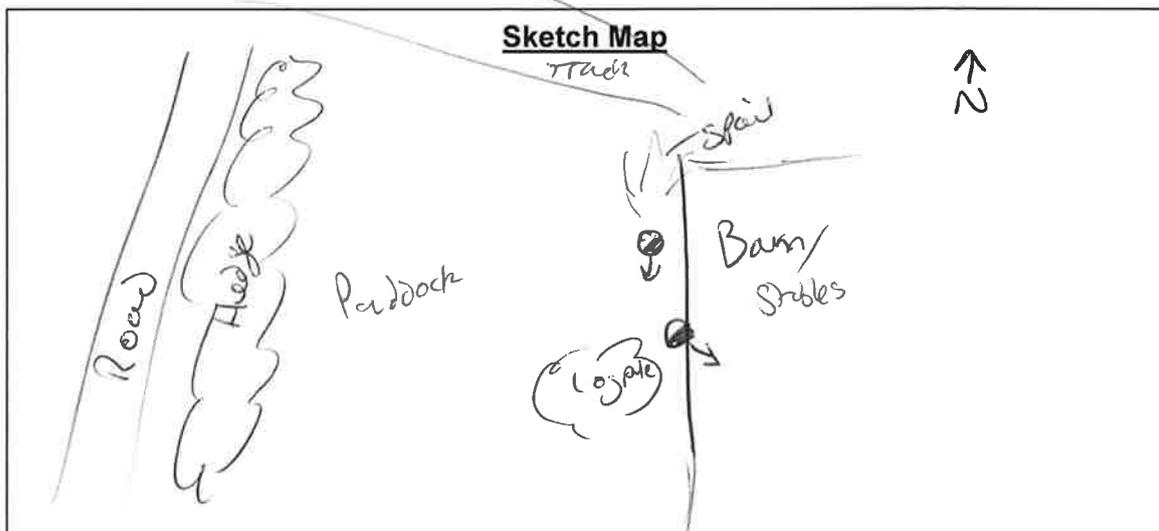
Notes: One hole goes below barn concrete base

Signs of Occupation Bedding Hairs Tracks Dung Pits Scratching

Notes: No recent signs of Badger

Vulnerability (i.e. ease of public access; obviousness; nearby development)

Notes:



● Well used entrance ○ Disused entrance ◐ Partially used entrance

BADGER SETT RECORDING CARD

Site: Newport Pagnell

Sett ref: E

Grid Reference: SP89133 41 778

Date: 25/4/2019

Surveyor HS

Habitat

Woodland

Scrub

Hedge

Ditch

Field

Garden

Quarry

Embankment / Cutting

Conifer plantation

Other

Notes: area of scrubby woodland to east of road and to north of hotel.

Number of Entrances

Well used

Partially used

Disused 2

Notes:

Sett in Current Use

Yes

No

Category of Sett

Main (many holes with conspicuous spoil heaps, looks active. Well worn paths. Can be disused)

Annexe (close to main (<150m) usually connected to it by well-worn paths)

Subsidiary (few holes (3-5). At least 50m from main with no obvious paths)

Outlying (one or two holes, used sporadically, no obvious paths)

Notes:

Signs of Occupation

Bedding

Hairs

Tracks

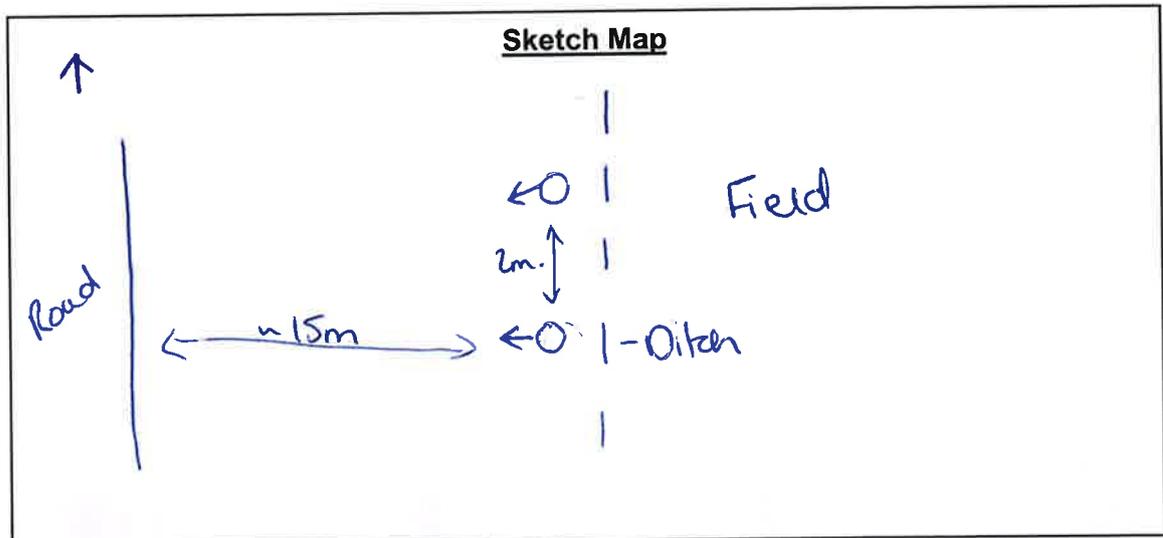
Dung Pits

Scratching

Notes: No signs of occupation by Badger. Possible occasional use by Rabbit.

Vulnerability (i.e. ease of public access; obviousness; nearby development)

Notes:



Well used entrance

Disused entrance

Partially used entrance

BADGER SETT RECORDING CARD

Site: Newport Pagnell

Sett ref: ~~M4/F3~~ (also recorded in 2013) Date: 25/4/2019

Grid Reference: SP89194 41367

Surveyor MS

Habitat

Woodland Scrub Hedge Ditch Field Garden
Quarry Embankment / Cutting Conifer plantation Other

Notes.....
.....

Number of Entrances Well used Partially used 1 Disused

Notes: large hole, old spoil pile, faint mammal path leading to it. likely used on an occasional basis.

Sett in Current Use Yes No

Category of Sett

Main (many holes with conspicuous spoil heaps, looks active. Well worn paths. Can be disused)

Annexe (close to main (<150m) usually connected to it by well-worn paths)

Subsidiary (few holes (3-5). At least 50m from main with no obvious paths)

Outlying (one or two holes, used sporadically, no obvious paths)

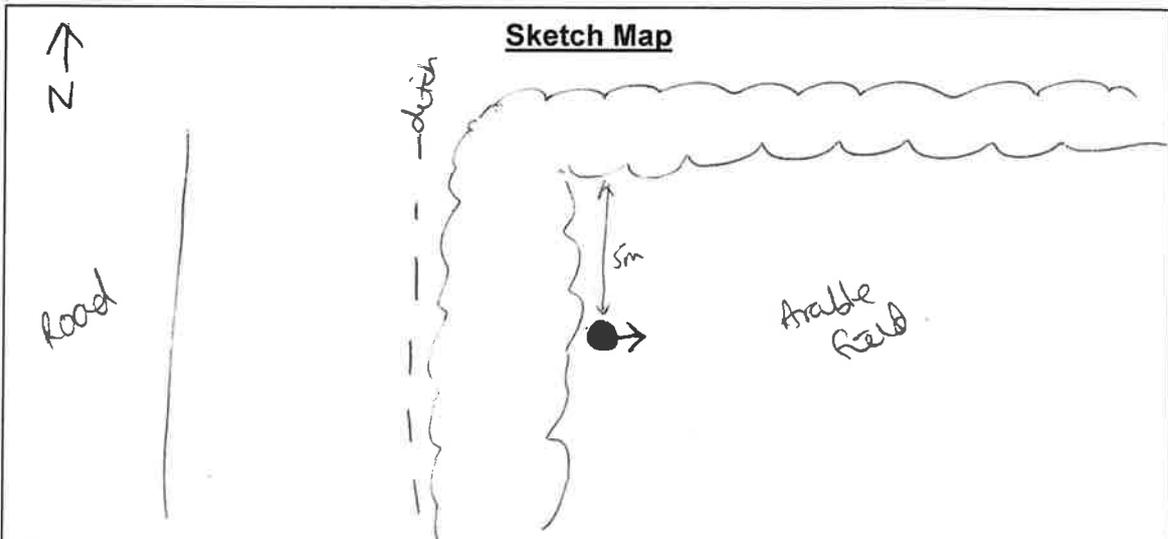
Notes: All other holes in vicinity of sett appear Rabbit in origin and one currently in use by rabbits.

Signs of Occupation Bedding Hairs Tracks Dung Pits Scratching

Notes: clear hole, mammal paths leading to hole.

Vulnerability (i.e. ease of public access; obviousness; nearby development)

Notes.....
.....



● Well used entrance ○ Disused entrance ◐ Partially used entrance

BADGER SETT RECORDING CARD

Site: Newport Pagnell

Sett ref: ~~426~~ G

Grid Reference: SP 89194 43000

Date: 05/06/2019

Surveyor CC

Habitat

Woodland Scrub Hedge Ditch Field Garden
Quarry Embankment / Cutting Conifer plantation Other

Notes: close to lot of rabbit holes. Under Hawthorn tree + fallen wooden stake

Number of Entrances Well used _____ Partially used _____ Disused

Notes: possible hole of badger origin - but no sign of use by badges

Sett in Current Use Yes _____ No

Category of Sett

Main (many holes with conspicuous spoil heaps, looks active. Well worn paths. Can be disused)

Annexe (close to main (<150m) usually connected to it by well-worn paths)

Subsidiary (few holes (3-5). At least 50m from main with no obvious paths)

Outlying (one or two holes, used sporadically, no obvious paths)

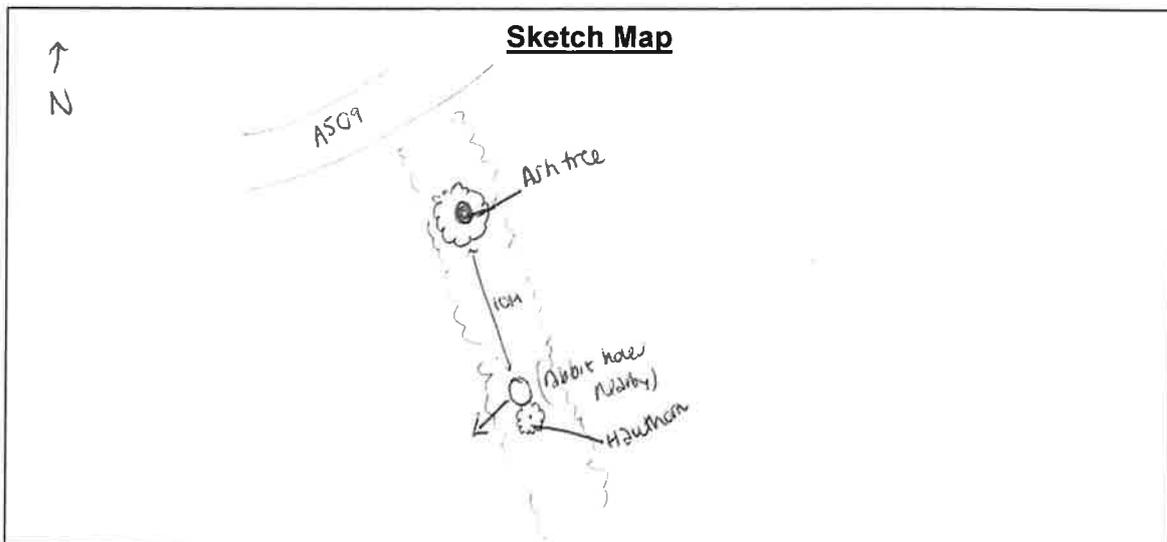
Notes:

Signs of Occupation Bedding Hairs Tracks Dung Pits Scratching

Notes: no recent signs

Vulnerability (i.e. ease of public access; obviousness; nearby development)

Notes:



Well used entrance



Disused entrance



Partially used entrance

BADGER SETT RECORDING CARD

Site: Newport Pagnell

Sett ref: 44

Date: 05/06/19

Grid Reference: SP 89031 42012

Surveyor CC

Habitat

Woodland Scrub Hedge Ditch Field Garden
Quarry Embankment / Cutting Conifer plantation Other

Notes: in defunct hedgerow, south of barbed wire fence, east of elder tree

Number of Entrances Well used Partially used Disused

Notes: overgrown with grass. Could be a large rabbit hole or an old badger sett entrance

Sett in Current Use Yes No

Category of Sett

Main (many holes with conspicuous spoil heaps, looks active. Well worn paths. Can be disused)

Annexe (close to main (<150m) usually connected to it by well-worn paths)

Subsidiary (few holes (3-5). At least 50m from main with no obvious paths)

Outlying (one or two holes, used sporadically, no obvious paths)

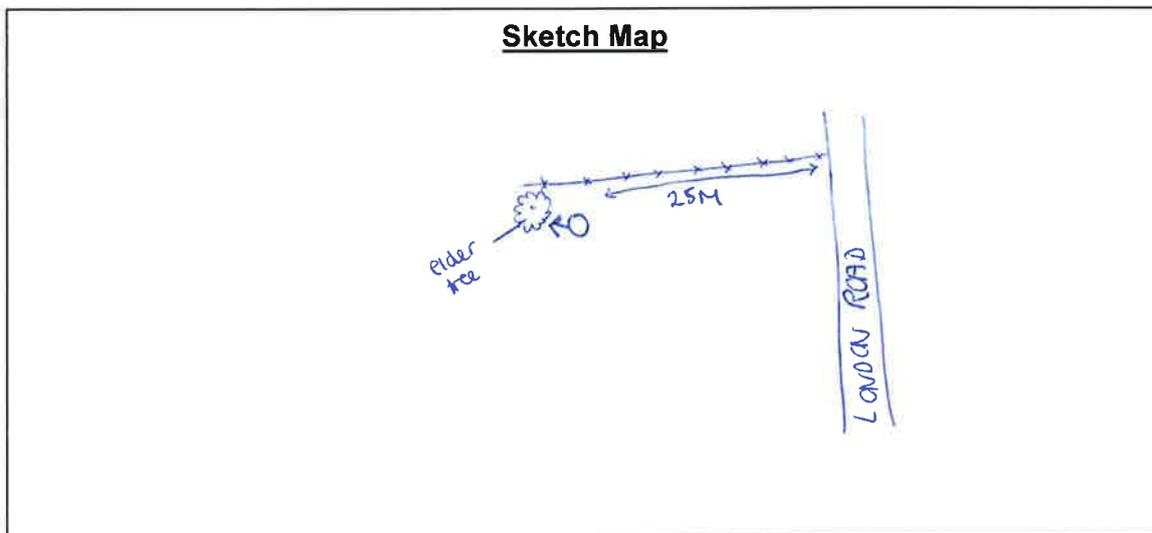
Notes:

Signs of Occupation Bedding Hairs Tracks Dung Pits Scratching

Notes: no recent sign of badger use

Vulnerability (i.e. ease of public access; obviousness; nearby development)

Notes:



Well used entrance



Disused entrance



Partially used entrance

BADGER SETT RECORDING CARD

Site: Newport Pagnell

Sett ref: 1

Date: 25/4/2019

Grid Reference: SP 89170 41443

Surveyor US

Habitat

Woodland Scrub Hedge Ditch Field Garden
 Quarry Embankment / Cutting Conifer plantation Other

Notes: Below hedgerow - grassland to east road to west

Number of Entrances Well used Partially used 2 Disused

Notes: Two holes likely Badger in origin - Fox & Rabbit droppings at 1 of the entrances

Sett in Current Use Yes No ✓ Not by Badger

Category of Sett

- Main (many holes with conspicuous spoil heaps, looks active. Well worn paths. Can be disused)
- Annexe (close to main (<150m) usually connected to it by well-worn paths)
- Subsidiary (few holes (3-5). At least 50m from main with no obvious paths)
- Outlying (one or two holes, used sporadically, no obvious paths)

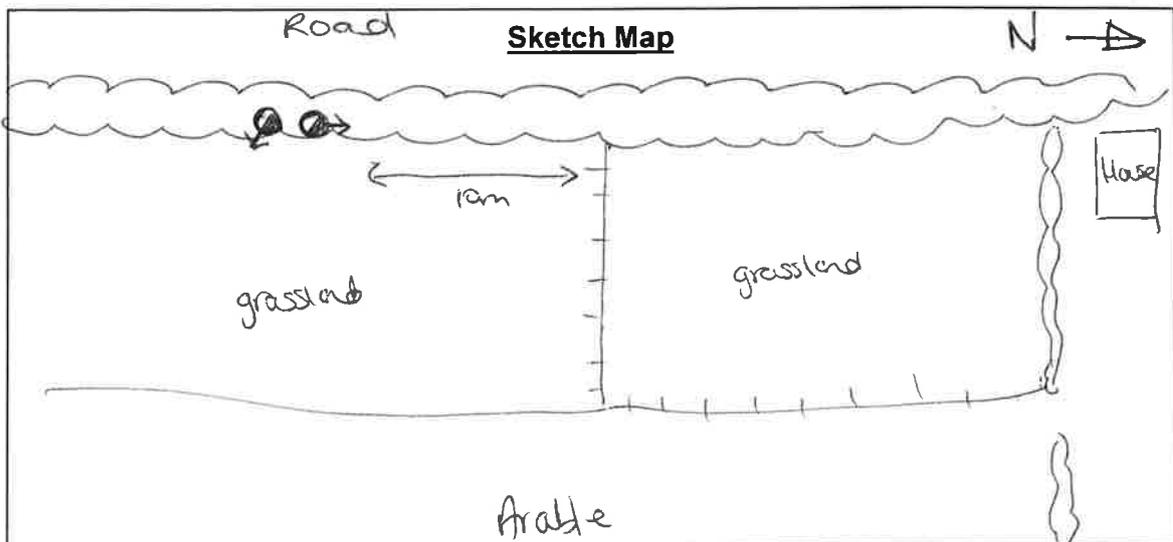
Notes:

Signs of Occupation Bedding Hairs Tracks Dung Pits Scratching

Notes: None

Vulnerability (i.e. ease of public access; obviousness; nearby development)

Notes:



● Well used entrance ○ Disused entrance ◐ Partially used entrance

BADGER SETT RECORDING CARD

Site: NEWPORT PAGNELL

Sett ref: J

Date: 3/12/2019

Grid Reference: SP 88189 42039

Surveyor CC

Habitat

Woodland Scrub Hedge Ditch Field Garden
Quarry Embankment / Cutting Conifer plantation Other

Notes: in field margin next to ditch and hedgerow

Number of Entrances Well used _____ Partially used 1 Disused _____

Notes: single entrance, possibly of badger origin, now in use by rabbit

Sett in Current Use Yes _____ No

Category of Sett

Main (many holes with conspicuous spoil heaps, looks active. Well worn paths. Can be disused)

Annexe (close to main (<150m) usually connected to it by well-worn paths)

Subsidiary (few holes (3-5). At least 50m from main with no obvious paths)

Outlying (one or two holes, used sporadically, no obvious paths)

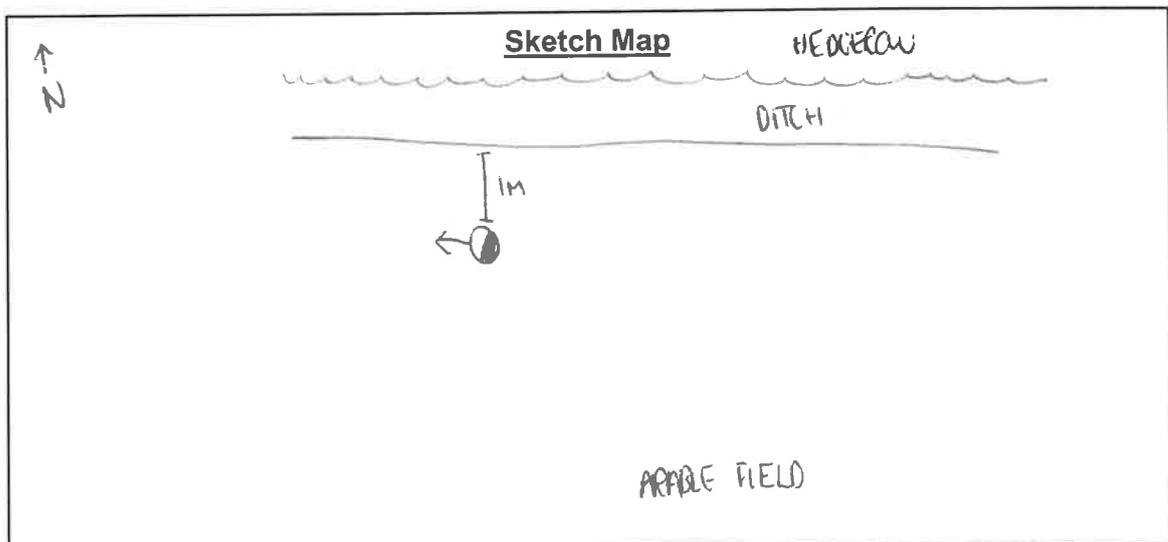
Notes:

Signs of Occupation Bedding Hairs Tracks Dung Pits Scratching

Notes: No signs of badger found. Rabbit droppings at entrance

Vulnerability (i.e. ease of public access; obviousness; nearby development)

Notes:



Well used entrance

Disused entrance

Partially used entrance

BADGER SETT RECORDING CARD

Site: Newport Pagnell

Sett ref: 3 K

Date: 26/04/19

Grid Reference: SP 90303 41016

Surveyor HS

Habitat

Woodland Scrub Hedge Ditch Field Garden
 Quarry Embankment / Cutting Conifer plantation Other

Notes: Small copse adjacent to arable field

Number of Entrances Well used Partially used Disused 2

Notes: Possibly Badger in origin. 1 hole has collapsed internally

Sett in Current Use Yes No

Category of Sett

Main (many holes with conspicuous spoil heaps, looks active. Well worn paths. Can be disused)

Annexe (close to main (<150m) usually connected to it by well-worn paths)

Subsidiary (few holes (3-5). At least 50m from main with no obvious paths)

Outlying (one or two holes, used sporadically, no obvious paths)

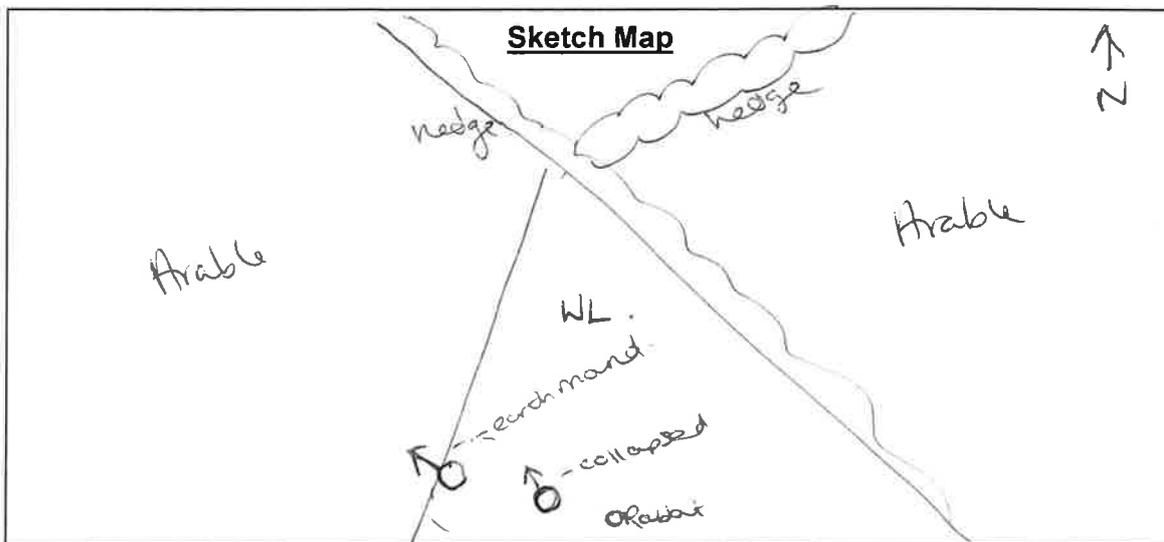
Notes:

Signs of Occupation Bedding Hairs Tracks Dung Pits Scratching

Notes: None - holes have not been used for some time. 1 collapsed. Other tunnel does narrow about 1m in but still quite wide

Vulnerability (i.e. ease of public access; obviousness; nearby development)

Notes:



Well used entrance



Disused entrance



Partially used entrance

BADGER SETT RECORDING CARD

Site: Newport Pagnon

Sett ref: L

Date: 26/4/2019

Grid Reference: SP8967140771

Surveyor HS

Habitat

Woodland

Scrub

Hedge

Ditch

Field

Garden

Quarry

Embankment / Cutting

Conifer plantation

Other

Notes: holes on edge of arable field within grass margin and along ditch

Number of Entrances Well used Partially used 2 Disused

Notes: Hole entrance characteristic of Badger but tunnels than travel in different directions

Sett in Current Use Yes No

Category of Sett

Main (many holes with conspicuous spoil heaps, looks active. Well worn paths. Can be disused)

Annexe (close to main (<150m) usually connected to it by well-worn paths)

Subsidiary (few holes (3-5). At least 50m from main with no obvious paths)

Outlying (one or two holes, used sporadically, no obvious paths)

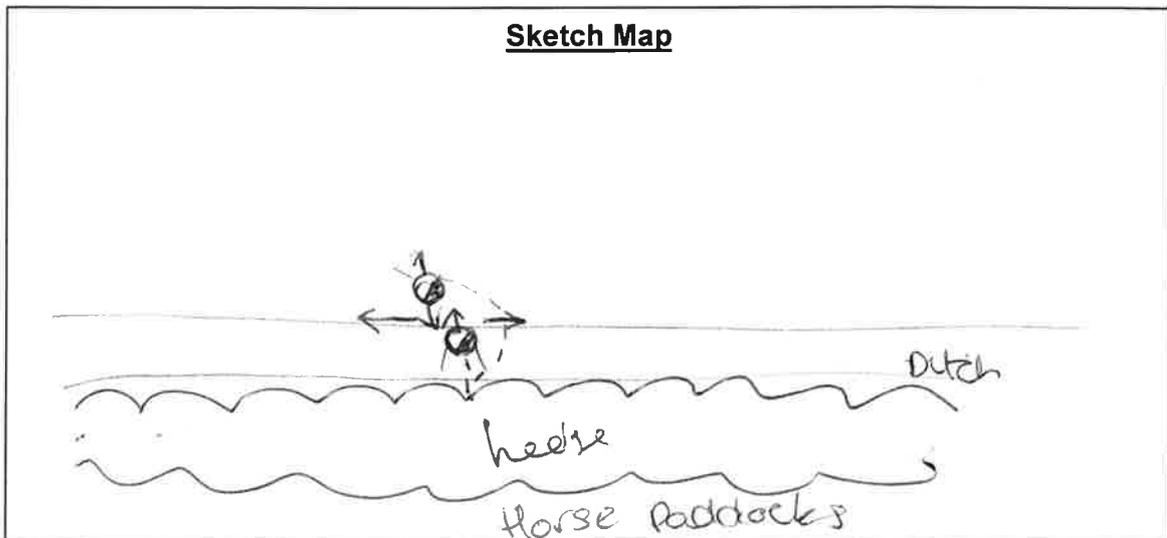
Notes: Looks like tunnels

Signs of Occupation Bedding Hairs Tracks Dung Pits Scratching

Notes: mammal paths leading through vegetation towards holes

Vulnerability (i.e. ease of public access; obviousness; nearby development)

Notes:



Well used entrance



Disused entrance



Partially used entrance

APPENDIX C

Badger Sett Type Definitions

Badger Sett Type Definitions

*From: Harris, S., Cresswell, P. and Jefferies, D. (1989) *Surveying Badgers*. The Mammal Society, Bristol.*

In most cases each social group of Badgers has more than one sett in its territory, and these vary in status and level of use. Whenever there is a Badger problem in an area, it is essential to undertake a thorough survey to establish (i) how many social groups may be involved and (ii) the distribution and status of any setts being threatened. The extent of any problem depends on the type of sett under threat, and so the different types of Badger sett occupied by a single group of Badgers are described below.

Main setts: Normally each group of Badgers has only one main sett, and so by counting all the main setts in an area you can find out how many social groups of Badgers are present. Main setts usually have several holes with large spoil heaps, and the sett generally looks well used. There will be obvious paths to and from the sett and between sett entrances. In the British national Badger survey the average number of holes for a main sett was twelve, although main setts may be much smaller, even a single hole in exceptional circumstances. Although normally the breeding sett, and in continuous use, it is possible to find a main sett that has become disused due to excessive interference, illegal digging, tree felling or some other reason.

Annexe setts: these are often close to a main sett, normally less than 150 metres away, and are connected to the main sett by one or more obvious well worn paths. Usually they have several holes but may not be in use all the time, even if the main sett is very active. The average number of holes per annexe sett in the British survey was eight.

Subsidiary setts: These are usually at least 50 metres from a main sett, and do not have an obvious path connecting with another sett. They are not continuously active. The average number of holes per subsidiary sett in the British survey was four.

Outlying setts: These often have little spoil outside the holes, have no obvious path connecting them with another sett, and are only used sporadically. When not in use by Badgers, they are often taken over by foxes or even rabbits. However, they can still be recognised as Badger setts by the shape of the tunnel (not the actual entrance hole), which is at least 25 centimetres in diameter and rounded or a flattened oval shape (i.e. broader than high). Fox and Rabbit tunnels are smaller and often taller than broad. The average number of holes per outlying sett in the British survey was two.

Note: These sett definitions form part of a continuum, and setts do not always fit neatly into these categories.

Appendix F12

Badger Survey Report: Additional Areas



MILTON KEYNES EAST

BADGER SURVEY REPORT: ADDITIONAL AREAS

Prepared for St James

by

Hankinson Duckett Associates

HDA ref: 2090.52

March 2021

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HDA Document Control and Quality Assurance Record

APPENDICES

- A Badger Survey Summary Plan
- B Badger Sett Recording Cards
- C Badger Sett Type Definitions

1 INTRODUCTION

1.1 Site location and a summary description

1.1.1 This report describes the results of additional Badger survey work conducted in association with proposed development at approximately 437ha of land at Newport Pagnell, Buckinghamshire hereinafter referred to as 'the site'. The site is located by National Grid Reference SP893419. The study was commissioned by St James in two phases in April 2020 and February 2021.

1.1.2 The site is located to the south of Newport Pagnell, on the north-eastern edge of Milton Keynes, Buckinghamshire. The site is dominated by a series of arable fields bordered by hedgerows, treelines, ditches and fencing. Other habitats include grazed grassland fields, small areas of amenity grassland and small pockets of deciduous woodland. The River Ouzel and its tributary, the Broughton Brook, flow in a northerly direction through the western and central areas of the site and, associated with these watercourses, the Pineham Nature Reserve in the south of the site supports a mosaic of scrub, rough grassland, tall ruderal vegetation and ponds. Other features within the site include a number of agricultural, commercial and residential buildings, generally associated with working farms, and roads including the M1 motorway and Tongwell Street which run through a corridor of woodland, scattered trees and scrub in the south-west of the site, and several smaller roads running through the site to the east.

1.1.3 The site is bordered to the north by a construction site for residential development and the A422, beyond which lie the Interchange Park industrial estate and the town of Newport Pagnell; to the east by arable farmland and the settlement of Moulsoe; to the south-west by residential development and Willen Lake on the outskirts of Milton Keynes, the M1 Motorway and Pineham sewage works; and to the south-east by arable farmland.

1.1.4 The majority of the site (362ha) was subject to a Badger survey in 2019 (HDA, 2020) however following the extension of the site boundary into previously unsurveyed parcels of land in March 2020 and again in February 2021, the survey was extended to include these areas and this forms the subject of this report. The surveys were carried out in May 2020 and February 2021 and the areas of the site subject to survey in each year are hereinafter referred to as the '2020 survey area' and '2021 survey area'. A plan showing the locations of the site and 2020/ 2021 survey areas are provided in *Appendix A*.

1.2 Development proposals

1.2.1 Proposals for the site include a large-scale mixed use urban extension incorporating residential development, employment, schools, commercial and community facilities, open space including a new linear park along the River Ouzel corridor, and associated highways infrastructure.

1.3 Legislative context

1.3.1 Badgers and their setts are protected under the 1992 Protection of Badgers Act (HMSO, 1992). Unless permitted under a licence issued by Natural England, this makes it an offence to:

- Kill, injure or capture a Badger;
- Damage, destroy or obstruct access to a Badger sett displaying signs of current use; or
- Disturb Badgers while they are occupying a sett.

1.4 Scope and purpose of the report

1.4.1 The Badger survey conducted in 2019 (HDA, 2020) recorded Badger activity and setts within the wider site. Following the expansion of the site boundary into the 2020/ 2021 survey areas discussed above, initial review of these additional land parcels identified the presence of potentially suitable sett-building and foraging habitat within and bordering the survey areas in the form of rough, semi-improved and amenity grassland, arable field margins, hedgerow bases, scrub and woodland habitats.

1.4.2 In recognition of the presence of suitable habitat and within the legislative context set out in *Section 1.2*, the Badger survey was extended to the additional land in order to:

- i) Establish the current presence/ probable absence of active Badger setts within or adjacent to the additional land parcels;
- ii) Assess the relative importance of different parts of the additional land parcels for Badgers; and
- iii) Predict likely impacts potentially arising from the proposed development on Badgers and give recommendations for impact avoidance, minimisation and mitigation.

1.4.3 The area surveyed included the 2020/ 2021 survey areas and accessible land within 30m of the survey area boundaries thought likely to provide suitable habitat for Badgers.

2 METHODOLOGY

2.1 Detailed walkover surveys of the survey areas and, where possible, adjacent land were conducted on 5-7th May 2020 (2020 survey area) and 17th February 2021 (2021 survey area). All surveys were carried out by Anna Potter of HDA. The surveys involved walking around the survey areas, looking for evidence of Badger activity including setts and other field signs such as footprints, latrines, feeding scrapes and hairs. All holes and scrapes were examined to assess what species was using or had dug them. For each confirmed Badger sett a recording card was completed detailing the type of sett, number of entrances and level of activity (from disused to well-used). Descriptions of the sett type classifications used are given in *Appendix C*.

2.2 A subjective assessment of the foraging potential of the habitats within the survey areas was also made, based on the availability of potential food sources.

- Good foraging habitat: provides Badgers with a variety of foraging opportunities through the year (e.g. agriculturally improved pasture, hedgerows and gardens).
- Moderate foraging habitat: foraging opportunities can be limited by season and management regime (e.g. cereal crops, rough grassland, woodland and scrub).
- Poor foraging habitat: areas that provide few foraging opportunities for Badgers (e.g. heathland, moorland and wetlands).

2.3 Limitations

2.3.1 Due to the land use of some off-site areas adjacent to the additional land parcels, in some instances it was not possible to access or fully view all land within 30m of the survey area boundaries to confirm the absence of Badger setts. These areas included residential properties to the east and south-east of the site where access was unavailable, parts of the M1 road embankments, and busy stretches of the A509 where roadside access was unsafe. These areas were circumnavigated and examined for evidence of paths leading into them and other evidence of recent use by Badgers. It is considered unlikely that these areas contained active Badger setts at the time of survey however as they comprised either residential gardens or busy road corridors, and/ or no signs of Badger using these areas were recorded during the survey.

2.3.2 With regard to the above limitations, it is considered that the Badger survey was not subject to any significant constraints and allowed a robust basis for the assessment of the likely effects of the proposed development on Badgers and the recommendations provided in *Section 4* of this report.

3 RESULTS

3.1 Setts

3.1.1 A total of five setts were recorded during the 2020/ 2021 surveys, all of which are located within the site and only one of which is in 'current use'. The setts are described below. The locations of each sett are shown on the map in *Appendix A* and Sett Recording Cards are given in *Appendix B*. Natural England's 2009 guidance was used to determine whether setts should be regarded as being in 'current use'.

3.1.2 **Sett C1:** A possible outlying sett not in 'current use' at the time of survey, located on a grass road verge at the southern end of London Road. The possible sett comprises one large disused entrance and has characteristics of being of Badger origin, although appears to be currently used by Rabbits. No signs of Badger activity were observed in the vicinity of the sett.

- 3.1.3 **Sett J1:** An outlying sett not in 'current use' at the time of survey, located in a ditch below a hedgerow on a field boundary in the west of the site. The sett comprises two disused entrances with large spoil heaps, however no recent signs of Badger activity were observed in the vicinity of the sett.
- 3.1.4 **Sett J2:** An outlying sett considered to be in 'current use' at the time of survey, comprising two partially used entrances and one disused entrance. The sett is located in a ditch below a hedgerow on a field boundary in the west of the site, approximately 200m to the north of Sett J1. Discarded bedding outside one of the entrances indicated recent use of the sett by Badgers.
- 3.1.5 **Sett M:** An outlying sett not in 'current use' at the time of survey, located on the edge of a small woodland on the north-eastern site boundary. The sett comprises one disused entrance with a small spoil heap, with a tunnel leading into the woodland. The entrance appeared to be of Badger origin but showed no signs of recent use by Badgers.
- 3.1.6 **Sett N:** An outlying sett not in 'current use' at the time of the survey, located below a hedgerow on the eastern margin of the site. The sett comprises two disused entrances with small spoil heaps. The entrances appeared to be of Badger origin but showed no signs of recent use by Badgers and both the entrances were blocked with debris.

3.2 Other signs of Badger activity

- 3.2.1 Several well-used mammal paths were recorded throughout the majority of the 2020 and 2021 survey areas, particularly passing through woodland, hedgerows, scrub and running along field edges. The mammal paths are likely used by Badgers, as well as Rabbits, Foxes and Deer which have also been recorded at the site. In addition, two large and very well used latrines were recorded close to Sett N in the east of the site and a single large latrine was recorded along a field boundary close to Sett M. Evidence of foraging activity was recorded in the west of the site within arable fields adjacent to the M1.

3.3 Foraging habitat

- 3.3.1 The 2020/2021 survey areas comprise grassland, arable field margins, hedgerows, scrub and woodland habitats which provide good to moderate quality foraging habitat for Badgers. The intensively managed arable fields which are present within these areas only offer low quality foraging habitat for Badgers however. The 2020/2021 survey areas are reflective of the habitat types present within the wider site (HDA, 2020) and such habitats are relatively abundant in the wider area.

4 ASSESSMENT AND RECOMMENDATIONS

4.1 Setts

4.1.1 One Badger sett in 'current use', identified as Sett J2, was recorded during the 2020/ 2021 survey. This is an outlying sett located in a ditch below a hedgerow on a field boundary in the west of the site. Four outlying setts (Setts C1, J1, M and N), not showing any signs of current use at the time of survey, were also recorded.

4.1.2 Signs of Badger activity, including paths and foraging signs and droppings, were also recorded within the 2020/ 2021 survey areas.

4.1.3 The Protection of Badgers Act protects Badgers and their setts. Any works involving the disturbance of a Badger occupying a sett, or destruction of a sett displaying signs indicating 'current use' by a Badger (Natural England, 2009), will require a licence from Natural England.

4.1.4 It is recommended that, where possible, all Badger setts are retained within the development scheme for the site, with access to areas of suitable foraging habitat maintained.

Sett J2

4.1.5 Sett J2, an outlying sett, displayed signs of current use at the time of survey, and therefore priority should be given to its protection and retention within the development scheme with a minimum stand-off of 20m maintained between active entrances and any proposed excavation works, movement of heavy machinery and/ or storage of materials. The stand-off zone should be demarcated using suitable fencing/notices throughout construction works and site staff made aware of its presence. In order to minimise disturbance during the operational phase consideration should be given to use of fencing and dense scrub planting to limit access to retained setts.

4.1.6 Where this stand-off is not possible, in order to prevent any physical damage or disturbance to the sett(s) during the construction phase, works encroaching into the stand-off zone but beyond 10m from an active hole should be subject to the approval of a suitably qualified ecologist¹. Where appropriate, approved work within this area should be carried out under an Ecological Watching Brief and restrictions placed on night-time working/lighting in the vicinity of the sett.

¹ In the event that the suitably qualified ecologist considers there to be a risk of works within the 10-20m zone which could result in damage to the sett or disturbance to occupying Badgers that cannot be avoided, a licence will be required as described in *Section 4.1.7*.

- 4.1.7 Emerging development proposals suggest it will be possible to retain Sett J2 in an area of open greenspace however in the event that it is not possible to retain Sett J2 or works have potential to damage this sett or disturb Badgers present, it would be necessary to apply for a Natural England licence to close and/or damage/destroy the sett prior to works commencing. The recommended method for sett closure involves the affected entrances being “soft stopped” initially to confirm current use, followed by the installation of one-way gates at the sett entrances. The entrance(s) are then monitored until use by Badgers has ceased, after which the sett is destroyed under the supervision of a suitably qualified ecologist. Closure of setts usually takes in the region of three to six weeks and licences are usually only granted for works affecting setts between July and November outside of the Badger breeding season. Where only part of a Badger sett is to be affected by the works, exclusion by use of one-way gates may not be effective due to the presence of interlying tunnels, in which case it may be necessary to proceed to supervised destruction of the affected part of the sett under the supervision of a suitably qualified ecologist even if the entrance remains active.
- 4.1.8 All procedures relating to the closure or damage to a sett or disturbance of occupying Badgers would need to be subject of a detailed method statement and monitored by the licensee and/or accredited agents. The requirement for this would be assessed on finalisation of the scheme design and, if necessary, the detail of any replacement sett provision would be provided in the detailed method statement to be prepared in support of the licence application.
- 4.1.9 Outlying setts are low-status non-breeding setts that may be occupied on only a temporary basis and therefore alternative setts are expected to be present in the wider area. Loss of these setts is therefore unlikely to have any long-term impact on the local Badger population.

Setts C1, J1, M and N

- 4.1.10 Current knowledge suggests that Setts C1, J1, M and N are not in ‘current use’ in the context of the 1992 Badgers Act (Natural England, 2009) and therefore a Badger licence would not currently be required for any works affecting these setts. It should be noted however that outlying setts may not be permanently occupied and may be used on a seasonal or irregular basis and it is possible that these setts could be reoccupied prior to development commencing. It is therefore recommended that, where possible, Setts C1, J1, M and N are also retained within the development scheme for the site, maintaining a suitable standoff and ensuring that areas of foraging habitat remain readily accessible.

Further survey

- 4.1.11 Badgers are very mobile animals and setts may be abandoned, new setts dug and old setts reclaimed within short periods of time. It would therefore be prudent to resurvey the site in advance of each design stage and prior to works commencing in order to confirm the status of Badgers across the site and inform any need for avoidance, mitigation and licensing measures.

4.2 Foraging and connectivity

- 4.2.1 The grassland, arable field margins, hedgerow, scrub and woodland habitats within the 2020/ 2021 survey areas and wider site provide good to moderate quality foraging habitat for Badgers. The intensively managed arable fields which dominate the site however only offer low to moderate quality foraging habitat for Badgers. It is likely that these habitats are used for regular foraging by the local Badger population.

- 4.2.2 Although the development of the site will result in a loss of foraging habitat where built development takes the place of existing grassland and woodland habitats, habitats of similar and higher quality than those present within the site are abundant in the wider area. It is also likely that the open space proposals will maintain opportunities at the site for foraging Badgers following development, and that the gardens of the proposed development may also provide opportunities for foraging Badgers as these mature. The landscape scheme for the site should seek to maximise opportunities for foraging Badgers through maintenance of corridors between any retained Badger sett and areas of foraging habitat in the wider area and inclusion of high-quality Badger foraging habitats such as tree and scrub planting, establishment of rough and meadow grasslands and use of fruit and nut providing species within planting schemes.

- 4.2.3 To avoid entrapment of Badgers foraging and moving around the site during the site preparation, earthworks and construction phases, any steep sided holes left open overnight should be equipped with a mammal ladder (a reinforced plywood board >60cm wide set at an angle of no greater than 30° to the base of the pit) and temporarily open pipes with a diameter of >150mm should be plugged.

5 CONCLUSION

- 5.1 One active outlying sett was recorded within the 2020/ 2021 survey areas, in a ditch below a hedgerow in the west of the site. A total of four disused setts, all outlying setts, were also recorded within the 2020/ 2021 survey areas.
- 5.2 Measures by which development proposals can protect Badgers associated with these setts are provided in *Section 4* above, in addition to maintenance of opportunities for foraging Badgers at the site following development. Subject to the implementation of these

measures to protect individual Badgers during works, and to avoid/ minimise impacts on Badger setts during works, it is unlikely that the proposed development would have any significant long-term impact on the local Badger population.

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HDA Document Control and Quality Assurance Record

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1	Badger Survey Report: Additional Areas	March 2021	

	Personnel	Position
Authors	Anna Potter	Assistant Ecologist
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Approved for issue	Adrian Meurer MCIEEM	Director

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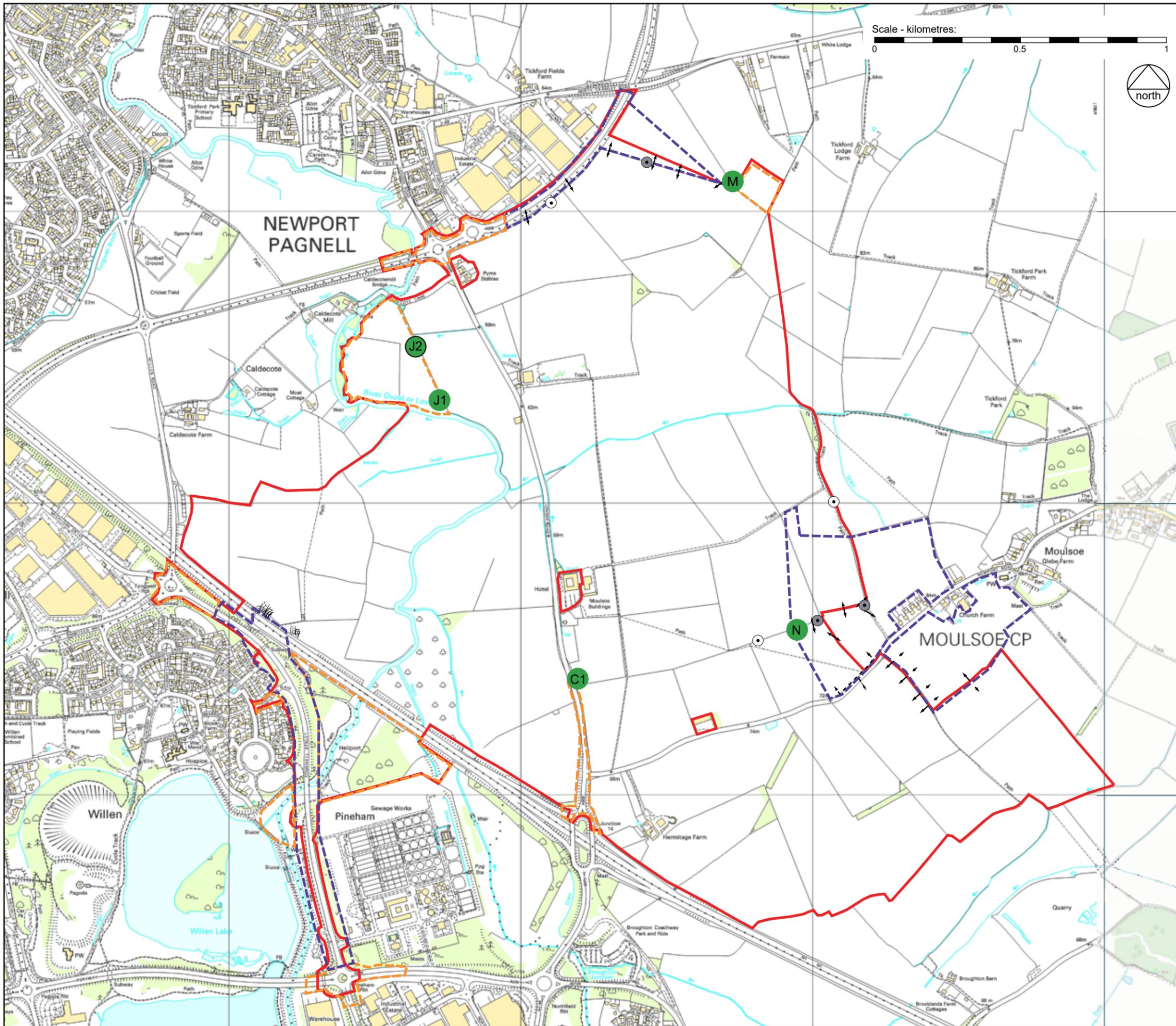
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APPENDIX A

Badger Survey Summary Plan



- KEY**
- Site boundary
 - 2020 survey area boundary
 - 2021 survey area boundary
 - A Outlying Badger sett
 - Active Badger sett
 - Mammal path
 - Badger foraging signs
 - Well used latrine
 - Single dung pit

CLIENT:
St James
 PROJECT:
Milton Keynes East
 TITLE:
Badger Survey Summary Plan: Additional Areas
 SCALE AT A3: 1:12,500 DATE: March 2021

2090.52 / 16

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**Landscape Architecture
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APPENDIX B

Badger Sett Recording Cards

BADGER SETT RECORDING CARD

Site: NP-1A1
Sett ref: -N
Grid Reference: SP89964
41585

Date: 06/05/2020
Surveyor: 1A7

Habitat

Woodland Scrub Hedge Ditch Field Garden
Quarry Embankment / Cutting Conifer plantation Other

Notes: hedgerow in agricultural field

Number of Entrances Well used Partially used Disused 2

Notes: Some debris over entrances

Sett in Current Use Yes No ✓

Category of Sett

Main (many holes with conspicuous spoil heaps, looks active. Well worn paths. Can be disused)

Annexe (close to main (<150m) usually connected to it by well-worn paths)

Subsidiary (few holes (3-5). At least 50m from main with no obvious paths)

Outlying (one or two holes, used sporadically, no obvious paths)

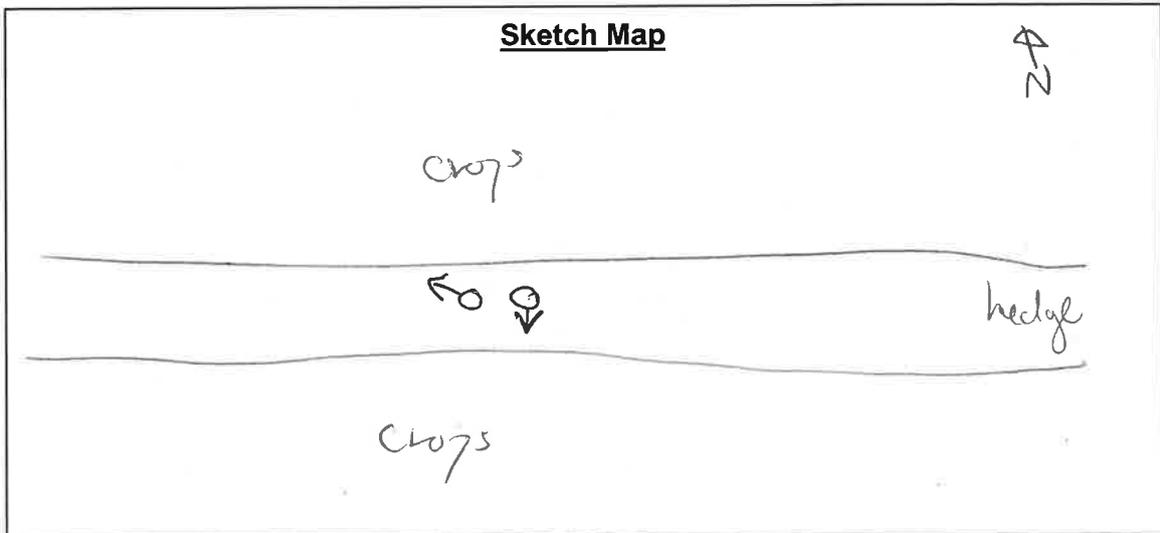
Notes: Outlying - 2 holes - with paths however do not appear to be used frequently

Signs of Occupation Bedding Hairs ~~Tracks~~ Dung Pits Scratching

Notes: Dung pits close by, tracks not frequently used. Looks of badger origin but not in current use. Not used by rabbits.

Vulnerability (i.e. ease of public access; obviousness; nearby development)

Notes:



● Well used entrance ○ Disused entrance ◐ Partially used entrance

BADGER SETT RECORDING CARD

Site: NP. A2

Sett ref: M

Grid Reference: SP89707
43123

Date: 09/05/2020

Surveyor: hP

Habitat

Woodland

Scrub

Hedge

Ditch

Field

Garden

Quarry

Embankment / Cutting

Conifer plantation

Other

Notes: Woodland corpse

Number of Entrances

Well used

Partially used

Disused

Notes: looks of badger origin, now used by rabbits

Sett in Current Use

Yes

No

Category of Sett

Main (many holes with conspicuous spoil heaps, looks active. Well worn paths. Can be disused)

Annexe (close to main (<150m) usually connected to it by well-worn paths)

Subsidiary (few holes (3-5). At least 50m from main with no obvious paths)

Outlying (one or two holes, used sporadically, no obvious paths)

Notes:

Signs of Occupation

Bedding

Hairs

Tracks

Dung Pits

Scratching

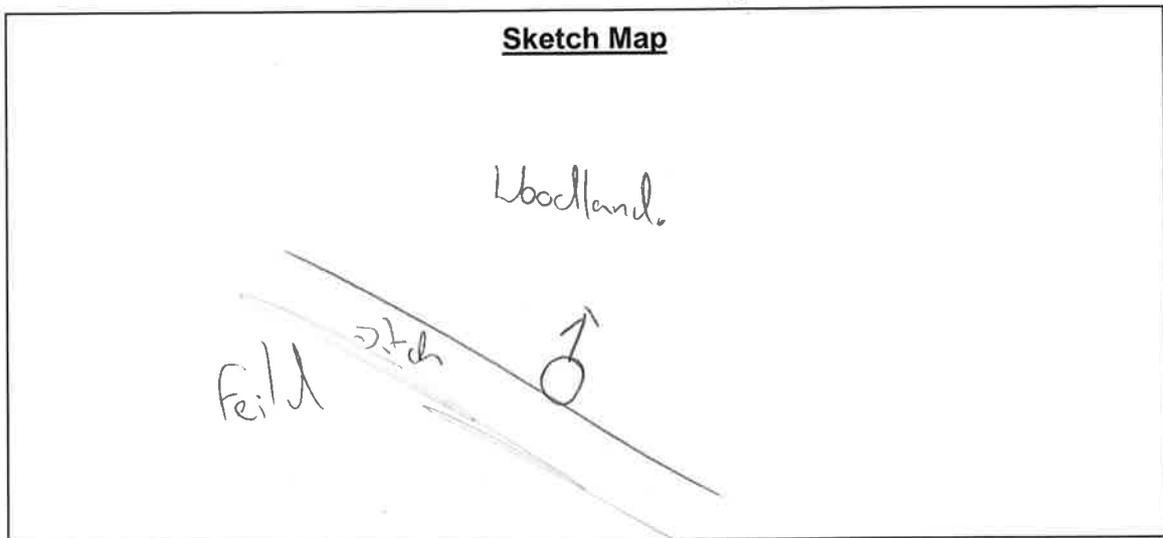
Notes: X

Vulnerability (i.e. ease of public access; obviousness; nearby development)

Notes:

Close to field edge outside of boundary line

Sketch Map



Well used entrance



Disused entrance



Partially used entrance

BADGER SETT RECORDING CARD

Site: NP-C1

Sett ref: C1

Date: 17/02/2021

Grid Reference: 52°3'49"N

Surveyor: M

0°42'1" W ← SP89197.41378

Habitat

Woodland Scrub Hedge Ditch Field Garden
Quarry Embankment / Cutting Conifer plantation Other

Notes: Road verge

Number of Entrances Well used Partially used Disused 1

Notes: One large entrance

Sett in Current Use Yes No 1

Category of Sett

- Main (many holes with conspicuous spoil heaps, looks active. Well worn paths. Can be disused)
- Annexe (close to main (<150m) usually connected to it by well-worn paths)
- Subsidiary (few holes (3-5). At least 50m from main with no obvious paths)
- Outlying (one or two holes, used sporadically, no obvious paths)

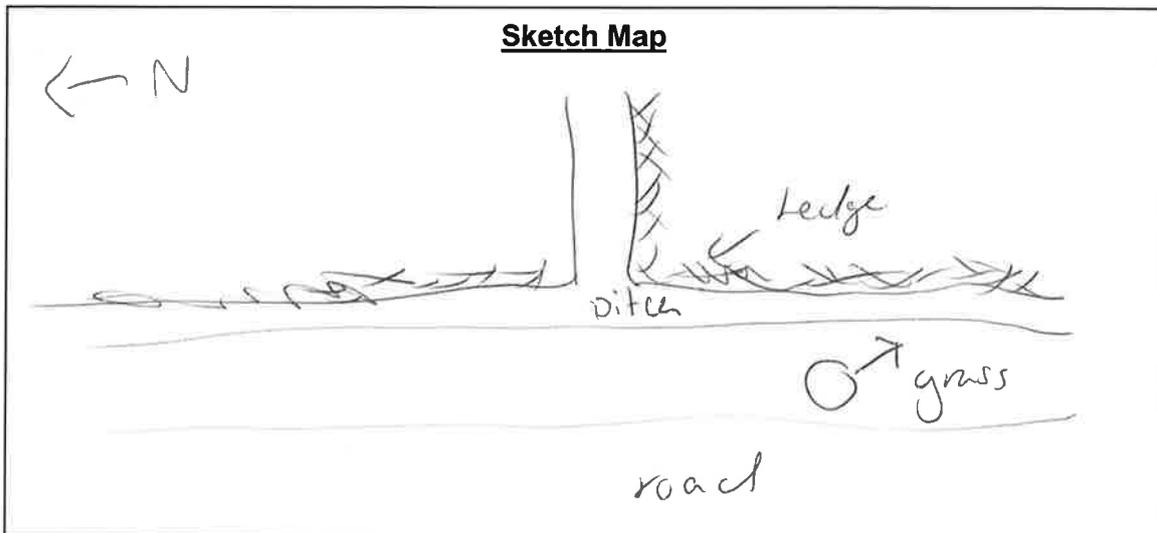
Notes: Possibly occupied by rabbits

Signs of Occupation Bedding Hairs Tracks Dung Pits Scratching

Notes:

Vulnerability (i.e. ease of public access; obviousness; nearby development)

Notes:



Well used entrance (solid black circle) Disused entrance (white circle) Partially used entrance (half black circle)

BADGER SETT RECORDING CARD

Site: NP

Sett ref: ①⑤

Date: 17/02/2008

Grid Reference: 52°4'20" N

Surveyor: VM

0°42'24" W 578874242328

Habitat

Woodland Scrub Hedge Ditch Field Garden
 Quarry Embankment / Cutting Conifer plantation Other

Notes.....

Number of Entrances Well used _____ Partially used _____ Disused 2

Notes.....

Sett in Current Use Yes _____ No

Category of Sett

- Main (many holes with conspicuous spoil heaps, looks active. Well worn paths. Can be disused)
- Annexe (close to main (<150m) usually connected to it by well-worn paths)
- Subsidiary (few holes (3-5). At least 50m from main with no obvious paths)
- Outlying (one or two holes, used sporadically, no obvious paths)

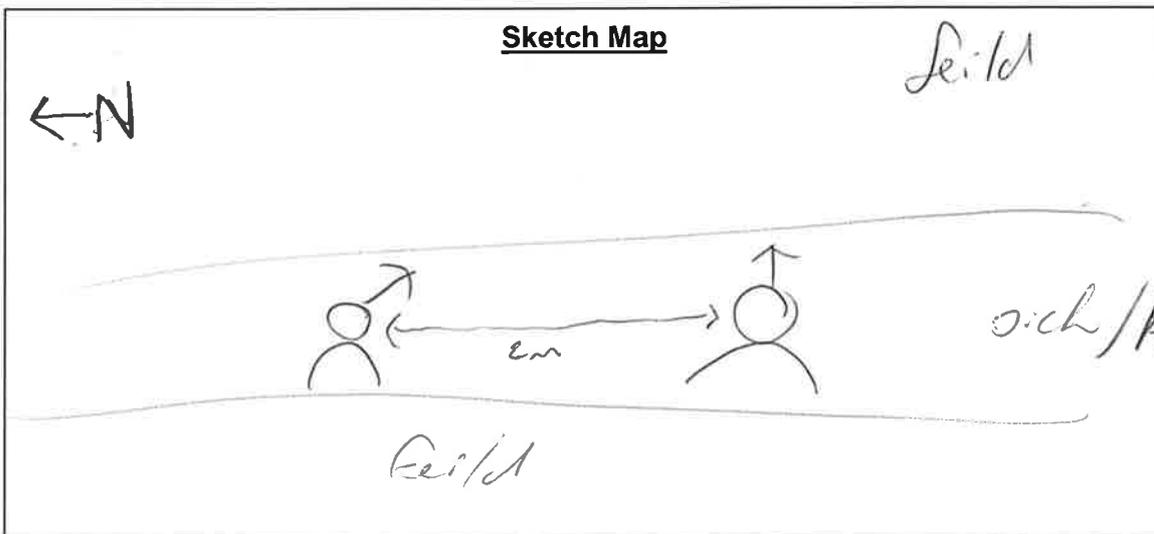
Notes.....

Signs of Occupation Bedding Hairs Tracks Dung Pits Scratching

Notes..... Disused

Vulnerability (i.e. ease of public access; obviousness; nearby development)

Notes.....



● Well used entrance ○ Disused entrance ◐ Partially used entrance

BADGER SETT RECORDING CARD

Site: NR

Sett ref: (52)

Date: 17/02/2021

Grid Reference: 52° 4' 27" N

Surveyor W

0° 42' 29" W SP88643 42543

Habitat

Woodland Scrub Hedge Ditch Field Garden
 Quarry Embankment / Cutting Conifer plantation Other

Notes.....

Number of Entrances Well used Partially used 2 Disused 1

Notes.....

Sett in Current Use Yes No

Category of Sett

- Main (many holes with conspicuous spoil heaps, looks active. Well worn paths. Can be disused)
- Annexe (close to main (<150m) usually connected to it by well-worn paths)
- Subsidiary (few holes (3-5). At least 50m from main with no obvious paths)
- Outlying (one or two holes, used sporadically, no obvious paths)

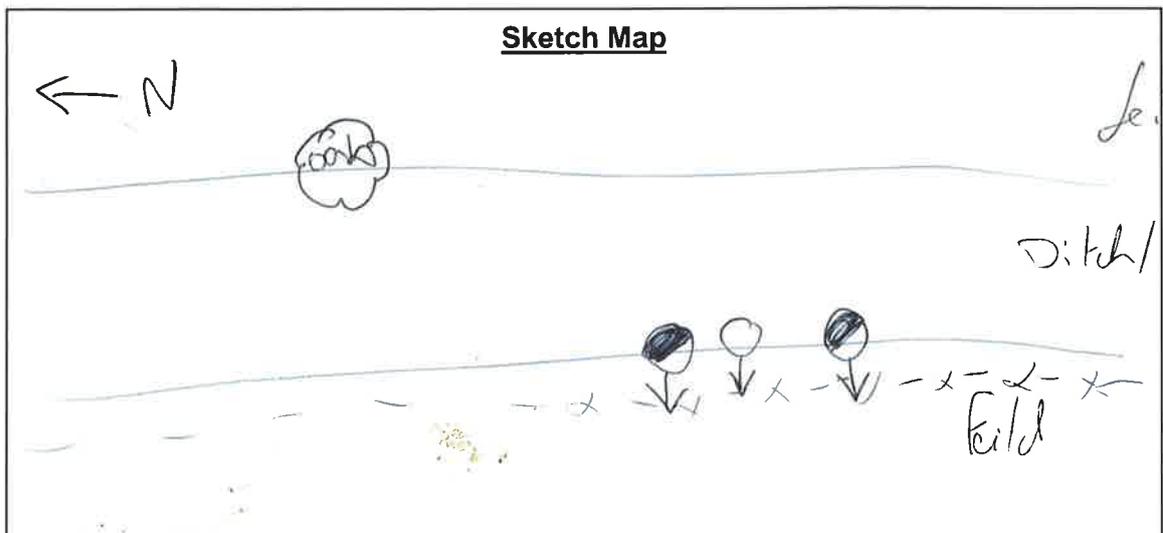
Notes.....

Signs of Occupation Bedding Hairs Tracks Dung Pits Scratching

Notes Some bedding subside one entrance

Vulnerability (i.e. ease of public access; obviousness; nearby development)

Notes.....



● Well used entrance ○ Disused entrance ◐ Partially used entrance

APPENDIX C

Badger Sett Type Definitions

Badger Sett Type Definitions

From: Harris, S., Cresswell, P. and Jefferies, D. (1989) Surveying Badgers. The Mammal Society, Bristol.

In most cases each social group of Badgers has more than one sett in its territory, and these vary in status and level of use. Whenever there is a Badger problem in an area, it is essential to undertake a thorough survey to establish (i) how many social groups may be involved and (ii) the distribution and status of any setts being threatened. The extent of any problem depends on the type of sett under threat, and so the different types of Badger sett occupied by a single group of Badgers are described below.

Main setts: Normally each group of Badgers has only one main sett, and so by counting all the main setts in an area you can find out how many social groups of Badgers are present. Main setts usually have several holes with large spoil heaps, and the sett generally looks well used. There will be obvious paths to and from the sett and between sett entrances. In the British national Badger survey the average number of holes for a main sett was twelve, although main setts may be much smaller, even a single hole in exceptional circumstances. Although normally the breeding sett, and in continuous use, it is possible to find a main sett that has become disused due to excessive interference, illegal digging, tree felling or some other reason.

Annexe setts: these are often close to a main sett, normally less than 150 metres away, and are connected to the main sett by one or more obvious well worn paths. Usually they have several holes but may not be in use all the time, even if the main sett is very active. The average number of holes per annexe sett in the British survey was eight.

Subsidiary setts: These are usually at least 50 metres from a main sett, and do not have an obvious path connecting with another sett. They are not continuously active. The average number of holes per subsidiary sett in the British survey was four.

Outlying setts: These often have little spoil outside the holes, have no obvious path connecting them with another sett, and are only used sporadically. When not in use by Badgers, they are often taken over by foxes or even rabbits. However, they can still be recognised as Badger setts by the shape of the tunnel (not the actual entrance hole), which is at least 25 centimetres in diameter and rounded or a flattened oval shape (i.e. broader than high). Fox and Rabbit tunnels are smaller and often taller than broad. The average number of holes per outlying sett in the British survey was two.

