Civil | Structural | Geo-Environmental | Transport Planning

Flood Risk Assessment and Drainage Strategy

Prepared for
Bloor Homes

Proposed Residential Development of
Lane off Willen Road, Newport Pagnell

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Document Control

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-	24 August 2021	DRAFT FOR COMMENT	James Cross	Rob Travis
A	28 September 2021	UPDATED TO SUIT CONSULTANT COMMENTS	James Cross	Rob Travis
B	19 October 2021	REVISED MASTERPLAN INSERTED	James Cross	Rob Travis

Contents

1.0 INTRODUCTION

1.1 Background

1.1.1 This Flood Risk Assessment and Drainage Strategy report has been prepared by Travis Baker Ltd on behalf of Bloor Homes

1.1.2 This Flood Risk Assessment has been prepared under the guidance of the National Planning Policy Framework (NPPF) and associated technical guidance. The majority of the site is located within flood zone 1. The easternmost part of the site is located within Flood Zones 2 and 3 and a small part of the north east corner is located within Flood Zone 2. The report will focus on these flood zone areas and other possible flood risks to or from the development as well as the sustainable disposal of surface water.

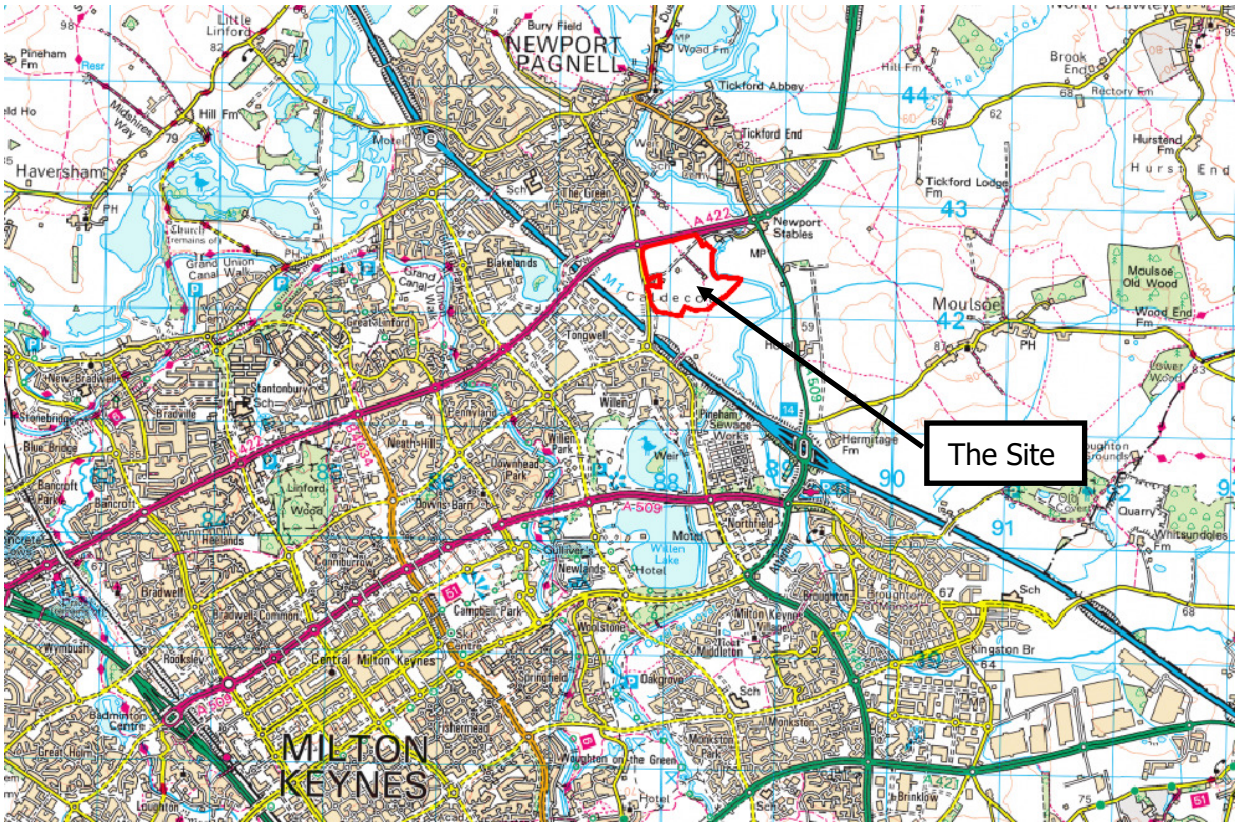
1.1.3 The potential effects of climate change on future rainfall intensity will also be taken into account.

1.2 Site Location and Surroundings

1.2.1 The site is located north of Milton Keynes. The centre of the site is at approximate grid reference 488122,242339, and the post code is MK16 0QE. The site covers an area of approximately 39 hectares. The site is predominantly greenfield land with a quarry site.

1.2.2 The surrounding areas are predominantly greenfield land with the M1 motorway to the south of the site and the A422 to the north of the site. Directly to the west of the site is Willen Road.

1.2.4 The site location is shown below:



1.3 Development Proposals

1.3.1 The proposals are for a residential development by Bloor Homes for a mixed-use development comprising of approximately 800 residential dwellings, a primary school and a mixed-use commercial site. There are 2 site accesses proposed, along with pedestrian access which will both be from Willen Road.

1.3.2 A copy of the site illustrative masterplan can be found in the appendices.

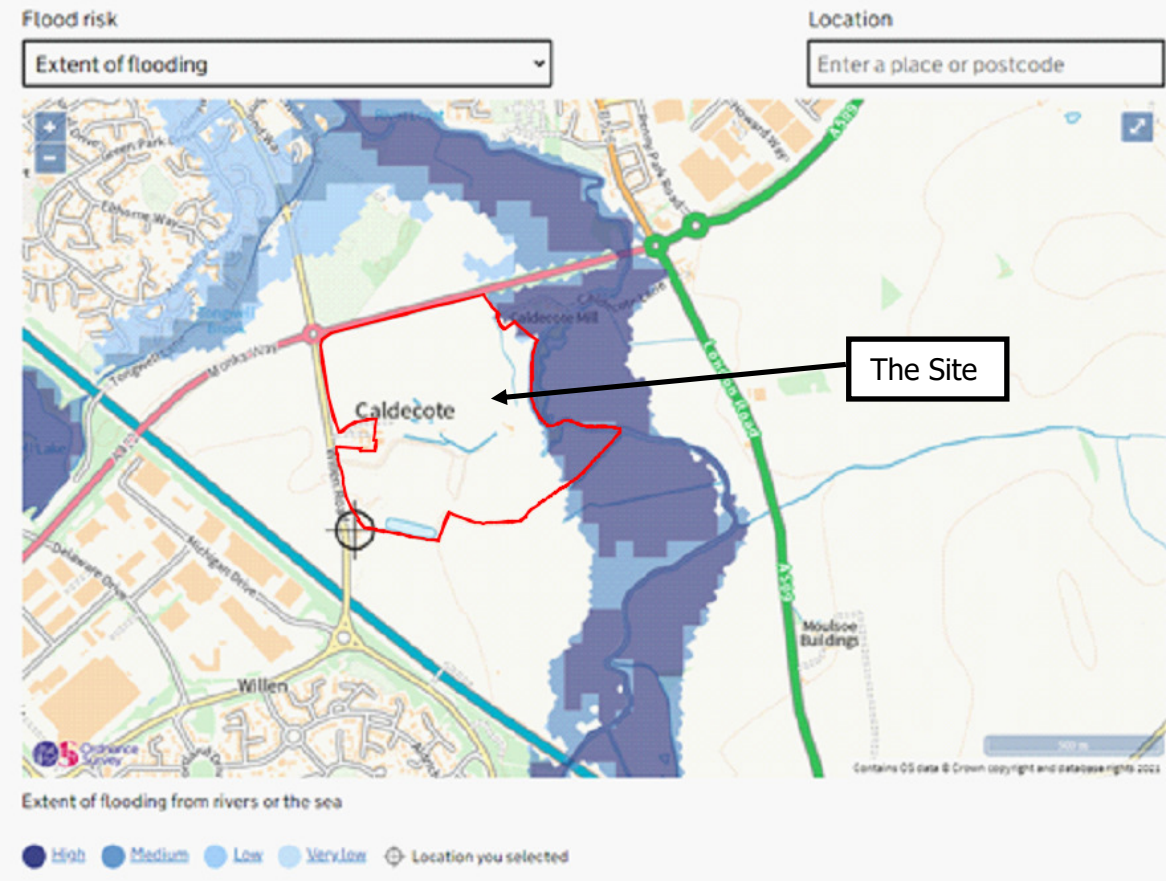
2.0 EXISTING SITE CONDITIONS

2.1 Existing Topography and Drainage

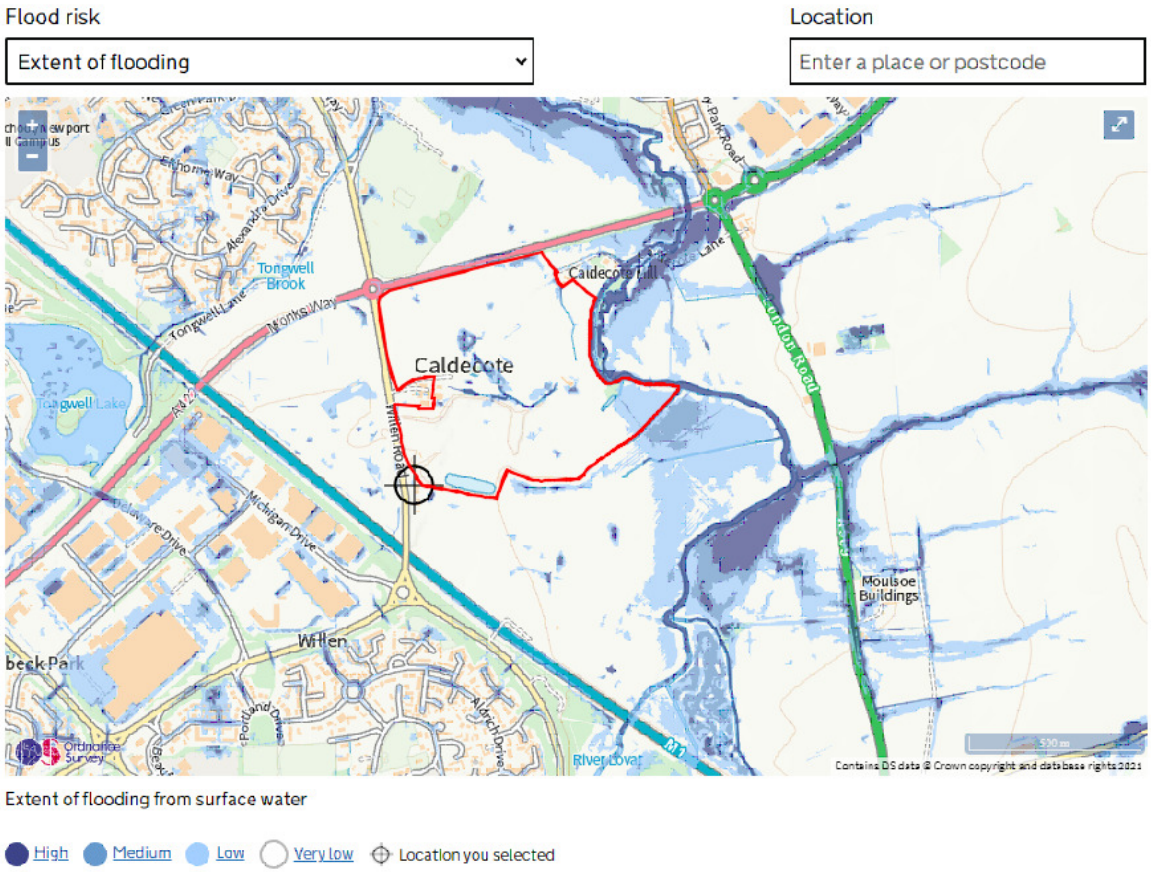
2.1.1 The site has a gradual fall from west to east with levels ranging from approximately 60.00m AOD down to 55.89m. A copy of the topographical survey can be found in the appendices.

2.2 Existing Flood Risk

2.2.1 The flood mapping available from the Government website (below) shows that there is no risk of fluvial flooding to the majority of the site however the north east corner has a medium risk of flooding and the easternmost part of the site has a high risk of fluvial flooding.



2.2.2 The risk of flooding from surface water mapping, available from the Government website (below), shows that there are some areas of the site which could theoretically be subject to low, medium and high-risk surface water flooding.

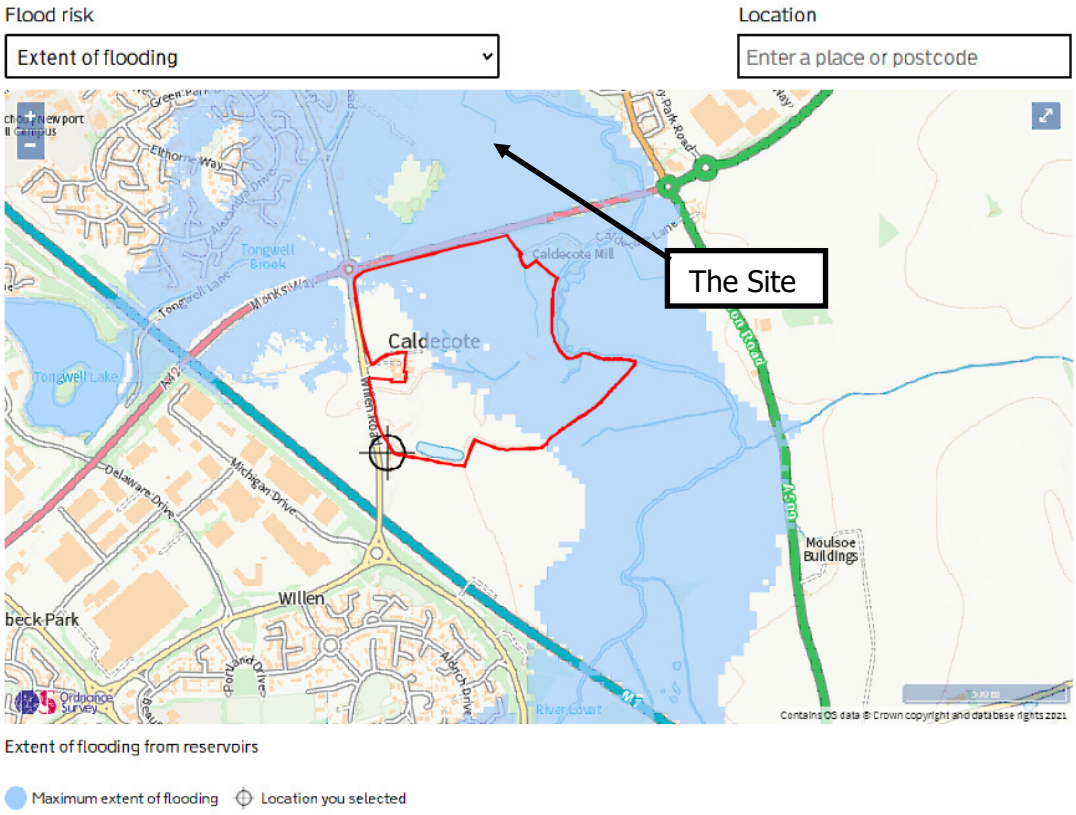


2.2.3 The mapping provided by the Government is based upon aerial LIDAR survey, and places surface water in areas where there are low points in the topography. It is accepted that the mapping is generally coarse in nature.

2.2.4 Once the site has been developed, these low-lying depressions are likely to be removed due to the existing site levels changing to suit the development proposals.

2.2.5 The reservoir flood map from the Government website (below), shows that there is quite a significant risk of reservoir flooding within the site. We believe this reservoir flooding relates to the Willen Lake and Tongwell Lake which are located approximately 1.65km south of the site. Willen Lake is a large balancing lake which takes surface water run-off from Milton Keynes. The lake has capacity to store a 1 in 200-year event which helps alleviate flooding issues downstream.

2.2.6 The Reservoirs Act 1975 ensures that reservoirs are regularly managed, maintained and inspected which makes reservoir breaches rare. Although some of the site is within the maximum extent of reservoir flooding, the risk of reservoir flooding is considered to be low.



