Appendix 5 WSI for an Archaeological Investigation: Earthwork Enclosure (March 2021)

WRITTEN SCHEME OF INVESTIGATION FOR AN ARCHAEOLOGICAL EVALUATION

Earthwork Enclosure, land north-east of Milton Keynes, Buckinghamshire

25141
March 2021

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CONTENTS

1 INTRODUCTION

1.1 General Background

1.1.1 Pre-Construct Archaeology (PCA) has been commissioned by RPS Consulting Ltd to undertake a programme of archaeological evaluation at the site, provisionally called the 'Viking Camp' at Land North-East of Milton Keynes (NGR SP 8891 4227) (Figure 1).

1.1.2 The area including the site has been allocated for comprehensive development in the emerging Milton Keynes Local Plan.

1.1.3 This document comprises a Written Scheme of Investigation (WSI) for a programme of archaeological trial trench evaluation covering the area provisionally called the 'Viking Camp' (Figure 2). Any changes to the specification that may need to be made after approval of this document will be communicated to the Milton Keynes Senior Archaeological Officer (MKSAO) for approval.

1.2 Site Location and Description

1.2.1 The wider development area is located over multiple fields between Milton Keynes, to the west and the village of Moulsoe, to the east. The principal thoroughfares in the vicinity of the site are the A509 and the M1. The area currently comprises various arable fields, as well as some areas of grassland, adjacent to the River Ouzel which flows along the western boundary of the site area (Figure 1).

1.2.2 The 'Viking Camp' is an area of geophysical anomalies, forming a double ditched enclosure, located on the northern bank of the River Ouzel close to the A509 London Road and north of the Milton Keynes Holiday Inn.

2 ARCHAEOLOGICAL BACKGROUND

2.1.1 The following archaeological background is taken from the Archaeological Desk Based Assessment (Archer 2018) for the site. Numbers in brackets refer to Milton Keynes Historic Environment Record (HER) asset numbers.

2.1.2 In general, the HER records within the study area comprise evidence for a diverse archaeological landscape, comprising artefactual evidence for the prehistoric periods, and occupation activity from the later prehistoric periods through to the present day.

2.1.3 Previous archaeological work undertaken within the study site comprises programmes of Fieldwalking and Metal Detecting, geophysical survey (see below), evaluation trial trenching and some areas of excavation as part of schemes to widen the M1 motorway in the 1990s. These works have identified Neolithic/Bronze Age artefactual evidence, and possible Iron Age/Roman occupation and Medieval ridge and furrow activity in the far western area of the study site.

2.1.4 The map regression exercise has demonstrated that the study site has generally comprised open agricultural or pastoral land from the Post Medieval period until the present day, with only minor instances of agricultural development and brickearth extraction activity.

2.2 Recent Geophysical Survey

2.2.1 Sumo Geophysics Ltd were commissioned by RPS group to undertake a geophysical survey of an area outline for comprehensive development (RPS 2020). The geophysical survey has produced some remarkably clear results.

2.2.2 The geophysical survey identified several archaeological sites, some of which were previously unknown including two prehistoric occupation sites, an extensive Romano-British/Medieval settlement and a possible Viking encampment (RPS 2020).

2.2.3 The proposed fieldwalking and metal detecting cover Areas 7, 8, 11, 13, 14B, 15, 16, 22 and 25 (see Fig 2 & RPS 2020 Fig 24). The results from these areas

are summarised below.

2.2.4 **Area 7**. Overlooking the river Ouzel this area displays clear anomalies interpreted as a series of ditches associated with banks which form a multivallate, fortified enclosure, with the river providing the southern defences. The enclosure has maximum dimensions of 210m by 120m and there appears to be a single entrance in the south. Rectilinear anomalies inside the enclosure appear to indicate building foundation trenches. The results correspond with the location of a curvilinear cropmark enclosure recorded in the HER (MMK3823). It has been interpreted as a possible Viking encampment (RPS 2020).

2.2.5 **Area 8**. A complex of archaeological features comprising ring ditches, enclosures and a probable trackway are visible. The ring ditches are presumed to be gullies associated with roundhouses. The complex extends over 400m east to west and appears to represent prehistoric settlement. The area 8 settlement activity extends into areas 9 and 11.

2.2.6 **Area 11**. A small rectangular area of slightly increase magnetic response visible on aerial imagery might could be associated with the brickworks further south. A possible windmill in existence in the 19th century may be represented by Anomaly 17. In the central and eastern half of Area 11 there are several poorly defined rings, arcs and short linear responses. These features are thought to be prehistoric, representing roundhouses or possible round barrows. Several pit-like responses would tend to favour settlement rather than burial activity.

2.2.7 **Area 14B.** In the north of Area 14B there are ring-shaped anomalies, arcs and trends which form a small focus of features similar to those in Area 8 and 11. In the south east extremity of Area 14B and extending in Area 14D is a curving band of negative magnetic responses which may be indicative of a former bank, now ploughed out.

2.2.8 **Area 15, 16, 16A & Area 7 South**. In this area a plethora of archaeological type anomalies extends over an area exceeding 12 hectares. The results have

some similarity to those from Wharram Percy, North Yorkshire. At Wharram the results identified phases of activity presumed to date from the Iron Age and Romano-British periods, continuing through Saxon times into the medieval period. Anomalies from Area 15, 16 and 17 (south) appear to represent enclosure and trackways. Some of these on a rectilinear pattern are likely to be Romano-British. The more curvilinear features are likely to be medieval. Amongst the anomalies, probable ovens and kilns or metalworking zones appear to be evident.

2.2.9 **Area 22**. A rectilinear enclosure was revealed to the east of which some 50m by 40m in size.

2.2.10 **Area 25**. The geophysics provides a very clear picture of a series of rectilinear enclosures, trackways, ring ditches, pits and ditches. These features are assumed to represent a multi-phase prehistoric settlement which extends over some 5 hectares. Some of the responses could indicate the presence of fire/burnt features – perhaps ovens or small kilns.