Note: These sett definitions form part of a continuum, and setts do not always fit neatly into these categories.

Appendix F13

Wintering and Breeding Bird Assessment

MILTON KEYNES EAST
BREEDING AND WINTERING BIRD ASSESSMENT

Prepared for St James

by

Hankinson Duckett Associates

HDA ref: 2090.52

February 2020

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HDA Document Control and Quality Assurance Record

APPENDICES

A	Site Location and Bird Survey Area Plan
B	Phase 1 Habitat Survey Plan and Target Notes (HDA, 2020)
C	Breeding Bird Survey Results Summary Table
D	Wintering Bird Survey Results Summary Table
E	Site Evaluation Methodology

1 INTRODUCTION

1.1 Introduction and site description

1.1.1 This report describes the results of breeding and wintering bird surveys carried out at approximately 362ha of land at Newport Pagnell, Buckinghamshire hereinafter referred to as 'the site'. The site centre is located by National Grid Reference SP 893 415. The study was commissioned by St James in September 2018.

1.1.2 The site is located to the south of Newport Pagnell, on the north-eastern edge of Milton Keynes, Buckinghamshire. The site is dominated by agricultural land comprising intensively managed arable and grazed grassland fields with associated farmyards, agricultural buildings and residential farm houses. Field boundaries generally consist of hedgerows, treelines and fencing with occasional ponds and parcels of woodland, and the River Ouzel flows from south to north through the western part of the site. The site is bordered to the north by a construction site for residential development and the A422 beyond which lies the town of Newport Pagnell; to the east by arable farmland; to the west by the Pineham Nature Reserve and the M1 Motorway beyond which lies the town of Milton Keynes; and to the south by arable farmland.

1.1.3 The location and boundary of the site are shown in *Appendix A*. Detailed descriptions of the habitats within the site are given in the Ecological Appraisal (HDA, 2020) and a Phase 1 Habitat Plan and detailed target notes are provided in *Appendix B*.

1.2 Development proposals

1.2.1 Proposals for the site include mixed use development with associated landscaping and infrastructure.

1.3 Legislative context

1.3.1 All species of bird are protected through Part 1, Sections 1 to 8, of the 1981 Wildlife and Countryside Act (as amended). Subject to the provisions of Part 1 it is an offence to:

- Intentionally kill, injure or take any wild bird;
- Take, damage or destroy the nest of any wild bird whilst that nest is in use or being built;
- Take or destroy an egg of any wild bird;
- Possess or be in control of any live or dead wild bird, or anything derived from such a bird; and/or
- Possess or be in control of an egg of a wild bird, or any part of such an egg.

1.3.2 In addition, selected species of particular nature conservation interest included in Schedule 1 of the Act are afforded a higher level of protection, with significantly higher

penalties applying where an offence is committed. In addition to the basic level of protection described above, it is an offence to:

- Intentionally disturb any wild bird included in Schedule 1 whilst it is building a nest or is in, on or near a nest containing eggs or young; and/or
- Disturb dependent young of such a bird.

1.3.3 Some bird species included on Annex 1 of the Council Directive 79/409 EEC on the Conservation of Wild Birds are afforded additional protection under the 2019 Conservation of Habitats and Species (Amendment) (EU Exit) Regulations. The 2019 Regulations allow for the setting up of Special Protection Areas (SPAs) where internationally important populations occur.

1.3.4 Many bird species are scarce and/or have undergone significant declines in recent years and these are listed as priority species on the UK Biodiversity Action Plan (BAP) and identified as Species of Principal Importance under Section 41 of the 2006 Natural Environment and Rural Communities (NERC) Act. Section 40 of the NERC Act and planning policy requires that these bird species are a material consideration in the planning process.

1.3.5 The UKBAP and birds listed as Species of Principal Importance generally reflect those 'red listed' by the RSPB in their publication '*Birds of Conservation Concern*' (BoCC) (RSPB, 2015).

1.4 Scope and purpose of the report

1.4.1 An initial site walkover identified potential for Birds of Conservation Concern (RSPB, 2015), Species of Principal Importance and species specially protected under Schedule 1 of the 1981 Wildlife and Countryside Act to occur within the site. Bird surveys were subsequently instructed in order to identify the assemblage of birds at the site and to inform the likely implications of the proposed development on breeding and wintering birds.

1.4.2 This report presents the findings of the wintering and breeding bird survey work and identifies:

- The bird species using the site;
- Their status (wintering, breeding or otherwise);
- The approximate number and distribution of species meeting nature conservation criteria;
- The nature conservation value of the site for breeding and wintering birds, and;
- The potential effects of the proposed development on the ornithological interest of the site.

2 DESK STUDY

2.1 Statutory Designated Sites

2.1.1 No internationally designated sites are located within 10km of the site and no nationally designated sites are located within 5km of the site.

Non-statutory designated areas

2.1.2 Buckinghamshire and Milton Keynes Environmental Records Centre (BMERC) provided details of two Local Wildlife Sites (LWS) within 2km of the site. These include:

- Willen Lake LWS located approximately 410m to the south of the site at its closest point. This 93.36ha LWS supports UK BAP Priority Habitats including lowland meadow and open water with associated habitats of swamp, tall-herb fen and flowing water. The LWS is also noted for its bird populations and supports significant non-breeding numbers of qualifying bird species including 61 species meeting BTO Birds of Conservation Concern (BoCC) criteria; and
- Tongwell Lake LWS located approximately 800m to the south-west of the site at its closest point. This 20.90ha LWS comprises a lake with fringing aquatic vegetation, woodland and amenity grassland and is noted for supporting a wide range of bird species particularly during the winter. Over 120 bird species have been recorded since 1974 including 8 species included on the BoCC Red list.

2.2 Existing bird records

2.2.1 BMERC provided 1061 bird records, pertaining to 126 bird species, for the desk study area. Table 1 below details the notable bird species recorded within 2km of the site:

Table 1: Notable bird species recorded within desk study area

Common Name	Scientific Name	Annex 1 ¹	WCA 1 ²	NERC 41 ³	BOCC4 (2015) ⁴
Arctic Tern	<i>Sterna paradisaea</i>				
Avocet	<i>Recurvirostra avosetta</i>				
Barn Owl	<i>Tyto alba</i>				
Barnacle Goose	<i>Branta leucopsis</i>				
Bar-tailed Godwit	<i>Limosa lapponica</i>				
Bewick's Swan	<i>Cygnus columbianus</i> ssp. <i>bewickii</i>				
Bittern	<i>Botaurus stellaris</i>				
Black Redstart	<i>Phoenicurus ochruros</i>				
Black Tern	<i>Chlidonias niger</i>				
Black-headed Gull	<i>Chroicocephalus ridibundus</i>				

Common Name	Scientific Name	Annex 1 ¹	WCA 1 ²	NERC 41 ³	BOCC4 (2015) ⁴
Black-necked Grebe	<i>Podiceps nigricollis</i>				Orange
Black-tailed Godwit	<i>Limosa limosa</i>				Red
Brambling	<i>Fringilla montifringilla</i>				Green
Brent Goose	<i>Branta bernicla</i>				Orange
Bullfinch	<i>Pyrrhula pyrrhula</i>				Orange
Caspian Gull	<i>Larus cachinnans</i>				Orange
Cetti's Warbler	<i>Cettia cetti</i>				Green
Common Gull	<i>Larus canus</i>				Orange
Common Scoter	<i>Melanitta nigra</i>				Red
Common Tern	<i>Sterna hirundo</i>				Orange
Corn Bunting	<i>Emberiza calandra</i>				Red
Cuckoo	<i>Cuculus canorus</i>				Red
Curlew (Eurasian)	<i>Numenius arquata</i>				Red
Dartford Warbler	<i>Sylvia undata</i>				Orange
Dunlin	<i>Calidris alpina</i>				Orange
Dunnock	<i>Prunella modularis</i>				Orange
Fieldfare	<i>Turdus pilaris</i>				Red
Firecrest	<i>Regulus ignicapilla</i>				Green
Gadwall	<i>Anas strepera</i>				Orange
Gannet	<i>Morus bassanus</i>				Orange
Garganey	<i>Anas querquedula</i>				Orange
Glaucous Gull	<i>Larus hyperboreus</i>				Orange
Goldeneye	<i>Bucephala clangula</i>				Orange
Grasshopper Warbler	<i>Locustella naevia</i>				Red
Great B.b. Gull	<i>Larus marinus</i>				Orange
Green Sandpiper	<i>Tringa ochropus</i>				Orange
Greenshank	<i>Tringa nebularia</i>				Orange
Grey Partridge	<i>Perdix perdix</i>				Red
Grey Plover	<i>Pluvialis squatarola</i>				Orange
Grey Wagtail	<i>Motacilla cinerea</i>				Red
Greylag Goose	<i>Anser anser</i>				Orange
Hen Harrier	<i>Circus cyaneus</i>				Red
Herring Gull	<i>Larus argentatus</i>				Red
Hobby	<i>Falco subbuteo</i>				Green
House Martin	<i>Delichon urbicum</i>				Orange
House Sparrow	<i>Passer domesticus</i>				Red
Iceland Gull	<i>Larus glaucoides</i>				Orange
Kestrel	<i>Falco tinnunculus</i>				Orange
Kingfisher	<i>Alcedo atthis</i>				Orange
Kittiwake	<i>Rissa tridactyla</i>				Red
Knot	<i>Calidris canutus</i>				Orange
Lapwing	<i>Vanellus vanellus</i>				Red
Lesser B.b. Gull	<i>Larus fuscus</i>				Orange
Lesser Redpoll	<i>Carduelis cabaret</i>				Red
Lesser Sp. Woodpecker	<i>Dendrocopos minor</i>				Red

Common Name	Scientific Name	Annex 1 ¹	WCA 1 ²	NERC 41 ³	BOCC4 (2015) ⁴
Linnet	<i>Carduelis cannabina</i>				
Little Gull	<i>Larus minutus</i>				
Little Ringed Plover	<i>Charadrius dubius</i>				
Little Tern	<i>Sternula albifrons</i>				
Mallard	<i>Anas platyrhynchos</i>				
Marsh Harrier	<i>Circus aeruginosus</i>				
Marsh Tit	<i>Poecile palustris</i>				
Meadow Pipit	<i>Anthus pratensis</i>				
Mealy (Common) Redpoll	<i>Carduelis flammea</i>				
Mediterranean Gull	<i>Larus melanocephalus</i>				
Merlin	<i>Falco columbarius</i>				
Mistle Thrush	<i>Turdus viscivorus</i>				
Mute Swan	<i>Cygnus olor</i>				
Nightingale	<i>Luscinia megarhynchos</i>				
Osprey	<i>Pandion haliaetus</i>				
Oystercatcher	<i>Haematopus ostralegus</i>				
Peregrine Falcon	<i>Falco peregrinus</i>				
Pied Flycatcher	<i>Ficedula hypoleuca</i>				
Pink-footed Goose	<i>Anser brachyrhynchus</i>				
Pintail	<i>Anas acuta</i>				
Pochard	<i>Aythya ferina</i>				
Red Kite	<i>Milvus milvus</i>				
Red-necked Grebe	<i>Podiceps grisegena</i>				
Red-necked Phalarope	<i>Phalaropus lobatus</i>				
Redshank	<i>Tringa totanus</i>				
Redstart	<i>Phoenicurus phoenicurus</i>				
Redwing	<i>Turdus iliacus</i>				
Reed Bunting	<i>Emberiza schoeniclus</i>				
Ring Ouzel	<i>Turdus torquatus</i>				
Ringed Plover	<i>Charadrius hiaticula</i>				
Ruff	<i>Calidris pugnax</i>				
Sanderling	<i>Calidris alba</i>				
Sandpiper (Common)	<i>Actitis hypoleucos</i>				
Scaup	<i>Aythya marila</i>				
Shag	<i>Phalacrocorax aristotelis</i>				
Shelduck	<i>Tadorna tadorna</i>				
Short-eared Owl	<i>Asio flammeus</i>				
Shoveler	<i>Anas clypeata</i>				
Skylark	<i>Alauda arvensis</i>				

Common Name	Scientific Name	Annex I ¹	WCA 1 ²	NERC 41 ³	BOCC4 (2015) ⁴
Slavonian Grebe	<i>Podiceps auritus</i>				Red
Smew	<i>Mergellus albellus</i>				Orange
Snipe	<i>Gallinago gallinago</i>				Orange
Song Thrush	<i>Turdus philomelos</i>				Red
Spoonbill	<i>Platalea leucorodia</i>				Orange
Spotted Flycatcher	<i>Muscicapa striata</i>				Red
Spotted Redshank	<i>Tringa erythropus</i>				Orange
Starling	<i>Sturnus vulgaris</i>				Red
Stock Dove	<i>Columba oenas</i>				Orange
Swift	<i>Apus apus</i>				Orange
Tawny Owl	<i>Strix aluco</i>				Orange
Teal	<i>Anas crecca</i>				Orange
Temminck's Stint	<i>Calidris temminckii</i>				White
Tree Pipit	<i>Anthus trivialis</i>				Red
Tree Sparrow	<i>Passer montanus</i>				Red
Turnstone	<i>Arenaria interpres</i>				Orange
Turtle Dove	<i>Streptopelia turtur</i>				Red
Velvet Scoter	<i>Melanitta fusca</i>				Green
Whimbrel	<i>Numerius phaeopus</i>				Red
Whinchat	<i>Saxicola rubetra</i>				Red
White-fronted Goose	<i>Anser albifrons</i>				Red
Whooper Swan	<i>Cygnus cygnus</i>				Orange
Wigeon	<i>Anas penelope</i>				Orange
Willow Tit	<i>Poecile montanus/montana</i>				Red
Willow Warbler	<i>Phylloscopus trochilus</i>				Orange
Wood Sandpiper	<i>Tringa glareola</i>				Orange
Wood Warbler	<i>Phylloscopus sibilatrix</i>				Red
Woodcock	<i>Scolopax rusticola</i>				Red
Wryneck	<i>Jynx torquilla</i>				White
Yellow Wagtail	<i>Motacilla flava</i>				Red
Yellowhammer	<i>Emberiza citrinella</i>				Red
Yellow-legged Gull	<i>Larus michahellis</i>				Orange

Notes:

1 Species listed in Annex I of Council Directive 79/409/EEC on the conservation of wild birds

2 Species specially protected under Schedule 1 of the 1981 Wildlife and Countryside Act

3 Species included in the UK Biodiversity Action Plan and of Principal Importance under the 2006 NERC Act

4 Species included in the Birds of Conservation Concern Red and Amber lists (RSPB, 2015)

3 METHODOLOGY

3.1 Field survey

3.1.1 Both wintering and breeding bird surveys were carried out to inform the ornithological assessment of the site. The methodologies for the breeding and wintering bird surveys undertaken are described below. Due to the large size of the site, the site was divided

into 6 survey areas which were surveyed simultaneously by up to 3 surveyors on each survey visit. A plan showing the survey areas is provided in *Appendix A*.

3.1.2 Wintering bird survey

3.1.2.1 The field survey methodology used for the wintering bird survey broadly followed the territory mapping methods outlined by Bibby, Burgess, Hill & Mustoe (2000) carried out over 5 visits.

3.1.2.2 On each visit a route was followed that allowed all parts of the site and immediately adjacent habitat to be surveyed. The area covered by the wintering bird survey is shown in *Appendix A*. To avoid bias, routes were varied slightly from visit to visit. The survey visits were carried out by Adrian Meurer, Anna Senior and Hayley Snowdon of HDA, with all aural or visual bird encounters noted. In addition, other notable evidence of birds, such as raptor kills and owl pellets, was searched for and recorded during the survey.

3.1.2.3 Where species meeting the nature conservation criteria given in *Section 3.3.1* below were recorded these were mapped using standard BTO notation. Birds not meeting the nature conservation criteria were simply recorded as present and a subjective assessment of abundance was made.

Timing of visits

3.1.2.4 Surveys were generally carried out in dry and bright weather conditions with low winds, thereby maximising the opportunity to record bird activity. The time, date and weather conditions for each visit are shown in *Table 2*.

Table 2: Wintering bird survey timings and weather conditions

Visit	Visit dates	Time	Weather conditions
1	12 th November 2018	08:00 – 13:00	10-15°C, partially overcast (30-50% cloud) with sunny spells, dry, light breeze.
2	4 th December 2018	08:20 – 13:00	0-4°C, clear skies (<5% cloud), dry, still.
3	21 st January 2019/ 23 rd January 2019	08:30 – 13:45 / 10:45-13:45	2°C, overcast (90% cloud) at start becoming clearer from 11am, dry, light breeze / 0-2°C clear skies, dry, light breeze.
4	27 th February 2019	07:10 – 15:40	1-17°C, clear skies (<5% cloud), dry, very light breeze, frost on ground.
5	19 th March 2019	06:50 – 14:30	7-12°C, mostly overcast (80-90% cloud), dry, breeze.

3.1.2.5 Approximately 48 hours were spent recording birds over the 5 visits for the wintering bird survey.

3.1.3 Breeding bird survey

3.1.3.1 The field survey methodology used for the breeding bird survey broadly followed the territory mapping methods outlined by Bibby, Burgess, Hill & Mustoe (2000) carried out over 5 visits.

3.1.3.2 On each visit a route was followed that allowed all parts of the site and adjacent land to be surveyed. The area covered by the breeding bird survey is shown in *Appendix A*. To avoid bias, routes were varied slightly from visit to visit. The survey was carried out by Hayley Snowdon and Anna Potter of HDA, with all aural or visual bird encounters noted. In addition, other notable evidence of birds, such as raptor kills and owl pellets, was searched for and recorded during the survey.

3.1.3.3 Where species meeting the nature conservation criteria given in *Section 3.3.1* below were recorded these were mapped using standard BTO notation. Particular attention was given to recording evidence of breeding (e.g. song, display or territorial disputes) and recording different individuals of the same species simultaneously, indicating separate breeding territories. Birds not meeting the nature conservation criteria were simply recorded as present and a subjective assessment of abundance was made.

Timing of visits

3.1.3.4 Surveys were generally carried out in dry and bright weather conditions with low winds, thereby maximising the opportunity to record bird activity. All visits were timed to coincide with highest periods of bird activity (i.e. avoiding early afternoon) and included a visit during the peak breeding season for most species. The time, date and weather conditions for each visit are shown in *Table 3*.

Table 3: Breeding bird survey timings and weather conditions

Visit	Visit dates	Time	Weather conditions
1	29 th April 2019	07:30 – 13:15	6-12°C, clear skies (100% cloud), dry, light breeze.
2	24 th May 2019	07:30 – 15:00	12-21°C, clear skies (0% cloud), dry, bright, calm.
3	3 rd June 2019	08:00 – 17:00	12-20°C, partially overcast (10-80% cloud), dry, light breeze.
4	18 th June 2019	06:30 – 15:00	11-23°C, partially overcast (40-100% cloud), mostly dry with a single short period of drizzle, calm, humid.
5	9 th July 2019	10:30 – 17:15	19-21°C, overcast (100% cloud), dry, light breeze.

3.1.3.5 Approximately 65 hours were spent recording birds over the 5 visits for the breeding bird survey.

3.2 Interpretation of territory mapping results

3.2.1 Interpretation of the breeding bird field survey data follows the guidelines given for the territory mapping method in Bibby, Burgess, Hill and Mustoe (2000).

3.2.2 For territorial bird species of nature conservation interest, during the breeding bird survey the presence of a species in the same location on a minimum of two visits is generally taken to constitute a breeding pair, although in some instances a cautious approach has been applied when estimating the number of breeding pairs. For other species alternative measures were applied again following Bibby, Burgess, Hill & Mustoe (2000). All species recorded at the boundaries of the site have been included within the analysis.

3.3 Conservation evaluation

3.3.1 The ornithological importance of the site is assessed in two ways.

3.3.2 Firstly the conservation status of individual species is assessed by reference to the following criteria:

- Species listed on Annex 1 of the EU Birds Directive (Codified version: 2009/147/EC) (EC, 2009);
- Species specially protected under Schedule 1 of the 1981 Wildlife and Countryside Act (HMSO, 1981);
- Species included in the Birds of Conservation Concern red and amber lists (RSPB, 2015); and
- Species included in the UK Biodiversity Action Plan (BAP) / Species of Principal Importance identified under the Natural Environment and Rural Communities (NERC) Act 2006.

3.3.2 Secondly, the species assemblage of all birds is assessed with regard to published guidance on: (a) the selection of biological Sites of Special Scientific Interest (SSSIs) (*Appendix E: Drewitt et al., 2015*); and (b) Criteria for the Selection of Local Wildlife Sites in Berkshire, Buckinghamshire and Oxfordshire (TVERC and BMERC, 2009).

3.4 Limitations

3.4.1 A short period of precipitation was recorded during the fourth breeding bird survey. This was not found to have significantly affected levels of bird activity in the vicinity of the surveyors and as such is not considered a significant constraint to the findings of the breeding bird surveys.

3.4.2 The third wintering bird survey was carried out over two days due to surveyor availability. This may have resulted in an occasional double counting or under-recording of birds in some areas, where individuals or small groups moved to different areas of the site

between the surveys. This was taken into consideration during the analysis of the results and is not considered to be a significant limitation in this instance.

3.4.3 On a small number of occasions noise disturbance was experienced in the southern area of the site, including the flying of model aircraft and the use of sound cannons. These were not found to have caused a significant effect on the levels of bird activity in the vicinity of these areas and are not considered a significant constraint to the findings of the bird surveys.

3.4.4 No other constraints were encountered during the survey and it is considered that the survey findings allow a robust assessment of the likely importance of the site for breeding and wintering birds.

4 RESULTS

4.1 Wintering bird survey

4.1.1 A total of 58 bird species were recorded during the wintering bird survey, of which 55 were recorded directly from habitat associated with the site or immediately adjacent to the site (rather than simply flying over). A complete list of birds recorded during the wintering bird survey and a description of their distribution across the site is given in *Appendix D. Table 4* lists all species recorded in association with the site, together with an indication of the maximum number of individuals of species of conservation interest recorded using the site on any one visit.

Table 4: Wintering bird species at Land East of Milton Keynes: 12th November 2018 - 19th March 2019

Common Name	Latin Name	Notes on Occurrence
Mute Swan	<i>Cygnus olor</i>	Individuals and pairs recorded within the River Ouzel channel in the western area of the site, with up to eight individuals recorded on any one occasion. Small groups also recorded flying over the site.
Greylag Goose	<i>Anser anser</i>	Two individuals recorded adjacent to the river channel in the western area of the site during the fourth survey visit.
Canada Goose	<i>Branta canadensis</i>	Up to four individuals recorded on three of the survey visits, associated with the river corridor in the west of the site.
Mallard	<i>Anas platyrhynchos</i>	Up to two individuals recorded using the river corridor during three of the survey visits. A group of six individuals was recorded flying over the site on the third visit.

Common Name	Latin Name	Notes on Occurrence
Red-legged Partridge	<i>Alectoris rufa</i>	Small groups and individuals recorded in the central and southern areas of the site during the first, third and fifth surveys.
Grey Partridge	<i>Perdix perdix</i>	Eight individuals recorded foraging in the north-western area of the site on the first survey only. The birds flew off to the west outside of the site boundary.
Pheasant	<i>Phasianus colchicus</i>	Up to 12 individuals recorded across the site during all surveys.
Cormorant	<i>Phalacrocorax carbo</i>	One individual recorded flying over the west of the site on the first survey and one individual recorded in the river corridor on the third survey.
Red Kite	<i>Milvus milvus</i>	One individual recorded foraging over the site on the second survey and two individuals recorded foraging over the site on the fifth survey.
Sparrowhawk	<i>Accipiter nisus</i>	Individual recorded on two occasions, associated with the western and central areas of the site.
Buzzard (Common)	<i>Buteo buteo</i>	At least three individuals recorded foraging over the site on each survey visit, with up to 6 individuals recorded foraging across the site during the third and fourth survey visits.
Moorhen	<i>Gallinula chloropus</i>	Individual recorded during the fifth survey along the river corridor in the west of the site.
Lapwing	<i>Vanellus vanellus</i>	Individuals and small groups recorded during all surveys other than the first, with a maximum count of 22 individuals recorded in the south of the site during the second survey visit.
Woodcock	<i>Scolopax rusticola</i>	Individual recorded below a hedgerow in the southern area of the site on a single occasion during the second survey visit.
Snipe	<i>Gallinago gallinago</i>	Individual recorded on a single occasion during the third survey visit in association with a hedgerow in the central area of the site.
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	At least 10 individuals recorded flying over the site or foraging in fields on the first four survey visits. A maximum count of 88 individuals recorded during the second survey visit.
Feral Pigeon	<i>Columba livia</i> (domest.)	Five individuals recorded on the fourth survey.
Stock Dove	<i>Columba oenas</i>	Two individuals recorded in association with hedgerows in the northern area of the site during the first survey visit.

Common Name	Latin Name	Notes on Occurrence
Woodpigeon	<i>Columba palumbus</i>	Groups and individuals recorded across the site with a maximum count of 210 individuals across the site during the third survey.
Collared Dove	<i>Streptopelia decaocto</i>	Five individuals recorded on the fifth survey located within the northern and southern areas of the site.
Kingfisher	<i>Alcedo atthis</i>	Individual recorded during the first and fifth survey visits along the river corridor in the west of the site.
Green Woodpecker	<i>Picus viridis</i>	Up to four individuals recorded on three of the survey visits.
Great Spotted Woodpecker	<i>Dendrocopos major</i>	Up to four individuals recorded across the site during the first four surveys.
Kestrel	<i>Falco tinnunculus</i>	Individual recorded on three occasions foraging within the western, central and southern areas of the site.
Magpie	<i>Pica pica</i>	Up to 20 individuals recorded across the site during all survey visits.
Jackdaw	<i>Corvus monedula</i>	Individuals and small groups recorded across the site during all survey visits other than the first, with a maximum count of 35 individuals.
Rook	<i>Corvus fruilegus</i>	Groups and individuals recorded across all areas of the site, with a maximum count of 163 individuals recorded during the first survey.
Carrion Crow	<i>Corvus corone</i>	Up to 34 individuals recorded across the site on each survey visit.
Blue Tit	<i>Parus caeruleus</i>	Up to 57 individuals recorded on any one survey in association with hedgerow and woodland habitats.
Great Tit	<i>Parus major</i>	Up to 57 individuals recorded on any one survey in association with hedgerow and woodland habitats.
Skylark	<i>Alauda arvensis</i>	Individuals and small groups recorded across the site in association with arable fields. A maximum count of 44 individuals was recorded across the site during the fourth survey visit.
Long-tailed Tit	<i>Aegithalos caudatus</i>	12 individuals recorded in the southern area of the site during the first survey.
Chiffchaff	<i>Phylloscopus collybita</i>	One individual recorded on the fifth survey in the western area of the site.
Willow Warbler	<i>Phylloscopus trochilus</i>	One individual recorded within Pineham Nature Reserve immediately adjacent to the south of the site.
Reed Warbler	<i>Acrocephalus scirpaceus</i>	Two individuals recorded adjacent to the river in the western area of the site.
Wren	<i>Troglodytes troglodytes</i>	Up to 14 individuals recorded across the site on all survey visits.

Common Name	Latin Name	Notes on Occurrence
Starling	<i>Sturnus vulgaris</i>	Small group of 12 individuals recorded in the western area of the site in association with grassland on the first survey visit and a pair recorded in association with farm buildings in the southern area of the site during the fifth survey visit.
Blackbird	<i>Turdus merula</i>	At least 27 individuals recorded across the site on each visit in association with hedgerow and woodland habitats. A maximum count of 47 individuals was recorded across the site on the fourth survey visit.
Fieldfare	<i>Turdus pilaris</i>	Groups recorded across the site in association with arable fields and hedgerows. Groups ranging in size from 40 - 150 individuals recorded during the first and second surveys, with a maximum count of 212 individuals recorded across the site on the second survey. Up to five individuals recorded on the third and fifth surveys in the southern area of the site only.
Song Thrush	<i>Turdus philomelos</i>	Individuals recorded across the site in association with hedgerows and woodland. At least one individual was recorded during each survey with a maximum count of six individuals recorded across the site on the fourth survey visit.
Redwing	<i>Turdus iliacus</i>	Small groups recorded across farmland habitats during all surveys other than the first. Up to 50 individuals recorded across the site during a single survey visit.
Mistle Thrush	<i>Turdus viscivorus</i>	Small numbers of individuals recorded across the site during the fourth and fifth surveys. A maximum count of five individuals was recorded during the fifth survey.
Robin	<i>Erithacus rubecula</i>	At least 17 individuals recorded across the site on each visit.
Wheatear	<i>Oenanthe oenanthe</i>	Two individuals recorded in the central area of the site during the third and fourth survey visits and two individuals recorded in the northern area of the site during the fourth survey visit.
Dunnock	<i>Prunella modularis</i>	Up to 15 individuals recorded in association with hedgerows across the site during all survey visits.
House Sparrow	<i>Passer domesticus</i>	Six individuals recorded in the west of the site during the second survey visit and two individuals recorded in the south of the site during the third survey visit.

Common Name	Latin Name	Notes on Occurrence
Pied Wagtail	<i>Motacilla alba</i>	Small groups and individuals recorded across the site during all surveys, with up to 29 individuals recorded on a single survey.
Chaffinch	<i>Fringilla coelebs</i>	Up to 110 individuals recorded across the site on each survey visit.
Bullfinch	<i>Pyrrhula pyrrhula</i>	Three individuals recorded on the first survey visit only, located in the central and southern areas of the site.
Greenfinch	<i>Carduelis chloris</i>	Up to four individuals recorded across the site during the majority of survey visits.
Linnet	<i>Carduelis cannabina</i>	Up to 29 individuals recorded across the site during all survey visits. This species was recorded most consistently in the northern area of the site in association with hedgerows, but was recorded in all areas of the site on at least one occasion.
Goldfinch	<i>Carduelis carduelis</i>	Up to 50 individuals recorded across the site on each survey visit.
Siskin	<i>Carduelis spinus</i>	Five individuals recorded in the northern area of the site during the third survey visit.
Yellowhammer	<i>Emberiza citrinella</i>	A minimum of five individuals recorded across the site during all surveys other than the second. A maximum count of fourteen individuals was recorded during the fifth survey visit.
Reed Bunting	<i>Emberiza schoeniclus</i>	Low numbers of individuals recorded in the western areas of the site during the third, fourth and fifth surveys. A maximum count of nine individuals was recorded on the fifth survey.

4.1.2 In addition to the above, a further three species including Common Gull, Lesser Black-backed Gull and Herring Gull were recorded simply flying over the site on an occasional basis.

4.2 Breeding bird survey

4.2.1 A total of 54 bird species were recorded during the breeding bird survey, of which 39 are considered to be either breeding or hold a significant proportion of a breeding territory (either wholly or in part) in association with the site. A complete list of recorded birds and a description of their distribution across the site is given in *Appendix C. Table 5* lists all species thought to hold significant breeding territories within the site. For species meeting nature conservation criteria, *Table 5* also provides an estimate of the number of breeding territories or pairs of each species within the site. For species not meeting

nature conservation criteria, a simple estimate of abundance has been made (Abundant/Frequent/Occasional/Rare).

Table 5: Breeding bird species at Milton Keynes East: 29th April - 9th July 2019

Common Name	Scientific Name	Notes On Breeding/ Occurrence	No. Territories/ Breeding Pairs Associated With Site*
Mute Swan	<i>Cygnus olor</i>	Adult and juvenile recorded in river corridor on a number of survey visits. Likely 1 breeding pair within the site.	1
Mallard	<i>Anas platyrhynchos</i>	Small numbers of pairs/ individuals recorded within the river corridor in the west of the site and flying over the site. At least one pair likely breeding within the site.	1
Red-legged Partridge	<i>Alectoris rufa</i>	Occasional: Small numbers of pairs/ individuals recorded in association with arable habitats across the site. Likely breeding within the site.	n/a
Pheasant	<i>Phasianus colchicus</i>	Occasional: Individuals and pairs recorded on an occasional basis in association with farmland habitats across the site. Likely breeding within the site.	n/a
Red Kite	<i>Milvus milvus</i>	Pairs and individuals recorded foraging over the site on most survey visits. Likely hold part of a breeding territory within the site with nest in an off-site location.	1 (part of breeding territory)
Buzzard (Common)	<i>Buteo buteo</i>	Frequent: Individuals and small groups recorded foraging over site on all surveys. Adult with juveniles recorded on one survey indicating this species is likely breeding within or in close vicinity of the site.	n/a
Barn Owl	<i>Tyto alba</i>	One breeding territory within the site, potentially nesting in an undetermined building or hollow tree within or close to the site. Recorded foraging across farmland habitats across the site during the bat activity survey.	1
Lapwing	<i>Vanellus vanellus</i>	Up to four breeding territories recorded in association with the arable farmland habitats in the western and north-eastern areas of the site.	Up to 4
Woodpigeon	<i>Columba palumbus</i>	Abundant: High numbers of pairs/small groups recorded foraging within farmland habitats across the site.	n/a
Collared Dove	<i>Streptopelia decaocto</i>	Rare: Pairs recorded on an occasional basis within the site. Likely breeding within site.	n/a

Common Name	Scientific Name	Notes On Breeding/ Occurrence	No. Territories/ Breeding Pairs Associated With Site*
Green Woodpecker	<i>Picus viridis</i>	Occasional: Individual recorded on most survey visits in the western area of the site, with three individuals recorded on the fourth survey visit in the central area of the site. Likely breeding in small numbers within the site.	n/a
Magpie	<i>Pica pica</i>	Frequent: Pairs and individuals regularly recorded across the site. Likely breeding within the site.	n/a
Jackdaw	<i>Corvus monedula</i>	Abundant: Small groups recorded across the site during all survey visits. Highly likely to be breeding within the site near the Moulsoe buildings, where highest numbers were recorded.	n/a
Rook	<i>Corvus fruilegus</i>	Frequent: Large numbers of pairs/ small groups recorded foraging in association with woodland, grassland and farmland habitats across the site.	n/a
Carrion Crow	<i>Corvus corone</i>	Frequent: Small groups and pairs regularly recorded foraging throughout the site and on land immediately adjacent to the site. Highly likely breeding within site.	n/a
Blue Tit	<i>Parus caeruleus</i>	Abundant: Small groups and pairs regularly recorded foraging throughout the site and on land immediately adjacent to the site. Highly likely that a large number of breeding pairs are present within the site.	n/a
Great Tit	<i>Parus major</i>	Abundant: Small groups and pairs regularly recorded foraging throughout the site and on land immediately adjacent to the site. Highly likely that a large number of breeding pairs are present within the site.	n/a
Skylark	<i>Alauda arvensis</i>	Up to 41 breeding territories associated with arable and grassland fields across all areas of the site.	Up to 41
Long-tailed Tit	<i>Aegithalos caudatus</i>	Frequent: Small groups recorded in association with hedgerow, tree and woodland habitats across the site. Likely breeding within the site.	n/a
Chiffchaff	<i>Phylloscopus collybita</i>	Rare: Low numbers of individuals recorded within the site. Likely breeding within site.	n/a

Common Name	Scientific Name	Notes On Breeding/ Occurrence	No. Territories/ Breeding Pairs Associated With Site*
Blackcap	<i>Sylvia atricapilla</i>	Occasional: Individuals recorded occasionally within the site, with highest numbers recorded in the west of the site. Highly likely a small number of breeding territories are present within the site.	n/a
Whitethroat	<i>Sylvia communis</i>	Frequent: Moderate numbers of individuals recorded in association with hedgerow habitats across the site. Likely breeding within the site.	n/a
Sedge Warbler	<i>Acrocephalus schoenobaenus</i>	Three individuals recorded on a single survey in association with vegetation along the river corridor in the west of the site. Possibly breeding within site.	n/a
Wren	<i>Troglodytes troglodytes</i>	Frequent: Low-moderate numbers of individuals recorded in association with hedgerow and woodland habitats across the site. Likely breeding within the site.	n/a
Starling	<i>Sturnus vulgaris</i>	At least one breeding pair within the site, with four juveniles recorded within the western-most area of the site. Individuals also recorded in central area of the site.	1
Blackbird	<i>Turdus merula</i>	Abundant: Pairs and individuals recorded in association with hedgerow and woodland habitats across the site on all surveys.	n/a
Song Thrush	<i>Turdus philomelos</i>	Up to 4 breeding pairs in association with woodland in the south-eastern area of the site and hedgerows in the north-eastern area of the site.	Up to 4
Robin	<i>Erithacus rubecula</i>	Frequent: Regularly recorded in association with hedgerow and woodland habitat across the site.	
Dunnock	<i>Prunella modularis</i>	Up to 31 breeding territories in association with hedgerow habitats located across the site.	Up to 31
House Sparrow	<i>Passer domesticus</i>	Up to twenty-six breeding territories recorded in association with hedgerow habitats close to buildings within the site.	Up to 26

Common Name	Scientific Name	Notes On Breeding/ Occurrence	No. Territories/ Breeding Pairs Associated With Site*
Yellow Wagtail	<i>Motacilla flava</i>	At least two breeding territories; one in the central area of the site and one in the western area of the site. Pairs and individuals were also recorded foraging in the central area of the site and the south-western area of the site but were not displaying breeding behaviour at the time of these surveys.	At least 2
Pied Wagtail	<i>Motacilla alba</i>	Occasional: Small numbers of pairs/ individuals recorded in association with grazed grassland habitats on an occasional basis. Likely breeding within the site.	n/a
Chaffinch	<i>Fringilla coelebs</i>	Frequent: Small groups recorded foraging within hedgerows across the site on a regular basis.	n/a
Bullfinch	<i>Pyrrhula pyrrhula</i>	Up to one breeding pair associated with hedgerow and farmland habitat within the western area of the site.	1
Greenfinch	<i>Carduelis chloris</i>	Occasional: Individuals and small groups recorded on most surveys within the central-eastern and south-eastern areas of the site. Likely breeding in small numbers within the site.	n/a
Linnet	<i>Carduelis cannabina</i>	Up to nine breeding territories associated with hedgerows along arable fields in the eastern areas of the site.	Up to 9
Goldfinch	<i>Carduelis carduelis</i>	Frequent: Pairs and small groups recorded across the site on all of survey visits.	n/a
Yellowhammer	<i>Emberiza citrinella</i>	Up to 42 breeding territories recorded in association with hedgerows across the site.	42
Reed Bunting	<i>Emberiza schoeniclus</i>	Up to six breeding pairs recorded in association with vegetation along the river corridor or within neighbouring fields in the west of the site.	Up to 6

*Only species meeting nature conservation criteria holding significant breeding territory over the site are considered in this column.

4.2.2 A further 13 species, not including species simply flying over, were also recorded using land within the site during the breeding bird survey which are considered unlikely to breed or hold distinct territories over the site but may be breeding within the vicinity of the site. These include species either recorded as single birds, during one survey visit only, or in unsuitable breeding habitat. Such records may relate to species breeding nearby

and using the site on an occasional basis for feeding, loafing, etc. *Table 6* below details these species.

Table 6: Non-breeding bird species at Milton Keynes East: 29th April - 9th July 2019

Common Name	Scientific Name	NOTES ON BREEDING/ OCCURRENCE
Canada Goose	<i>Branta canadensis</i>	Rare: Small number of individuals recorded foraging or flying over the site on an occasional basis. Likely breeding in the vicinity of the site.
Grey Heron	<i>Ardea cinerea</i>	Rare: Individual recorded on a single occasion in association with the river corridor in the west of the site. Likely to be breeding in close vicinity of the site.
Sparrowhawk	<i>Accipiter nisus</i>	Rare: Individual recorded on a single occasion within the central area of the site near the Moulsoe Buildings. Unlikely breeding within the site.
Moorhen	<i>Gallinula chloropus</i>	Rare: Individual recorded on a single occasion within the pond in the east of the site. Unlikely breeding within the site.
Feral Pigeon	<i>Columba livia</i> (domest.)	Rare: Low numbers recorded foraging over site on a single occasion.
Swift	<i>Apus apus</i>	Individuals recorded flying over the site on three occasions. Unlikely breeding within the site.
Great Spotted Woodpecker	<i>Dendrocopos major</i>	Rare: Individual recorded on two occasions. Likely breeding in the vicinity of the site.
Kestrel	<i>Falco tinnunculus</i>	Rare: Individual recorded foraging within the south-eastern area of the site on a single occasion. Likely breeding in the vicinity of the site.
Swallow	<i>Hirundo rustica</i>	Frequent: Moderate numbers of pairs/ small groups recorded foraging over arable fields. No nest sites recorded.
Reed Warbler	<i>Acrocephalus scirpaceus</i>	Rare: Individual recorded on a single occasion in association with the river corridor in the west of the site. Unlikely to be breeding within site.
Nuthatch	<i>Sitta europaea</i>	Rare: Individual recorded on a single occasion in the north of the site.
Grey Wagtail	<i>Motacilla cinerea</i>	Rare: Individual recorded on a single survey in the central area of the site. Unlikely breeding within the site.
Meadow Pipit	<i>Anthus pratensis</i>	Rare: Individuals recorded in association with arable farmland habitat on a small number of occasions in the western area of the site and the south-eastern area of the site.

5 EVALUATION

5.1 Importance of individual species

5.1.2 Wintering bird survey

5.1.2.1 *Table 7* below lists the species recorded using the site during the wintering bird survey which meet at least one of a range of criteria relating to statutory protection or conservation importance. Species simply recorded as flying over are excluded from the list.

Table 7: Species recorded using the site during the wintering bird survey that meet at least one of a range of criteria relating to statutory protection or conservation importance.

COMMON NAME	LATIN NAME	Annex 1 Directive 2009/247/EC	Sched. 1 W&C Act 1982	UK BAP/ Sec.41 NERC Act.	BoCC 2015 (Red/ Amber/ Green/ No status)
Mute Swan	<i>Cygnus olor</i>				Amber
Greylag Goose	<i>Anser anser</i>				Amber
Mallard	<i>Anas platyrhynchos</i>				Amber
Grey Partridge	<i>Perdix perdix</i>				Red
Red Kite	<i>Milvus milvus</i>				Green
Lapwing	<i>Vanellus vanellus</i>				Red
Woodcock	<i>Scolopax rusticola</i>				Red
Snipe	<i>Gallinago gallinago</i>				Amber
Black-headed Gull	<i>Chroicocephalus ridibundus</i>				Amber
Stock Dove	<i>Columba oenas</i>				Amber
Kingfisher	<i>Alcedo atthis</i>				Amber
Kestrel	<i>Falco tinnunculus</i>				Amber
Skylark	<i>Alauda arvensis</i>				Red
Willow Warbler	<i>Phylloscopus trochilus</i>				Amber
Starling	<i>Sturnus vulgaris</i>				Red
Fieldfare	<i>Turdus pilaris</i>				Red
Song Thrush	<i>Turdus philomelos</i>				Red
Redwing	<i>Turdus iliacus</i>				Red
Mistle Thrush	<i>Turdus viscivorus</i>				Red
Dunnock	<i>Prunella modularis</i>				Amber
House Sparrow	<i>Passer domesticus</i>				Red
Bullfinch	<i>Pyrrhula pyrrhula</i>				Amber
Linnet	<i>Carduelis cannabina</i>				Red
Yellowhammer	<i>Emberiza citrinella</i>				Red
Reed Bunting	<i>Emberiza schoeniclus</i>				Amber

Notes on Table 7:

- 1 Species listed on Annex 1 of the EU Birds Directive (Codified version: 2009/147/EC) (EC, 2009). For the conservation of these species the 2019 Conservation of Habitats and Species (Amendment) EU Exit Regulations provides for the setting up of Special Protection Areas (SPAs) where internationally important populations exist.
- 2 Species specially protected by Schedule 1 of the 1981 Wildlife and Countryside Act (as amended).
- 3 Priority Species included in the UK Biodiversity Action Plan (BAP) / Species of Principal Importance under the 2006 Natural Environment and Rural Communities (NERC) Act.
- 4 Species included in the Birds of Conservation Concern 4 red and amber lists (RSPB, 2015). Red list – rapidly declining species and species of global conservation concern. Amber list – moderately declining species, rare breeders, internationally important and localised species, and those with an unfavourable conservation status in Europe.

- 5.1.2.2 Two species included on Annex 1 of the EU Birds Directive were recorded during the wintering bird survey, namely Red Kite and Kingfisher. Annex 1 species are those that are considered to be in danger of extinction; vulnerable to changes in their habitat; considered rare because of small populations or restricted local distribution; and/or require particular attention for reasons of the specific nature of habitat. For these species their most suitable territories must be conserved as Special Protection Areas (SPAs). As such consideration has been given to whether the site forms an internationally important area for the maintenance of the UK population of these species, either in isolation or in combination with adjacent land.
- 5.1.2.3 In recent years the Red Kite has become relatively common and widespread within its UK range, having an expanding population following recent reintroductions in association with common and widespread habitats, and has subsequently been relisted as being of 'Green' status (i.e. of least concern) under BoCC4 (RSPB, 2015). It is therefore extremely unlikely that the site would qualify as a SPA for this species, either in isolation or as part of a wider protected area.
- 5.1.2.4 Kingfishers are considered widespread in central and southern England with approximately 3,600–6,100 breeding pairs recorded throughout the UK. An individual Kingfisher was recorded on two occasions in association with the river corridor in the west of the site during the wintering bird surveys and Kingfisher were not considered to be breeding at the site during the breeding surveys, with no records of this species being made. As such, it is therefore extremely unlikely that the site would qualify as a SPA for this species, either in isolation or as part of a wider protected area.
- 5.1.2.5 In addition, Red Kite and Kingfisher are also included on Schedule 1 of the 1981 Wildlife and Countryside Act (as amended) and receive additional protection against disturbance of active nest sites relative to other breeding birds. No sightings of Kingfisher were recorded during the breeding bird survey and it is unlikely this species is breeding at the site, and although Red Kites were recorded foraging within the site during the breeding bird survey no breeding behaviour was recorded. As such, the additional protection afforded to these species is unlikely to apply at the Milton Keynes East site.
- 5.1.2.6 Two additional species included on Schedule 1 of the 1981 Wildlife and Countryside Act (as amended) were recorded during the wintering bird survey namely Fieldfare and Redwing.
- 5.1.2.7 Both Fieldfare and Redwing are present in large numbers in Britain during the winter, but only a very small number remain through the summer to breed. During the winter, the

British Redwing population is approximately 750,000 individuals, but following the northward migration in the spring, only 30-50 pairs remain to breed. The Fieldfare has a similar life history; 750,000 individuals may be present in Britain during the winter months, but during summer, only 1-5 pairs remain. The majority of records of Fieldfare and Redwing nesting in Britain occur in Northern Britain. It is therefore extremely unlikely that Fieldfare or Redwing are breeding on the site, as supported by the findings of the breeding bird survey. As such the additional protection afforded to these two species is unlikely to apply at this site.

5.1.2.8 During the wintering bird survey eleven red-listed bird species were recorded within the site. Species recorded include Lapwing, Woodcock, Skylark, Starling, Fieldfare, Song Thrush, Redwing, Mistle Thrush, House Sparrow, Linnet and Yellowhammer which are included on the red list under the criteria of having undergone a rapid ($\geq 50\%$) decline in UK breeding population over last 25 years and/or in the long-term, defined as the time from the first BoCC assessment (1969). *Table 8* below compares the UK wintering population of the red listed bird species in relation to the numbers recorded within the site.

Table 8: Wintering populations of red listed bird species

Species	UK Wintering Population (based on Musgrove <i>et al.</i> , 2013)	No. supported by site	Proportion of UK population supported by site (%)
Lapwing	650,000	22	0.003
Woodcock	1,400,000	1	0.00007
Skylark	3,000,000*	44	0.0014
Starling	3,800,000*	12	0.00003
Fieldfare	720,000	212	0.03
Song Thrush	2,400,000*	6	0.00025
Redwing	690,000	50	0.007
Mistle Thrush	340,000*	5	0.001
House Sparrow	10,600,000*	6	0.00006
Linnet	860,000*	29	0.003
Yellowhammer	1,420,000*	14	0.00099

* Wintering population of resident species estimated by doubling numbers of pairs/territories given by Musgrove *et al.* for the UK breeding population.

5.1.2.9 Of the red listed birds wintering at the Milton Keynes East site, in terms of British population, conservation status and number of wintering territories supported by the site, the species of highest nature conservation interest is Fieldfare with the site supporting up to 0.03% of the UK's wintering population of this species. Despite the rapid decline of the Fieldfare's UK breeding population, this species remains relatively common and widespread with a UK population of around 720,000 wintering individuals. Up to 212 Fieldfare were recorded across the site during the surveys although this number was

often much lower, representing only a very small proportion (<0.03%) of the British wintering population.

5.1.2.10 Twelve amber listed species were recorded wintering at the site, including Mute Swan, Greylag Goose, Mallard, Snipe, Black-headed Gull, Stock Dove, Kingfisher, Kestrel, Willow Warbler, Dunnock, Bullfinch and Reed Bunting. These species are included on the BoCC amber list due to the following:

- Mute Swan, Mallard and Black-headed Gull are included on the BoCC amber list due to moderate (25% to 50%) non-breeding population declines over the past 25 years and/ or long-term;
- Snipe is included on the BoCC amber list due to moderate (25% to 50%) breeding range decline;
- Greylag Goose is included on the BoCC amber list due to over 50% of the non-breeding population being found at ten or fewer sites in the UK;
- Stock Dove is included on the BoCC amber list due to the UK supporting at least 20% of the European breeding population;
- Kingfisher is included on the BoCC amber list due to it being listed as Vulnerable on the IUCN Red List¹; and
- Kestrel, Willow Warbler, Dunnock, Bullfinch and Reed Bunting are included on the BoCC amber list due to moderate (25% to 50%) breeding population declines over the past 25 years and/ or long-term.

5.1.2.11 *Table 9* below shows the UK wintering population of the amber listed bird species in relation to the numbers recorded within the site.

¹ Vulnerable (IUCN Red List, 2012): A taxon is Vulnerable when it is considered to be facing a high risk of extinction in the wild in Great Britain.

Table 9: Wintering populations of amber listed bird species

Species	UK Wintering Population (based on Musgrove <i>et al.</i> , 2013)	No. supported by site	Proportion of UK population supported by site (%)
Mute Swan	79,000	5	0.006
Greylag Goose	230,000	2	0.0009
Mallard	710,000	2	0.0003
Snipe	1,100,000	1	0.00009
Black-headed Gull	2,200,000	84	0.004
Stock Dove	520,000*	2	0.0004
Kingfisher	7,600 – 12,800*	1	0.0002
Kestrel	92,000*	1	0.0001
Willow Warbler	4,800,000*	1	0.00002
Dunnock	5,000,000	15	0.000003
Bullfinch	440,000	3	0.0007
Reed Bunting	1,420,000*	9	0.0006

* Wintering population of resident species estimated by doubling numbers of pairs/territories given by Musgrove *et al.* for the UK breeding population.

5.1.2.12 All the above species remain relatively common and widespread in Britain however and the site holds only a very small proportion (<0.01%) of their British breeding populations. As such it is considered that the site is unlikely to be of significant importance for the populations of amber listed bird species recorded during the wintering bird surveys.

5.1.2.13 A description of the distribution of red and amber list breeding birds across the site and the habitats with which they were associated is given in *Appendix D*.

5.1.2.14 Lapwing, Skylark, Starling, Song Thrush, Dunnock, House Sparrow, Bullfinch, Linnet, Yellowhammer and Reed Bunting are also UK Biodiversity Action Plan (BAP) priority species (UKBAP, 2007) and listed as Species of Principal Importance under Section 41 of the 2006 NERC Act. Although these are all relatively common and widespread species and the site is only likely to support a small proportion of their British wintering populations, where possible development proposals should seek to maintain opportunities at the site for these species following development. This is discussed further in *Section 6* below.

5.1.3 *Breeding bird survey*

5.1.3.1 *Table 10* lists the species recorded during the survey that are thought to hold breeding territories on or over the site which meet at least one of a range of criteria relating to statutory protection or conservation importance. Species recorded during the survey but not thought to hold significant territory on or over the site are excluded from *Table 10*

and, unless specifically mentioned, are not used in the evaluation of the importance of the site for individual breeding bird species.

Table 10: Species recorded holding breeding territories on or over the site that meet at least one of a range of criteria relating to statutory protection or conservation importance.

Common Name	Scientific Name	Annex I ¹	WCA 1 ²	NERC 41 ³	BOCC4 (2015) ⁴
Mute Swan	<i>Cygnus olor</i>				Amber
Mallard	<i>Anas platyrhynchos</i>				Amber
Barn Owl	<i>Tyto alba</i>				Green
Lapwing	<i>Vanellus vanellus</i>				Red
Skylark	<i>Alauda arvensis</i>				Red
Starling	<i>Sturnus vulgaris</i>				Red
Song Thrush	<i>Turdus philomelos</i>				Red
Dunnock	<i>Prunella modularis</i>				Amber
Red Kite	<i>Milvus milvus</i>				Green
House Sparrow	<i>Passer domesticus</i>				Red
Yellow Wagtail	<i>Motacilla flava</i>				Red
Bullfinch	<i>Pyrrhula pyrrhula</i>				Amber
Linnet	<i>Carduelis cannabina</i>				Red
Yellowhammer	<i>Emberiza citrinella</i>				Red
Reed Bunting	<i>Emberiza schoeniclus</i>				Amber

Notes on Table 10:

- 1 Species listed on Annex 1 of the EU Birds Directive (Codified version: 2009/147/EC) (EC, 2009). For the conservation of these species member states shall classify in number and size the most suitable territories for these species as Special Protection Areas (SPAs).
- 2 Species specially protected by Schedule 1 of the 1981 Wildlife and Countryside Act (as amended).
- 3 Priority Species included in the UK Biodiversity Action Plan (BAP) (UKBP, 2007)/Species of Principal Importance under the 2006 Natural Environment and Rural Communities (NERC) Act.
- 4 Species included in the Birds of Conservation Concern 4 red and amber lists (RSPB, 2015). Red list – rapidly declining species and species of global conservation concern. Amber list – moderately declining species, rare breeders, internationally important and localised species, and those with an unfavourable conservation status in Europe.

5.1.3.2 Red Kite was the only species included on both Annex 1 of the EU Birds Directive and Schedule 1 of the 1981 Wildlife and Countryside Act (as amended) recorded as holding a breeding territory within or over the site during the 2019 breeding bird survey due to this

species having a regular presence foraging over the site in similar locations, indicating a likely nesting site nearby. However, as no nest site or nesting behaviour was recorded during the surveys it is likely the site forms part of a much larger breeding territory for this species. As mentioned in *Section 5.1.2.3* above, Red Kite has become relatively common and widespread within its UK range in recent years. In addition, only a small number of individuals was recorded at the site and it is therefore extremely unlikely that the site would qualify as a SPA for this species, either in isolation or as part of a wider protected area.

- 5.1.3.3 Barn Owl was the only other bird species included in Schedule 1 of the 1981 Wildlife and Countryside Act (as amended) considered to be nesting within, or close to, the site. Although no nest site for this species was identified within the site itself, it is conceivable that this species is nesting within one of the buildings or trees.
- 5.1.3.4 Thirteen of the species recorded breeding in association with the site are included in the Birds of Conservation Concern (BoCC) red or amber lists (RSPB, 2015). Although inclusion on these lists does not confer special statutory protection or present any legal constraints on development, the species concerned are all of conservation importance and therefore mitigation would be required if significant populations of such species are likely to be affected by development of the site. This is not the case for the Milton Keynes East site.
- 5.1.3.5 Eight red-listed bird species were recorded breeding within or holding significant breeding territory over the site namely Lapwing, Skylark, Starling, Song Thrush, House Sparrow, Yellow Wagtail, Linnet and Yellowhammer. These species are included on the red list under the following criteria:
- Lapwing, Starling and Yellow Wagtail are included on the BoCC red list due to severe decline in their UK breeding population size (>50%) over 25 years and over the longer term defined as the entire period used for assessments since the first BoCC review in 1969; and
 - Skylark, Song Thrush, House Sparrow, Linnet and Yellowhammer are included on the BoCC red list due to severe decline in their UK breeding population size (>50%) over the longer term defined as the entire period used for assessments since the first BoCC review in 1969.
- 5.1.3.6 *Table 11* below shows the UK population of the red listed bird species in relation to the number of territories or breeding pairs supported by the site.

Table 11: Breeding populations of red listed bird species

Species	UK Breeding Population (based on Musgrove <i>et al.</i> , 2013)	No. territories supported by site	Proportion of UK population supported by site (%)
Lapwing	140,000	4	0.003
Skylark	1,500,000	41	0.002
Starling	1,900,000	1	0.00005
Song Thrush	1,200,000	4	0.0003
House Sparrow	5,300,000	26	0.0007
Yellow Wagtail	15,000	2	0.013
Linnet	430,000	9	0.002
Yellowhammer	710,000	42	0.006

5.1.3.7 Other than Yellow Wagtail, all the red listed species recorded within the site remain relatively common and widespread in Britain and the site holds only a very small proportion (<0.01%) of their UK breeding populations. Yellow Wagtail was found to hold at least two breeding territories within the site accounting for 0.013% of the UK population. Breeding behaviour such as being recorded in the same location twice or more, calling, travelling with food and the presence of juveniles with an adult female all indicated that this species was breeding within the site. Up to 7 individuals of this species, including juveniles, were recorded on a single occasion, with this species recorded foraging within both arable and grassland habitats within the site. Yellow Wagtails favour damp habitats such as wet meadows, grazing marshes and river valleys, but also use arable fields, for breeding. As such it is possible that the habitats within the site form only a small part of a much wider foraging range for the individuals recorded during the breeding bird survey. Notwithstanding this, breeding habitat at the site for Yellow Wagtail has the potential to be lost as part of the proposed development. The importance of the site for this species is considered further below.

5.1.3.8 Although Skylark, Linnet and Yellowhammer are relatively common species and hold only a very small proportion of their UK breeding populations (0.002%, 0.002% and 0.006% respectively) at the site, a relatively large number of breeding territories were recorded during the surveys. Although similar opportunities to those provided by the site are abundant in the wider area and, like many small farmland birds, the likely cause of national population declines in these bird species is agricultural intensification, particularly the increased use of pesticides and decrease in winter stubble left in arable fields resulting in loss of foraging opportunities, the landscape scheme for the proposed development should give consideration to the retention and enhancement of suitable habitats for these species and, where this is not possible, off-site compensation may be required. This is discussed further in *Section 6* below.

5.1.3.9 A further five bird species meeting nature conservation criteria are considered to hold breeding territories within the site namely Mute Swan, Mallard, Dunnock, Bullfinch and Reed Bunting. These species are included on the amber list under the following criteria:

- Mute Swan, Mallard, included on the BoCC amber list due to moderate (25% to 50%) non-breeding population declines over the past 25 years and/ or long-term; and
- Dunnock, Bullfinch and Reed Bunting are included on the BoCC amber list due to moderate (25% to 50%) breeding population declines over the past 25 years and/ or long-term.

Table 12: Breeding populations of amber listed bird species.

Species	UK Breeding Population (based on Musgrove <i>et al.</i> , 2013)	No. territories supported by site	Proportion of UK population supported by site (%)
Mute Swan	6,400	1	0.016
Mallard	Up to 146,000	1	0.0007
Dunnock	2,500,000	31	0.001
Bullfinch	220,000	1	0.0005
Reed Bunting	250,000	6	0.002

5.1.3.10 Of these amber listed species recorded breeding at the site, in terms of UK population, conservation status and number of territories associated with the site, the species of greatest nature conservation interest is Mute Swan which has an estimated UK breeding population of 6,400 breeding pairs (Musgrove *et al.*, 2013). Up to 2 individuals of this species, usually including a female with a juvenile, were recorded within the river channel in the west of the site. Based on counts of individuals it is expected that up to 1 breeding pair could hold territories associated with the site which equates to 0.016% of the UK breeding population. The likely contributor of the Mute Swan's population decline is lead poisoning from the use of lead fishing weights, which has largely been solved by a ban on the sale of these products. The site is dominated by arable and grassland fields bordered by hedgerows, with a river flowing through the western area of the site. Similar habitat is widely available in the wider area, and as such, it is likely that the habitats within the site form only a small part of a much wider foraging range for the individuals recorded during the breeding bird survey and for this species in general. It is therefore considered unlikely that the site is of significant importance for the populations of Mute Swan and other wetland birds, including Mallard, recorded at the site during the breeding bird survey.

5.1.3.11 A description of the distribution of red and amber listed birds across the site and the habitats with which they were associated is given in *Appendix C*.

5.1.3.12 A number of the species recorded (including Skylark, Linnet, Yellowhammer, Reed Bunting, Yellow Wagtail, Starling, Dunnock, House Sparrow, Bullfinch, Song Thrush and Lapwing) are also UK Biodiversity Action Plan (BAP) species (UKBAP, 2007). Therefore, where possible development proposals should seek to maintain opportunities for breeding by these species at the site following development. This is discussed further in *Section 6* below.

5.2 Importance of the site

Wintering

5.2.1.1 The site does not comprise an area of semi-natural habitat supporting greater than 1% of the wintering population of any one species or an assemblage of greater than 20,000 wetland birds and is not regularly used by an exceptional population of a nationally or county rare or rapidly declining species (red-listed species). The site is therefore not eligible for selection as a SPA or SSSI on the basis of its value for wintering or non-breeding birds.

5.2.1.2 A document prepared by Buckinghamshire and Milton Keynes Environmental Records Centre (BMERC) and Thames Valley Environmental Records Centre (TVERC) titled '*Criteria for the Selection of Local Wildlife Sites in Berkshire, Buckinghamshire and Oxfordshire*' (BMERC and TVERC, 2009), provides information and advice on how Local Wildlife Sites should be identified. Criteria for selection of a Local Wildlife Site in relation to birds is outlined in *Section 5.7* of the document and takes into account consideration of a site as a Local Wildlife Site for its notable breeding birds, notable non-breeding birds and sites which support a significant assemblage of birds associated with a habitat present on the site.

5.2.1.3 Species recorded at the site which are listed as notable species on the Local Wildlife Site (LWS) criteria 5.7.A for non-breeding birds include Red Kite. Red Kite was recorded in low numbers during both the wintering and breeding bird surveys and was considered to hold part of a breeding territory over the site, due to its regular presence. The non-breeding criteria requires that the site supports 'significant non-breeding numbers' and also must have a known roost site for Red Kite. As no breeding behaviour or no known nesting sites were recorded and Red Kites were only recorded in low numbers at the site, it is considered highly unlikely that the site would be considered as a Local Wildlife Site based on the criteria for this species.

5.2.1.4 Although the site is not considered to qualify for designation on the basis of its wintering bird assemblage, either wholly or in part, the site does support a number of wintering bird species of nature conservation interest, albeit in very low numbers of relatively common and widespread species. Similar quality habitat to that found in the site is however

relatively abundant in the surrounding area and as such the site is considered to be of no more than low district value for wintering birds. This interest largely arises from the size of the site rather than a reflection of habitat quality. The proposals should nonetheless seek to include measures to maintain opportunities for populations of the species of nature conservation interest recorded during the wintering bird survey where possible. These are discussed in *Section 6* below.

5.2.2 *Breeding birds*

5.2.2.1 Published guidance on the selection of biological SSSIs (Drewitt *et al.*, 2015) provides a method for evaluating assemblages of breeding birds. Sites are eligible for selection as SSSIs if they support an especially good range of bird species characteristic of the habitat. This method has been employed to evaluate the site, using updated national population estimates, described in *Appendix E*.

5.2.2.2 The site supports a number of avian habitats including a network of hedgerows along the site boundaries, woodland, arable land, the wet grassland fields in the west of the site and the river corridor. The site does not however qualify as a candidate SSSI, either wholly or in part, for its lowland damp grassland, lowland farmland or woodland bird assemblages, as the site index value scores are below the threshold site index value for these habitats (10 [41.6%] for lowland damp grassland, 15 [57.7%] for lowland farmland and 13 [33.3%] for woodland).

5.2.2.3 As described above, BMERC and TVERC provide information and advice on how Local Wildlife Sites should be identified in the publication '*Criteria for the Selection of Local Wildlife Sites in Berkshire, Buckinghamshire and Oxfordshire*' (BMERC and TVERC, 2009). Criteria for selection of a Local Wildlife Site in relation to birds is outlined in *Section 5.7* of the document and takes into account consideration of a site as a Local Wildlife Site for its notable breeding birds, notable non-breeding birds and sites which support a significant assemblage of birds associated with a habitat present on the site.

5.2.2.4 Species recorded at the site which are listed as notable species on the Local Wildlife Site (LWS) criteria 5.7.A for breeding birds include Grey Heron. Grey Heron was only recorded at the site on a single occasion, and although it is likely this species uses the site for foraging on an occasional basis, it is not considered to be breeding at the site and as such does not meet the criteria of 'two nests' being present for the site to be considered as a LWS.

5.2.2.5 Criteria 5.7.B of the LWS selection criteria uses an index approach for breeding birds within six different habitat types. Qualifying species and scores for criteria 5.7.B are listed in the tables included in *Appendix F*. The breeding bird assemblage for each of the

relevant habitats within the site do not meet the qualifying score for consideration as a LWS. As such, the site is not considered wholly, or in part, to qualify as a LWS for its bird assemblage. Table 13 below identifies the site's score for each supported habitat type and whether the score qualifies for consideration of the site as a LWS.

Table 13: Index scores for assemblage of birds associated with habitats present on the site

Habitat Type	Total index score for site	Qualifying score	Does site meet LWS criteria?
Lowland damp grassland	4	21	No
Lowland open waters and margins*	20	47	No
Woodland	14	52	No

* Reflects the most similar habitat type to the river habitat that is located within the site.

5.2.2.6 Whilst the site is not considered to qualify for designation on the basis of its breeding bird assemblage, either wholly or in part, the site does support a number of breeding bird species of nature conservation interest, albeit in mostly very low numbers of relatively common and widespread species. Two breeding pairs of Yellow Wagtail were recorded within the site and although this accounts for 0.013% of the British population of this species, similar quality habitat to that found in the site is relatively abundant in the surrounding area and as such the site is considered to be of no more than low district interest for breeding birds. As with the wintering bird interest of the site, this largely relates to the large size of the site rather than the quality of the habitats present. The proposals should nonetheless seek to include measures to maintain opportunities for populations of the species of nature conservation interest recorded during the breeding bird survey where possible. This is discussed further in *Section 6* below.