2.3 Existing Drainage

2.3.1 The Anglian Water Sewer Records indicates there are two foul rising mains routing from north to south.

2.3.2 The Anglian Water Sewer Records also indicate a final effluent foul pipe running through the eastern part of the site flowing from south to north.

2.3.3 There are several water courses within the development. Further on-site connectivity survey works are required to confirm if water courses need to remain or can be removed. The River Ousel is located to the east of the development.

3.0 PROPOSED SITE LEVELS, FLOOD MITIGATION AND DRAINAGE SYSTEMS

3.1 Proposed Site Levels

3.1.1 It is proposed that upon redevelopment the existing site levels will be followed as far as reasonably practical.

3.2 Proposed Flood Mitigation

3.2.1 As noted previously, the Government maps for reservoir flooding shows there is flooding. There is low to high risk of surface water flooding within the site however once the site is developed, these low-lying depressions are likely to be removed due to the existing site levels changing to suit the proposed development.

3.2.2 There is also a high risk of fluvial flooding within the eastern area of the site. No part of the development will take place in this area.

3.2.3 There is a high risk of reservoir flooding within two thirds of the site relating to Willen Lake and Tongwell Lake. The Reservoirs Act 1975 ensures that reservoirs are regularly managed, maintained and inspected which makes reservoir breaches rare. Although some of the site is within the maximum extent of reservoir flooding, the risk of reservoir flooding is considered to be low.

3.2.4 The minimum existing level is at approximately 55.89 m AOD.

3.3 Sustainable Surface Water Drainage

3.3.1 As with any new development, and in accordance with requirements of the Building Regulations and other national guidance, the first method which should be considered for the disposal of surface water is by infiltration into the ground.

3.3.2 Results from Preliminary Ground Investigations undertaken by Rolton Group Ltd can be found in the appendices. A total of 14 soakaway tests were undertaken in September 2020 at different locations across the site. Although infiltration rates vary across the site, the infiltration rates are generally poor. It is therefore likely that soakaway drainage will not be suitable for the disposal of surface water.

3.3.3 A copy of the Anglian Water sewer records can be found in the appendices.

3.3.4 The surface water for the site will be restricted to greenfield run-off rates and will discharge into the River Ousel to the east of the site.

3.3.5 The site is proposed to be split up into 4 catchment areas with all 4 catchment areas discharging to a proposed attenuation pond for each area which will be sized to cater for the 100 year + 40% Climate Change Storm Event. Flows from each pond will then be restricted using a flow control device. For Catchment A and B, the restricted flows will go directly to the existing River Ousel. For Catchment C and D, the restricted flows will pass through a proposed swale which then outfalls to the existing River Ousel.

3.3.6 The surface water drainage outfall to the River Ousel will be subject to EA approval.

3.3.7 A section 104 application will be submitted to Anglian Water for the adoption of the on-site surface water drainage.

3.3.8 A copy of the Indicative Surface Water Drainage Proposals can be found in the appendices.

3.4 Foul Water Drainage

3.4.1 The foul drainage for the site is proposed to be split into 2 systems both drainage to a proposed foul pumping station with both systems being hydraulically pumped to existing Anglian Water Manhole 9901 located north of the site and to the north east of Newport Pagnell Tennis Club.

3.4.2 The southern section of the site will drain via gravity to foul pumping station 2 and then hydraulically pumped north to connect into a proposed foul manhole which is part of the northern section of the site.

3.4.3 The northern section of the site will drain via gravity to foul pumping station 1 and then hydraulically pumped to the existing Anglian Water Manhole 9901.

3.4.4 A section 106 application will be required for the connection into the existing public foul water sewer.

3.4.5 A section 104 application will be submitted to Anglian Water for the adoption of the on-site foul water drainage including the foul pumping stations.

3.4.6 Proposed foul outfall through is subject to a sewer requisition application.

3.4.7 A copy of the Indicative Foul Water Drainage Proposals can be found in the appendices.

3.5 Ongoing Maintenance

3.5.1 It is proposed that the surface water drainage systems within the development will be adopted by Anglian Water who will carry out the maintenance of the surface water drainage system.

3.5.2 It is proposed that the foul water drainage systems within the development will be adopted by Anglian Water who will carry out the maintenance of the foul water drainage system.

3.5.3 This ongoing maintenance will ensure that the drainage systems will operate as originally intended throughout the life of the development.

3.5.4 The proposed attenuation ponds will be managed by a private management company.

4.0 CONCLUSIONS

4.1 Flood Risk, Flood Consequences and Sustainable Design

4.1.1 There is a high risk of flooding to the development from nearby fluvial sources in a small section of the north eastern part of the site and the eastern most part of the site.

4.1.2 There is no low to high risk of flooding from surface water within the site.

4.1.3 There is a high risk of reservoir breach flooding within two thirds of the site from Willen Lake and Tongwell Lake which are approximately 1.65km south of the site. The Reservoirs Act 1975 ensures that reservoirs are regularly managed, maintained and inspected which makes reservoir breaches rare. Although some of the site is within the maximum extent of reservoir flooding, the risk of reservoir flooding is considered to be low.

4.1.4 The surface water drainage systems are proposed to be designed in accordance with nationally agreed standards, and will provide protection from surface flooding under the critical 100 year rainfall event, including the recognised allowance for the effects of climate change.

4.1.5 The main drainage systems are proposed to be offered for adoption and to be maintained by Anglian Water. This will ensure long term maintenance throughout the life of the development.

5.0 APPENDICES

Appendix 1 –Illustrative Masterplan

Appendix 2 – MK Surveys Topographical Survey

Appendix 3 – Soakaway Tests Produced by Rolton Group Ltd

Appendix 4 – Sewer Records supplied by Anglian Water

Appendix 5 – Indicative Surface Water Drainage Proposals

Appendix 6 – Indicative Foul Water Drainage Proposals

Appendix 1

Illustrative Masterplan

KEY

- Built form - Main Street
- Built form - Neighbourhood Core
- Built form - Green Edge
- Local Centre
- Primary School
- Green infrastructure
- Adjacent employment development
- Proposed vehicular, cycle and pedestrian access point
- Existing rights of access to be retained
- Proposed MK grid road (Fig 4.2 MK East SUE Development Framework SPD)
- Proposed MK local distributor road (Fig 4.2 MK East SUE Development Framework SPD)
- Primary access/link road
- Existing PRoW
- Potential PRoW diversion
- Proposed pedestrian/cycle access points
- Existing MK redway
- Existing pedestrian/cycle route (leisure/traffic free/quiet route)
- Proposed MK redway
- Proposed pedestrian/cycle links
- Proposed bus stop (indicative location shown)
- Flood Zone 3
- Existing vegetation with associated RPZ
- Existing vegetation to be removed
- Proposed vegetation
- Proposed local play area
- Proposed neighbourhood play area

WILLEN ROAD, NEWPORT PAGNELL - **ILLUSTRATIVE MASTERPLAN**

Pegasus Design

PLANNING | DESIGN | ENVIRONMENT | ECONOMICS | WWW.PEGASUSGROUP.CO.UK | TEAM/DRAWN BY: AMW/EMH | APPROVED BY P.M: MCC | DATE: 16.09.2021 | SCALE: 1:2,500 @ A1/1:5,000 @ A3 | DRWG: **P19-2609_07** REV: N | CLIENT: **BLOOR HOMES** |

Appendix 2

MK Surveys Topographical Survey

KEY

TOPOGRAPHICAL KEY

SURVEY STATION	5	FENCE	
BANKING	TOP / BOTTOM	WALL	
HEDGE SPREADS		BUILDING	
WOODLAND CANOPY		OPEN SIDED BUILDING	
ARROW ON STEPS / RAMPS INDICATES DIRECTION UPWARDS		OVERHANG / CANOPY	
TREES	SPREAD & GIRTH SHOWN TO SCALE	GLASSHOUSE	
GATE		CONTOUR	25.50
KERB CHANNEL		SPOT LEVEL	+ 127.13
ROAD UNKERBED		SONAR LEVEL	127.13
		BORE HOLE	BH
		TRIAL HOLE	TH
		FOOTPATH	
		CHANGE IN SURFACE	

GENERAL

Av.	AVERAGE
(ACP)	ASSUMED CONNECTION POINT
COW	CABLE ON WALL
CW	COMBINED WATER
DIS	DISUSED
DK	DROP KERB
EML	ELECTROMAGNETIC LOCATOR
EOT	END OF TRACE
FO	FIBRE OPTIC
FP	FOOTPATH
FW	FOUL WATER
GP	GATE POST
GPR	GROUND PENETRATING RADAR
HB	HARD BED
H/P	HIGH PRESSURE
HV	HIGH VOLTAGE
KV	KILO VOLT
I/P	INTERMEDIATE PRESSURE
L/P	LOW PRESSURE
LV	LOW VOLTAGE
M/P	MEDIUM PRESSURE
NDI	NO DEPTH INFORMATION
NFI	NO FURTHER INFORMATION
NDV	NO DUCTS VISIBLE
NPV	NO PIPES VISIBLE
OSBM	ORDNANCE SURVEY BENCHMARK
POW	PIPE ON WALL
P.BOX	POST BOX
RED	REDUNDANT SERVICE
RW	RETAINING WALL
SB	SOFT BED
SNP	STREET NAME PLATE
SW	SURFACE WATER
TAC	TACTILE PAVING
TOW	TOP OF WALL
TW	TRADE EFFLUENT WATER
UTL	UNABLE TO LOCATE
UTR	UNABLE TO RAISE
UTS	UNABLE TO SURVEY

PIPE MATERIALS

AC	ASBESTOS CEMENT
ALK	ALKATHENE
BK	BRICK
CI	CAST IRON
CO	CONCRETE
DI	DUCTILE IRON
HDPE	HIGH DENSITY PE
MDPE	MEDIUM DENSITY PE
PE	POLYETHYLENE
PF	PITCH FIBRE
PP	POLYPROPYLENE
PVC	POLYVINYL CHLORIDE
PVC-U	ULTRA RIB (PVC)
SI	SPUN IRON
ST	STEEL
VC	VITRIFIED CLAY

FENCES

B/W	BARBED WIRE FENCE
C/B	CLOSED BOARDED FENCE
CPL	CONCRETE PANEL FENCE
C/I	CORRUGATED IRON FENCE
CNP	CHESTNUT PAILING
C/L	CHAIN LINK FENCE
I/R	IRON RAILINGS
L/L	LARCH LAP FENCE
P/R	POST AND RAIL FENCE
P/W	POST AND WIRE FENCE
W/M	WIRE MESH FENCE

LEVELS

BD	BACKDROP LEVEL
BL	BASE LEVEL
CL	COVER LEVEL
CWL	CROWN LEVEL
DPC	DAMP PROOF COURSE
FL	FLOOR LEVEL
IL	INVERT LEVEL
PT	P TRAP LEVEL
RL	ROOF LEVEL
SL	SILT LEVEL
SOF	SOFFIT LEVEL
THL	THRESHOLD LEVEL
WL	WATER LEVEL

APPARATUS

ACU	AIR CONDITIONING UNIT
AV	AIR VALVE
BB	BELISHA BEACON
BO	BOLLARD
BOL	BOLLARD LIGHT
BS	BUS STOP
CATV	CABLE TELEVISION
CB	CONTROL BOX
CCB	CROSSING CONTROL BUTTON
CP	CATCH PIT
CR	CABLE RISER
DCH	DRAINAGE CHANNEL
EB	ELECTRIC CONTROL BOX
EP	ELECTRIC POLE
ER	EARTH ROD
FD	FILTER DRAIN
FFP	FUEL TANK FILL POINT
FH	FIRE HYDRANT
GR	GAS RISER
GV	GAS VALVE
GY	GULLY
IC	INSPECTION COVER
INT	INTERCEPTOR
IT	INLET
KO	KERB OUTLET
LD	LOOP DETECTOR
LH	LAMP HOLE
LP	LAMP POST
MH	MANHOLE
MK	MARKER POST / PLATE
MT	METER
MW	MONITORING WELL
OL	OUTLET
OU	OUTFALL
PO	POST
PTG	PIPE TO GROUND
PTS	PIPE TO SURFACE
PU	PUMP
RE	RODDING EYE
RS	ROAD SIGN
RM	RISING MAIN
RWP	RAIN WATER PIPE
SC	STOP COCK
SO	SOAKAWAY
SP	SOIL PIPE
ST	STAY CABLE
SV	STOP / SLUICE VALVE
SVP	SOIL VENT PIPE
TCB	TELEPHONE CALL BOX
TEL	TELECOM INSPECTION COVER
TL	TRAFFIC LIGHT
TLC	TRAFFIC LIGHT COVER
TM	TICKET MACHINE
TP	TELECOM POLE
VP	VENT PIPE
WM	WATER METER
WO	WASH OUT
WR	WATER RISER
WT	WATER TAP
WW	WET WELL

LINESTYLE

- INTERNAL METER (MT)
- POT ENDED SERVICE
- SEWER CAPPED RUN
- SURVEY ABANDONED
- INTERNAL VALVE
- UNKNOWN UNDERGROUND ANOMALY
- UNDERGROUND CHAMBERS
- POST PROCESSING AREA (FROZEN LAYER)
- ABOVE GROUND (AG)
- ASSUMED ROUTE QB4(AR)
- EMPTY DUCTS (E)
- OVERHEAD (OH)
- BACK DROP
- P TRAP
- UTILITY CROSSOVER
- SURVEY BOUNDARY
- VERBAL INFORMATION QB4(VI)
- RECORD INFORMATION QB4(R)
- REDUNDANT SERVICE
- RISING MAIN

CCTV SECTION 4 AND 5 FAULTS ARE SHOWN IN RED

SERVICE TYPE

- CATV / DATA
- ELECTRICITY (HV)
- ELECTRICITY (LV)
- FUEL
- GAS
- HEATING
- OVERHEAD ELECTRIC
- OVERHEAD TELECOM
- TRADE EFFLUENT
- COMBINED SEWER
- FOUL SEWER
- SURFACE SEWER
- UNIDENTIFIED SEWER
- TELECOM
- UNKNOWN SERVICE
- WATER

DEPTHS

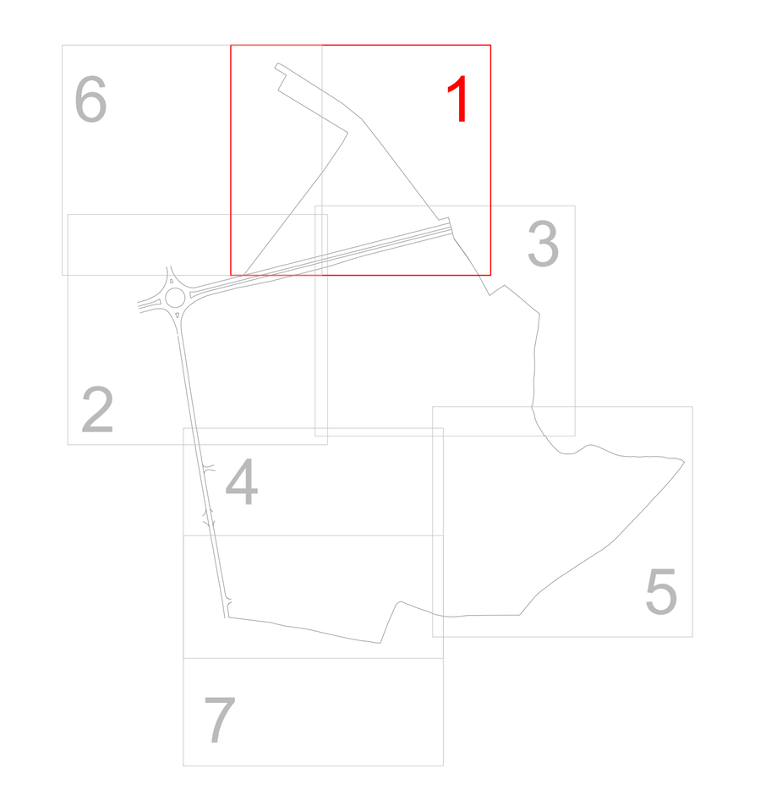
d	ELECTRONICALLY DERIVED
Pd	PASSIVELY DERIVED
Bd	BASE DEPTH
Cd	DEPTH TO CROWN
Id	DEPTH TO INVERT
Sd	DEPTH TO SOFFIT