2.3 Palaeolithic

2.3.1 Evidence for Palaeolithic human activity within the study area comprises a finished axe head and a single flint flake found at Newport Pagnell to the north west of the study site (HER Refs: MMK3636-7, SP 88800 43200 & NMR Ref: 344978). A complete ox horn and a fragment of a further horn were found at the base of a gravel pit within the area of the Cotton Valley Sewage Works at the south west extent of the study area (HER Ref: MMK1598, SP 88400 40900).

2.3.2 The presence of Palaeolithic material can be notoriously difficult to predict and is typically dependent upon the presence of an appropriate underlying geology sequence (such as terrace gravels or brickearth), as well as suitable topography and access to nearby resources and water. Whilst the alluvial deposits likely present within the western area of the study site are considered too late in date to contain Palaeolithic material, the potential presence of residual flintwork artefacts cannot be discounted at depth within any underlying river terrace gravel deposits which may be present. Therefore, a

generally low to moderate archaeological potential is identified for the Palaeolithic period within proximity to the River Ouzel, and a generally low potential is identified for the remainder of the study site.

2.4 Mesolithic

2.4.1 A largely residual Mesolithic flint scatter was recorded during excavation at a site c.250m south of the study site boundary (HER Ref: EMK990, SP 89400 40500).

2.5 Later Prehistoric - Neolithic & Bronze Age

2.5.1 The Milton Keynes HER records only limited evidence for Neolithic occupation activity within the study area, in the form of an early Neolithic pit which included a plain bowl pottery assemblage, identified c.250m south of the study site during archaeological excavation (HER Ref: EKM990, SP 89400 40500).

2.5.2 Further evidence for Neolithic activity comprises Neolithic/Bronze Age flintwork which is recorded throughout much of the study area and has generally been identified during systematic fieldwalking programmes both within the study site and the immediate area. Generally, any finds are recorded along the southern area of the study site (HER Refs: MMK503, MMK3965, MMK3977-8, MMK3980-2). Further findspots of Neolithic and Bronze Age flintwork are concentrated to the north west and south west of the study site (HER Refs: MMK475, MMK982-9, MMK1235, MMK3851).

2.5.3 Cropmark evidence for possible Bronze Age ring ditches and barrow cemeteries are recorded within the western part of the study site (HER Refs: MMK502, MMK504, MMK929-30 & NMR Ref: 345028), as well as to the west of the site (HER Ref: MMK993/NMR Ref: 345034), to the south of the M1 (HER Refs: EMK898 & MMK1120/NMR Ref: 641446, & NMR Ref: 344979), and to the east of the site (NMR Ref: 16222028).

2.5.4 The HER records further Bronze Age occupation activity to the south of the study site, including cremation burials at Cotton Valley Sewage Works to the south of the M1 (HER Refs: MMK1120-2, SP 88600 40910), and at Broughton Barn Quarry to the south east of the study site (NMR Ref:

1330218/1393304/1354482, SP 9076 4056). A bronze socketed axe is recorded at a likely inaccurate location south west of the study site, as the event record notes the find at Bradwell, 5km to the west (HER Ref: EKM408, SP 88248 41321).

2.6 Iron Age & Roman

2.6.1 A middle Iron Age occupation site is recorded at Tickfordfield Farm to the north of the study site, which comprised an occupation layer containing pottery fragments, bone and charcoal (HER Ref: MMK3411, SP 89480 43450 & NMR Ref: 657222). In addition, possible traces of an Iron Age building were recorded to the south east of this, near to the study site's north east corner (HER Refs: MMK546-7, SP 90000 43100).

2.6.2 Geophysical survey along the route of the M1 widening scheme in the 1990s identified enclosure ditches and pits, possibly representing late Iron Age or Roman agricultural activity (HER Ref: MMK7915, SP 89085 41700). This record is given an inexact grid reference in the centre of the study site as the detailed location is unknown. The National Monuments Record also notes that archaeological evaluation work was undertaken along the route of the M1 motorway which identified evidence for Iron Age and Roman ditches, pits and possible occupation (NMR Ref: 1324853, SP 8815 4165 to SP 8030 4924). It seems that occupation may have been located around a site at West Caldecote to the west of the study site where a substantial number of Iron Age and Roman features have been identified (HER Ref: MMK934, SP 87448 42218). A further settlement site is recorded at Brooklands, c.400m south of the study site, which suggested a confined settlement surrounded by associated field systems (HER Ref: EMK989-90, SP 89800 40100).

2.6.3 The HER notes Iron Age/Roman features generally comprising enclosures, ditches and pits at Broughton c.500m south of the study site (HER Refs: MMK1593-6 & EMK967, SP 89310 40270 & NMR Ref: 1343554), at the Cotton Valley Sewage Works site to the south of the M1 (HER Refs: MMK1244-7, SP 88500 40800 & NMR Ref: 344979), within the area south of M1 junction 14 (HER Ref: EMK982, SP 89283 40458), and also at Broughton

Farm to the south east of the study site (NMR Ref: 1324848 & 1330218, SP 9076 4056). In addition, evidence for an Iron Age/Roman field system is recorded at London Road to the north of the study site (HER Refs: MMK7918, SP 88798 43046 & NMR Ref: 1454307). It is likely that these comprise evidence for activity associated with the settlements at Brooklands and at West Caldecote.

2.6.4 The nearest major Roman routeway to the study site as recorded by Margary (1955) is Watling Street, which passes through Milton Keynes c.6km south west of the study site. However, the smaller road known as 'Viatores 175' is projected to pass through the western end of the study site, possibly fording the River Ouzel adjacent to the study site's north west corner (NMR Ref: 868140 & HER Ref: MMK457, SP 88400 42600). A number of finds comprising pottery fragments and a quern stone have been made within the immediate area of this likely fording spot, which may indicate the presence of an occupation site near to the ford, or activity associated with the settlement at West Caldecote to the west (HER Refs: MMK545-6, SP 88400 42600 & NMR Ref: 344993). Typical archaeological features associated with Roman roads can include evidence for settlement and occupation, roadside ditches and associated land division, together with quarry pits, burials and chance losses.