6 RECOMMENDATIONS

6.1 All species recorded during the survey are relatively common and widespread, with the site supporting only a very small proportion of the British wintering and/or breeding population of any one species.

6.2 The site is considered to be of no higher than low district interest for birds on the basis of the quality and extent of habitats present, the species of nature conservation interest recorded and their respective abundance. The site is dominated by intensively farmed arable habitats which in general are of relatively low value to breeding birds, and habitats of higher ornithological interest including woodland, hedgerows, scattered mature trees, grassland, scrub and wetland (river) are often limited in extent and restricted to field boundaries or have interfaces with off-site habitats. Furthermore, habitats providing similar opportunities for birds are relatively abundant in the local area. The site does not

meet the requisite score for qualification as a candidate SPA or SSSI and is highly unlikely to qualify, either wholly or in part, as a Local Wildlife Site (LWS).

Maintenance of opportunities for wintering and breeding birds

- 6.3 Notwithstanding the above, where possible, the proposals for the site should seek to maintain and enhance opportunities for bird species of nature conservation interest recorded holding wintering and/or breeding territories on or over the site during the survey.
- 6.4 The bird species of highest conservation interest recorded during the surveys in the context of the site is the invertebrate eating passerine Yellow Wagtail. Yellow Wagtails are associated with arable farmland, wet pastures and upland hay meadow habitats and migrate from Africa to the UK to breed between April and September. The cause of their population decline is unknown but is likely due to a combination of habitat loss and agricultural intensification. This species was recorded foraging and showing signs of breeding behaviour in arable fields across the site with at least two breeding pairs located in the westernmost arable field and an arable field in the central area of the site. It is highly likely that the arable fields associated with the Yellow Wagtail records will be lost to the proposed development scheme. Due to the similar arable and grassland habitats being abundant in the wider area and nationally, it is considered that loss of these habitats from the site in isolation are unlikely to result in a significant adverse impact on the conservation status of this species. Notwithstanding this, the landscape strategy for the site should seek to maintain opportunities for this species at the site, such as retention of wet meadow grassland habitats along the River Ouzel in the west of the site.
- 6.5 The proposed development would result in the loss of open farmland habitats and this would inevitably affect current populations of species of conservation interest associated with the open fields, including Skylark and Lapwing. Skylarks in particular, were recorded as holding a relatively large number of breeding territories (41 territories) across the site during the breeding bird survey. These birds are associated with open, relatively undisturbed habitats and it is unlikely that suitable opportunities could be incorporated into the open space strategy for the proposed development. As such, off-site compensation works may be required to enhance farmland habitat in the wider area. This could include the provision of 'Skylark plots' within retained arable land in the vicinity of the site.
- 6.6 The site also supports a relatively large number of breeding territories for Yellowhammer (up to 42 territories) associated with hedgerow habitats bordering arable fields across the site. Yellowhammer are associated with species-rich hedgerow and scrub habitats within

areas of open countryside and are known to avoid towns and busy inhabited areas. As such, consideration should be given to the retention, enhancement and creation of habitat for this species within the open space strategy for the site, ensuring that open habitat is retained adjacent to hedgerow and scrub habitats, particularly in areas bordering retained off-site arable habitats to the east of the site.

6.7 Notwithstanding the above, the intensively farmed arable habitats that dominate the site offer limited opportunities for many species of nature conservation interest recorded at the site, and the proposed development could provide opportunity to create new habitats of high value (both for birds and in their own right), benefitting other species of conservation concern currently found at the site and potentially providing opportunities for other species not already present. This could be achieved through the following measures:

- Retention and enhancement of the existing network of linear habitats within the site including hedgerows, treelines and mature scattered trees. Where this is not possible, provide alternative habitat corridors to allow movement of wildlife across and around the site.
- Where possible, retention of existing woodland, hedgerows, scrub, mature trees, wet grassland, the river corridor and ponds within the site, and enhancement of these habitats through sensitive management and complementary planting. Encourage deadwood habitat where safe to do so to provide opportunities for hole nesting birds such as blue tits.
- Creation of new wetland habitats to create new opportunities for wetland birds, either as standalone features or as part of the site surface water drainage strategy. This could include a range of additional permanent and ephemeral waterbodies, ditches, swales, wet woodland and wet grassland habitats.
- Provision of new high value habitats for birds and other wildlife within areas of proposed informal open space such as species-rich meadow and rough grassland, native woodland, species-rich hedgerows and scrub habitats. Consideration could be given to the sowing of grassland or wildflower seed mixes formulated to provide a food source for small farmland birds such as Linnet and Yellowhammer.
- Planting schemes should use native species where appropriate, using species characteristic of the area, sourced from stock of local provenance where possible;
- Use of high value plants for foraging birds within the landscape planting scheme, including fruit and nut producing species in addition to those with high pollen and nectar yields (attracting invertebrate prey);
- Provision of a range of bird boxes situated on new buildings and existing trees within the proposed development and areas of open space. Within the built environment these could include boxes specifically designed to encourage House Sparrow, Starling and Swift. Consideration should also be given to the provision of Kestrel and Owl boxes on suitable retained mature trees overlooking areas of grassland within informal open space in the east of the site and the open countryside beyond.

- 6.8 It is recommended that any hedgerow or scrub management works should be carried out during January and/or February, in order to allow the majority of fruit and nuts to be eaten by birds prior to removal and to avoid impacts on nesting birds (see below).

Protection of birds during site clearance works

- 6.9 All breeding birds should be afforded the basic level of protection provided by the 1981 Wildlife and Countryside Act (as amended), i.e. protection of nest sites during the breeding season. It is recommended that any tree felling, ground clearance, hedgerow management, scrub clearance and building demolition works are done outside of the bird nesting season (generally taken as March to September inclusive) to avoid risk of an offence being committed. In the event that this is not possible, these works should be overseen by a suitably qualified ecologist who would check for nesting birds prior to and during works. In the event that nesting birds are present, it will be necessary to delay works in the vicinity of an active nest until nesting is complete.

- 6.10 In addition, as Barn Owls can breed throughout the year it is recommended that any initial works to suitable buildings between October and February are also preceded by a check by a suitably qualified ecologist to confirm absence of this species prior to works commencing.

7 CONCLUSION

- 7.1 In conclusion, subject to the implementation of sufficient retention, creation and enhancement of habitat for notable bird species recorded within the site as described above, the proposed development at the Milton Keynes East site is considered unlikely to result in a significant adverse impacts on local populations of breeding birds.

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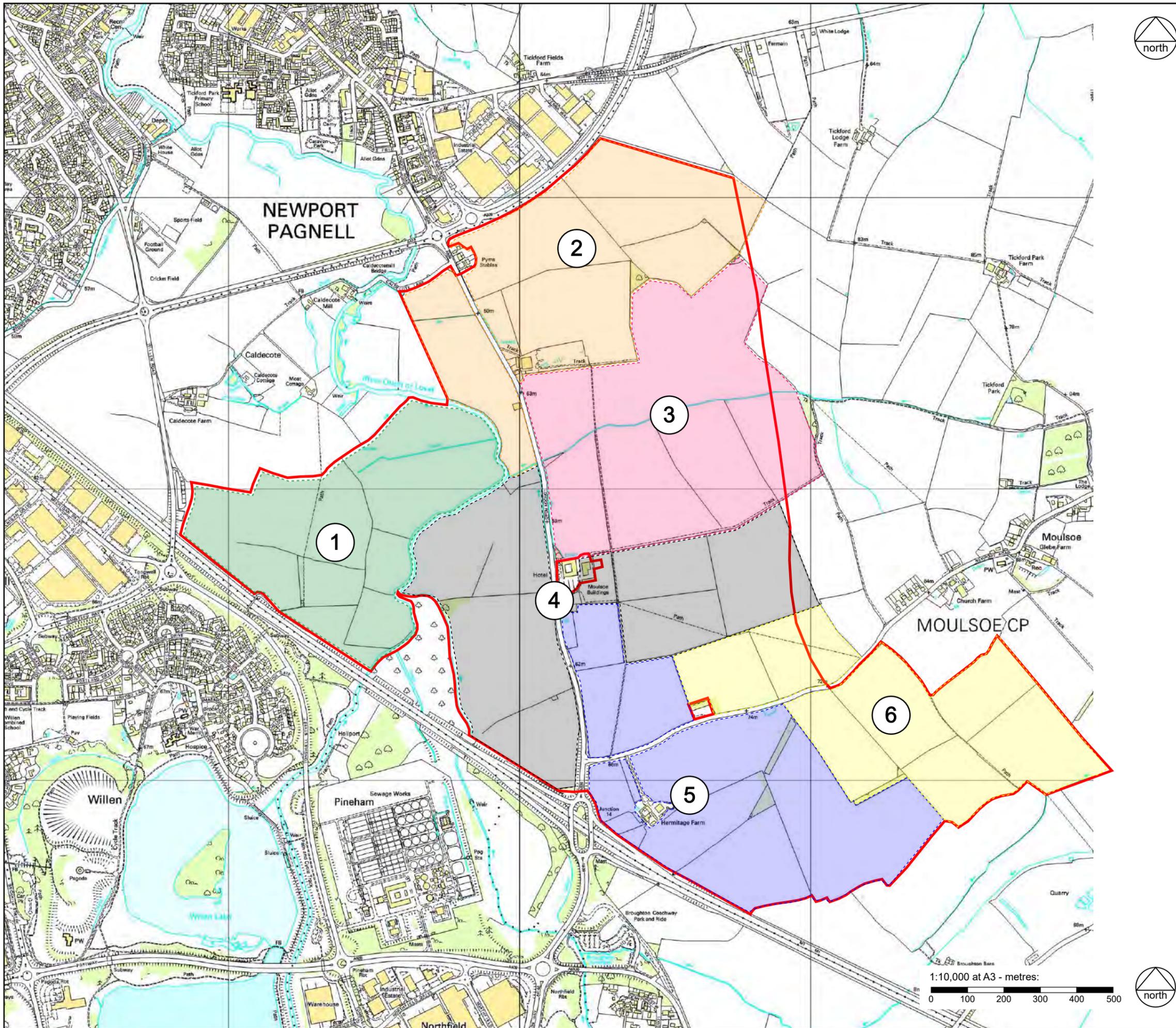
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Appendix A

Site Location and Bird Survey Area Plan



KEY

-  Site boundary
-  Transect number

CLIENT:
St James
 PROJECT:
Milton Keynes East
 TITLE:
Site Location and Bird Survey Transect Plan
 SCALE AT A3: 1:10,000 DATE: February 2020

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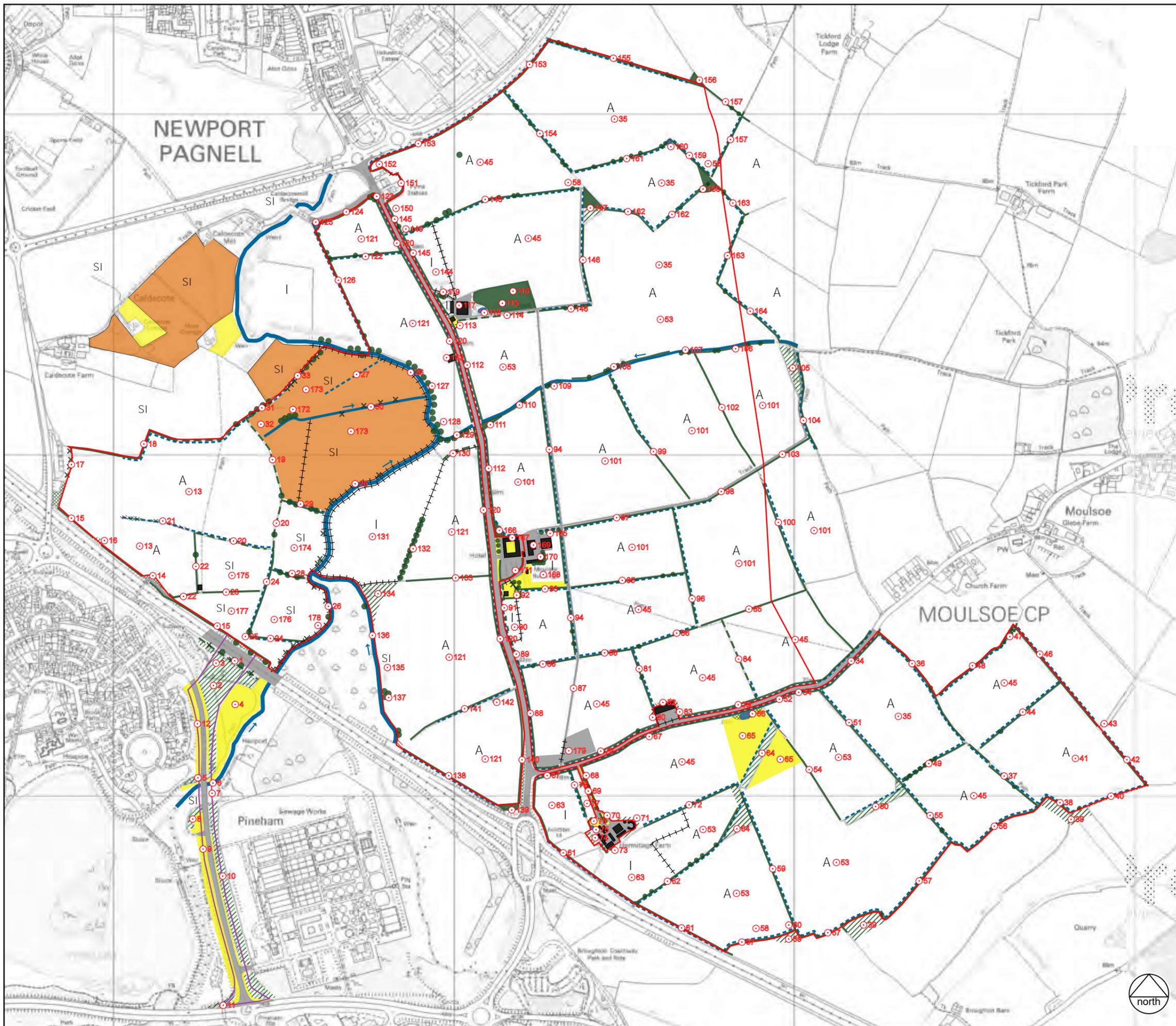
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Landscape Architecture
 Masterplanning
 Ecology



Appendix B

Phase 1 Habitat Survey Plan and Target Notes



- KEY**
- 2019 Survey boundary
 - Additional area surveyed in 2015
 - Semi-natural broadleaved woodland
 - Broadleaved plantation woodland
 - Mixed plantation woodland
 - Scattered trees
 - Intact hedgerow
 - Defunct hedgerow
 - Dense scrub
 - Scattered scrub
 - Tall ruderals
 - Species-rich semi-improved grassland
 - Species-poor semi-improved grassland
 - Improved grassland
 - Amenity grassland
 - Arable land
 - Watercourse and direction of flow
 - Dry / seasonally wet ditch
 - Standing water
 - Fence
 - Hardstanding
 - Buildings
 - Target note

CLIENT:
St James
 PROJECT:
Milton Keynes East
 TITLE:
Phase 1 Habitat Survey Plan
 SCALE AT A3: DATE:
Not to scale **February 2020**

2090.52 / 15

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Target notes¹⁰:

1. The southern verge of the M1 motorway comprises an outgrown defunct hedgerow with regenerated scattered scrub and trees. Scrub and tree species include Sycamore (*Acer pseudoplatanus*), Crack Willow (*Salix fragilis*), Blackthorn (*Prunus spinosa*), Hawthorn (*Crataegus monogyna*), Ash (*Fraxinus excelsior*) and Silver Birch (*Betula pendula*). The hedgerow is dominated by Hawthorn and Elder (*Sambucus nigra*) and is sparse and leggy due to lack of management and shading from adjacent trees and scrub. The ground flora is sparse due to lack of light penetration through the canopy and includes Wood Avens (*Geum urbanum*), Herb Robert (*Geranium robertianum*), Garlic Mustard (*Alliaria petiolata*), Ivy (*Hedera helix*), Bramble (*Rubus fruticosus*), Nettle (*Urtica dioica*) and mosses. There are also occasional patches of tussocky grassland along the roadside.
2. An area of mixed planted woodland dominated by early-mature Scot's Pine (*Pinus Sylvestris*) and Silver Birch. The understorey scrub is moderately dense and includes Dogwood (*Cornus sanguinea*), Elder, Ash (saplings), Blackthorn and Dog Rose (*Rosa canina*). The sparse ground flora is dominated by Bramble with Wood Avens, Herb Robert, Yorkshire Fog (*Holcus lanatus*), Cock's-foot (*Dactylis glomerata*) and Male Fern (*Dryopteris filix-mas*). A network of paths around and through the woodland are lined by mown amenity grassland.
3. A woodland ride, along which electricity pylons run, comprising relatively species-poor damp grassland with abundant tall ruderals and scrub and tree saplings along woodland edges. The dominant grassland species are Cock's-foot and Yorkshire Fog with less frequent Creeping Bent (*Agrostis stolonifera*), Meadow Foxtail (*Alopecurus pratensis*), Knapweed sp. (*Centaurea* sp.) and Trefoil sp. (*Lotus* sp.). Frequent ruderal species includes Great Willowherb (*Epilobium hirsutum*), Nettle, Bramble, Cleavers (*Galium aparine*) and Broad-leaved Dock (*Rumex obtusifolius*). Himalayan Balsam (*Impatiens glandulifera*) is also abundant, which is an invasive plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). Scrub species includes dominant Dogwood with Elder, Laurel sp., Wild Cherry (*Prunus avium*), Hawthorn, Cotoneaster sp. and Rowan (*Sorbus aucuparia*).
4. An infrequently mown area of species-poor grassland dominated by Perennial Rye-grass (*Lolium perenne*) and Rough Meadow-grass (*Poa trivialis*). The scrubby margin of the grassland abutting woodland to the west is dominated by Goat Willow (*Salix caprea*), Dogwood and Hawthorn. A small number of young White Willow (*Salix alba*) trees have also been planted, scattered within the grassland.
5. Tree and scrub planting to both sides of a road bridge dominated by young and early-mature Field Maple (*Acer campestre*) and Alder (*Alnus glutinosa*) with a sparse understorey of Hazel (*Corylus avellana*). Scot's Pine is also present.
6. The River Ouzel passes under a wide concrete road bridge beneath Tongwell Street. The banks of the river generally comprise tussocky grasses with frequent Willow (*Salix* sp.) trees.
7. A strip of tall tussocky grassland running along the southern bank of the River Ouzel both sides of the road bridge. The grassland is unmanaged and dominated by perennial grasses including Cock's-foot, Creeping Bent, Fescue (*Festuca* sp.), Couch Grass (*Elymus repens*), Tufted Hair-grass (*Deschampsia cespitosa*) and Common Reed (*Phragmites australis*). Frequent forb species include Creeping Cinquefoil (*Potentilla reptans*), Cleavers and Common Vetch (*Vicia sativa*). Ruderals are abundant and include Creeping Thistle (*Cirsium arvense*), Teasel (*Dipsacus fullonum*), Nettle, Great Willowherb, Hogweed (*Heracleum*

¹⁰ Target notes 1-12 relate to additional area surveyed in March 2015.

sphondylium), Mugwort (*Artemisia vulgaris*), Ground Elder (*Aegopodium podagraria*), Bristly Ox-tongue (*Picris echioides*), Broad-leaved Dock and Himalayan Balsam

8. Tree and scrub planting to the south of the river comprises young and early-mature Silver Birch, Alder, Wild Cherry and Scot's Pine with a sparse understorey of Cherry Laurel (*Prunus laurocerasus*), Field Rose (*Rosa arvensis*) and Osier (*Salix viminalis*). The ground layer comprises mostly bare ground.
9. The verges of Tongwell Street comprise frequently mown species-poor grassland. Species include Creeping Bent, Perennial Rye-grass, Fescue, White Champion (*Silene latifolia*), Red Clover (*Trifolium pratense*), Bristly Ox-tongue, Dandelion (*Taraxacum officinale*), Selfheal (*Prunella vulgaris*), Hawkbit (*Leontodon* sp.), Common Ragwort (*Senecio jacobaea*), Creeping Cinquefoil, White Clover (*Trifolium repens*), Creeping Buttercup (*Ranunculus repens*), Ribwort Plantain (*Plantago lanceolata*), Daisy (*Bellis perennis*) and Yarrow (*Achillea millefolium*).
10. Tree and shrub planting along the eastern side of Tongwell street comprising early-mature trees including Silver Birch, Alder, Wild Cherry, Poplar (*Populus* sp.) and Scot's Pine with an understorey of Cherry Laurel, Osier, Guelder Rose (*Viburnum opulus*), Dog Rose, Hazel and Dogwood.
11. Tree and shrub planting along the north-western side of the roundabout comprising early-mature Sycamore (*Acer pseudoplatanus*), Norway Maple (*Acer platanoides*), Alder and Hornbeam (*Carpinus betulus*) with an understorey of Dog Rose, Hazel and Blackthorn.
12. Western verge of Tongwell Street to the north of the river bridge comprising frequently mown amenity grassland lined with dense tree and shrub planting to the west.
13. A large field in the westernmost area of the site used for intensive arable farming. At the time of the survey the field had cereal stubble present, with scattered herbs and arable weeds throughout including Cleavers, Field Speedwell (*Veronica persica*), Bristly Ox-tongue, Sow-thistle sp. (*Sonchus* sp.) and Scentless Mayweed (*Tripleurospermum inodorum*). Grassland field margins are approximately 3m wide and are dominated by Annual Meadow-grass (*Poa annua*) and Black-grass (*Alopecurus myosuroides*) with occasional Barley (*Hordeum vulgare*), Wild Oat (*Avena fatua*), Field Speedwell and Field Pansy (*Viola arvensis*). An abundance of ruderal vegetation along hedgerow bases includes Cleavers, Creeping Thistle, Knotgrass (*Polygonum aviculare*), Field Bindweed (*Convolvulus arvensis*), Bristly Ox-tongue, Hogweed, Forget-me-not (*Myosotis* sp.) Nettle, Bramble, Hemlock (*Conium maculatum*), Scarlet Pimpernel (*Anagallis arvensis*), Burdock (*Arctium* sp.), Hoary Willowherb (*Epilobium parviflorum*), Sow-thistle and Dove's-foot Crane's-bill (*Geranium molle*).
14. Small area of planted trees and scrub including early-mature Sycamore with a Hawthorn understorey.
15. Hedgerows running along the site boundary adjacent to the M1 motorway to the west are intact and species-poor, dominated by Hawthorn occasional Elder and abundant Bramble. A steep bank lies beyond the site boundary in some places. The hedgerow has been laid in the past but is generally quite sparse and leggy at the base. The hedgerow measures approximately 3-4m high and 1-2m wide.
16. A small patch of dense scrub protruding from the field boundary comprising Blackthorn, English Elm (*Ulmus procera*), Elder and Wild Cherry with abundant Bramble, Nettle, Prickly Sow-thistle (*Sonchus asper*) and Creeping Thistle at the ground layer.

17. Perhaps once a hedgerow, this section of field boundary now comprises occasional Elder and dead, Ivy-covered Elm trees with abundant Nettle, Bramble and Creeping Thistle.
18. A mostly intact outgrown species-poor hedgerow forming the northern boundary of the westernmost arable field within the site. The hedgerow is generally heavily dominated by Hawthorn and in some places by Blackthorn, with occasional Elder, English Elm, Field Maple, Goat Willow, Crab Apple (*Malus sylvestris*) and an Oak (*Quercus* sp.) standard. The ground flora is sparse and dominated by Nettle and Bramble. The hedgerow measures approximately 3m high and 2-3m wide. Along much of its length is a dry ditch with a channel measuring up to 1.5m and 2-3m wide at the eastern end.
19. A defunct, species-poor hedgerow with substantial gaps dominated by Elder with occasional Hawthorn and English Elm. Some gaps are now filled by Bramble.
20. Mostly defunct, species-poor hedgerows along the boundaries of the western arable field with English Elm, Field Maple, Crab Apple, Elder, Hazel and two mature Crack Willow trees along the northern section of hedgerow. Substantial gaps in the hedgerows often support Bramble. The western section of hedgerow is accompanied by a dry ditch with a channel of approximately 1m deep and 1m wide.
21. A length of seasonally wet ditch, approximately 2m wide and 1m deep, running through the westernmost arable field and supporting dense stands of scrub and ruderal vegetation. Along the western end are stands of scrub comprising Hawthorn and Goat Willow and other stretches of the ditch were overgrown with Bramble scrub at the time of survey.
22. An outgrown hedgerow with a few large gaps dominated by Hawthorn with Ash, English Elm, Crack Willow, Elder and abundant Bramble.
23. Infrequently managed, intact, species-poor hedgerow dominated by Hawthorn with occasional Blackthorn and Elder with abundant Bramble. The hedgerow measures approximately 3-4m tall and up to 2m wide.
24. Infrequently managed, intact, species-poor hedgerows dominated by Hawthorn and Blackthorn with occasional Elder, Field Maple and Bramble, and a mature Ash tree. The hedgerows measured approximately 3-4m in height and up to 3m wide. Seasonally wet ditches with channels measuring 3-4m wide and up to 1m deep run beneath the hedgerows and support very occasional Greater Pond Sedge (*Carex riparia*).
25. A damp depression alongside the corner of a hedgerow which is known to fill with water during/following particularly wet weather, but was dry at the time of survey.
26. The River Ouzel flows in a northerly direction through the site. The river channel is approximately 5-10m wide and estimated to be over 1m deep with a soft silt base. The earth banks located within the site are generally dominated by rough grass and ruderal vegetation with occasional scrub and trees. Species identified during the survey included Cock's-foot, False Oat-grass (*Arrhenatherum elatius*), Nettle, Teasel, Bramble, Great Willowherb, Hogweed, Broad-leaved Dock and Creeping Thistle. Scrub and tree species include Crack Willow and Hawthorn. Common Reed is also locally abundant.
27. Shallow, seasonally wet ditch running through a field of semi-improved grassland bordered by tussocky grasses.
28. A relatively short section of outgrown, mostly intact, species-poor hedgerow and a seasonally wet ditch with mature Crack Willow trees along its length. The hedgerow is dominated by

Hawthorn with frequent Blackthorn and rare occurrences of Guelder Rose and Crab Apple. The ditch channel measures approximately 2m wide and 0.5m deep.

29. A relatively short section of outgrown, mostly-intact, species-poor hedgerow and dry ditch with mature Crack Willow trees. The hedgerow measures up to 5m high and 4m wide and is dominated by Blackthorn with frequent Hawthorn, Elder and English Elm. The ditch channel measures approximately 2m wide and 0.5m deep.
30. A seasonally wet ditch with a channel measuring up to 2-3m wide and 0.5-1m deep supporting dense marginal vegetation dominated by Reed Canary-grass (*Phalaris arundinacea*) with occasional Common Reed. The banks of the ditch support rough grasses with occasional small Crack Willow trees and Goat Willow. The western end is much shallower with grasses and tall ruderals.
31. A defunct, outgrown, species-poor hedgerow with mature trees and a dry ditch beneath. The hedgerow includes Hawthorn, Field Maple, Elder and Blackthorn with Crack Willow and Field Maple trees. The seasonally wet ditch has a channel measuring approximately 2m wide and up to 1.5m deep and supports dense ruderal vegetation where there is less shading.
32. The westernmost margin of a grassland field dominated by tall ruderal vegetation, in particular Common Nettle.
33. A seasonally wet ditch supporting dense marginal vegetation including dominant Reed Canary Grass and occasional Common Reed, Great Willowherb and Meadowsweet. The banks of the ditch support rough grasses with occasional scrub and trees including Hawthorn, Ash and Crack Willow.
34. Infrequently managed intact boundary hedgerow dominated by Hawthorn and Blackthorn with Dog Rose and Bramble, measuring approximately 2.5m high and 2.5m wide. A narrow semi-improved grassland field margin runs along the southern side of hedgerow and a shallow dry ditch with a channel measuring approximately 1m wide and 0.5m deep runs along the northern side along Newport Road.
35. Intensively farmed arable land used primarily for cereal production. The field margins, comprising species-poor improved and semi-improved grassland, are generally minimal but up to 2m wide along some boundaries and up to 6m where footpaths and tracks occur alongside hedgerows. Typical margin species include abundant Barren Brome (*Bromus sterilis*) with Cock's-foot, Perennial Rye-grass, False Oat-grass, Hogweed, Dove's-foot Crane's-bill, White Clover, Creeping Buttercup, Ribwort Plantain, Field Bindweed, Broad-leaved Dock, Bristly Ox-tongue, Broad-leaved Willowherb (*Epilobium montanum*) and Bramble. Sapling scrub is also abundant along some boundaries. Tracks and footpath margins are subject to periodical mowing.
36. Intact, native, species-poor hedgerow dominated by Blackthorn and Hawthorn with frequent English Elm, occasional Field Maple and Dog Rose, and an early-mature Ash tree. The hedgerow measured approximately 2.5m high and up to 3m wide and had been recently flail cut at the time of survey. A dry ditch runs along the base of the hedgerow with a channel measuring approximately 1m deep and 1m wide and supports Great Willowherb in places.
37. Intact, native hedgerow dominated by Blackthorn and Hawthorn with occasional Elder. The hedgerow measures approximately 2.5m high and 1-2m wide and had been recently flail cut at the time of survey. A dry ditch runs along the base of the hedgerow with a channel measuring approximately 1m deep and 1m wide and supports Great Willowherb in places.

38. Mostly intact, native hedgerow dominated by Blackthorn and Hawthorn with frequent English Elm, Elder and Bramble, and small Ash trees. The hedgerow measures approximately 2.5m high and 1-2m wide and was outgrown at the time of survey. Dry ditch as described for TN37.
39. A small area of tree planting just beyond the site boundary including young Ash, Oak, Rowan (*Sorbus aucuparia*), Goat Willow and Alder.
40. Field boundary with dry (probably seasonally wet) ditch and regular stands of dense scrub. The ditch channel typically measures 2-3m wide and 1-1.5m deep. Scrub along the southern bank of the ditch includes Hawthorn, Blackthorn, Elder, Goat Willow and Bramble with a small number of early mature Ash trees.
41. Intensively farmed arable land used primarily for cereal production. Along the western margin of the field is a footpath along a 3m wide mown grassland buffer (see TN35).
42. Mostly intact, native, species-poor hedgerow dominated by Hawthorn with English Elm, Elder and Dog Rose. The hedgerow measured approximately 2m high and 1-2m wide and had been recently flail cut at the time of survey. A dry ditch running along the east side of the hedgerow has a channel measuring approximately 1m deep and 1m wide.
43. A small stand of dense scrub and small trees including Horse Chestnut, Blackthorn, Hawthorn, Crab Apple, Poplar and Ash.
44. Intact, native, species-poor hedgerow dominated by Blackthorn and Hawthorn with English Elm, Elder, Ash and Dog Rose and early-mature Ash trees. The hedgerow measures approximately 2m high and 2m wide and had been recently flail cut at the time of survey. A shallow dry ditch running along the north side of the hedgerow has a channel measuring approximately 0.3m deep and 1m wide.
45. Intensively farmed arable land used primarily for cereal production. The grassland field margins are generally very narrow (see TN35).
46. Intact, native, species-poor hedgerow dominated by Blackthorn and Hawthorn with English Elm, Elder, Ash, Field Maple and Crab Apple and early-mature Ash trees. The hedgerow measures approximately 2m high and 2m wide. A shallow dry ditch running along the east side of the hedgerow has a channel measuring approximately 0.3m deep and 1m wide.
47. An area of dense scrub dominated by Bramble with mixed tree planting including Aspen (*Populus tremula*), Pedunculate Oak, Ash, Scot's Pine, Wild Cherry, Blackthorn and domestic Apple (*Malus domestica*).
48. Intact, native, species-poor hedgerow dominated by Blackthorn with English Elm and Field Maple. The hedgerow measured approximately 2m high and 1-2m wide and had been recently flail cut at the time of survey. A shallow dry ditch running along the southern side of the hedgerow has a channel measuring approximately 0.5m deep and 1-2m wide and is generally choked with Bramble and tall ruderal vegetation.
49. Intact native hedgerow dominated by Blackthorn with Hawthorn, English Elm, Crab Apple, Dog Rose and Bramble. The hedgerow measures approximately 2m high and 2m wide and had been recently flail cut at the time of survey. Seven mature Ash trees located along the hedgerow have severe decay and support a number of cavities. A shallow dry ditch running along the northern side of the hedgerow has a channel measuring approximately 0.5m deep and 1m wide.

50. A strip of woodland comprising tree planting and regenerated trees and scrub including Ash, Pedunculate Oak, Norway Maple, Scot's Pine, Alder, Aspen, Wild Cherry and Poplar species. The scrub understorey includes Blackthorn, Bramble and Dogwood. An outgrown Hawthorn and Elm dominated hedgerow and a dry ditch runs along the northern edge of the woodland.
51. Intact, species-poor hedgerow dominated by Hawthorn with Blackthorn, English Elm and Dog Rose. The hedgerow had not recently been cut at the time of survey and measured approximately 2-3m high and 2m wide. A shallow dry ditch running along the eastern side of the hedgerow has a channel measuring approximately 0.5m deep and 1m wide.
52. A small Rhododendron sp. plant growing within the field margin.
53. Intensively farmed arable land used primarily for cereal production, cropped with wheat at time of survey. The field has narrow grassland field margins (see TN35) with wider mown grassland tracks. Field margins are between 0.5m and 4m.
54. Mostly intact, species-poor hedgerow dominated by Blackthorn and English Elm. The hedgerow measures approximately 2m high and 1-2m wide. A dry ditch occurs along the hedgerow at the northern end of the boundary and supports dense Bramble scrub and tall ruderal vegetation including Great Willowherb and Nettle.
55. Intact, species-poor hedgerow dominated by Blackthorn with Hawthorn, English Elm, Crab Apple, and a mature Pedunculate Oak tree. The hedgerow measures approximately 2.5m high and 1-2m wide and had been recently flail cut on just one side at the time of survey. A dry ditch running along the east side of the hedgerow has a channel measuring approximately 1m deep and 1.5m wide and supports Nettle and Great Willowherb in places.
56. Mostly intact, species-poor hedgerow dominated by Blackthorn and English Elm with Hawthorn, Goat Willow, Dog Rose and Bramble. The hedgerow was flailed on the field side and outgrown on top, measuring up to 4m high. A dry ditch running along the boundary has a channel measuring approximately 0.5-1m deep and 1-2m wide.
57. Intact native hedgerow dominated by Blackthorn with Hawthorn, English Elm, Crab Apple, Elder and Ash. The hedgerow measures approximately 2.5m high and 1-2m wide and had been recently flail cut on just one side at the time of survey. A dry ditch running along the east side of the hedgerow has a channel measuring approximately 1m deep and 1.5m wide and supports Nettle and Great Willowherb in places.
58. Field margin, approximately 4m in width, at southern end of an arable field used for cereal production. The area comprises tussocky grassland with species typical of species-poor improved/semi-improved grassland, including dominant Perennial Rye-grass and False Oat-grass with abundant ruderal vegetation including Creeping Thistle, Hogweed, Bristly Ox-tongue and Nettle.
59. Intact, species-poor hedgerow dominated by Blackthorn with Hawthorn with a dry ditch running along the eastern side (as TN55).
60. Corner of arable field left fallow comprising grasses and ruderal vegetation. Species include dominant Bristly Ox-tongue with Nettle, Fescue species, Creeping Bent, Cock's-foot and False Oat-grass. Appeared to have been mown at the time of survey, displaying a short uniform sward.

61. Site boundary bordering the M1 motorway comprising post and rail fence with intact, species-poor hedgerow and dry ditches. The hedgerows are dominated by Hawthorn with occasional Elder.
62. Mostly intact native hedgerow dominated by Blackthorn and Hawthorn with English Elm, Dog Rose, Ash, Elder and a number of early mature Ash trees. The hedgerow measures approximately 2.5m high and 1-2m wide and had not been flail cut at the time of survey. A dry ditch running along the hedgerow base has a channel measuring approximately 1-1.5m deep and 2m wide.
63. A tall earth bund of around seven years of age surrounds the western and southern sides of Hermitage Farm and supports recently established species-poor improved grassland grazed by horses and cattle. The grassland generally has a short sward and species recorded include Perennial Rye-grass, Cock's-foot, False Oat-grass, Soft Brome (*Bromus hordeaceus*), Timothy (*Phleum pratense*), Brome species, Meadow Foxtail, White Clover and Bristly Ox-tongue. The grassland is divided into fenced paddocks which are grazed by cattle and horses.
64. Small areas of woodland comprising a mix of tree planting and regenerated trees and scrub including White Poplar (*Populus alba*), Ash, Pedunculate Oak, Norway Maple and Crab Apple. The scrub understorey includes Hawthorn, Blackthorn, Elder, Hazel and Bramble. The north-eastern strip of woodland also supports planted Scot's Pine. Very little ground flora is present, which is likely due to heavy shading.
65. An area of species-poor amenity grassland in the corner of an arable field, managed by regular mowing. A band of woodland runs diagonally through the centre of the grassland. Species recorded within the sward include Perennial Rye-grass, Cock's-foot, Yorkshire Fog, Fescue, False Oat-grass, Hawkbit (*Leontodon* sp.), White Clover, Creeping Thistle, Dandelion, Hogweed, Common Vetch (*Vicia sativa*) and Greater Plantain (*Plantago major*). The northern section of the grassland is used as a dog agility training area and the southern section is used as a runway for model aircraft.
66. A fairly large pond adjacent to Newport Road measuring approximately 30x20m surrounded by dense scrub and occasional trees. Little aquatic or marginal vegetation was recorded although there are small amounts of Greater Reedmace (*Typha latifolia*), Greater Pond Sedge and Water Lily (*Nymphaeaceae* sp.). Great Willowherb and Nettle dominate less shaded areas of the margins. To the east of the pond is a small area of young to early-mature trees dominated by Ash and Wild Cherry, and dense Blackthorn scrub dominates the western banks. Crack Willow trees and scrub is also present along the banks of the pond. Hedgerow borders the pond to the north (see TN67).
67. Mostly intact, species-poor hedgerow along Newport Road, dominated by Hawthorn with English Elm, Ash, Crab Apple and Bramble. The hedgerow measures approximately 2m high and 1.5m wide. A shallow dry ditch running along the hedgerow base has a channel measuring up to 0.5m deep and 1m wide.
68. Intact, species-poor hedgerow dominated by Hawthorn with English Elm, Ash, Crab Apple and Bramble. The hedgerow measures approximately 2m high and 1.5m wide.
69. The driveway to Hermitage Farm comprises a concrete road and a verge along the eastern edge with amenity grass and scattered trees. The grassland is regularly mown and includes Perennial Rye-grass, Fescue species, Annual Meadow-grass, Cock's-foot, White Clover, Dandelion, Dove's-foot Crane's-bill and Hogweed. Tree species included Horse Chestnut (*Aesculus hippocastanum*), Goat Willow, Red Oak (*Quercus rubra*), Wild Cherry and Weeping Willow.

70. A small area of amenity grassland (see TN69) with small trees including domestic Apple, Plum (*Prunus* sp.), Cypress (*Cupressaceae* sp.), Norway Spruce and a young Pedunculate Oak tree.
71. A small area of planted semi-mature trees around the eastern edge of the Hermitage Farm buildings. Species include Wild Cherry, Pedunculate Oak, Silver Birch, Rowan, Ash, Whitebeam (*Sorbus aria*), Holm Oak (*Quercus ilex*) and Norway Maple. English Elm is also present in the understory and the ground layer supports Bramble and Nettle.
72. Mostly intact, species-poor hedgerow dominated by Blackthorn with Hawthorn, English Elm and Ash. The hedgerow measures approximately 2.5m high and 1.5m wide and was flailed on the northern side only at the time of survey. A dry ditch running along the northern side of the hedgerow has a channel measuring up to 1m deep and 1.5m wide.
73. Line of Pedunculate Oak and Norway Maple trees running along the boundary of Hermitage farmyard bordering the grassland field/ bund to the south-west.
74. A small area of planted semi-mature trees including Pedunculate Oak, Wild Cherry, Scot's Pine, Cypress, Field Maple and Horse Chestnut.
75. A small natural pond located in the corner of the garden of Hermitage Farmhouse. No marginal vegetation was recorded and aquatic vegetation was limited to abundant Duckweed (*Lemna minor*). Pollarded Ash and Crack Willow and Hawthorn is also present on the banks of the pond.
76. Garden of Hermitage Farmhouse comprising amenity grassland with shrub and flower beds on the margins. The southern and eastern boundaries of the garden comprise Cypress, Common Box (*Buxus sempervirens*) and Holly hedging. A mature Ash and a Norway Maple tree exist on the northern margin.
77. A small field comprising improved grassland regularly grazed by horses. Two mature domestic Apple trees and Wild Cherry tree grow within the grassland.
78. Mostly intact native, species-poor hedgerow dominated by Hawthorn with Blackthorn, English Elm and Elder. A small number of early-mature trees including Ash, Wild Cherry and Horse Chestnut also occur within the hedgerow. The hedgerow measures approximately 2m high and 1m wide and was recently flail cut at the time of survey. A large gap in the hedgerow to the north has been filled with recently planted Hawthorn. A dry ditch running along the western side of the hedgerow has a channel measuring up to 0.5m deep and 1m wide.
79. Mostly intact native, species-poor hedgerow along Newport Road dominated by Hawthorn with English Elm, Blackthorn, Ash, Elder, Crab Apple and Bramble. A shallow dry ditch running along the hedgerow base has a channel measuring up to 0.5m deep and 1m wide.
80. A fenceline with scattered scrub forms the boundary with a commercial unit located off Newport Road. The scrub comprises mostly Elder and Hawthorn with abundant Ivy.
81. Mostly intact native hedgerow dominated by Hawthorn and Blackthorn with English Elm and Crab Apple. The hedgerow measures approximately 2m high and 1.5m wide. A dry ditch running along the hedgerow base has a channel measuring around 1m deep and 1m wide.
82. A wide section of field margin bordering a commercial unit located off Newport Road comprising Common Nettles with rubble and other building waste.

83. A small strip of planted early-mature trees and shrubs including Wild Cherry, Field Maple and Rowan. Elder has also colonised and the ground layer comprises Common Nettle and Bramble.
84. A field boundary hedgerow which is species-poor and defunct with large gaps and comprises Hawthorn with occasional Elder.
85. An intact native, species-poor hedgerow dominated by Hawthorn and Blackthorn with English Elm, Ash and Elder. The hedgerow measures approximately 2.5m high and 2.5m wide and had been recently flail cut at the time of survey.
86. An intact native hedgerow dominated by Hawthorn and Blackthorn with English Elm, Ash and Elder. The hedgerow measured approximately 2.5m high and 2.5m wide and had been recently flail cut at the time of survey. A shallow dry ditch running along the hedgerow base has a channel measuring up to 0.5m deep and around 1m wide.
87. A network of gravel tracks running through the eastern area of the site with narrow rough grassland verges.
88. An intact native, species-poor hedgerow along London Road dominated by Hawthorn with English Elm, Blackthorn, Ash, Elder, Crab Apple and Bramble. A shallow dry ditch running along the hedgerow base has a channel measuring up to 0.5m deep and 1m wide.
89. A section of recently planted Hawthorn and Blackthorn hedgerow along London Road.
90. An area of land comprising relatively recently established species-poor grassland along the western margin of an arable field. The species recorded within the sward included False Oat-grass, Cock's-foot, Greater Bird's-foot Trefoil (*Lotus pedunculatus*), Hogweed, Yarrow, Dandelion, Broadleaved Dock, Knapweed (*Centaurea* sp.), Common Mouse-ear (*Cerastium fontanum*), Ox-eye Daisy (*Leucanthemum vulgare*), Red Clover, White Clover and Creeping Thistle. The area in the north-west of the field is fenced and mown for amenity use.
91. A slightly gappy section of species-poor hedgerow running along the boundary of the site adjacent to London Road. Species include Elm, Hawthorn and Blackthorn.
92. Species-poor hedgerows forming the southern and eastern boundaries of the garden of Moulsoe Farmhouse including Blackthorn and Yew (*Taxus baccata*) with Clematis sp. and a young Birch (*Betula* sp.) tree.
93. An intact native, species-poor hedgerow dominated by Hawthorn with English Elm and Blackthorn. The hedgerow measured approximately 2.5m high and 2m wide and had been recently flail cut at the time of survey. A dry ditch running along the hedgerow base has a channel measuring up to 1m deep and 1.5m wide.
94. An intact native, species-poor hedgerow dominated by Hawthorn, Blackthorn and English Elm with Ash, Crab Apple and Elder. The hedgerow measures approximately 2.5m high and 2m wide and had been recently flail cut at the time of survey. A dry ditch running along the hedgerow base has a channel measuring up to 1.5m deep and 2m wide which supports Great Willowherb, Nettle and Bramble. Two mature Ash trees located along the hedgerow have severe decay and a number of cavities.
95. An intact native, species-poor hedgerow dominated by English Elm with Hawthorn, Blackthorn, Ash, Field Maple and Dog Rose. The hedgerow measures approximately 2.5m high and 1.5m wide. A dry ditch running along the hedgerow base has a channel measuring up to 1m deep and 1.5m wide.

96. A mostly intact native, species-poor hedgerow dominated by Hawthorn with abundant English Elm and Blackthorn. The hedgerow measures approximately 2.5m high and 1.5m wide. A dry ditch running along the hedgerow base has a channel typically measuring up to 1m deep and 1m wide but it has a steep bank of up to the 2m high to field margin to the east. The ditch had recently been dredged and had bare earth banks.
97. An intact native, species-poor hedgerow dominated by Hawthorn with abundant English Elm and Blackthorn, and occasional Oak. The hedgerow measures approximately 2.5m high and 1.5m wide. A dry ditch running along the hedgerow base has a channel measuring around 1m deep and 1m wide with a grassy base.
98. An intact native, species-poor hedgerow dominated by Hawthorn and English Elm with Blackthorn and Norway Maple. A dry ditch with a channel measuring around 1m deep and 1m wide runs along the western end of the hedgerow.
99. A mostly intact native, species-poor hedgerow including Hawthorn, Blackthorn, Dog Rose, Ash, English Elm, Elder and Bramble. The hedgerow measures approximately 2m high and 1.5m wide and had been recently flail cut at the time of survey. A dry ditch running along the northern end of the hedgerow base has a channel measuring around 1m deep and 1m wide.
100. A mostly intact native, species-poor hedgerow measuring approximately 2.5m high and 2m wide which had been recently flail cut at the time of survey. A shallow dry ditch running along the hedgerow base has a channel measuring around 0.5m deep and 1m wide. The northern end of the boundary comprises Bramble scrub.
101. Intensively farmed arable land used primarily for cereal production. These fields had cereal stubble present and appeared to have been planted with a cover crop with minimum tillage at the time of survey. The field margins are generally narrow (see TN35) but along the stream corridor (TN107) are much wider and comprise rough grassland (see TN58).
102. An intact native, species-poor hedgerow dominated by Hawthorn and Blackthorn with English Elm and Elder. The hedgerow measures approximately 3m high and 2m wide and had not been recently managed at the time of survey.
103. An intact native, species-poor hedgerow dominated by Hawthorn and Blackthorn with Wild Cherry. The hedgerow measured approximately 2.5m high and 1.5m wide. Oak trees exist nearer the eastern end of the hedgerow.
104. An intact native hedgerow dominated by Hawthorn with abundant English Elm and Blackthorn. The hedgerow measures approximately 2m high and 1.5m wide and had been recently flail cut at the time of survey. A dry ditch running along the hedgerow base has a channel typically measuring up to 1-1.5m deep and 1m wide and had recently been dredged.
105. A small area of planted woodland with a sparse scrub understorey including Pedunculate Oak, Norway Maple, Scot's Pine, Small-leaved Lime (*Tilia cordata*) and Wild Cherry. The scrub understorey includes Common Box, Dog Rose and Bramble.
106. An intact native, species-poor hedgerow running along a brook corridor dominated by Hawthorn and Blackthorn with Ash and English Elm, including mature Ash trees. The hedgerow had been flail cut on the sides only and measured approximately 3-5m high and 2m wide.
107. A small brook flowing westwards into the River Ouzel in the central area of the site. The brook channel measures around 1.5-2m deep and 3-4m wide. At the time of survey, the

brook was mostly dry with localised pooling around 10cm deep, but the flow of water is often strong during times of wetter weather. The bankside vegetation, which had been recently cut, includes grasses and ruderal vegetation including Great Willowherb. Fool's Watercress (*Apium nodiflorum*) is present within the channel in places.

108. An intact native, species-poor hedgerow running along a brook corridor dominated by Hawthorn with Blackthorn, Crab Apple, Crack Willow and mature Ash trees. The hedgerow had been recently flail cut at the time of survey and measured approximately 2.5m high and 1.5m wide.
109. A short section of scrub resembling a defunct hedgerow located along the southern side of a brook corridor which includes dense Blackthorn, Elder, Hawthorn, English Elm and Bramble.
110. A mostly intact native, species-poor hedgerow running along a brook corridor dominated by Hawthorn with Blackthorn with abundant English Elm. The hedgerow had been recently flail cut on the sides and measures around 3-4m high and 1-2m wide.
111. A small area of regenerated English Elm and Elder with a small number of mature Pedunculate Oak and Ash and (probably planted) early-mature Whitebeam and Sycamore. The ground flora comprises a sparse covering of Common Nettle.
112. An intact native hedgerow along London Road dominated by Hawthorn with English Elm, Blackthorn, Ash, Elder, Crab Apple and Bramble. A shallow dry ditch running along the hedgerow base has a channel measuring up to 0.5m deep and 1m wide.
113. Semi-detached farmhouses along London Road with gardens comprising amenity grassland with a small number of Apple trees and ornamental shrubs and flowers on the margins.
114. A line of outgrown scrub and young trees resembling a defunct hedgerow which exists along a 2-3m high earth embankment sloping downward from the arable field to the south to a gravel track to the north. The dominant species are Hawthorn, Blackthorn, English Elm and Elder with occasional Crab Apple, Field Maple, Pedunculate Oak and Horse Chestnut. A small number of mature Ash trees occur at the eastern end of the boundary and dense stands of Bramble dominate the western end.
115. A larger area of woodland comprising a mix of mature and early-mature regenerated trees, and a range of planted trees. Occasional mature Pedunculate Oak trees occur predominantly around the northern and eastern edges of the woodland. Other species include Rowan, Poplar species, White Willow, Beech (*Fagus sylvatica*), Wild Cherry, Norway Maple, Scot's Pine, Prunus sp., Lilac Tree (*Syringa vulgaris*), Box Maple (*Acer negundo*), Elder and Goat Willow. Large areas of the woodland have seasonal standing water (TN116). Damper areas in the south-western areas of the woodland support a higher density of Willow species.
116. Areas of the woodland support seasonal standing water often during the winter and early spring. Areas in the north-eastern area of the woodland support dense stands of Greater Pond Sedge and towards the south-west of the woodland damper areas are dominated by White Willow and Goat Willow.
117. A complex of brick, timber and corrugated metal buildings surrounded by concrete hardstanding and gravel. Frequently there are piles of building materials, rubble, logs and farm machinery. Ruderal vegetation is abundant and includes Nettle, Bristly Ox-tongue, White Dead-nettle (*Lamium album*), Bramble, Poppy (*Papaver* sp.), Burdock, Cock's-foot and False Oat-grass.

118. A pond located at the south-eastern edge of a farmyard (TN117) measuring approximately 15x8m and surrounded by dense stands of Lesser Pond Sedge and Greater Pond Sedge. No other aquatic or marginal vegetation was recorded other than Duckweed. Nettle, Great Willowherb and Woody Nightshade (*Solanum dulcamara*) is also found on the pond banks. The water appears to be heavily polluted due to runoff from the farm, and waste materials such as old tyres were recorded within the water.
119. A small area of grazed improved grassland located between London Road and a farmyard. Along a short section of track to the north is a group of early-mature trees including Scot's Pine, Ash and Apple. On the margins of the area are occasional tall ruderal and scattered scrub including English Elm, Blackthorn and Bramble. A log pile is present.
120. A mostly intact native hedgerow along the eastern side of London Road dominated by Hawthorn with Blackthorn, English Elm, Ash and Elder. The hedgerow had not been recently managed and measured approximately 2m high and 2m wide at the time of survey. A shallow dry ditch runs along the eastern side of the hedgerow with a channel measuring approximately 0.5m deep and 1m wide.
121. Intensively farmed arable land used primarily for cereal production. The field margins are generally narrow (2-3m) and support common and widespread ruderal and arable weed species including Nettle, Hogweed, Cleavers, Horsetail (*Equisetum* sp.), Bristly Ox-tongue, Mugwort, Spear Thistle (*Cirsium vulgare*), Creeping Thistle, Cock's-foot, False Oat-grass, White Campion, White Dead-nettle, Green Alkanet (*Pentaglottis sempervirens*), Wall Rocket (*Diploaxis tenuifolia*) and Forget-me-not.
122. A mostly intact native, species-poor hedgerow dominated by Hawthorn with Blackthorn, English Elm, Ash, Elder and a mature Oak tree. The hedgerow had not been recently managed and measured approximately 2m high and 2m wide at the time of survey. A dry ditch runs along the eastern side of the hedgerow with a channel measuring approximately 1m deep and 1-2m wide supporting dense Nettle, Great Willowherb and Bramble.
123. Corner of an arable field supporting a small number of mature Pedunculate Oak trees and young Scot's Pine with a sparse understory dominated by Elder with Hazel, and a ground layer of Bramble and Ivy.
124. Intact hedgerow forming the boundary of the site including Hawthorn, Blackthorn, Elder, Alder, Buckthorn and Crab Apple. Scrub and trees located beyond the boundary adjacent to a single lane road include abundant young Ash trees.
125. Corner of an arable field supporting a small number of mature Pedunculate Oak and Crack Willow trees with Hawthorn and Blackthorn in the understory. Beneath is a seasonal pond which was dry at the time of survey and supports no aquatic or marginal vegetation.
126. A mostly intact native hedgerow dominated by Blackthorn with Hawthorn, Elder and Ash, Oak and Aspen trees. The hedgerow had not been recently managed and measured approximately 2m high and 2m wide at the time of survey. A dry ditch runs along the western side of the hedgerow with a channel measuring approximately 1m deep and 1m wide. Gaps in the hedgerow support dense Bramble with Cleavers.
127. A wide margin along the River Ouzel corridor which borders arable fields to the east comprises mature trees, occasional scrub and a wide rough grassland field margin. Tree species include Crack Willow, Ash, White Willow and hybrid Black Poplar (*Populus nigra* x *deltoides* = *P. x canadensis*). The less-shaded banks of the river support rough grassland and ruderals including Cock's-foot, Timothy, Creeping Bent, Perennial Rye-grass, False Oat-

grass, Wild Oat and Common Reed. Other abundant species include Nettle, Teasel, Hogweed, Cleavers, Spear Thistle, Himalayan Balsam, Broad-leaved Dock and Bramble.

128. A small area of uncultivated ground comprising tussocky grass including Timothy, Cock's-foot and Italian Rye-grass (*Lolium multiflorum*).
129. Brook corridor lined with mature Ash and Crack Willow trees. Rough grass and Bramble grow along the banks of the brook.
130. A short section of defunct native hedgerow dominated by Hawthorn with abundant English Elm and Elder. Substantial gaps in the hedgerow are filled with Bramble.
131. A large riverside field comprising improved grassland established on former arable land. The sward is regularly grazed by cattle and was short at the time of survey. It is dominated by Perennial Rye-grass with occasional Cock's-foot and White Clover.
132. A field boundary comprising a line of mature hybrid Poplar trees with a defunct outgrown hedgerow beneath including Hawthorn, Blackthorn, English Elm, Elder and Bramble.
133. A mostly intact native hedgerow running along a brook corridor dominated by Hawthorn and Blackthorn with abundant English Elm, Elder and Bramble. The hedgerow had not been recently cut and no ditch was associated with the boundary.
134. A small wet area in the corner of an arable field adjacent to the Broughton Brook supporting planted hybrid Black Poplar trees with a ground layer dominated by Cleavers and Common Nettle.
135. A wide margin along the site boundary adjacent to Broughton Brook comprising rough species-poor grassland. The grassland is dominated by tussocky Cock's-foot with occasional Broad-leaved Dock, Hogweed and Nettle.
136. A tributary to the River Ouzel, known as Broughton Brook, with a 4-5m wide channel and a strong northerly flow. The eastern bank within the site had been recently cut and comprises grasses and abundant Common Nettle. The channel itself supports abundant Reed Canarygrass and Common Club Rush (*Schoenoplectus lacustris*). The western bank comprises rough grass and scrub.
137. A small group of early-mature Crack Willow trees along the bank of Broughton Brook.
138. Intact hedgerow and fenceline running along the site boundary adjacent to the M1 motorway. The hedgerow is dominated by Hawthorn with occasional Elder, English Elm and abundant Bramble. The hedgerow measures approximately 3m high and 2m wide. A seasonally wet ditch runs to the south of the hedgerow and supports Common Reed and Greater Pond-sedge along its western section with Crack Willow and Goat Willow trees along its bank.
139. A small area of regenerated woodland in the corner of an arable field. The area is dominated by early-mature Elm (possibly Smooth-leaved Elm (*Ulmus minor*)). The understory comprises suckered Elm and occasional Ash and Wild Cherry, with fallen deadwood throughout.
140. An outgrown native hedgerow with adjacent mature scrub dominated by Hawthorn with occasional Blackthorn, English Elm, Elder, Wild Cherry, Pedunculate Oak and an early-mature Ash tree. The hedgerow had not been recently cut. A ditch running along its eastern edge has a channel measuring approximately 1m deep and 1m wide, becoming deeper at the southern end.

141. A mostly defunct native hedgerow dominated by Hawthorn with Blackthorn, English Elm, Elder, Field Maple and Crab Apple. A dry ditch runs along the hedgerow with a channel measuring approximately 0.5m deep and 1m wide, becoming shallower at the western end.
142. A utilities sub-station comprising hardstanding, with a track leading from London Road to the east, and dense scrub on the margins dominated by Bramble.
143. A complex of barns constructed of timber and corrugated metal used for storage and as a shelter for cattle. The surrounding field margins comprise bare earth, rough grass and tall ruderals.
144. A small field comprising improved species-poor grassland which is regularly grazed by horses and has a short sward. The grassland may have been relatively recently established over former arable land. The dominant species include Perennial Rye-grass, Creeping Buttercup, White Clover and Dandelion.
145. An intact native hedgerow along London Road dominated by Hawthorn with English Elm, Blackthorn, Ash, Elder, Crab Apple and Bramble. A shallow dry ditch running along the hedgerow base has a channel measuring up to 0.5m deep and 1m wide.
146. Two intact native hedgerows along a gravel track dominated by Hawthorn with English Elm, Blackthorn, Ash, Elder and Bramble. The hedgerows measure approximately 2.5m high and 1.5m wide and had been flail cut on just one side at the time of survey. Shallow dry ditches running along the hedgerow bases have a channel measuring up to 0.5m deep and 1m wide.
147. Small area of woodland dominated by fairly mature native trees in the north and early-mature specimens in the south which have likely been planted more recently. Tree species include Pedunculate Oak, Ash, Norway Maple, Poplar species, Aspen and Small-leaved Lime, and the understorey also includes Blackthorn and Crab Apple. Ground flora is heavily shaded and dominated by Cow Parsley (*Anthriscus Sylvestris*) and Common Nettle.
148. An intact native hedgerow dominated by Hawthorn with English Elm, Ash, and Crab Apple, including a small number of mature Ash trees. The hedgerow had recently been flail cut to approximately 2m high and 2m wide at the time of survey. A dry ditch runs along the western side of the hedgerow with a channel measuring approximately 1m deep and 1m wide and is choked with grasses and tall ruderal vegetation.
149. Corner of an arable field supporting early-mature Ash and Scot's Pine.
150. A wide strip of mown improved species-poor grassland along the western margin of an arable field. The grassland may have been relatively recently established over former arable land.
151. A section of the site boundary which borders a complex of residential properties comprises wooden post and rail fencing and lines of 8-12m tall Cypress trees.
152. A mostly unmanaged area of land in the corner of an arable field comprising improved grassland with stands of dense tall ruderal vegetation. A section had been mown for amenity use by neighbouring residential properties. Other sections had been used for the dumping of garden waste and storing trailers.
153. Field boundary bordering the A509 to the north comprising a fenceline and hedgerow with a dry ditch and scrub to the north. The hedgerow is intact, heavily dominated by Hawthorn and had been flail cut to approximately 2.5m high and 1.5m wide. The shallow dry ditch running along the hedgerow base to the north had a channel measuring up to 0.5m deep and 1m wide.

and is heavily overgrown with scrub, in particular Bramble. Scrub and tree planting along the verge of the A509 includes Hawthorn, Wild Cherry and Crack Willow.

- 154.** An intact native hedgerow dominated by Hawthorn with English Elm, Ash, Blackthorn and Crab Apple, including a small number of mature Ash trees. The hedgerow had recently been flail cut to approximately 2m high and 2m wide at the time of survey. A dry ditch runs along the eastern side of the hedgerow with a channel measuring approximately 1m deep and 1m wide and supports frequent Great Willowherb.
- 155.** An intact native hedgerow dominated by Hawthorn with English Elm, Ash, Blackthorn, Crab Apple and Dog Rose. A dry ditch runs along the southern side of the hedgerow with a channel measuring approximately 1m deep and 1m wide. A number of mature Oak and Ash trees occur along the southern bank of the ditch.
- 156.** A small area of woodland within the corner of an arable field just beyond the site boundary. The area supports a couple of mature Oak trees and an abundance of smaller trees and scrub including Field Maple, English Elm, Hawthorn, Ash, Horse Chestnut and Lime (*Tilia* sp.), some of which are likely to have been planted.
- 157.** Two mostly intact native hedgerows dominated by Hawthorn with English Elm, Blackthorn and Oak. The hedgerows measure approximately 2.5m high and 1m wide and had been flail cut on just one side at the time of survey.
- 158.** A small area between arable fields dominated by early-mature Ash and Norway Maple trees with a ground layer of Bramble and Nettle. The foundations and one wall remain of a former brick farm building in the centre of the area.
- 159.** A mostly intact native hedgerow dominated by Hawthorn, Blackthorn and English Elm measuring approximately 2.5m high and 1.5m wide. A dry ditch runs along the eastern side of the hedgerow with a channel measuring approximately 1m deep and 1m wide.
- 160.** Pond: A seasonally wet pond located in the corner of an arable field and surrounded by hedgerow and dense scrub and Ash trees. The pond measures approximately 10x6m and forms part of the ditch network, being fed from a drainage pipe to the east. The pond was mostly dry at the time of survey and supports no aquatic or marginal vegetation other than Greater Reedmace. Surrounding scrub includes Hawthorn, Blackthorn and Bramble.
- 161.** An intact native hedgerow dominated by Hawthorn, Blackthorn and English Elm, with a number of mature Ash trees. The hedgerow had recently been flail cut on the southern side only. A shallow dry ditch runs along the base of the hedgerow with a channel measuring approximately 0.5m deep and 1m wide.
- 162.** An intact native hedgerow heavily dominated by Hawthorn with Ash and a mature Oak tree. The hedgerow had recently been flail cut to approximately 2m high and 1.5m wide at the time of survey. A shallow dry ditch runs along the base of the hedgerow with a channel measuring approximately 0.5m deep and 1m wide.
- 163.** An intact native hedgerow dominated by Hawthorn with English Elm, Blackthorn and Ash. The hedgerow had recently been flail cut at the time of survey. A very shallow dry ditch runs along the base of the hedgerow with a channel measuring up to 0.3m deep and 1m wide.
- 164.** An intact native hedgerow dominated by Hawthorn with English Elm, Blackthorn and Ash. A shallow dry ditch runs along the base of the hedgerow with a channel measuring approximately 0.5m deep and 1m wide.