CAUTIONARY NOTES

1. EML techniques have been used in the detection of underground utilities as outlined in Table 2 of PAS 128:2014, the results are not infallible and trial excavations must be carried out in order to confirm identification, position and in particular depth of the utility.
2. GPR techniques has been used in the detection of non-metallic utilities as outlined in Table 2 of PAS 128:2014. The interpretation of these results is not infallible and success will depend on a number of factors including soil type, ground water levels and surface conditions, hence trial excavations must be carried out in order to confirm identification, position and in particular depth of the utility.
3. Depths derived via EML are taken to the centre of the conductor (cable, metallic pipe) and those derived via GPR are usually to the crown of the utility unless otherwise indicated.
4. Where cables cannot be detected individually an average depth has been obtained and trial excavations are recommended to confirm number and depths of cables banded together.
5. 'Pot-ended' cables are often difficult to detect and although we have made all reasonable efforts to locate or transpose this information from records, we cannot guarantee that all 'pot-ended' cables have been located.
6. Fibre optic cables are often difficult to detect, and commonly access chambers can be locked and thereby made inaccessible by the utility provider. All reasonable efforts have been made to locate these ducts using GPR. Cables not located have been transposed from records.
7. Within close proximity of electric substations and similar structures results using EML may become distorted. All reasonable efforts have been made to verify our results using GPR wherever conditions permitted.
8. Underneath overhead power lines results using EML may become distorted. All reasonable efforts have been made to verify our results using GPR wherever conditions permitted.
9. Drainage information has been obtained without man entry into the chamber.
10. Wherever possible we have attempted to locate the route of the sewer. Issues such as blockages, surcharging, flooding, sedimentation, sewer collapse, root ingress, excessive depth, obstructions or heavy traffic flow may have affected our ability to obtain meaningful results. In these cases recommendations have been made for further survey or maintenance work.
11. Pipe / duct sizes have been recorded from surface inspection or taken from record information. Pipe sizes have been recorded in millimetres and depths in metres, except in instances where sizes are indicated in imperial units on the record information.
12. Water and Gas utilities to individual properties are often of a size that cannot be detected using EML or GPR investigation, whenever possible the route has been added from surface evidence (pipe risers, valves, etc), but this should be viewed as a guide only.
13. All utilities detected by MK Surveys should be considered live unless confirmed otherwise by client or service provider.
14. MK Surveys cannot confirm when utilities are redundant unless there is visual or record evidence to indicate this. In addition MK Surveys cannot guarantee being able to detect all redundant utilities.
15. Wherever available the results of our investigations have been cross referenced with record information. If a utility shown on the records cannot be detected on site, the information has been added to the drawing and indicated as QB4 (R). However it should be noted that the completeness and accuracy of the records cannot be guaranteed.
16. The utility information has been obtained from non-intrusive survey techniques; it always remains possible that there are additional utilities within the survey boundary that we have not been able to detect. We recommend that care is taken on site and that all utility records are used in conjunction with this survey.
17. The responsibility for avoiding damage to assets and utilities on site shall be that of the persons proposing to excavate within the surveyed area, who shall be liable to the asset owner and any third party who may be affected in any way for any loss or damage.

ALWAYS EXERCISE CAUTION WHEN EXCAVATING.

Sheet Layout: (Not to Scale)



Notes :

1. GRID AND LEVELS BASED ON ORDNANCE DATUM, DERIVED FROM THE NATIONAL GNSS NETWORK. LOCAL SCALE FACTOR 0.99969 APPLIED.
2. TREE AND HEDGE SPECIES HAVE BEEN IDENTIFIED AS ACCURATELY AS POSSIBLE BUT SHOULD BE CROSS CHECKED IN CRITICAL AREAS.

Coordinate Table

Station	Description	Easting	Northing	Level
S1	PEG	487749.616	242310.597	58.745
S4	ROAD NAIL	487776.960	242228.103	58.887
S5	PEG	488184.054	242741.236	56.919
S6	PEG	488087.796	242514.408	57.351
S7	PEG	487903.779	242378.573	57.951
S8	PEG	488334.055	242473.674	56.756
S9	PEG	488379.826	242305.992	56.774
S10	PEG	488232.590	242139.288	62.080
S11	PEG	488040.230	242287.471	60.531
S12	ROAD NAIL	487868.371	242123.433	59.229
J101	PEG	487711.093	242595.568	58.620
J102	PEG	487654.561	242925.329	56.502
J103	PEG	487814.290	241981.235	65.460
J104	ROAD NAIL	487615.299	242957.876	56.048

Equipment Information

Equipment	Manufacturer	Model	Serial Number	MKS REF	Date of Calibration
EML Tx Transmitter	SPX Radiodetection	RD TX10	10/TX-10B-GB-94	RD20	05/12/2019
EML Rx Receiver	SPX Radiodetection	RD8100	10/81PDL-GB-80	RD20	05/12/2019
GPR	IDS Georadar	Leica DS2000	SN-010-16-000172	GPR15	23/03/2020

DETECTION SURVEY REPORT

GENERAL
This survey was carried out in accordance with PAS 128:2014 (Publicly Available Specification from BSI). After a pre-survey consultation with the client it was agreed to carry out the detection survey using methodology M1 as per Table 2 of the PAS 128:2014. The survey boundary has been shown on the drawing; please see linestyle section of the key for reference.

RECORD INFORMATION
The client has provided MK Surveys with historical record information. This was at the time of the survey more than 90 days old. As per PAS 128:2014 this is classed as historical and must be referenced with extreme caution. There is no guarantee of the completeness and accuracy of this information.

DETECTION SURVEY
RISING MAINS
One of the rising mains was located by EML methods using the "radio" function on the RD receiver. This method of location does not provide depth information, therefore the quality level is QB3. Unable to obtain depths because the rising main is too deep to generate a strong enough signal. Unable to locate the other rising main due to poor readings for EML and GPR caused by the depth of the utility, therefore assumed has been shown. Records indicate that the rising mains are in a different location to that found on site. Recommend trial excavations to confirm position and depth.

FINAL EFFLUENT SEWER
Unable to locate sewer due to poor readings for EML and GPR. Information has therefore been added from records and the quality level is QB4. Unable to locate MH2501, assumed buried.

SEE CAUTIONARY NOTES WITHIN THE UTILITY KEY

PAS 128:2014 Quality Level Guide

Quality Level	Description	Accuracy
QB4	A utility is expected to exist but cannot be detected - (AR), (R), (VI)	Undefined
QB3 QB3P	Horizontal location only using one geophysical technique. No depth information - NDI.	+/- 500mm Horizontal Undefined Vertical
QB2 QB2P	Horizontal and vertical location only using one geophysical technique.	+/- 250mm or +/- 40% of depth whichever is greater
QB1 QB1P	Horizontal and vertical location only using two geophysical techniques.	+/- 150mm or +/- 15% of depth whichever is greater
QA	Service verified in an open excavation, inside an inspection chamber / draw pit, or at the point the service enters / exits the ground.	+/- 50mm Horizontal +/- 25mm Vertical

Client Provided Desktop Utility Records

Utility Type	Provider Details	Date Acquired
Drainage	Anglian Water	12/04/2019 (Historical)

N

Revision	Description	Surv. by	Check. by	Appr. by	Date
1	Survey area extended along Willen Road & Monks Way.	JSB	AJ	NS	May 2021

0m 5 10 15 20 25 30 35 40 45 50 55

Topographical and PAS 128:2014 Targeted Drainage Survey

Client:

BLOOR HOMES

Land off Willen Road
Newport Pagnell
Buckinghamshire

Scale:	Sheet Size:	Sheet Number:	Date:
1:500	A0	1	Mar/Apr 2020

Project Number:	Rev:	Surveyed by:	Checked by:	Approved by:
28389	1	NC/AC	RPE/DSR	RPE

mksurveys

www.mksurveys.com www.surveys4bim.co.uk
Head Office: Milton Keynes t: 01908 565561 e: mail@mksurveys.co.uk

KEY

TOPOGRAPHICAL KEY

SURVEY STATION · FENCE · WALL · BANKING (TOP / BOTTOM) · BUILDING · HEDGE SPREADS · OPEN SIDED BUILDING · WOODLAND CANOPY · OVERHANG / CANOPY · ARROW ON STEPS / RAMPS INDICATES DIRECTION UPWARDS · GLASSHOUSE · CONTOUR (25.50) · TREES (SPREAD & GIRTH SHOWN TO SCALE) · SPOT LEVEL + 127.13 · SONAR LEVEL ○ 127.13 · BORE HOLE (BH) · GATE · TRIAL HOLE (TH) · KERB CHANNEL · FOOTPATH · ROAD UNKERBED · CHANGE IN SURFACE

GENERAL

Av.	AVERAGE
(ACP)	ASSUMED CONNECTION POINT
COW	CABLE ON WALL
CW	COMBINED WATER
DIS	DISUSED
DK	DROP KERB
EML	ELECTROMAGNETIC LOCATOR
EOT	END OF TRACE
FO	FIBRE OPTIC
FP	FOOTPATH
FW	FOUL WATER
GP	GATE POST
GPR	GROUND PENETRATING RADAR
HB	HARD BED
H/P	HIGH PRESSURE
HV	HIGH VOLTAGE
KV	KILO VOLT
I/P	INTERMEDIATE PRESSURE
L/P	LOW PRESSURE
LV	LOW VOLTAGE
M/P	MEDIUM PRESSURE
NDI	NO DEPTH INFORMATION
NFI	NO FURTHER INFORMATION
NDV	NO DUCTS VISIBLE
NPV	NO PIPES VISIBLE
OSBM	ORDNANCE SURVEY BENCHMARK
POW	PIPE ON WALL
P.BOX	POST BOX
RED	REDUNDANT SERVICE
RW	RETAINING WALL
SB	SOFT BED
SNP	STREET NAME PLATE
SW	SURFACE WATER
TAC	TACTILE PAVING
TOW	TOP OF WALL
TW	TRADE EFFLUENT WATER
UTL	UNABLE TO LOCATE
UTR	UNABLE TO RAISE
UTS	UNABLE TO SURVEY

PIPE MATERIALS

AC	ASBESTOS CEMENT
ALK	ALKATHENE
BK	BRICK
CI	CAST IRON
CO	CONCRETE
DI	DUCTILE IRON
HDPE	HIGH DENSITY PE
MDPE	MEDIUM DENSITY PE
PE	POLYETHYLENE
PF	PITCH FIBRE
PP	POLYPROPYLENE
PVC	POLYVINYL CHLORIDE
PVC-U	ULTRA RIB (PVC)
SI	SPUN IRON
ST	STEEL
VC	VITRIFIED CLAY

FENCES

B/W	BARBED WIRE FENCE
C/B	CLOSED BOARDED FENCE
CPL	CONCRETE PANEL FENCE
C/I	CORRUGATED IRON FENCE
CNP	CHESTNUT PAILING
C/L	CHAIN LINK FENCE
I/R	IRON RAILINGS
L/L	LARCH LAP FENCE
P/R	POST AND RAIL FENCE
P/W	POST AND WIRE FENCE
W/M	WIRE MESH FENCE

LEVELS

BD	BACKDROP LEVEL
BL	BASE LEVEL
CL	COVER LEVEL
CWL	CROWN LEVEL
DPC	DAMP PROOF COURSE
FL	FLOOR LEVEL
IL	INVERT LEVEL
PT	P TRAP LEVEL
RL	ROOF LEVEL
SL	SILT LEVEL
SOF	SOFFIT LEVEL
THL	THRESHOLD LEVEL
WL	WATER LEVEL

APPARATUS

ACU	AIR CONDITIONING UNIT
AV	AIR VALVE
BB	BELISHA BEACON
BO	BOLLARD
BOL	BOLLARD LIGHT
BS	BUS STOP
CATV	CABLE TELEVISION
CB	CONTROL BOX
CCB	CROSSING CONTROL BUTTON
CP	CATCH PIT
CR	CABLE RISER
DCH	DRAINAGE CHANNEL
EB	ELECTRIC CONTROL BOX
EP	ELECTRIC POLE
ER	EARTH ROD
FD	FILTER DRAIN
FFP	FUEL TANK FILL POINT
FH	FIRE HYDRANT
GR	GAS RISER
GV	GAS VALVE
GY	GULLY
IC	INSPECTION COVER
INT	INTERCEPTOR
IT	INLET
KO	KERB OUTLET
LD	LOOP DETECTOR
LH	LAMP HOLE
LP	LAMP POST
MH	MANHOLE
MK	MARKER POST / PLATE
MT	METER
MW	MONITORING WELL
OL	OUTLET
OU	OUTFALL
PO	POST
PTG	PIPE TO GROUND
PTS	PIPE TO SURFACE
PU	PUMP
RE	RODDING EYE
RS	ROAD SIGN
RM	RISING MAIN
RWP	RAIN WATER PIPE
SC	STOP COCK
SO	SOAKAWAY
SP	SOIL PIPE
ST	STAY CABLE
SV	STOP / SLUICE VALVE
SVP	SOIL VENT PIPE
TCB	TELEPHONE CALL BOX
TEL	TELECOM INSPECTION COVER
TL	TRAFFIC LIGHT
TLC	TRAFFIC LIGHT COVER
TM	TICKET MACHINE
TP	TELECOM POLE
VP	VENT PIPE
WM	WATER METER
WO	WASH OUT
WR	WATER RISER
WT	WATER TAP
WW	WET WELL

LINESTYLE

INTERNAL METER (MT) · POT ENDED SERVICE · SEWER CAPPED RUN · SURVEY ABANDONED · INTERNAL VALVE · UNKNOWN UNDERGROUND ANOMALY · UNDERGROUND CHAMBERS · POST PROCESSING AREA (FROZEN LAYER) · ABOVE GROUND (AG) · ASSUMED ROUTE QB4(AR) · EMPTY DUCTS (E) · OVERHEAD (OH) · BACK DROP · P TRAP · UTILITY CROSSOVER · SURVEY BOUNDARY · VERBAL INFORMATION QB4(VI) · RECORD INFORMATION QB4(R) · REDUNDANT SERVICE · RISING MAIN

CCTV SECTION 4 AND 5 FAULTS ARE SHOWN IN RED

SERVICE TYPE

CATV / DATA · ELECTRICITY (HV) · ELECTRICITY (LV) · FUEL · GAS · HEATING · OVERHEAD ELECTRIC · OVERHEAD TELECOM · TRADE EFFLUENT · COMBINED SEWER · FOUL SEWER · SURFACE SEWER · UNIDENTIFIED SEWER · TELECOM · UNKNOWN SERVICE · WATER

DEPTHS

d	ELECTRONICALLY DERIVED
Pd	PASSIVELY DERIVED
Bd	BASE DEPTH
Cd	DEPTH TO CROWN
Id	DEPTH TO INVERT
Sd	DEPTH TO SOFFIT

CAUTIONARY NOTES

1. EML techniques have been used in the detection of underground utilities as outlined in Table 2 of PAS 128:2014, the results are not infallible and trial excavations must be carried out in order to confirm identification, position and in particular depth of the utility.
2. GPR techniques has been used in the detection of non-metallic utilities as outlined in Table 2 of PAS 128:2014. The interpretation of these results is not infallible and success will depend on a number of factors including soil type, ground water levels and surface conditions, hence trial excavations must be carried out in order to confirm identification, position and in particular depth of the utility.
3. Depths derived via EML are taken to the centre of the conductor (cable, metallic pipe) and those derived via GPR are usually to the crown of the utility unless otherwise indicated.
4. Where cables cannot be detected individually an average depth has been obtained and trial excavations are recommended to confirm number and depths of cables banded together.
5. 'Pot-ended' cables are often difficult to detect and although we have made all reasonable efforts to locate or transpose this information from records, we cannot guarantee that all 'pot-ended' cables have been located.
6. Fibre optic cables are often difficult to detect, and commonly access chambers can be locked and thereby made inaccessible by the utility provider. All reasonable efforts have been made to locate these ducts using GPR. Cables not located have been transposed from records.
7. Within close proximity of electric substations and similar structures results using EML may become distorted. All reasonable efforts have been made to verify our results using GPR wherever conditions permitted.
8. Underneath overhead power lines results using EML may become distorted. All reasonable efforts have been made to verify our results using GPR wherever conditions permitted.
9. Drainage information has been obtained without man entry into the chamber.
10. Wherever possible we have attempted to locate the route of the sewer. Issues such as blockages, surcharging, flooding, sedimentation, sewer collapse, root ingress, excessive depth, obstructions or heavy traffic flow may have affected our ability to obtain meaningful results. In these cases recommendations have been made for further survey or maintenance work.
11. Pipe / duct sizes have been recorded from surface inspection or taken from record information. Pipe sizes have been recorded in millimetres and depths in metres, except in instances where sizes are indicated in imperial units on the record information.
12. Water and Gas utilities to individual properties are often of a size that cannot be detected using EML or GPR investigation, whenever possible the route has been added from surface evidence (pipe risers, valves, etc), but this should be viewed as a guide only.
13. All utilities detected by MK Surveys should be considered live unless confirmed otherwise by client or service provider.
14. MK Surveys cannot confirm when utilities are redundant unless there is visual or record evidence to indicate this. In addition MK Surveys cannot guarantee being able to detect all redundant utilities.
15. Wherever available the results of our investigations have been cross referenced with record information. If a utility shown on the records cannot be detected on site, the information has been added to the drawing and indicated as QB4 (R). However it should be noted that the completeness and accuracy of the records cannot be guaranteed.
16. The utility information has been obtained from non-intrusive survey techniques; it always remains possible that there are additional utilities within the survey boundary that we have not been able to detect. We recommend that care is taken on site and that all utility records are used in conjunction with this survey.
17. The responsibility for avoiding damage to assets and utilities on site shall be that of the persons proposing to excavate within the surveyed area, who shall be liable to the asset owner and any third party who may be affected in any way for any loss or damage.