2.6.5 Further evidence for the Iron Age and Roman periods within the study area comprises artefactual evidence which is not discussed in detailed here, as it is generally located within areas of occupation activity or adjacent to routeways which are noted above. Fieldwalking within the study site has identified a single sherd of Roman pottery, which is recorded in the centre of the study site (HER Ref: MMK3979, SP 89300 40950 & MMK3980, SP 89400 41250), whilst further pottery sherds and a metal artefact have been found to the east at Moulsoe (HER Refs: MMK552-4, SP 90670 41760 & MMK7174, SP 90315 41953).

2.7 Anglo-Saxon/Early Medieval & Medieval

2.7.1 A middle 5th century sunken featured building was identified during works at

Brooklands, to the south of the M1, which may be indicative of a Saxon settlement within that area (HER Ref: EMK990, SP 89400 40500). Two early Saxon pits were also recorded to the south of this at Broughton (HER Ref: EKM967, SP 89330 40250).

2.7.2 A programme of fieldwalking during the widening of the M1 identified a single sherd of Saxon pottery, at a findspot which is recorded at the southern boundary of the study site (HER Ref: MMK3979, SP 89300 40950). A further programme of fieldwalking to the north west of Caldecote in the north western extent of the study area identified c.70 sherds of Saxon pottery (HER Ref: MMK991, SP 88310 42740).

2.7.3 Gravel extraction in 1900 at the northern extent of the study area revealed a Saxon cemetery, and several associated grave goods (HER Refs: MMK474/476& MMK7720-2, SP 88770 43310 & NMR Ref: 344952)

2.7.4 Several late Saxon estates are recorded within the area of the study site by the Domesday Survey of 1086 (Domesday Online 2018). These include:

2.7.5 Tickford - located to the north of the study site, medium sized estate of 15 households, assessed for a large total tax of 5 geld units;

2.7.6 Moulsoe - located to the east of the study site, medium sized estate of 17 households, assessed for a very large total tax of 10 geld units. The HER notes the location of the manor house and the historic core of settlement at Moulsoe to the east of the study site (HER Refs: MMK159, SP 90748 41742; MMK548- 51, SP 90600 41600; MMK3629, SP 90656 41746; MMK5412, SP 90582 41637 & NMR Ref: 1576671);

2.7.7 Broughton - located to the south of the study site, medium sized estate of 17 households, assessed for a large total tax of 5 geld units. The HER notes the associated shrunken Medieval village of Broughton (HER Ref: MMK3482, SP 89675 40062 & NMR Ref: 344989).

2.7.8 Milton (Keynes) - located to the south of the study site, very large estate of 37 households, assessed for a very large total tax of 10 geld units;

2.7.9 Newport (Pagnell) - located to the north of the study site, medium sized estate of 14 households, assessed for a large total tax of 5 geld units;

2.7.10 Caldecote - located to the north west of the study site, listed by the HER as comprising a moated manorial site, with possible associated deserted village or manorial buildings, and a mill (HER Refs: MMK87, SP 88170 42290; MMK90, SP 88332 42322; MMK91, SP 88029 42288; MMK92, SP 88335 42340; MMK93, SP 88010 42380; MMK1078, SP 88430 42650; MMK3423, SP 88220 42075 & NMR Refs: 344953 & 1592528).

2.7.11 The nearest of these estates to the study site are Caldecote to the north west and Moulsoe to the east. The lands associated with the estate at Moulsoe comprise plough land, meadows and woodland (Domesday Online 2018). It is therefore likely that the study site was located within an area of mixed arable land, pasture, and woodland at the time of the Domesday Survey. The HER also notes a mill that was recorded within Moulsoe Hundred by the Domesday Survey, although it is acknowledged that the mill may not be located within Moulsoe Parish (HER Ref: MMK3763, SP 91000 41500).

2.7.12 In addition to the above Saxon estates, the HER also records the estate and village at Willen to the south west of the study site, which was first documented in AD1189 (HER Ref: MMK5481, SP 87903 41209).

2.7.13 Evidence for Medieval ridge and furrow agricultural activity is noted by the HER in the far western extent of the study area (HER Ref: MMK7915, SP 89085 41700 & NMR Ref: 915523), which is also evident on the LiDAR plot.

2.7.14 It is likely that the study area remained characterised by scattered estate centres and farmsteads, interspersed with agricultural and pastoral land, during the Saxon and Medieval periods. Known centres of settlement and occupation are located outside the study site boundary, whilst evidence for ridge and furrow activity survives within the western area of the site.

2.8 Post Medieval & Modern (including map regression exercise)

2.8.1 Several HER records within the study area refer to Post Medieval and Modern

archaeological remains which are not discussed in detail here unless relevant to the study site.

2.8.2 During the Post Medieval and Modern periods, our understanding of settlement, land-use and the utilisation of the landscape is enhanced by cartographic and documentary sources, which can give additional detail to data contained within the HER.

2.8.3 Jeffrey's 1768 Map of Buckinghamshire characterises the study site within areas of probably open land, between the various settlements and hamlets at Newport Pagnel to the north west, Mulsoe to the east, Broughton to the south, Willen to the south west and Caldecote to the west. The north-south London Road bisects the study site, whilst the River Ouzel bisects the area of the study site to the west of the London Road. The London Road is recorded as the Woburn to Newport Pagnell turnpike road, which was set up in 1728 (HER Ref: MMK5881, SP 90754 39016). A few trackways are shown branching off from the London Road towards Moulsoe and Tickford Park to the east.