165. A line of planted early mature trees included Pedunculate Oak, Norway Maple and Wild Cherry, and a dry ditch with a channel measuring approximately 2m wide and 1m deep supporting abundant Great Willowherb and Bramble.
166. A small area in the corner of an arable field supporting mature Oak trees and early-mature Norway Maple with a sparse understory of English Elm and Elder. The ground flora includes Bramble, Nettle and Ivy.
167. Site boundary bordering hotel to the south comprising a dry ditch with a channel measuring approximately 1.5m deep and 2m wide. The southern bank comprises a brick wall and the northern bank was earth with recently cut ruderal vegetation dominated by Bramble, Nettle and Ivy.
168. An area of species-poor grassland used as a campsite and for grazing horses. The grassland is intensively managed through mowing or grazing and has a short sward. The sward is dominated by Perennial Rye-grass with Cock's-foot, Yorkshire Fog, White Clover, Dandelion, Common Chickweed, Red Clover, Creeping Thistle and Forget-me-not. More frequent ruderals occur on the margins of the area including Broad-leaved Dock, Nettle, Mugwort, Bristly Ox-tongue, Green Alkanet and Teasel.
169. A complex of large sheds and warehouse style buildings surrounded by areas of hardstanding.
170. A line of early-mature Cypress, Oak, Norway Maple and Field Maple of approximately 15m in height.
171. A line of early-mature Cypress trees around 15m in height, forming the boundary between the site and hotel grounds to the west.
172. Four mature Pedunculate Oak (*Quercus robur*) trees.
173. Two lightly cattle grazed fields, comprising relatively species-rich semi-improved neutral grassland to the west of the River Ouzel. Its species composition is broadly characteristic of NVC classification MG4 (Meadow Foxtail - Great Burnet grassland), with scattered tussocks of Thistle sp. throughout. Species recorded include Meadow Foxtail, Sweet Vernal-grass (*Anthoxanthum odoratum*), Yorkshire Fog, Red Fescue (*Festuca rubra*), Tall Fescue (*Festuca arundinacea*), Tufted Hair-grass, Cock's-foot, Creeping Bent, Rough Meadow-grass, Smooth Meadow-grass (*Poa pratensis*), Meadow Oat-grass (*Avenula pratensis*), Crested Dog's-tail (*Cynosurus cristatus*), False Oat-grass, Perennial Rye-grass, Soft Brome, Field Woodrush (*Luzula campestris*), Hairy Sedge (*Carex hirta*), Meadow Buttercup, Creeping Buttercup, Dandelion, Cut-leaved Cranesbill (*Geranium dissectum*), Common Nettle, Common Sorrel (*Rumex acetosa*), Curled Dock (*Rumex crispus*), Broad-leaved Dock, Pignut (*Conopodium majus*), Common Mouse-ear, Germander Speedwell (*Veronica chamaedrys*), Lesser Stitchwort (*Stellaria graminea*), Yarrow, Spear Thistle, Creeping Thistle, Red Clover, Cuckoo Flower (*Cardamine pratensis*), Meadow Vetchling (*Lathyrus pratensis*), Greater Burnet (*Sanguisorba officinalis*), Hogweed, Lady's Bedstraw (*Galium verum*), Lesser Trefoil (*Trifolium dubium*), and Tormentil (*Potentilla erecta*). The western area of the southern field shows evidence of ridge and furrow.
174. Species-poor, semi-improved grassland field subject to heavy cattle grazing with a short sward at the time of survey. The species composition has a high dominance of grasses, in particular Perennial Rye-grass. Other species present include Small Cat's-tail, Annual Meadow-grass, Meadow Barley (*Hordeum brachyantherum*), Common Bent (*Agrostis*

Appendix C

Breeding Bird Survey Results Summary Table

Breeding bird survey results summary table for Milton Keynes East in 2019:

Common Name	Scientific Name	Annex 1 ¹	WCA 1 ²	NERC 41 ³	BOCC4 (2015) ⁴	IBA**	NOTES ON BREEDING/OCCURRENCE	NO. TERRITORIES/ BREEDING PAIRS ASSOCIATED WITH SITE***
Mute Swan	<i>Cygnus olor</i>				Amber	3	Adult and juvenile recorded in river corridor on a number of survey visits. Likely 1 breeding pair within the site.	1
Canada Goose	<i>Branta canadensis</i>					2	Rare: Small number of individuals recorded foraging or flying over the site on an occasional basis. Likely breeding within the vicinity of the site.	n/a
Mallard	<i>Anas platyrhynchos</i>				Amber	1	Small numbers of pairs/ individuals recorded within the river corridor in the west of the site and flying over the site. At least one pair likely breeding within the site.	1
Red-legged Partridge	<i>Alectoris rufa</i>					2	Occasional: Small numbers of pairs/ individuals recorded in association with arable habitats across the site. Likely breeding within the site.	n/a
Pheasant	<i>Phasianus colchicus</i>					0	Occasional: Individuals and pairs recorded on an occasional basis in association with farmland habitats across the site. Likely breeding within the site.	n/a
Grey Heron	<i>Ardea cinerea</i>				Green	2	Rare: Individual recorded on a single occasion in association with the river corridor in the west of the site. Likely to be breeding in close vicinity of the site.	n/a
Red Kite	<i>Milvus milvus</i>				Green	3	Pairs and individuals recorded foraging over the site on most survey visits. Likely hold part of breeding territory within the site with nest in an off-site location.	n/a
Sparrowhawk	<i>Accipiter nisus</i>				Green	2	Rare: Individual recorded on a single occasion within the central area of the site near the Moulsoe Buildings. Unlikely breeding within the site.	n/a
Buzzard (Common)	<i>Buteo buteo</i>				Green	2	Frequent: Individuals and small groups recorded foraging over site on all surveys. Adult with juveniles recorded on one survey indicating this species is likely breeding within the site.	n/a
Barn Owl	<i>Tyto alba</i>				Green	3	One breeding territory within the site, potentially nesting in an undetermined building or hollow tree within or close to the site. Recorded foraging across farmland habitats across the site during the bat activity survey.	1

Moorhen	<i>Gallinula chloropus</i>				Green	1	Rare: Individual recorded on a single occasion within the pond in the east of the site. Unlikely breeding within the site.	n/a
Lapwing	<i>Vanellus vanellus</i>				Red	1	Up to four breeding territories recorded in association with the arable farmland habitats in the western and north-eastern areas of the site.	Up to 4
Black-headed Gull	<i>Chroicocephalus ridibundus</i>				Amber	1	Rare: Recorded flying over the site on a small number of surveys. Not breeding within the site.	0
Feral Pigeon	<i>Columba livia</i> (domest.)					1	rare: Low numbers recorded foraging over site on all visits on a small number of occasions.	n/a
Woodpigeon	<i>Columba palumbus</i>					0	Abundant: High numbers of pairs/small groups recorded foraging within farmland habitats across the site.	n/a
Collared Dove	<i>Streptopelia decaocto</i>				Green	1	Rare: Pairs recorded in on an occasional basis within the site. Likely breeding within site.	n/a
Swift	<i>Apus apus</i>				Amber	2	Individuals recorded flying over the site on three occasions. Unlikely breeding within the site.	0
Green Woodpecker	<i>Picus viridis</i>				Green	2	Occasional: individual recorded on most survey visits in the western area of the site, with three individuals recorded on the fourth survey visit in the central area of the site. Likely breeding in small numbers within the site.	n/a
Great Spotted Woodpecker	<i>Dendrocopos major</i>				Green	1	Rare: Individual recorded on a two occasions. Likely breeding within the vicinity of the site.	n/a
Kestrel	<i>Falco tinnunculus</i>				Amber	2	Rare: Individual recorded foraging within the south-eastern area of the site on a single occasion. Likely breeding in the vicinity of the site.	n/a
Magpie	<i>Pica pica</i>				Green	1	Frequent: Pairs and individuals regularly recorded across the site. Likely breeding within the site.	n/a
Jackdaw	<i>Corvus monedula</i>				Green	0	Abundant: Small groups recorded across the site during all survey visits. Highly likely to be breeding within site.	n/a
Rook	<i>Corvus fruilegus</i>				Green	1	Frequent: Large numbers of pairs/ small groups recorded foraging in association with woodland, grassland and farmland habitats across the site. Rookery present within trees to the east of London Road.	n/a
Carrion Crow	<i>Corvus corone</i>				Green	1	Frequent: Small groups and pairs regularly recorded foraging throughout the site and on land immediately adjacent to the site. Highly likely breeding within site.	n/a

Blue Tit	<i>Parus caeruleus</i>				Green	0	Abundant: Small groups and pairs regularly recorded foraging throughout the site and on land immediately adjacent to the site. Highly likely that a large number of breeding pairs are present within the site.	n/a
Great Tit	<i>Parus major</i>				Green	0	Abundant: Small groups and pairs regularly recorded foraging throughout the site and on land immediately adjacent to the site. Highly likely that a large number of breeding pairs are present within the site.	n/a
Skylark	<i>Alauda arvensis</i>				Red	0	Up to 41 breeding territories associated with arable and grassland fields across all areas of the site.	Up to 41
Swallow	<i>Hirundo rustica</i>				Green	1	Frequent: Moderate numbers of pairs/ small groups recorded foraging over arable fields. Possibly breeding within the site but no breeding behaviour recorded.	n/a
House Martin	<i>Delichon urbicum</i>				Amber	1	Rare: Individual recorded flying over the site on a single occasion. Unlikely breeding within the site.	0
Long-tailed Tit	<i>Aegithalos caudatus</i>				Green	1	Frequent: Small groups recorded in association with hedgerow, tree and woodland habitats across the site. Likely breeding within the site.	n/a
Chiffchaff	<i>Phylloscopus collybita</i>				Green	0	Rare: Low numbers of individuals recorded within the site. Likely breeding within site.	n/a
Blackcap	<i>Sylvia atricapilla</i>				Green	0	Occasional: Individuals recorded occasionally within the site. Highest numbers recorded in the west of the site. Highly likely a small number of breeding territories are present within the site.	n/a
Whitethroat	<i>Sylvia communis</i>				Green	0	Frequent: Moderate numbers of individuals recorded in association with hedgerow habitats across the site. Likely breeding within the site.	n/a
Sedge Warbler	<i>Acrocephalus schoenobaenus</i>				Green	1	Three individuals recorded on a single survey in association with vegetation along the river corridor in the west of the site. Possibly breeding within site.	n/a
Reed Warbler	<i>Acrocephalus scirpaceus</i>				Green	1	Rare: Individual recorded on a single occasion in association with the river corridor in the west of the site. Unlikely to be breeding within site.	n/a
Nuthatch	<i>Sitta europaea</i>				Green	1	Rare: Individual recorded on a single occasion in the north of the site.	n/a
Wren	<i>Troglodytes troglodytes</i>				Green	0	Frequent: Low-moderate numbers of individuals recorded in association with hedgerow and woodland habitats across the site. Likely breeding within the site.	n/a

Starling	<i>Sturnus vulgaris</i>				Red	0	At least one breeding pair within the site, with four juveniles recorded within the western-most area of the site. Individuals also recorded in central area of the site.	1
Blackbird	<i>Turdus merula</i>				Green	0	Abundant: Pairs and individuals recorded across the site on all surveys.	n/a
Song Thrush	<i>Turdus philomelos</i>				Red	0	Up to 4 breeding pairs in association with woodland in the south-eastern area of the site and hedgerows in the north-eastern area of the site	Up to 4
Robin	<i>Erithacus rubecula</i>				Green	0	Frequent: Regularly recorded in association with hedgerow and woodland habitat across the site.	
Dunnock	<i>Prunella modularis</i>				Amber	0	Up to 31 breeding territories in association with hedgerow habitats located across the site.	Up to 31
House Sparrow	<i>Passer domesticus</i>				Red	0	Up to twenty-six breeding territories recorded in association with hedgerow habitats close to buildings within the site.	Up to 26
Yellow Wagtail	<i>Motacilla flava</i>				Red	2	At least two breeding territories; one in the central area of the site and one in the western area of the site. Pairs and individuals were also recorded foraging in the central area of the site and the south-western area of the site but were not displaying breeding behaviour at the time of surveys.	At least 2
Grey Wagtail	<i>Motacilla cinerea</i>				Red	2	Rare: Individual recorded on a single survey in the central area of the site. Unlikely breeding within the site.	0
Pied Wagtail	<i>Motacilla alba</i>				Green	1	Occasional: Small numbers of pairs/ individuals recorded in association with grazed grassland habitats on an occasional basis. Likely breeding within the site.	n/a
Meadow Pipit	<i>Anthus pratensis</i>				Amber	0	Rare: Individuals recorded in association with arable farmland habitat on a small number of occasions in the western area of the site and the south-eastern area of the site.	0
Chaffinch	<i>Fringilla coelebs</i>				Green	0	Frequent: Small groups recorded foraging within hedgerows across the site on a regular basis.	n/a
Bullfinch	<i>Pyrrhula pyrrhula</i>				Amber	1	Up to one breeding pair possible associated with hedgerow and farmland habitat within the western area of the site.	1
Greenfinch	<i>Carduelis chloris</i>				Green	0	Occasional: Individuals and small groups recorded on most surveys within the central eastern and south-eastern areas of the site. Likely breeding in small numbers within the site.	n/a

Linnet	<i>Carduelis cannabina</i>				Red	1	Up to nine breeding territories associated with hedgerows along arable fields in the eastern areas of the site.	Up to 9
Goldfinch	<i>Carduelis carduelis</i>				Green	0	Frequent: Pairs and small groups recorded across the site on all of survey visits.	n/a
Yellowhammer	<i>Emberiza citrinella</i>				Red	1	Up to 42 breeding territories recorded in association with hedgerows across the site.	42
Reed Bunting	<i>Emberiza schoeniclus</i>				Amber	1	Up to six breeding pairs recorded in association with vegetation along the river corridor or within neighbouring fields in the west of the site.	Up to 6
total = 54 species (39 holding breeding territories over site)		1 (1 possible territory)	2 (1 possible breeding)	11 (11 breeding)	9 Red list (8 breeding); 10 Amber list (5 breeding)			

* Species listed in **bold** are considered to hold significant areas of breeding territory over the site during the 2019 breeding season.

** Index of Breeding Abundance (IBA) values based on latest robust breeding population data (Musgrove et al, 2013) using criteria from JNCC guidance for selection of biological SSSIs (Drewitt et al., 2015).

*** Only species meeting nature conservation criteria holding significant breeding territory over the site are considered in this column.

Appendix D

Wintering Bird Survey Results Summary Table

Wintering bird survey results summary table for Milton Keynes East 2018-2019:

COMMON NAME	LATIN NAME	Annex 1 Directive 2009/247/E C	Sched. 1 W&C Act 1982	UK BAP/ Sec.41 NERC Act.	BoCC 2015 (Red/ Amber/ Green/ No status)	IBA*	NOTES ON OCCURRENCE
Mute Swan	<i>Cygnus olor</i>					3	Individuals and pairs recorded within the River Ouzel channel in the western area of the site, with up to eight individuals recorded on any one occasion. Small groups also recorded flying over the site.
Greylag Goose	<i>Anser anser</i>					2	Two individuals recorded near the river channel in the western area of the site during the fourth survey visit.
Canada Goose	<i>Branta canadensis</i>					2	Up to four individuals recorded on three of the survey visits, associated with the river corridor in the west of the site.
Mallard	<i>Anas platyrhynchos</i>					1	Up to two individuals recorded using the river corridor during three of the survey visits. A group of six individuals was recorded flying over the site on the third visit.
Red-legged Partridge	<i>Alectoris rufa</i>					2	Small groups and individuals recorded in the central and southern areas of the site during the first, third and fifth surveys.
Pheasant	<i>Phasianus colchicus</i>					0	Up to 12 individuals recorded across the site during all surveys.
Cormorant	<i>Phalacrocorax carbo</i>					3	Six individuals recorded on the first survey and one individual recorded on the third survey.
Red Kite	<i>Milvus milvus</i>					3	One individual recorded on the second survey and two individuals recorded on the fifth survey.
Sparrowhawk	<i>Accipiter nisus</i>					2	Individual recorded on two occasions.
Buzzard (Common)	<i>Buteo buteo</i>					2	At least 3 individuals recorded across the site on each survey visit, with up to 6 individuals recorded during the third and fourth survey visits.
Moorhen	<i>Gallinula chloropus</i>					1	Individual recorded during the fifth survey along the river corridor in the west of the site.
Grey Partridge	<i>Perdix perdix</i>					2	Eight individuals recorded flying westwards from land east of the river corridor during the first survey.
Lapwing	<i>Vanellus vanellus</i>					1	Individuals and small groups recorded during all surveys other than the first, with a maximum count of 22 individuals recorded in the south of the site during the second survey.
Woodcock	<i>Scolopax rusticola</i>					2	Individual recorded below a hedgerow in the southern area of the site during the second survey visit.
Snipe	<i>Gallinago gallinago</i>					2	Individual recorded on a single occasion during the third survey visit in association with a hedgerow in the central area of the site.
Black-headed Gull	<i>Chroicocephalus ridibundus</i>					1	At least 10 individuals recorded flying over the site or foraging in fields on the first four survey visits. A maximum count of 88 individuals recorded during the second survey visit.
Common Gull	<i>Larus canus</i>					2	Eight individuals recorded flying over the site during the fourth survey visit.
Lesser B.b. Gull	<i>Larus fuscus</i>					1	Three individuals recorded flying over the site during the second survey.
Herring Gull	<i>Larus argentatus</i>					1	Individual recorded flying over the site on a single occasion.
Feral Pigeon	<i>Columba livia</i> (domest.)					1	Five individuals recorded on the fourth survey.
Stock Dove	<i>Columba oenas</i>					1	Two individuals recorded in association with hedgerows in the northern area of the site during the first survey visit.

Woodpigeon	<i>Columba palumbus</i>					0	Groups and individuals recorded across the site with a maximum count of 210 individuals during the third survey.
Collared Dove	<i>Streptopelia decaocto</i>					1	Five individuals recorded on the fifth survey located within the northern and southern areas of the site.
Kingfisher	<i>Alcedo atthis</i>					3	Individual recorded during the first and fifth survey visits along the river corridor in the west of the site.
Green Woodpecker	<i>Picus viridis</i>					2	Up to four individuals recorded on three of the survey visits.
Great Spotted Woodpecker	<i>Dendrocopos major</i>					1	Up to four individuals recorded across the site during the first four surveys.
Kestrel	<i>Falco tinnunculus</i>					2	Individual recorded on three occasions foraging within the western, central and southern areas of the site.
Magpie	<i>Pica pica</i>					1	Up to 20 individuals recorded across the site during all survey visits.
Jackdaw	<i>Corvus monedula</i>					0	Individuals and small groups recorded across the site during all survey visits other than the first, with a maximum count of 35 individuals.
Rook	<i>Corvus fruilagus</i>					1	Groups and individuals recorded across all areas of the site, with a maximum count of 163 individuals recorded during the first survey.
Carrion Crow	<i>Corvus corone</i>					1	Up to 34 individuals recorded across the site on each survey visit.
Blue Tit	<i>Parus caeruleus</i>					0	Up to 57 individuals recorded on any one survey in association with hedgerow and woodland habitats.
Great Tit	<i>Parus major</i>					0	Up to 57 individuals recorded on any one survey in association with hedgerow and woodland habitats.
Skylark	<i>Alauda arvensis</i>					0	Individuals and small groups recorded across the site in association with arable fields. A maximum count of 44 individuals was recorded across the site during the fourth survey visit.
Long-tailed Tit	<i>Aegithalos caudatus</i>					1	12 individuals recorded in the southern area of the site during the first survey.
Chiffchaff	<i>Phylloscopus collybita</i>					0	One individual recorded on the fifth survey in the western area of the site.
Willow Warbler	<i>Phylloscopus trochilus</i>					0	One individual recorded within Pineham Nature Reserve immediately adjacent to the south of the site.
Reed Warbler	<i>Acrocephalus scirpaceus</i>					1	Two individuals recorded adjacent to the river in the western area of the site.
Wren	<i>Troglodytes troglodytes</i>					0	Up to fourteen individuals recorded across the site.
Starling	<i>Sturnus vulgaris</i>					0	Small group of 12 individuals recorded in the western area of the site in association with grassland on the first survey visit and a pair recorded in association with farm buildings in the southern area of the site during the fifth survey visit.
Blackbird	<i>Turdus merula</i>					0	At least 27 individuals recorded across the site on each visit in association with hedgerow and woodland habitats. A maximum count of 47 individuals was recorded across the site on the fourth survey visit.

Fieldfare	<i>Turdus pilaris</i>					6	Groups recorded across the site in association with arable fields and hedgerows. Groups ranging in size from 40 - 150 individuals recorded during the first and second surveys, with a maximum count of 212 individuals recorded on the second survey. Up to five individuals recorded on the third and fifth surveys in the southern area of the site only.
Song Thrush	<i>Turdus philomelos</i>					0	Individuals recorded across the site in association with hedgerows and woodland. At least one individual was recorded during each survey with a maximum count of six individuals recorded across the site on the fourth survey visit.
Redwing	<i>Turdus iliacus</i>					5.5	Small groups recorded across farmland habitats during all surveys other than the first. Up to 50 individuals recorded across the site during a single survey visit.
Mistle Thrush	<i>Turdus viscivorus</i>					1	Small numbers of individuals recorded across the site during the fourth and fifth surveys. A maximum count of five individuals was recorded during the fifth survey.
Robin	<i>Erithacus rubecula</i>					0	At least 17 individuals recorded across the site on each visit.
Wheatear	<i>Oenanthe oenanthe</i>					1	Two individuals recorded in the central area of the site during the third and fourth survey visits and two individuals recorded in the northern area of the site during the fourth survey visit.
Duncock	<i>Prunella modularis</i>					0	Up to 15 individuals recorded in association with hedgerows across the site during all survey visits.
House Sparrow	<i>Passer domesticus</i>					0	Six individuals recorded in the west of the site during the second survey visit and two individuals recorded in the south of the site during the third survey visit.
Pied Wagtail	<i>Motacilla alba</i>					1	Small groups and individuals recorded across the site during all surveys, with up to 29 individuals recorded on a single survey.
Chaffinch	<i>Fringilla coelebs</i>					0	Up to 110 individuals recorded across the site on each survey visit.
Bullfinch	<i>Pyrrhula pyrrhula</i>					1	Three individuals recorded on the first survey visit only located in the central and southern areas of the site.
Greenfinch	<i>Carduelis chloris</i>					0	Up to four individuals recorded across the site during the majority of survey visits.
Linnet	<i>Carduelis cannabina</i>					1	Up to 29 individuals recorded across the site during all survey visits. This species was recorded most consistently in the northern area of the site in association with hedgerows, but was recorded in all areas of the site at least once.
Goldfinch	<i>Carduelis carduelis</i>					0	Up to 50 individuals recorded across the site on each survey visit.
Siskin	<i>Carduelis spinus</i>					1	Five individuals recorded in the northern area of the site during the third survey visit.
Yellowhammer	<i>Emberiza citrinella</i>					1	A minimum of five individuals recorded across the site during all surveys other than the second. A maximum count of fourteen individuals was recorded during the fifth survey visit.

Reed Bunting	<i>Emberiza schoeniclus</i>					1	Low numbers of individuals recorded in the western areas of the site during the third, fourth and fifth surveys. A maximum count of nine individuals was recorded on the fifth survey.
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* Index of Breeding Abundance (IBA) values based on latest robust breeding population data (Musgrove et al, 2013) using criteria from JNCC guidance for selection of biological SSSIs (Drewitt et al., 2015).

Appendix E
Site Evaluation Methodology

Site Evaluation Methodology (taken from Drewitt *et al.*, 2015)

Published guidance by the JNCC on the selection of biological SSSI's (Drewitt *et al.*, 2015) provides a method for evaluating assemblages of breeding birds. Sites are eligible for selection as SSSI's if they support an especially good range of bird species characteristic of the habitat.

Lists of breeding bird assemblages of different habitats can be found below. Each species listed is given an index of breeding abundance (IBA) from 0 to 6, which refers to the current total number of breeding pairs in Britain (Musgrove *et al.*, 2013) as follows:

Breeding Pairs	IBA
>1 million	0
100,000 - 1,000,000	1
10,000 - 100,000	2
1,000 – 10,000	3
100 – 1,000	4
10 – 100	5
1 – 10	6

Where the population of a species falls on the border of two classes, an intermediate value may be given (e.g. 2.5).

The species list for each habitat is made up as follows. All species characteristic of the habitat and with indices of abundance of 4 to 6 (i.e. with a total British population less than 1,000 pairs) are included. Also included are more abundant species which are either primarily associated with this habitat or are associated with more than one habitat, some of which are particularly threatened by habitat change (for example drainage of wetlands or loss of heath or scrub). All species of index 0 (i.e. with more than 1 million pairs) are omitted from the lists.

The index value for a site is calculated by summing the indices of abundance for species breeding in it. A species may be included if it has been recorded as probably breeding in the majority of recent years for which information is available. Species regularly using a site for essential activities (such as feeding) while breeding may be included even if they nest outside the site. To qualify under section 3.8, the index value for a site should exceed the threshold value given for the relevant habitat.

The threshold values were derived as follows. For each habitat, the theoretical maximum score which could be obtained for those species with indices of 1 to 4 was calculated. Those species with scores of 5 and 6 were excluded, as these species with British populations of less than 100 pairs are generally very restricted in geographical distribution. In fact, this also applies to many species with an index of 3 or 4. Although species with indices of 5 and 6 are excluded in the calculation of site threshold values, any such species must be included in the calculation of a site index, as few, if any, will be present at

any one site and inclusion allows the required added importance to be given to the sites used by these rarer species (such sites might also qualify under section 3.2). Even with these rare species included, it is most unlikely that the theoretical maximum score would be achieved at any site because species from all parts of Britain and all subdivisions of the general habitat category concerned are included in its calculation. For most habitats, a site reaching half the theoretical maximum as calculated above would be an especially good example of the breeding bird community. Thus this half-maximum value is the threshold given for each habitat.

The differences in distribution patterns shown by birds make the provision of national values difficult. For some habitats, different values are given for different parts of Britain to make some allowance for this. Even if a single threshold level is given, this may allow for the absences of some species in some parts of the country. It is impracticable to make the very fine geographical divisions which biological purists might suggest. No list is provided for certain habitats (for example cliffs). In these cases, it is envisaged that sites selected on the basis of other criteria (for example see sections 3.2 or 3.5) should provide for adequate population coverage.

Mixed habitats

It is clearly impracticable to give lists for each possible combination of habitats within a site, although it is recognised that many bird species depend on a combination of habitats. Several approaches are possible:

- (i) if one (or more) of the composite habitats reaches the threshold value for that habitat, the whole site may be selected if the other habitats clearly form integral parts of the site;
- (ii) if two habitats are included in one well-defined site, the indices for species which are on both habitat lists and have been recorded for the site should be double-counted; other species score in the usual way; for the site to qualify on this basis, its total score should exceed the qualifying threshold value for the two habitats combined (for example for a woodland and lowland scrub combination $39 + 14 = 53$).

In all cases, local knowledge of the site and its context is essential.

Tables of breeding bird assemblage index values of different habitats – see above text for explanation.

Lowland scrub (excluding heath)

Turtle Dove	2	Grasshopper Warbler	2
Cuckoo	2.5	Nightingale	3
Long-eared Owl	3	Linnet	1
Willow Tit	3	Lesser Redpoll	1
Long-tailed Tit	1	Bullfinch	1
Garden Warbler	1	Yellowhammer	1
Lesser Whitethroat	2	Cirl Bunting	4

Site threshold values

14 (this does not readily apply to Wales, Scotland or Northern England)

Lowland Farmland

Grey Partridge	2	Cuckoo	2.5
Quail	4	Barn Owl	3
Marsh Harrier	4	Magpie	1
Montagu's Harrier	5	Rook	1
Buzzard	2	Swallow	1
Kestrel	2	Tree Sparrow	1
Hobby	3	Yellow Wagtail	2
Corncrake	3	Pied Wagtail	1
Stone-curlew	4	Linnet	1
Lapwing	1	Yellowhammer	1
Curlew	2	Cirl Bunting	4
Crane	5	Reed Bunting	1
Stock Dove	1	Corn Bunting	2.5
Turtle Dove	2		

Site threshold values

S and E England: 26

Wales: 17.5

Rest of Britain: 22

Woodland

Grey Heron	2	Crested Tit	3
Little Egret	4	Coal Tit	1
Honey-buzzard	5	Willow Tit	3
Red Kite	3	Marsh Tit	2
Goshawk	4	Long-tailed Tit	1
Sparrowhawk	2	Wood Warbler	3
Buzzard	2	Garden Warbler	1
Osprey	4	Nuthatch	1
Hobby	3	Treecreeper	1
Black Grouse	3	Fieldfare	6
Capercaillie	4	Redwing	5.5
Woodcock	2	Spotted Flycatcher	2
Stock Dove	1	Nightingale	3
Cuckoo	2.5	Pied Flycatcher	2
Tawny Owl	2	Redstart	1.5
Long-eared Owl	3	Tree Pipit	1.5
Wryneck	6	Siskin	1
Green Woodpecker	2	Lesser Redpoll	1
Great Spotted Woodpecker	1	Common Crossbill	2
Lesser Spotted Woodpecker	3	Scottish Crossbill	2.5
Jay	1	Bullfinch	1
Raven	3	Hawfinch	4
Firecrest	4		

Site threshold values

Northern Scotland: 33.5

Wales: 37.5

Rest of Britain: 39

Appendix F14

Reptile Survey Report

MILTON KEYNES EAST

REPTILE SURVEY REPORT

Prepared for St James

by

Hankinson Duckett Associates

HDA ref: 2090.52

February 2020

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HDA Document Control and Quality Assurance Record

APPENDICES

A Reptile Survey Summary Plan

1 INTRODUCTION

1.1 Site location and summary description

1.1.1 This report describes the results of a reptile survey conducted on approximately 362ha of land at Newport Pagnell, Buckinghamshire hereinafter referred to as 'the site'. The site can be located by National Grid Reference SP893419. The study was commissioned by St James in July 2018.

1.1.2 The site is located to the south of Newport Pagnell, on the north-eastern edge of Milton Keynes, Buckinghamshire. The site is dominated by agricultural land comprising intensively managed arable and grazed grassland fields with associated farmyards, agricultural buildings and residential farm houses. Field boundaries generally consist of hedgerows, treelines and fencing with occasional ponds and parcels of woodland, and the River Ouzel flows from south to north through the western part of the site. The site is bordered to the north by a construction site for residential development and the A422 beyond which lies the town of Newport Pagnell; to the east by arable farmland; to the west by the Pineham Nature Reserve and the M1 Motorway beyond which lies the town of Milton Keynes; and to the south by arable farmland.

1.1.3 The location and boundary of the site are shown in *Appendix A*. Detailed descriptions of the habitats within the site are given in the Ecological Appraisal (HDA, 2020).

1.2 Background and legislative context

1.2.1 Four species of reptile are widespread in England, Grass Snake *Natrix natrix*, Slow-worm *Anguis fragilis*, Common Lizard *Zootoca vivipara* and Adder *Vipera berus*. The Sand Lizard *Lacerta agilis* and Smooth Snake *Coronella austriaca* are restricted to certain sand dune and heathland sites.

1.2.2 Reptiles can be found in a range of habitats and typically require a mosaic of vegetation types. Habitat interfaces are important with reptiles requiring woodland, scrub or hedgerow for shelter, with adjacent longer vegetation for hunting and patches of sheltered short turf, bare ground or log piles for basking areas. Areas which catch the sun (i.e. those with a southerly aspect) are preferred over those where direct sunlight is absent for most of the day. In addition, Grass Snakes favour damp habitats such as those associated with still and running water, grazing marshes, mires etc.

1.2.3 All species of reptile are protected through Sections 9(1) and 9(5) of the 1981 Wildlife and Countryside Act (as amended). It is an offence to:

- Intentionally kill or injure any reptile; and
- Sell, offer for sale, possess or transport for the purposes of sale or publish advertisements to buy or sell any reptile.

Due to their rarity, Sand Lizards and Smooth Snakes have additional protection.

1.2.4 Reptiles across the UK have undergone significant declines in recent years and all species of reptile within the UK are now listed under Section 41 of the 2006 NERC Act as Species of Principal Importance. This requires planning authorities to regard these species as a material consideration in the planning process.

1.3 Development proposals

1.3.1 Proposals for the site include mixed use development with associated landscaping and infrastructure.

1.4 Scope and purpose of the report

1.4.1 During an initial walkover survey undertaken by HDA in 2012, habitats within and adjacent to the site were identified as suitable for use by reptiles in the form of woodland parcels, waterbodies and field margins comprising hedgerow bases and associated rough grassland, scrub and tall ruderal vegetation. A reptile survey was subsequently undertaken in 2012 which confirmed the presence of a very low population of Grass Snake within areas of suitable habitat across the site.

1.4.2 In recognition of the confirmed presence of reptiles in 2012, the time that has passed since the 2012 reptile survey was undertaken, the continued presence of suitable habitat for reptiles and the legislative context set out in *Section 1.2* above, an updated reptile survey was undertaken in 2018 to identify the continued presence/ likely absence of reptiles within the site. This is the subject of this report. Specifically, the aims of the updated reptile survey were:

- i. To establish the continued presence/ probable absence of reptiles;
- ii. To assess the relative importance of different parts of the survey area for reptiles; and
- iii. To predict likely impacts potentially arising from the proposed development of the site on reptiles and give recommendations for impact avoidance, minimisation and mitigation.

2 METHODOLOGY

2.1 The methodology has been devised to accord with the requirements of all relevant legislation and good practice guidance, including the Herpetofauna Worker's Manual (JNCC, 1999) and Reptile Survey guidance (Froglife, 1999).

2.2 The site was surveyed on a total of six occasions by Kate Hair and Gerald Selvey of HDA. Surveys were generally carried out during optimum temperature and weather conditions (intermittent or hazy sunshine, temperature between 9°C and 20°C and low

winds). Dates of survey visits, with survey timings and weather conditions, are shown in *Table 1* below:

Table 1: Survey times and weather conditions

Survey visit	Date	Time of visit	Weather conditions	Temp (°C)
1	28.08.2018	9:00 -17:10	Dry, 100% cloud cover, calm.	16 - 20
2	03.09.2018	8:30 – 4.10	Dry 100% cloud cover, calm	14 – 25
3	11.09.2018	7:00 – 15:45	Light drizzle, 100% cloud, cool breeze	13 – 23
4	18.09.2018	9:00 – 15:45	Occasional showers, sunny spells, 40-100% cloud cover and strong breeze.	16 - 25
5	24.09.2018	9:05 – 17:05	Sunny warm, dry, 0-5% cloud cover, and calm.	9 – 20
6	1.10.2018	9:20 – 16:00	Sunny, dry, clear, breezy	10 - 15
6	2.10.2018	9:30 – 14:25	100% cloud, dry, breezy	10

- 2.3 Two methods of surveying were used. Firstly, artificial refugia (squares of roofing felt 0.5m x 0.5m) were placed, in advance of the survey commencing, at potential basking areas throughout the survey area. A total of 1,500 refugia were placed across the site, giving a total density of 4 refugia per hectare. Although this is below the recommended density of 5 to 10 refugia per hectare, the majority of the site comprises intensively farmed fields which were generally considered unsuitable for reptiles. The actual extent of potential reptile habitat forms only a small proportion of the site and therefore the actual density of refugia per hectare of suitable habitat considerably exceeded the recommended 5 to 10 refugia per hectare, thereby allowing a robust assessment of the presence/likely absence of reptiles and their distribution where suitable habitat occurs.
- 2.4 During each of the six visits, each refugium was inspected for any reptiles basking on the upper side, then lifted and checked for sheltering animals before being carefully replaced. A different route was taken each time to ensure that there was no bias due to time of survey.
- 2.5 The second survey method involved transect searches across suitable habitats within the site. This ensured that all areas were represented in the survey, and that the survey was not biased towards those reptiles more likely to use refugia. Transect searches involve walking slowly around the survey area, visually searching potential basking areas and marking the locations of any reptiles observed on a map. Potential reptile refuges already present within the survey area such as fallen deadwood were also lifted to check for the presence of animals.
- 2.6 The following information was recorded for each reptile survey: species seen, number of animals seen, location, date, start and finish times, temperature and weather.

2.7 Limitations

2.7.1 The reptile surveys were carried out at an appropriate time of year during suitable weather conditions. On a minority of occasions temperatures exceeded 20°C but it has been HDA's experience that minor exceedances do not significantly change rates of detection, and in some instances may improve detection of reptiles. Additionally, prior to the second survey visit approximately a third of the artificial refugia throughout the site had been destroyed. This is not considered a significant limitation however, as the number of 'settled' refugia across the site was maintained at above the recommended matting density of suitable habitat throughout the course of the survey and the rest of the mats remained undisturbed until completion of the survey. It is therefore considered that no significant limitations were encountered during the survey and the survey findings allow a robust assessment of the likely effects of the proposed development on reptiles.

3 RESULTS

3.1 Habitat assessment

3.1.1 The majority of the site comprises unsuitable reptile habitat, being dominated by intensively managed farmland. Suitable reptile habitat is limited to areas of woodland edge habitat, hedgerow bases, the banks of watercourses and the network of field margins comprising rough grassland, ditch, tall ruderal vegetation and scrub habitats.

3.2 Refugia and visual searches

3.2.1 Slow-worm and Grass Snake were recorded within the site during the reptile survey. The full survey results are summarised in *Table 2* below and the locations at which reptiles were recorded are shown in *Appendix A*.

Table 2: Reptiles recorded at the site

Date of survey	Reptiles observed
28.08.2018	1 x Grass snake (1 adult) 1 x Slow-worm (1 Juvenile)
03.09.2018	No reptiles recorded
11.09.2018	No reptiles recorded
18.09.2018	No reptiles recorded
24.09.2018	No reptiles recorded
1.10.2018	No reptiles recorded
2.10.2018	No reptiles recorded

Slow-worm

3.2.2 During the course of the survey a maximum count of one juvenile Slow-worm was recorded on any one visit. The Slow-worm was recorded from the base of a hedgerow in the south of the site.

Grass Snake

- 3.2.3 During the course of the survey a maximum count of one adult Grass Snake was recorded on any one visit. No juvenile or sub-adult Grass Snakes were recorded. The record of Grass Snake was also associated with rough grassland and tall ruderal vegetation along a hedgerow base on the south-eastern site boundary.

4 SITE EVALUATION

- 4.1 A number of guidelines are used to evaluate the importance of a site for reptiles, based on both the population density and number of species present, in addition to historical factors.
- 4.2 The Guidelines for Biological Selection of SSSIs (JNCC, 1989) gives a scoring system for the evaluation of sites on the basis of their reptile population. It suggests that for the commoner species of reptile, the best localities in which three or more species occur should be selected as potential SSSIs.
- 4.3 The Herpetofauna Workers' Manual (JNCC, 1998) suggests that sites falling outside of the SSSI selection criteria should be designated as Sites of Importance for Nature Conservation (SINCs) if they meet the following criteria:
- Any site with a large population of a single species;
 - Any site with a moderate population of two species;
 - Any site at the edge of the geographical range of a species; and
 - Any site with a long documented history.
- 4.4 The Key Reptile Site register is a mechanism designed to promote the safeguard of important reptile sites. To qualify for the register, the site in question must meet at least one of the following criteria (Froglife, 1999):
- Supports three or more reptile species;
 - Supports two snake species;
 - Supports an exceptional population of at least one species (Table 2);
 - Supports an assemblage of species scoring at least 4 (Table 2); and
 - Does not satisfy the above criteria but is of particular regional importance due to local rarity (e.g. in the East Midlands, Adders are very rare so even "low" populations should be designated as Key Sites).
- 4.5 The criteria for scoring populations of the four common reptile species for the purposes of the Key Reptile Register are given in *Table 3* below.

Table 3: Population parameters for the Key Reptile Sites register

Reptile species	Low population Score 1	Good population Score 2	Exceptional population Score 3
Adder	<5	5-10	>10
Grass Snake	<5	5-10	>10
Common Lizard	<5	5-20	>20
Slow-worm	<5	5-20	>20

Figures in the table refer to maximum number of adults seen by observation and/or under tins (placed at a density of up to 10 per hectare) by one person in one day.

4.6 Using these criteria, the survey area supports 'low' populations of Slow-worm and Grass Snake with a maximum count of one for each of these species. However, due to the high density of reptile refugia placed at the site, relative to the suitable habitat available, it is likely that the results have been exaggerated to indicate a higher population of Grass Snake and Slow-worm, and that a 'very low' population of both species is more likely to be present. As only two species of reptile were recorded within the site, which are both considered to be present in only very low numbers, the site does not qualify as a SSSI, SINC or Key Reptile Site.

4.7 Grass Snakes and Slow-worm are a common and widespread reptile species and suitable habitat for these species is relatively abundant in the wider area. The site is therefore considered in its entirety to be of no more than low local value for Grass Snake and Slow-worm.

4.8 Although the Grass Snake and Slow-worm recorded were associated with hedgerow bases on field margins in the southern area of the site, it is conceivable that these species also occur in very low numbers in other areas of suitable habitat across the site including woodland edges, pond/ watercourse margins, and field margins including hedgerow bases, rough grassland, tall ruderal and scrub habitats. This is reflected in the findings of the 2012 reptile survey which also recorded low numbers of Grass Snake in the north, east and west of the site (see *Appendix A*).

5 RECOMMENDATIONS

5.1 The site is considered to support 'very low' numbers of Slow-worm and Grass Snake and as such does not qualify as a SSSI, SINC or Key Reptile Site. The site is considered to be of no more than low local value for reptiles as the species recorded are all common and widespread and similar habitat for these species is relatively abundant in the wider area. Notwithstanding this, all reptiles should be afforded the protection provided under the 1981 Wildlife and Countryside Act (as amended). In addition, development proposals

for the site should also seek to maintain and, where possible, enhance opportunities for this group in accordance with the 2006 NERC Act and planning policy and guidance. Measures by which this can be achieved are identified below.

5.2 Sensitive Approach to Site Clearance

5.2.1 Although Slow-worm and Grass Snake were associated with the field margins comprising hedgerow bases and associated rough grassland and tall ruderal vegetation it is conceivable that these species also occur in very low numbers in other areas of suitable habitat across the site. Where it is unavoidable that areas of suitable reptile habitat are lost as a result of the proposed development, measures to protect reptiles should be implemented.

5.2.2 In view of the limited number and distribution of Slow-worm and Grass Snake recorded, assuming that management of the survey area remains the same and that the distribution or character of habitats does not change significantly prior to construction a full reptile translocation exercise is not currently recommended in this instance prior to development commencing (see *paragraph 5.2. below*).

5.2.3 Instead, it is recommended that a controlled approach is taken to site clearance in those areas where potential habitat is to be lost in order to displace any reptiles present into retained areas of contiguous habitat within the site and/ or wider area. This would require the following:

- Firstly, vegetation cover should be reduced to minimum height of 150mm. This would ideally take place at a time avoiding the bird breeding season (typically between March and August inclusive) or otherwise be preceded by a check of suitable habitat for active nests immediately prior to commencement of works by a suitably qualified ecologist.
- Where potential for reptiles to be present remains, a minimum period of 5 days with daytime temperatures of >12°C should then be allowed to pass prior to the second stage of vegetation clearance (see below).
- The second stage would involve clearance of all suitable vegetation to ground level (i.e. <75mm) by hand during mild temperatures (>14°C) at a suitable time of year when reptiles are likely to be active (generally mid-March to early October inclusive). At this time any potential hibernacula or refugia encountered should be carefully dismantled by hand. This stage of clearance should be undertaken under the supervision of a suitably qualified ecologist who would capture and relocate any reptiles encountered to areas of retained habitat on the margins of the site.
- Where potential for reptiles to be present still remains, a further 5 days with daytime temperatures of >12°C should then be allowed to elapse to enable any

remaining reptiles to disperse from the area of works, prior to the destructive search.

- Following clearance of vegetation to ground level and removal of any refugia by hand, no suitable reptile habitat would remain and it is expected that any remaining reptiles would disperse from the area of works into adjacent habitat on their own accord.
- In order to be certain that no reptiles are present within the area of works, where any potential for reptiles to be present still remains a destructive search should be carried out. This would involve the progressive stripping of topsoil from the area of works under the supervision of a suitably qualified ecologist.
- In the event that the destructive search is delayed, vegetation should be maintained at ground level until the destructive search is carried out. Similarly, following the destructive search, the land should be maintained as unsuitable for the recolonisation of reptiles prior to and throughout the construction works.

5.2.4 It is recommended that the approach to mitigation outlined above is reviewed at an appropriate stage prior to works commencing in order to allow consideration of:

- Development design. The above approach assumes that only relatively limited areas of suitable reptile habitat are affected at any given time and that where habitat is lost contiguous areas of suitable reptile habitat will be retained or created in advance of works commencing into which reptiles can be displaced. In the event that large isolated areas of habitat are affected then translocation may be required.
- Any changes to management of habitats at the site which may have affected their ability to support reptiles since this report was produced.

5.2.5 It is recommended that the measures to protect and maintain the site's reptile population form the basis of a detailed Reptile Mitigation Method Statement to be agreed with Natural England and/or the Local Planning Authority at an appropriate stage.

5.3 Maintaining & Enhancing Opportunities for Reptiles

5.3.1 In accordance with the 2019 National Planning Policy Framework (NPPF) and 2006 NERC Act, development proposals should seek to maintain and where possible enhance opportunities for reptiles at the site. This could be achieved through the retention, enhancement and creation of reptile habitats as part of the landscape strategy for the site. Consideration should be given to:

- Enhancement of woodland/hedgerow edge habitats through creation of ecotones (a gradation from woodland/hedgerow to scrub to rough grassland habitats);
- Creation of new waterbodies in order to provide improved habitats favoured by Grass Snake;

- Inclusion of other high quality reptile habitats within the landscape scheme in the form of rough and meadow grasslands, scrub, wetland and woodland habitats;
- Provision of opportunities for hibernation and refuge through provision of log/brush piles and purpose built hibernaculum; and
- Securing the long-term integrity of new and retained reptile habitat through inclusion within a long-term management plan.

6 CONCLUSION

6.1 Subject to the implementation of the measures outlined above to protect individual reptiles and ensure that suitable habitat remains following development at the site, the proposed development is unlikely to result in adverse effects on the local reptile population. Furthermore, through habitat retention, enhancement, creation and management, development at the site could in fact provide opportunities to safeguard and enhance its value for reptiles in the long-term in accordance with the 2019 National Planning Policy Framework and the 2006 NERC Act.

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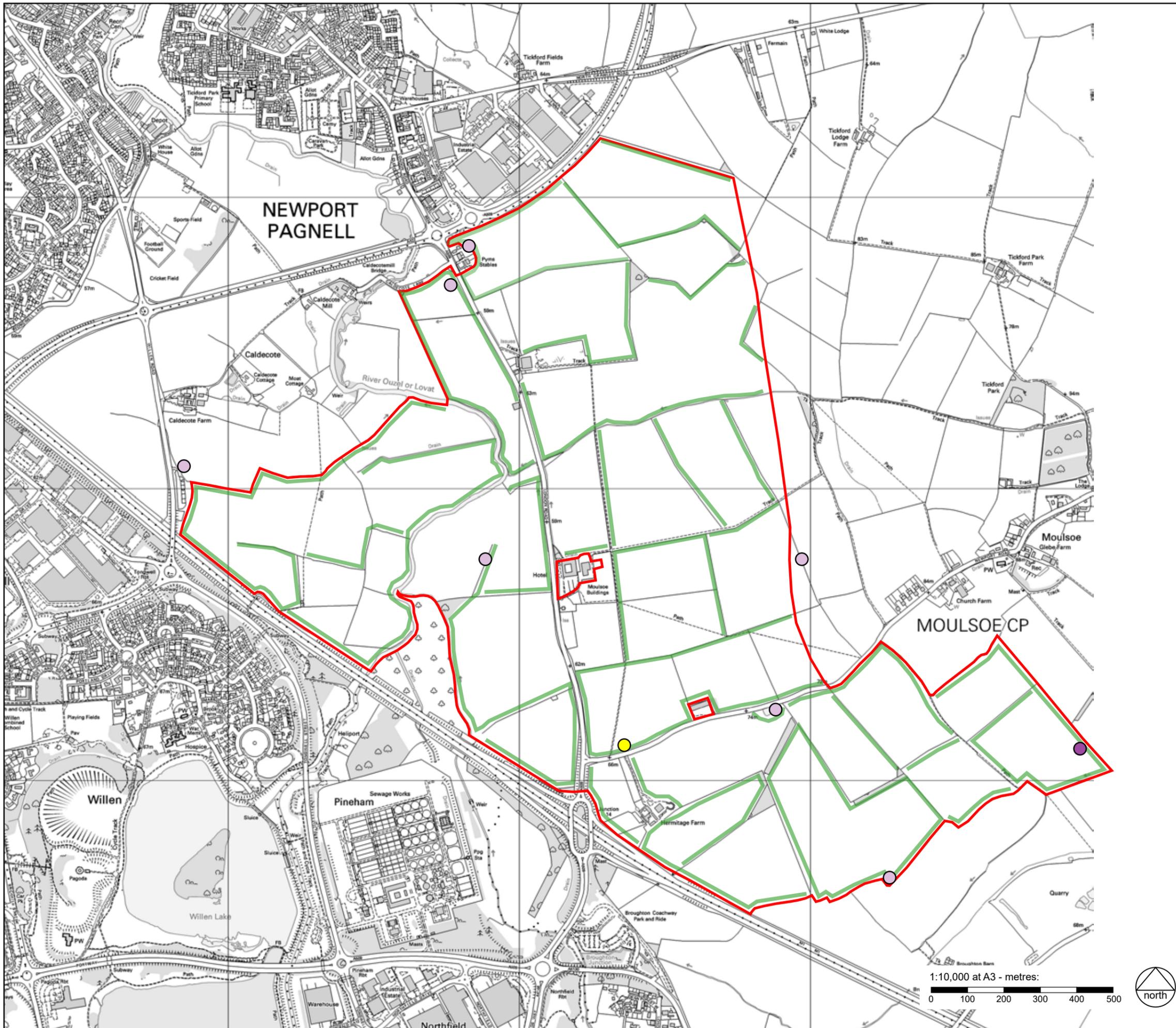
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APPENDIX A

Reptile Survey Summary Plan



- KEY**
- Site Boundary
 - Reptile mat locations
 - Slow-worm record
 - Grass Snake record
 - 2012 Grass Snake record

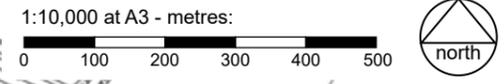
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St James
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Reptile Survey Summary Plan
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**Landscape Architecture
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Appendix F15

Reptile Survey Report: Additional Areas



MILTON KEYNES EAST

REPTILE SURVEY REPORT: ADDITIONAL AREAS

Prepared for St James

by

Hankinson Duckett Associates

HDA ref: 2090.52

March 2021

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APPENDICES

A Reptile Survey Summary Plan

1 INTRODUCTION

1.1 Site location and a summary description

- 1.1.1 This report describes the results of additional reptile survey work conducted in association with the proposed development of approximately 437ha of land at Newport Pagnell, Buckinghamshire hereinafter referred to as 'the site'. The site is located by National Grid Reference SP893419. The study was commissioned by St James in April 2020.
- 1.1.2 The site is located to the south of Newport Pagnell, on the north-eastern edge of Milton Keynes, Buckinghamshire. The site is dominated by a series of arable fields bordered by hedgerows, treelines, ditches and fencing. Other habitats include grazed grassland fields, small areas of amenity grassland and small pockets of deciduous woodland. The River Ouzel and its tributary, the Broughton Brook, flow in a northerly direction through the western and central areas of the site and, associated with these watercourses, the Pineham Nature Reserve in the south of the site supports a mosaic of scrub, rough grassland, tall ruderal vegetation and ponds. Other features within the site include a number of agricultural, commercial and residential buildings, generally associated with working farms, and roads including the M1 motorway and Tongwell Street which run through a corridor of woodland, scattered trees and scrub in the south-west of the site, and several smaller roads running through the site to the east.
- 1.1.3 The site is bordered to the north by a construction site for residential development and the A422, beyond which lie the Interchange Park industrial estate and the town of Newport Pagnell; to the east by arable farmland and the settlement of Moulsoe; to the south-west by residential development and Willen Lake on the outskirts of Milton Keynes, the M1 Motorway and Pineham sewage works; and to the south-east by arable farmland.
- 1.1.4 The majority of the site (362ha) was subject to reptile survey in 2018 (HDA, 2020) however following the expansion of the site boundary into previously unsurveyed areas of land on the margins of the site in March 2020, the survey was extended to incorporate these areas and this forms the subject of this report. These areas of additional land are hereinafter referred to in combination as the '2020 survey area' and have a combined area of approximately 44.9ha. Each of the additional parcels forming the 2020 survey area is described below and a plan showing the locations of the site and the additional survey areas is provided in *Appendix A*¹.
- 1.1.5 The three parcels of land subject to further survey which are the focus of this report are described below:

¹ The site was extended again in February 2021 to make up the full 437ha however the further additional land either (1) comprises the interiors of intensively farmed fields or existing highways infrastructure and is therefore generally unsuitable for reptiles (2) will not be affected by the proposed works and /or relates to land immediately associated with land already subject to survey and is unlikely to yield different results being substantially similar in character.

- **Area 1:** Area 1 comprises approximately 30ha of land to the north and south of Newport Road in the east of the site located around the settlement of Moulsoe, centred by National Grid Reference SP902417. The area to the north of Newport Road comprises a series of large arable fields with narrow rough grassland margins, intersected by a network of native hedgerows, ditches and occasional trees. The area to the south of Newport Road comprises a slightly undulating species-rich, semi-improved grassland field managed by occasional sheep grazing. This is bordered by dense native hedgerows and belts of scrub and woodland.
- **Area 2:** Area 2 comprises approximately 6.3ha of land in the northern corner of the site, centred by National Grid Reference SP893432. The area comprises an approximately 625m section of the A509 alongside Interchange Park and a wedge-shaped section of an adjacent arable field to the south-east. The southern and eastern boundaries of the arable field are formed by dense hedgerows and tree lines and the arable field extends beyond the site boundary to the north-east.
- **Area 3:** Area 3 comprises approximately 8.6ha of land located in the south-west of the site, centred by National Grid Reference SP882408. The area comprises an approximately 1.3km stretch of Tongwell Street with adjacent managed semi-improved grassland road verges and mixed woodland roadside planting. The River Ouzel passes below the road in the centre of the area through a corridor of woodland, scattered trees and grassland.

1.2 Background and legislative context

1.2.1 Four species of reptile are widespread in England: Grass Snake *Natrix natrix*, Slow-worm *Anguis fragilis*, Common Lizard *Zootoca vivipara* and Adder *Vipera berus*. The Sand Lizard *Lacerta agilis* and Smooth Snake *Coronella austriaca* are restricted to certain sand dune and heathland sites.

1.2.2 Reptiles can be found in a range of habitats and typically require a mosaic of vegetation types. Habitat interfaces are important with reptiles requiring woodland, scrub or hedgerow for shelter, with adjacent longer vegetation for hunting and patches of sheltered short turf, bare ground or log piles for basking areas. Areas which catch the sun (i.e. those with a southerly aspect) are preferred over those where direct sunlight is absent for most of the day. In addition, Grass Snakes favour damp habitats such as those associated with still and running water, grazing marshes, mires etc.

1.2.3 All species of reptile are protected through Sections 9(1) and 9(5) of the 1981 Wildlife and Countryside Act (as amended). It is an offence to:

- Intentionally kill or injure any reptile; and
- Sell, offer for sale, possess or transport for the purposes of sale or publish advertisements to buy or sell any reptile.

Due to their rarity, Sand Lizards and Smooth Snakes have additional protection.

1.2.4 Reptiles across the UK have undergone significant declines in recent years and all native reptile species are listed as priority species on the UKBAP and as Species of Principal Importance under Section 41 of the 2006 Natural Environment and Rural Communities (NERC) Act. Section 40 of the Act requires that these species are a material consideration in the planning process.

1.3 Scope and purpose of the report

1.3.1 Very low populations of Grass Snake and Slow-worm have been identified within the wider site during surveys conducted by HDA in 2012 and 2018 (HDA, 2020). Initial review of the 2020 survey area identified the presence of potentially suitable reptile habitat across all three land parcels in the form of woodland edge, wetland, scrub, hedgerow bases, ditches and rough grassland.

1.3.2 A reptile survey was subsequently undertaken to identify the presence/ likely absence of reptiles within the 2020 survey area and, together with the findings of the previous surveys carried out within the wider site, inform an assessment of the likely effects of the proposed development of the site on reptiles. The aims of this study are:

- i. To establish the presence/probable absence of reptiles within the 2020 survey area;
- ii. To assess the relative importance of different parts of the 2020 survey area for reptiles; and
- iii. To predict likely impacts potentially arising from the proposed development of the 2020 survey area on reptiles and give recommendations for impact avoidance, minimisation and mitigation.

2 METHODOLOGY

2.1 The survey methodology has been devised to accord with the requirements of all relevant legislation and good practice guidance, including the Herpetofauna Worker's Manual (JNCC, 1999) and Reptile Survey guidance (Froglife, 1999).

2.2 The 2020 survey area was surveyed on a total of six occasions during 2020 by Hayley Snowdon GradCIEEM, Anna Potter and Shannon Davis of HDA. Surveys were generally carried out during optimum temperature and weather conditions (intermittent or hazy sunshine, temperature between 9°C and 20°C and low winds). Dates of survey visits, with survey timings and weather conditions, are shown in *Table 1* below:

Table 1: Survey times and weather conditions

Survey visit	Date	Time of Visit	Weather conditions	Temp (°C)
1	18/05/2020	10.30 - 13.40	Dry, clear, bright with a gentle breeze	16 - 20
2	20/02/2020	16.30 – 18.30	Dry, clear, warm with a light breeze	24 - 21
3	22/05/2020	14.15 – 16.45	Dry, 5% cloud cover with a moderate breeze.	20 - 19
4	28/05/2020	12.00 – 14.30	Dry, sunny, clear, light cool breeze	19 - 22
5	02/06/2020	12.00 – 15.30	Dry, 30% cloud cover with a light breeze	19 - 21
6	23/06/2020 30/06/2020	11.00 – 15.30 13.00 – 16.00	Dry, 20% cloud cover with a light breeze Overcast, with a light breeze.	20-22 14

- 2.3 Two methods of surveying were used. Firstly, artificial refugia (squares of roofing felt 0.5m x 0.5m) were placed, in advance of the survey commencing, at potential basking areas throughout the 2020 survey area. A total of 200 refugia were placed across the 2020 survey area, giving a total density of 4.45 refugia per hectare. Although this is slightly below the recommended density of 5 to 10 refugia per hectare, the majority of the 2020 survey area comprises intensively farmed arable land which is generally considered unsuitable for reptiles. The actual extent of suitable reptile habitat forms only a small proportion of the 2020 survey area, and therefore the actual density of refugia per hectare of suitable habitat considerably exceeded the recommended 5 to 10 refugia per hectare. This exceedance of density was intended to increase the likelihood of encountering reptiles and if present, provide a more accurate indication of their distribution within areas of suitable habitat.
- 2.4 During each of the six subsequent visits, each refugium was inspected for any reptiles basking on the upper side, then lifted and checked for sheltering animals before being carefully replaced.
- 2.5 The second survey method involved transect searches across suitable habitats within the 2020 survey area. This ensured that all areas were represented in the survey, and that the survey was not biased towards those reptiles more likely to use refugia. Transect searches involve walking slowly around the survey area, visually searching potential basking areas and marking the locations of any reptiles observed on a map. Potential reptile refuges already present such as discarded wooden boards were also lifted to check for the presence of reptiles.
- 2.6 The following information was recorded for each reptile survey: species seen, number of animals seen, location (refugium number), date, start and finish times, temperature and weather.

2.7 Limitations

2.7.1 The reptile surveys were carried out at appropriate times of the year during suitable weather conditions for reptile activity. On several occasions, temperatures exceeded 20°C, which is at the upper end of the recommended temperature range for reptile surveys, but it has been HDA's experience that minor exceedances do not significantly change rates of detection, and in some instances may improve detection of reptiles. It is therefore considered that no significant limitations were encountered during the surveys and that the survey findings allow a robust assessment of the likely effects of the proposed development on reptiles.

3 RESULTS

3.1 Habitat assessment

3.1.1 Areas 1 and 2

Areas 1 and 2 are dominated by intensively managed arable land which provide generally poor-quality reptile habitat. Suitable reptile habitat within these areas is limited to areas of hedgerow bases and field margins of rough grassland, ditch, tall ruderal vegetation and scrub habitats.

3.1.2 Area 3

Area 3 comprises predominantly highly disturbed grassland road verges and mixed woodland planting on the edges of Tongwell Street which provide generally poor quality reptile habitat. The River Ouzel corridor which passes below the road in the centre of the Area 3 provides areas of good quality reptile habitat in the form of rough grassland, scrub, wetland and woodland edge habitats.

3.2 Refugia and visual searches

3.2.1 Grass Snake was the only species of reptile recorded during the 2020 survey. The full results of the survey are summarised in *Table 2* below, and the locations at which animals were recorded are illustrated in *Appendix A*.

Table 2: Reptiles recorded within the 2020 survey area

Survey visit	Reptiles observed
1	1 x Grass Snake (Juvenile)
2	2 x Grass Snake (1 x Adult & 1 x Juvenile)
3	No reptiles recorded
4	No reptiles recorded
5	1 x Grass Snake (Adult)
6	1 x Grass Snake (Adult)

3.2.2 During the course of the survey a maximum count of one adult and one juvenile Grass Snake was recorded on any one visit. Grass Snakes were observed within Areas 1 and 3 but none were recorded within Area 2.

3.2.3 Incidental recordings of one adult and one juvenile Grass Snake were also made along the River Ouzel adjacent to the south-western edge of Area 3 during the course of other field surveys being conducted by HDA on 20th May 2020. The locations at which these animals were recorded are illustrated in *Appendix A*.

4 SITE EVALUATION

4.1 A number of guidelines are used to evaluate the importance of a site for reptiles, based on both the population density and number of species present, in addition to historical factors.

4.2 The Guidelines for Biological Selection of SSSIs (JNCC, 1989) gives a scoring system for the evaluation of sites on the basis of their reptile population. It suggests that for the commoner species of reptile, the best localities in which three or more species occur should be selected as potential SSSIs.

4.3 The Herpetofauna Workers' Manual (JNCC, 1998) suggests that sites falling outside of the SSSI selection criteria should be designated as Sites of Importance for Nature Conservation (SINCs) if they meet the following criteria:

- Any site with a large population of a single species;
- Any site with a moderate population of two species;
- Any site at the edge of the geographical range of a species; and
- Any site with a long documented history.

4.4 The Key Reptile Site register is a mechanism designed to promote the safeguard of important reptile sites. To qualify for the register, the site in question must meet at least one of the following criteria (Froglife, 1999):

- Supports three or more reptile species;
- Supports two snake species;
- Supports an exceptional population of at least one species (*Table 2*);
- Supports an assemblage of species scoring at least 4 (*Table 2*); and
- Does not satisfy the above criteria but is of particular regional importance due to local rarity (e.g. in the East Midlands, Adders are very rare so even "low" populations should be designated as Key Sites).

4.5 The criteria for scoring populations of the four common reptile species for the purposes of the Key Reptile Register are given in *Table 2* below.

Table 2: Population parameters for the Key Reptile Sites register

Reptile species	Low population Score 1	Good population Score 2	Exceptional population Score 3
Adder	<5	5-10	>10
Grass Snake	<5	5-10	>10
Common Lizard	<5	5-20	>20
Slow-worm	<5	5-20	>20

Figures in the table refer to the maximum number of adults seen by observation and/or under tins (placed at a density of up to 10 per hectare) by one person in one day.

4.6 Using these criteria, Areas 1 and 2 support a 'low' population of Grass Snake with a maximum count of 1 adult. However, due to the high density of reptile refugia placed within the 2020 survey area, it is likely that the results have been exaggerated to indicate a higher population of Grass Snake, and as such no more than a 'very low' population Grass Snake is expected to be present. As only one species of reptile was recorded within the 2020 survey area, and is considered to be present in only very low numbers, the 2020 survey area does not qualify as an SSSI, SINC or Key Reptile Site.

4.7 With regard to the criteria described above the 2020 survey area would not qualify as an SSSI, SINC or Key Reptile Site on the basis of its reptile assemblage either in isolation or in combination with the wider site. Grass Snake is a relatively common and widespread species in southern England and suitable habitat for these species is relatively abundant in the wider area.

4.8 Although the site is not considered to qualify either wholly or in part for designation on the basis of its reptile interest, it is considered to be of no more than low local value for reptiles. In addition to affording reptiles present the protection provided under the 1981 Wildlife and Countryside Act (as amended), any development proposals affecting the 2020 survey area should therefore also seek to maintain and, where possible, enhance its current value for this group in accordance with the 2006 NERC Act and planning policy and guidance. Measures by which this can be achieved are provided in *Section 5* below.

5 RECOMMENDATIONS

5.1 The 2020 survey area is considered to support 'very low' numbers of Grass Snake and as such does not qualify as a SSSI, SINC or Key Reptile Site on the basis of its reptile interest. The 2020 survey area supports only very limited areas of suitable reptile habitat, with similar opportunities being abundant in the wider area. Notwithstanding this, all reptiles should be afforded the protection provided under the 1981 Wildlife and Countryside Act (as amended).

5.2 It is recommended that development proposals seek to avoid areas of higher quality reptile habitat within the 2020 survey area, such as scrub, hedgerow bases, rough grassland, wetland and woodland edge habitats. Where the loss of potential reptile habitat is unavoidable, it will be necessary to employ measures during development works to ensure the protection of any individual reptiles present together with the long-term maintenance of opportunities for reptiles at the site in accordance with the 2006 NERC Act.

5.3 Sensitive Approach to Site Clearance

5.3.1 Suitable measures for the protection of reptiles during development works within the 2020 survey area are outlined below. Although Grass Snake are likely to be present within suitable habitats across the 2020 survey area, in view of the limited number and distribution of Grass Snake recorded, and assuming that the site management remains the same (and subsequently the distribution and character of habitats on site do not change significantly prior to construction), a full reptile translocation exercise is not recommended in this instance prior to development commencing.

5.3.2 Instead, in line with the recommendations previously given in relation to development of the wider site (HDA, 2020), it is recommended that a controlled approach is taken to site clearance in those areas of the 2020 survey area where potential reptile habitat is to be lost in order to displace any reptiles present into retained areas of contiguous habitat within the site and wider area. This would require the following:

- Firstly, vegetation cover should be reduced to a minimum height of 150mm. This would ideally take place at a time avoiding the bird breeding season (typically between March and August inclusive) or otherwise be preceded by a check of suitable habitat for active nests immediately prior to commencement of works by a suitably qualified ecologist.
- Where the potential for reptiles to be present remains, a minimum period of 5 days with daytime temperatures of >12°C should then be allowed to elapse prior to the second stage of vegetation clearance (see below).
- The second stage would involve the clearance of all suitable vegetation to ground level (i.e. <75mm) by hand during mild temperatures (>14°C) at a suitable time of year when reptiles are likely to be active (mid-March to early October inclusive). At this time any potential hibernacula or refugia encountered should be carefully dismantled by hand. This stage of clearance should be undertaken under the supervision of a suitably qualified ecologist who would capture and relocate any reptiles encountered to areas of retained habitat on the margins of the site.
- Where potential for reptiles to be present still remains, a further 5 days with daytime temperatures of >12°C should then be allowed to elapse to enable any remaining reptiles to disperse from the area of works, prior to carrying out a destructive search.

- Following clearance of vegetation to ground level and removal of any refugia by hand, no suitable reptile habitat would remain and it is expected that any remaining reptiles would disperse from the area of works into adjacent habitat on their own accord.
- In order to be certain that no reptiles are present within the area of works, where any potential for reptiles to be present remains a destructive search should be carried out. This will involve the progressive stripping of topsoil from the area of works under the supervision of a suitably qualified ecologist.
- In the event that the destructive search is delayed, vegetation should be maintained at ground level until the destructive search is carried out. Similarly, following the destructive search, the land should be maintained as unsuitable for the recolonisation of reptiles prior to and throughout the construction works.

5.3.3 It is recommended that the approach to mitigation outlined above is reviewed at an appropriate stage prior to works commencing in order to allow consideration of:

- Development design. The above approach assumes that only relatively limited areas of suitable reptile habitat are affected at any given time and that where habitat is lost contiguous areas of suitable reptile habitat will be retained or created in advance of works commencing into which reptiles can be displaced. In the event that large isolated areas of habitat are affected then translocation may be required.
- Any changes to management of habitats at the site which may have affected their ability to support reptiles since this report was produced.