ALWAYS EXERCISE CAUTION WHEN EXCAVATING.

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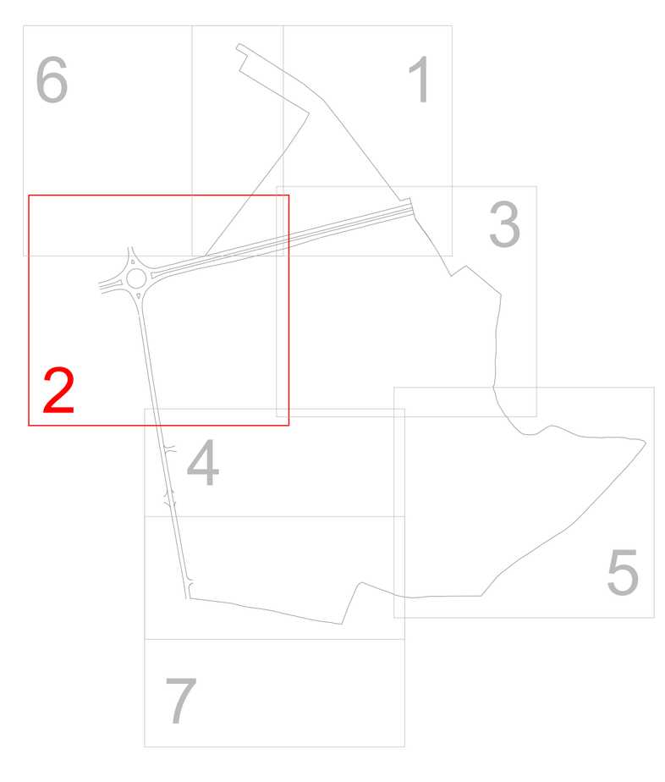

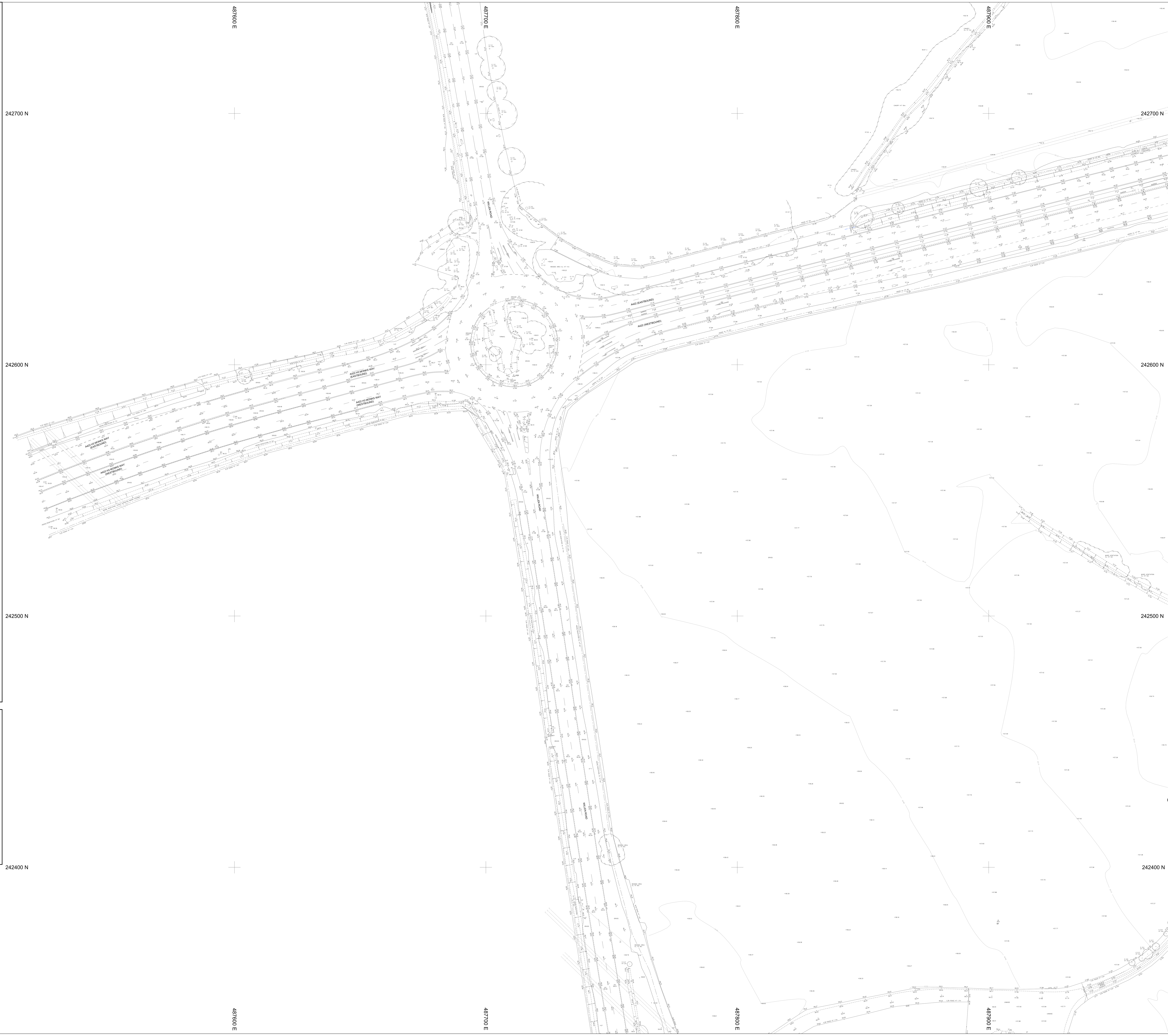

Notes :

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2. TREE AND HEDGE SPECIES HAVE BEEN IDENTIFIED AS ACCURATELY AS POSSIBLE BUT SHOULD BE CROSS CHECKED IN CRITICAL AREAS.

Coordinate Table

Station	Description	Easting	Northing	Level
S1	PEG	487749.616	242310.597	58.745
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S7	PEG	487903.779	242378.573	57.951
S8	PEG	488334.055	242473.674	56.756
S9	PEG	488379.826	242305.992	56.774
S10	PEG	488232.590	242139.288	62.080
S11	PEG	488040.230	242287.471	60.531
S12	ROAD NAIL	487868.371	242123.433	59.229
J101	PEG	487711.093	242595.568	58.620
J102	PEG	487654.561	242925.329	56.502
J103	PEG	487814.290	241981.235	65.460
J104	ROAD NAIL	487615.299	242957.876	56.048

Equipment Information

Equipment	Manufacturer	Model	Serial Number	MKS REF	Date of Calibration
EML Tx Transmitter	SPX Radiodetection	RD TX10	10/TX-10B-GB-94	RD20	05/12/2019
EML Rx Receiver	SPX Radiodetection	RD8100	10/81PDL-GB-80	RD20	05/12/2019
GPR	IDS Georadar	Leica DS2000	SN-010-16-000172	GPR15	23/03/2020

DETECTION SURVEY REPORT

GENERAL
This survey was carried out in accordance with PAS 128:2014 (Publicly Available Specification from BSI). After a pre-survey consultation with the client it was agreed to carry out the detection survey using methodology M1 as per Table 2 of the PAS 128:2014. The survey boundary has been shown on the drawing; please see linestyle section of the key for reference.

RECORD INFORMATION
The client has provided MK Surveys with historical record information. This was at the time of the survey more than 90 days old. As per PAS 128:2014 this is classed as historical and must be referenced with extreme caution. There is no guarantee of the completeness and accuracy of this information.

DETECTION SURVEY
RISING MAINS
One of the rising mains was located by EML methods using the "radio" function on the RD receiver. This method of location does not provide depth information, therefore the quality level is QB3. Unable to obtain depths because the rising main is too deep to generate a strong enough signal. Unable to locate the other rising main due to poor readings for EML and GPR caused by the depth of the utility, therefore assumed has been shown. Records indicate that the rising mains are in a different location to that found on site. Recommend trial excavations to confirm position and depth.

FINAL EFFLUENT SEWER
Unable to locate sewer due to poor readings for EML and GPR. Information has therefore been added from records and the quality level is QB4. Unable to locate MH2501, assumed buried.

SEE CAUTIONARY NOTES WITHIN THE UTILITY KEY

PAS 128:2014 Quality Level Guide

Quality Level	Description	Accuracy
QB4	A utility is expected to exist but cannot be detected - (AR), (R), (VI)	Undefined
QB3 QB3P	Horizontal location only using one geophysical technique. No depth information - NDI.	+/- 500mm Horizontal Undefined Vertical
QB2 QB2P	Horizontal and vertical location only using one geophysical technique.	+/- 250mm or +/- 40% of depth whichever is greater
QB1 QB1P	Horizontal and vertical location only using two geophysical techniques.	+/- 150mm or +/- 15% of depth whichever is greater
QA	Service verified in an open excavation, inside an inspection chamber / draw pit, or at the point the service enters / exits the ground.	+/- 50mm Horizontal +/- 25mm Vertical

Client Provided Desktop Utility Records

Utility Type	Provider Details	Date Acquired
Drainage	Anglian Water	12/04/2019 (Historical)

Revision	Description	Surv. by	Check. by	Appr. by	Date
1	Survey area extended along Willen Road & Monks Way.	JSB	AJ	NS	May 2021

0m 5 10 15 20 25 30 35 40 45 50 55

Topographical and PAS 128:2014 Targeted Drainage Survey

Client:

BLOOR HOMES

Land off Willen Road
Newport Pagnell
Buckinghamshire

Scale:	Sheet Size:	Sheet Number:	Date:
1:500	A0	2	Mar/Apr 2020

Project Number:	Rev:	Surveyed by:	Checked by:	Approved by:
28389	1	NC/AC	RPE/DSR	RPE

mksurveys

www.mksurveys.com www.surveys4bim.co.uk
Head Office: Milton Keynes t: 01908 565561 e: mail@mksurveys.co.uk

KEY

TOPOGRAPHICAL KEY

SURVEY STATION 5 — FENCE — WALL
BANKING (TOP / BOTTOM) — BUILDING
HEDGE SPREADS — OPEN SIDED BUILDING
WOODLAND CANOPY — OVERHANG / CANOPY
ARROW ON STEPS / RAMPS INDICATES DIRECTION UPWARDS — GLASSHOUSE
TREES (SPREAD & GIRTH SHOWN TO SCALE) — CONTOUR 25.50
SPOT LEVEL + 127.13 — SONAR LEVEL 127.13
BORE HOLE BH
TRIAL HOLE TH
GATE — FOOTPATH
KERB CHANNEL — CHANGE IN SURFACE
ROAD UNKERBED

GENERAL

Av.	AVERAGE
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APPARATUS

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LINESTYLE

INTERNAL METER (MT)
POT ENDED SERVICE
SEWER CAPPED RUN
SURVEY ABANDONED
INTERNAL VALVE
UNKNOWN UNDERGROUND ANOMALY
UNDERGROUND CHAMBERS
POST PROCESSING AREA (FROZEN LAYER)
ABOVE GROUND (AG)
ASSUMED ROUTE QB4(AR)
EMPTY DUCTS (E)
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UTILITY CROSSOVER
SURVEY BOUNDARY
VERBAL INFORMATION QB4(VI)
RECORD INFORMATION QB4(R)
REDUNDANT SERVICE
RISING MAIN
CCTV SECTION 4 AND 5 FAULTS ARE SHOWN IN RED

SERVICE TYPE

CATV / DATA
ELECTRICITY (HV)
ELECTRICITY (LV)
FUEL
GAS
HEATING
OVERHEAD ELECTRIC
OVERHEAD TELECOM
TRADE EFFLUENT
COMBINED SEWER
FOUL SEWER
SURFACE SEWER
UNIDENTIFIED SEWER
TELECOM
UNKNOWN SERVICE
WATER

DEPTHS

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4. Where cables cannot be detected individually an average depth has been obtained and trial excavations are recommended to confirm number and depths of cables banded together.
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16. The utility information has been obtained from non-intrusive survey techniques; it always remains possible that there are additional utilities within the survey boundary that we have not been able to detect. We recommend that care is taken on site and that all utility records are used in conjunction with this survey.
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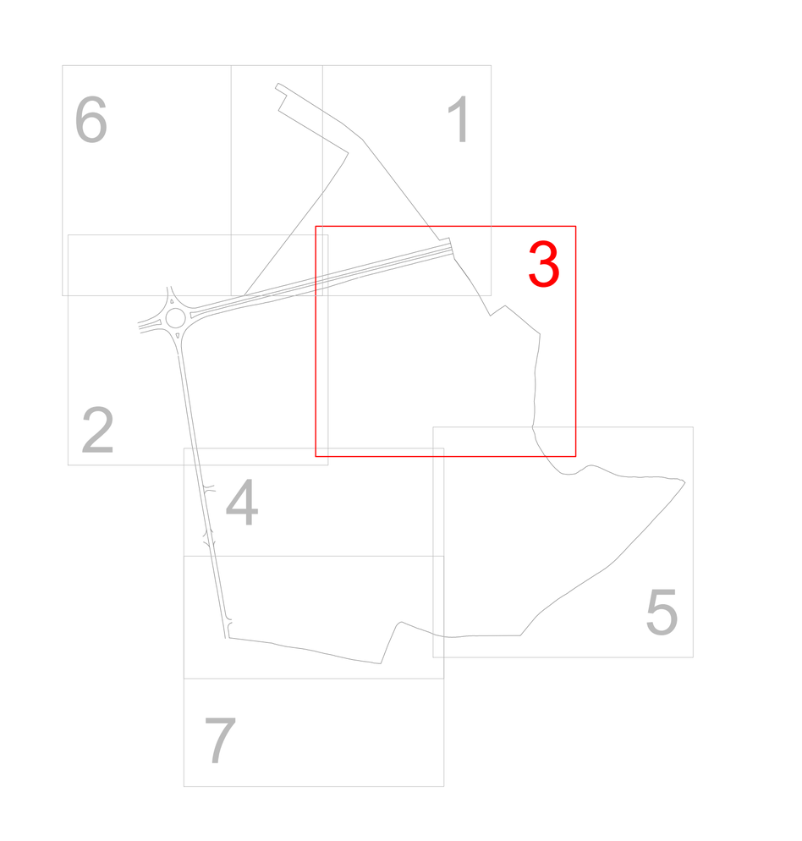

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GPR	IDS Georadar	Leica DS2000	SN-010-16-000172	GPR15	23/03/2020

DETECTION SURVEY REPORT

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DETECTION SURVEY
RISING MAINS
One of the rising mains was located by EML methods using the "radio" function on the RD receiver. This method of location does not provide depth information, therefore the quality level is QB3. Unable to obtain depths because the rising main is too deep to generate a strong enough signal. Unable to locate the other rising main due to poor readings for EML and GPR caused by the depth of the utility, therefore assumed has been shown. Records indicate that the rising mains are in a different location to that found on site. Recommend trial excavations to confirm position and depth.