2.8.4 Early 19th century enclosure maps for Moulsoe and Tickford, as well as a Willen parish map show the study site divided into agricultural and pastoral plots of land. The Tickford map notes a 'Mill Field' in the northern area of the study site, which may indicate a possible windmill within this area (HER Ref: MMK3385, SP 89100 42600). The agricultural nature of the site is further shown on an 1814-15 Ordnance Survey Drawing, which also shows a small cluster of buildings adjacent to the London Road in the centre of the study site, and a further building labelled as Moulsoe Barn adjacent to the London Road at the southern study site boundary.

2.8.5 By 1886, the study site generally remains characterised as areas of open agricultural and pastoral fields. The cluster of buildings in the centre of the study site was labelled as Moulsoe Buildings, whilst the former Moulshoe Barn at the southern site boundary was labelled as Cottage Farm. A further farm labelled as Caldecotehill Farm is shown adjacent and to the north of the study site boundary, adjacent to the London Road. Brickworks (HER Ref: MMK3400, SP 89000 42450) with associated brick kilns and extraction pit are shown

adjacent to the London Road, with an area of allotments immediately south of this (see geometric patterned fields). A further area of allotment is shown at the eastern study site boundary, and an area of scrubland labelled Drake's Gorse is shown to the north of this.

2.8.6 Only minor changes are shown with the study site on 20th century mapping and aerial photography through to the present day, as the aforementioned areas of development were expanded minimally, and much of the study site was opened up through the removal of field boundaries to create larger agricultural and pastoral fields. The first stretch of the M1 motorway between Watford and Rugby was opened in 1959 and is first shown adjacent to the southern boundary of the study site in the 1960s. Minor additional development is shown adjacent to the Newport Road and the London Road by 2002. The urban expansion of Milton Keynes is first shown to the south west in 2002, which also depicts the A509 which forms the northern study site boundary. The area of the former Moulsoe Buildings is now shown as a hotel.

2.8.7 Historic mapping has demonstrated that the study site has generally comprised open agricultural or pastoral land from the Post Medieval period into the Modern period, with only minor instances of Modern agricultural development and brickearth extraction activity.

3 GEOLOGY AND TOPOGRAPHY

3.1 Geology

3.1.1 The British Geological Survey (BGS Online 2020) indicates that the solid geology of the site generally comprises Mudstone formations, with a mix of Sandstone, Siltstone and Mudstone on the far west of the study site.

3.1.2 Alluvial deposits are located within the immediate vicinity of the River Ouzel in the western half of the site, whilst gravel terraces and head deposits associated with the river valley are recorded either side of the river. Previous site investigation boreholes recorded by the British Geological Survey are concentrated across the western half of the study site, and generally confirm the underlying geology of the alluvial floodplain.

3.1.3 Further deposits of Oadby Member (Diamicton) and small pockets of glaciofluvial deposits are recorded across much of the eastern half of the study site.

3.2 Topography

3.2.1 The River Ouzel meanders north-south through the site, creating a river valley within the western half of the site.

3.2.2 The river and its floodplain lie at approximately 57m Above Ordnance Datum (AOD). Land to the west of the floodplain rises gently to c.65m AOD at the far western corner, whilst the topography of the eastern half of the site generally comprises land sloping down towards the river valley, and away from an area of high ground at Moulsoe immediately to the east, and a further area of high ground at the north east corner of the study site. These areas of high ground are generally situated at a height of c.80-90m AOD.

4 AIMS AND OBJECTIVES

4.1 Site Specific Aims

4.1.1 The evaluation will gather information on the further nature, date and survival of the double-ditched enclosure and associated features identified by the geophysical survey.

4.1.2 Trenches 1, 2 and 3 across the enclosure ditches will aim to identify their morphology, nature, date and survival.

4.1.3 Trench 4 located in the internal part of the enclosure aims to identify the nature, date and survival of those features and whether they are associated with an entrance, access and/or defensive arrangements.

4.1.4 The area between Trench 3 and the river will be subject to a survey by Ground Penetrating Radar prior to any potential trenching. This is not part of this WSI.

4.2 Broad Aims

4.2.1 The broad aims of the evaluation are to identify, excavate and record the location, extent, date, character and state of preservation of any archaeological remains on the site which are likely to be threatened by the proposed development, and to identify their significance in a local, regional and national context, as appropriate, with reference to the regional research frameworks which are:

-Solent-Thames Research Framework for the Historic Environment (Hey and Hind 2014);

4.2.2 The evaluation will aim to provide sufficient information to enable the formulation of a suitable management/investigation strategy for the site's heritage assets.

4.2.3 The evaluation will provide a predictive model of any archaeological remains likely to be present on the site and will characterise and include an appraisal of the remains significance.

4.2.4 The evaluation's trial trenches will cover an adequate representative sample of the proposed development area in order to fully understand and characterise the archaeology on the site, and to inform any potential mitigation strategies.

5 METHODOLOGY

5.1 All aspects of the investigation shall be conducted in accordance with the Chartered Institute for Archaeologists' Code of Conduct, the Standard and Guidance for Archaeological Excavation (CIfA 2014), and Standards for Field Archaeology in the East of England (EAA Occasional Paper 14, 2003).

5.2 Machining and Site Planning

5.2.1 The scheme will comprise of a single phase of work, comprising three 50m long and 4m wide trenches across the double ditched enclosure and one 50m x 4m trench in the interior of the enclosure (Figure 2).

5.2.2 The trenches have been positioned to investigate the nature of the ditched enclosure and its interior features. They have also been positioned to avoid the farmer's tramlines and crop experiment area.

5.3 Excavation

5.3.1 Within each trench the topsoil, subsoil or man-made made ground deposits will be machine stripped by a mechanical excavator with toothless ditching bucket down to the archaeological horizon or geological horizon, whichever comes first. Upon encountering any archaeological features the procedure followed is detailed below.

5.3.2 Exposed archaeological features and deposits will be cleaned as necessary to define them using hand tools.

5.3.3 Metal-detecting will be carried out of any stripped deposits and all archaeological features and spoil heaps will be surveyed by metal-detector as they are encountered.