5.3.4 It is recommended that the measures to protect and maintain the reptile population present within the 2020 survey area and wider site form the basis of a holistic detailed Reptile Mitigation Method Statement to be agreed with Natural England and/or the Local Planning Authority at an appropriate stage.

5.4 Maintaining and Enhancing Opportunities for Reptiles

5.4.1 In accordance with the 2019 National Planning Policy Framework (NPPF) and 2006 NERC Act, development proposals should seek to maintain and where possible, enhance opportunities for reptiles at the site. This could be achieved through the retention, enhancement and creation of reptile habitats as part of the landscape strategy for the site. Consideration should be given to:

- Enhancement of woodland/hedgerow edge habitats through the creation of ecotones (a gradation from woodland/hedgerow to scrub too rough grassland habitats);
- Creation of new waterbodies in order to provide improved habitats favoured by Grass Snake;

- Inclusion of other high-quality reptile habitats within the landscape scheme in the form of rough and meadow grasslands and scrub;
- Provision of opportunities for hibernation and refuge through the provision of log/brash piles and purpose-built hibernaculum; and
- Securing the long-term integrity of new and retained reptile habitat through inclusion within a long-term management plan.

6 CONCLUSION

6.1 Subject to the implementation of the measures outlined above to protect reptiles and ensure that suitable habitat remains following development of the site, the proposed development is unlikely to result in adverse effects on the local reptile population. Furthermore, through habitat retention, enhancement, creation and management, development at the site could provide opportunities to safeguard and enhance its value for reptiles in the long-term in accordance with the 2019 National Planning Policy Framework and the 2006 NERC Act.

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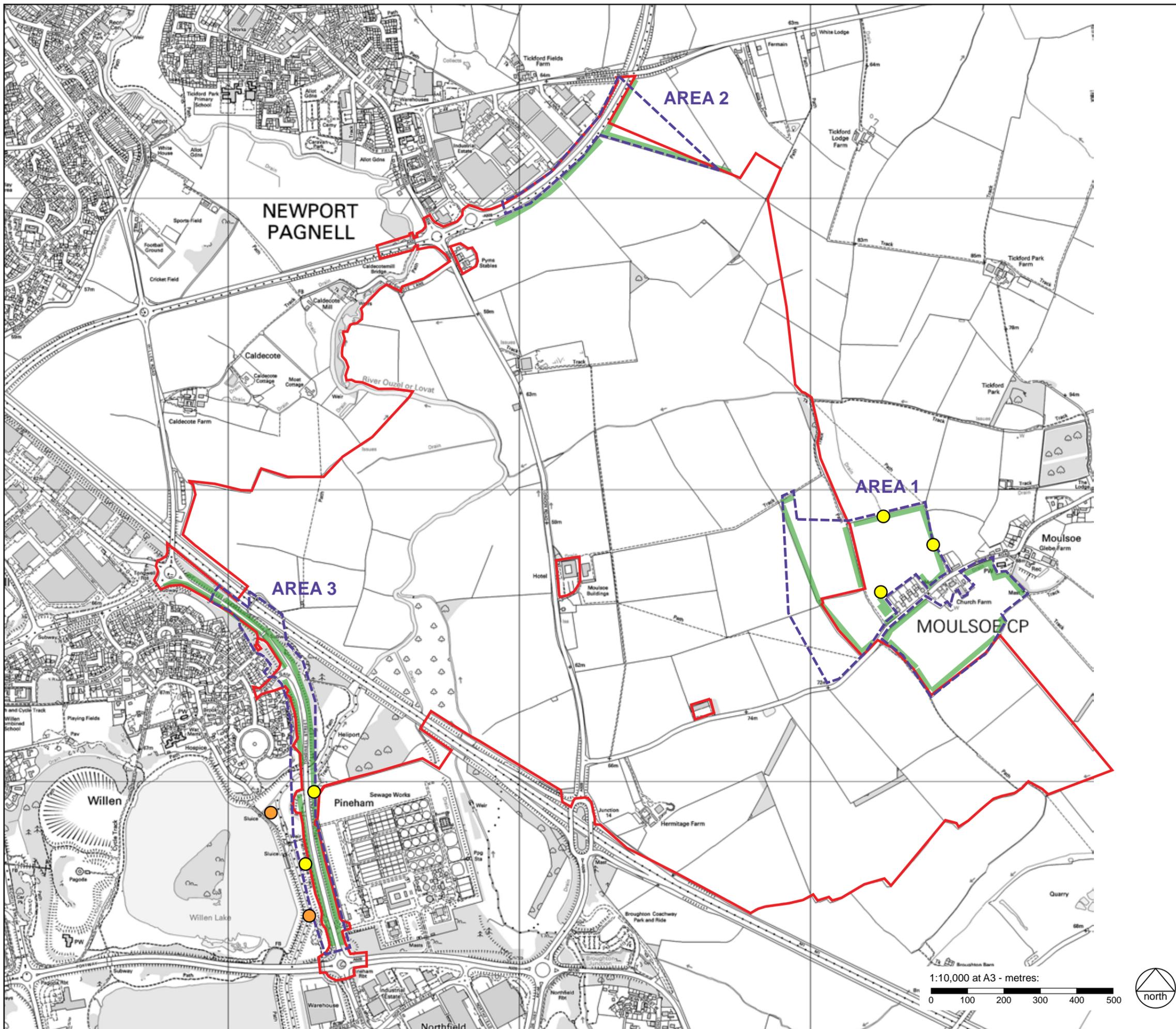
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APPENDIX A

Reptile Survey Summary Plan



KEY

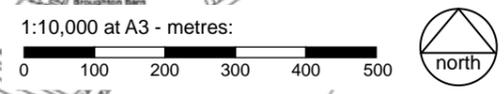
- Site boundary
- Survey area boundary
- Reptile mat locations
- Grass Snake recorded at refugia
- Grass Snake incidental record

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Appendix F16

Great Crested Newts HSI and eDNA Survey Report



MILTON KEYNES EAST

GREAT CRESTED NEWT SURVEY REPORT

Prepared for St James

by

Hankinson Duckett Associates

HDA ref: 2090.52

February 2020

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D	Population estimate survey results
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1 INTRODUCTION

1.1 Site location and summary description

1.1.1 This report describes Great Crested Newt surveys carried out on waterbodies associated with approximately 362ha of land at Newport Pagnell, Buckinghamshire hereinafter referred to as 'the site'. The centre of the site is located by National Grid Reference SP 893419. The study was commissioned by St James in June 2018.

1.1.2 The site is located to the south of Newport Pagnell, on the north-eastern edge of Milton Keynes, Buckinghamshire. The site is dominated by agricultural land comprising intensively managed arable and grazed grassland fields with associated farmyards, agricultural buildings and residential farm houses. Field boundaries generally consist of hedgerows, treelines and fencing with occasional ponds and parcels of woodland, and the River Ouzel flows from south to north through the western part of the site. The site is bordered to the north by a construction site for residential development and the A422 beyond which lies the town of Newport Pagnell; to the east by arable farmland; to the west by the Pineham Nature Reserve and the M1 Motorway beyond which lies the town of Milton Keynes; and to the south by arable farmland.

1.1.3 The location and boundary of the site are shown in *Appendix A*. Detailed descriptions of the habitats within the site are given in the Ecological Appraisal (HDA, 2020).

1.2 Background and legislative context

1.2.1 Five species of amphibian are widespread in England: Common Frog *Rana temporaria*, Common Toad *Bufo bufo*; Smooth Newt *Lissotriton vulgaris*; Palmate Newt *Lissotriton helveticus*; and Great Crested Newt *Triturus cristatus*. A sixth species of amphibian, the Natterjack Toad *Bufo calamita*, also occurs in England but this species has special habitat requirements that limit its range to certain sand dune and heathland sites.

1.2.2 Amphibians require aquatic habitat within which to breed and suitable terrestrial habitat to forage and hibernate. Suitable breeding ponds are usually well vegetated with still, shallow water that is not heavily shaded or very exposed. Terrestrial habitat includes woodland, scrub, field edges and gardens. Hibernation can occur under stone or log piles, in crevices or leaf litter and under the soil. Occasionally amphibians may be found hibernating in their breeding pools.

1.2.3 Over the last few decades all amphibians have suffered a decline in numbers. This is due to a combination of many factors, which include habitat destruction and fragmentation, loss of breeding pools through unsympathetic management and neglect, introduction of fish (which eat amphibian larvae) and pollution.

- 1.2.4 The Great Crested Newt is protected under the 2019 Conservation of Habitats and Species (Amendment) (EU Exit) Regulations. The 2019 Regulations make it an offence to:
- Deliberately capture, injure or kill any wild animal of an EPS;
 - Deliberately disturb wild animals of any such species, in particular any disturbance which is likely to: (i) impair their ability to survive, to breed or reproduce, or to rear or nurture their young; or to hibernate or migrate; (ii) affect significantly the local distribution or abundance of the species to which they belong;
 - Damage or destroy a breeding site or resting place of such an animal; or
 - To (a) be in possession of, or to control; (b) to transport any live or dead animal or any part of an animal; (c) to sell or exchange or (d) offer for sale or exchange any live or dead animal or part of an animal of an EPS.
- 1.2.5 In addition, Great Crested Newts are protected under the 1981 Wildlife and Countryside Act (as amended). The Great Crested Newt is listed on Schedule 5 of the Act and is subject to the provisions of Sections 9.4b and 9.4c, which make it an offence to:
- Intentionally or recklessly disturb a Great Crested Newt while it is occupying a structure or place which it uses for shelter or protection; or
 - Intentionally or recklessly obstruct access to any structure or place used for shelter or protection by a Great Crested Newt.
- 1.2.6 Where works are planned that may result in an offence under the legislation then works should be carried out under an appropriate licence from Natural England.
- 1.2.7 Great Crested Newts and Common Toads are also identified as a Species of Principal Importance under Section 41 of the 2006 Natural Environment and Rural Communities (NERC) Act. Section 40 of the Act requires that these species are a material consideration in the planning process.
- 1.3 Development proposals**
- 1.3.1 Proposals for the site include mixed use development with associated landscaping and infrastructure.
- 1.4 Scope and purpose of the report**
- 1.4.1 During an initial site walkover by HDA, five waterbodies were identified within the site which could provide suitable breeding habitat for Great Crested Newts indicating that this species could be breeding at the site. In addition, the areas of grassland, woodland and field margins comprising hedgerow bases, scrub and tall ruderal vegetation provide suitable for Great Crested Newts during terrestrial phases. A review of the OS 1:10,000 scale map and aerial photographs of the site's surrounds also identified the presence of multiple waterbodies within the Pineham Nature Reserve to the immediate southwest of the site and a further 11 waterbodies located within 300m of the site.

- 1.4.2 In view of the above it was considered possible that Great Crested Newts could be present at the site and a series of Great Crested Newt surveys were subsequently undertaken in order to:
- i. Establish the suitability of waterbodies within the site and within 300m of the site for Great Crested Newts;
 - ii. Establish the presence/ likely absence of Great Crested Newts in suitable waterbodies within 300m of the site;
 - iii. Where appropriate, establish the size of any Great Crested Newt population potentially associated with the site; and
 - iv. To predict likely impacts of the proposed development on Great Crested Newts and give recommendations for impact avoidance, minimisation and/ or mitigation.

2 METHODOLOGY

2.1 Great Crested Newt Habitat Suitability Index (HSI) Assessment

2.1.1 HSI assessments provide a mechanism by which the suitability of a pond to support Great Crested Newts can be objectively assessed in order to assist in the identification of ponds potentially supporting this species (Oldham *et al.*, 2000).

2.1.2 For the HSI assessment the locations of waterbodies within a 300m radius of the site were identified from online aerial photographs, a 1:10,000 scale Ordnance Survey map and from other waterbodies encountered during the survey. Where necessary, relevant landowners were contacted in advance of the survey in order to gain access to off-site waterbodies. Use of a 300m radius reflects the findings of studies into the movement of Great Crested Newts during terrestrial phases which indicate that the maximum routine migratory distance of Great Crested Newts away from breeding ponds during terrestrial phases is less than 250m (Cresswell and Whitworth, 2004).

2.1.3 The HSI assessment was conducted by Shannon Davies of Hankinson Duckett Associates on 26th and 28th June 2018. All accessible waterbodies identified within the survey area were visited and, where appropriate, assessed against each of the following ten suitability indices:

- i. Geographic location;
- ii. Pond area;
- iii. Pond permanence;
- iv. Water quality;
- v. Shading;
- vi. Presence of waterfowl;
- vii. Presence of fish;
- viii. Pond density in the area;
- ix. Terrestrial habitat quality; and
- x. Macrophyte cover in pond.

2.1.4 Details of the pond characteristics (depth, margin profile, etc.) and bankside, marginal and aquatic vegetation were also recorded during the assessment.

2.2 Great Crested Newt Environmental DNA (eDNA) Survey

2.2.1 Great Crested Newt eDNA sampling surveys were conducted on all accessible waterbodies that had been identified as having suitability to support Great Crested Newts during the HSI survey. The eDNA survey methodology is recognised by Natural England as a reliable technique for determining the presence/ likely absence of Great Crested Newts within a pond through detection of traces of Great Crested Newt DNA within the water.

2.2.2 The eDNA sampling survey was conducted by Shannon Davies of HDA on 26th and 28th June 2018. The field survey involved taking samples of pond water at each of the surveyed waterbodies in line with the recognised methodology established by Biggs *et. al.* (2014). The samples were then despatched to a recognised laboratory for polymerase chain reaction (qPCR) analysis.

2.3 Great Crested Newt population estimate survey

2.3.1 Full Great Crested Newt population estimate surveys were conducted on all accessible waterbodies that had been identified as supporting Great Crested Newts during the eDNA sampling survey, and on ponds immediately adjacent to waterbodies that had proved positive for this species.

2.3.2 The population estimate survey methodology has been devised to accord with the requirements of all relevant legislation, guidelines and good practice guidance, including the 1981 Wildlife and Countryside Act (as amended), the Herpetofauna Worker's Manual (Gent and Gibson, 1998), the Great Crested Newt Mitigation Guidelines (English Nature, 2001) and subsequent research (Cresswell and Whitworth, 2004). The survey was conducted by Adrian Meurer MCIEEM and Hayley Snowdon GradCIEEM of HDA, assisted by Shannon Davies, Anna Potter and Gerald Selvey, between April and early-June 2019.

2.3.3 Waterbodies were surveyed on 6 separate visits in suitable climatic conditions. Dates of survey visits, weather conditions and personnel are shown in the table below:

Table 1: Survey Times and weather conditions

Date	Weather conditions	Personnel
25.04.2019	Clear, calm and dry	Hayley Snowdon and Shannon Davies
01.05.2019	Mild, calm and overcast	Hayley Snowdon and Gerald Selvey
13.05.2019	Clear and overcast	Hayley Snowdon and Gerald Selvey
15.05.2019	Clear, calm and dry	Hayley Snowdon and Shannon Davies
29.05.2019	Calm and dry	Adrian Meurer, Hayley Snowdon and Anna Potter

03.06.2019	60% Cloud cover, light wind and dry	Hayley Snowdon and Gerald Selvey
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2.3.4 A combination of two population estimate survey methods were used in accordance with Natural England guideline:

- i. Torch surveys: These were carried out after dark using 1,000,000 candlepower torches. Each waterbody was circumnavigated and searched by torchlight for amphibians
- ii. Bottle trapping: Traps, assembled from bamboo canes and plastic bottles, were placed overnight around waterbody margins with a survey effort of one every 2m of shoreline and checked early the following morning for the presence of newts.

2.3.5 Submerged and floating vegetation and leaf litter, and artificial egg strips installed in selected waterbodies prior to the survey commencing, were also inspected for newt eggs at each waterbody to determine whether newts were likely to be breeding.

2.3.6 The size of amphibian populations within the waterbodies surveyed was estimated using the scoring system given in the Herpetofauna Workers Manual (Gent and Gibson, 1998).

3 RESULTS

3.1 Five waterbodies suitable for supporting Great Crested Newts are located within the site, and multiple off-site waterbodies are located within 300m of the site boundary. The locations of the waterbodies are shown in *Appendix A* and photographs are provided in *Appendix E*.

3.2 The results of the HSI assessment, eDNA survey and population estimate survey, together with descriptions of the surveyed waterbodies and any limitations encountered, are provided below. Full findings of the HSI assessment, the laboratory results from the eDNA analysis and population estimate survey results are given in *Appendices B, C* and *D*, respectively.

3.3 Waterbody 2

Location: Approximately 200m to the south of the site.

HSI assessment: 0.760

3.3.1 Waterbody 2 (*Photo 1*) is located within the Pineham Nature Reserve beneath a bridge on top of which is the M1 Motorway. The waterbody is approximately 90m² and generally has steep banks. The majority of the waterbody is bordered by bare earth however the northern and southern margins, either side of the bridge, are bordered by rough grassland, scrub and tall ruderal vegetation, the adjacent terrestrial habitat for Great Crested Newts is

therefore considered to be of 'moderate' quality. The waterbody's location beneath a bridge results in 85% shading of the waterbody perimeter and aquatic and marginal vegetation are therefore limited to the northern and southern margins. Plant species present include Floating Sweet-grass, Iris and Water Plantain. The water quality was assessed as moderate and it is assumed the waterbody never dries and, together with the location of the pond within the floodplain of the River Ouzel, it is considered fish may be present.

3.3.2 The HSI score for Waterbody 2 was calculated as 0.760, which indicates that the pond has 'good' suitability for Great Crested Newts.

3.3.3 An eDNA sampling survey of Waterbody 2 was subsequently carried out and the samples were sent to the Surescreen Scientifics laboratory for analysis. The analysis returned a positive result for Great Crested Newt eDNA which indicates that Great Crested Newts are highly likely to have been present within the waterbody at the time of survey. The results of the eDNA analysis are provided in *Appendix C*.

3.3.4 Presence of Great Crested Newts was confirmed during the population estimate survey. The survey of Waterbody 2 recorded a maximum count of 12 adult Great Crested Newts. Other amphibian species recorded included Smooth Newt and Common Frog.

3.3.5 On two occasions the waterbody was found to contain Dewsbury Traps which had been set by another consultancy working on a different project. In order to avoid adversely affecting their survey results and given the proven efficacy of torch survey in identifying newts in this waterbody over bottle trapping, it was decided not to bottle trap on these occasions. No other limitations were otherwise encountered.

3.4 Waterbody 3

Location: Approximately 245m to the south of the site.

HSI assessment: 0.424

3.4.1 Waterbody 3 (*Photo 2*) is located within the Pineham Nature Reserve and comprises a 50m² waterbody located under the M1 bridge. The waterbody generally has steep banks with a deeply silted base. The margins of the waterbody are bordered by bare earth which is considered 'poor' terrestrial habitat for Great Crested Newts, however either side of the bridge is rough grassland, scrub and tall ruderal vegetation. The waterbody's location beneath the bridge results in 95% shading of the pond perimeter, and aquatic and marginal vegetation was limited to Fools Watercress on the southern margin. The water quality was assessed as poor and fish were present.

3.4.2 The HSI score for Waterbody 3 was calculated as 0.424, which indicates that the pond has 'poor' suitability for Great Crested Newts.

- 3.4.3 An eDNA sampling survey of Waterbody 3 was subsequently carried out and the samples were sent to the Surescreen Scientifics laboratory for analysis. The analysis returned a positive result for Great Crested Newt eDNA which indicates that Great Crested Newts are highly likely to have been present within the waterbody at the time of survey. The results of the eDNA analysis are provided in *Appendix C*.
- 3.4.4 No further evidence of Great Crested Newts was recorded during the population estimate survey. Other amphibian species recorded within Waterbody 3 included Smooth Newt.
- 3.4.5 Following the fourth survey visit the waterbody dried out and was thereafter unsuitable for Great Crested Newts.

3.5 Waterbody 4

Location: Approximately 230 to the south of the site.

HSI assessment: 0.418

- 3.5.1 Waterbody 4 (*Photo 3*) is located within the Pineham Nature Reserve and comprises a 14m² waterbody located under the M1 bridge. The waterbody generally has steep banks with a deeply silted base. The margins of the waterbody are bordered by bare earth which is considered 'poor' terrestrial habitat for Great Crested Newts, however either side of the bridge is rough grassland, scrub and tall ruderal vegetation. The waterbody's location beneath a bridge results in 95% shading of the pond perimeter, and no aquatic and marginal vegetation was recorded during the survey. The water quality was assessed as poor and fish were present.
- 3.5.2 The HSI score for Waterbody 4 was calculated as 0.418, which indicates that the pond has 'poor' suitability for Great Crested Newts.
- 3.5.3 An eDNA sampling survey of Waterbody 4 was subsequently carried out and the samples were sent to the Surescreen Scientifics laboratory for analysis. The analysis returned a positive result for Great Crested Newt eDNA which indicates that Great Crested Newts are highly likely to have been present within the waterbody at the time of survey. The results of the eDNA analysis are provided in *Appendix C*.
- 3.5.4 Presence of Great Crested Newts was confirmed during the population estimate survey. The survey of Waterbody 4 recorded a maximum count of 1 adult Great Crested Newt. Other amphibian species recorded included Common Frog.

3.5.5 During the last two surveys the waterbody became too shallow to bottle trap. However, torch surveys could still be carried out, and in view of the water clarity and shallow depth this is not thought to have significantly affected the survey findings.

3.6 Waterbody 5

Location: Approximately 90m to the south of the site.

HSI assessment: 0.549

3.6.1 Waterbody 5 is located within the Pineham Nature Reserve and comprises a 35m² pond surrounded by rough grassland, tall ruderal vegetation and scrub considered to provide 'good' quality terrestrial habitat for Great Crested Newts. Bankside trees shaded approximate 20% of the pond's perimeter and aquatic and marginal vegetation was limited. The waterbody was dry in 2018 but held water throughout the 2019 surveys.

3.6.2 The HSI score for Waterbody 5 was calculated as 0.549, which indicates that the pond is 'below average' suitability for Great Crested Newts.

3.6.3 An eDNA sampling survey of Waterbody 5 was not carried out as the waterbody was dry in June 2018 when the eDNA survey was undertaken.

3.6.4 Presence of Great Crested Newts was confirmed during the 2019 population estimate survey. The survey of Waterbody 5 recorded a maximum count of 2 adult Great Crested Newts. Other species recorded included Smooth Newt and Common Frog.

3.6.5 No limitations were encountered during the survey of Waterbody 5

3.7 Waterbody 8

Location: Approximately 80m to the south of the site.

HSI assessment: 0.684

3.7.1 Waterbody 8 (*Photo 4*) is located within the Pineham Nature Reserve and comprises a 25m² pond surrounded by rough grassland, tall ruderal vegetation and scrub considered to provide 'good' quality terrestrial habitat for Great Crested Newts. Bankside trees and scrub shade approximately 40% of the pond's margin, and Common Reed dominated the surface of the waterbody with the occasional Water Plantain. The water quality was assessed as good and it appears that the waterbody rarely dries out.

3.7.2 The HSI score for Waterbody 8 was calculated as 0.684, which indicates that the pond has 'average' suitability for Great Crested Newts.

3.7.3 An eDNA sampling survey of Waterbody 8 was subsequently carried out and the samples were sent to the Surescreen Scientifics laboratory for analysis. The analysis returned a

positive result for Great Crested Newt eDNA which indicates that Great Crested Newts are highly likely to have been present within the waterbody at the time of survey. The results of the eDNA analysis are provided in *Appendix C*.

3.7.4 No evidence of Great Crested Newts was recorded during the population estimate survey. Amphibian species recorded within Waterbody 8 included Smooth Newt and Common Frog.

3.7.5 Following the fourth survey visit the waterbody dried out and was thereafter unsuitable for Great Crested Newts.

3.8 Waterbody 9

Location: Approximately 90m to the south of the site.

HSI assessment: 0.741

3.8.1 Waterbody 9 (*Photo 5*) is located within the Pineham Nature Reserve and comprises a 150m² pond surrounded by rough grassland, tall ruderal vegetation and scrub considered to provide 'good' quality terrestrial habitat for Great Crested Newts. Bankside willow shaded approximately 30% of the pond's margin. Aquatic and marginal vegetation covered 80% of the ponds surface and included Spike Rush, Bulrush and Water Plantain. The water quality was assessed as good and it appears that the waterbody rarely dries out.

3.8.2 The HSI score for Waterbody 9 was calculated as 0.741, which indicates that the pond has 'good' suitability for Great Crested Newts.

3.8.3 An eDNA sampling survey of Waterbody 9 was subsequently carried out and the samples were sent to the Surescreen Scientifics laboratory for analysis. The analysis returned a positive result for Great Crested Newt eDNA which indicates that Great Crested Newts are highly likely to have been present within the waterbody at the time of survey. The results of the eDNA analysis are provided in *Appendix C*.

3.8.4 No evidence of Great Crested Newts was recorded during the population estimate survey. Amphibian species recorded within Waterbody 9 included Smooth Newt and Common Frog.

3.8.5 No limitations were encountered during the survey of Waterbody 9.

3.9 Waterbody 10

Location: Approximately 40m to the south of the site.

HSI assessment: 0.902

- 3.9.1 Waterbody 10 (*Photo 6*) is located within the Pineham Nature Reserve and comprises a 800m² pond surrounded by rough grassland, tall ruderal vegetation and scrub considered to provide 'good' quality terrestrial habitat for Great Crested Newts. Bankside willow scrub shades approximately 60% of the pond's margin. Aquatic and marginal vegetation covered 90% of the ponds surface and included Floating Sweet-grass, Rushes and Water Plantain. The water quality was assessed as good and it appears that the waterbody rarely dries out. Fish were recorded within the waterbody.
- 3.9.2 The HSI score for Waterbody 10 was calculated as 0.902, which indicates that the pond has 'excellent' suitability for Great Crested Newts.
- 3.9.3 An eDNA sampling survey of Waterbody 10 was subsequently carried out and the samples were sent to the Surescreen Scientifics laboratory for analysis. The analysis returned a positive result for Great Crested Newt eDNA which indicates that Great Crested Newts are highly likely to have been present within the waterbody at the time of survey. The results of the eDNA analysis are provided in *Appendix C*.
- 3.9.4 Great Crested Newts were recorded during the population estimate survey. The survey of Waterbody 10 recorded a maximum count of 1 adult Great Crested Newt. Other amphibian species recorded included Smooth Newt and Common Frog.
- 3.9.5 No limitations were encountered during the survey of Waterbody 10.

3.10 Waterbody 11

Location: Approximately 60m to the south of the site.

HSI assessment: 0.852

- 3.10.1 Waterbody 11 (*Photo 7*) is located within the Pineham Nature Reserve and comprises a 900m² pond surrounded by rough grassland, tall ruderal vegetation and scrub considered to provide 'good' quality terrestrial habitat for Great Crested Newts. The banks of the waterbody are gently sloping and bankside willow scrub shaded approximately 40% of the pond's margin. Aquatic and marginal vegetation covered approximately 60% of the pond's surface and included Floating Sweet-grass, Common Reed, Reed Canary-grass and Water Plantain. The water quality was assessed as moderate and it appears that the waterbody sometimes dries out.
- 3.10.2 The HSI score for Waterbody 11 was calculated as 0.852, which indicates that the pond has 'excellent' suitability for Great Crested Newts.
- 3.10.3 An eDNA sampling survey of Waterbody 11 was subsequently carried out and the samples were sent to the Surescreen Scientifics laboratory for analysis. The analysis returned a

positive result for Great Crested Newt eDNA which indicates that Great Crested Newts are highly likely to have been present within the waterbody at the time of survey. The results of the eDNA analysis are provided in *Appendix C*.

3.10.4 Evidence of Great Crested Newts was recorded during the population estimate survey. The survey of Waterbody 11 recorded Great Crested Newt eggs, however no individual Great Crested Newts were recorded. Other amphibian species recorded within Waterbody 11 included Smooth Newt and Common Frog.

3.10.5 Following the fourth survey visit the waterbody dried out and was thereafter unsuitable for Great Crested Newts.

3.11 Waterbody 12

Location: Approximately 20m to the south of the site.

HSI assessment: 0.583

3.11.1 Waterbody 12 is located within the Pineham Nature Reserve and comprises an 8m² pond surrounded by rough grassland, tall ruderal vegetation and scrub considered to provide 'good' quality terrestrial habitat for Great Crested Newts. The waterbody has moderately steep banks with little shading of the margin. Aquatic and marginal vegetation covered approximately 90% of the pond's surface and included Common Reed and Floating Sweet-grass, Reed Canary-grass and Water Plantain. The water quality was assessed as good and it appears likely that the waterbody dries out annually.

3.11.2 The HSI score for Waterbody 12 was calculated as 0.583, which indicates that the pond has 'below average' suitability for Great Crested Newts.

3.11.3 An eDNA sampling survey of Waterbody 12 was not carried out as the waterbody was dry in June 2018 when the eDNA survey was undertaken.

3.11.4 No evidence of Great Crested Newts was recorded during the 2019 population estimate survey. Amphibian species recorded within Waterbody 12 included Smooth Newt.

3.11.5 Following the third survey visit the waterbody dried out and was thereafter unsuitable for Great Crested Newts. It is unlikely that this waterbody contains sufficient water for breeding Great Crested Newts in any given year.

3.12 Waterbody 13

Location: Approximately 30m to the south of the site.

HSI assessment: 0.818

- 3.12.1 Waterbody 13 is located within the Pineham Nature Reserve and comprises a 300m² pond surrounded by rough grassland, tall ruderal vegetation and scrub considered to provide 'good' quality terrestrial habitat for Great Crested Newts. Bankside willow scrub shades approximately 70% of the pond's margin. Aquatic and marginal vegetation covered approximately 70% of the pond's surface and included Bulrush, Soft Rush and Reed Canary-grass. The water quality was assessed as moderate and it appears likely that the waterbody regularly dries out.
- 3.12.2 The HSI score for Waterbody 13 was calculated as 0.818, which indicates that the pond has 'excellent' suitability for Great Crested Newts.
- 3.12.3 An eDNA sampling survey of Waterbody 13 was subsequently carried out and the samples were sent to the Surescreen Scientifics laboratory for analysis. The analysis returned a positive result for Great Crested Newt eDNA which indicates that Great Crested Newts are highly likely to have been present within the waterbody at the time of survey. The results of the eDNA analysis are provided in *Appendix C*.
- 3.12.4 No evidence of Great Crested Newts or other amphibian species was recorded during the population estimate survey.
- 3.12.5 Following the first survey visit the waterbody dried out and was thereafter unsuitable for Great Crested Newts.

3.13 Waterbody 14

Location: Approximately 30m to the south of the site.

HSI assessment: 0.650

- 3.13.1 Waterbody 14 is located within the Pineham Nature Reserve and comprises a 24m² pond surrounded by rough grassland, tall ruderal vegetation and scrub considered to provide 'good' quality terrestrial habitat for Great Crested Newts. The waterbody has gently sloping banks, comprising bankside willow scrub which shaded approximately 20% of the pond's margin. Aquatic and marginal vegetation covered approximately 50% of the pond's surface and included Soft Rush and Common Reed. The water quality was assessed as moderate and it appears likely that the waterbody sometimes dries out.
- 3.13.2 The HSI for Waterbody 14 was calculated as 0.650, which indicates that the pond has 'average' suitability for Great Crested Newts.
- 3.13.3 An eDNA sampling survey of Waterbody 14 was not carried out as the waterbody was dry in June 2018 when the eDNA survey was undertaken.

3.13.4 No evidence of Great Crested Newts was recorded during the population estimate survey. Amphibian species recorded within Waterbody 14 included Smooth Newt.

3.13.5 No limitations were encountered during the survey of Waterbody 14.

3.14 Waterbody 15

Location: Approximately 60m to the south of the site.

HSI assessment: 0.565

3.14.1 Waterbody 15 is located within the Pineham Nature Reserve and comprises a 48m² pond surrounded by rough grassland, tall ruderal vegetation and scrub considered to provide 'good' quality terrestrial habitat for Great Crested Newts. The pond has gently sloping banks and was approximately 30cm deep at the start of the surveys. Bankside willow scrub and a tree that has fallen over the pond shaded approximately 20% of the pond's margin. Aquatic and marginal vegetation was limited to approximately 10% of the pond's surface and included Common Reed. The water quality was assessed as poor and it appears likely that the waterbody sometimes dries out.

3.14.2 The HSI score for Waterbody 15 was calculated as 0.565, which indicates that the pond has 'below average' suitability for Great Crested Newts.

3.14.3 An eDNA sampling survey of Waterbody 15 was not carried out as the waterbody was dry in June 2018 when the eDNA survey was undertaken.

3.14.4 No evidence of Great Crested Newts was recorded during the population estimate survey. Other amphibian species recorded within Waterbody 15 included Smooth Newt and Common Frog.

3.14.5 No limitations were encountered during the survey of Waterbody 15.

3.15 Waterbody 18

Location: Approximately 50m to the south of the site.

HSI assessment: 0.593

3.15.1 Waterbody 18 is located within the Pineham Nature Reserve and comprises an 18m² pond surrounded by rough grassland, tall ruderal vegetation and scrub considered to provide 'good' quality terrestrial habitat for Great Crested Newts. Bankside willow scrub shades approximately 70% of the pond's margin. Aquatic and marginal vegetation covered approximately 50% of the pond's surface and included Soft Rush, Water Plantain and Floating Sweet-grass. The water quality was assessed as moderate and it appears likely that the waterbody sometimes dries out. Fish were recorded present within the waterbody.

- 3.15.2 The HSI score for Waterbody 18 was calculated as 0.593, which indicates that the pond has 'below average' suitability for Great Crested Newts.
- 3.15.3 An eDNA sampling survey of Waterbody 18 was subsequently carried out and the samples were sent to the Surescreen Scientifics laboratory for analysis. The analysis returned a negative result for Great Crested Newt eDNA which indicates that Great Crested Newts are highly unlikely to have been present within the waterbody at the time of survey. The results of the eDNA analysis are provided in *Appendix C*.
- 3.15.4 No evidence of Great Crested Newts was recorded during the population estimate survey. Amphibian species recorded within Waterbody 18 included Smooth Newt and Common Frog.
- 3.15.5 Following the fourth survey visit the waterbody dried out and was thereafter unsuitable for Great Crested Newts.

3.16 Waterbody 1A

Location: On-site waterbody

HSI assessment: 0.559

- 3.16.1 Waterbody 1A (*Photo 8*) comprises a 1200m² pond surrounded by scattered trees, hedgerow and scrub beyond which is arable farmland considered to provide 'moderate' quality terrestrial habitat for Great Crested Newts. The pond has gently sloping banks with bankside willow and Ash trees which shaded approximately 30% of the pond's margin. The waterbody was densely covered by Duckweed however other aquatic and marginal vegetation was limited to 20% of the pond's surface and included Water Lily and Flag Iris. The water quality was assessed as good and it is assumed the waterbody never dries out and therefore fish may be present within the waterbody.
- 3.16.2 The HSI score for Waterbody 1A was calculated as 0.559, which indicates that the pond has 'below average' suitability for Great Crested Newts.
- 3.16.3 An eDNA sampling survey of Waterbody 1A was subsequently carried out and the samples were sent to the Surescreen Scientifics laboratory for analysis. The analysis returned a negative result for Great Crested Newt eDNA which indicates that Great Crested Newts are highly unlikely to have been present within the waterbody at the time of survey. The results of the eDNA analysis are provided in *Appendix C*.
- 3.16.4 No limitations were encountered during the survey of Waterbody 1A.

3.17 Waterbody 2A

Location: Onsite waterbody

HSI assessment: 0.494

- 3.17.1 Waterbody 2A (*Photo 9*) comprises a 35m² pond surrounded by trees, tall ruderal vegetation and grazed grassland considered to provide 'moderate' quality terrestrial habitat for Great Crested Newts. The pond has steep sloping banks and the bankside willow trees shaded approximately 80% of the pond's margin. Duckweed and Blanket weed dominated the waterbody however other aquatic and marginal vegetation covered approximately 30% of the pond's surface and included Floating Sweet-grass and willowherb. The water quality was assessed as poor and it is assumed the waterbody sometimes dries out.
- 3.17.2 The HSI score for Waterbody 2A was calculated as 0.494, which indicates that the pond has 'poor' suitability for Great Crested Newts.
- 3.17.3 An eDNA sampling survey of Waterbody 2A was subsequently carried out and the samples were sent to the Surescreen Scientifics laboratory for analysis. The analysis returned a negative result for Great Crested Newt eDNA which indicates that Great Crested Newts are highly unlikely to have been present within the waterbody at the time of survey. The results of the eDNA analysis are provided in *Appendix C*.
- 3.17.4 No limitations were encountered during the survey of Waterbody 2A.

3.18 Waterbody 3A

Location: On-site waterbody

HSI assessment: 0.640

- 3.18.1 Waterbody 3A (*Photo 10*) comprises a 700m² pond located near a farmyard. The pond is immediately surrounded by tall ruderal vegetation with occasional scattered trees considered to provide 'moderate' quality terrestrial habitat for Great Crested Newts. The pond has steeply sloping banks and the bankside willow trees shade approximately 10% of the pond's margin. Duckweed dominates the waterbody surface and marginal vegetation was limited and included Sedges and Common Nettle. The water quality was assessed as poor and it is assumed the waterbody sometimes dries.
- 3.18.2 The HSI score for Waterbody 3A was calculated as 0.640, which indicates that the pond has 'average' suitability for Great Crested Newts.
- 3.18.3 An eDNA sampling survey of Waterbody 3A was subsequently carried out and the samples were sent to the Surescreen Scientifics laboratory for analysis. The analysis returned a negative result for Great Crested Newt eDNA which indicates that Great Crested Newts are

highly unlikely to have been present within the waterbody at the time of survey. The results of the eDNA analysis are provided in *Appendix C*.

3.18.4 No limitations were encountered during the survey of Waterbody 3A.

3.19 Waterbody 11A

Location: Approximately 230m to the south of the site.

HSI assessment: 0.372

3.19.1 Waterbody 11A (*Photo 12*) comprises a 50m² pond located within a residential garden. The pond is surrounded by trees and amenity grassland considered to provide 'poor' quality terrestrial habitat for Great Crested Newts. The pond has steep sloping banks and the bankside Elder and fruit trees shade approximately 80% of the pond's margin. Duckweed dominates the waterbody and other aquatic and marginal vegetation is limited to approximately 5% of the ponds surface and included Floating Sweet-grass, Hard Rush and Creeping Buttercup. The water quality was assessed as moderate and it is assumed the waterbody sometimes dries out.

3.19.2 The HSI score for Waterbody 11A was calculated as 0.372, which indicates that the pond has 'poor' suitability for Great Crested Newts.

3.19.3 An eDNA sampling survey of Waterbody 11A was subsequently carried out and the samples were sent to the Surescreen Scientifics laboratory for analysis. The analysis returned a negative result for Great Crested Newt eDNA which indicates that Great Crested Newts are highly unlikely to have been present within the waterbody at the time of survey. The results of the eDNA analysis are provided in *Appendix C*.

3.19.4 No limitations were encountered during the survey of Waterbody 11A.

3.20 Waterbody 14A

Location: Approximately 270m to the south of the site.

HSI assessment: 0.755

3.20.1 Waterbody 14A (*Photo 13*) comprises a 500m² pond within a residential housing estate. The pond is immediately surrounded by rough grassland, amenity grassland and scattered trees considered to provide 'poor' quality terrestrial habitat for Great Crested Newts. Bankside willow trees shade approximately 50% of the pond's margin. Aquatic and marginal vegetation covered 75% of the pond's surface and included Bulrush, Soft Rush and Water Plantain. The water quality was assessed as good and it is assumed likely that the waterbody never dries out and fish maybe present within the waterbody.

- 3.20.2 The HSI score for Waterbody 14A was calculated as 0.755, which indicates that the pond has 'good' suitability for Great Crested Newts.
- 3.20.3 An eDNA sampling survey of Waterbody 14A was subsequently carried out and the samples were sent to the Surescreen Scientifics laboratory for analysis. The analysis returned a positive result for Great Crested Newt eDNA which indicates that Great Crested Newts are highly likely to have been present within the waterbody at the time of survey. The results of the eDNA analysis are provided in *Appendix C*.
- 3.20.4 Great Crested Newts were recorded during the population estimate survey. The survey of Waterbody 14A recorded a maximum count of 1 adult Great Crested Newt. Other amphibian species recorded included Smooth Newt.
- 3.20.5 No limitations were encountered during the survey of Waterbody 14A.

3.21 Waterbody 15A

Location: On-site waterbody

HSI assessment: 0.486

- 3.21.1 Waterbody 15A (*Photo 14*) comprises a 50m² pond located within the corner of an arable field. The pond is immediately surrounded by hedgerows, scattered trees and tall ruderal vegetation considered to provide 'moderate' quality terrestrial habitat for Great Crested Newts. The pond has steeply sloping banks and the bankside Ash, willow and Hawthorn trees shaded approximately 75% of the pond's margin. Aquatic and marginal vegetation covered approximately 15% of the pond's surface and included Water Lilly, Yellow Flag Iris and willowherb. The water quality was assessed as moderate and it is assumed likely that the waterbody sometimes dries out. Minor wildfowl disturbance was recorded within the waterbody.
- 3.21.2 The HSI score for Waterbody 15A was calculated as 0.486, which indicates that the pond has 'poor' suitability for Great Crested Newts.
- 3.21.3 An eDNA sampling survey of Waterbody 15A was subsequently carried out and the samples were sent to the Surescreen Scientifics laboratory for analysis. The analysis returned a negative result for Great Crested Newt eDNA which indicates that Great Crested Newts are highly unlikely to have been present within the waterbody at the time of survey. The results of the eDNA analysis are provided in *Appendix C*.
- 3.21.4 No limitations were encountered during the survey of Waterbody 15A.

3.22 Waterbodies 1, 6, 16 and 17

HSI assessment: N/A (as waterbodies dry)

3.22.1 Waterbodies 1, 6, 7, 16 and 17 are located within the Pineham Nature Reserve to the south of the site. All had earth bases with a mixture of steep and gently sloping banks. These waterbodies were dry at the time of both the 2018 and 2019 surveys and the bases of the waterbodies were becoming colonised by grasses. These waterbodies are therefore unsuitable for breeding Great Crested Newts and were not subject to further survey.

3.23 Waterbodies 9A and 10A

HSI assessment: N/A (as waterbodies dry)

3.23.1 Waterbody 9A (*Photo 11*) is located on the north western site boundary and Waterbody 10A is located 250m north-east of the site. Waterbodies 9A and 10A had an earth base with gently sloping banks and are located within hedgerows which shade the majority of the ponds:

- Waterbody 9A, located on the northern site boundary, was dry at the time of the 2018 HSI and eDNA survey and has been observed to be dry on all previous and subsequent site visits¹. This waterbody was subsequently not subject to further survey and is considered unsuitable for Great Crested Newts.
- Waterbody 10A, located 250m north-east of the site, was dry at the time of the 2018 HSI and eDNA survey. Research has identified that the maximum routine migratory distance of Great Crested Newts away from ponds during terrestrial phases is 250m and more recent studies suggest that 95% of newt summer refuges are within 63m of breeding ponds (Cresswell and Whitworth, 2004). At a distance of 250m from the site, in the event that this waterbody now contains water it is highly unlikely that any newts present would use the site during terrestrial phases.

3.24 Waterbodies 4A, 5A, 6A, 7A, 8A, 12A, 13A and 16A

HSI assessment: N/A (no access granted)

3.24.1 Access to Waterbodies 4A, 5A, 6A, 7A, 8A, 12A, 13A and 16A was not granted during the 2018 and 2019 HSI and eDNA surveys:

- Waterbody 12A is located 230m to the south-east of the site and from aerial photographs appears to be along a field margin and has been infilled. Although this pond appears to no longer exist, in the unlikely event that Great Crested Newts are present in this pond these are unlikely to use the site during terrestrial phases as:
 - Research has identified that the maximum routine migratory distance of Great Crested Newts away from ponds during terrestrial phases is 250m (Cresswell and Whitworth, 2004). At a distance of 230m from the site, Waterbody 12A is located towards the outer extremity of this range.

¹ One exception being following a period of heavy rain in 2012 when this pond was flooded by the River Ouzel.

- The interlying habitat between Waterbody 12A and the site is dominated by intensively managed arable farmland which provides limited opportunities for this species.
- Waterbody 16A is located 250m to the east of the site within a residential garden and appears to be densely shaded by trees. As identified above, this pond lies at the maximum routine migratory distance of Great Crested Newts away from ponds during terrestrial phases and it is unlikely that any newts associated with this pond use the site during terrestrial phases.
- Waterbodies 4A, 5A, 6A, 7A, 8A and 13A are located 390m, 290m, 260m, 250m, 130m and 260m, respectively. In addition to the majority of these ponds being the located beyond the maximum routine migratory distance of Great Crested Newts away from ponds during terrestrial phases, waterbodies to the north of the site were subject to Great Crested Newt presence/ absence surveys carried out by HDA in 2012 in accordance with the methodology in the Great Crested Newt Mitigation Guidelines (English Nature, 2001). No ponds were found to support Great Crested Newts and it is considered unlikely that Great Crested Newts have colonised these ponds in the intervening period.

4 SUMMARY

4.1 The results of the Great Crested Newt survey are summarised in *Table 2* below, with recorded amphibians and lifestage shown and the findings are summarised on the plan in *Appendix A*.

Table 2: Summary of Great Crested Newt survey results

Waterbodies*	Great Crested Newt	Smooth Newt	Common Frog
Waterbody 2	eDNA, Adults and Juveniles	Adults and juvenile	Adult
Waterbody 3	eDNA	Adults and juvenile	-
Waterbody 4	eDNA, Adult	-	Adults and juveniles
Waterbody 5	Adults and Juveniles**	Adults	Adult and juvenile
Waterbody 8	eDNA	Adults	Adult
Waterbody 9	eDNA	Adults	Adult
Waterbody 10	eDNA, Adult	Adults and juveniles	Adults
Waterbody 11	eDNA, Eggs	Adults	Adult
Waterbody 12	-**	Adult	-
Waterbody 13	eDNA	-	-
Waterbody 14	-**	Adults	-
Waterbody 15	-	Adults	Juvenile
Waterbody 18	-***	Adults	Adult

Waterbodies*	Great Crested Newt	Smooth Newt	Common Frog
Waterbody 14A	eDNA, Adults	Adults	-

* Waterbodies 1, 6, 7, 12, 16, 17, 9A and 10A comprises dry waterbodies which were discounted for their potential to support breeding Great Crested Newts and subsequently not subject to further survey.

** Environmental DNA (eDNA) was not collected as these waterbodies were dry during the 2018 survey.

*** Great Crested Newts were recorded absent by eDNA but due to the proximity to other ponds with Great Crested Newt eDNA present, the waterbody was subject to survey.

4.2 Although no Great Crested Newts were recorded from waterbodies within the site, Great Crested Newts were recorded from ten off-site waterbodies. Evidence for Great Crested Newts for Waterbodies 3, 8, 9 and 13 is limited to eDNA only, despite population estimate surveys being carried out. The majority of the waterbodies supporting Great Crested Newts are located within the Pineham Nature Reserve, within which Waterbody 2 had a maximum count of 12 adult Great Crested Newts; Waterbody 5 had a maximum count of 2 adult Great Crested Newts; and Waterbodies 4 and 10 each had a maximum count of 1 adult Great Crested Newt. In addition, Waterbody 14A within the housing estate approximately 270m south west of the site had a maximum count of 1 adult Great Crested Newt.

4.3 The numbers of Great Crested Newts (excluding newt eggs and larvae) recorded from each pond during torching or bottle trapping can be used to estimate population size. The number of adult newts recorded from each of these waterbodies is given in *Table 3* below. Where applicable, the maximum count for each survey method is indicated by shaded boxes.

Table 3: Maximum counts of adult Great Crested Newts

Date	Waterbody 2*		Waterbody 4*		Waterbody 5	
	Torch survey	Bottle trap survey	Torch survey	Bottle trap survey	Torch survey	Bottle trap survey
25.04.2019	12	1	0	0	1	1
01.05.2019	9	0	0	0	0	2
13.05.2019	8	1	0	0	0	0
15.05.2019	5	0	0	0	0	0
29.05.2019	10	0	1	-	0	1
03.06.2019	7	0	0	-	0	0

Date	Waterbody 10*		Waterbody 14A*	
	Torch survey	Bottle trap survey	Torch survey	Bottle trap survey
25.04.2019	0	0	1	0
01.05.2019	1	0	1	0
13.05.2019	0	0	0	0
15.05.2019	0	0	0	1
29.05.2019	0	0	1	0
03.06.2019	0	0	1	0

* Great Crested Newt presence recorded during eDNA survey.

- 4.4 The population size class assessment criteria given in the Great Crested Newt Mitigation Guidelines (English Nature, 2001) suggests that maximum counts of up to 10 individuals constitute a 'small' population of Great Crested Newts; 11-100 individuals constitutes a 'medium' population and counts over 100 individuals constitutes a 'large' population.
- 4.5 All waterbodies surveyed were subject to 6 separate visits except where waterbodies dried out prior to the final visits. Waterbody 2, had a maximum count of 12 adult individuals recorded by any one population estimate survey method, therefore indicating a low-end 'medium' population. Waterbody 4, 5, 10 and 14A had maximum counts of 2 or less adult individuals, indicating 'small' populations.
- 4.6 The evidence for Great Crested Newt presence in Waterbodies 3, 8, 9 and 13 is limited to eDNA only, even after population estimate survey. It is therefore considered that each of these waterbodies support only a 'very low' population, possibly using the waterbodies on an infrequent or occasional basis.
- 4.7 No evidence of Great Crested Newts was recorded from any other waterbodies subject to survey.
- 4.8 The majority of waterbodies subject to survey also supported Smooth Newt populations (Waterbodies 2, 3, 5, 8, 9, 10, 11, 12, 14, 15, 18 and 14A). Smooth Newts are a common and widespread native amphibian species in England. Based on the scoring system given in the Herpetofauna Worker's Manual (Gent and Gibson, 1998), Waterbodies 8, 9, 10, 11, 12, 14, 15, 18 and 14A support a 'low' population of Smooth Newts and Waterbodies 2, 3 and 5 support a 'medium' population of Smooth Newts.
- 4.9 Many of the waterbodies subject to survey also supported Common Frog populations. Common Frogs are common and widespread native amphibian species in England. Based on the scoring system given in the Herpetofauna Worker's Manual (Gent and Gibson, 1998), Waterbodies 2, 4, 5, 8, 9 and 18 support a 'low' population of Common Frog.

5 EVALUATION

- 5.1 Although no Great Crested Newts were recorded from within the site, Great Crested Newts were recorded within 10 waterbodies within the wider survey area (Waterbodies 2, 3, 4, 5, 8, 9, 10, 11, 13 and 14A). A low-end moderate population of Great Crested Newts was recorded from waterbodies within the Pineham Nature Reserve to the south-west of the site and a very low population was recorded from Waterbody 14A located 270m to the south of the site beyond the M1 Motorway.

- 5.2 A maximum routine migratory range of 250m from breeding ponds has been estimated for Great Crested Newts during terrestrial phases, and more recent studies suggest that 95% of newt summer refuges are within 63m of breeding ponds (Cresswell and Whitworth, 2004).
- 5.3 Waterbody 14A is located approximately 270m from the site, within a sub-urban housing estate, and a number of roads including the M1 Motorway lie between Waterbody 14A and the western site boundary. It is considered highly unlikely that individual newts from the low population supported by this waterbody use the site during terrestrial phases.
- 5.4 Waterbodies within Pineham Nature Reserve vary from 20m to 230m from the southern site boundary² and these were found to support a low-end medium population of this species. Great Crested Newts usually exist in metapopulations, using clusters of ponds with cross dispersal of individuals between them. This decreases the vulnerability of local populations to habitat changes (e.g. individual ponds drying) thereby maintaining long-term population viability. Therefore, the network of ponds within Pineham Nature Reserve should all be regarded as potential Great Crested Newt breeding habitat in its entirety as newts may use different ponds in different years according to their suitability.
- 5.5 The western area of the site, within 250m of the Pineham Nature Reserve, is dominated by arable fields and grazed semi-improved grassland fields which provide limited opportunities for Great Crested Newts during terrestrial phases. These are however complimented by a network of hedgerows, scattered trees, rough grassland/ tall ruderal field margins and a small area of broadleaved woodland which provide moderate to high quality habitat for terrestrial phase newts. Despite the presence of the River Ouzel and the Broughton Brook between the Pineham Nature Reserve and the site, which may to some extent act as a barrier to dispersal, it is therefore likely that some Great Crested Newts from the Pineham Nature Reserve use the site during terrestrial phases.
- 5.6 Notwithstanding the likely use of the western area of the site within 250m of the Pineham Nature Reserve by Great Crested Newts during terrestrial phases, the site is unlikely however to form a key area of terrestrial habitat for this population as:
- The waterbodies are immediately connected to good quality terrestrial habitat within the Pineham Nature Reserve itself. These habitats are likely to form the core terrestrial habitat for the newts associated with the ponds.
 - The River Ouzel and Broughton Brook may provide partial (but not complete) barriers to movement of newts between the Pineham Nature Reserve and the site;

² Six waterbodies within Pineham Nature reserve are within 63m of the site, from 3 of which evidence of Great Crested Newts was recorded in the form of eDNA, eggs or individual newts.

- The Pineham Nature Reserve supports only a low-end medium population of Great Crested Newts, thereby reducing pressure for newts to disperse away from the terrestrial habitat in the immediate vicinity of the ponds; and
- Some ponds supporting Great Crested Newts within the Pineham Nature Reserve are located beyond 250m from the site, with other ponds located towards the outer edge of this range.

5.7 Although the western area of the site within 250m of the Pineham Nature Reserve is considered to be of limited importance for the local Great Crested Newt population, due to the potential for this area to support low numbers of Great Crested Newts during terrestrial phases a Natural England licence would need to be obtained prior to works potentially affecting Great Crested Newts commencing. Unless otherwise agreed with Natural England, this would require implementation of measures to protect individual Great Crested Newts during construction and maintenance of opportunities at the site and/or its surrounds for this species in the long-term. Outline measures to avoid adverse effects on individual Great Crested Newts and to maintain the favourable conservation status of the local population in accordance with UK and European legislation, along with measures to enhance the overall value of the site and/or its surrounds for Great Crested Newts in accordance with the 2019 National Planning Policy Framework (NPPF) and 2006 NERC Act, are therefore provided in *Section 6* below.

6 MITIGATION AND SITE SAFEGUARDING

6.1 Introduction

6.1.1 This section identifies measures to be implemented during development of the site in order to avoid and mitigate potential impacts on Great Crested Newts. In addition, measures for enhancement of the site for Great Crested Newts are recommended in accordance with the 2019 NPPF and the 2006 NERC Act.

6.1.2 The results of the field surveys indicate low numbers of Great Crested Newts may be present within the western area of the site within 250m of the Pineham Nature Reserve during terrestrial phases. Unless otherwise agreed with Natural England it would therefore be necessary to:

- Protect individual Great Crested Newts through removal and exclusion from the site prior to and during construction works; and
- Provision of replacement habitat within the landscape scheme of the proposed development to ensure that opportunities remain at the site for Great Crested Newts, thereby protecting the favourable conservation status of the local population in the long-term.

6.1.3 These works would need to be carried out under a Natural England licence. It is anticipated that the outline mitigation strategy described below would provide the basis for a detailed Method Statement to be submitted to Natural England as part of a licence application unless an alternative approach is agreed with Natural England at an appropriate stage.

6.1.4 The extent of the recommended mitigation measures is shown in *Appendix F*.

6.2 Great Crested Newt capture and translocation

6.2.1 Proposals for the site include mixed use development with associated landscaping and infrastructure. Where this affects substantial areas of suitable terrestrial habitat within 250m of the Pineham Nature Reserve (see *Appendix F*) in order to protect individual Great Crested Newts in accordance with nature conservation legislation it will be necessary to translocate to a receptor area prior to the commencement of works:

Identification and preparation of the receptor site

- A suitable receptor area should be identified to receive translocated Great Crested Newts from the development area. Priority should be given to the sourcing and use of potential receptor areas within or in close vicinity to the site.
- In order to ensure the receptor area has capacity to support the translocated Great Crested Newts it may be necessary to carry out further survey and habitat enhancement works to the receptor area to increase its capacity to support Great Crested Newts.
- Measures to maintain the long-term integrity of the receptor site should also be secured.
- The receptor area could be located within the site or within the wider area and should comprise habitats of high value to Great Crested Newts such as scrub, rough grassland, tall ruderal and woodland habitats. In addition, it should include features suitable for hibernation such as purpose built hibernacula and refuge piles, and where possible waterbodies suitable for breeding. Any new wildlife ponds should be sensitively designed to provide high quality aquatic habitat through provision of gently shelving margins and native aquatic and marginal planting. The receptor area should be connected to Pineham Nature Reserve and other areas of suitable habitat in the wider area.

6.2.2 The Pineham Nature Reserve would be an ideal location for a receptor site as this is the focus of the local breeding population and is already dominated by high quality terrestrial habitat.

6.2.3 Should this not be feasible, the emerging proposals indicate the retention of the semi-improved grassland along the River Ouzel and creation of wetland habitats within an area of informal public open space. In addition to its potential use as a receptor area to receive

translocated newts, it is recommended that this area comprises a selection of rough and meadow grassland and shrub habitats to mitigate for the areas of suitable terrestrial habitat lost to development (see *Section 6.5*). These works would be expected to enhance this area of the site and it is expected that this could form the receptor habitat for translocated Great Crested Newts.

6.2.4 In order to allow for translocation of Great Crested Newts from areas of works within the western area of the site within 250 of the Pineham Nature Reserve, and prevent newts from dispersing into such areas during construction, exclusion fencing should firstly be erected around the boundary of affected habitat prior to the commencement of works. Pitfall traps should then be installed at 10m intervals along the inside of the fencing and artificial refugia placed along the fenceline and within suitable terrestrial habitat (rough grass, hedgerow bases etc.) within the interior of the exclusion zone at a density of 50-100 refugia per hectare. Trapping and translocation should follow the general methodology set out below:

Installation of fencing and pitfall traps

- Fencing and pitfall traps should only be installed under the supervision of a suitably qualified ecologist at a time of year when night time temperatures are consistently above 5°C;
- The proposed fence line should first be searched and cleared of amphibians. Any amphibians found should be translocated to the receptor site outside of the exclusion area (detailed above);
- Any vegetation that requires removal for fence installation should be removed using hand tools in a two stage cutting regime (firstly cut down to 15cm above ground level, followed by a second cut to ground level), taking care to avoid risk of injury to resting amphibians;
- Pitfall traps should be installed flush with the newt fencing and ensure no top lip is present;
- Each pitfall trap should remain closed until the translocation commences; and
- Pitfall traps should be complemented by installation of carpet tile refugia (or similar) along the fence lines and within the interior of the capture area, installed at a density of 50 - 100 mats per hectare of suitable habitat.

Translocation exercise

- Translocation works should be carried out in suitable climatic conditions between March and early November inclusive;
- Once the translocation has started, the pitfall traps should be opened and equipped with a mammal ramp, float and vegetation for trapped newts to hide under;
- Each pitfall trap should be checked daily before 11am and weather conditions monitored and traps closed if necessary;

- Refugia should be lifted and any amphibians beneath captured;
- All amphibians captured should be translocated to the pre-established receptor area outside of the exclusion fencing;
- The pitfall trapping and artificial refugia searches should be undertaken for a minimum of 30 nights (with 5 clear days at the end of the translocation) unless trapping results suggest other as appropriate (in agreement with Natural England); and
- Fencing should be monitored on a weekly basis and any damaged repaired until all newts have been cleared from the area of search, after which any drift fencing within the interior of the capture area removed.

6.2.5 Once capture rates decline in any given compartment, vegetation manipulation works described below would commence to encourage capture of any remaining newts. Any remaining naturally occurring refugia should also be dismantled by hand and searched for newts. In the event that vegetation clearance is likely to be counterproductive to the capture of newts (e.g. by encouraging newts to go to ground) this work should not be carried out.

Vegetation manipulation

- Vegetation manipulation to encourage capture of newts would require clearance of remaining vegetation to no less than 100mm by hand;
- Vegetation should be cut using hand tools under the supervision of a suitably qualified ecologist;
- Again, any newts encountered within the area of works during vegetation clearance should be captured and moved to the receptor site outside the exclusion area; and
- A further 5 days with night time temperatures of >5°C should then be allowed to elapse to enable capture of any remaining newts prior to a destructive search (see below).

Destructive search

- In order to be certain that no newts are present within the area of works, once five suitable trapping nights have passed with no captures from terrestrial habitats, vegetation should be cleared from areas of suitable habitat to ground level and topsoil disturbed by scraping back to a depth of up to 10cm where the possibility of newts being present remains. This should be carried out under the direct supervision of a suitably qualified ecologist where it is expected Great Crested Newts might still be present. Topsoil should not be stripped from the root protection areas of retained trees, scrub and hedgerows, or where translocation results and vegetation clearance to ground level allows satisfactory inspection to confirm likely absence of newts.

- In the event that the destructive search is delayed following newt capture, the vegetation should be maintained at ground level until the destructive search is carried out.

6.2.6 Once the translocation, vegetation clearance and destructive search measures have been completed within any given compartment in accordance with the methodology outlined above, development works would be able to go ahead within the cleared area.

6.3 Reasonable Avoidance Measures (RAMs)

6.3.1 Subject to review and agreement with a suitably qualified ecologist, where only small areas of suitable terrestrial habitat are affected by works (e.g. installation of a bench within an otherwise undisturbed area of habitat, it may be possible to avoid a full translocation. In order to ensure that no Great Crested Newts are present or harmed during such works it is recommended that a two-stage approach to clearance of the affected area is undertaken. This is also in keeping with measures to avoid unlawful killing/ injuring of reptiles which also have potential to be present within similar habitat as described in the Reptile Report (HDA, 2020a). This would involve:

- i. Manipulation of suitable habitat within the construction zone to reduce suitability for newts.
- ii. Destructive search of areas of cleared habitat to ensure the absence of newts.

6.3.2 Each of the above stages is described below:

Vegetation manipulation:

- Vegetation within areas of suitable terrestrial habitat located within the proposed area of works should be cleared using hand held machinery to a height of no less than 100mm in order to reduce suitability of the habitat present to encourage the dispersal of any animals present away from affected areas.
- Vegetation should be cut using handheld tools under the supervision of a suitably qualified ecologist who will inspect affected areas prior to and during works.
- In addition, any refuge opportunities present should be dismantled by hand and searched prior to being removed.
- Vegetation removal works should be carried out at a time of year when amphibians are active (generally March to October inclusive), ideally during the newt breeding season (mid-March to mid-June inclusive) when newts are even less likely to be present at the site.

Destructive search:

- In order to be certain that no amphibians are present within the area of works, once five suitable days/ nights have passed since vegetation manipulation works have been completed, the remaining vegetation would be cleared from areas of

suitable habitat to ground level and where necessary topsoil disturbed by scraping back to a depth of up to 100mm where the possibility of animals being present remains.

- This should be carried out under the direct supervision of a suitably qualified ecologist.
- Topsoil should not be stripped from the root protection areas of retained trees, scrub and hedgerows, or where vegetation clearance to ground level allows satisfactory inspection to confirm likely absence.
- In the event that the destructive search is delayed following vegetation manipulation, the vegetation should be maintained at ground level until the destructive search is carried out.
- Destructive search works should be carried out at a time of year when amphibians are active (generally March to October inclusive), ideally during the newt breeding season (mid-March to mid-June inclusive) when newts are even less likely to be present at the site.

6.3.2 In the unlikely event that during any of the works on site a Great Crested Newt is encountered outside the area covered under the Great Crested Newt licence, works should stop, a suitable qualified ecologist contacted and Natural England consulted.

6.4 Further survey

6.4.1 It is recommended that the need to update the Great Crested Newt survey work undertaken to date is periodically reviewed by a suitably qualified ecologist in order to ensure effective assessment of effects of the proposed development on this species and to identify appropriate avoidance and mitigation measures. Any updated survey work should also include renewed attempts to survey Waterbodies 4A, 5A, 6A, 7A, 8A, and 13A to confirm continued absence of Great Crested Newts in these off-site ponds.

6.5 Site safeguards and habitat creation

6.5.1 The exclusion fencing should be retained and maintained until completion of works within the relevant area and the condition of the fencing monitored and repairs made as required. Following the completion of development, the exclusion fencing should be removed allowing newts to disperse back into newly created habitat within the site.

6.5.2 Development proposals should also seek to maintain and where possible enhance opportunities for Great Crested Newts at the site. This could be achieved through the retention, enhancement and creation of Great Crested Newt habitats as part of the landscape strategy for the site in addition to those required for any receptor site provision in relation to the development works. Consideration should be given to:

- Creation of new open water wetland habitats suitable for breeding amphibians planted with a range of native aquatic and marginal vegetation, either as standalone features or as part of the site surface water drainage strategy;
- Inclusion of high quality terrestrial habitats within the landscape scheme in the form of scrub, hedgerows, swales and ditches and rough, meadow and wet grassland;
- Provision of opportunities for hibernation and refuge through provision of log/brush piles and purpose built hibernacula; and
- Securing the long-term integrity of new and retained Great Crested Newt habitats through inclusion within a long-term management plan.

6.5.3 In order to protect any newts entering the entire site during the operational phase of the development, any gully pots within 250m of Pineham Nature Reserve or areas of targeted Great Crested newt habitat creation works should be suitably designed with a stand-off from the kerb and/or through use of 'wildlife friendly' kerbs³ to avoid entrapment of any newts and other wildlife passing over hard landscaped areas. Consideration should also be given to installation of 'escape ladders' in drains. Where appropriate, dropped kerbs should also be used where Great Crested Newts are likely to cross roads and other areas of hardstanding. Detailed drainage and infrastructure proposals for the development should be reviewed at appropriate design stages by a suitably qualified ecologist.

7 CONCLUSION

7.1 The results of the Great Crested Newt surveys recorded a low-end 'medium' sized population of Great Crested Newts present within the waterbodies associated with the Pineham Nature Reserve immediately adjacent to the southern site boundary. The findings of the survey suggest that low numbers of Great Crested Newts from this population may use the site during terrestrial phases.

7.2 In addition a 'low' population of Great Crested Newts was recorded from Waterbody 14A, 270m to the south of the site. However in view of the small size of this population, its distance from the site and the presence of interlying barriers to dispersal (including the M1 Motorway) it is considered unlikely that newts associated with this pond use the site during terrestrial phases.