FINAL EFFLUENT SEWER
Unable to locate sewer due to poor readings for EML and GPR. Information has therefore been added from records and the quality level is QB4. Unable to locate MH2501, assumed buried.

SEE CAUTIONARY NOTES WITHIN THE UTILITY KEY

PAS 128:2014 Quality Level Guide

Quality Level	Description	Accuracy
QB4	A utility is expected to exist but cannot be detected - (AR), (R), (VI)	Undefined
QB3 QB3P	Horizontal location only using one geophysical technique. No depth information - NDI.	+/- 500mm Horizontal Undefined Vertical
QB2 QB2P	Horizontal and vertical location only using one geophysical technique.	+/- 250mm or +/- 40% of depth whichever is greater
QB1 QB1P	Horizontal and vertical location only using two geophysical techniques.	+/- 150mm or +/- 15% of depth whichever is greater
QA	Service verified in an open excavation, inside an inspection chamber / draw pit, or at the point the service enters / exits the ground.	+/- 50mm Horizontal +/- 25mm Vertical

Client Provided Desktop Utility Records

Utility Type	Provider Details	Date Acquired
Drainage	Anglian Water	12/04/2019 (Historical)

Revision	Description	Surv. by	Check. by	Appr. by	Date
1	Survey area extended along Willen Road & Monks Way.	JSB	AJ	NS	May 2021

0m 5 10 15 20 25 30 35 40 45 50 55

Topographical and PAS 128:2014 Targeted Drainage Survey

Client:
BLOOR HOMES

Land off Willen Road
Newport Pagnell
Buckinghamshire

Scale:	Sheet Size:	Sheet Number:	Date:
1:500	A0	3	Mar/Apr 2020

Project Number:	Rev:	Surveyed by:	Checked by:	Approved by:
28389	1	NC/AC	RPE/DSR	RPE

mksurveys

www.mksurveys.com www.surveys4bim.co.uk
Head Office: Milton Keynes t: 01908 565561 e: mail@mksurveys.co.uk

KEY

TOPOGRAPHICAL KEY

SURVEY STATION 5
BANKING TOP BOTTOM
HEDGE SPREADS
WOODLAND CANOPY
ARROW ON STEPS / RAMPS INDICATES DIRECTION UPWARDS
TREES SPREAD & GIRTH SHOWN TO SCALE
GATE
KERB CHANNEL
ROAD UNKERBED
FENCE
WALL
BUILDING
OPEN SIDED BUILDING
OVERHANG / CANOPY
GLASSHOUSE
CONTOUR 25.50
SPOT LEVEL + 127.13 SONAR LEVEL 127.13
BORE HOLE BH
TRIAL HOLE TH
FOOTPATH
CHANGE IN SURFACE

GENERAL

Av.	AVERAGE
(ACP)	ASSUMED CONNECTION POINT
COW	CABLE ON WALL
CW	COMBINED WATER
DIS	DISUSED
DK	DROP KERB
EML	ELECTROMAGNETIC LOCATOR
EOT	END OF TRACE
FO	FIBRE OPTIC
FP	FOOTPATH
FW	FOUL WATER
GP	GATE POST
GPR	GROUND PENETRATING RADAR
HB	HARD BED
H/P	HIGH PRESSURE
HV	HIGH VOLTAGE
KV	KILO VOLT
I/P	INTERMEDIATE PRESSURE
L/P	LOW PRESSURE
LV	LOW VOLTAGE
M/P	MEDIUM PRESSURE
NDI	NO DEPTH INFORMATION
NFI	NO FURTHER INFORMATION
NDV	NO DUCTS VISIBLE
NPV	NO PIPES VISIBLE
OSBM	ORDNANCE SURVEY BENCHMARK
POW	PIPE ON WALL
P.BOX	POST BOX
RED	REDUNDANT SERVICE
RW	RETAINING WALL
SB	SOFT BED
SNP	STREET NAME PLATE
SW	SURFACE WATER
TAC	TACTILE PAVING
TOW	TOP OF WALL
TW	TRADE EFFLUENT WATER
UTL	UNABLE TO LOCATE
UTR	UNABLE TO RAISE
UTS	UNABLE TO SURVEY

APPARATUS

ACU	AIR CONDITIONING UNIT
AV	AIR VALVE
BB	BELISHA BEACON
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IT	INLET
KO	KERB OUTLET
LD	LOOP DETECTOR
LH	LAMP HOLE
LP	LAMP POST
MH	MANHOLE
MK	MARKER POST / PLATE
MT	METER
MW	MONITORING WELL
OL	OUTLET
OU	OUTFALL
PO	POST
PTG	PIPE TO GROUND
PTS	PIPE TO SURFACE
PU	PUMP
RE	RODDING EYE
RS	ROAD SIGN
RM	RISING MAIN
RWP	RAIN WATER PIPE
SC	STOP COCK
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TCB	TELEPHONE CALL BOX
TEL	TELECOM INSPECTION COVER
TL	TRAFFIC LIGHT
TLC	TRAFFIC LIGHT COVER
TM	TICKET MACHINE
TP	TELECOM POLE
VP	VENT PIPE
WM	WATER METER
WO	WASH OUT
WR	WATER RISER
WT	WATER TAP
WW	WET WELL

DEPTHS

d	ELECTRONICALLY DERIVED
Pd	PASSIVELY DERIVED
Bd	BASE DEPTH
Cd	DEPTH TO CROWN
Id	DEPTH TO INVERT
Sd	DEPTH TO SOFFIT

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ALK	ALKATHENE
BK	BRICK
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DI	DUCTILE IRON
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PVC	POLYVINYL CHLORIDE
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VC	VITRIFIED CLAY

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I/R	IRON RAILINGS
L/L	LARCH LAP FENCE
P/R	POST AND RAIL FENCE
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LEVELS

BD	BACKDROP LEVEL
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LINESTYLE

INTERNAL METER (MT)
POT ENDED SERVICE
SEWER CAPPED RUN
SURVEY ABANDONED
INTERNAL VALVE
UNKNOWN UNDERGROUND ANOMALY
UNDERGROUND CHAMBERS
POST PROCESSING AREA (FROZEN LAYER)
ABOVE GROUND (AG)
ASSUMED ROUTE QB4(AR)
EMPTY DUCTS (E)
OVERHEAD (OH)
BACK DROP
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UTILITY CROSSOVER
SURVEY BOUNDARY
VERBAL INFORMATION QB4(VI)
RECORD INFORMATION QB4(R)
REDUNDANT SERVICE
RISING MAIN
CCTV SECTION 4 AND 5 FAULTS ARE SHOWN IN RED

SERVICE TYPE

CATV / DATA
ELECTRICITY (HV)
ELECTRICITY (LV)
FUEL
GAS
HEATING
OVERHEAD ELECTRIC
OVERHEAD TELECOM
TRADE EFFLUENT
COMBINED SEWER
FOUL SEWER
SURFACE SEWER
UNIDENTIFIED SEWER
TELECOM
UNKNOWN SERVICE
WATER

CAUTIONARY NOTES

1. EML techniques have been used in the detection of underground utilities as outlined in Table 2 of PAS 128:2014, the results are not infallible and trial excavations must be carried out in order to confirm identification, position and in particular depth of the utility.
2. GPR techniques has been used in the detection of non-metallic utilities as outlined in Table 2 of PAS 128:2014. The interpretation of these results is not infallible and success will depend on a number of factors including soil type, ground water levels and surface conditions, hence trial excavations must be carried out in order to confirm identification, position and in particular depth of the utility.
3. Depths derived via EML are taken to the centre of the conductor (cable, metallic pipe) and those derived via GPR are usually to the crown of the utility unless otherwise indicated.
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7. Within close proximity of electric substations and similar structures results using EML may become distorted. All reasonable efforts have been made to verify our results using GPR wherever conditions permitted.
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9. Drainage information has been obtained without man entry into the chamber.
10. Wherever possible we have attempted to locate the route of the sewer. Issues such as blockages, surcharging, flooding, sedimentation, sewer collapse, root ingress, excessive depth, obstructions or heavy traffic flow may have affected our ability to obtain meaningful results. In these cases recommendations have been made for further survey or maintenance work.
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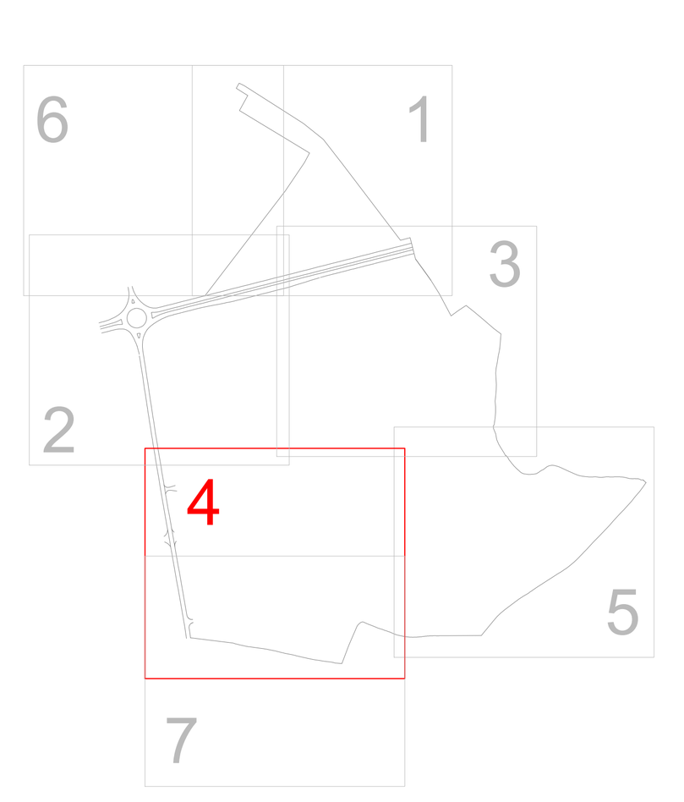
13. All utilities detected by MK Surveys should be considered live unless confirmed otherwise by client or service provider.
14. MK Surveys cannot confirm when utilities are redundant unless there is visual or record evidence to indicate this. In addition MK Surveys cannot guarantee being able to detect all redundant utilities.
15. Wherever available the results of our investigations have been cross referenced with record information. If a utility shown on the records cannot be detected on site, the information has been added to the drawing and indicated as QB4 (R). However it should be noted that the completeness and accuracy of the records cannot be guaranteed.
16. The utility information has been obtained from non-intrusive survey techniques; it always remains possible that there are additional utilities within the survey boundary that we have not been able to detect. We recommend that care is taken on site and that all utility records are used in conjunction with this survey.
17. The responsibility for avoiding damage to assets and utilities on site shall be that of the persons proposing to excavate within the surveyed area, who shall be liable to the asset owner and any third party who may be affected in any way for any loss or damage.

ALWAYS EXERCISE CAUTION WHEN EXCAVATING.

Sheet Layout: (Not to Scale)



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Coordinate Table

Station	Description	Easting	Northing	Level
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S6	PEG	488087.796	242514.408	57.351
S7	PEG	487903.779	242378.573	57.951
S8	PEG	488334.055	242473.674	56.756
S9	PEG	488379.826	242305.992	56.774
S10	PEG	488232.590	242139.288	62.080
S11	PEG	488040.230	242287.471	60.531
S12	ROAD NAIL	487868.371	242123.433	59.229
J101	PEG	487711.093	242595.568	58.620
J102	PEG	487654.561	242925.329	56.502
J103	PEG	487814.290	241981.235	65.460
J104	ROAD NAIL	487615.299	242957.876	56.048

Equipment Information

Equipment	Manufacturer	Model	Serial Number	MKS REF	Date of Calibration
EML Tx Transmitter	SPX Radiodetection	RD TX10	10/TX-10B-GB-94	RD20	05/12/2019
EML Rx Receiver	SPX Radiodetection	RD8100	10/81PDL-GB-80	RD20	05/12/2019
GPR	IDS Georadar	Leica DS2000	SN-010-16-000172	GPR15	23/03/2020

DETECTION SURVEY REPORT

GENERAL
This survey was carried out in accordance with PAS 128:2014 (Publicly Available Specification from BSI). After a pre-survey consultation with the client it was agreed to carry out the detection survey using methodology M1 as per Table 2 of the PAS 128:2014. The survey boundary has been shown on the drawing; please see linestyle section of the key for reference.

RECORD INFORMATION
The client has provided MK Surveys with historical record information. This was at the time of the survey more than 90 days old. As per PAS 128:2014 this is classed as historical and must be referenced with extreme caution. There is no guarantee of the completeness and accuracy of this information.

DETECTION SURVEY
RISING MAINS
One of the rising mains was located by EML methods using the "radio" function on the RD receiver. This method of location does not provide depth information, therefore the quality level is QB3. Unable to obtain depths because the rising main is too deep to generate a strong enough signal. Unable to locate the other rising main due to poor readings for EML and GPR caused by the depth of the utility, therefore assumed has been shown. Records indicate that the rising mains are in a different location to that found on site. Recommend trial excavations to confirm position and depth.

FINAL EFFLUENT SEWER
Unable to locate sewer due to poor readings for EML and GPR. Information has therefore been added from records and the quality level is QB4. Unable to locate MH2501, assumed buried.

SEE CAUTIONARY NOTES WITHIN THE UTILITY KEY

PAS 128:2014 Quality Level Guide

Quality Level	Description	Accuracy
QB4	A utility is expected to exist but cannot be detected - (AR), (R), (VI)	Undefined
QB3 QB3P	Horizontal location only using one geophysical technique. No depth information - NDI.	+/- 500mm Horizontal Undefined Vertical
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Client Provided Desktop Utility Records

Utility Type	Provider Details	Date Acquired
Drainage	Anglian Water	12/04/2019 (Historical)

Revision	Description	Surv. by	Check. by	Appr. by	Date
1	Survey area extended along Willen Road & Monks Way.	JSB	AJ	NS	May 2021

0m 5 10 15 20 25 30 35 40 45 50 55

Topographical and PAS 128:2014 Targeted Drainage Survey

Client:

BLOOR HOMES

Land off Willen Road
Newport Pagnell
Buckinghamshire

Scale:	Sheet Size:	Sheet Number:	Date:	
1:500	A0	4	Mar/Apr 2020	
Project Number:	Rev:	Surveyed by:	Checked by:	Approved by:
28389	1	NC/AC	RPE/DSR	RPE

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www.mksurveys.com www.surveys4bim.co.uk
Head Office: Milton Keynes t: 01908 565561 e: mail@mksurveys.co.uk

KEY

TOPOGRAPHICAL KEY

SURVEY STATION	5
BANKING	TOP / BOTTOM
HEDGE SPREADS	
WOODLAND CANOPY	
ARROW ON STEPS / RAMPS INDICATES DIRECTION UPWARDS	
TREES	SPREAD & GIRTH SHOWN TO SCALE
GATE	
KERB CHANNEL	
ROAD UNKERBED	
FENCE	
WALL	
BUILDING	
OPEN SIDED BUILDING	
OVERHANG / CANOPY	
GLASSHOUSE	
CONTOUR	25.50
SPOT LEVEL	+ 127.13
SONAR LEVEL	127.13
BORE HOLE	BH
TRIAL HOLE	TH
FOOTPATH	
CHANGE IN SURFACE	

GENERAL

Av.	AVERAGE
(ACP)	ASSUMED CONNECTION POINT
COW	CABLE ON WALL
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H/P	HIGH PRESSURE
HV	HIGH VOLTAGE
KV	KILO VOLT
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NPV	NO PIPES VISIBLE
OSBM	ORDNANCE SURVEY BENCHMARK
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P.BOX	POST BOX
RED	REDUNDANT SERVICE
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UTL	UNABLE TO LOCATE
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UTS	UNABLE TO SURVEY

APPARATUS

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THL	THRESHOLD LEVEL
WL	WATER LEVEL

LINESTYLE

INTERNAL METER	(MT)
POT ENDED SERVICE	
SEWER CAPPED RUN	
SURVEY ABANDONED	
INTERNAL VALVE	
UNKNOWN UNDERGROUND ANOMALY	
UNDERGROUND CHAMBERS	
POST PROCESSING AREA	(FROZEN LAYER)
ABOVE GROUND	(AG)
ASSUMED ROUTE	QB4(AR)
EMPTY DUCTS	(E)
OVERHEAD	(OH)
BACK DROP	
P TRAP	
UTILITY CROSSOVER	
SURVEY BOUNDARY	
VERBAL INFORMATION	QB4(VI)
RECORD INFORMATION	QB4(R)
REDUNDANT SERVICE	
RISING MAIN	