5.3.4 Limits of excavation of all trenches, pre-excavation and post-excavation plans of archaeological features and heights above Ordnance Datum (m OD) will be recorded using a Geomax or Leica 1200 Global positioning System (GPS) rover unit with RTK differential correction, giving three-dimensional accuracy of 20mm or better.

5.4 Recording and Sampling

5.4.1 Field excavation techniques and recording methods are detailed in the PCA Fieldwork Induction Manual (Operations Manual I) by Joanna Taylor and Gary Brown (2009).

5.4.2 All features will be investigated and recorded in order to properly understand the date and nature of the archaeological remains on the site and to recover sufficient finds assemblages to assess the chronological development and socio-economic character of the site over time.

5.4.3 Drawn records will be in the form of survey plans, drawn plans and section drawings of all archaeological features at an appropriate scale (1:10, 1:20, 1:50) while all individual deposits and cuts will be recorded as written records on PCA pro-forma context sheets.

5.4.4 Linear features will be investigated by means of slots excavated across their width and measuring at least 1m in length, positioned to avoid areas of intercutting/ disturbance in order to provide uncontaminated finds assemblages. If stratigraphic relationships between features are not visible in plan, slots will also be positioned to determine inter-feature relationships.

5.4.5 Discrete features such as pits and postholes will be at least 50% excavated and when considered appropriate 100% excavated.

5.4.6 Significant features such as structural remains (e.g. eaves drip gullies, sunken feature buildings and beam slots), industrial features (kilns, ovens, domestic hearths, metalworking furnaces) and burials (cremation and inhumation) will be left in situ for further work.

5.4.7 High-resolution digital photographs of all archaeological features and deposits will be taken at all stages of the evaluation. Horizontal and vertical scales will be used as appropriate. Cameras with a resolution of no less than 10 megapixels will be used and images will be taken in an archivable .raw or .tiff format.

5.4.8 Artefacts and ecofacts will be collected by hand and retained, receiving

appropriate care prior to removal from site (CIfA 2014; Walker 1990; Watkinson 1981).

5.4.9 A metal detector will be used during the evaluation in order to enhance finds recovery and will not be set to discriminate against iron.

5.4.10 Bulk samples, 40 litres in volume, will be taken by the excavator and in consultation with the project's environmental specialist where practicable, in order to recover micro- and macro-botanical environmental remains. The broad aim of such sampling is to recover evidence relating to the past environment and agricultural economy of the site, and how these changed over time under both natural and anthropogenic influence.

5.4.11 Buried soils and associated deposits will be inspected on site by the PCA project manager in consultation with the PCA geoarchaeologist whose advice will be sought as to whether soil micromorphology or other analytical techniques will enhance understanding of depositional processes and transformations at the site.

5.4.12 Results of paleoenvironmental investigations, industrial residue analyses and scientific analyses will be included in the full evaluation report and sent to the Historic England Science Advisor.

5.4.13 Environmental sampling will make reference to the following guideline documents:

- English Heritage, 2011, Environmental Archaeology: A Guide to the Theory and Practice of Methods from Sampling and Recovery to Post-excavation (second edition).

- Association for Environmental Archaeology, 1995, Environmental archaeology and archaeological evaluations. Recommendations concerning the environmental archaeology component of archaeological evaluations in England. Working Papers of the Association for Environmental Archaeology 2, 8 ff. York: Association for Environmental Archaeology;

- Dobney, K., Hall, A., Kenward, H. and Milles, A., 1992, A working

classification of sample types for environmental archaeology. Circaea 9.1 (1992 for 1991), pg. 24-26;

- Murphy, P.L. and Wiltshire, P.E.J., 1994, A guide to sampling archaeological deposits for environmental analysis.

5.5 Monitoring

5.5.1 PCA / the client will notify MKSAO of the proposed start date at least 1 week in advance, allowing sufficient notice to arrange a monitoring meeting.

5.5.2 MKSAO and the client will be kept regularly informed about developments and any significant discoveries during both the site works and subsequent post-excavation phase.

5.5.3 Further trenching or deposit testing may be a requirement of the site monitoring visit if unclear archaeological remains or geomorphological features present difficulties of interpretation, or to assist with the formulation of a mitigation strategy.

5.5.4 Trial trenches will not be backfilled without the approval of MKSAO.

5.6 Treasure

5.6.1 All finds defined as Treasure will be removed to a safe place and reported to the local coroner according to the procedures outlined in the Treasure Act 1996 (as amended by the Treasure Designation Order 2002 No. 2666). Where removal cannot be effected on the same working day as the discovery, suitable security measures will be taken to protect the finds from theft. Any finds that could be considered treasure under the terms of the Act made during the process of fieldwork will be immediately reported to the Finds Liaison Officer, so that it is properly reported to the appropriate Coroner within 14 days of discovery in line with the Treasure Act.

5.7 Human Remains

5.7.1 If human remains are encountered, MKSAO and the client will be informed. Wherever possible, human remains will be left in situ during the evaluation state. Excavation may be required where the remains are under imminent

threat or dating/preservation information is required for costing purposes. This will only be undertaken in agreement with the MKSAO.

5.7.2 No further excavation will take place until removal becomes necessary and will only be carried out in accordance with all appropriate Environmental Health regulations and only after a Ministry of Justice license has been obtained.

5.7.3 Due to the wide range of variables, costs of excavation, removal and analysis of human remains are not included in any statement of costs accompanying or associated with this specification.

6 ACCESS AND SAFETY

6.1.1 Access to the site will be arranged by the client. The client will secure safe access to the site for archaeological personnel and provide suitable welfare provision. The client will also ensure that all deep excavations are adequately shored, conforming to current health and safety regulations and that the archaeological investigations are enabled through the provision and operation of adequate water extraction/pumping equipment.

6.1.2 Any costs incurred to secure access, or incurred as a result of withholding of access will not be PCA's responsibility. The costs of any delays as a result of withheld access will be passed on to the client in addition to the project costs already specified.