7.3 The proposed construction and ground works within 250m of the Pineham Nature Reserve have the potential to result in a loss of Great Crested Newt terrestrial habitat and affect any individual newts present, and in absence of mitigation development of this area may constitute an offence under UK and European nature conservation legislation. Measures to maintain the favourable conservation status of the local Great Crested Newt population and avoid direct injury or mortality of individual newts, through sympathetic design of hard

³ Wildlife friendly kerbs - www.wildlifefencing.co.uk/product.php?productid=477&cat=68&page=1

landscaping, maintenance of habitat linkages, approach to works and suitable timing of activities, are subsequently described in *Section 6* of this report. In the event that planning permission is granted, the measures described should form the basis of a detailed Method Statement to accompany an application to Natural England for a licence to permit development works affecting Great Crested Newts.

7.4 Subject to implementation of the proposed mitigation and enhancement works described in *Section 6*, it is considered that the favourable conservation status of the local Great Crested Newt population present can be maintained. This would ensure compliance with the nature conservation objectives of the 2019 Conservation of Habitats and Species (Amendment) (EU Exit) Regulations, the 2006 NERC Act and the guidance underpinning the 2019 National Planning Policy Framework.

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Commissioning Party: St James

Issue	Description	Date of Issue	Signed
1	Great Crested Newt Survey Report	February 2020	AM

	Personnel	Position
Author	Shannon Davies	Assistant ecologist
Approved for issue	Adrian Meurer MCIEEM	Director

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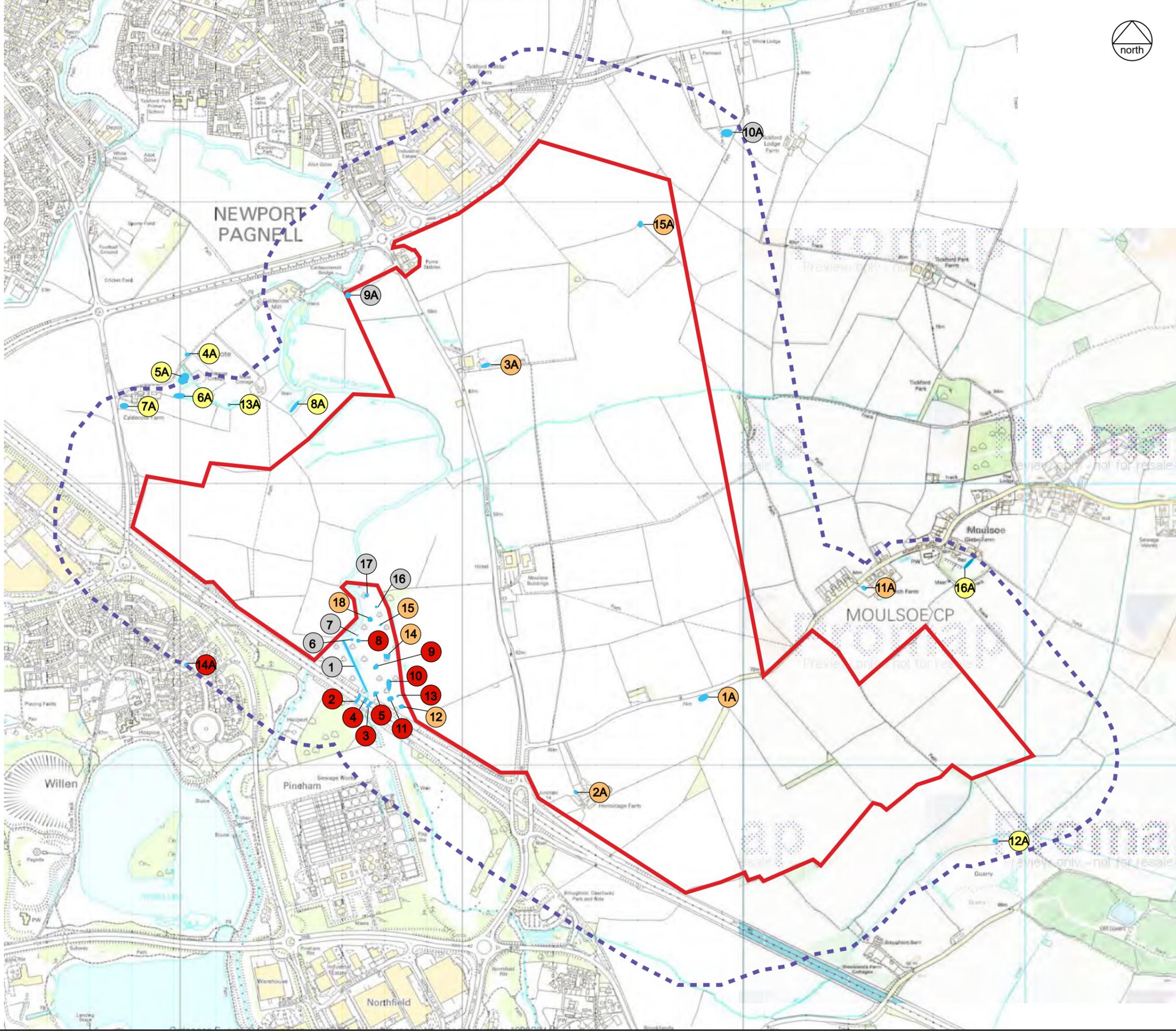
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APPENDIX A

Great Crested Newt Survey Summary Plan



KEY

- Site boundary
- 300m radius of site
- 1 Waterbody reference number
- Great Crested Newt confirmed present by population estimate survey and/or eDNA analysis
- Great Crested Newts confirmed absent by eDNA analysis and/or population estimate survey
- Waterbody dry at the time of survey
- Waterbody inaccessible for survey

CLIENT:
St James
 PROJECT:
Milton Keynes East
 TITLE:
Great Crested Newt Survey Summary Plan
 SCALE AT A3: DATE:
 Not to Scale February 2020

2090.52/09

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**Landscape Architecture
 Masterplanning
 Ecology**

APPENDIX B

Full HSI assessment results

		Waterbody 2		Waterbody 3		Waterbody 4	
SI Ref	Description of Index	Measure / Comment	SI score	Measure / Comment	SI score	Measure / Comment	SI score
SI1	Geographic location	A	1	A	1	A	1
SI2	Pond area (m ²)	3x30	0.95	2 x 25	0.1	2 x 7	0.05
SI3	Pond permanence	Rarely	1	Sometimes dries	0.5	Sometimes dries	0.5
SI4	Water quality	Moderate	0.67	Poor	0.33	Poor	0.33
SI5	Shading (%)	85%	0.5	95%	0.3	95%	0.3
SI6	Presence of waterfowl	Absent	1	Absent	1	Absent	1
SI7	Presence of fish	Possible	0.67	Minor	0.33	Possible	0.67
SI8	Pond density in area	6.6	1	6.6	1	6.6	1
SI9	Terrestrial habitat quality	Moderate	0.67	Poor	0.33	Poor	0.33
SI10	Macrophyte cover in pond (%)	15%	0.45	5%	0.35	0%	0.3
	Overall HSI for pond		0.760		0.424		0.418
Overall suitability		Good		Excellent		Poor	

		Waterbody 8		Waterbody 9		Waterbody 10	
SI Ref	Description of Index	Measure / Comment	SI score	Measure / Comment	SI score	Measure / Comment	SI score
SI1	Geographic location	A	1	A	1	A	1
SI2	Pond area (m ²)	5 x 5	0.05	15 x 10	0.25	40 x 20	0.98
SI3	Pond permanence	Rarely dries	1	Rarely dries	1	Never dries	0.9
SI4	Water quality	Good	1	Good	1	Good	1
SI5	Shading (%)	40%	1	30%	1	60%	1
SI6	Presence of waterfowl	Minor	0.67	Minor	0.67	Minor	0.67
SI7	Presence of fish	Possible	0.67	Minor	0.33	Minor	0.67
SI8	Pond density in area	6.6	1	6.6	1	6.6	1
SI9	Terrestrial habitat quality	Good	1	Good	1	Good	1
SI10	Macrophyte cover in pond (%)	80%	1	60%	0.9	90%	0.9
	Overall HSI for pond		0.684		0.741		0.902
Overall suitability		Average		Good		Excellent	

		Waterbody 11		Waterbody 12		Waterbody 13	
SI Ref	Description of Index	Measure / Comment	SI score	Measure / Comment	SI score	Measure / Comment	SI score
SI1	Geographic location	A	1	A	1	A	1
SI2	Pond area (m ²)	30 x 30	1	2 x 4	0.05	30x10	0.6
SI3	Pond permanence	Sometimes dries	0.5	Annually dries	0.1	Sometimes dries	0.5
SI4	Water quality	Moderate	0.67	Good	1	Moderate	0.67
SI5	Shading (%)	40%	1	5%	1	20%	1
SI6	Presence of waterfowl	Absent	1	Absent	1	Absent	1
SI7	Presence of fish	Possible	0.67	Absent	1	Possible	0.67
SI8	Pond density in area	6.6	1	6.6	1	6.6	1
SI9	Terrestrial habitat quality	Good	1	Good	1	Good	1
SI10	Macrophyte cover in pond (%)	60%	0.9	90%	0.9	70%	1
	Overall HSI for pond		0.852		0.583		0.818
Overall suitability		Excellent		Below average		Excellent	

		Waterbody 14		Waterbody 18		Waterbody 1A	
SI Ref	Description of Index	Measure / Comment	SI score	Measure / Comment	SI score	Measure / Comment	SI score
SI1	Geographic location	A	1	A	1	A	1
SI2	Pond area (m ²)	6 x 4	0.05	6x3	0.05	60x20	0.9
SI3	Pond permanence	Sometimes dries	0.5	Sometimes dries	0.5	Never dries	0.9
SI4	Water quality	Moderate	0.67	Moderate	0.67	Good	1
SI5	Shading (%)	20%	1	70%	0.9	30%	1
SI6	Presence of waterfowl	Absent	1	Minor	0.67	Minor	0.33
SI7	Presence of fish	Absent	1	Minor	0.67	Possible	0.67
SI8	Pond density in area	6.6	1	6.6	1	0.9	0.1
SI9	Terrestrial habitat quality	Good	1	Good	1	Poor	0.33
SI10	Macrophyte cover in pond (%)	50%	0.8	50%	0.8	20%	0.5
	Overall HSI for pond		0.650		0.593		0.559
Overall suitability		Average		Below average		Below Average	

		Waterbody 2A		Waterbody 3A		Waterbody 11A	
SI Ref	Description of Index	Measure / Comment	SI score	Measure / Comment	SI score	Measure / Comment	SI score
SI1	Geographic location	A	1	A	1	A	1
SI2	Pond area (m ²)	15x7	0.2	35x20	1	10x5	0.1
SI3	Pond permanence	Sometimes dries	0.5	Sometimes dries	0.5	Sometimes dries	0.5
SI4	Water quality	Poor	0.33	Poor	0.33	Moderate	0.67
SI5	Shading (%)	80%	0.6	10%	1	80%	0.6
SI6	Presence of waterfowl	Minor	0.33	Minor	0.33	Minor	0.33
SI7	Presence of fish	Minor	0.33	Absent	1	Possible	0.67
SI8	Pond density in area	5.7	1	1.5	0.7	0.95	0.1
SI9	Terrestrial habitat quality	Moderate	0.67	Moderate	0.67	Poor	0.33
SI10	Macrophyte cover in pond (%)	30%	0.6	15%	0.45	5%	0.35
	Overall HSI for pond		0.494		0.640		0.372
Overall suitability		Poor		Average		Poor	

		Waterbody 14A		Waterbody 15A	
SI Ref	Description of Index	Measure / Comment	SI score	Measure / Comment	SI score
SI1	Geographic location	A	1	A	1
SI2	Pond area (m ²)	20x25	1	10x5	0.1
SI3	Pond permanence	Never dries	0.9	Sometimes dries	0.5
SI4	Water quality	Good	1	Moderate	0.67
SI5	Shading (%)	50%	1	75%	0.7
SI6	Presence of waterfowl	Minor	0.67	Minor	0.33
SI7	Presence of fish	Minor	0.67	Minor	0.33
SI8	Pond density in area	7.3	1	2.8	0.95
SI9	Terrestrial habitat quality	Poor	0.33	Moderate	0.67
SI10	Macrophyte cover in pond (%)	15%	0.45	15%	0.45
	Overall HSI for pond		0.755		0.486
Overall suitability		Good		Poor	

APPENDIX C

eDNA sampling analysis results

Folio No: E3587
 Report No: 1
 Order No: 2090.52
 Client: HDA
 Contact: Shannon Davies
 Contact Details: sd@hda-enviro.co.uk
 Date: 16/07/2018

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS

Date sample received at Laboratory: 02/07/2018
Date Reported: 16/07/2018
Matters Affecting Results: None

RESULTS

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
0383	3A	-	Pass	Pass	Pass	Negative	0
1372	1A	-	Pass	Pass	Pass	Negative	0
1375	14A	-	Pass	Pass	Pass	Positive	12
1377	15A	-	Pass	Pass	Pass	Negative	0
3532	2	-	Pass	Pass	Pass	Positive	1
3534	18	-	Pass	Pass	Pass	Negative	0
3538	2A	-	Pass	Pass	Pass	Negative	0
3541	11A	-	Pass	Pass	Pass	Negative	0
3542	3	-	Pass	Pass	Pass	Positive	0
3543	10	-	Pass	Pass	Pass	Positive	11
3547	4	-	Pass	Pass	Pass	Positive	1
3548	11	-	Pass	Pass	Pass	Positive	3
3549	8	-	Pass	Pass	Pass	Positive	12

3550		13		-		Pass		Pass		Pass		Positive		10
3551		9		-		Pass		Pass		Pass		Positive		4

SUMMARY

When Great Crested Newts (GCN); *Triturus cristatus* inhabit a pond, they deposit traces of their DNA in the water as evidence of their presence. By sampling the water, we can analyse these small environmental DNA (eDNA) traces to confirm GCN habitation, or establish GCN absence.

The water samples detailed below were submitted for eDNA analysis to the protocol stated in DEFRA WC1067 (Latest Amendments). Details on the sample submission form were used as the unique sample identity.

RESULTS INTERPRETATION

Lab Sample No.- When a kit is made it is given a unique sample number. When the pond samples have been taken and the kit has been received back in to the laboratory, this sample number is tracked throughout the laboratory.

Site Name- Information on the pond.

O/S Reference - Location/co-ordinates of pond.

SIC- Sample Integrity Check. Refers to quality of packaging, absence of tube leakage, suitability of sample (not too much mud or weed etc.) and absence of any factors that could potentially lead to results errors. Inspection upon receipt of sample at the laboratory. To check if the Sample is of adequate integrity when received. Pass or Fail.

DC- Degradation Check. Analysis of the spiked DNA marker to see if there has been degradation of the kit since made in the laboratory to sampling to analysis. Pass or Fail.

IC- Inhibition Check- PCR inhibitors can cause false results. Inhibitors are analysed to check the quality of the result. Every effort is made to clean the sample pre-analysis however some inhibitors cannot be extracted. An unacceptable inhibition check will cause an indeterminate sample and must be sampled again.

Result- NEGATIVE means that GCN eDNA was not detected or is below the threshold detection level and the test result should be considered as no evidence of GCN presence. POSITIVE means that GCN eDNA was found at or above the threshold level and the presence of GCN at this location at the time of sampling or in the recent past is confirmed. Positive or Negative.

Positive Replicates- To generate the results all of the tubes from each pond are combined to produce one eDNA extract. Then twelve separate analyses are undertaken. If one or more of these analyses are positive the pond is declared positive for the presence of GCN. It may be assumed that small fractions of positive analyses suggest low level presence but this cannot currently be used for population studies. In accordance with Natural England protocol, even a score of 1/12 is declared positive.

METHODOLOGY

The laboratory testing adheres to strict guidelines laid down in WC1067 Analytical and Methodological Development for Improved Surveillance of The Great Crested Newt, Version 1.1

The analysis is conducted in two phases. The sample first goes through an extraction process where all six tubes are pooled together to acquire as much eDNA as possible. The pooled sample is then tested via real time PCR (also called q-PCR). This process amplifies select part of DNA allowing it to be detected and measured in 'real time' as the analytical process develops. qPCR combines PCR amplification and detection into a single step. This eliminates the need to detect products using gel electrophoresis. With qPCR, fluorescent dyes specific to the target sequence are used to label PCR products during thermal cycling. The accumulation of fluorescent signals during the exponential phase of the reaction is measured for fast and objective data analysis. The point at which amplification begins (the Ct value) is an indicator of the quality of the sample. True positive controls, negatives and blanks as well as spiked synthetic DNA are included in every analysis and these have to be correct before any result is declared so they act as additional quality control measures.

The primers used in this process are specific to a part of mitochondrial DNA only found in GCN ensuring no DNA from other species present in the water is amplified. The unique sequence appropriate for GCN analysis is quoted in DEFRA WC 1067 and means there should be no detection of closely related species. We have tested our system exhaustively to ensure this is the case in our laboratory. We can offer eDNA analysis for most other species including other newts.

Analysis of eDNA requires scrupulous attention to detail to prevent risk of contamination. Kits are manufactured by SureScreen Scientifics to strict quality procedures in a separate building and with separate staff, adopting best practice from WC1067 and WC1067 Appendix 5. Kits contain a 'spiked' DNA marker used as a quality control tracer (SureScreen patent pending) to ensure any DNA contained in the sampled water has not deteriorated in transit. Stages of the DNA analysis are also conducted in different buildings at our premises for added

SureScreen Scientifics Ltd also participate in Natural England's proficiency testing scheme and we also carry out inter-laboratory checks on accuracy of results as part of our quality procedures.

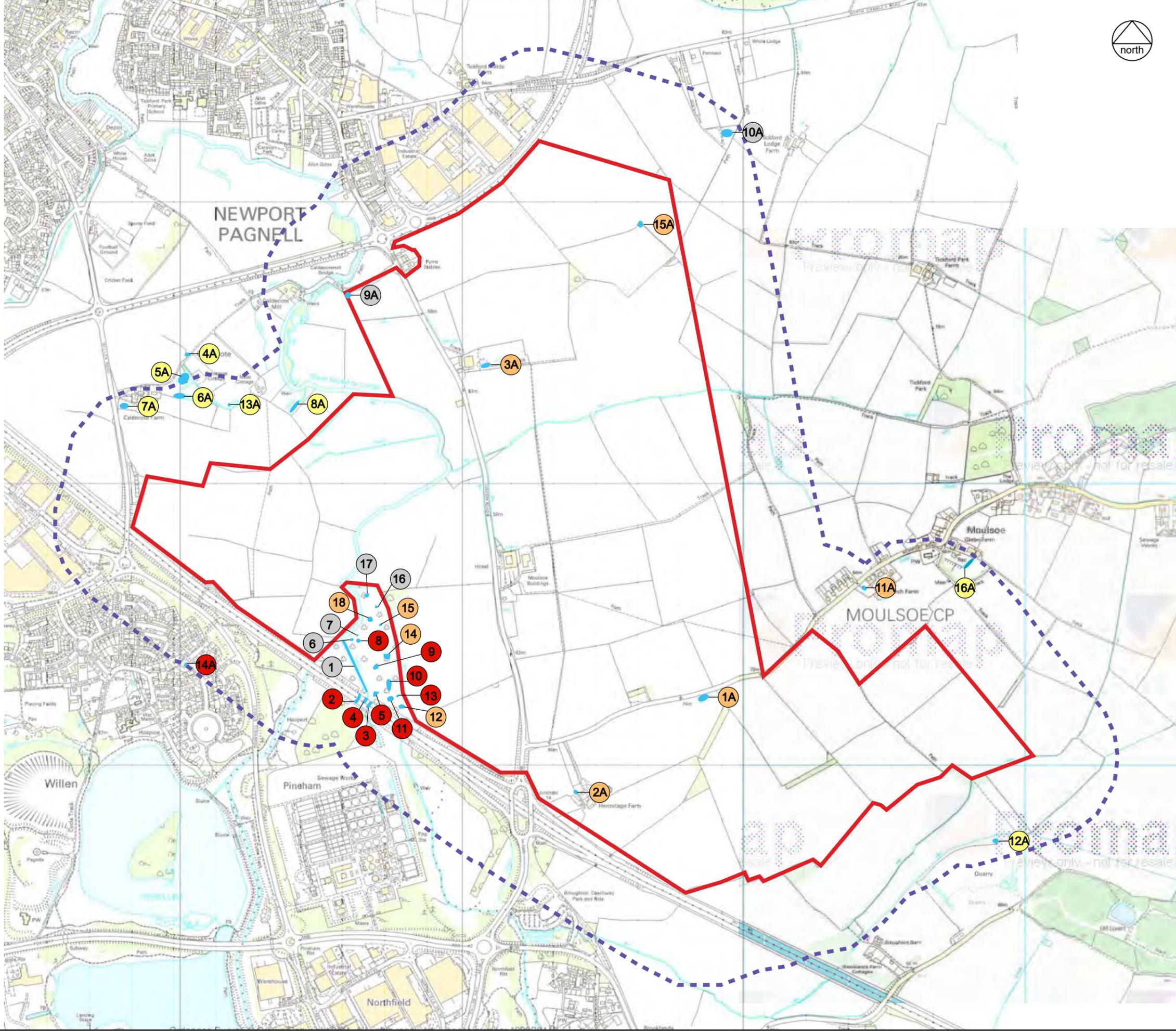
Reported by: Josh Estella

Approved by: Derry Hickman

End Of Report

APPENDIX D

Population estimate survey results



KEY

- Site boundary
- 300m radius of site
- 1 Waterbody reference number
- Great Crested Newt confirmed present by population estimate survey and/or eDNA analysis
- Great Crested Newts confirmed absent by eDNA analysis and/or population estimate survey
- Waterbody dry at the time of survey
- Waterbody inaccessible for survey

CLIENT:
St James
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Milton Keynes East
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Great Crested Newt Survey Summary Plan
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2090.52/09

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Waterbody*	Date	Air Temp (°C)	Water Temp (°C)	Turbidity	Vegetation cover	Egg search	Netting	Torch survey	Bottle survey	Notes	
Waterbody 2	25.04.2019	10	-	1	1	-	NC	7 Tc male 5 Tc female 4 Lv male 7 Lv female	1 Tc male 11 Lv male		
	01.05.2019	13	-	3	0	-	NC	5 Tc male 4 Tc female 8 Lv female	NC**		
	13.05.2019	15	8.3 (AM)	3	1	-	NC	6 Tc male 2 Tc female 2 Lv male 15 Lv female 1 Rt	1 Tc female		
	15.05.2019	10	11	1	1	-	NC	4 Tc male 1 Tc female 8 Lv male 5 Lv female 1 Rt	NC**		
	29.05.2019	11	-	1	1	-	NC	6 Tc male 3 Tc female 1 Tc juvenile 6 Lv male 13 Lv female	NC		
	03.06.2019	16	13.8	1	1	-	NC	2 Tc male 3 Tc female 2 Tc juvenile 4 Lv male 15 Lv female 1 Lv juvenile 3 Rt	NC		
Waterbody 3	25.04.2019	10	-	2	0	-	NC	9 Lv female	NC	The waterbody was too shallow to use bottle traps.	
	01.05.2019	13	-	3	0	-	NC	2 Lv females	NC		
	13.05.2019	-	-	2	0	-	NC	2 Lv male 14 Lv female	NC		
	15.05.2019	10	-	3	0	-	NC	1 Lv male 10 Lv female 2 Lv juveniles	NC		
	29.05.2019	The waterbody was dry and therefore no further surveys were carried out									
	03.06.2019										

Waterbody*	Date	Air Temp (°C)	Water Temp (°C)	Turbidity	Vegetation cover	Egg search	Netting	Torch survey	Bottle survey	Notes	
Waterbody 4	25.04.2019	10	-	3	1	-	NC	4 Rt	1 Rt		
	01.05.2019	13	-	3	1	-	NC	2 Rt	NC		
	13.05.2019	14	8.4 (AM)	3	1	-	NC	-	-		
	15.05.2019	10	10.4	4	1	-	NC	-	2 Rt		
	29.05.2019	-	-	4	1	-	NC	1 Tc male	NC	The waterbody was too shallow to use bottle trap.	
	03.06.2019	16	13.7	4	1	-	NC	3 Rt juvenile	NC		
Waterbody 5	25.04.2019	11	-	2	4	-	NC	1 Tc female 7 Lv male 5 Lv female 1 Rt juvenile	1 Tc female 1 Lv female		
	01.05.2019	15	-	3	2	-	NC	1 Lv male 2 Lv female	2 Tc males 4 Lv females		
	13.05.2019	14	12 (AM)	3	2	-	NC	11 Lv male 1 Lv female	5 Lv male 5 Lv female		
	15.05.2019	10	16.2	3	2	-	NC	9 Lv male 8 Lv female 1 Rt	7 Lv male 6 Lv female		
	29.05.2019	11	12.3	3	2	-	NC	10 Lv male 13 Lv female	1 Tc juvenile 1 Lv male 3 Lv female		
	03.06.2019	16	17	1	2	-	NC	3 Lv male 8 Lv female	1 Lv male 3 Lv female		
Waterbody 8	25.04.2019	12	-	0	3	-	NC	2 Lv male 3 Lv female	3 Lv male 3 Lv female		
	01.05.2019	13	-	2	3	-	NC	1 Lv male 1 Rt	-		
	13.05.2019	14	8.6 (AM)	2	3	-	NC	-	-		
	15.05.2019	10	14.9	2	3	-	NC	-	1 Lv female		
	29.05.2019	The waterbody was dry and therefore no further surveys were carried out									
	03.06.2019	The waterbody was dry and therefore no further surveys were carried out									
Waterbody 9	25.04.2019	12	-	1	1	-	NC	2 Lv male 1 Lv female	1 Lv female		
	01.05.2019	12.5	15	1	2	-	NC	2 Lv male 1 Rt			
	13.05.2019	14	12.9 (AM)	1	2	-	NC	-	-		
	15.05.2019	10	17.1	1	2	-	NC	1 Lv female	-		
	29.05.2019	11	13.6	1	2	-	NC	3 Lv female	-		

Waterbody*	Date	Air Temp (°C)	Water Temp (°C)	Turbidity	Vegetation cover	Egg search	Netting	Torch survey	Bottle survey	Notes
	03.06.2019	16	18.3	1	2	-	NC	-	-	
Waterbody 10	25.04.2019	10	-	2	3	-	NC	1 Lv male 6 Lv female	1 Lv male 1 Lv juvenile	
	01.05.2019	13	14.8	1	3	-	NC	1 Tc male 2 Lv male 3 Lv female	-	
	13.05.2019	14	10.2 (AM)	2	3	-	NC	-	-	
	15.05.2019	10	15.4	2	3	-	NC	1 Lv male 1 Rt	1 Lv male	
	29.05.2019	11	12.8	2	3	-	NC	1 Lv female	-	
	03.06.2019	16	17.4	2	3	-	NC	-	-	
Waterbody 11	25.04.2019	11	-	2	4	-	NC	1 Lv male 2 Lv female	-	
	01.05.2019	14	14	2	4	-	NC	-	-	
	13.05.2019	14	8.4 (AM)	2	4	-	NC	-	-	
	15.05.2019	10	15.9	2	4	Tc eggs	NC	1 Rt	-	
	29.05.2019	The waterbody was dry and therefore no further surveys were carried out								
	03.06.2019	The waterbody was dry and therefore no further surveys were carried out								
Waterbody 12	25.04.2019	11	-	1	4	-	NC	-	-	
	01.05.2019	14	13.8	1	4	-	NC	1 Lv female	-	
	13.05.2019	14	-	2	4	-	NC	-	NC	Bottle trapping was not carried out due to shallow water levels
	15.05.2019	The waterbody was dry and therefore no further surveys were carried out								
	29.05.2019	The waterbody was dry and therefore no further surveys were carried out								
	03.06.2019	The waterbody was dry and therefore no further surveys were carried out								
Waterbody 13	25.04.2019	11	-	3	4	-	NC	-	-	
	01.05.2019	The waterbody was dry and therefore no further surveys were carried out								
	13.05.2019	The waterbody was dry and therefore no further surveys were carried out								
	15.05.2019	The waterbody was dry and therefore no further surveys were carried out								
	29.05.2019	The waterbody was dry and therefore no further surveys were carried out								
	03.06.2019	The waterbody was dry and therefore no further surveys were carried out								
Waterbody 14	25.04.2019	12	-	3	3	-	NC	1 Lv male	-	
	01.05.2019	13	14.5	3	3	-	NC	1 Lv male 1 Lv female	-	
	13.05.2019	14	11.6 (AM)	2	3	-	NC	-	-	

Waterbody*	Date	Air Temp (°C)	Water Temp (°C)	Turbidity	Vegetation cover	Egg search	Netting	Torch survey	Bottle survey	Notes
	15.05.2019	10	16.7	2	3	-	NC	2 Lv female	1 Lv female	
	29.05.2019	11	13.7	2	3	-	NC	1 Lv male	-	
	03.06.2019	16	17.6	2	3	-	NC	-	-	
Waterbody 15	25.04.2019	11	-	2	4	-	NC	1 Lv male 2 Lv female	-	
	01.05.2019	13	14	3	4	-	NC	1 Lv male 1 Lv female	-	
	13.05.2019	14	9.6 (AM)	3	4	-	NC	1 Lv male 1 Lv female	-	
	15.05.2019	10	15	3	4	-	NC	-	-	
	29.05.2019	11	14	3	4	-	NC	2 Lv male 3 Lv female	-	
	03.06.2019	16	15.9	3	4	-	NC	1 Rt juvenile	-	
Waterbody 18	25.04.2019	10	-	1	4	-	NC	1Rt	NC	
	01.05.2019	13	-	1	4	-	NC	-	1 Lv male	
	13.05.2019	15	-	1	4	-	NC	1 Lv female	-	
	15.05.2019	10	16.6	1	4	-	NC	-	-	
	29.05.2019	The waterbody was dry and therefore no further surveys were carried out								
	03.06.2019									
Waterbody 14a	25.04.2019	10	-	1	4	-	NC	1 Tc female	-	
	01.05.2019	11	13.5	1	4	-	NC	1 Tc male	-	
	13.05.2019	14	9.2 (AM)	2	4	-	NC	-	-	
	15.05.2019	10	8.1 (AM)	2	4	-	NC	1 Tc male 2 Lv female	1 Tc female	
	29.05.2019	11	13.3	2	4	-	NC	1 Tc male 1 Lv male 1 Lv female	-	
	03.06.2019	16	14.2	2	4	-	NC	1 Tc female	-	

* Waterbodies 1, 6, 16, 17, 1A, 2A, 3A, 4A, 5A, 6A, 7A, 8A, 9A, 10A, 11A, 12A 13A and 15A were not subject to population estimate surveys due to either the likely absence of Great Crested Newts proved by eDNA survey (Waterbody 1A, 2A, 3A, 11A and 15A) or waterbody assessed as not suitable for breeding Great Crested Newts (Waterbodies 1, 6, 16, 17, 4A, 5A, 6A, 7A, 8A, 9A, 10A, 12A, 13A and 16A).

** The waterbody was found to contain Dewsbury Traps on these occasions which had been set by another consultancy working on a different project. In order to avoid adversely affecting their survey results and given the proven efficacy of torch survey in identifying newts in this waterbody over bottle trapping, it was decided not to bottle trap on these occasions.

Turbidity scale: 0=clear; 5= Very murky

Vegetation cover scale: 0=none, 5=obscured

Species: Great Crested Newt *Triturus cristatus* (Tc), Smooth Newt *Lissotriton vulgaris* (Lv) and Common Frog *Rana temporaria* (Rt)
NC: Methodology not carried out

APPENDIX E

Waterbody photographs



Photo 1:
Waterbody 2



Photo 2:
Waterbody 3



Photo 3:
Waterbody 4



Photo 4:
Waterbody 8



Photo 5:
Waterbody 9



Photo 6:
Waterbody 10



Photo 7:
Waterbody 11



Photo 8:
Waterbody 1A



Photo 9:
Waterbody 2A



Photo 10:
Waterbody 3A

			<p>Photo 11: Waterbody 9A</p>
			<p>Photo 12: Waterbody 11a</p>
			<p>Photo 13: Waterbody 14A</p>

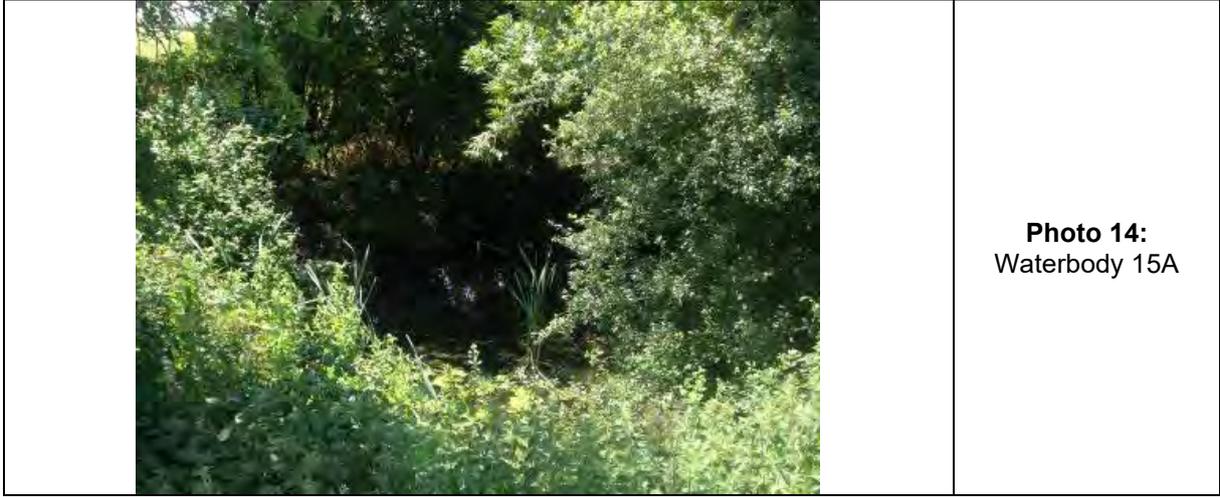
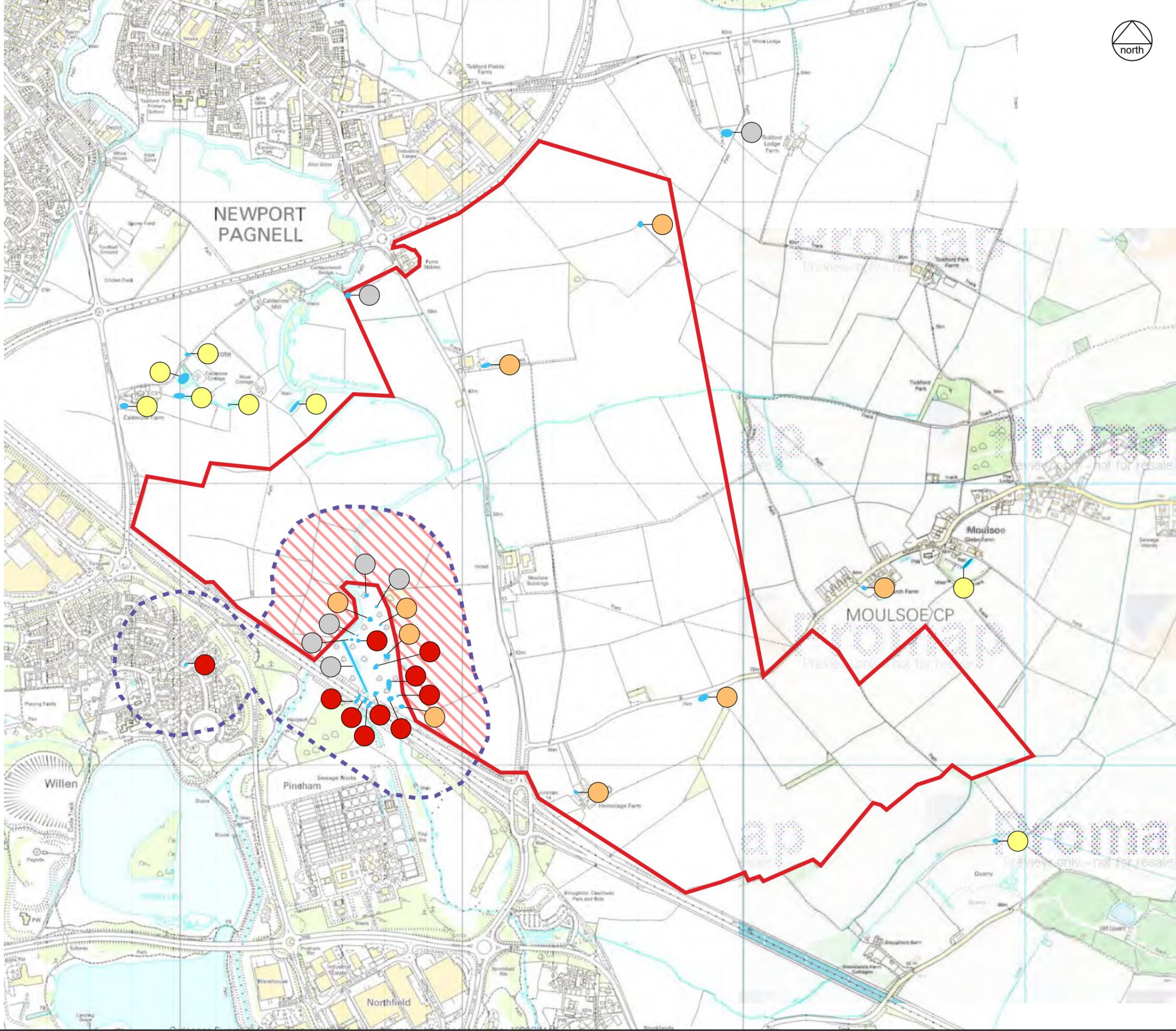


Photo 14:
Waterbody 15A

APPENDIX F

Great Crested Newt Mitigation Plan



KEY

-  Site boundary
-  250m radius from Great Crested Newt Ponds
-  Translocation area
-  Great Crested Newt confirmed present by population estimate survey and/or eDNA analysis
-  Great Crested Newts confirmed absent by eDNA analysis and/or population estimate survey
-  Waterbody dry at the time of survey
-  Waterbody inaccessible for survey

* Do not scale off this plan

CLIENT:
St James
 PROJECT:
Milton Keynes East
 TITLE:
Great Crested Newt Mitigation Plan
 SCALE AT A3: DATE:
 Not to Scale February 2020

2090.52/ 13

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Appendix F17

Great Crested Newt Survey Report: Additional Areas

MILTON KEYNES EAST

GREAT CRESTED NEWT SURVEY REPORT: ADDITIONAL AREAS

Prepared for St James

by

Hankinson Duckett Associates

HDA ref: 2090.52

March 2021

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HDA Document Control and Quality Assurance Record

APPENDICES

- A Great Crested Newt Survey Summary Plan: Additional Areas
- B Full HSI Assessment Results
- C Presence/ Absence Survey Results
- D Great Crested Newt Mitigation Plan
- E Waterbody Photographs

1 INTRODUCTION

1.1 Site location and a summary description

- 1.1.1 This report describes additional Great Crested Newt survey work carried out on waterbodies associated with the proposed development of approximately 437ha of land at Newport Pagnell, Buckinghamshire hereinafter referred to as 'the site'. The site can be located by National Grid Reference SP893419. The study was commissioned by St James in April 2020.
- 1.1.2 The site is located to the south of Newport Pagnell, on the north-eastern edge of Milton Keynes, Buckinghamshire. The site is dominated by a series of arable fields bordered by hedgerows, treelines, ditches and fencing. Other habitats include grazed grassland fields, small areas of amenity grassland and small pockets of deciduous woodland. The River Ouzel and its tributary, the Broughton Brook, flow in a northerly direction through the western and central areas of the site and, associated with these watercourses, the Pineham Nature Reserve in the south of the site supports a mosaic of scrub, rough grassland, tall ruderal vegetation and ponds. Other features within the site include a number of agricultural, commercial and residential buildings, generally associated with working farms, and roads including the M1 motorway and Tongwell Street which run through a corridor of woodland, scattered trees and scrub in the south-west of the site, and several smaller roads running through the site to the east.
- 1.1.3 The site is bordered to the north by a construction site for residential development and the A422, beyond which lie the Interchange Park industrial estate and the town of Newport Pagnell; to the east by arable farmland and the settlement of Moulsoe; to the south-west by residential development and Willen Lake on the outskirts of Milton Keynes, the M1 Motorway and Pineham sewage works; and to the south-east by arable farmland.
- 1.1.4 The majority of the site (362ha) and surrounding area was subject to Great Crested Newt surveys by HDA in 2018/2019 (HDA, 2020b), however following amendments to highways proposals and expansion of the site boundary in March 2020 the survey was extended to include additional land, hereinafter referred to as the '2020 survey area' and this forms the subject of this report. The site boundary was subject to an additional expansion in 2021 however this did not have an implication on the need for additional survey in relation to Great Crested Newts.
- 1.1.5 A plan showing the location of the site, including the 2020 and 2021 site extension areas, is provided in *Appendix A*.

1.2 Background and legislative context

- 1.2.1 Five species of amphibian are widespread in England: Common Frog *Rana temporaria*, Common Toad *Bufo bufo*; Smooth Newt *Lissotriton vulgaris*; Palmate Newt *Lissotriton helveticus*; and Great Crested Newt *Triturus cristatus*. A sixth species of amphibian, the Natterjack Toad *Bufo calamita*, also occurs in England but this species has special habitat requirements that limit its range to certain sand dune and heathland sites.
- 1.2.2 Amphibians require aquatic habitat within which to breed and suitable terrestrial habitat to forage and hibernate. Suitable breeding ponds are usually well vegetated with still, shallow water that is not heavily shaded or very exposed. Terrestrial habitat includes woodland, scrub, field edges and gardens. Hibernation can occur under stone or log piles, in crevices or leaf litter and under the soil. Occasionally amphibians may be found hibernating in their breeding pools.
- 1.2.3 Over the last few decades all amphibians have suffered a decline in numbers. This is due to a combination of many factors, which include habitat destruction and fragmentation, loss of breeding pools through unsympathetic management and neglect, introduction of fish (which eat amphibian larvae) and pollution.
- 1.2.4 The Great Crested Newt is protected as a 'European Protected Species' (EPS) under the 2019 Conservation of Habitats and Species (Amendment) (EU Exit) Regulations. In relation to EPSs, the 2019 Regulations make it an offence to:
- Deliberately capture, injure or kill any wild animal of an EPS;
 - Deliberately disturb wild animals of any such species, in particular any disturbance which is likely to: (i) impair their ability to survive, to breed or reproduce, or to rear or nurture their young; or to hibernate or migrate; (ii) affect significantly the local distribution or abundance of the species to which they belong;
 - Damage or destroy a breeding site or resting place of such an animal; or
 - To (a) be in possession of, or to control; (b) to transport any live or dead animal or any part of an animal; (c) to sell or exchange or (d) offer for sale or exchange any live or dead animal or part of an animal of an EPS.
- 1.2.5 In addition, Great Crested Newts are protected under the 1981 Wildlife and Countryside Act (as amended). The Great Crested Newt is listed on Schedule 5 of the Act and is subject to the provisions of Sections 9.4b and 9.4c, which make it an offence to:
- Intentionally or recklessly disturb a Great Crested Newt while it is occupying a structure or place which it uses for shelter or protection; or
 - Intentionally or recklessly obstruct access to any structure or place used for shelter or protection by a Great Crested Newt.
- 1.2.6 Where works are planned that may result in an offence under the legislation then works should be carried out under an appropriate licence from Natural England.

1.2.7 Great Crested Newts and Common Toads are also identified as Species of Principal Importance under Section 41 of the 2006 Natural Environment and Rural Communities (NERC) Act. Section 40 of the Act requires that these species are a material consideration in the planning process.

1.3 Scope and purpose of the report

1.3.1 The Great Crested Newt surveys conducted by HDA in 2018/2019 (HDA, 2020b) identified the following ponds supporting Great Crested Newts within 300m of the site:

- A low-end moderate population of Great Crested Newts within nine ponds at Pineham Nature Reserve in the south of the site (Waterbodies 2, 3, 4, 5, 8, 9, 10, 11 and 13); and
- A very low population of Great Crested Newts within a pond (Waterbody 14A) located approximately 65m from the south-western site boundary.

1.3.2 The locations of the above waterbodies are shown in *Appendix A*.

1.3.3 Following the expansion of the site boundary in March 2020, initial surveys identified potential for additional breeding and terrestrial habitat to be affected by the proposed development that had not been covered by the work undertaken in 2018/2019¹.

1.3.4 In view of the above, the Great Crested Newt survey was extended to include additional previously unsurveyed ponds within 300m of the new site boundary, and where possible, other waterbodies which had not been subject to survey in 2018/2019 due to access constraints. The aims of the survey were to:

- i. Establish the suitability of waterbodies within 300m of the current site boundary for Great Crested Newts;
- ii. Establish the presence/ likely absence of Great Crested Newts in suitable waterbodies within 300m of the site;
- iii. Where appropriate, establish the size of any Great Crested Newt population potentially associated with the site; and
- iv. To predict likely impacts of the proposed development on Great Crested Newts and give recommendations for impact avoidance, minimisation and/ or mitigation.

2 METHODOLOGY

2.1 Desk study

2.1.1 As part of the Ecological Appraisal (HDA, 2020a), existing protected species records were obtained for an area of approximately 2km around the site from Buckinghamshire and Milton Keynes Environmental Records Centre (BMERC). Subsequent to this, during the course of this current study, additional third-party records were obtained from Highways England for

¹ Subsequent extension of the site in 2021 did not result in a need for further survey requirement.

Great Crested Newt surveys conducted within the vicinity of the site in 2016 in relation to the M1 Junction 13 to 16 works (Highways England, 2017). The findings of the desk study are summarised in *Section 3.1* below.

2.2 Great Crested Newt Habitat Suitability Index (HSI) Assessment

2.2.1 HSI assessments provide a mechanism by which the suitability of a pond to support Great Crested Newts can be objectively assessed in order to assist in the identification of ponds potentially supporting this species (Oldham *et al.*, 2000).

2.2.2 For the HSI assessment the locations of additional, previously unsurveyed waterbodies now falling within 300m of the extended site boundary were identified from online aerial photographs, a 1:10,000 scale Ordnance Survey map and from other waterbodies encountered during the survey. Where necessary, relevant landowners were contacted in advance of the survey in order to gain access to off-site waterbodies. Use of a 300m radius reflects the findings of studies into the movement of Great Crested Newts during terrestrial phases which indicate that the maximum routine migratory distance of Great Crested Newts away from breeding ponds during terrestrial phases is less than 250m (Cresswell and Whitworth, 2004).

2.2.3 The HSI assessment was conducted by Clare Bird MCIEEM and Shannon Davies of Hankinson Duckett Associates on 29th April 2020. All accessible waterbodies which had been identified within the survey radius at the time of survey were visited and, where appropriate, assessed against each of the following ten suitability indices:

- i. Geographic location;
- ii. Pond area;
- iii. Pond permanence;
- iv. Water quality;
- v. Shading;
- vi. Presence of waterfowl;
- vii. Presence of fish;
- viii. Pond density in the area;
- ix. Terrestrial habitat quality; and
- x. Macrophyte cover in pond.

2.2.4 Details of the pond characteristics (depth, margin profile, etc.) and bankside, marginal and aquatic vegetation were also recorded during the assessment.

2.3 Great Crested Newt presence/absence survey

2.3.1 Following the HSI survey, a full Great Crested Newt presence/absence survey was conducted on all additional, previously unsurveyed waterbodies now falling within 300m of

the extended site boundary that had been identified as providing suitable habitat for Great Crested Newts.

2.3.2 The presence/absence survey methodology has been devised to accord with the requirements of all relevant legislation, guidelines and good practice guidance, including the 1981 Wildlife and Countryside Act (as amended), the Herpetofauna Worker's Manual (Gent and Gibson, 1998), the Great Crested Newt Mitigation Guidelines (English Nature, 2001) and subsequent research (Cresswell and Whitworth, 2004). The survey was conducted by Clare Bird MCIEEM, Shannon Davies and Anna Potter of HDA, assisted by Gerald Selvey, between April and June 2020.

2.3.3 The waterbodies were surveyed on four separate visits in suitable climatic conditions. Dates of survey visits, weather conditions and personnel are shown in the table below:

Table 1: Survey dates and weather conditions

Date	Weather conditions	Personnel
29.04.2020	100% cloud cover, light breeze and dry	Clare Bird and Shannon Davies
05.05.2020	Mild, light breeze and dry	Shannon Davies and Anna Potter
13.05.2020	Clear, calm and dry	Shannon Davies and Anna Potter
20.05.2020	15% cloud cover, calm and dry	Shannon Davies and Gerald Selvey

2.3.4 A combination of three survey methods were used during each survey in order to determine the presence/likely absence of Great Crested newts in accordance with Natural England guidelines²:

- i. Sweep-netting: A hand held net, fitted with 2mm amphibian mesh, was used around waterbody margins with a survey effort of at least 15 minutes per 50m of shoreline.
- ii. Egg searching: Submerged and floating vegetation and leaf litter was inspected for newt eggs at each waterbody.
- iii. Torch surveys: These were carried out after dark using 1,000,000 candlepower torches. Each waterbody was circumnavigated and searched by torchlight for amphibians

2.3.5 The size of amphibian populations within the waterbodies surveyed was estimated using the scoring system given in the Herpetofauna Workers Manual (Gent and Gibson, 1998).

² For Waterbodies 17A and 18A, the surveys were focussed on the areas of the lakes falling within 300m of the 2020 survey area boundary. This was considered a sufficiently robust survey effort as stands of marginal vegetation suitable to support breeding Great Crested Newts were present within these areas and, if newts were present within the waterbodies it is expected that they would have been evident within these areas. Environmental eDNA sampling was considered unsuitable for identifying presence/absence of Great Crested Newts within Waterbodies 17A and 18A in view of the size and volume of these waterbodies.

2.4 Limitations

2.4.1 A number of waterbodies have been identified within 300m of the site boundary to which access was requested for the 2018/2019 surveys but for which access was not permitted. Access to these waterbodies was attempted again for the 2020 surveys but again no access was granted to these waterbodies for HSI or presence/ absence surveys. These are identified in *Appendix A* and included:

- An active construction site located on the northern site boundary contained approximately 11 waterbodies at the time of survey. These pools were however recently established, shallow, temporary features associated with ongoing gravel extraction and construction works and it is understood that the majority have now been infilled (Bloor Homes, pers comm).
- Waterbodies 4A, 5A, 6A, 7A, 8A, 13A and 16A – With the exception of waterbodies 13A and 8A (located 122m and 200m from the site respectively) these are all located over 250m away from the site boundary i.e. beyond the maximum routine migratory distance for Great Crested Newts during terrestrial phases. Waterbodies 13A and 8A comprise widenings of drains connected to the River Ouzel and are likely to support predatory fish thereby limiting their suitability for Great Crested Newts. Furthermore, these waterbodies were subject to Great Crested Newt presence/absence surveys by HDA in 2012 in accordance with the methodology in the Great Crested Newt Mitigation Guidelines (English Nature, 2001). None of these ponds were found to support Great Crested Newts during these surveys and it is considered unlikely that Great Crested Newts have colonised these ponds in the intervening period.

2.4.2 The presence of a number of waterbodies supporting Great Crested Newts or having potential to support Great Crested Newts was identified during the desk study after the 2020 field work had been carried out. The presence of these ponds was unknown at the time of the 2020 field surveys due to their location outside of the site boundary at that time and/ or the ponds not being mapped on OS maps or visible on aerial photographs available at that time. Due to the timing of this information becoming available and seasonal constraints associated with Great Crested Newt survey work, it has not been possible to conduct further surveys of these waterbodies in advance of this assessment. These limitations are factored into the evaluation at *Section 5*, and where necessary the recommendations provided in *Section 6* take a precautionary approach to address these.

2.4.3 Notwithstanding the above limitations, the surveys that were carried out in 2020 followed current best practice guidelines (English Nature, 2001) and were conducted at an appropriate time of year, under favourable weather conditions and with an appropriate level of survey effort both in terms of the number of survey visits undertaken and range of survey techniques employed on each occasion.

2.4.4 In summary, the findings of the field surveys conducted to date, together with the results of the desk study discussed below, are considered sufficient to inform an assessment of the likely effects of the proposed development on Great Crested Newts and to inform the recommendations provided in *Section 6* of this report.

3 RESULTS

3.1 Desk Study

3.1.1 During the desk study conducted as part of the Ecological Appraisal (HDA, 2020a), BMERC provided 136 records of Great Crested Newt for the desk study area. In addition, surveys carried out by Highways England (HE) in 2016 confirmed the presence of Great Crested Newts within several ponds in the vicinity of the site (Highways England, 2017). The combined desk study results included the following records of Great Crested Newts from ponds within 300m of the site:

- Medium³ and small⁴ populations of Great Crested Newts in four on-site ponds located within the Pineham Nature Reserve in the south of the site, dating from 2016;
- A small population of Great Crested Newts within an on-site pond located below the Tongwell Street bridge in the south of the site (Waterbody 19A⁵), dating from 2016;
- Presence of Great Crested Newts within an on-site pond located within the Parks Trust land in the south of the site, dating from 2016 (Waterbody 22⁶);
- Presence of Great Crested Newts within at least four off-site ponds within 50m of the site boundary located at Cotton Valley Sewage Works along Tongwell Street (Waterbodies 24-27⁷) dating from 2010 and 2016;
- Presence of Great Crested Newts within a pond (Waterbody 14A⁸) located 65m from the south-western site boundary, dating from 2003; and
- A small population of Great Crested Newt within an off-site pond located 245m to the south-west of the site boundary (Waterbody 20⁹), dating from 2016.

3.1.2 The locations of the above waterbodies are shown in *Appendix A*.

3.2 Field Surveys

3.2.1 Two waterbodies within 300m of the extended site boundary were subject to full survey in 2020. The locations of the waterbodies are shown in *Appendix A* and photographs are provided in *Appendix E*.

3.2.2 The results of the HSI assessment and presence/absence survey, together with descriptions of the surveyed waterbodies, are provided below. Full findings of the HSI

³ HE pond ref. 11.

⁴ HE pond refs. 13, 13D and 14E.

⁵ HE pond ref. 13C.

⁶ BMERC pond ref. WB3.

⁷ BMERC pond refs. 1-4.

⁸ BMERC pond ref. Southfield Close.

⁹ HE ref Pond 13A.

assessment and the presence/absence survey results are given in *Appendices B* and *C* respectively.

Waterbody 12A

Location: 236m to the south-east of the site

HSI assessment: N/A

- 3.2.3 The landowner of Waterbody 21A was contacted during the 2020 survey. The landowner confirmed that the waterbody shown at this location on OS mapping has been infilled and no longer holds water. The feature is therefore considered to be unsuitable for breeding Great Crested Newts and is not considered further in this assessment.

Waterbody 17A

Location: Approximately 83m to the west of the site

HSI assessment: 0.709

(Photos 1 and 2)

- 3.2.4 Willen Lake, a large lake measuring approximately 25ha, with a large inaccessible island in the centre. The waterbody is surrounded by scattered trees, scrub and amenity grassland which is considered to provide 'moderate' quality terrestrial habitat for Great Crested Newts. The lake edge generally comprises reinforced shelving, or gently sloping banks with bankside Willow, Hawthorn and Bramble which shade approximately 5% of the lake margin. Aquatic and marginal vegetation was limited to 5% of the lake's surface at the time of survey, with Water Dock, Common Reed, Bullrush, Pondweed and Yellow Iris present particularly around the lake margins. The water quality was assessed as good, fish were recorded as being present and it is considered that the waterbody never dries out.
- 3.2.5 The HSI score for Waterbody 17A was calculated as 0.709, which indicates that the waterbody has 'good' suitability for Great Crested Newts.
- 3.2.6 No evidence of Great Crested Newts was recorded during the presence/ absence survey. Amphibian species recorded within Waterbody 17A included Smooth Newt, Common Frog and Common Toad.

Waterbody 18A

Location: Approximately 150m to the west of the site

HSI assessment: 0.709

(Photo 1)

- 3.2.7 A large lake measuring approximately 40ha, forming part of the Willen Lake complex and used for water sports. The waterbody is surrounded by scattered trees, scrub and amenity grassland which is considered to provide 'moderate' quality terrestrial habitat for Great

Crested Newts. The lake edge generally comprises reinforced shelving banks with bankside trees including Willow, Hawthorn and Cherry which shade less than 5% of the lake margin within the survey area. Aquatic and marginal vegetation was also limited to less than 5% of the lake surface, with Water Dock, Common Reed, Bullrush, Pondweed and Yellow Iris present particularly around the lake margins. The water quality was assessed as good, fish were recorded to be present and it is considered that the waterbody never dries out.

3.2.8 The HSI score for Waterbody 18A was calculated as 0.709, which indicates that the pond has 'good' suitability for Great Crested Newts.

3.2.9 No evidence of Great Crested Newts was recorded during the presence/absence survey. Amphibian species recorded within Waterbody 18A was limited to Smooth Newt.

Other waterbodies

3.2.10 During the 2020 survey access was requested to survey the following waterbodies but permission for access was not granted:

- Waterbody 4A - located approximately 390m north-west of the site;
- Waterbody 5A - located approximately 290m north-west of the site;
- Waterbody 6A - located approximately 255m north-west of the site;
- Waterbody 7A - located approximately 275m north-west of the site;
- Waterbody 8A - located approximately 122m north-west of the site;
- Waterbody 13A - located approximately 200m north-west of the site;
- Waterbody 16A - located approximately 245m to the east of the site; and
- Up to 11 waterbodies within the gravel extraction area adjoining the site's north-western boundary.

3.2.11 The implications of lack of access to these waterbodies is discussed under 'Limitations' in *Section 2.4* above.

4 ASSESSMENT

4.1 The key findings of all desk study and field survey work for Great Crested Newts carried out in association with the proposed development of land at Milton Keynes East in 2018, 2019 and 2020 are summarised below. *Section 5* evaluates the likely importance of the Milton Keynes East site for Great Crested Newts taking into account all findings to date. *Section 6* then goes on to identify appropriate measures to avoid, mitigate and/ or compensate effects of the proposed development on Great Crested Newts.

4.2 Waterbodies

Waterbodies 2, 3, 4, 5, 8, 9, 10, 11 and 13

4.2.1 Based on the results of the field surveys conducted by HDA in 2018/2019, nine ponds at Pineham Nature Reserve in the south of the site (Waterbodies 2, 3, 4, 5, 8, 9, 10, 11 and 13) were identified as supporting a low-end moderate population of Great Crested Newts.

Waterbody 14A

4.2.2 Also based on the results of the field surveys conducted by HDA in 2018/2019 a very low population of Great Crested Newt was recorded within Waterbody 14A. This reflects the findings of the desk study, during which a record of Great Crested Newts in this pond was provided dating from 2003.

Waterbodies 1, 6, 7, 12, 14, 15, 16, 17, 18, 1A, 2A, 3A, 9A, 10A, 11A and 15A

4.2.3 The field surveys conducted by HDA in 2018/2019 recorded these ponds either to be dry or Great Crested Newts to be absent at the time of survey.

Waterbodies 19A, 20, 21, 22, 23, 24, 25, 26 and 27

4.2.4 Based on the results of the 2020 desk study described at *Section 3.1*, the following additional ponds within 300m of the site have been identified as supporting Great Crested Newts:

- Waterbody 19A – a small population of Great Crested Newts recorded in 2016;
- Waterbody 20 - a small population of Great Crested Newts recorded in 2016;
- Waterbody 22 - presence of Great Crested Newts recorded in 2016; and
- Waterbodies 24-27 - presence of Great Crested Newts recorded in 2010 and 2016.

4.2.5 As discussed in *Section 2.4.2*, the presence of ponds 19A, 20, 21, 22, 23, 24, 25, 26 and 27 was unknown at the time of the 2020 field surveys due to their location outside of the site boundary at that time and/ or the ponds not being mapped on OS maps or visible on aerial photographs. Due to the timing of this information becoming available and seasonal constraints associated with Great Crested Newt survey work, it has not been possible to conduct further surveys of these waterbodies in advance of this assessment to confirm current presence/ absence or population sizes.

4.2.6 Therefore, in view of the above and in advance of further survey confirming otherwise (see *Section 6.5* below), for the purposes of this assessment all ponds in the vicinity of Tongwell Street where full surveys have not been undertaken by HDA are assumed to support high populations of Great Crested Newts, whether or not these have been identified as supporting Great Crested Newts through third party survey data.

4.2.7 The above assumptions present a worst-case scenario for the likely effects of the proposed development on the local Great Crested Newt population and this forms the basis of the evaluation in *Section 5* and subsequent measures prescribed for mitigation and site safeguarding in *Section 6* below.

Waterbodies 17A and 18A

4.2.8 The 2020 presence/ absence surveys recorded no evidence of Great Crested Newt within Waterbodies 17A and 18A and this species is considered to be currently absent from these waterbodies. Other amphibian species recorded within the surveyed sections of these waterbodies included low populations of Smooth Newt within both waterbodies, and low populations of Common Frog and Common Toad within Waterbody 17A. Population size classes were estimated based on the scoring system given in the Herpetofauna Worker's Manual (Gent and Gibson, 1998).

Waterbodies 4A, 5A, 6A, 7A, 8A, 13A, 16A and ponds within construction site

4.2.9 Permission was not granted during 2020 to access a number of waterbodies within a 300m radius of the site, namely Waterbodies 4A, 5A, 6A, 7A, 8A, 13A and 16A and up to 11 further waterbodies within a mineral extraction area bordering the north-western boundary of the site. It is considered that Great Crested Newts are likely to be absent from these waterbodies however for the following reasons:

- *Waterbodies 4A, 5A, 6A, 7A, 8A and 13A*
 - These waterbodies were subject to Great Crested Newt presence/absence surveys by HDA in 2012 in accordance with the methodology in the Great Crested Newt Mitigation Guidelines (English Nature, 2001). None of these ponds were found to support Great Crested Newts during these surveys and it is considered unlikely that Great Crested Newts have colonised these ponds in the intervening period.
 - A maximum routine migratory range of 250m from breeding ponds has been estimated for Great Crested Newts during terrestrial phases, and more recent studies suggest that 95% of newt summer refuges are within 63m of breeding ponds. With the exception of waterbodies 8A and 13A (see below) these ponds are located beyond this maximum range.
 - Waterbodies 13A and 8A, located 122m and 200m from the site respectively, comprise widenings of drains connected to the River Ouzel and are likely to support predatory fish thereby limiting their suitability for Great Crested Newts. Furthermore, where on-site terrestrial habitat is located within 250m of these ponds (i.e. 8A and 13A), this primarily comprises intensively cultivated arable land of poor suitability for terrestrial-phase newts. In the unlikely event that Great Crested Newts are present within any of these ponds, it is therefore considered unlikely that they would be using terrestrial habitats within the site.

- *Waterbodies within construction site*
 - Up to 11 waterbodies are estimated to be present within this area, all located within 250m of the site boundary. These pools are however recently established, shallow, temporary features associated with ongoing gravel extraction and construction works and it is understood that the majority have now been infilled (Bloor Homes, pers comm).
- *Waterbody 16A*
 - This is a pond located within a residential garden approximately 245m from the site boundary and aerial photography suggests it is densely shaded by trees. The pond appears to be highly isolated from other waterbodies with potential to support Great Crested Newts, with the closest being Waterbody 11A, located 360m to the east, from which Great Crested Newts were found to be absent during the 2018/2019 survey.
 - Great Crested Newts usually exist in metapopulations, using clusters of ponds with cross dispersal of individuals between them, which decreases the vulnerability of local populations to habitat changes (e.g. individual ponds drying) and thereby maintains long-term population viability. In view of this, it is considered highly unlikely that Waterbody 16A supports Great Crested Newts.

4.3 Terrestrial habitat

4.3.1 The southern and western areas of the site, located within 250m (the maximum routine migratory range of Great Crested Newts) of the known and assumed populations of Great Crested Newts, include extensive areas of scrub and rough grassland within Pineham Nature Reserve and the Parks Trust Land which provide high quality terrestrial habitat for Great Crested Newts. The remainder of the likely Great Crested Newt range area within the site is dominated by arable land, grazed semi-improved grassland fields, roads and managed grassland which provide limited opportunities for Great Crested Newts during terrestrial phases. These are however complemented by a network of hedgerows, scattered trees, rough grassland/ tall ruderal field margins and small areas of broadleaved woodland which provide moderate to high quality habitat for terrestrial phase newts. It is therefore likely that Great Crested Newts associated with known and assumed populations use suitable areas of the site during terrestrial phases.

5 EVALUATION

5.1 The emerging development proposals indicate that one of the ponds identified as supporting Great Crested Newts will be directly affected as a result of the proposals, namely Pond 19A, which will be affected by road widening works associated with construction of a second road bridge immediately west of the existing Tongwell Street bridge beneath which Pond 19A is located. All other ponds with known or assumed populations of Great Crested Newt are expected to be unaffected by the proposals.

5.2 When considering effects on terrestrial habitat, English Nature research suggests that the maximum routine migratory distance of Great Crested Newts away from breeding ponds is 250m and that 95% of summer refuges are within 63m of breeding ponds (Cresswell & Whitworth, 2004). A total of approximately 42ha of the site (*Appendix D*) is located within 250m of the known and assumed breeding ponds described in *Section 4* above and current proposals suggest that the majority of suitable terrestrial habitats within these areas will be retained. Nonetheless, small areas of woodland, scrub, hedgerows and rough grassland will be lost to the proposed Highways Infrastructure works and within development areas and this has potential to affect any Great Crested Newts present.

5.3 In view of the above, a Natural England licence would need to be obtained prior to works potentially affecting Great Crested Newts commencing. Unless otherwise agreed with Natural England, this would require implementation of measures to protect individual Great Crested Newts during construction and maintenance of opportunities at the site and/or its surrounds for this species in the long-term. Outline measures to avoid adverse effects on individual Great Crested Newts and to maintain the favourable conservation status of the local population in accordance with nature conservation legislation, along with measures to enhance the overall value of the site and/or its surrounds for Great Crested Newts in accordance with the 2019 National Planning Policy Framework (NPPF) and 2006 NERC Act, are therefore provided in *Section 6* below.