CCTV SECTION 4 AND 5 FAULTS ARE SHOWN IN RED

SERVICE TYPE

CATV / DATA
ELECTRICITY (HV)
ELECTRICITY (LV)
FUEL
GAS
HEATING
OVERHEAD ELECTRIC
OVERHEAD TELECOM
TRADE EFFLUENT
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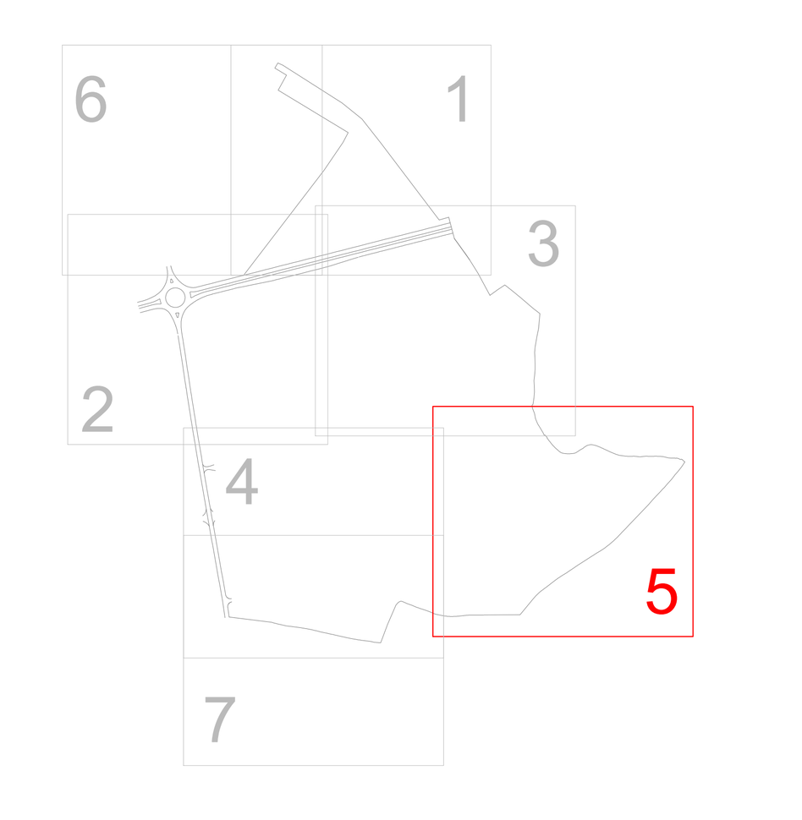

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S7	PEG	487903.779	242378.573	57.951
S8	PEG	488334.055	242473.674	56.756
S9	PEG	488379.826	242305.992	56.774
S10	PEG	488232.590	242139.288	62.080
S11	PEG	488040.230	242287.471	60.531
S12	ROAD NAIL	487868.371	242123.433	59.229
J101	PEG	487711.093	242595.568	58.620
J102	PEG	487654.561	242925.329	56.502
J103	PEG	487814.290	241981.235	65.460
J104	ROAD NAIL	487615.299	242957.876	56.048

Equipment Information

Equipment	Manufacturer	Model	Serial Number	MKS REF	Date of Calibration
EML Tx Transmitter	SPX Radiodetection	RD TX10	10/TX-10B-GB-94	RD20	05/12/2019
EML Rx Receiver	SPX Radiodetection	RD8100	10/81PDL-GB-80	RD20	05/12/2019
GPR	IDS Georadar	Leica DS2000	SN-010-16-000172	GPR15	23/03/2020

DETECTION SURVEY REPORT

GENERAL
This survey was carried out in accordance with PAS 128:2014 (Publicly Available Specification from BSI). After a pre-survey consultation with the client it was agreed to carry out the detection survey using methodology M1 as per Table 2 of the PAS 128:2014. The survey boundary has been shown on the drawing; please see linestyle section of the key for reference.

RECORD INFORMATION
The client has provided MK Surveys with historical record information. This was at the time of the survey more than 90 days old. As per PAS 128:2014 this is classed as historical and must be referenced with extreme caution. There is no guarantee of the completeness and accuracy of this information.

DETECTION SURVEY
RISING MAINS
One of the rising mains was located by EML methods using the "radio" function on the RD receiver. This method of location does not provide depth information, therefore the quality level is QB3. Unable to obtain depths because the rising main is too deep to generate a strong enough signal. Unable to locate the other rising main due to poor readings for EML and GPR caused by the depth of the utility, therefore assumed has been shown. Records indicate that the rising mains are in a different location to that found on site. Recommend trial excavations to confirm position and depth.

FINAL EFFLUENT SEWER
Unable to locate sewer due to poor readings for EML and GPR. Information has therefore been added from records and the quality level is QB4. Unable to locate MH2501, assumed buried.

SEE CAUTIONARY NOTES WITHIN THE UTILITY KEY

PAS 128:2014 Quality Level Guide

Quality Level	Description	Accuracy
QB4	A utility is expected to exist but cannot be detected - (AR), (R), (VI)	Undefined
QB3 QB3P	Horizontal location only using one geophysical technique. No depth information - NDI.	+/- 500mm Horizontal Undefined Vertical
QB2 QB2P	Horizontal and vertical location only using one geophysical technique.	+/- 250mm or +/- 40% of depth whichever is greater
QB1 QB1P	Horizontal and vertical location only using two geophysical techniques.	+/- 150mm or +/- 15% of depth whichever is greater
QA	Service verified in an open excavation, inside an inspection chamber / draw pit, or at the point the service enters / exits the ground.	+/- 50mm Horizontal +/- 25mm Vertical

Client Provided Desktop Utility Records

Utility Type	Provider Details	Date Acquired
Drainage	Anglian Water	12/04/2019 (Historical)

N

Revision	Description	Surv. by	Check. by	Appr. by	Date
1	Survey area extended along Willen Road & Monks Way.	JSB	AJ	NS	May 2021

0m 5 10 15 20 25 30 35 40 45 50 55

Topographical and PAS 128:2014 Targeted Drainage Survey

Client:

BLOOR HOMES

Land off Willen Road
Newport Pagnell
Buckinghamshire

Scale:	Sheet Size:	Sheet Number:	Date:
1:500	A0	5	Mar/Apr 2020

Project Number:	Rev:	Surveyed by:	Checked by:	Approved by:
28389	1	NC/AC	RPE/DSR	RPE

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Head Office: Milton Keynes t: 01908 565561 e: mail@mksurveys.co.uk

KEY

TOPOGRAPHICAL KEY

SURVEY STATION	5	FENCE	
BANKING	TOP / BOTTOM	WALL	
HEDGE SPREADS		BUILDING	
WOODLAND CANOPY		OPEN SIDED BUILDING	
ARROW ON STEPS / RAMPS INDICATES DIRECTION UPWARDS		OVERHANG / CANOPY	
TREES	SPREAD & GIRTH SHOWN TO SCALE	GLASSHOUSE	
GATE		CONTOUR	25.50
KERB CHANNEL		SPOT LEVEL	+ 127.13
ROAD UNKERBED		SONAR LEVEL	127.13
		BORE HOLE	BH
		TRIAL HOLE	TH
		FOOTPATH	
		CHANGE IN SURFACE	

GENERAL

Av.	AVERAGE
(ACP)	ASSUMED CONNECTION POINT
COW	CABLE ON WALL
CW	COMBINED WATER
DIS	DISUSED
DK	DROP KERB
EML	ELECTROMAGNETIC LOCATOR
EOT	END OF TRACE
FO	FIBRE OPTIC
FP	FOOTPATH
FW	FOUL WATER
GP	GATE POST
GPR	GROUND PENETRATING RADAR
HB	HARD BED
H/P	HIGH PRESSURE
HV	HIGH VOLTAGE
KV	KILO VOLT
I/P	INTERMEDIATE PRESSURE
L/P	LOW PRESSURE
LV	LOW VOLTAGE
M/P	MEDIUM PRESSURE
NDI	NO DEPTH INFORMATION
NFI	NO FURTHER INFORMATION
NDV	NO DUCTS VISIBLE
NPV	NO PIPES VISIBLE
OSBM	ORDNANCE SURVEY BENCHMARK
POW	PIPE ON WALL
P.BOX	POST BOX
RED	REDUNDANT SERVICE
RW	RETAINING WALL
SB	SOFT BED
SNP	STREET NAME PLATE
SW	SURFACE WATER
TAC	TACTILE PAVING
TOW	TOP OF WALL
TW	TRADE EFFLUENT WATER
UTL	UNABLE TO LOCATE
UTR	UNABLE TO RAISE
UTS	UNABLE TO SURVEY

PIPE MATERIALS

AC	ASBESTOS CEMENT
ALK	ALKATHENE
BK	BRICK
CI	CAST IRON
CO	CONCRETE
DI	DUCTILE IRON
HDPE	HIGH DENSITY PE
MDPE	MEDIUM DENSITY PE
PE	POLYETHYLENE
PF	PITCH FIBRE
PP	POLYPROPYLENE
PVC	POLYVINYL CHLORIDE
PVC-U	ULTRA RIB (PVC)
SI	SPUN IRON
ST	STEEL
VC	VITRIFIED CLAY

FENCES

B/W	BARBED WIRE FENCE
C/B	CLOSED BOARDED FENCE
CPL	CONCRETE PANEL FENCE
C/I	CORRUGATED IRON FENCE
CNP	CHESTNUT PAILING
C/L	CHAIN LINK FENCE
I/R	IRON RAILINGS
L/L	LARCH LAP FENCE
P/R	POST AND RAIL FENCE
P/W	POST AND WIRE FENCE
W/M	WIRE MESH FENCE

LEVELS

BD	BACKDROP LEVEL
BL	BASE LEVEL
CL	COVER LEVEL
CWL	CROWN LEVEL
DPC	DAMP PROOF COURSE
FL	FLOOR LEVEL
IL	INVERT LEVEL
PT	P TRAP LEVEL
RL	ROOF LEVEL
SL	SILT LEVEL
SOF	SOFFIT LEVEL
THL	THRESHOLD LEVEL
WL	WATER LEVEL

APPARATUS

ACU	AIR CONDITIONING UNIT
AV	AIR VALVE
BB	BELISHA BEACON
BO	BOLLARD
BOL	BOLLARD LIGHT
BS	BUS STOP
CATV	CABLE TELEVISION
CB	CONTROL BOX
CCB	CROSSING CONTROL BUTTON
CP	CATCH PIT
CR	CABLE RISER
DCH	DRAINAGE CHANNEL
EB	ELECTRIC CONTROL BOX
EP	ELECTRIC POLE
ER	EARTH ROD
FD	FILTER DRAIN
FFP	FUEL TANK FILL POINT
FH	FIRE HYDRANT
GR	GAS RISER
GV	GAS VALVE
GY	GULLY
IC	INSPECTION COVER
INT	INTERCEPTOR
IT	INLET
KO	KERB OUTLET
LD	LOOP DETECTOR
LH	LAMP HOLE
LP	LAMP POST
MH	MANHOLE
MK	MARKER POST / PLATE
MT	METER
MW	MONITORING WELL
OL	OUTLET
OU	OUTFALL
PO	POST
PTG	PIPE TO GROUND
PTS	PIPE TO SURFACE
PU	PUMP
RE	RODDING EYE
RS	ROAD SIGN
RM	RISING MAIN
RWP	RAIN WATER PIPE
SC	STOP COCK
SO	SOAKAWAY
SP	SOIL PIPE
ST	STAY CABLE
SV	STOP / SLUICE VALVE
SVP	SOIL VENT PIPE
TCB	TELEPHONE CALL BOX
TEL	TELECOM INSPECTION COVER
TL	TRAFFIC LIGHT
TLC	TRAFFIC LIGHT COVER
TM	TICKET MACHINE
TP	TELECOM POLE
VP	VENT PIPE
WM	WATER METER
WO	WASH OUT
WR	WATER RISER
WT	WATER TAP
WW	WET WELL

LINESTYLE

- INTERNAL METER (MT)
- POT ENDED SERVICE
- SEWER CAPPED RUN
- SURVEY ABANDONED
- INTERNAL VALVE
- UNKNOWN UNDERGROUND ANOMALY
- UNDERGROUND CHAMBERS
- POST PROCESSING AREA (FROZEN LAYER)
- ABOVE GROUND (AG)
- ASSUMED ROUTE QB4(AR)
- EMPTY DUCTS (E)
- OVERHEAD (OH)
- BACK DROP
- P TRAP
- UTILITY CROSSOVER
- SURVEY BOUNDARY
- VERBAL INFORMATION QB4(VI)
- RECORD INFORMATION QB4(R)
- REDUNDANT SERVICE
- RISING MAIN

CCTV SECTION 4 AND 5 FAULTS ARE SHOWN IN RED

SERVICE TYPE

- CATV / DATA
- ELECTRICITY (HV)
- ELECTRICITY (LV)
- FUEL
- GAS
- HEATING
- OVERHEAD ELECTRIC
- OVERHEAD TELECOM
- TRADE EFFLUENT
- COMBINED SEWER
- FOUL SEWER
- SURFACE SEWER
- UNIDENTIFIED SEWER
- TELECOM
- UNKNOWN SERVICE
- WATER

DEPTHS

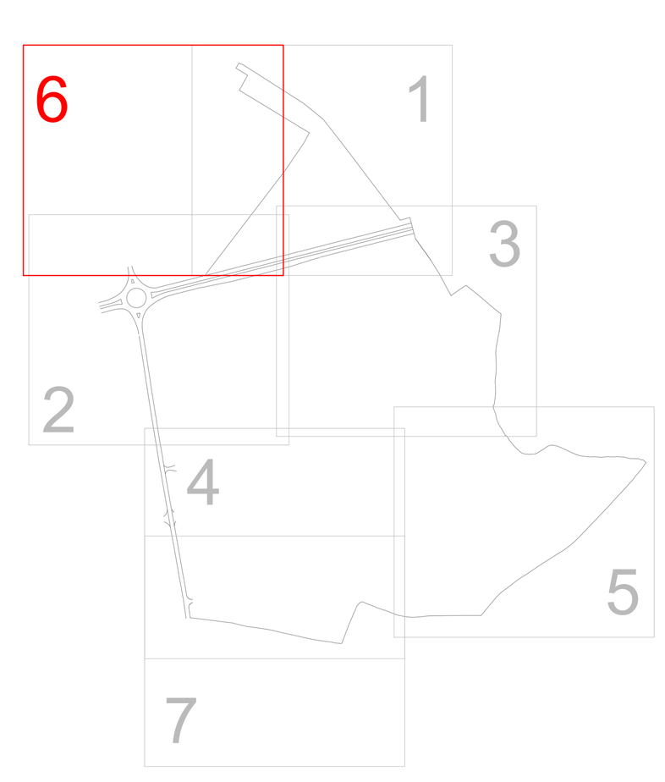
d	ELECTRONICALLY DERIVED
Pd	PASSIVELY DERIVED
Bd	BASE DEPTH
Cd	DEPTH TO CROWN
Id	DEPTH TO INVERT
Sd	DEPTH TO SOFFIT