6.1.3 All relevant health and safety legislation, regulations and codes of practice will be respected. The Health and Safety policies will be those of Pre- Construct Archaeology Ltd. and in accordance with all statutory regulations. A Health & Safety Risk Assessment for the site will be produced and made available to all staff.

6.1.4 There is a duty of care for the client to provide all information reasonably obtainable on contamination and the location of live services before site works commence.

7 TIMETABLE AND STAFFING

7.1 Timetable

7.1.1 The duration of the evaluation will comprise c. 10 days. Working days are based on a 5-day working week, Monday to Friday.

7.2 Staffing and Support

7.2.1 The project will be managed and led by Mark Hinman, Project Manager of PCA Central who will ensure all staff are familiarised with the site, the archaeological background of the area and the ground conditions to maximise the effectiveness of the evaluation.

7.2.2 Key team members will include Mark Hinman Project Manager of PCA Central and a PCA Evaluation Supervisor. Additional Site Assistants will be drawn from a pool of qualified and experienced staff if required.

7.2.3 The following staff will form the project team:

1x Project Manager
1x Supervisor
2x Site Assistant (if required)
1x Survey Supervisor
1x Finds Supervisor
1x Finds Assistant
1x Illustrator for post-excavation work.

7.2.4 Specialists will be employed for consultation and analysis as necessary (see Appendix 1). Post-Roman ceramics will be examined by Berni Seddon. Small Finds will be examined by Marit Gaimster or Ruth Beveridge. Faunal remains will be examined by Kevin Reilly. Conservation will be undertaken by Colchester Museums. Other specialists will be approached to carry out analysis as required from the list at Appendix 1.

8 REPORTING

8.1 Post-excavation tasks and report writing will take approximately 4 weeks following the end of fieldwork. Specialists will be employed for consultation and analysis as necessary.

8.2 An illustrated report will be prepared to present the results of the fieldwork and the assessment of the artefacts and palaeo-environmental samples. The report will include: a non-technical summary; an archaeological and historical background to the site, supported by relevant historical maps; a description of the methodology employed; plans and sections showing the location and extent of any archaeology encountered; a site narrative, with a discussion of the archaeological results; specialist reports; photographs supporting the text.

8.3 A copy of the report, clearly marked DRAFT, will be sent to MKSAO and the client for comment and following approval a final digital copy of the report will be uploaded to OASIS (Online AccesS to the Index of archaeological investigationS[1]), from which it will be submitted to MKSAO. The OASIS summary form will be included in the evaluation report.

8.4 The archaeological advisory and planning role of MKSAO will be acknowledged in any report and publication generated by the project.

[1] https://oasis.ac.uk/pages/wiki/Main [Accessed 07/05/2020]

9 OWNERSHIP OF FINDS, STORAGE AND CURATION OF ARCHIVE

9.1 An Accession No. to be used for the archive has been requested from Buckinghamshire County Museum and an Event Number will be requested from the MKSAO. The accession number, or both numbers as required, will be used as a unique identifier linking all physical and digital components of the archive. The accession number and event number will be clearly indicated on this specification once received for this project. It will be shown on all paperwork created on site (context forms and plans etc), on relevant ensuing reports and on the OASIS data collection form. The Event Number will also be used as the unique Site Code for the site.

9.2 Prior to the start of the investigations, PCA will seek the transfer title of ownership of the complete project archive to the relevant depository or store by issuing a "Deeds of Transfer Agreement" form.

9.3 During post excavation analysis all artefactual material recovered will be held in storage by PCA central. Arrangements for the long-term storage and deposition of all artefacts must be agreed with the landowner and the local authority before or during the reporting stage. Transfer of title and the transfer of the ownership of the archive to the County Archive Facility or another local registered depository will be arranged at this time, and the arrangements indicated in the evaluation report. The Project Manager will consult any relevant guidelines for the deposition of archaeological archives.

9.4 PCA will recommend that ownership of all such archaeological finds will be given over to the relevant authority to facilitate future study and ensure proper preservation of all artefacts. In the unlikely event that artefacts of significant monetary value are discovered, and if they are not subject to treasure act legislation separate ownership arrangements may be negotiated.

9.5 The project archive shall be compiled in accordance with the guidelines contained in Guidelines for the Preparation of Excavation Archives for Long term Storage (UKIC, 1990), Standards in the Museum Care of Archaeological Collections (Society for Museum Archaeology 2020) and the Buckinghamshire

County Museum Procedures for deposit of archaeological archives (2003).

9.6 Should the evaluation go forward to the mitigation stage, the site digital archive will be deposited with the Archaeological Data Service or another publicly accessible CoreTrustSeal certified repository on completion of the archaeological programme.

9.7 PCA will provide appropriate details relating to the Online Access to Index of Archaeological Investigations (OASIS) project by completing the OASIS form at http://ads.ahds.ac.uk/project/oasis, in accordance with the guidelines provided by English Heritage and the Archaeology Data Service.

9.8 A copy of the report will accompany the archive when it is deposited with Buckinghamshire County Museum.

10 FURTHER CONSIDERATIONS

10.1 Insurance

10.1.1 Pre-Construct Archaeology Ltd is covered by the following insurances:

● Public & Products Liability £5,000,000 with £5,000,000 Excess Layer (Aviva Insurance Ltd & Zurich Insurance Ltd), Policy nos: 000133 & PC00788;

● Employers Liability £10,000,000 (Aviva Insurance Ltd) Policy no: 000133;

● Professional Indemnity £5,000,000 (Hiscox Underwriting Ltd). Policy no: PL-PSC10002112906/00;

● Hired in Plant and Equipment £500,000 (Aviva Insurance Ltd) Policy no: 000133.

● Unmanned Aircraft Systems £5,000,000 (Tokio Marine Kiln Ltd) Policy no: B0831TMKDRO2020/8688.