6 MITIGATION AND SITE SAFEGUARDING

6.1 Introduction

6.1.1 This section identifies measures to be implemented during development of the site in order to avoid and mitigate potential impacts on Great Crested Newts in consideration of the 2018, 2019 and 2020 field survey and desk study findings. In addition, measures for enhancement of the site for Great Crested Newts are recommended in accordance with the 2019 NPPF and the 2006 NERC Act.

6.1.2 Based on HDA survey data, it is currently understood that low to moderate populations of Great Crested Newt are present in ten ponds located within and close to the south-western part of the site, and in the absence of updated survey data, for the purposes of this assessment it is assumed that high populations of Great Crested Newt are present within up to 9 further ponds located within 250m of the south-western areas of the site. Unless otherwise agreed with Natural England it would therefore be necessary to:

- Protect individual Great Crested Newts through removal and exclusion from the affected areas of site prior to and during construction works; and
- Provision of replacement habitat within the landscape scheme of the proposed development to ensure that opportunities remain at the site for Great Crested

Newts, thereby protecting the favourable conservation status of the local population in the long-term.

6.1.3 These works would need to be carried out under a Natural England licence. It is anticipated that the outline mitigation strategy described below would provide the basis for a detailed Method Statement to be submitted to Natural England as part of a licence application unless an alternative approach is agreed with Natural England at an appropriate stage.

6.1.4 The extent of the recommended mitigation measures is shown in *Appendix D*.

6.2 Great Crested Newt capture and translocation

6.2.1 Proposals for the site within 250m of the known and assumed breeding ponds comprise highways infrastructure works including road widening, new road and bridge construction and landscape planting, and other mixed-use development with associated landscaping and infrastructure. These works are expected to result in loss of one pond, Waterbody 19A below the Tongwell Street bridge, and terrestrial habitats such as woodland, rough grassland, scrub and hedgerow bases. In order to protect individual Great Crested Newts in accordance with nature conservation legislation it will be necessary to translocate any Great Crested Newts present within these areas to a receptor area prior to the commencement of works:

Identification and preparation of the receptor site

- A suitable receptor area should be identified to receive translocated Great Crested Newts from the development area. Priority should be given to the sourcing and use of potential receptor areas within or in close vicinity to the site.
- In order to ensure the receptor area has capacity to support the translocated Great Crested Newts it may be necessary to carry out further survey and habitat enhancement works to the receptor area to increase its capacity to support Great Crested Newts.
- Measures to maintain the long-term integrity of the receptor site should also be secured.
- The receptor area could be located within the site or within the wider area and should comprise habitats of high value to Great Crested Newts such as scrub, rough grassland, tall ruderal and woodland habitats. In addition, it should include features suitable for hibernation such as purpose built hibernacula and refuge piles, and where possible waterbodies suitable for breeding. Any new wildlife ponds should be sensitively designed to provide high quality aquatic habitat through provision of gently shelving margins and native aquatic and marginal planting. The receptor area should be connected to Pineham Nature Reserve and other areas of suitable habitat in the wider area.

- 6.2.2 The Pineham Nature Reserve would be an ideal location for a receptor site as this is already a focus of the local breeding population and dominated by high quality terrestrial habitat and will not be affected by the proposed works.
- 6.2.3 Should this not be feasible, the emerging proposals indicate the retention and extension of the semi-improved grassland along the River Ouzel and creation of wetland habitats within the linear park, an area of informal public open space. In addition to its potential use as a receptor area to receive translocated newts, it is recommended that this area comprises a selection of rough and meadow grassland and shrub habitats to mitigate for the areas of suitable terrestrial habitat lost to development (see *Section 5.2*). These works would be expected to enhance this area of the site and it is expected that this could form the receptor habitat for translocated Great Crested Newts.
- 6.2.4 In order to allow for translocation of Great Crested Newts from development areas falling within 250m of breeding ponds, and prevent newts from dispersing into such areas during construction, exclusion fencing should firstly be erected around the boundary of affected habitat prior to the commencement of works. Pitfall traps should then be installed at 10m intervals along the inside of the fencing and artificial refugia placed along the fenceline and within suitable terrestrial habitat (rough grass, hedgerow bases etc.) within the interior of the exclusion zone at a density of 50-100 refugia per hectare. Trapping and translocation should follow the general methodology set out below:

Installation of fencing and pitfall traps

- Fencing and pitfall traps should only be installed under the supervision of a suitably qualified ecologist at a time of year when night time temperatures are consistently above 5°C;
- The proposed fence line should first be searched and cleared of amphibians. Any amphibians found should be translocated to the receptor site outside of the exclusion area (detailed above);
- Any vegetation that requires removal for fence installation should be removed using hand tools in a two stage cutting regime (firstly cut down to 15cm above ground level, followed by a second cut to ground level), taking care to avoid risk of injury to resting amphibians;
- Pitfall traps should be installed flush with the newt fencing and ensure no top lip is present;
- Each pitfall trap should remain closed until the translocation commences; and
- Pitfall traps should be complemented by installation of carpet tile refugia (or similar) along the fence lines and within the interior of the capture area, installed at a density of 50 - 100 mats per hectare of suitable habitat.

Translocation exercise

- Translocation works should be carried out in suitable climatic conditions between March and early November inclusive;
- Once the translocation has started, the pitfall traps should be opened and equipped with a mammal ramp, float and vegetation for trapped newts to hide under;
- Each pitfall trap should be checked daily before 11am and weather conditions monitored and traps closed if necessary;
- Refugia should be lifted and any amphibians beneath captured;
- All amphibians captured should be translocated to the pre-established receptor area outside of the exclusion fencing;
- The pitfall trapping and artificial refugia searches should be undertaken for a minimum of 30 nights (with 5 clear days at the end of the translocation) unless trapping results suggest other as appropriate (in agreement with Natural England); and
- Fencing should be monitored on a weekly basis and any damages repaired until all newts have been cleared from the area of search, after which any drift fencing within the interior of the capture area removed.
- Depending on water levels and the time of year at which translocation is being undertaken, consideration should also be given to use of bottle traps to facilitate the capture of Great Crested Newts from Pond 19A together with use of egg strips to allow transfer of eggs to newly created replacement ponds.

6.2.5 Once capture rates decline in any given compartment, vegetation manipulation works described below would commence to encourage capture of any remaining newts. Any remaining naturally occurring refugia should also be dismantled by hand and searched for newts. In the event that vegetation clearance is likely to be counterproductive to the capture of newts (e.g. by encouraging newts to go to ground) this work should not be carried out.

Vegetation manipulation

- Vegetation manipulation to encourage capture of newts would require clearance of remaining vegetation to no less than 100mm by hand;
- Vegetation should be cut using hand tools under the supervision of a suitably qualified ecologist;
- Again, any newts encountered within the area of works during vegetation clearance should be captured and moved to the receptor site outside the exclusion area; and
- A further 5 days with night time temperatures of $>5^{\circ}\text{C}$ should then be allowed to elapse to enable capture of any remaining newts prior to a destructive search (see below).

Destructive search

- In order to be certain that no newts are present within the area of works, once five suitable trapping nights have passed with no captures from terrestrial habitats, vegetation should be cleared from areas of suitable habitat to ground level and topsoil disturbed by scraping back to a depth of up to 10cm where the possibility of newts being present remains. This should be carried out under the direct supervision of a suitably qualified ecologist where it is expected Great Crested Newts might still be present. Topsoil should not be stripped from the root protection areas of retained trees, scrub and hedgerows, or where translocation results and vegetation clearance to ground level allows satisfactory inspection to confirm likely absence of newts.
- At this time any water remaining within Pond 19A (which is known to dry out periodically) should be mechanically pumped at low speed away under supervision of an ecologist to catch any remaining newts present through netting and hand searching. A fine mesh screen should be utilised on the pump to protect any newts still present.
- In the event that the destructive search is delayed following newt capture, the vegetation should be maintained at ground level until the destructive search is carried out.

6.2.6 Once the translocation, vegetation clearance and destructive search measures have been completed within any given compartment in accordance with the methodology outlined above, development works would be able to go ahead within the cleared area.

6.3 Reasonable Avoidance Measures (RAMs)

6.3.1 Subject to review and agreement with a suitably qualified ecologist, where only small areas of suitable terrestrial habitat are affected by works (e.g. installation of a bench within an otherwise undisturbed area of habitat) it may be possible to avoid a full translocation within these areas. In order to ensure that no Great Crested Newts are present or harmed during such works it is recommended that a two-stage approach to clearance of the affected area is undertaken. This is also in keeping with measures to avoid unlawful killing/injuring of reptiles which also have potential to be present within similar habitat as described in the Reptile Reports (HDA, 2020c and 2021). This would involve:

- i. Manipulation of suitable habitat within the construction zone to reduce suitability for newts.
- ii. Destructive search of areas of cleared habitat to ensure the absence of newts.

6.3.2 Each of the above stages is described below:

Vegetation manipulation:

- Vegetation within areas of suitable terrestrial habitat located within the proposed area of works should be cleared using hand held machinery to a height of no less

than 100mm in order to reduce suitability of the habitat present to encourage the dispersal of any animals present away from affected areas.

- Vegetation should be cut using handheld tools under the supervision of a suitably qualified ecologist who will inspect affected areas prior to and during works.
- In addition, any refuge opportunities present should be dismantled by hand and searched prior to being removed.
- Vegetation removal works should be carried out at a time of year when amphibians are active (generally March to October inclusive), ideally during the newt breeding season (mid-March to mid-June inclusive) when newts are even less likely to be present within areas of terrestrial habitat.

Destructive search:

- In order to be certain that no amphibians are present within the area of works, once five suitable days/ nights have passed since vegetation manipulation works have been completed, the remaining vegetation would be cleared from areas of suitable habitat to ground level and where necessary topsoil disturbed by scraping back to a depth of up to 100mm where the possibility of animals being present remains.
- This should be carried out under the direct supervision of a suitably qualified ecologist.
- Topsoil should not be stripped from the root protection areas of retained trees, scrub and hedgerows, or where vegetation clearance to ground level allows satisfactory inspection to confirm likely absence.
- In the event that the destructive search is delayed following vegetation manipulation, the vegetation should be maintained at ground level until the destructive search is carried out.
- Destructive search works should be carried out at a time of year when amphibians are active (generally March to October inclusive), ideally during the newt breeding season (mid-March to mid-June inclusive) when newts are even less likely to be present within areas of terrestrial habitat.

6.3.3 In the unlikely event that during any of the above works a Great Crested Newt is encountered outside the area covered under the Great Crested Newt licence, works should stop, a suitable qualified ecologist contacted and Natural England consulted.

6.4 Site safeguards and habitat creation

6.4.1 The exclusion fencing should be retained and maintained until completion of works within the relevant area and the condition of the fencing monitored and repairs made as required. Following the completion of development, the exclusion fencing should be removed allowing newts to disperse back into newly created habitat within the site.

- 6.4.2 Development proposals should also seek to maintain and where possible enhance opportunities for Great Crested Newts at the site. This could be achieved through the retention, enhancement and creation of Great Crested Newt habitats as part of the landscape strategy for the site in addition to those required for any receptor site provision in relation to the development works. Consideration should be given to:
- Creation of new open water wetland habitats suitable for breeding amphibians planted with a range of native aquatic and marginal vegetation, either as standalone features or as part of the site surface water drainage strategy. It should be noted that two sympathetically designed stand-alone waterbodies will be required to mitigate for the loss of Pond 19A;
 - Inclusion of high quality terrestrial habitats within the landscape scheme in the form of scrub, hedgerows, swales and ditches and rough, meadow and wet grassland;
 - Provision of opportunities for hibernation and refuge through provision of log/brush piles and purpose built hibernacula; and
 - Securing the long-term integrity of new and retained Great Crested Newt habitats through inclusion within a long-term management plan.

6.4.3 In order to protect any newts entering the entire site during the operational phase of the development, any gully pots within 250m of any known Great Crested Newt breeding ponds or areas of targeted Great Crested Newt habitat creation works should be suitably designed with a stand-off from the kerb and/or through use of 'wildlife friendly' kerbs'¹⁰ to avoid entrapment of any newts and other wildlife passing over hard landscaped areas. Consideration should also be given to installation of 'escape ladders' in drains. Where appropriate, dropped kerbs should also be used where Great Crested Newts are likely to cross roads and other areas of hardstanding. Detailed drainage and infrastructure proposals for the development should be reviewed at appropriate design stages by a suitably qualified ecologist.

6.5 Further survey

6.5.1 Due to the limitations of the surveys carried out by HDA to date discussed in *Section 2.4* above, it is recommended that the Great Crested Newt survey is updated for all accessible waterbodies within 300m of the site that were not subject to survey in 2020. Following this the recommendations included within this document should be reviewed and revised if necessary in order to ensure effective assessment of effects of the proposed development on this species and to identify appropriate avoidance and mitigation measures. Any updated survey work should also include renewed attempts to survey Waterbodies 4A, 5A, 6A, 7A, 8A, 13A and 16A, and the waterbodies within the mineral extraction area bordering

¹⁰ Wildlife friendly kerbs - www.wildlifefencing.co.uk/product.php?productid=477&cat=68&page=1

the north-western boundary of the site, to confirm the status of Great Crested Newts in these off-site waterbodies.

7 CONCLUSION

7.1 Field surveys and desk study data have indicated the presence of Great Crested Newt populations within up to 19 ponds within the site and within 250m of the site boundary. Although updated Great Crested Newt surveys to confirm the current status of the population within several of the ponds are yet to be completed, subject to implementation of the mitigation measures described in *Section 6* above, the proposed development would be expected to maintain compliance with nature conservation legislation and planning policy, and ensure that opportunities for Great Crested Newts are maintained at the site in the long-term thereby ensuring that the favourable conservation status of the local Great Crested Newt population is maintained. The approach to mitigation set out in this report, which represents a reasonable worst-case scenario, should however be reviewed on completion of the updated Great Crested Newt surveys in order to confirm the mitigation is proportionate to the case in hand.

7.2 Subject to implementation of the proposed mitigation and enhancement works described in *Section 6* however, it is considered that the favourable conservation status of the local Great Crested Newt population present can be maintained. This would ensure compliance with the nature conservation objectives of the 2019 Conservation of Habitats and Species (Amendment) (EU Exit) Regulations, the 2006 NERC Act and the guidance underpinning the 2019 National Planning Policy Framework.

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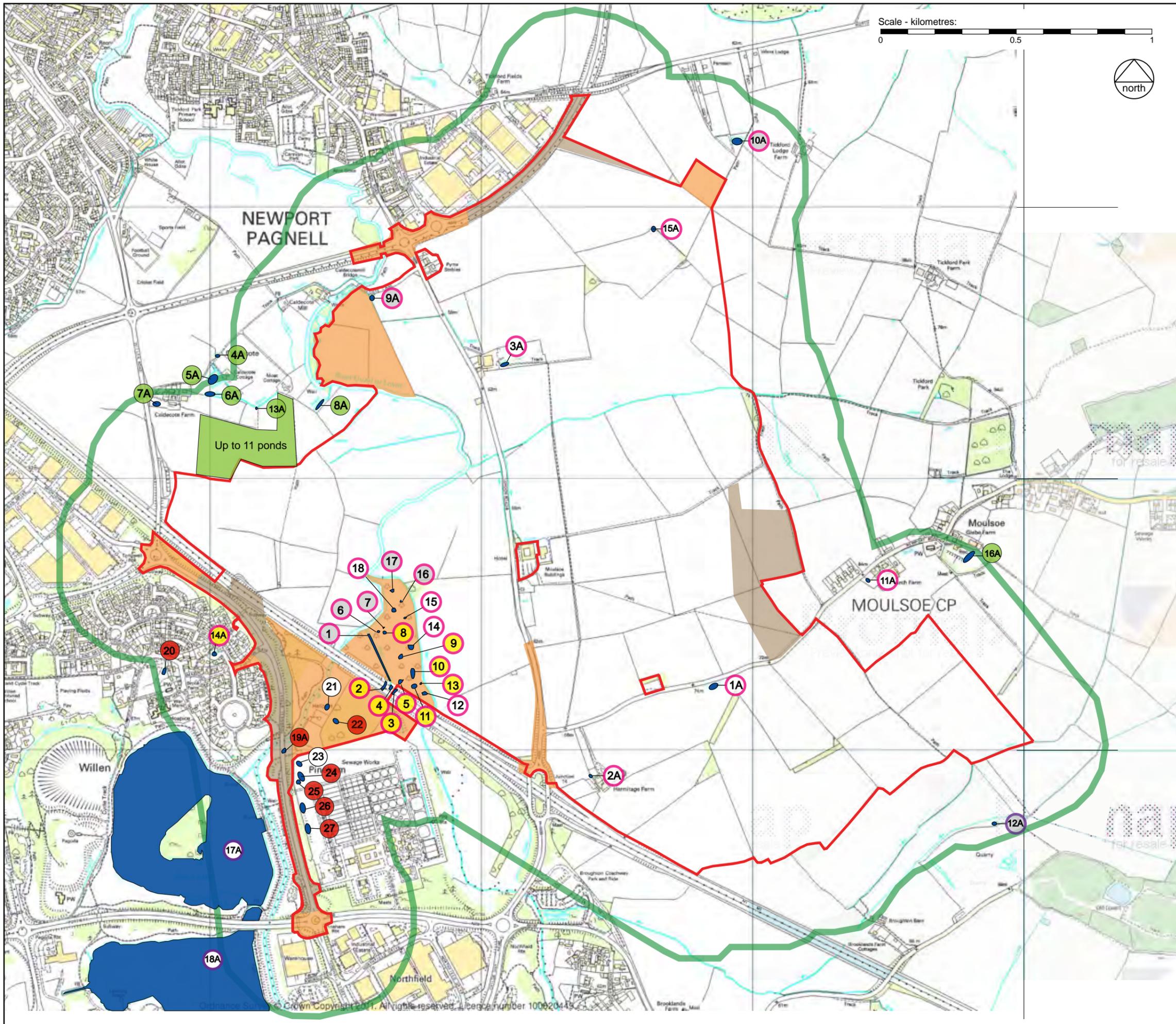
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APPENDIX A

Great Crested Newt Survey Summary Plan: Additional Areas



Scale - kilometres:
0 0.5 1



- KEY**
- Site boundary
 - 300m radius of site*
 - 2020 additional land
 - 2021 additional land
 - Waterbody*
 - Waterbody subject to HDA survey in 2018/2019
 - Waterbody subject to HDA survey in 2020
 - Waterbody dry
 - No access available for survey in 2020
 - GCN presence confirmed through HDA presence/absence or eDNA survey**
 - GCN presence identified through desk study**

*No further waterbodies have been identified within 300m of the site.

**No GCN have been recorded in any of the other identified waterbodies

Further details of the 2018/2019 GCN Surveys carried out are provided in the Great Crested Newt HSI and eDNA Survey Report (HDA, 2020a).

CLIENT:
St James

PROJECT:
Milton Keynes East

TITLE:
Great Crested Newt Survey Summary Plan:
Additional Areas

SCALE AT A3: NTS (ref. scale bar) DATE: March 2021

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APPENDIX B

Full HSI Assessment Results

Waterbody ID		Waterbody 17A		Waterbody 18A	
SI Ref	Description of Index	Measure / Comment	SI score	Measure / Comment	SI score
SI1	Geographic location	A	1	A	1
SI2	Pond area m2	Approximately 2000m ²	0.8	>2000m ²	0.8
SI3	Pond permanence	Never	0.9	Never	0.9
SI4	Water quality	Good	1	Good	1
SI5	Shading %	5%	1	<5%	1
SI6	Presence of waterfowl	Minor	0.67	Minor	0.67
SI7	Presence of fish	Minor	0.33	Minor	0.33
SI8	Pond density in area	6.6	1	6.6	1
SI9	Terrestrial habitat quality	Moderate	0.67	Moderate	0.67
SI10	Macrophyte cover in pond	5%	0.3	<5%	0.3
	Overall HSI for pond:		0.709		0.709
	Overall Suitability	Good		Good	

APPENDIX C

Presence/ Absence Survey Results

Water body	Date	Air Temp (°C)	Water Temp (°C)	Turbidity	Vegetation cover	Egg search	Netting	Torch survey
17A	29.04.2020	11.4	13.8	1	1	-	1 Lv female	1 Lv female 2 Bb
	05.05.2020	9.3	16.5	2		-	-	2 Lv male 1 Lv female 2 Bb
	13.05.2020	5.3	13.4	2		-	-	1 Lv male 1 Lv female 1 Rt
	20.05.2020	21.1	22.7	1		-	-	2 Lv female
18A	29.04.2020	11.4	13.8	0	1	-	-	-
	05.05.2020	9.3	13.9	0		-	-	-
	13.05.2020	5.3	12.8	1		-	1 Lv female	-
	20.05.2020	21.1	22.7	0		-	-	-

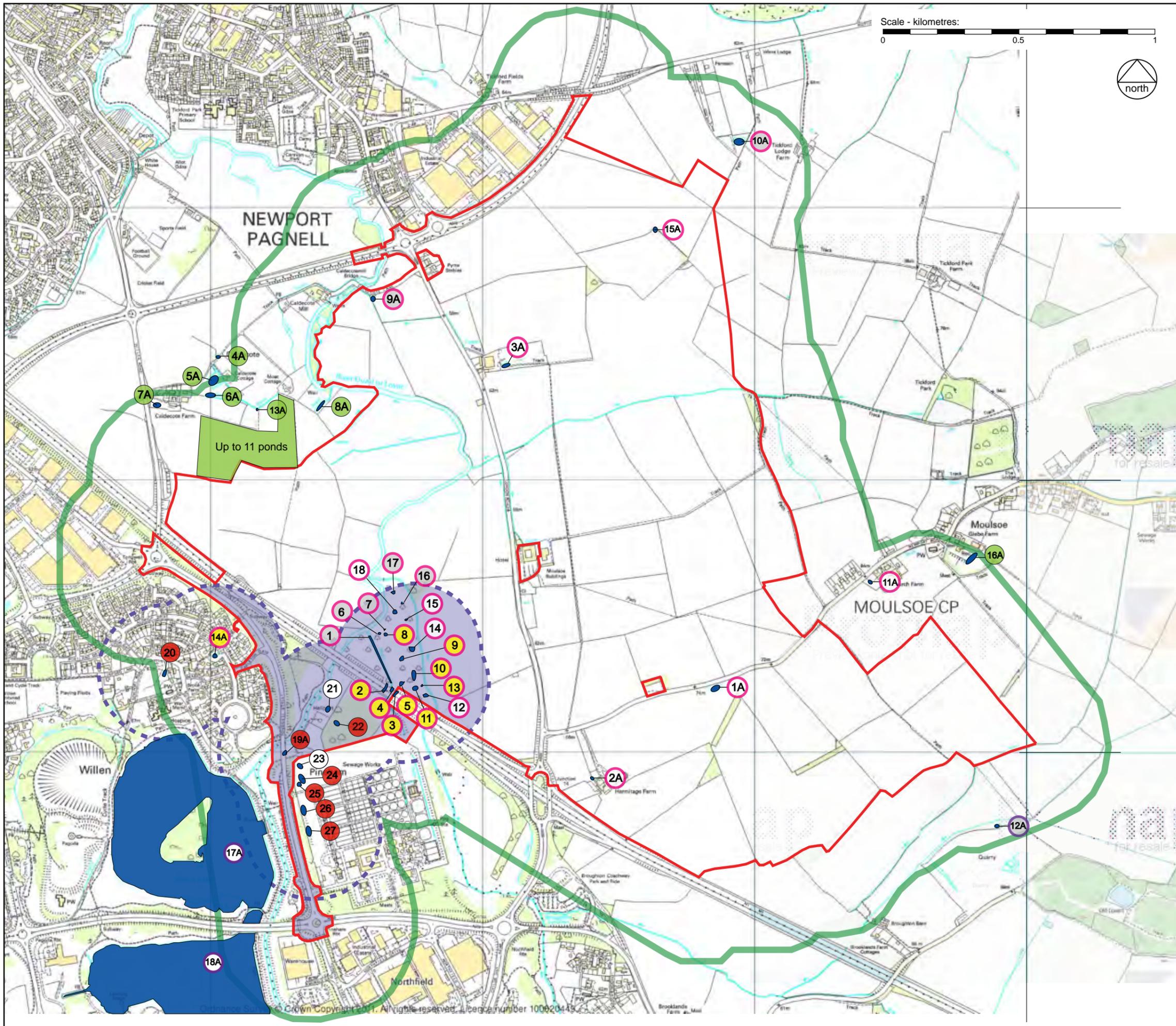
Turbidity scale: 0=clear; 5= Very murky

Vegetation cover scale: 0=none, 5=obscured

Species: Great Crested Newt *Triturus cristatus* (Tc), Smooth Newt *Lissotriton vulgaris* (Lv), Common Frog *Rana temporaria* (Rt) and Common Toad *Bufo bufo* (Bb).

APPENDIX D

Great Crested Newt Mitigation Plan



KEY

- Site boundary
- 300m radius of site*
- 250m radius from Great Crested Newt ponds
- Area of site within 250m of Great Crested Newt ponds
- Waterbody*
- Waterbody subject to HDA survey in 2018/2019
- Waterbody subject to HDA survey in 2020
- Waterbody dry
- No access available for survey in 2020
- GCN presence confirmed through HDA presence/absence or eDNA survey**
- GCN presence identified through desk study**

*No further waterbodies have been identified within 300m of the site.

**No GCN have been recorded in any of the other identified waterbodies

Further details of the 2018/2019 GCN Surveys carried out are provided in the Great Crested Newt HSI and eDNA Survey Report (HDA, 2020a).

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St James

PROJECT:
Milton Keynes East

TITLE:
Great Crested Newt Mitigation Plan

SCALE AT A3: NTS (ref. scale bar) DATE: March 2021

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APPENDIX E

Waterbody Photographs



Photo 1: Waterbody 18A with Waterbody 17A beyond.



Photo 2: Waterbody 17A

Appendix F18

Invertebrate Survey Report

Milton Keynes East
Invertebrate Surveys

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Project	Milton Keynes East (Newport Pagnell) – Invertebrate Surveys
Version	DRAFT
Project number	P18-395 - Newport Pagnell - Invertebrate Surveys

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2019 revision Issued to client	Dr Jim Fairclough	Principal Ecologist	21 November 2019
2020 report revised and issued (following client review)	Dr Jim Fairclough	Principal Ecologist	11 March 2020

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1 Executive Summary

- 1.1 This report describes Invertebrate surveys conducted within approximately 362ha of land at Newport Pagnell, Buckinghamshire, hereinafter referred to as 'the site'. The site centre is located by National Grid Reference SP 893 415. The study was commissioned by Hankinson Duckett Associates (HDA) on behalf of St James, to inform an application for mixed use development and associated infrastructure and landscaping.
- 1.2 A habitat potential assessment and subsequent targeted survey of terrestrial invertebrates was completed in summer and autumn 2018, and late spring / early summer 2019; the targeted survey included a range of survey techniques (pan traps, pitfall traps, window traps, sweep netting, beating and grubbing) to gather samples in the field. Samples were subsequently sorted and identified to enable a preliminary evaluation of the importance of the Site for invertebrates.
- 1.3 Two ponds within the Site were surveyed in August 2018, and macroinvertebrate data were collated and analysed using the Predictive SYstem for Multimetrics (PSYM) tool. This allowed an assessment to be made of whether either or both of the ponds may qualify as a Habitat of Principal Importance.
- 1.4 Aquatic macroinvertebrate sampling of defined reaches of the River Ouzel and Broughton Brook was completed in September 2018 and May 2019. This allowed identification of macroinvertebrate families using these watercourses and assessment of their biological water quality, based on metrics applied to macroinvertebrate families. Other tributaries of the River Ouzel were dry at the times of survey, so could not be sampled.
- 1.5 The results of the targeted surveys provide an indication of the relative species diversity within the targeted groups of invertebrates predicted to be well represented at the Site. Over 400 terrestrial and aquatic species were recorded in total from the surveys. Coleoptera (beetles) was the dominant order recorded from the terrestrial invertebrate surveys. The majority of the species recorded are without a recognised status, being widely distributed and common, and exhibiting little habitat specificity. Nineteen of the species recorded currently have a recognised conservation status.
- 1.6 There is no widely accepted published guidance presently available that provides a clear description of how to evaluate an invertebrate assemblage of a Site; however the professional judgement of the assessor is that the Site as a whole is considered likely to be of District and potentially of County importance for its invertebrate assemblage. This is largely due to the proportion of species with a recognised conservation status associated with the riparian habitat of the River Ouzel and Broughton Brook, a block of mature woodland in the north of the Site, over mature / veteran standard trees associated with hedgerows and sparsely vegetated wide arable field margins in the west of the Site. These habitats, with the exception of the woodland block, are restricted to vegetated linear corridors. The majority of habitats (arable fields and pasture) are of low invertebrate habitat potential.

2 Introduction

Project Background

- 2.1 This report describes a suite of Invertebrate surveys conducted within approximately 362ha of land at Newport Pagnell, Buckinghamshire, hereinafter referred to as 'the site'. The site centre is located by National Grid Reference SP 893 415. The study was commissioned by Hankinson Duckett Associates (HDA) on behalf of St James, to inform an application for mixed use development and associated infrastructure and landscaping.

Ecological Background

- 2.2 The site is located to the south of Newport Pagnell, on the north-eastern edge of Milton Keynes, Buckinghamshire. The site is dominated by agricultural land comprising intensively managed arable and grazed grassland fields with associated farmyards, agricultural buildings and residential farm houses. Field boundaries generally consist of hedgerows, treelines and fencing with occasional ponds and parcels of woodland, and the River Ouzel flows from south to north through the western part of the site. The site is bordered to the north by a construction site for residential development and the A422 beyond which lies the town of Newport Pagnell; to the east by arable farmland; to the west by the Pineham Nature Reserve and the M1 Motorway beyond which lies the town of Milton Keynes; and to the south by arable farmland.
- 2.3 In 2012 Ecological Survey & Assessment Limited (ECOSA) was contracted by Hankinson Duckett Associates to carry out terrestrial and freshwater invertebrate surveys at the Site. The methods and results of these surveys are documented in the following two reports:
- J ECOSA (2013) Land to the South of Newport Pagnell, Milton Keynes – Terrestrial Invertebrate Scoping Survey.
 - J ECOSA (2013) Land to the South of Newport Pagnell, Milton Keynes – Aquatic Invertebrate Scoping Survey.

Brief and Objectives

- 2.4 Six years had elapsed since the surveys undertaken by ECOSA were completed; therefore, in July 2018, BSG Ecology was contracted by Hankinson Duckett Associates to update the terrestrial and freshwater invertebrate surveys at the Site over the summer and autumn season. A subsequent instruction was received in May 2019 to undertake terrestrial and aquatic invertebrate surveys during late spring / early summer of that year. The objectives of the work are as follows:
- J Evaluation of habitats present on Site for their potential to support important assemblages of invertebrates;
 - J Undertake survey for terrestrial and freshwater invertebrates using a variety of survey techniques;
 - J List the invertebrate species collected / observed during the course of the survey, including an appraisal of any species of nature conservation value (Species of Principal Importance, nationally scarce or rare species (following IUCN and Red Data Book criteria));
 - J Outline the legislative and/or policy protection afforded to any species of nature conservation value potentially associated with the site;
 - J Assessment of the invertebrate assemblage(s) of the Site using the Pantheon tool developed by Natural England; and
 - J Assessment of the impact of the Project, based on currently available design information, and provide recommendations for mitigation, compensation and enhancement, as appropriate.

3 Methods

Invertebrate habitat potential assessment

- 3.1 The Site was assessed for its potential to support important invertebrate assemblages by Dr Jim Fairclough MCIEEM, an experienced entomologist and Principal Ecologist at BSG Ecology, on 25 and 26 July 2018.
- 3.2 Notes were made regarding the habitats present and features likely to be of greatest value for notable invertebrate assemblages. Such features can include: areas with dense patches of flowering plants; south facing banks; patchy mosaic habitat including aggregations of bare ground; margins of scrub/woodland and substrate containing high organic content; veteran or mature trees, including standing and fallen dead wood; temporary areas of water (e.g. pools and seepages) and associated terrestrial habitat (e.g. marshy grassland).
- 3.3 The distribution and extent of such features informed the nature of targeted terrestrial invertebrate surveys that were subsequently conducted at the Site. These features were documented in a photographic record (Appendix 2). To enable a baseline characterisation of the Site for invertebrates, the habitat assessment included observations of features that might limit invertebrate interest, as well as those which might be of particular value for invertebrates.

Targeted Survey for Terrestrial Invertebrates

- 3.4 Terrestrial habitats with potential to support important invertebrate assemblages (identified during the habitat potential assessment) were subject to more detailed survey. The main habitats targeted included: woodland (deciduous plantation and semi-natural) and woodland edge, hedgerows and field margins, and the banks of the River Ouzel. Therefore, the survey was designed to target the collection of key indicator groups associated with such habitat. This approach relates to the guidance set out in Drake *et al.* (2007); which lists many of the target taxa of field layer and arboreal assemblages and their value in assessment. Coleoptera (beetles) and Hemiptera (true bugs) are two orders that are strongly represented in such assemblages; therefore these orders were targeted by the surveys. Certain families (and suborders) of the order Diptera (flies) (e.g. Syrphidae (hoverflies) and other families of the larger Brachycera) were also targeted. In suitable habitats such as scrub edge and field layer assemblages, sampling methods also enabled the collection of aculeate Hymenoptera (bees, ants and wasps) and Orthoptera (grasshoppers and crickets). Incidental observations of other invertebrate taxa including butterflies and day-flying moths (Lepidoptera) were also recorded.
- 3.5 The following sampling methods were employed: pan traps, pitfall traps, sweep-netting, beating and grubbing. These methods are described below.

Pan Traps

- 3.6 Clusters of three pan (or water) traps were set out in flower-rich areas of the Site on 25 July, 2018, 14 and 27 September, 30 May and 21 June 2019. Their approximate locations are shown on Figure 1 (Appendix 1). The pan traps comprised a mixture of yellow and white plastic trays into which a small amount of water was poured (along with a few drops of detergent to break the surface tension). Such traps mimic large flowers and attract flying insects of many groups' especially aculeate Hymenoptera and certain Diptera, which become trapped in the fluid and can be collected later. The traps were collected in at the end of the following day; therefore were each collecting invertebrates for a period of approximately 36 hours. Photograph 1 shows a pan trap deployed *in situ*.

Pitfall Traps

- 3.7 Pitfall traps were set out in clusters of three, at various parcels within the Site (shown on Figure 1). Pitfall trapping involved the use of circular plant pot trays (24 cm diameter x 5 cm depth) sunk into

an excavated circular hole with the tray rims flush with the surrounding ground level. Preserving fluid (and a drop of detergent to break the surface tension) was poured into the trays until they were half full. Lastly, a piece of mesh was secured over the tray to prevent capture of small mammals, amphibians and reptiles. Photograph 2 shows a pitfall trap deployed within the Site. Three clusters of traps were operational during the period from 25 July to 9 August 2018, and four clusters of traps were operational during the period from 14 to 27 September 2018.

Window Flight Interception Traps

- 3.8 Three window flight interception traps (referred to hereafter as ‘window traps’) were used to target the dead wood fauna of veteran trees along hedgerows and also other winged insects flying along the structural ecotones of woodland and hedgerows. Each trap was composed of four 2 L. plastic drinks bottles, securely locked in place at the base, and so contained within a circular plant pot tray (24 cm diameter x 5 cm depth), which also acted as a roof to shield the trap from excessive rain water. Wire fittings were used to bind the four bottles to the circular tray. An outward facing rectangular hole (the ‘window’) was cut out of each bottle. Each constructed trap was inverted and therefore suspended from its base by hanging it from a branch. Each trap was positioned inside a hollow of a veteran tree (e.g. Photograph 3) or close to standing dead wood of a veteran or mature tree (e.g. Photograph 4). Approximately 30 ml of preserving fluid, comprising 1 part ethylene glycol (antifreeze) to 2 parts water was poured into each bottle via the ‘windows’ made on each bottle.
- 3.9 The traps were operational during the period from 25 July to 27 September 2018. The location of the window traps are illustrated on Figure 1.

Sweep Netting

- 3.10 Sweep netting was conducted on all survey dates, in July, August and September 2018, and May and June 2019 across various parts of the Site. Sweep netting involved walking at a steady pace through the vegetation and passing an entomologist’s sweep net back and forth through vegetation in a figure of eight motion. Sweep netting was accompanied by ‘spot-sweeping’ where individual invertebrates were targeted and collected via a single sweep. The approximate areas where sweep netting took place (together with beating and grubbing) are shown on Figure 1.

Beating

- 3.11 Beating is a useful technique for extracting arboreal invertebrates from overhanging branches. This method involves placing a beating tray beneath a branch before delivering several sharp blows to the branch, sending any dislodged invertebrates into the beating tray for inspection. Beating was conducted on all survey dates, in July, August and September 2018, and May and June 2019 across various parts of the Site, targeting hedgerows and lower reaches of woodland canopies. The approximate areas where beating took place (together with sweeping and grubbing) are shown on Figure 1.

Grubbing

- 3.12 Grubbing is the name generally applied to the extraction of invertebrates by hand from a variety of media such as: dead wood or fungi and under bark; from moist cracked ground in seasonally inundated habitats; from dung; or from dense aggregations of leaf matter and detritus (e.g. base of grass tussocks, fern shuttlecocks and leafy / woody deposits). If appropriate, to assist in the detection of small beetles, material was sieved or placed in a bucket of water to capture invertebrates moving to the surface. All of these media were targeted during all survey dates, in July, August and September 2018, and June 2019, across various parts of the Site, and the approximate areas where grubbing took place (together with beating and sweeping) are shown on Figure 1.

Targeted Survey for Aquatic Invertebrates

Ponds

- 3.13 Three ponds were investigated during the survey on the 9 August 2018. These ponds are shown on Figure 2. Only two of these ponds held water and were therefore subject to further survey.
- 3.14 Benthic macroinvertebrates were collected at the two ponds using standard 3-minute kick sample methodology (Biggs *et al.*, 1998) using a 1 mm mesh hand net. One minute of hand searching (of rocks, logs, leaf packs and other submerged debris) was then carried out in search of invertebrates (e.g. caddis larvae, pond skaters and whirligig beetles) that might otherwise have been missed during the net sampling.
- 3.15 Invertebrates were separated from detritus and bed material in the field and preserved immediately in 70% Industrial Methylated Spirit (IMS) for subsequent laboratory analysis.
- 3.16 Habitat characteristics of each pond were recorded at the time of the survey, which included for example observations of: water and silt depths; evidence of pollution; presence of waterfowl, fish and amphibians; and likely source water and inflow/outflow points. Basic water chemistry parameters were measured, which included pH and temperature. A photographic record of each of the ponds was also made.
- 3.17 As part of the survey, an appraisal of the composition of the plant community at each pond was made. All aquatic and marginal plants were identified to species-level in the field using the most up-to-date identification keys available. This information is used to inform subsequent analysis of each pond, as described below ('PSYM category analysis – Ponds').

Watercourses (Broughton Brook and River Ouzel)

- 3.18 On 28 September 2018, macroinvertebrates were collected from four locations (survey reaches A1 to A4) which included two on the River Ouzel and two on the Broughton Brook. A standard 3-minute kick sample methodology (BS EN 27828:1994) using a 1 mm mesh hand net was applied. This involved three minutes of net sampling with the time divided equally between all of the mesohabitats present. Stony or sandy substrates were lightly kick-sampled to disturb and capture macroinvertebrate inhabitants on the river bed. Care was taken to avoid deep accumulations of soft sediment since this makes later sorting extremely difficult. Similarly, the netting of large volumes of plant material was avoided. One minute of hand searching (of rocks, logs, leaf packs and other submerged debris, where present) was then carried out in search of invertebrates (e.g. limpets, caddis larvae, pond skaters, riffle and whirligig beetles) that might otherwise have been missed during the net sampling.
- 3.19 Coarse debris was checked for clinging invertebrates before being removed from the net. Samples were preserved immediately in 70% IMS for subsequent laboratory analysis.
- 3.20 This sampling methodology was repeated on 30 May 2019.
- 3.21 The two side ditches running into the River Ouzel were not sampled as they did not contain water at any stage during the surveys conducted in 2018 and 2019. The locations of all the sampling points are shown on Figure 2.

Dates and weather conditions and period of survey

- 3.22 Table 1 below shows the weather conditions on the days of survey. During all survey days the weather conditions did not impede survey. All surveys lasted for between 8 to 10 hours.

Table 1. Weather Conditions during Surveys

Survey Date	Survey Type	Weather Conditions
25 July 2018	Habitat potential assessment; targeted terrestrial survey.	Dry with little cloud. Becoming hazy towards end of the day. Light air, max temp. 31 °C. Generally hot and sunny in preceding week.
26 July 2018	Habitat potential assessment; targeted terrestrial survey.	Dry with little cloud. Light breeze, max temp. 33 °C.
09 August 2018	Targeted terrestrial survey; aquatic survey (ponds).	Overcast in morning with patchy rain through the day. Light air, max temp. 17 °C. Generally warm and dry in preceding week.
14 September 2018	Targeted terrestrial survey.	Dry, scattered cloud, moderate breeze, max temp. 21 °C. Mostly dry, warm and sunny, but with occasional wet and overcast days in preceding week.
27 September 2018	Targeted terrestrial survey.	Dry and sunny. Gentle breeze, max temp. 23 °C. Variable, with warm, sunny and cool overcast days (with rain) in preceding week.
28 September 2018	Aquatic survey (rivers); targeted terrestrial survey.	Dry, overcast with sunny spells, moderate breeze, max temp. 18 °C.
30 May 2019	Aquatic survey (rivers); targeted terrestrial survey.	Dry, with cloud varying from scattered cloud to overcast during the day, moderate breeze, max temp 21 °C. Mostly dry, warm and sunny in preceding week. Light rain on previous day.
21 June 2019	Targeted terrestrial survey.	Dry with cloud varying from little cloud to overcast during the day, gentle breeze and max temp. 21 °C. Dry, warm and sunny in preceding week.

Sample Sorting and Identification

- 3.23 For all terrestrial and aquatic surveys, whilst some species could be identified in the field, the majority of specimens were stored in 70% IMS for later identification, using a stereoscopic microscope with the aid of identification literature. For all target groups identification was taken down to species level.

Data Analysis

- 3.24 The following results and discussion section places a value on the rare and nationally scarce invertebrates found at the Site, informed by their current national status. Further information on status definitions and criteria of invertebrate groups can be found in Appendix 3.

Pantheon Assemblage Analysis

- 3.25 The list of species derived from the terrestrial and aquatic invertebrate surveys were analysed using the “Pantheon” database tool developed by Natural England and the Centre for Ecology and Hydrology (Webb *et al.*, 2018). For each species recognised by Pantheon, various attributes relating to associated habitats and resources, assemblage types and habitat fidelity scores are placed against them. Reports can then be generated including those that provide:

) information on each individual species entered into the database;

- J a list of species belonging to different feeding guilds (e.g. xylophagous, saprophagous, nectivorous);
- J a list of species with different associations (e.g. to certain groups of plant, fungi or animal);
- J a summary of the number of species within the sample that have a particular score or fidelity and, if relevant an overall score that provides insight into the quality of the site that the sample has come from; and
- J summary tables that assess where species live and what assemblages they are associated with.

- 3.26 In the context of the present assessment, it is the report that Pantheon provides relating to where species live and with which assemblages they are associated, that is most useful in evaluating the relative importance of a site for its invertebrates. This considers the habitats and resources used by an invertebrate species at various hierarchical levels, from broad biotopes (e.g. tree associated, wetland, coastal) at the highest level, down to specific habitats (e.g. tall sward and scrub, decaying wood, arboreal, marshland) at a mid-level, and resources (e.g. sapwood & bark decay, heart-rot and fungal fruiting bodies all associated with the decaying wood habitat) at the finest level. The assessment also considers the “ISIS” (Invertebrate Species-habitat Information System) assemblage types that had previously been developed by Natural England (Drake *et al.*, 2007). The original Specific Assemblage Types (SATs) are therefore carried forward in their original form, although ‘Habitats’ have replaced the ISIS Broad Assemblage Types (BATs).
- 3.27 SATs include only habitat specific species, which are normally faithful to a single habitat or resource, which are often closely associated with sites of higher conservation value. Analysis of SATs is helpful to inform the determination of the nature conservation value of a site for invertebrates; sites with high-scoring SATs are considered to have good quality invertebrate assemblages.
- 3.28 The original role of ISIS was to guide Natural England on assessing the conservation value of SSSIs for their invertebrate assemblages (especially for the purposes of Common Standards Monitoring). This was done by identifying whether an assemblage associated with a site was in a “favourable condition” (i.e. where it was considered to be of sufficient condition to meet the threshold criteria for an assemblage of SSSI-level value). However, whilst the condition assessment function is still retained within Pantheon, it is not the sole use. Accordingly, the analysis may be used in other situations (e.g. by nature reserve managers or those assessing the effects of a development) to help understand which assemblages (SATs) within a site are likely to be important.
- 3.29 A useful measure of the quality of a site for its invertebrate assemblage is to count and assign scores that are more heavily weighted towards the rarer species. The Species Quality Index (SQI) is a numerical scoring system contained within Pantheon that does exactly this. Each species recorded from a sample is given a Species Quality Score (SQS) based on their conservation status. The SQI is the sum of all SQSs divided by the number of species in that sample. This score is multiplied by 100 to give a 3 figure value without decimal places (e.g.100 rather than a 1.00). This SQI score is preferred to the SQS since it eliminates, to a greater extent the effect of recorder effort. Notwithstanding this, sites where little effort has been made to record the common species could result in overly amplified SQI scores. There is presently no published guidance on what SQI score might be classed as ‘good’ or ‘average’ as this might vary between habitats and regions (e.g. northern vs. southern England). However, as a general rule of thumb, based on the experience of the author, a habitat with an SQI score exceeding 125 is likely to be of some value and merit further consideration.

PSYM category analysis - Ponds

- 3.30 For the two ponds holding water that were surveyed, habitat, water quality, plant and macroinvertebrate data were collated and analysed using the Predictive SYstem for Multimetrics (PSYM) tool developed by Pond Action (2002) in order to assess the biological quality of each of the ponds. The PSYM tool was used to classify the ponds into four categories of biological quality

based on a combined index (Index of Biological Integrity; IBI) which varies between zero and 100%:

-) 0-25% = very poor,
-) 26%-50% = poor,
-) 51%-75% = moderate,
-) 76%-100% = good.

- 3.31 Biological quality assessment using PSYM relies on species-level plant data and family-level macroinvertebrate data being available and can only be used to assess the biological quality of ponds surveyed between June and August.
- 3.32 Ponds attaining an Index of Biological Integrity of 75% or more are classified as Priority (Habitat of Principal Importance; HPI) Ponds in accordance with the PSYM guidance.
- 3.33 Aquatic macroinvertebrates sampled from the ponds were also identified to species level to determine if any species present are rare or nationally scarce and therefore merit further consideration in the interpretation of results.

Biological Water Quality - Watercourses

- 3.34 A calculation was made of biological water quality using the Whalley, Hawkes, Paisley and Trigg (WHPT) metric from the macroinvertebrate family list, as well as the Biological Monitoring Working Party (BMWP) index. WHPT supersedes the Biological Monitoring Working Party (BMWP) index (WFD UKTAG, 2014), but may not be being used consistently across Environment Agency regions at present (EA, pers. comm.).
- 3.35 Both metrics give a score to a watercourse based upon the ratio of pollution-tolerant to intolerant families present in the macroinvertebrate community. Macroinvertebrate families which are more susceptible to pollution, including Philopotamidae (caddis fly), Siphonuridae (mayfly) and Taeniopterygidae (stonefly) score highly. Conversely, pollution-tolerant groups score the least points, and include Oligochaeta (worms) and Chironomidae (non-biting midge larvae). Accordingly, high-scoring watercourses have highest biological water quality, whilst polluted watercourses score the lowest. WHPT scores are weighted by abundance of individual families whereas BMWP scores are not.
- 3.36 Both metrics can be expressed as the Number of Taxa (NTAXA), which is the total number of scoring taxa, and the Average Score Per Taxon (ASPT), which is obtained by dividing the WHPT or BMWP score by the number of scoring taxa. The higher the ASPT, the cleaner the watercourse is; in general, ASPT scores over 5 are indicative of good biological quality, and scores below 4 are indicative of poor biological quality.
- 3.37 Aquatic macroinvertebrates sampled from the watercourses were also identified to species level to determine if any species present are rare or nationally scarce and therefore merit further consideration in the interpretation of results.

Personnel

- 3.38 The team for this survey and reporting involved the following personnel:
-) Dr Jim Fairclough BSc, PhD, MCIEEM: Jim's role in this project was to complete the field survey work (2018) and technical reporting. He studied invertebrates for his PhD and has worked full-time as a professional ecologist since 2003, during which time he has completed invertebrate surveys and assessment at over 100 development sites.
 -) Sarah Joscelyne, a Senior Ecologist with three years' experience in invertebrate survey, took part in the field surveys in 2018, and led these in 2019.
 -) Don Stenhouse MSc, FRES: Don completed the identification of invertebrates for the project. He is a fellow of the Royal Entomological Society and Curator of Natural Science at Bolton

Museum. He specialises in invertebrate identification, particularly Coleoptera, and has carried out work for a wide range of clients across the UK over the last 10 years.

- J) This report has been reviewed by Kirsty Kirkham (BSc (Joint Hons) MSc, MCIEEM). Kirsty is a Partner at BSG Ecology with over twenty five years' experience of ecological consultancy including ecological impact assessment for a wide range of sites, including those with elevated invertebrate interest. Kirsty's MSc was research based and focused upon urban invertebrates within the City of Leicester.

NOTES AND LIMITATIONS

- 3.39 Surveys conducted between May and September cover the optimal survey period for invertebrates, although extending this to include April and October can yield additional taxa that are mostly active either early or late in the year (e.g. Drake *et al.*, 2007). Accordingly, it is considered that the surveys that were undertaken at the Site during 2018 and 2019 provide a good representation of the invertebrate assemblages likely to be present.
- 3.40 The survey approach has been designed with reference to guidance set out in Drake *et al.* (2007). It should be noted that the confidence in the ISIS / Pantheon analysis of SATs is reduced where survey work does not follow the precise ISIS sampling protocols. Since the objectives of the present survey were to identify a broad a range of invertebrates across target groups in predicted key areas of habitat, the methods employed do vary slightly from the ISIS protocol. In such instances Webb *et al.* (2018) advises that caution is applied when using the SAT assessments, and that confidence in a favourable condition should be considered as 'Medium' for semi-ISIS compliant samples. In the present context, the analysis is considered to be broadly indicative; and may therefore give further steer to help understand which assemblages within the Site are likely to be important.

4 Results and Interpretation

Habitat Potential Assessment

- 4.1 Figure 1 shows the location of the areas assessed for invertebrates, showing those areas of higher likely invertebrate value (subjected to further targeted survey), and the remainder of the Site with predicted lower invertebrate value (these areas are left blank on the plan). The habitat descriptions (below) are accompanied by photographs of features / habitats of note (see Appendix 2).
- 4.2 Overall the Site is characterised by arable and pastoral (intensively grazed) fields, with boundary features comprising several ditches, a brook and main river, and a network of hedgerows, some of these with mature and veteran trees. The arable fields are generally of low suitability for invertebrates. They predominantly have narrow margins, rarely more than 2 m wide and have limited structural and floral species diversity (see Photograph 5). Similarly, the pastoral fields are likely to be of limited value to invertebrates. The majority of fields are intensively grazed, sown as rye-grass ley, and even in the more diverse examples, such as those in the west of the Site, still have low diversity of wildflower species, being dominated by grasses and subject to cutting for example for a hay or silage crop (see Photograph 6).
- 4.3 Features of potential interest for invertebrate assemblages, notably boundary features and wooded copses are described further, below.

Woodland

- 4.4 There are six woodland blocks within the Site east of the River Ouzel. Five of these blocks are of principally of recent planted origin, which is portrayed by the relatively young age of the trees; that are estimated to be around 40 years old, and a lack of a woodland ground flora and mid-level shrub layer typical of more established woodland. The most frequently occurring and abundant trees that make up the canopy include ash *Fraxinus excelsior*, Norway maple *Acer platanoides* and sycamore *Acer pseudoplatanus*, with pedunculate oak *Quercus robur*, field maple *Acer campestre*, aspen *Populus tremula* and common lime *Tilia cordata* also present in at least two of the woodland blocks. Hawthorn *Crataegus monogyna*, bramble *Rubus fruticosus* agg and young ash saplings are commonly found in the understorey; although larger areas of unvegetated shaded woodland floor are also present. Management of the woodland blocks appears to involve a non-intervention approach, as small to medium diameter fallen dead wood is accumulating. This may provide a useful resource for invertebrates, although is not of sufficient size and age to be truly valuable. One block of plantation, close to the River Ouzel, is entirely dominated by hybrid black poplar *Populus x canadensis* and has an understorey of mostly nettle *Urtica dioica* (Photograph 7). Overall, due to their uniform age and structure, these plantation woodlands are considered likely to be of no more than local interest for invertebrate assemblages.
- 4.5 A single block of woodland in the centre of the Site (east of the River Ouzel) sets itself apart as being of value to invertebrate assemblages, owing to:
- J Size - in comparison to other woodland blocks.
 - J Antiquity - with a large proportion of trees (mostly pedunculate oak) estimated to be in excess of 100 years old (Photograph 8) and there being a moderate amount of standing and fallen dead wood, some of which includes medium diameter branches.
 - J Complexity – with a scrubby opening cut into the woodland in the south east corner; a pond partially surrounded by willow *Salix* species, located at its south west corner; and a series of hollows in the north of the wood (Photograph 9), some of which contain greater pond sedge *Carex riparia*, and are likely to retain water for most of the year (except in summer and early autumn).
 - J Connectivity – to a mature hedgerow to the south, that is separated by a farm track with a wide vegetated strip either side of this, which forms a linear glade between the hedgerow and woodland (Photograph 10). There are a number of mature standard trees along the length of

the hedgerow and southern boundary of the woodland, including ash, white willow *Salix alba* and pedunculate oak.

- 4.6 West of the River Ouzel (and south west of the M1 Motorway), there is a block of off-site plantation woodland associated with Pineham Park. This woodland, like others within the Site, is estimated to be around 40 years old. However, the plantation is mixed, with a coniferous element attributed to the abundance of Scot's pine *Pinus sylvestris*. Silver birch *Betula pendula*, ash and rowan *Sorbus aucuparia* are also frequent in the canopy; whilst the shrub layer is well developed, with field maple, wild cherry *Prunus avium*, dogwood *Cornus sanguinea* and bramble all frequent to locally abundant. There is scattered small to medium diameter fallen dead wood on the woodland floor. The woodland is dissected by a number of parkland roads, and there is a wide glade at the eastern edge; delineating an area of regularly cleared habitat beneath a power line (Photograph 11). Overall, the varied structure of the woodland and additional interest of the Scots pine mean that the woodland is likely to offer some value to invertebrates; although, as with the other plantations across the Site, this is considered to be valued at no more than a local geographical scale.

Hedgerows, trees lines and field margins

- 4.7 Hedgerows across the Site are variable, ranging from large (ca. 4 m wide x 5 m tall), unmanaged hedgerows such as those in the pastoral areas to the west of the River Ouzel (see Photograph 12); to more compact (ca. 2 m wide x 3 m tall) uniformly managed hedgerows typical of the arable landscape east of the River Ouzel (see Photograph 13). Hawthorn, blackthorn *Prunus spinosa*, English elm *Ulmus procera* and bramble are abundant in most of the hedgerows. Other woody species include crab apple *Malus sylvestris*, elder *Sambucus nigra*, dog rose *Rosa canina* agg and field maple. Mature and semi-mature crack willow *Salix fragilis* and white willow are included as standard trees in many of the hedgerows west of the River Ouzel; whilst east of the river, ash with occasional pedunculate oak and crack willow are the main standard trees. Some of these on the eastern side are mature or veteran, showing clear signs of ageing, with hollows in the trunks and a variety of standing dead wood (e.g. Photographs 14, 15 and 16). In the majority of cases it is considered likely that ageing is premature and has been caused by deep ploughing close to the hedgerow margins, thus damaging tree roots. The more prominent mature and veteran trees are marked on Figure 1.
- 4.8 The hedgerows themselves are likely to be of value to invertebrates, providing places for shelter, hibernation, and sources of food (nectar, pollen, fruit, foliage and prey) in a landscape that is generally considered likely to be of low value to invertebrates. The addition of over mature and veteran trees within the hedgerows (and along river banks), especially specimens with exposed heartwood of the hollowing trunks and flaking bark and bracket fungi is considered likely to elevate the value of the hedgerows further due to the likely associated saproxylic (dead-wood feeding) invertebrate assemblage.
- 4.9 Additional structural and species diversity is provided by the ground flora at the base of the hedgerows, especially where margins extend several metres into the field. Some of the wider margins are indicated on Figure 1. These are characterised by a variety of plant species that are favoured nectar and pollen sources for invertebrates, including common ragwort *Jacobaea vulgaris*, bristly ox-tongue *Helminthotheca echioides*, various thistles *Cirsium* sp., scented mayweed *Matricaria chamomilla*, prickly sow-thistle *Sonchus asper*, cats ear *Hypochaeris radicata*, mugwort *Artemisia vulgaris*, bird's-foot-trefoil *Lotus corniculatus*, white clover *Trifolium repens* and nettle. The shelter on the leeward side hedgerows may also encourage basking and nesting by invertebrates, including aculeate Hymenoptera and butterflies. Some particularly good examples of this are in the west of the Site, associated with the field margins of the arable fields west of the River Ouzel, that appear to be sandy and are also heavily rabbit grazed therefore have greater structural complexity and areas of bare earth that may be favoured by a range of thermophilous (warmth-loving) species of invertebrate (see Photograph 17). These margins were however significantly reduced during ongoing agricultural practice over the course of the 2018/ 2019 survey work.

River Ouzel and Broughton Brook

- 4.10 The River Ouzel (Photograph 18), is the main river that flows through the Site, west of the A509 and this is joined by the Broughton Brook (Photograph 19), also in the west of the Site, which forms a boundary with the former motocross circuit of Pineham Park. These riparian habitats are considered likely to provide an important resource for a wide range of aquatic, semi-aquatic and terrestrial species associated with riparian habitats. For example, the aquatic habitat includes submerged woody debris, a diverse array of submerged, floating and emergent plants (including but not limited to: common club-rush *Schoenoplectus lacustris*, unbranched bur reed *Sparganium emersum*, common arrowhead *Sagittaria sagittifolia*, greater pond sedge, yellow water-lily *Nuphar lutea*, flowering rush *Butomus umbellatus* and watercress *Nasturtium officinale*) a variable range of substrates on the bed (including gravel, silts and clays). The bankside habitat is also varied and includes marginal vegetation (including but not limited to: reed canary grass *Phalaris arundinacea*, reed sweet grass *Glyceria maxima*, branched bur reed *Sparganium erectum*, nettle, various thistles *Cirsium sp.* and Himalayan balsam *Impatiens glandulifera*). overhanging mature willow *Salix* trees and accumulations of decaying leaf litter. Together these features combine to provide important structural diversity and diversity of food plants favoured by invertebrates. The added connectivity contributed by these watercourses is considered likely to make this one of the most important features for invertebrates within the Site.
- 4.11 There are two ditches within the Site that were identified; one feeding into the River Ouzel from the grazed pasture to the west, and the other feeding in from the arable land to the east. Neither of these held any water at any point during the surveys (e.g. Photograph 20), and are therefore likely to be of importance more as boundary features (considered alongside the 'Hedgerows, trees lines and field margins' feature identified above) with seasonal complexity associated with periodical inundation, that may support a different invertebrate assemblage to that of the River Ouzel and Broughton Brook which are permanent watercourses.

Ponds

- 4.12 Three ponds were identified within the Site. These are described below:
- J A large pond in the south east of the Site, located just south of Newport Road (Photograph 21). The pond is surrounded by scrub (mostly willow *Salix sp.*, hawthorn and ash) and has a patchy distribution of marginal vegetation, including but not limited to: lesser pond sedge *Carex acutiformis*, yellow flag iris, white water lily *Nymphaea alba*, great willowherb *Epilobium hirsutum*, common cattail *Typha latifolia* and purple loosestrife *Lythrum salicaria*. These provide local structural diversity and diversity of food plants favoured by a range of invertebrates.
 - J A medium sized pond in the north of the Site, between a farm and the large woodland block previously described (Photograph 22). This pond is very uniform, with a triangular shape, greater pond sedge dominating the margins, and a complete covering of common duckweed *Lemna minor* over the surface of the pond. This invasive species is likely to limit the value for invertebrates owing to the dense shade that it casts preventing light from penetrating into the water.
 - J A small pond in the north east of the Site, at the base of a hedgerow and close to a small block of plantation woodland. This pond was almost dry at the time of the July site visit and completely dry by the time of the site visit in August. Some vegetation associated with the pond includes common duckweed, common cattail and great willowherb.
- 4.13 None of the ponds were considered to be in optimal condition, with the larger two both characterised by deep silt layers that are likely to result in relatively anoxic conditions close to the bed of the ponds. Collectively, as a Site-wide resource, the ponds are considered likely to be of some invertebrate potential; although they are likely to be valued at no more than local level.

Terrestrial Invertebrate Species Assemblage

- 4.14 The results of the targeted invertebrate survey provide an indication of the relative species diversity within the targeted groups of invertebrates. Over 2,900 specimens were collected or recorded over

the course of the survey, allowing 376 species to be identified from the Site. Figure 1 shows the location of the areas sampled for invertebrates, including a description of the sampling method used.

- 4.15 Of the target groups, Coleoptera was the dominant order recorded: 200 species; Hemiptera was represented by 67 species, Hymenoptera was represented by 41 species, Diptera was represented by 31 species and Lepidoptera by 15 species. Other species, which made up the remaining records, included those belonging to (but not limited to): Pulmonata (air-breathing snails), Orthoptera (grasshoppers and crickets), Julida (millipedes) and Isopoda (woodlice).
- 4.16 Of the species recorded, the majority are without any recognised status, being widely distributed and common, and exhibiting little habitat specificity. Sixteen of the species recorded are currently regarded as Nationally Scarce or Rare and one species is listed on Section 41 of the NERC Act as a Species of Principal Importance. The full list of invertebrates recorded within the Site is displayed in tabular format in Appendix 4.
- 4.17 Further information relating to species which were recorded with a recognised status, is provided below.

COLEOPTERA (BEETLES)

Carabidae (Ground beetles) *Agonum nigrum* - UK Status: Nationally Scarce

- 4.18 Duff (2012) states that this species has been recorded from '*litter on marshy vegetated soils, especially estuary and streambanks near the sea.*'... and is '*Local in South West England and Wales, very local elsewhere in England*'. The status of this species has recently been reviewed in Telfer (2016).
- 4.19 In Woodland Parcel 1, one specimen was identified from a pitfall trap and one was swept from vegetation, both on 9 August 2018.

Carabidae (Ground beetles) *Amara apricaria* - UK Status: Amber list

- 4.20 This species has been recorded from under objects such as stones and debris on vegetated disturbed soils (Duff, 2012). It has a widespread distribution in eastern England, and is local to very local elsewhere in Great Britain. The status of this species has recently been reviewed in Telfer (2016). It has been added to the amber list as it may be at risk from extreme fluctuations.
- 4.21 Two specimens were identified from pitfalls traps retrieved from the banks of the River Ouzel on 27 September 2018.

Carabidae (Ground beetles) *Pterostichus anthracinus* - UK Status: Nationally Scarce and Amber list

- 4.22 Duff (2012) claims the species to be found '*on marshy vegetated soils on lake shores and by fen pools*'... and it is '*Local in East Central and Southern England, very local in North West England, Wales and South West Scotland; scarce*'. The status of this species has recently been reviewed by Telfer (2016), who places the species on the Amber list.
- 4.23 Two beetles were extracted by grubbing and six were captured in a pitfall trap retrieved from Woodland Parcel 1, both on 9 August 2018.

Coccinellidae (Ladybirds) *Hippodamia variegata* - UK Status: Nationally Scarce (Notable B)

- 4.24 The entry in Hyman & Parsons (1992) reports this species from '*heathland, grassland, parkland, sand dunes, riverbanks and waste ground, although a mainly coastal species. It was noted as found by general sweeping and also noted from thistles, knapweed, broom, gorse and bramble*'. However, the species is now found well inland, is increasing its range distribution and not as scarce as formerly, so not deserving of Notable status and likely to be downgraded in a future review.

- 4.25 Four beetles were identified from sweep netting ruderal vegetation of the sandy arable field margins west of the River Ouzel, on 26 July 2018.

Curculionidae (True Weevils) *Cryptorhynchus lapathi* - UK Status: Nationally Scarce (Notable B)

- 4.26 This very distinctive weevil is found on 'willows *Salix* sp., especially almond willow *S. triandra* and osier *S. viminalis*, rarely on alder and birches'; and is local in England and Wales, and very local in Scotland (Duff, 2016).

- 4.27 One weevil was taken from a pitfall trap set on the banks of the River Ouzel and retrieved on 9 August 2018.

Curculionidae (True Weevils) *Polydrusus formosus* – UK Status: Nationally Scarce (Notable A)

- 4.28 Although formerly restricted to the south, this species is now much commoner and widespread (Stenhouse, 2004). There are also many records that are not shown on current distribution maps and it is certainly common in Lancashire and Cheshire for example. It is probably overlooked as it closely resembles several other common weevils. A review will undoubtedly downgrade the species as the number of 10 km squares it has been recorded in greatly exceeds that necessary for Notable A status.

- 4.29 It is a polyphagous species and found on a variety of tree species, including oak (*Quercus* spp.), hazel and fruit trees such as apple, pear and cherry species (Duff, 2016)

- 4.30 One weevil was swept from vegetation in the wide field margins in the south of the Site on 21 June 2019.

Curculionidae (True Weevils) *Notaris scirpi* - UK Status: Nationally Scarce (Notable B)

- 4.31 According to Duff (2016) this species is typically found 'on sedges *Carex* and club-rushes *Schoenoplectus* and bulrushes *Typha*, in wetland habitats (larvae in the roots)'. It is locally found in central and south-east England, Wales and Ireland, but is very local in northern England and generally scarce. The current status was accorded in Hyman & Parsons (1992) and may be in need of revision.