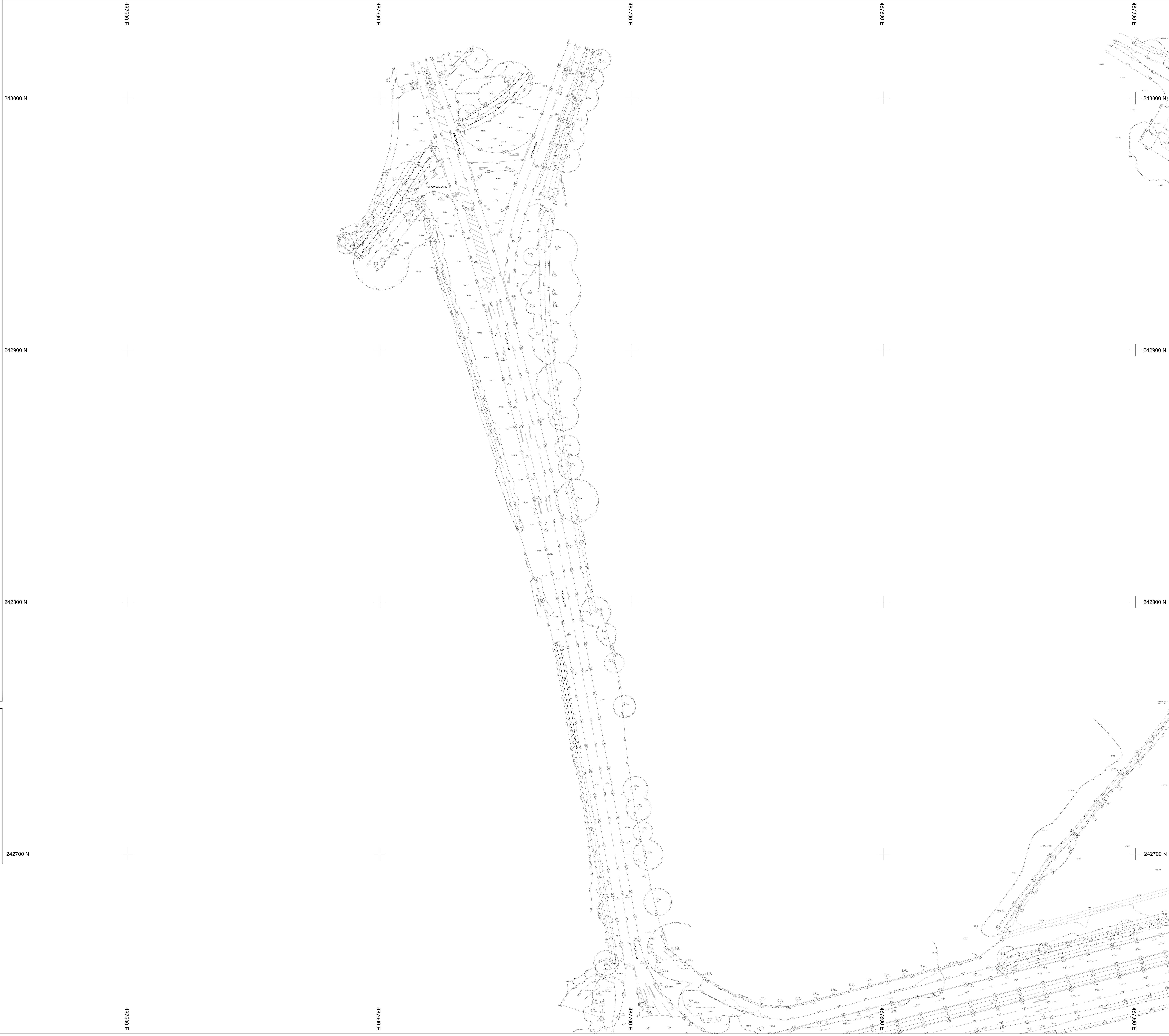
CAUTIONARY NOTES

1. EML techniques have been used in the detection of underground utilities as outlined in Table 2 of PAS 128:2014, the results are not infallible and trial excavations must be carried out in order to confirm identification, position and in particular depth of the utility.
2. GPR techniques has been used in the detection of non-metallic utilities as outlined in Table 2 of PAS 128:2014. The interpretation of these results is not infallible and success will depend on a number of factors including soil type, ground water levels and surface conditions, hence trial excavations must be carried out in order to confirm identification, position and in particular depth of the utility.
3. Depths derived via EML are taken to the centre of the conductor (cable, metallic pipe) and those derived via GPR are usually to the crown of the utility unless otherwise indicated.
4. Where cables cannot be detected individually an average depth has been obtained and trial excavations are recommended to confirm number and depths of cables banded together.
5. 'Pot-ended' cables are often difficult to detect and although we have made all reasonable efforts to locate or transpose this information from records, we cannot guarantee that all 'pot-ended' cables have been located.
6. Fibre optic cables are often difficult to detect, and commonly access chambers can be locked and thereby made inaccessible by the utility provider. All reasonable efforts have been made to locate these ducts using GPR. Cables not located have been transposed from records.
7. Within close proximity of electric substations and similar structures results using EML may become distorted. All reasonable efforts have been made to verify our results using GPR wherever conditions permitted.
8. Underneath overhead power lines results using EML may become distorted. All reasonable efforts have been made to verify our results using GPR wherever conditions permitted.
9. Drainage information has been obtained without man entry into the chamber.
10. Wherever possible we have attempted to locate the route of the sewer. Issues such as blockages, surcharging, flooding, sedimentation, sewer collapse, root ingress, excessive depth, obstructions or heavy traffic flow may have affected our ability to obtain meaningful results. In these cases recommendations have been made for further survey or maintenance work.
11. Pipe / duct sizes have been recorded from surface inspection or taken from record information. Pipe sizes have been recorded in millimetres and depths in metres, except in instances where sizes are indicated in imperial units on the record information.
12. Water and Gas utilities to individual properties are often of a size that cannot be detected using EML or GPR investigation, whenever possible the route has been added from surface evidence (pipe risers, valves, etc), but this should be viewed as a guide only.
13. All utilities detected by MK Surveys should be considered live unless confirmed otherwise by client or service provider.
14. MK Surveys cannot confirm when utilities are redundant unless there is visual or record evidence to indicate this. In addition MK Surveys cannot guarantee being able to detect all redundant utilities.
15. Wherever available the results of our investigations have been cross referenced with record information. If a utility shown on the records cannot be detected on site, the information has been added to the drawing and indicated as QB4 (R). However it should be noted that the completeness and accuracy of the records cannot be guaranteed.
16. The utility information has been obtained from non-intrusive survey techniques; it always remains possible that there are additional utilities within the survey boundary that we have not been able to detect. We recommend that care is taken on site and that all utility records are used in conjunction with this survey.
17. The responsibility for avoiding damage to assets and utilities on site shall be that of the persons proposing to excavate within the surveyed area, who shall be liable to the asset owner and any third party who may be affected in any way for any loss or damage.

ALWAYS EXERCISE CAUTION WHEN EXCAVATING.

Sheet Layout: (Not to Scale)





Notes :

1. GRID AND LEVELS BASED ON ORDNANCE DATUM, DERIVED FROM THE NATIONAL GNSS NETWORK. LOCAL SCALE FACTOR 0.99969 APPLIED.
2. TREE AND HEDGE SPECIES HAVE BEEN IDENTIFIED AS ACCURATELY AS POSSIBLE BUT SHOULD BE CROSS CHECKED IN CRITICAL AREAS.

Coordinate Table

Station	Description	Easting	Northing	Level
S1	PEG	487749.616	242310.597	58.745
S4	ROAD NAIL	487776.960	242228.103	58.887
S5	PEG	488184.054	242741.236	56.919
S6	PEG	488087.796	242514.408	57.351
S7	PEG	487903.779	242378.573	57.951
S8	PEG	488334.055	242473.674	56.756
S9	PEG	488379.826	242305.992	56.774
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J104	ROAD NAIL	487615.299	242957.876	56.048

Equipment Information

Equipment	Manufacturer	Model	Serial Number	MKS REF	Date of Calibration
EML Tx Transmitter	SPX Radiodetection	RD TX10	10/TX-10B-GB-94	RD20	05/12/2019
EML Rx Receiver	SPX Radiodetection	RD8100	10/81PDL-GB-80	RD20	05/12/2019
GPR	IDS Georadar	Leica DS2000	SN-010-16-000172	GPR15	23/03/2020

DETECTION SURVEY REPORT

GENERAL
This survey was carried out in accordance with PAS 128:2014 (Publicly Available Specification from BSI). After a pre-survey consultation with the client it was agreed to carry out the detection survey using methodology M1 as per Table 2 of the PAS 128:2014. The survey boundary has been shown on the drawing; please see linestyle section of the key for reference.

RECORD INFORMATION
The client has provided MK Surveys with historical record information. This was at the time of the survey more than 90 days old. As per PAS 128:2014 this is classed as historical and must be referenced with extreme caution. There is no guarantee of the completeness and accuracy of this information.

DETECTION SURVEY
RISING MAINS
One of the rising mains was located by EML methods using the "radio" function on the RD receiver. This method of location does not provide depth information, therefore the quality level is QB3. Unable to obtain depths because the rising main is too deep to generate a strong enough signal. Unable to locate the other rising main due to poor readings for EML and GPR caused by the depth of the utility, therefore assumed has been shown. Records indicate that the rising mains are in a different location to that found on site. Recommend trial excavations to confirm position and depth.

FINAL EFFLUENT SEWER
Unable to locate sewer due to poor readings for EML and GPR. Information has therefore been added from records and the quality level is QB4. Unable to locate MH2501, assumed buried.

SEE CAUTIONARY NOTES WITHIN THE UTILITY KEY

PAS 128:2014 Quality Level Guide

Quality Level	Description	Accuracy
QB4	A utility is expected to exist but cannot be detected - (AR), (R), (VI)	Undefined
QB3 QB3P	Horizontal location only using one geophysical technique. No depth information - NDI.	+/- 500mm Horizontal Undefined Vertical
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QA	Service verified in an open excavation, inside an inspection chamber / draw pit, or at the point the service enters / exits the ground.	+/- 50mm Horizontal +/- 25mm Vertical

Client Provided Desktop Utility Records

Utility Type	Provider Details	Date Acquired
Drainage	Anglian Water	12/04/2019 (Historical)

N

Revision	Description	Surv. by	Check. by	Appr. by	Date
1	Survey area extended along Willen Road & Monks Way.	JSB	AJ	NS	May 2021

0m 5 10 15 20 25 30 35 40 45 50 55

Topographical and PAS 128:2014 Targeted Drainage Survey

Client:

BLOOR HOMES

Land off Willen Road
Newport Pagnell
Buckinghamshire

Scale:	Sheet Size:	Sheet Number:	Date:
1:500	A0	6	Mar/Apr 2020

Project Number:	Rev:	Surveyed by:	Checked by:	Approved by:
28389	1	NC/AC	RPE/DSR	RPE

mksurveys

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Head Office: Milton Keynes t: 01908 565561 e: mail@mksurveys.co.uk

KEY

TOPOGRAPHICAL KEY

SURVEY STATION 5
BANKING (TOP / BOTTOM)
HEDGE SPREADS
WOODLAND CANOPY
ARROW ON STEPS / RAMPS INDICATES DIRECTION UPWARDS
TREES — SPREAD & GIRTH SHOWN TO SCALE
GATE
KERB CHANNEL
ROAD UNKERBED
FENCE
WALL
BUILDING
OPEN SIDED BUILDING
OVERHANG / CANOPY
GLASSHOUSE
CONTOUR 25.50
SPOT LEVEL + 127.13 SONAR LEVEL 127.13
BORE HOLE BH
TRIAL HOLE TH
FOOTPATH
CHANGE IN SURFACE

GENERAL

Av.	AVERAGE
(ACP)	ASSUMED CONNECTION POINT
COW	CABLE ON WALL
CW	COMBINED WATER
DIS	DISUSED
DK	DROP KERB
EML	ELECTROMAGNETIC LOCATOR
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GPR	GROUND PENETRATING RADAR
HB	HARD BED
H/P	HIGH PRESSURE
HV	HIGH VOLTAGE
KV	KILO VOLT
I/P	INTERMEDIATE PRESSURE
L/P	LOW PRESSURE
LV	LOW VOLTAGE
M/P	MEDIUM PRESSURE
NDI	NO DEPTH INFORMATION
NFI	NO FURTHER INFORMATION
NDV	NO DUCTS VISIBLE
NPV	NO PIPES VISIBLE
OSBM	ORDNANCE SURVEY BENCHMARK
POW	PIPE ON WALL
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APPARATUS

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AV	AIR VALVE
BB	BELISHA BEACON
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INT	INTERCEPTOR
IT	INLET
KO	KERB OUTLET
LD	LOOP DETECTOR
LH	LAMP HOLE
LP	LAMP POST
MH	MANHOLE
MK	MARKER POST / PLATE
MT	METER
MW	MONITORING WELL
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OU	OUTFALL
PO	POST
PTG	PIPE TO GROUND
PTS	PIPE TO SURFACE
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TLC	TRAFFIC LIGHT COVER
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VP	VENT PIPE
WM	WATER METER
WO	WASH OUT
WR	WATER RISER
WT	WATER TAP
WW	WET WELL

DEPTHS

d	ELECTRONICALLY DERIVED
Pd	PASSIVELY DERIVED
Bd	BASE DEPTH
Cd	DEPTH TO CROWN
Id	DEPTH TO INVERT
Sd	DEPTH TO SOFFIT

PIPE MATERIALS

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LEVELS

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THL	THRESHOLD LEVEL
WL	WATER LEVEL

LINESTYLE

INTERNAL METER (MT)
POT ENDED SERVICE
SEWER CAPPED RUN
SURVEY ABANDONED
INTERNAL VALVE
UNKNOWN UNDERGROUND ANOMALY
UNDERGROUND CHAMBERS
POST PROCESSING AREA (FROZEN LAYER)
ABOVE GROUND (AG)
ASSUMED ROUTE QB4(AR)
EMPTY DUCTS (E)
OVERHEAD (OH)
BACK DROP
P TRAP
UTILITY CROSSOVER
SURVEY BOUNDARY
VERBAL INFORMATION QB4(VI)
RECORD INFORMATION QB4(R)
REDUNDANT SERVICE
RISING MAIN
CCTV SECTION 4 AND 5 FAULTS ARE SHOWN IN RED

SERVICE TYPE

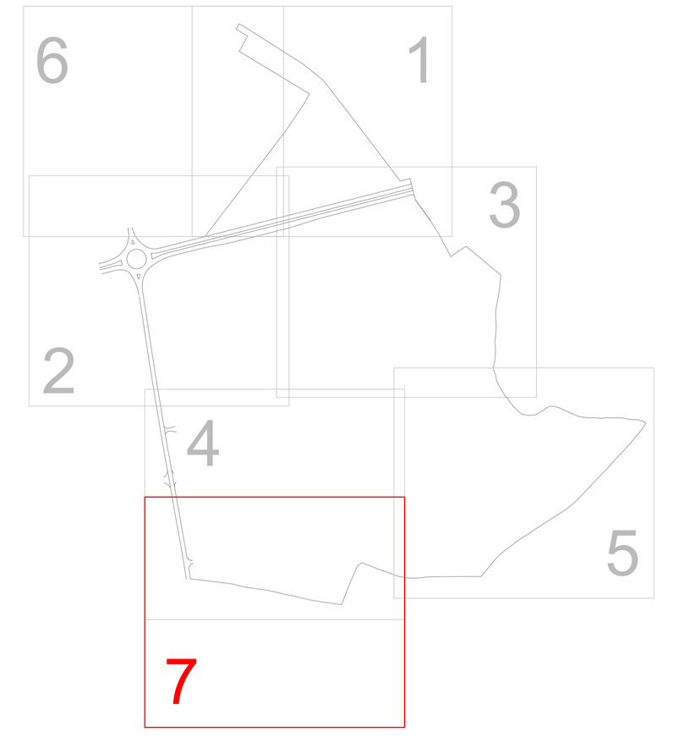
CATV / DATA
ELECTRICITY (HV)
ELECTRICITY (LV)
FUEL
GAS
HEATING
OVERHEAD ELECTRIC
OVERHEAD TELECOM
TRADE EFFLUENT
COMBINED SEWER
FOUL SEWER
SURFACE SEWER
UNIDENTIFIED SEWER
TELECOM
UNKNOWN SERVICE
WATER

CAUTIONARY NOTES

1. EML techniques have been used in the detection of underground utilities as outlined in Table 2 of PAS 128:2014, the results are not infallible and trial excavations must be carried out in order to confirm identification, position and in particular depth of the utility.
2. GPR techniques has been used in the detection of non-metallic utilities as outlined in Table 2 of PAS 128:2014. The interpretation of these results is not infallible and success will depend on a number of factors including soil type, ground water levels and surface conditions, hence trial excavations must be carried out in order to confirm identification, position and in particular depth of the utility.
3. Depths derived via EML are taken to the centre of the conductor (cable, metallic pipe) and those derived via GPR are usually to the crown of the utility unless otherwise indicated.
4. Where cables cannot be detected individually an average depth has been obtained and trial excavations are recommended to confirm number and depths of cables banded together.
5. 'Pot-ended' cables are often difficult to detect and although we have made all reasonable efforts to locate or transpose this information from records, we cannot guarantee that all 'pot-ended' cables have been located.
6. Fibre optic cables are often difficult to detect, and commonly access chambers can be locked and thereby made inaccessible by the utility provider. All reasonable efforts have been made to locate these ducts using GPR. Cables not located have been transposed from records.
7. Within close proximity of electric substations and similar structures results using EML may become distorted. All reasonable efforts have been made to verify our results using GPR wherever conditions permitted.
8. Underneath overhead power lines results using EML may become distorted. All reasonable efforts have been made to verify our results using GPR wherever conditions permitted.
9. Drainage information has been obtained without man entry into the chamber.
10. Wherever possible we have attempted to locate the route of the sewer. Issues such as blockages, surcharging, flooding, sedimentation, sewer collapse, root ingress, excessive depth, obstructions or heavy traffic flow may have affected our ability to obtain meaningful results. In these cases recommendations have been made for further survey or maintenance work.
11. Pipe / duct sizes have been recorded from surface inspection or taken from record information. Pipe sizes have been recorded in millimetres and depths in metres, except in instances where sizes are indicated in imperial units on the record information.
12. Water and Gas utilities to individual properties are often of a size that cannot be detected using EML or GPR investigation, whenever possible the route has been added from surface evidence (pipe risers, valves, etc), but this should be viewed as a guide only.
13. All utilities detected by MK Surveys should be considered live unless confirmed otherwise by client or service provider.
14. MK Surveys cannot confirm when utilities are redundant unless there is visual or record evidence to indicate this. In addition MK Surveys cannot guarantee being able to detect all redundant utilities.
15. Wherever available the results of our investigations have been cross referenced with record information. If a utility shown on the records cannot be detected on site, the information has been added to the drawing and indicated as QB4 (R). However it should be noted that the completeness and accuracy of the records cannot be guaranteed.
16. The utility information has been obtained from non-intrusive survey techniques; it always remains possible that there are additional utilities within the survey boundary that we have not been able to detect. We recommend that care is taken on site and that all utility records are used in conjunction with this survey.
17. The responsibility for avoiding damage to assets and utilities on site shall be that of the persons proposing to excavate within the surveyed area, who shall be liable to the asset owner and any third party who may be affected in any way for any loss or damage.