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12 FIGURES

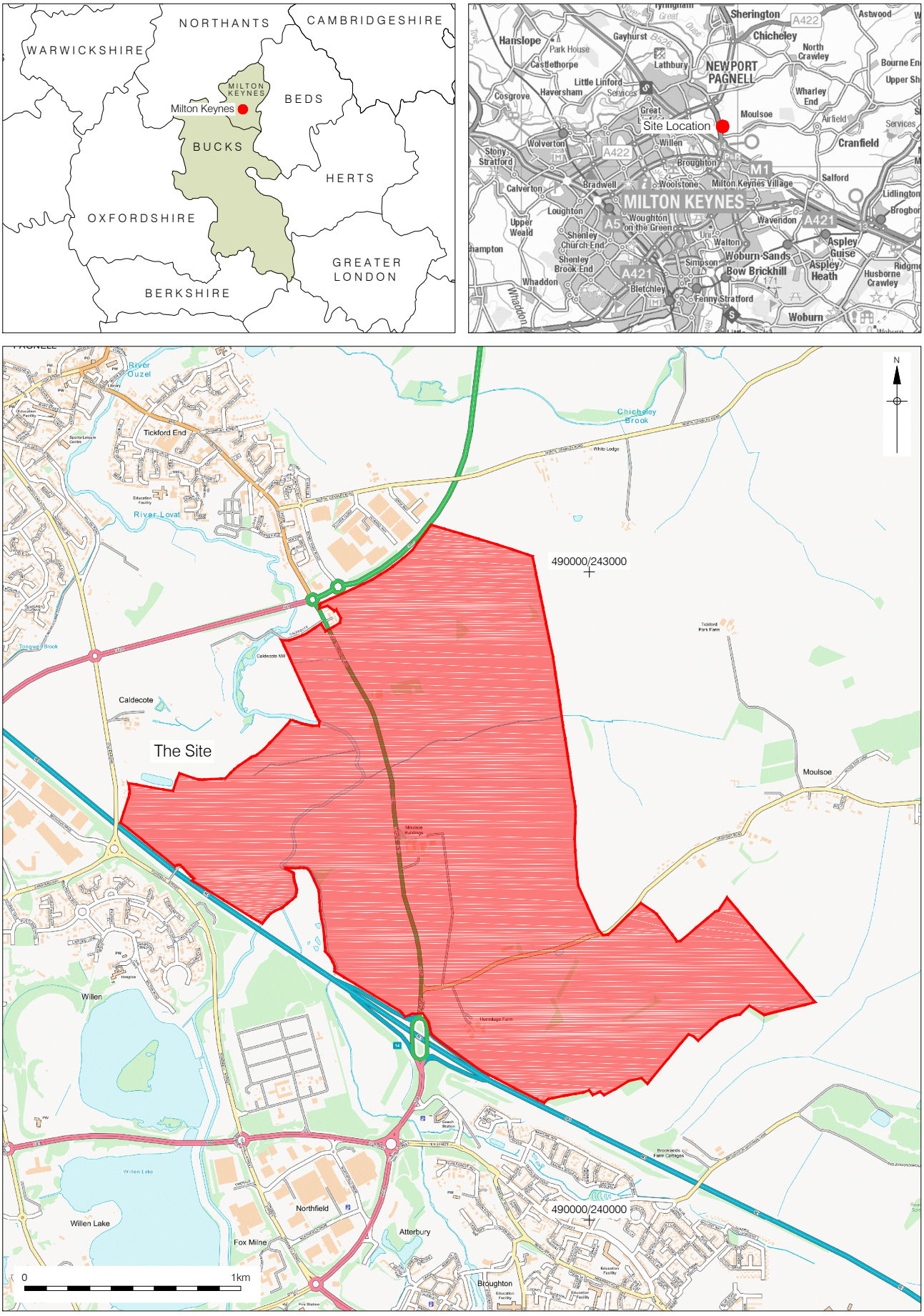

Figure 1
Site Location
1:2,000,000, 1:250,000, 1:25,000 at A4

Figure 2
Trenches on Tramlines and Crop Experiment
1:1600 at A3

APPENDIX 1: FINDS, ENVIRONMENTAL AND OTHER SPECIALIST SERVICES

Prehistoric Pottery: Matt Brudenell, Sarah Percival, Lawrence Morgan-Shelbourne (PCA)

Roman Pottery: Katie Anderson (PCA), Eniko Hudak (PCA), Kayt Hawkins, Jo Mills (samian), Gwladys Monteil (samian), Joanna Bird (decorated samian), David Williams (amphora)

Post-Roman Pottery: Chris Jarrett (PCA), Berni Seddon (PCA), Sue Anderson

Clay Tobacco Pipe: Chris Jarrett (PCA)

CBM: Berni Seddon (PCA), Kevin Hayward (PCA), Amparo Valcarcel (PCA)

Stone & Petrological Analysis: Kevin Hayward (PCA), Mark Samuel (moulded stone)

Glass: Chris Jarrett (PCA), John Shepherd (PCA), Ruth Beveridge, Hilary Cool, Rachel Tyson

Coins: James Gerrard (in house), Ruth Beveridge

Inscriptions & Graffiti: James Gerrard (PCA), Ruth Beveridge

Animal Bone: Kevin Rielly (PCA), Karen Deighton (PCA), Ryan Desrosiers (PCA) Philip Armitage, Robin Bendrey,

Lithics (inc Palaeolithic): Barry Bishop (PCA)

Osteology: James Langthorne (PCA), Petra Ivanova (PCA)

Timber: Damian Goodburn, Nigel Nayling (Wales), Mike Bamforth

Leather: Quita Mould

Small Finds: Marit Gaimster (PCA), James Gerrard (PCA), Hilary Major, Ian Riddler (esp worked bone), Ruth Beveridge

Metal slag: Gary Taylor (PCA), Lynne Keys

Textiles: Sue Harrington, Penelope Walton Rogers

Conservation: Drakon Heritage, Karen Barker, Stefanie White (Colchester Museums), Emma Hogarth (Colchester Museums)