- 4.32 One weevil was collected via grubbing and sweeping of bankside vegetation of the River Ouzel on 26 July 2018.

Melandryidae (False Darkling Beetles) *Anisoxya fuscula* - UK status: Nationally Scarce

- 4.33 This species is mainly recorded from central and south east England in ancient broad-leaved woodland and suburban gardens. Larvae develop in the dead twigs of ash, willow, beech, field maple and lilac and adults are typically found in the tree canopy (Hyman & Parsons, 1994). It is included on the list of saproxylic species in Alexander (2004). The status of this species has recently been reviewed by Alexander *et al* (2014).

- 4.34 One specimen was taken from a pitfall trap set beneath a mature collapsed willow on the banks of the River Ouzel and retrieved on 9 August 2018.

Staphylinidae (Rove beetles) *Ilyobates propinquus* – UK Status: Nationally scarce (Notable)

- 4.35 This beetle is typically found in sandy places such as river banks and sandpits, but has been taken from flood meadows (Hyman & Parsons, 1994).

- 4.36 One specimen was taken from a pitfall trap set on the banks of the River Ouzel and retrieved on 9 August 2018.

Staphylinidae (Rove beetles) *Quedius truncicola* – UK Status: Nationally scarce (Notable)

- 4.37 According to Lott & Anderson (2011) this species can be '*found in tree hollows containing moist or wet wood mould and is widespread in England (except for the southwest)*'. It is included on the list of saproxylic species in Alexander (2004).
- 4.38 One beetle was taken from a window trap set over the summer in the hollow of a veteran ash tree near to the River Ouzel, and retrieved on 28 September 2018.

HEMIPTERA (BUGS)**Lygaeidae (Ground bugs) *Drymus latus* - UK Status: Nationally Scarce (Notable B)**

- 4.39 This species is noted on the British Bugs website as '*A scarce species mainly confined to the south-east of England with a scatter of records north to Yorkshire. The host plants are unclear; it has been recorded from a variety of habitats on both chalk and acid soils. It is mainly associated with sparsely-vegetated sites*' (British Bugs, online).
- 4.40 One bug was recorded from a pitfall trap set at the sandy arable field margins west of the River Ouzel, which was retrieved on 27 September 2018.

Miridae (Mirid bugs) *Lygus pratensis* - UK Status: Nationally Rare (RDB 3)

- 4.41 According to Kirby (1992) this species has been recorded from woodland rides and more open situations. Like other *Lygus* species it is known to be polyphagous, but certainly recorded from gorse *Ulex* sp. and heather *Calluna vulgaris*. There are records for all months of the year and it is well distributed, being recorded from southern England to northern Scotland. It is very difficult to separate from other *Lygus* species and there has been a lot of confusion over identification, compounded by variation in colouring. The bug no longer merits RDB status because although '*Previously scarce and confined to southern heaths, this bug has recently undergone a dramatic range expansion. It is now widespread throughout much of southern Britain and is much commoner than its RDB3 status suggests*' (British Bugs, online).
- 4.42 One specimen was taken from a pitfall trap set on the banks of the River Ouzel and retrieved on 27 September 2018.

HYMENOPTERA (BEES, WASPS AND ANTS)**Chrysididae (cuckoo wasps) *Cleptes nitidulus* - UK Status: Nationally Scarce (Notable A)**

- 4.43 This is understood to be a widespread species recorded from '*Devon to Kent, north to Cumberland and South-west Yorkshire*' and '*has probably declined recently*' (BWARS, online).
- 4.44 The BWARS website goes on to say that it is '*associated with open habitats both inland, e.g. scrub, heathland, calcareous grassland; and coastal, e.g. sand dunes and is found from June to August but mainly during July; rare during May and September*'. It visits '*hogweed and wild carrot and probably other umbellifers (Apiaceae)*' but is a '*parasitoid on the cocoons of tenthredinid sawflies*' of which there are several undetermined species at the Newport Pagnell Site.
- 4.45 One bee was taken from a pan trap set amongst sandy arable field margins west of the River Ouzel, on 30 May 2019.

Halictidae (Base-banded Furrow Bees) *Lasioglossum malachurum* – UK Status: Nationally Scarce (Notable A)

- 4.46 This species was regarded as scarce but is now widespread in Southern England and is extending its range distribution into the midlands. It can be very numerous, forming huge colonies along well-trodden paths and sparsely vegetated south facing slope (Falk, 2015). Due to the large number of

recent records, the bee is understood to not deserve its current status and is likely to be downgraded in any future review.

- 4.47 One bee was taken from a pan trap set amongst sandy arable field margins west of the River Ouzel, on 30 May 2019.

Halictidae (Base-banded Furrow Bees) *Lasioglossum pauxillum* - UK Status: Nationally Scarce (Notable A)

- 4.48 Although formerly regarded as scarce this small bee is now one of the most common *Lasioglossum* species in southern England (Falk, 2015) and has been recorded as far as Yorkshire.

- 4.49 This species can be found in a range of open habitats, favouring chalk downland and calcareous brownfield sites (Falk, 2015) and visits plants of various families including buttercups, Rape, Asteraceae and Blackthorn. Due to the large number of recent records, the bee does not deserve its current status and is likely to be downgraded in any future review.

- 4.50 Two bees were taken from a pan trap set amongst sandy arable field margins west of the River Ouzel, on 30 May 2019.

Halictidae (Sweat Bees) *Sphecodes crassus* - UK Status: Nationally Scarce (Notable B)

- 4.51 This tiny bee is a member of a difficult genus and according to Else and Edwards (2018) '*the difficulty of accurate identification has caused a problem in the assessment of the range of this species within Britain. Formerly considered a scarce but very widely distributed bee, modern records suggest that it is now frequent, at least in southern Britain*'. It is a cleptoparasite of *Lasioglossum nitidiusculum*.

- 4.52 One bee was swept from vegetation on the banks of the River Ouzel on 25 July 2018 and one bee was taken from a pan trap set amongst sandy arable field margins west of the River Ouzel, on 30 May 2019.

LEPIDOPTERA (BUTTERFLIES AND MOTHS)

Nymphalidae (Brush-footed Butterflies) *Coenonympha pamphilus* - UK Status: Near Threatened; Section 41 listed Species of Principal Importance

- 4.53 *This species can be found in many different habitats, especially those that are more open, such as grassland, heathland, railway embankments, disused quarries, meadows and sand dunes. Wherever it occurs, the adults prefer a shorter grass sward than closely related species* (UK Butterflies, online).

- 4.54 According to Fox *et al* (2010), this butterfly is classed as Near Threatened. Despite a small recovery over the last decade, this butterfly has experienced a long-term decline (Fox *et al.*, 2015).

- 4.55 This butterfly was recorded along wide and more flower rich arable field margins in the east of the Site.

Pantheon Assemblage Analysis

- 4.56 As explained in the methodology section, the Pantheon database has been used principally to help understand which terrestrial invertebrate assemblages within the Site are likely to be important. The species list derived from the terrestrial invertebrate surveys was entered into Pantheon. The data output from the analysis is shown in Tables 2 and 3 below which considers invertebrate assemblages at two different levels.

Broad Biotopes

Table 2: Summary of Pantheon output for Broad Biotopes (more than 10 species)

Broad biotope	No. of species	Species with conservation status
open habitats	247	7
tree-associated	57	4
wetland	43	4

4.57 Table 2 shows that there are three broad assemblage types that were covered by the surveys of the Site, which are recognised by Pantheon. The best represented is that belonging to open habitats, which is unsurprising given that much of the survey effort targeted this broad biotope that includes grassland, arable field margin and hedgerow margin habitats. The recording of a good proportion of invertebrates from the tree-associated biotope points towards this being an important feature of the Site, and is likely to be most closely associated with species recorded from window traps set in / near to veteran trees, and from the block of semi-natural woodland in the north of the Site. This is further emphasised by the presence of four species with conservation status from this biotope. The wetland biotope is likely to reflect the peaty habitat of the wet hollows in the semi-natural woodland, and also the riparian fauna sampled from the banks of the River Ouzel and Broughton Brook.

Habitats

Table 3: Summary of Pantheon output for Habitats

Broad biotope	Habitat	No. of species	SQI	Species with conservation status
Open habitats	Tall sward & scrub	192	102	2 (<i>Hippodamia variegata</i> , <i>Drymus latus</i>)
Open habitats	Short sward & bare ground	49	100	4 (<i>Lasioglossum malachurum</i> , <i>Lasioglossum pauxillum</i> , <i>Sphecodes crassus</i> , <i>Coenonympha pamphilus</i>)
Wetland	Marshland	25	126	2 (<i>Pterostichus anthracinus</i> , <i>Notaris scirpi</i>)
Tree-associated	Decaying wood	24	143	2 (<i>Anisoxya fuscula</i> , <i>Quedius truncicola</i>)
Tree-associated	Arboreal	21	143	3 (<i>Cryptorhynchus lapathi</i> , <i>Polydrusus formosus</i> , <i>Cleptes nitidulus</i>)
Other habitats	Peatland, running water, saltmarsh, brackish pools & ditches, lake, wet woodland, shaded woodland floor	<15	N/A	1 from peatland habitat (<i>Agonum nigrum</i>)

4.58 Table 3 adds a finer level of detail to Table 2, sub-dividing broad biotopes into habitats. The most prominent habitat that features is that of 'tall sward scrub' that lies within the broad biotope of open habitats. Whilst belonging to the open habitats biotope, it could be considered as intermediate with the tree-associated biotope, since the definition of this habitat in Pantheon, as 'Areas of dense herbage or partial shade where a humid microclimate is maintained at ground level. Dominance by woody plants is limited by exposure, grazing or cutting of vegetation, but they often form an

important component of the habitat leans on the importance of woody plants. The number of species with a recognised conservation status associated with this habitat is very low, with only two such species of the 192 recorded, which is reflected by a low SQI score. Both of these species were recorded from the arable field margins in the west of the Site, where there is a transition from arable to field margin to unmanaged hedgerow.

- 4.59 The short sward and bare ground habitat was represented by 49 species, four of which have a recognised conservation status. *Lasioglossum malachurum*, *L. pauxillum* and *Sphecodes crassus* were taken from sandy arable field margins west of the River Ouzel, whilst *Coenonympha pamphilus* was recorded from the wider and more flower rich arable field margins east of the River Ouzel.
- 4.60 Marshland habitat was represented by 25 species, two of which have a recognised conservation status. One of these species, *Notaris scirpi*, was recorded from the banks of the River Ouzel, whereas the other species, *Pterostichus anthracinus*, was found in the wet hollows of the block of semi-natural woodland in the north of the Site.
- 4.61 Five species with conservation status were recorded from the ‘tree-associated’ biotope (decaying wood and arboreal). The SQI scores for both of the habitats was relatively high, owing to the higher proportions of scarce and rare species taken. One window trap set in a hollow trunk of an ash tree produced *Quedius truncicola*; whilst *Anisoxya fuscula* and *Cryptorhynchus lapathi* were both taken from pitfall traps set beneath mature collapsed willows on the banks of the River Ouzel. *Polydrusus formosus* was taken from vegetation in the wide field margins in the south of the Site and *Cleptes nitidulus* was found in sandy arable field margins west of the River Ouzel. Both have established hedgerows with mature trees associated with them.
- 4.62 A number of other habitats were recognised by Pantheon; although each of these supported fewer than 15 species so are not considered further as they are unlikely to be important for invertebrate assemblages at the Site. Notwithstanding this, it is relevant to recognise that one nationally scarce species were identified from the peatland habitat.

Specific Assemblage Types

- 4.63 The ‘Favourable’ condition returned for ‘rich flower resource’ suggests that habitats supporting this resource within the Site are important and capable of supporting a range of associated species (especially aculeate Hymenoptera). It is relevant to note that such large flower patches were not prominent during the surveys, due to these being restricted to selected field margins and the river corridors within the Site. Such flower-rich resources can also include those associated with woody species (e.g. ivy, hawthorn, blackthorn, willow) as well as those associated with more typical herbaceous flowering plants (Webb *et al.*, 2018).
- 4.64 It is not appropriate to assess favourable condition of any other SATs identified by Pantheon at the Site. This is because for all other SATs identified, the number of species was below the threshold level (15 species). This is likely to be explained by the fact that the habitats sampled are not of sufficiently high quality to support SATs in a favourable condition.

PSYM category analysis - Ponds

- 4.65 A total of 15 aquatic macroinvertebrate taxa were recorded from the two ponds. Generally beetles were the most abundant, with 9 unique taxa recorded. Overall, species diversity was very low. No nationally scarce or threatened aquatic invertebrates were identified. A complete list of all the macroinvertebrate taxa recorded from the ponds can be found in Appendix 5.
- 4.66 Pond 1 had a ‘moderate’ PSYM quality category, with an Index of Biological Integrity of 56%; Pond 2 had a ‘poor’ PSYM quality category, with an Index of Biological Integrity of 39%. Neither pond qualifies as a Habitat of Principal Importance.
- 4.67 A complete list of all the macroinvertebrate taxa recorded at the ponds can be found in Appendix 5.

Biological Water Quality - Watercourses

- 4.68 A total of 63 species of freshwater invertebrate were recorded from the samples taken from the River Ouzel and Broughton Brook. The families sampled were typical of a lowland river, with strong representation of freshwater shrimps (Gammaridae), pea mussels (Sphaeriidae), bladder snails (Physidae), burrowing mayfly (Ephemeroidea), small square-gill mayfly (Caenidae), broad-winged damselflies (Calopterygidae) and riffle beetles (Elmidae). A varied range of caddis fly families (Trichoptera) was also present. A complete list of all the macroinvertebrate taxa recorded at each of the ponds can be found in Appendix 6.
- 4.69 WHPT and BMWP scores were calculated from the family-level macroinvertebrate data and are summarised in Table 4 below. As is normally the case, the WHPT scores were lower than the BMWP scores; however the scores indicated fair to good biological water quality, with the WHPT ASPT ranging between 4.1 and 5.2. The number of scoring taxa was higher in spring (May 2019) for most sampling locations, although WHPT and BMWP scores were broadly similar.

Table 4: WHPT and BMWP scores

Sampling location	Autumn (2018)				Spring (2019)			
	WHPT ASPT	WHPT NTAXA	BMWP ASPT	BMWP NTAXA	WHPT ASPT	WHPT NTAXA	BMWP ASPT	BMWP NTAXA
River Ouzel 1	4.73	20	5.40	20	5.2	20	6	17
River Ouzel 2	4.52	13	5.38	13	4.33	28	5	23
River Ouzel 3	5.2	19	5.67	18	4.1	21	4.84	19
Broughton Brook 1	4.71	21	5.15	20	4.77	30	5.05	22
Broughton Brook 2	4.38	19	5.53	19	4.9	30	5.23	26

WHPT: Whalley, Hawkes, Paisley and Trigg metric score
ASPT: Average Score Per Taxon
NTAXA: Number of Taxa

- 4.70 One nationally scarce aquatic invertebrate was identified. Further information relating to this species is provided below.

ODONATA (DRAGONFLIES)**Gomphidae (Clubtail Dragonflies) *Gomphus vulgatissimus* - UK Status: Near Threatened**

- 4.71 This very localised riverine species recorded from southern England and Wales is typically associated with moderate to slow flowing water, which breeds in unpolluted, meandering rivers, which have a depositional nature (Cham *et al.*, 2014). It is threatened by recreational use of rivers and excessive/unsympathetic river dredging and maintenance together with water pollution and habitat loss.
- 4.72 One nymph was taken from the Broughton Brook (sampling location 1) during the survey undertaken in May 2019.

5 Evaluation

Evaluation of Importance of Invertebrate Assemblages

- 5.1 There is no widely accepted published guidance presently available that provides a clear description of how to evaluate an invertebrate assemblage of a site. Various authors (e.g. Plant, undated) have previously proposed that threshold levels of species with a recognised conservation status could be used to distinguish sites of varying levels of importance across a geographical scale (e.g. a site with more than 10 Nationally Scarce species might merit Regional value). However, this relies on relatively comprehensive surveys being undertaken covering a broad range of groups, and the constant state of flux in relation to the status category applied to species compounds the difficulty in applying such an approach. Former English Nature guidance (English Nature, 2005) advised that an appropriate approach is to compare with other sites of similar nature and habitat. So, for example, a site in the South-East of England is of Regional importance if it compares well with other similar sites in the South-East. This however introduces doubt, especially where useful data are unavailable (e.g. poorly recorded areas or where data have not been shared with Local Records Centres).
- 5.2 For the purposes of the present evaluation, it is considered to be more useful to rely on a combination of factors in making a qualitative assessment of the invertebrate value of the Site. This considers the Pantheon output, including the number (and proportion) of species with a recognised conservation status found at the Site during surveys, the SQI scores and number and condition of SATs. It also takes into account the professional judgement of the assessor, based on a knowledge and understanding of the invertebrate importance of sites across the particular geographic region (in this case the South Midlands).
- 5.3 Overall, the Site is considered as a whole to be of District and potentially of County Value for its invertebrate assemblages. The rationale for this evaluation is provided below.
-) The Site supports a diverse invertebrate fauna, which returned over 400 terrestrial and aquatic species from surveys undertaken between 2018 and 2019.
 -) Nineteen species were sampled with recognised conservation status.
 -) The Specific Assemblage Type - rich flower resource - was recognised by the Pantheon tool, indicating that this assemblage type (represented by flower rich field and river bank margins) is of importance. At a broader level of detail, the 'Marshland', 'Arboreal' and 'Decaying Wood' habitats have moderately high SQI scores, indicating a relatively high proportion of scarce and rare species associated with these habitats; which were best represented in the block of mature woodland in the north of the Site, in association with over mature and veteran trees within hedgerows, and along the riparian bankside habitat of the River Ouzel.
 -) The aquatic habitat of the River Ouzel and Broughton Brook had fair to good biological water quality, and included the Near Threatened species – *Gomphus vulgatissimus* – a species associated with rivers of good water quality.
- 5.4 Notwithstanding the above, it should be noted that the vast majority of habitats at the Site, notably the arable fields and pasture are of low invertebrate habitat potential.

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Appendix 1: Figures

(overleaf)



LEGEND

Site boundary
 Site boundary

Survey location

- Pan trap (July 2018 and June 2019)
- Pan trap (September 2018)
- Pan trap (September 2018 and May 2019)
- ▲ Pitfall trap (July 2018)
- ▲ Pitfall trap (September 2018)
- ★ Window trap

Sweep/beating/grub location

- July 2018
- July 2018 and May 2019
- July 2018 and June 2019
- August 2018
- September 2018
- June 2019

Feature of Interest

- ✕ Collapsed mature willow tree
- Mature tree
- 1 Mature/veteran tree (number indicates number of trees)
- Veteran tree
- Broughton Brook
- River Ouzel
- Mature woodland parcel
- Wide field margins

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JOB REF: P18-395

PROJECT TITLE
NEWPORT PAGNELL INVERTEBRATE SURVEY

DRAWING TITLE
Figure 1: Terrestrial Invertebrate Survey Areas and Features of Interest

DATE: 30.10.2019 CHECKED: SJ SCALE: 1:10,500
 DRAWN: COH APPROVED: JF VERSION: 1.2

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 Sources: BSG Ecology survey data

C:\Users\clan\Documents\workingfiles\roost\bsp-ecology.com\Newport Pagnell spatial data\1.0\395 Figure 1 Terrestrial Invertebrate Survey.mxd

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



LEGEND

- Site boundary

Aquatic Invertebrate Sampling

- 1 ■ Broughton Brook
- 1 ▲ River Ouzel

Feature of Interest

- ✕ Collapsed mature willow tree
- Mature tree
- 1 ● Mature/veteran tree (number indicates number of trees)
- Veteran tree
- Broughton Brook
- River Ouzel
- Mature woodland parcel
- P1 ● Pond location

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PROJECT TITLE
NEWPORT PAGNELL INVERTEBRATE SURVEY

DRAWING TITLE
Figure 2: Aquatic Invertebrate Survey Areas and Features of Interest

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DRAWN: KW APPROVED: JF VERSION: 1.1

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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Appendix 2: Photographs

Photograph 1: Example of pan trap set near centre of Site



Photograph 2: Example of pitfall trap set at base of collapsed willow pollard adjacent to River Ouzel



Photograph 3: Window trap placed within hollow of a veteran ash tree near centre of Site



Photograph 4: Window trap placed next to exposed dead wood of a collapsed willow pollard adjacent to River Ouzel



Photograph 5: Typical example of arable land in east of the Site



Photograph 6: Typical example of pasture in west of the Site



Photograph 7: Poplar plantation woodland near centre of Site



Photograph 8: Mature oak associated with block of semi-natural woodland in north of the Site



Photograph 9: Wet hollows associated with block of semi-natural woodland in the north of the Site



Photograph 10: Linear glade formed by farm track between the hedgerow and woodland in north of the Site



Photograph 11: Wide glade formed by power line easement through plantation woodland in west of Site



Photograph 12: Unmanaged hedgerow of pastoral land to the west of the River Ouzel



Photograph 13: Uniformly managed hedgerow typical of the arable land east of the River Ouzel



Photograph 14: Veteran willow and ash near centre of Site



Photograph 15: Prematurely aged ash within hedgerow in south east of Site



Photograph 16: Standing dead wood associated with prematurely aged ash



Photograph 17: Arable field margins with exposed soil west of the River Ouzel



Photograph 18: Typical section of River Ouzel, at centre of Site



Photograph 19: Typical section of Broughton Brook, forming boundary to Site in the west



Photograph 20: Dried out field drain draining pastoral land in west of Site



Photograph 21: Large pond (Pond 1) in south east of Site



Photograph 22: Medium-sized pond (Pond 2) in north of Site



Appendix 3: Further Information on Status Definitions and Criteria of Invertebrate Groups

Much invertebrate conservation evaluation hinges on nationally threatened and scarce species. For many invertebrate groups, species rarity has often been gauged by the number of national 10 km grid squares in which they occur. The fewer “spots on a map”, the rarer it is. This, however, does not exactly equate with how threatened a species is, since some species may be naturally confined to very few localities but are very abundant where they do occur and under no immediate threat of extinction. The matter of how threatened the “rarest” species are has been addressed in a series of Red Data Books (RDB), such as for insects (Shirt, 1987). Here, the listing as RDB1 (Endangered), RDB2 (Vulnerable) and RDB3 (Rare) is an assessment of how threatened or endangered the species is in Britain, rather than how scarce it is in terms of map spot counting.

Over the last decade the RDB categories are slowly being replaced by IUCN red-list categories (Critically Endangered, Endangered and Vulnerable), which use different criteria to those developed for the RDBs. For a full explanation of the revised IUCN criteria see IUCN (2001), IUCN (2012), IUCN Standards and Petitions Subcommittee (2013, 2014) and the IUCN websites (<http://www.iucnredlist.org/>; www.iucn.org/).

The process of replacing RDB categories with IUCN ones is however slow, and IUCN categories are not available for all groups. Accordingly, wherever IUCN categories have been allocated in the report, these are also shown in preference, ahead of RDB categories.

At the national level, countries are permitted to refine the definitions for the non- threatened categories and to define additional ones of their own, which essentially sit below RDB / IUCN status. Thus, less rare but still significant species can be defined as Nationally Scarce (formerly called Nationally Notable), which is often sub-divided into Na (scarce), Nb (less scarce). These sub-categories were originally devised by Ball (1986) and are based on 10 km square spot counting for the Great Britain grid system. The Na sub-category represents scarce taxa that are thought to occur in 30 or fewer 10 km squares of the Great Britain grid system. The Nb sub-category represents less scarce taxa that occur in 31 to 100 10 km squares. Taxa in the N- sub-category are those listed as ‘Notable’, but not always distinguished into sub-category Na or Nb. These species are thought to occur in 16 to 100 10 km squares of the National Grid but are too poorly known for their status to be more precisely estimated.

IUCN (pre 1994) categories remain relevant to certain taxa if an update has not been forthcoming. These categories are as follows:

-) IUCN (pre 1994) Rare - taxa with small populations that are not at present Endangered or Vulnerable, but are at risk. In the UK, this was interpreted as species which exist in fifteen or fewer 10km squares. Superseded by new IUCN categories in 1994, but still applicable to lists that have not been reviewed since 1994.
-) IUCN (pre 1994) Vulnerable - taxa believed likely to move into the Endangered category in the near future if the causal factors continue operating. Superseded by new IUCN categories in 1994, but still applicable to lists that have not been reviewed since 1994.

Appendix 4: Species Lists (Terrestrial Surveys)

Order	Family	Taxon	Status
Coleoptera	Apionidae	<i>Eutrichapion vorax</i>	Local
Coleoptera	Apionidae	<i>Hemitrichapion waltoni</i>	Local
Coleoptera	Apionidae	<i>Protapion trifolii</i>	None
Coleoptera	Cantharidae	<i>Cantharis cryptica</i>	None
Coleoptera	Cantharidae	<i>Cantharis flavilabris</i>	None
Coleoptera	Cantharidae	<i>Cantharis lateralis</i>	Local
Coleoptera	Cantharidae	<i>Cantharis pellucida</i>	None
Coleoptera	Cantharidae	<i>Cantharis rustica</i>	None
Coleoptera	Cantharidae	<i>Malthinus seriepunctatus</i>	Local
Coleoptera	Cantharidae	<i>Rhagonycha fulva</i>	None
Coleoptera	Cantharidae	<i>Rhagonycha limbata</i>	None
Coleoptera	Carabidae	<i>Abax parallelepipedus</i>	None
Coleoptera	Carabidae	<i>Agonum emarginatum</i>	Local
Coleoptera	Carabidae	<i>Agonum fuliginosum</i>	None
Coleoptera	Carabidae	<i>Agonum nigrum</i>	NS
Coleoptera	Carabidae	<i>Amara aenea</i>	None
Coleoptera	Carabidae	<i>Amara apricaria</i>	Local
Coleoptera	Carabidae	<i>Amara communis</i>	Local
Coleoptera	Carabidae	<i>Amara familiaris</i>	None
Coleoptera	Carabidae	<i>Amara ovata</i>	None
Coleoptera	Carabidae	<i>Amara similata</i>	None
Coleoptera	Carabidae	<i>Bembidion articulatum</i>	Local
Coleoptera	Carabidae	<i>Bembidion assimile</i>	Local
Coleoptera	Carabidae	<i>Bembidion biguttatum</i>	None
Coleoptera	Carabidae	<i>Bembidion bualei</i>	Local
Coleoptera	Carabidae	<i>Bembidion clarkii</i>	Local
Coleoptera	Carabidae	<i>Bembidion guttula</i>	None
Coleoptera	Carabidae	<i>Bembidion lampros</i>	None
Coleoptera	Carabidae	<i>Bembidion lunulatum</i>	None
Coleoptera	Carabidae	<i>Bembidion obtusum</i>	None
Coleoptera	Carabidae	<i>Bembidion varium</i>	Local
Coleoptera	Carabidae	<i>Calathus fuscipes</i>	None
Coleoptera	Carabidae	<i>Calathus melanocephalus</i>	None
Coleoptera	Carabidae	<i>Calathus rotundicollis</i>	None
Coleoptera	Carabidae	<i>Carabus violaceus</i>	None

Order	Family	Taxon	Status
Coleoptera	Carabidae	<i>Chlaenius nigricornis</i>	Local
Coleoptera	Carabidae	<i>Clivina fossor</i>	None
Coleoptera	Carabidae	<i>Curtonotus aulicus</i>	None
Coleoptera	Carabidae	<i>Demetrias atricapillus</i>	None
Coleoptera	Carabidae	<i>Harpalus affinis</i>	None
Coleoptera	Carabidae	<i>Harpalus rufipes</i>	None
Coleoptera	Carabidae	<i>Leistus ferrugineus</i>	None
Coleoptera	Carabidae	<i>Leistus spinibarbis</i>	Local
Coleoptera	Carabidae	<i>Loricera pilicornis</i>	None
Coleoptera	Carabidae	<i>Metabletus obscuroguttatus</i>	Local
Coleoptera	Carabidae	<i>Nebria brevicollis</i>	None
Coleoptera	Carabidae	<i>Notiophilus biguttatus</i>	None
Coleoptera	Carabidae	<i>Ocys harpaloides</i>	None
Coleoptera	Carabidae	<i>Oxypselaphus obscurus</i>	Local
Coleoptera	Carabidae	<i>Poecilus cupreus</i>	Local
Coleoptera	Carabidae	<i>Pterostichus anthracinus</i>	NS
Coleoptera	Carabidae	<i>Pterostichus madidus</i>	None
Coleoptera	Carabidae	<i>Pterostichus melanarius</i>	None
Coleoptera	Carabidae	<i>Pterostichus niger</i>	None
Coleoptera	Carabidae	<i>Pterostichus nigrita</i>	None
Coleoptera	Carabidae	<i>Pterostichus strenuus</i>	None
Coleoptera	Carabidae	<i>Synuchus vivalis</i>	Local
Coleoptera	Carabidae	<i>Trechus quadristriatus</i>	None
Coleoptera	Cerambycidae	<i>Agapanthia villosoviridescens</i>	Local
Coleoptera	Cerambycidae	<i>Pseudovadonia livida</i>	Local
Coleoptera	Chrysomelidae	<i>Altica lythri</i>	None
Coleoptera	Chrysomelidae	<i>Altica palustris</i>	None
Coleoptera	Chrysomelidae	<i>Aphthona euphorbiae</i>	None
Coleoptera	Chrysomelidae	<i>Bruchus rufimanus</i>	Local
Coleoptera	Chrysomelidae	<i>Cassida rubiginosa</i>	None
Coleoptera	Chrysomelidae	<i>Chaetocnema concinna</i>	None
Coleoptera	Chrysomelidae	<i>Chaetocnema hortensis</i>	None
Coleoptera	Chrysomelidae	<i>Crepidodera plutus</i>	Local
Coleoptera	Chrysomelidae	<i>Gastrophysa polygoni</i>	None
Coleoptera	Chrysomelidae	<i>Longitarsus jacobaeae</i>	None
Coleoptera	Chrysomelidae	<i>Longitarsus luridus</i>	None
Coleoptera	Chrysomelidae	<i>Longitarsus rubiginosus</i>	Local

Order	Family	Taxon	Status
Coleoptera	Chrysomelidae	<i>Phyllotreta astrachanica</i>	Local
Coleoptera	Chrysomelidae	<i>Phyllotreta nemorum</i>	None
Coleoptera	Chrysomelidae	<i>Phyllotreta nigripes</i>	None
Coleoptera	Chrysomelidae	<i>Phyllotreta ochripes</i>	Local
Coleoptera	Chrysomelidae	<i>Psylliodes chrysocephala</i>	Local
Coleoptera	Chrysomelidae	<i>Psylliodes picina</i>	Local
Coleoptera	Chrysomelidae	<i>Sphaeroderma testaceum</i>	None
Coleoptera	Ciidae	<i>Cis bilamellatus</i>	None
Coleoptera	Ciidae	<i>Orthocis alni</i>	Local
Coleoptera	Coccinellidae	<i>Adalia decempunctata</i>	None
Coleoptera	Coccinellidae	<i>Coccidula rufa</i>	None
Coleoptera	Coccinellidae	<i>Coccinella septempunctata</i>	None
Coleoptera	Coccinellidae	<i>Harmonia axyridis</i>	None
Coleoptera	Coccinellidae	<i>Hippodamia variegata</i>	NS
Coleoptera	Coccinellidae	<i>Propylea quatuordecimpunctata</i>	None
Coleoptera	Coccinellidae	<i>Psyllobora vigintiduopunctata</i>	None
Coleoptera	Coccinellidae	<i>Rhyzobius litura</i>	None
Coleoptera	Coccinellidae	<i>Scymnus frontalis</i>	None
Coleoptera	Coccinellidae	<i>Subcoccinella vigintiquatuor punctata</i>	None
Coleoptera	Coccinellidae	<i>Tytthaspis sedecimpunctata</i>	Local
Coleoptera	Cryptophagidae	<i>Cryptophagus pubescens</i>	Local
Coleoptera	Curculionidae	<i>Acalles misellus</i>	Local
Coleoptera	Curculionidae	<i>Ceutorhynchus obstrictus</i>	None
Coleoptera	Curculionidae	<i>Ceutorhynchus pallidactylus</i>	None
Coleoptera	Curculionidae	<i>Cryptorhynchus lapathi</i>	NS
Coleoptera	Curculionidae	<i>Curculio glandium</i>	Local
Coleoptera	Curculionidae	<i>Euophryum confine</i>	None
Coleoptera	Curculionidae	<i>Exomias pellucidus</i>	None
Coleoptera	Curculionidae	<i>Liophloeus tessulatus</i>	None
Coleoptera	Curculionidae	<i>Nedyus quadrimaculatus</i>	None
Coleoptera	Curculionidae	<i>Notaris acridulus</i>	None
Coleoptera	Curculionidae	<i>Notaris scirpi</i>	NS
Coleoptera	Curculionidae	<i>Phyllobius pyri</i>	None
Coleoptera	Curculionidae	<i>Polydrusus formosus</i>	NS
Coleoptera	Curculionidae	<i>Rhinoncus pericarpus</i>	None
Coleoptera	Curculionidae	<i>Sitona hispidulus</i>	None
Coleoptera	Curculionidae	<i>Sitona lineatus</i>	None

Order	Family	Taxon	Status
Coleoptera	Curculionidae	<i>Sitona obsoletus</i>	None
Coleoptera	Elateridae	<i>Agriotes acuminatus</i>	None
Coleoptera	Elateridae	<i>Agriotes obscurus</i>	None
Coleoptera	Elateridae	<i>Athous haemorrhoidalis</i>	None
Coleoptera	Geotrupidae	<i>Geotrupes spiniger</i>	None
Coleoptera	Histeridae	<i>Margarinotus carbonarius</i>	None
Coleoptera	Histeridae	<i>Paromalus flavicornis</i>	Local
Coleoptera	Hydrophilidae	<i>Megasternum concinnum</i>	None
Coleoptera	Hydrophilidae	<i>Sphaeridium lunatum</i>	None
Coleoptera	Hydrophilidae	<i>Sphaeridium scarabaeoides</i>	None
Coleoptera	Kateretidae	<i>Brachypterus glaber</i>	None
Coleoptera	Kateretidae	<i>Brachypterus urticae</i>	None
Coleoptera	Latridiidae	<i>Corticaria impressa</i>	None
Coleoptera	Latridiidae	<i>Corticaria gibbosa</i>	None
Coleoptera	Latridiidae	<i>Enicmus transversus</i>	None
Coleoptera	Leiodidae	<i>Leiodes rufipennis</i>	Local
Coleoptera	Leiodidae	<i>Ptomaphagus medius</i>	Local
Coleoptera	Lucanidae	<i>Dorcus parallelipipedus</i>	Local
Coleoptera	Malachiidae	<i>Cordylepherus viridis</i>	Local
Coleoptera	Malachiidae	<i>Malachius bipustulatus</i>	None
Coleoptera	Melandryidae	<i>Anisoxya fuscula</i>	NS
Coleoptera	Monotomidae	<i>Monotoma picipes</i>	None
Coleoptera	Mycetophagidae	<i>Mycetophagus quadripustulatus</i>	Local
Coleoptera	Nitidulidae	<i>Meligethes aeneus</i>	None
Coleoptera	Nitidulidae	<i>Soronia grisea</i>	Local
Coleoptera	Oedemeridae	<i>Oedemera lurida</i>	Local
Coleoptera	Oedemeridae	<i>Oedemera nobilis</i>	None
Coleoptera	Phalacridae	<i>Olibrus aeneus</i>	None
Coleoptera	Phalacridae	<i>Phalacrus fimetarius</i>	None
Coleoptera	Phalacridae	<i>Stilbus testaceus</i>	None
Coleoptera	Ptinidae	<i>Anobium punctatum</i>	None
Coleoptera	Scarabaeidae	<i>Acrossus luridus</i>	Local
Coleoptera	Scarabaeidae	<i>Acrossus rufipes</i>	None
Coleoptera	Scarabaeidae	<i>Aphodius foetidus</i>	None
Coleoptera	Scarabaeidae	<i>Nimbus contaminatus</i>	None
Coleoptera	Scarabaeidae	<i>Otophorus haemorrhoidalis</i>	None
Coleoptera	Scirtidae	<i>Cyphon laevipennis</i>	Local

Order	Family	Taxon	Status
Coleoptera	Scirtidae	<i>Cyphon padi</i>	Local
Coleoptera	Scirtidae	<i>Microcara testacea</i>	None
Coleoptera	Scirtidae	<i>Prionocyphon serricornis</i>	Local
Coleoptera	Scraptiidae	<i>Anaspis maculata</i>	None
Coleoptera	Scraptiidae	<i>Anaspis pulicaria</i>	None
Coleoptera	Staphylinidae	<i>Acrolocha sulcula</i>	Local
Coleoptera	Staphylinidae	<i>Aleochara curtula</i>	None
Coleoptera	Staphylinidae	<i>Aleochara lanuginosa</i>	None
Coleoptera	Staphylinidae	<i>Aleochara sparsa</i>	None
Coleoptera	Staphylinidae	<i>Aleochara verna</i>	None
Coleoptera	Staphylinidae	<i>Anotylus inustus</i>	None
Coleoptera	Staphylinidae	<i>Anotylus rugosus</i>	None
Coleoptera	Staphylinidae	<i>Anotylus sculpturatus</i>	None
Coleoptera	Staphylinidae	<i>Anotylus tetracarinatus</i>	None
Coleoptera	Staphylinidae	<i>Carpelimus pusillus</i>	None
Coleoptera	Staphylinidae	<i>Drusilla canaliculata</i>	None
Coleoptera	Staphylinidae	<i>Habrocerus capillaricornis</i>	Local
Coleoptera	Staphylinidae	<i>Ilyobates propinquus</i>	NS
Coleoptera	Staphylinidae	<i>Lathrobium fovulum</i>	Local
Coleoptera	Staphylinidae	<i>Lathrobium impressum</i>	Local
Coleoptera	Staphylinidae	<i>Ocypus brunnipes</i>	None
Coleoptera	Staphylinidae	<i>Ocypus olens</i>	None
Coleoptera	Staphylinidae	<i>Ontholestes murinus</i>	None
Coleoptera	Staphylinidae	<i>Othius laeviusculus</i>	Local
Coleoptera	Staphylinidae	<i>Philonthus albipes</i>	Local
Coleoptera	Staphylinidae	<i>Philonthus decorus</i>	None
Coleoptera	Staphylinidae	<i>Philonthus laminatus</i>	None
Coleoptera	Staphylinidae	<i>Philonthus marginatus</i>	None
Coleoptera	Staphylinidae	<i>Philonthus tenuicornis</i>	Local
Coleoptera	Staphylinidae	<i>Philonthus varians</i>	None
Coleoptera	Staphylinidae	<i>Plataraea brunnea</i>	Local
Coleoptera	Staphylinidae	<i>Quedius levicollis</i>	None
Coleoptera	Staphylinidae	<i>Quedius mesomelinus</i>	None
Coleoptera	Staphylinidae	<i>Quedius molochinus</i>	None
Coleoptera	Staphylinidae	<i>Quedius schatzmayri</i>	Local
Coleoptera	Staphylinidae	<i>Quedius semiaeneus</i>	None
Coleoptera	Staphylinidae	<i>Quedius semiobscurus</i>	None

Order	Family	Taxon	Status
Coleoptera	Staphylinidae	<i>Quedius truncicola</i>	NS
Coleoptera	Staphylinidae	<i>Sepedophilus marshami</i>	None
Coleoptera	Staphylinidae	<i>Siagonium quadricorne</i>	Local
Coleoptera	Staphylinidae	<i>Stenus bifoveolatus</i>	None
Coleoptera	Staphylinidae	<i>Stenus bimaculatus</i>	None
Coleoptera	Staphylinidae	<i>Tachinus rufipes</i>	None
Coleoptera	Staphylinidae	<i>Tachyporus dispar</i>	None
Coleoptera	Staphylinidae	<i>Tachyporus hypnorum</i>	None
Coleoptera	Staphylinidae	<i>Tasgius ater</i>	None
Coleoptera	Staphylinidae	<i>Tasgius globulifer</i>	None
Coleoptera	Staphylinidae	<i>Tasgius melanarius</i>	None
Coleoptera	Staphylinidae	<i>Tasgius morsitans</i>	Local
Coleoptera	Staphylinidae	<i>Xantholinus elegans</i>	Local
Coleoptera	Staphylinidae	<i>Xantholinus linearis</i>	None
Coleoptera	Staphylinidae	<i>Xantholinus longiventris</i>	None
Coleoptera	Tenebrionidae	<i>Lagria hirta</i>	None
Coleoptera	Throscidae	<i>Trixagus obtusus</i>	Local
Dermaptera	Forficulidae	<i>Forficula auricularia</i>	None
Diptera	Asilidae	<i>Leptogaster cylindrica</i>	None
Diptera	Bibionidae	<i>Dilophus febrilis</i>	None
Diptera	Conopidae	<i>Thecophora atra</i>	Local
Diptera	Empidae	<i>Empis livida</i>	None
Diptera	Muscidae	<i>Mesembrina meridiana</i>	None
Diptera	Sarcophagidae	<i>Sarcophaga carnaria</i>	None
Diptera	Scathophagidae	<i>Scathophaga stercoraria</i>	None
Diptera	Sciomyzidae	<i>Coremacera marginata</i>	Local
Diptera	Stratiomyidae	<i>Chloromyia formosa</i>	None
Diptera	Syrphidae	<i>Chrysotoxum bicinctum</i>	Local
Diptera	Syrphidae	<i>Episyrphus balteatus</i>	None
Diptera	Syrphidae	<i>Eristalinus sepulchralis</i>	Local
Diptera	Syrphidae	<i>Eristalis arbustorum</i>	None
Diptera	Syrphidae	<i>Eristalis tenax</i>	None
Diptera	Syrphidae	<i>Helophilus pendulus</i>	None
Diptera	Syrphidae	<i>Melanogaster hirtella</i>	None
Diptera	Syrphidae	<i>Melanostoma scalare</i>	None
Diptera	Syrphidae	<i>Metasyrphus luniger</i>	None
Diptera	Syrphidae	<i>Neoascia podagrica</i>	None

Order	Family	Taxon	Status
Diptera	Syrphidae	<i>Pipizella varipes</i>	None
Diptera	Syrphidae	<i>Platycheirus albimanus</i>	None
Diptera	Syrphidae	<i>Platycheirus peltatus</i>	None
Diptera	Syrphidae	<i>Sphaerophoria scripta</i>	None
Diptera	Syrphidae	<i>Syrphus ribesii</i>	None
Diptera	Syrphidae	<i>Syrphus vitripennis</i>	None
Diptera	Syrphidae	<i>Volucella pellucens</i>	None
Diptera	Tachinidae	<i>Tachina fera</i>	None
Diptera	Tipulidae	<i>Nephrotoma appendiculata</i>	None
Diptera	Tipulidae	<i>Nephrotoma quadrifaria</i>	None
Diptera	Tipulidae	<i>Symplecta stictica</i>	None
Diptera	Tipulidae	<i>Tipula paludosa</i>	None
Hemiptera	Anthocoridae	<i>Anthocoris confusus</i>	None
Hemiptera	Anthocoridae	<i>Anthocoris nemorum</i>	None
Hemiptera	Anthocoridae	<i>Anthocoris simulans</i>	Local
Hemiptera	Aphrophoridae	<i>Aphrophora alni</i>	None
Hemiptera	Aphrophoridae	<i>Neophilaenus lineatus</i>	None
Hemiptera	Aphrophoridae	<i>Philaenus spumarius</i>	None
Hemiptera	Cicadellidae	<i>Adarrus ocellaris</i>	None
Hemiptera	Cicadellidae	<i>Agallia consobrina</i>	None
Hemiptera	Cicadellidae	<i>Aphrodes makarovi</i>	None
Hemiptera	Cicadellidae	<i>Eupteryx aurata</i>	None
Hemiptera	Cicadellidae	<i>Euscelis incisus</i>	None
Hemiptera	Cicadellidae	<i>Limotettix striola</i>	Local
Hemiptera	Cicadellidae	<i>Linnavuoriana sexmaculata</i>	None
Hemiptera	Cicadellidae	<i>Macropsis impura</i>	Local
Hemiptera	Cicadellidae	<i>Macropsis scotti</i>	None
Hemiptera	Cicadellidae	<i>Mocydia crocea</i>	None
Hemiptera	Coreidae	<i>Coreus marginatus</i>	None
Hemiptera	Delphacidae	<i>Stenocranus major</i>	Local
Hemiptera	Lygaeidae	<i>Drymus latus</i>	NS
Hemiptera	Lygaeidae	<i>Drymus sylvaticus</i>	None
Hemiptera	Lygaeidae	<i>Heterogaster urticae</i>	None
Hemiptera	Lygaeidae	<i>Ischnodemus sabuleti</i>	None
Hemiptera	Lygaeidae	<i>Kleidocerys resedae</i>	None
Hemiptera	Lygaeidae	<i>Metopoplax ditomoides</i>	Local
Hemiptera	Lygaeidae	<i>Nysius senecionis</i>	None

Order	Family	Taxon	Status
Hemiptera	Lygaeidae	<i>Scolopostethus thomsoni</i>	None
Hemiptera	Miridae	<i>Adelphocoris lineolatus</i>	None
Hemiptera	Miridae	<i>Capsus ater</i>	None
Hemiptera	Miridae	<i>Cyllecoris histrionius</i>	None
Hemiptera	Miridae	<i>Deraeocoris lutescens</i>	None
Hemiptera	Miridae	<i>Deraeocoris ruber</i>	None
Hemiptera	Miridae	<i>Dicyphus epilobii</i>	None
Hemiptera	Miridae	<i>Heterotoma planicornis</i>	None
Hemiptera	Miridae	<i>Leptopterna dolabrata</i>	None
Hemiptera	Miridae	<i>Liocoris tripustulatus</i>	None
Hemiptera	Miridae	<i>Lygus pratensis</i>	NS
Hemiptera	Miridae	<i>Lygus rugulipennis</i>	None
Hemiptera	Miridae	<i>Megacoelum infusum</i>	None
Hemiptera	Miridae	<i>Miridius quadrivirgatus</i>	Local
Hemiptera	Miridae	<i>Miris striatus</i>	None
Hemiptera	Miridae	<i>Notostira elongata</i>	None
Hemiptera	Miridae	<i>Oncotylus viridiflavus</i>	Local
Hemiptera	Miridae	<i>Orius niger</i>	None
Hemiptera	Miridae	<i>Phytocoris varipes</i>	None
Hemiptera	Miridae	<i>Stenodema calcarata</i>	None
Hemiptera	Miridae	<i>Stenodema laevigata</i>	None
Hemiptera	Miridae	<i>Stenotus binotatus</i>	None
Hemiptera	Nabidae	<i>Himacerus major</i>	None
Hemiptera	Nabidae	<i>Himacerus mirmicoides</i>	None
Hemiptera	Nabidae	<i>Nabis ferus</i>	None
Hemiptera	Nabidae	<i>Nabis flavomarginatus</i>	None
Hemiptera	Nabidae	<i>Nabis limbatus</i>	None
Hemiptera	Nabidae	<i>Nabis lineatus</i>	Local
Hemiptera	Nabidae	<i>Nabis rugosus</i>	None
Hemiptera	Pentatomidae	<i>Aelia acuminata</i>	Local
Hemiptera	Pentatomidae	<i>Dolycoris baccarum</i>	None
Hemiptera	Pentatomidae	<i>Elasmostethus interstinctus</i>	None
Hemiptera	Pentatomidae	<i>Elasmucha grisea</i>	None
Hemiptera	Pentatomidae	<i>Eurydema oleracea</i>	Local
Hemiptera	Pentatomidae	<i>Palomena prasina</i>	None
Hemiptera	Rhopalidae	<i>Corizus hyoscyami</i>	Local
Hemiptera	Rhopalidae	<i>Rhopalus subrufus</i>	Local

Order	Family	Taxon	Status
Hemiptera	Rhopalidae	<i>Stictopleurus abutilon</i>	Local
Hemiptera	Rhopalidae	<i>Stictopleurus punctatonervosus</i>	Local
Hemiptera	Tingidae	<i>Physatocheila dumetorum</i>	None
Hemiptera	Tingidae	<i>Tingis cardui</i>	None
Hymenoptera	Andrenidae	<i>Andrena chrysoceles</i>	None
Hymenoptera	Andrenidae	<i>Andrena subopaca</i>	None
Hymenoptera	Apidae	<i>Apis mellifera</i>	None
Hymenoptera	Apidae	<i>Bombus barbutellus</i>	Local
Hymenoptera	Apidae	<i>Bombus hypnorum</i>	None
Hymenoptera	Apidae	<i>Bombus lapidarius</i>	None
Hymenoptera	Apidae	<i>Bombus lucorum / terrestris</i>	None
Hymenoptera	Apidae	<i>Bombus pascuorum</i>	None
Hymenoptera	Apidae	<i>Bombus pratorum</i>	None
Hymenoptera	Apidae	<i>Bombus vestalis</i>	None
Hymenoptera	Apidae	<i>Nomada flava</i>	None
Hymenoptera	Apidae	<i>Nomada flavoguttata</i>	None
Hymenoptera	Apidae	<i>Nomada goodeniana</i>	None
Hymenoptera	Cephalidae	<i>Cephus pygmeus</i>	None
Hymenoptera	Chrysididae	<i>Cleptes nitidulus</i>	NS
Hymenoptera	Crabronidae	<i>Ectemnius continuus</i>	None
Hymenoptera	Crabronidae	<i>Pemphredon inornata</i>	None
Hymenoptera	Crabronidae	<i>Trypoxylon attenuatum</i>	None
Hymenoptera	Crabronidae	<i>Trypoxylon figulus</i>	None
Hymenoptera	Formicidae	<i>Lasius fuliginosus</i>	None
Hymenoptera	Formicidae	<i>Lasius niger</i>	None
Hymenoptera	Formicidae	<i>Myrmica rubra</i>	None
Hymenoptera	Formicidae	<i>Myrmica ruginodis</i>	None
Hymenoptera	Halictidae	<i>Halictus rubicundus</i>	None
Hymenoptera	Halictidae	<i>Halictus tumulorum</i>	None
Hymenoptera	Halictidae	<i>Lasioglossum leucopus</i>	None
Hymenoptera	Halictidae	<i>Lasioglossum malachurum</i>	NS
Hymenoptera	Halictidae	<i>Lasioglossum minutissimum</i>	Local
Hymenoptera	Halictidae	<i>Lasioglossum pauxillum</i>	NS
Hymenoptera	Halictidae	<i>Lasioglossum punctatissimum</i>	None
Hymenoptera	Halictidae	<i>Lasioglossum villosulum</i>	None
Hymenoptera	Halictidae	<i>Sphecodes crassus</i>	NS
Hymenoptera	Halictidae	<i>Sphecodes monilicornis</i>	None

Order	Family	Taxon	Status
Hymenoptera	Halictidae	<i>Sphecodes pellucidus</i>	Local
Hymenoptera	Ichneumonidae	<i>Amblyjoppa proteus</i>	None
Hymenoptera	Megachilidae	<i>Hoplitis claviventris</i>	Local
Hymenoptera	Tiphiidae	<i>Tiphia femorata</i>	Local
Hymenoptera	Vespidae	<i>Vespa crabro</i>	None
Hymenoptera	Vespidae	<i>Vespula germanica</i>	None
Hymenoptera	Vespidae	<i>Vespula vulgaris</i>	None
Isopoda	Armadillidiidae	<i>Armadillidium vulgare</i>	None
Isopoda	Oniscidae	<i>Oniscus asellus</i>	None
Isopoda	Philoscidae	<i>Philoscia muscorum</i>	None
Isopoda	Porcellionidae	<i>Porcellio scaber</i>	None
Julida	Julidae	<i>Tachypodoiulus niger</i>	None
Lepidoptera	Hesperiidae	<i>Ochlodes sylvanus</i>	None
Lepidoptera	Hesperiidae	<i>Thymelicus lineola</i>	None
Lepidoptera	Hesperiidae	<i>Thymelicus sylvestris</i>	None
Lepidoptera	Lycaenidae	<i>Aricia agestis</i>	None
Lepidoptera	Lycaenidae	<i>Polyommatus icarus</i>	None
Lepidoptera	Nymphalidae	<i>Aglais urticae</i>	None
Lepidoptera	Nymphalidae	<i>Coenonympha pamphilus</i>	S41
Lepidoptera	Nymphalidae	<i>Maniola jurtina</i>	None
Lepidoptera	Nymphalidae	<i>Pararge aegeria</i>	None
Lepidoptera	Nymphalidae	<i>Pyronia tithonus</i>	None
Lepidoptera	Nymphalidae	<i>Vanessa atalanta</i>	None
Lepidoptera	Pieridae	<i>Pieris brassicae</i>	None
Lepidoptera	Pieridae	<i>Pieris napi</i>	None
Lepidoptera	Pieridae	<i>Pieris rapae</i>	None
Lepidoptera	Zygaenidae	<i>Zygaena trifolii</i>	None
Lithobiomorpha	Lithobiidae	<i>Lithobius forficatus</i>	None
Mecoptera	Panorpidae	<i>Panorpa communis</i>	None
Neuroptera	Chrysopidae	<i>Chrysopa commata</i>	Local
Opiliones	Nemastomatidae	<i>Nemastoma bimaculatum</i>	None
Opiliones	Sclerosomatidae	<i>Leiobunum rotundum</i>	None
Orthoptera	Acrididae	<i>Chorthippus brunneus</i>	None
Orthoptera	Tetrigidae	<i>Tetrix subulata</i>	Local
Orthoptera	Tettigoniidae	<i>Conocephalus fuscus</i>	Local
Orthoptera	Tettigoniidae	<i>Leptophyes punctatissima</i>	None
Orthoptera	Tettigoniidae	<i>Meconema thalassinum</i>	None

Order	Family	Taxon	Status
Orthoptera	Tettigoniidae	<i>Metrioptera roeselii</i>	None
Orthoptera	Tettigoniidae	<i>Pholidoptera griseoptera</i>	None
Pulmonata	Cochlicopidae	<i>Cochlicopa lubrica</i>	None
Pulmonata	Helicidae	<i>Cepaea hortensis</i>	None
Pulmonata	Hygromiidae	<i>Trochulus hispidus</i>	None
Pulmonata	Physidae	<i>Aplexa hypnorum</i>	Local
Pulmonata	Succineidae	<i>Succinea putris</i>	None
Pulmonata	Vitrinidae	<i>Vitrina pellucida</i>	None
S41 = Section 41 NERC Act 2006			
NS = Nationally Scarce			

Appendix 5: Macroinvertebrate Species Data (Ponds)

Order	Family	Taxon	P1	P2
Amphipoda & Isopoda (Crustaceans)	Asellidae	<i>Asellus aquaticus</i>	0	28
	Crangonyctidae	<i>Crangonyx pseudogracillis</i>	0	15
Coleoptera (Beetles)	Dryopidae	<i>Dryops sp.</i>	0	1
	Dytiscidae	<i>Liopterus haemorrhoidalis</i>	1	0
	Dytiscidae	<i>Colymbetes fuscus</i>	3	0
	Dytiscidae	<i>Agabus bipustulatus</i>	2	0
	Dytiscidae	<i>Agabus nebulosus</i>		1
	Dytiscidae	<i>Agabus sturmii</i>	1	4
	Halplidae	<i>Halplus sp.</i>	1	0
	Hydrophilidae	Hydrophilidae indet (larvae)	2	1
	Scirtidae (Helodidae)	Helodidae indet (larvae)	59	0
	Diptera (Flies)	Chironomidae	Chironomidae	12
Ptychopteridae		Ptychopteridae indet (larvae)	1	0
Syrphidae		Syrphidae indet (larvae)	1	6
Hemiptera (Bugs)	Gerridae	<i>Gerris odontogaster</i>	1	0

Appendix 6: Macroinvertebrate Species Data (Watercourses)

Order / Class	Family	Taxon	RO1		RO2		RO3		BB1		BB2	
			2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Amphipoda	Crangonyctidae	<i>Crangonyx pseudogracilis</i>	7	1	5	29	2	7	6	18	3	0
Amphipoda	Gammaridae	<i>Dikerogammarus villosus</i>	0	0	0	1	0	0	0	0	0	0
Amphipoda	Gammaridae	<i>Gammarus pulex</i>	20	45	7	2	48	4	4	3	0	2
Bivalvia	Sphaeriidae	Sphaeriidae (indet)	17	45	0	10	78	25	22	100-999	20	5
Bivalvia	Unionidae	<i>Anodonta anatina</i>	0	1	0	1	2	0	0	0	0	0
Coleoptera	Dytiscidae	Dytiscidae (indet larvae)	0	0	0	0	0	1	1	0	0	0
Coleoptera	Elmidae	<i>Limnius volkmari</i>	15	0	0	0	61	0	5	0	0	0
Coleoptera	Elmidae	<i>Oulimnius tuberculatus</i>	5	0	0	0	4	0	0	0	0	3
Coleoptera	Halipidae	<i>Halipus laminatus</i>	0	0	0	0	0	0	10	3	0	0
Coleoptera	Halipidae	<i>Halipus lineatocollis</i>	0	0	0	0	0	1	0	0	0	0
Coleoptera	Halipidae	<i>Halipus ruficollis</i>	0	0	0	0	0	0	1	0	0	0
Coleoptera	Halipidae	<i>Halipus sibiricus</i>	0	0	0	1	0	0	0	0	0	0
Coleoptera	Halipidae	<i>Halipus sp.</i>	0	0	0	0	0	0	0	6	0	12
Coleoptera	Helophoridae	<i>Helophorus aequalis</i>	0	0	0	0	0	0	0	0	0	1
Coleoptera	Helophoridae	<i>Helophorus brevialpis</i>	0	0	0	2	0	0	0	0	0	0
Coleoptera	Helophoridae	<i>Helophorus sp.</i>	0	0	0	0	0	0	0	0	0	4
Coleoptera	Hydrophilidae	Hydrophilidae (indet larvae)	0	0	0	3	0	0	0	2	0	9
Decapoda	Astacidae	<i>Pacifastacus leniusculus</i>	1	1	1	0	0	2	0	0	0	1
Diptera	Chironomidae	Chironomidae (indet larvae)	19	0	1	100-999	51	0	12	100-999	12	100-999
Diptera	Chironomidae	Chironomidae (indet pupae)	0	0	0	99	0	10	0	100-999	0	90
Diptera	Dixidae	Dixidae (indet pupae)	0	0	0	12	0	0	0	24	0	29
Diptera	Empididae	Empididae (Indet larvae)	0	0	0	0	0	0	0	4	0	2
Diptera	Psychodidae	Psychodidae (indet larvae)	0	0	0	1	0	0	1	3	0	0
Diptera	Simuliidae	Simuliidae (indet larvae)	12	0	0	0	0	0	2	0	0	0
Diptera	Tipulidae	Tipulidae (indet larvae)	0	3	0	0	0	0	0	2	0	1
Ephemeroptera	Baetidae	<i>Baetis sp.</i> (indet nymph)	2	1	1	8	1	1	5	100-999	0	31
Ephemeroptera	Caenidae	<i>Caenis luctuosa / macrura</i>	100	12	0	10	43	1	54	100-999	61	100-999
Ephemeroptera	Ephemeridae	<i>Ephemera vulgata</i>	100-999	11	21	9	74	5	20	17	2	7
Gastropoda	Ancylidae	<i>Ancylus fluviatilis</i>	31	4	1	2	17	11	1	1	0	0
Gastropoda	Bithyniidae	<i>Bithynia leachii</i>	0	0	0	0	3	0	0	0	0	0
Gastropoda	Bithyniidae	<i>Bithynia tentaculata</i>	1	6	0	59	0	2	8	100-999	12	100-999
Gastropoda	Hydrobiidae	<i>Potamopyrgus antipodarum</i>	2	25	2	2	17	14	0	1	0	1
Gastropoda	Lymnaeidae	<i>Lymnaea peregra</i>	0	0	0	6	0	0	0	5	0	17
Gastropoda	Lymnaeidae	<i>Lymnaea stagnalis</i>	0	0	0	0	0	0	0	0	1	0
Gastropoda	Lymnaeidae	<i>Lymnaea truncatula</i>	0	0	0	0	0	100-999	0	0	0	0
Gastropoda	Lymnaeidae	<i>Radix auricularia</i>	0	0	0	0	0	0	3	0	4	0
Gastropoda	Lymnaeidae	<i>Stagnicola palustris</i>	0	27	0	0	0	0	0	0	0	0

			RO1		RO2		RO3		BB1		BB2	
Order / Class	Family	Taxon	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Gastropoda	Neritidae	<i>Theodoxus fluviatilis</i>	0	0	0	0	0	0	0	0	0	1
Gastropoda	Physidae	<i>Physa fontinalis</i>	92	11	19	100-999	34	100-999	0	11	1	5
Gastropoda	Planorbidae	<i>Gyraulus albus</i>	0	1	0	0	0	1	0	0	2	0
Gastropoda	Valvatidae	<i>Valvata piscinalis</i>	0	0	0	0	0	0	0	2	0	0
Gastropoda	Viviparidae	<i>Viviparus viviparus</i>	1	0	0	14	0	0	0	0	0	0
Hemiptera	Corixidae	Corixidae (indet nymph)	0	0	0	5	0	4	0	2	0	0
Hemiptera	Corixidae	<i>Hesperocorixa sahlbergi</i>	1	0	0	0	0	0	0	0	0	0
Hemiptera	Corixidae	<i>Sigara falleni</i>	2	0	0	0	0	0	0	0	0	0
Hemiptera	Gerridae	<i>Gerris lacustris</i>	5	0	1	0	0	0	2	0	0	0
Hemiptera	Gerridae	<i>Gerris sp.</i> (indet nymph)	8	0	2	0	0	0	0	0	0	0
Hemiptera	Nepidae	<i>Ranatra linearis</i>	1	0	0	0	0	0	0	0	0	0
Hemiptera	Notonectidae	<i>Notonecta glauca</i>	5	0	0	0	0	0	1	0	1	0
Hemiptera	Notonectidae	<i>Notonecta maculata</i>	0	0	0	0	1	0	0	0	0	1
Hemiptera	Notonectidae	<i>Notonecta marmorea subsp. viridis</i>	3	0	3	0	0	0	1	0	4	0
Hemiptera	Notonectidae	<i>Notonecta sp.</i> (indet nymph)	0	0	0	8	0	0	0	0	0	0
Hemiptera	Pleidae	<i>Plea minutissima</i>	0	0	0	0	0	2	0	0	1	1
Hemiptera	Veliidae	<i>Velia sp.</i> (indet nymph)	0	0	0	3	0	0	0	4	0	9
Hirudinea	Erpobdellidae	<i>Erpobdella octoculata</i>	0	0	0	0	0	0	0	4	0	0
Hirudinea	Erpobdellidae	<i>Erpobdella testacea</i>	0	0	0	0	0	0	0	5	0	1
Hirudinea	Glossiphoniidae	<i>Glossiphonia complanata</i>	0	0	0	0	0	0	0	0	1	0
Hirudinea	Glossiphoniidae	<i>Alboglossiphonia heteroclita</i>	0	0	0	1	0	0	0	1	0	1
Isopoda	Asellidae	<i>Asellus aquaticus</i>	0	0	1	100-999	3	9	3	100-999	15	99
Mysida	Mysidae	<i>Hemimysis anomala</i>	1	0	0	0	0	0	0	0	0	0
Odonata	Aeshidae	<i>Anax imperator</i>	0	0	1	3	0	0	0	0	0	0
Odonata	Calopterygidae	<i>Calopteryx splendens</i>	100-999	8	36	20	55	0	20	18	5	4
Odonata	Coenagrionidae	Coenagrionidae (indet nymph)	0	0	0	6	0	0	0	0	0	0
Odonata	Coenagrionidae	<i>Ischnura elegans</i>	0	0	0	2	0	0	0	0	0	0
Odonata	Gomphidae	<i>Gomphus vulgatissimus</i>	0	0	0	0	0	0	0	1	0	0
Odonata	Platycnemididae	<i>Platycnemis pennipes</i>	0	0	0	0	0	0	14	51	4	32
Oligochaetae	unknown	<i>unknown</i>	0	0	0	2	0	2	0	0	0	2
Trichoptera	Brachycentridae	<i>Brachycentrus subnubilus</i>	0	3	0	0	1	0	0	0	0	0
Trichoptera	Hydropsychidae	<i>Hydropsyche angustipennis</i>	0	0	0	0	0	0	1	1	0	0
Trichoptera	Hydropsychidae	<i>Hydropsyche pellucidula</i>	1	0	3	0	0	0	3	0	0	0
Trichoptera	Hydropsychidae	<i>Hydropsyche sp.</i>	0	3	0	0	0	0	0	0	0	0
Trichoptera	Leptoceridae	<i>Athripsodes aterrimus</i>	1	0	0	0	0	0	0	0	0	0
Trichoptera	Leptoceridae	<i>Athripsodes cinereus</i>	8	2	0	0	0	0	0	0	0	0
Trichoptera	Leptoceridae	Indet larvae	3	0	0	0	8	0	0	10	0	2
Trichoptera	Leptoceridae	<i>Mystacides longicornis</i>	0	0	0	0	0	1	0	0	0	0
Trichoptera	Leptoceridae	<i>Mystacides nigra</i>	8	0	0	0	5	0	0	0	3	0
Trichoptera	Limnephilidae	<i>Anabolia nervosa</i>	0	2	0	0	0	0	0	2	0	3

			RO1		RO2		RO3		BB1		BB2	
Order / Class	Family	Taxon	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
Trichoptera	Limnephilidae	Limnephilidae (indet larvae)	0	0	0	0	12	0	0	5	0	0
Trichoptera	Limnephilidae	<i>Limnephilus lunatus</i>	0	1	0	0	0	0	0	0	0	1
Trichoptera	Molannidae	<i>Molanna angustata</i>	0	0	0	0	0	0	0	0	1	3
Trichoptera	Phryganeidae	<i>Phryganea grandis</i>	0	0	0	0	0	0	11	0	12	0
Trichoptera	Polycentropodidae	<i>Polycentropus flavomaculatus</i>	0	0	0	0	2	0	0	0	0	0
Trichoptera	Polycentropodidae	<i>Polycentropus irroratus</i>	0	0	0	1	0	0	0	3	0	0
Trichoptera	unknown	<i>Indet larvae</i>	0	6	0	0	0	2	0	0	0	0