Dendrochronology: Ian Tyers

Archaeomagnetic dating: Mark Noel

Environmental: Tegan Abel (PCA), Kath Hunter, Val Fryer, Sheila Boardman QUEST, University of Reading

Documentary Research: Guy Thompson (PCA), Chris Phillpotts, Frederick

Hamond (NI), Gillian Draper, Jeremy Haslam, Roger Leech

Industrial Archaeology: Gary Taylor (PCA), David Cranstone

Finds Illustration: Cate Davies (PCA), Rita Goncalves-Pedro (PCA), Mark Roughley (PCA)

APPENDIX 2: DATA MANAGEMENT PLAN

Section A: Project Information			
HER# (Site Code):	TBC	Other Site Codes	TBC
Site Full Location	SP 8891 4227		
OASIS ID:	preconst1-	K-Code:	K
Museum Acc. #	TBC	NGR #	
Planning Ref #:	N/A	Planning Authority	Milton Keynes Council
DMP Written	January 2021	DMP Last Updated	January 2021
Project Manager/ Primary Contact:	Mark Hinman	Project Type:	Trial Trench Evaluation
Client:	RPS Consulting	Site Supervisor:	TBC
Data Sharing Agreement in Place?			
Data Management Responsibility	Pre-Construct Archaeology Limited	Who will take possession of the generated data at the end of the project	ADS/ Designated Archive Repository/Museum

Section B: Estimated Volume of Data				
File types generated as part of the project archive by PCA:				
Data Type	Format		Estimated Volume	Details/Comment
Spreadsheets	Excel (.xlsx), .csv		5	
Database	Access (.accdb)		1	
Text/Documents	.pdf, Word (.docx)		2	
Images	.jpeg, .png, .DNG		100	
Graphics	.dwg,		1	
GIS	.shp		-	
Will existing or external data be utilised?				YES
If yes, list type of data and source: HER data				
Data Type	Format	Estimated Volume	Source	Details/Comment
Images	.jpeg, .png, .DNG .shp	5	MK HER	Under licence
Graphics	.dwg,			
Text/Documents	.pdf, Word (.docx)	5	MK HER	Under licence

Section C.: Data Acquisition, Processing, and Analysis
What methods and data standards will be undertaken?
Field data will be collected through digital and analogue means as set out within the project design. All data that will be collected will aim to work to best practice guidelines as outlined by CIFA and the ADS whenever possible and will be updated as the project progresses, or as guidance is modified.
What file naming/structure is in place and how will version control be maintained?

Display example below.
Example file name: PCA_ECB6240_BRADLEY ROAD_EVAL_MH_rev1 Key: PCA (Organisational identifier) ECB6240 (site code) BRADLEY ROAD (Site name) EVAL (report type) MH (author identifier) rev1 (version control identifier) The project archive will be stored in a project specific folder, with sub folders being utilised to further sub-classify data as appropriate (e.g. databases, photos, reports, etc.).
What Quality Assurances of the data are in place?
All digital instruments used to capture data on site and during post-ex (e.g. cameras, GPS/RTK units, etc.) will be appropriately calibrated and checked to be in full working order prior to fieldwork and subsequent analysis to ensure accurate data capture. Site records and data will be reviewed during project delivery to guarantee all digital data is both secure and correct.

Section D: Documentation and Metadata:
How can the data be read?
Data collected during the course of the project will include standard formats as listed within section B.
What documentation and metadata will be provided when the data is archived?
A catalogue of the digital archive, material archive, paper archive, and the supporting metadata will be provided to the digital repository

Section E: Ethics and Legal Compliance:
How can the identity of individuals be protected if required
Personal data will be removed from the digital archive prior to deposition, and permission to include personal data will be gained during the project if required.
Is the data GDPR 2018 compliant?
All digital archive data is compliant with GDPR as outlined within PCA's GDPR policy.

Who owns the data generated during the course of this project?
Copyright for all data generated or collected by the project team belongs to PCA. However, if external data is utilised, formal permission or licences will be obtained prior to use, and correct citation given during reporting and when archived. Any licences agreed with external parties will be included within the project archive.

Section F: Storage and Backup:
Is sufficient storage in place?
All project data will be held on a server based at our regional office. The server has sufficient space to hold all data generated during the project.
What backups are in place?
Project data will be stored on a companywide intranet and on servers located at our regional office.
What data security is in place?
All project data is restricted by permission-based access and single factor authentication. The only exception to this is when external finds or data specialists are consulted, with only files pertinent to their role are shared directly.

Section G: Selection and Preservation:	
Which data will be selected for inclusion within the project archive?	
Selection of data that will be included within the project archive will be informed by the WSI, Project Brief, research aims, and specialist recommendations. All data selected for preservation will be logically named, identified, and structured, and will adhere to the formats listed in section B. Any deselected data will be deleted after deposition with the ADS or relevant archival repository.	
What is the long-term preservation plan for the project dataset?	
The digital archive will be deposited with the ADS.	
If this is a larger project, has the ADS been contacted regarding accession of the project dataset?	YES NO
Has the Museum or depository been	YES NO

contacted	

Section H: Data Dissemination:
How will the dataset or parts of it be shared?
The final project report will be uploaded to the HER via OASIS and subsequently released onto ADS's report library. Additionally, the report will be published either through a full publication, or as a note in the regional archaeological journal. After deposition of the digital archive, the ADS and relevant depository are able to share the data under licence.

Section I: Responsibilities:		
Who will manage the data?		
The project manager will be responsible for implementing the data management plan and its security.		
Roles and Responsibilities:		
Action	Responsible Person(s)	Details/Comment
Field Data	Field team	Including initial storage and backup
Data Analysis and Interpretation	Site Supervisor/Project Manager	
Data Archiving	Archives Officer	
Data Dissemination	Project Manager/Archives Officer	Archives officer will be responsible for uploading report onto OASIS.
GDPR Compliance	Project Manager/Archives Officer/ IT Specialist	
General Data backup	IT Specialist/Archives Officer	

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