ALWAYS EXERCISE CAUTION WHEN EXCAVATING.

Sheet Layout: (Not to Scale)



Notes :

1. GRID AND LEVELS BASED ON ORDNANCE DATUM, DERIVED FROM THE NATIONAL GNSS NETWORK. LOCAL SCALE FACTOR 0.99969 APPLIED.
2. TREE AND HEDGE SPECIES HAVE BEEN IDENTIFIED AS ACCURATELY AS POSSIBLE BUT SHOULD BE CROSS CHECKED IN CRITICAL AREAS.

Coordinate Table

Station	Description	Easting	Northing	Level
S1	PEG	487749.616	242310.597	58.745
S4	ROAD NAIL	487776.960	242228.103	58.887
S5	PEG	488184.054	242741.236	56.919
S6	PEG	488087.796	242514.408	57.351
S7	PEG	487903.779	242378.573	57.951
S8	PEG	488334.055	242473.674	56.756
S9	PEG	488379.826	242305.992	56.774
S10	PEG	488232.590	242139.288	62.080
S11	PEG	488040.230	242287.471	60.531
S12	ROAD NAIL	487868.371	242123.433	59.229
J101	PEG	487711.093	242595.568	58.620
J102	PEG	487654.561	242925.329	56.502
J103	PEG	487814.290	241981.235	65.460
J104	ROAD NAIL	487615.299	242957.876	56.048

Equipment Information

Equipment	Manufacturer	Model	Serial Number	MKS REF	Date of Calibration
EML Tx Transmitter	SPX Radiodetection	RD TX10	10/TX-10B-GB-94	RD20	05/12/2019
EML Rx Receiver	SPX Radiodetection	RD8100	10/81PDL-GB-80	RD20	05/12/2019
GPR	IDS Georadar	Leica DS2000	SN-010-16-000172	GPR15	23/03/2020

DETECTION SURVEY REPORT

GENERAL
This survey was carried out in accordance with PAS 128:2014 (Publicly Available Specification from BSI). After a pre-survey consultation with the client it was agreed to carry out the detection survey using methodology M1 as per Table 2 of the PAS 128:2014. The survey boundary has been shown on the drawing; please see linestyle section of the key for reference.

RECORD INFORMATION
The client has provided MK Surveys with historical record information. This was at the time of the survey more than 90 days old. As per PAS 128:2014 this is classed as historical and must be referenced with extreme caution. There is no guarantee of the completeness and accuracy of this information.

DETECTION SURVEY
RISING MAINS
One of the rising mains was located by EML methods using the "radio" function on the RD receiver. This method of location does not provide depth information, therefore the quality level is QB3. Unable to obtain depths because the rising main is too deep to generate a strong enough signal. Unable to locate the other rising main due to poor readings for EML and GPR caused by the depth of the utility, therefore assumed has been shown. Records indicate that the rising mains are in a different location to that found on site. Recommend trial excavations to confirm position and depth.

FINAL EFFLUENT SEWER
Unable to locate sewer due to poor readings for EML and GPR. Information has therefore been added from records and the quality level is QB4. Unable to locate MH2501, assumed buried.

SEE CAUTIONARY NOTES WITHIN THE UTILITY KEY

PAS 128:2014 Quality Level Guide

Quality Level	Description	Accuracy
QB4	A utility is expected to exist but cannot be detected - (AR), (R), (VI)	Undefined
QB3 QB3P	Horizontal location only using one geophysical technique. No depth information - NDI.	+/- 500mm Horizontal Undefined Vertical
QB2 QB2P	Horizontal and vertical location only using one geophysical technique.	+/- 250mm or +/- 40% of depth whichever is greater
QB1 QB1P	Horizontal and vertical location only using two geophysical techniques.	+/- 150mm or +/- 15% of depth whichever is greater
QA	Service verified in an open excavation, inside an inspection chamber / draw pit, or at the point the service enters / exits the ground.	+/- 50mm Horizontal +/- 25mm Vertical

Client Provided Desktop Utility Records

Utility Type	Provider Details	Date Acquired
Drainage	Anglian Water	12/04/2019 (Historical)

N

Revision	Description	Surv. by	Check. by	Appr. by	Date
1	Survey area extended along Willen Road & Monks Way.	JSB	AJ	NS	May 2021

0m 5 10 15 20 25 30 35 40 45 50 55

Topographical and PAS 128:2014 Targeted Drainage Survey

Client:

BLOOR HOMES

Land off Willen Road
Newport Pagnell
Buckinghamshire

Scale:	Sheet Size:	Sheet Number:	Date:
1:500	A0	7	Mar/Apr 2020

Project Number:	Rev:	Surveyed by:	Checked by:	Approved by:
28389	1	NC/AC	RPE/DSR	RPE

mksurveys
www.mksurveys.com www.surveys4bim.co.uk
Head Office: Milton Keynes t: 01908 565561 e: mail@mksurveys.co.uk

Appendix 3

Soakaway Tests produced by Rolton Group Ltd

ROLTON GROUP
ENGINEERING THE FUTURE™

Neil Cartwright
Bloor Homes South Midlands Ltd
Secondus House
Cygnet Drive
Swan Valley
Northampton
Northamptonshire
NN4 9BS

19 November 2020
Our Ref-190021-RGL-ZZ-XX-CO-Z-0006

Via email – **neil.cartwright@bloorhomes.com**

Dear Neil,

PRELIMINARY GROUND INVESTIGATIONS AT WILLEN ROAD, NEWPORT PAGNELL

Please find enclosed a plan drawing showing the locations of the soakaways and trial pits we undertook recently together with the soakaway infiltration test results and the trial pits logs.

I have also summarised at the end the results of the infiltration testing. You will see that the rates of infiltration vary significantly with low rates in places. Groundwater is shallow however and we were seeing seepages into many of the soakaways and trial pits at little over 1m below ground level.

The trial pits show the natural soils to be more or less as expected with a mixed cover of clays and sands and gravels.

The made ground in the backfilled quarry is generally a soft clay – in places very soft.

The quarry was still being finally restored.

We consider that it would be worth putting in place gas monitoring of the quarry backfill and there were indications of some degree of organic content and it will take some months to get a better picture of the potential for gas generation.

Also, it would be worthwhile once the restoration is complete placing some ground surface monitoring points on over the old pit to determine the degree of settlement that is taking place and when this shows signs of abating. Milton Keynes Surveys could do this.

Please advise if you would like any further assessment at this stage – of course if there is any point that needs further comment please do not hesitate to ask.

Yours sincerely
for and on behalf of Rolton Group Ltd

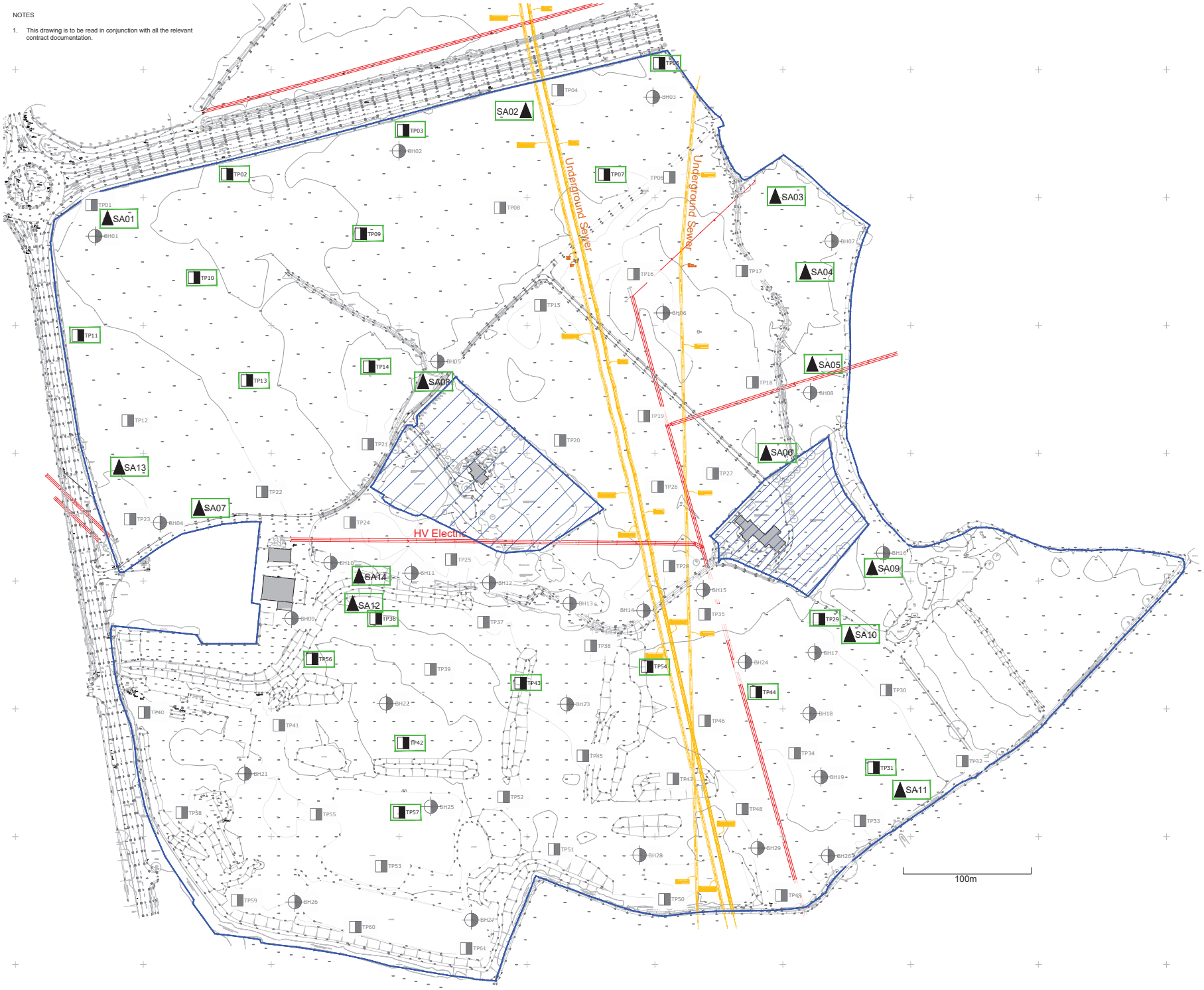
[redacted]

[redacted]

Encs. 190021-RGL-ZZ-XX-DR-G-900-0002_Exploratory Hole Location Layout
190021-RGL-ZZ-XX-SH-G-600-0001_Trial Pit Logs
190021-RGL-ZZ-XX-SH-G-500-0001_Soakaway Testing Results
Summary of Soakaway Infiltration Testing Results from Investigations by RGL in Sept 2020

NOTES

1. This drawing is to be read in conjunction with all the relevant contract documentation.



Standard construction hazards that a competent contractor would be aware of have not been identified on this drawing. Risks that may not be immediately apparent are listed below:

Status	Date	Description	Dwn	Eng	Chkd	Ver
S2-P01	03.11.20	Issued for Information	CRB	CRB	PRA	PRA

KEY

- TP01 — Trial Pit Location Completed in September 2020
- SA01 — Soakaway Location Completed in September 2020 SA01 - SA14

Investigations to be completed
- TP01 — Trial Pit Location to be Completed
- BH01 — Borehole Location BH01 - BH29

Services:
- HV Electric Location
- Sewer Location

Approximate Site Boundary Location - Hatched areas are not included in the development

ROLTON GROUP
ENGINEERING THE FUTURE™
www.rolton.com 01933 410909

Project:
Bloor Homes South Midlands Ltd
Land off Willen Road,
Newport Pagnell,
Buckinghamshire

Drawing Title:
Exploratory Hole Location Layout

RGL Project Ref:	Scale@A1	Scale@A3
19-0021	NTS	NTS

Specification(s):

Drawing Number:
190021-RGL-ZZ-XX-DR-G-900-0002
Project-Originator-Zone-Level-Type-Role-Classification-Number

Issue Purpose:	Status:
INFORMATION	S2-P01
	Suitability-Revision

Rolton Group Limited
The Charles Parker Building
Midland Road
Higham Ferrers
Northants
NN10 8DN

Trial Pit Log

Trialpit No
SA01
Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 28/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 1.60	1.5 / 0.55	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CRB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							TOPSOIL: Brown slightly gravelly very clayey sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
				0.45			Firm to stiff brown sandy CLAY.
				1.00			Firm to stiff grey mottled brown sandy gravelly CLAY. Gravel is fine to coarse subangular to subrounded flint.
▼				1.45			Medium dense brown gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.
				1.60			End of pit at 1.60 m

Remarks: Slight groundwater seepage at base of pit.

Stability: Pit walls stable.

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Trial Pit Log

Trialpit No
SA02
Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 28/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 1.08	1.5 × 0.55	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CFC

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.49			TOPSOIL. Light brown slightly clayey slightly gravelly sand. Gravel is of medium to coarse subrounded flint, quartz and occasional chalk.
				1.08			Medium dense orange brown slightly clayey gravelly medium SAND. Gravel is of medium to coarse subrounded flint, quartz, sandstone and occasional chalk End of pit at 1.08 m

1 2 3 4 5

Remarks: No groundwater encountered

Stability: Pit walls stable.

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Trial Pit Log

Trialpit No
SA03
Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 30/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 1.36	1.6 / 0.55	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CRB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.39			TOPSOIL: Brown slightly gravelly very clayey sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
							Medium dense light brown clayey gravelly SAND. Gravel is of medium to coarse subangular to subrounded flint, quartz and sandstone.
▼				1.30			Medium dense orange brown sandy GRAVEL. Gravel is of medium to coarse subangular to subrounded flint, sandstone and quartz.
				1.36			End of pit at 1.36 m

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Remarks: Slight groundwater seepage at base of pit.

Stability: Pit walls stable.

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Trial Pit Log

Trialpit No
SA04
Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 30/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 1.45	1.72 × 0.55	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CRB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							TOPSOIL: Brown slightly clayey slightly gravelly sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
				0.50			Medium dense brown clayey gravelly SAND. Gravel is medium to coarse subangular to subrounded chalk and flint.
				1.00			Medium dense brown slightly clayey gravelly SAND. Gravel is medium to coarse subangular to subrounded chalk and flint.
▼				1.45			End of pit at 1.45 m

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Remarks: Slight groundwater seepage at base of pit.

Stability: Pit walls stable.

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Trial Pit Log

Trialpit No **SA05**

Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 30/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 1.20	1.7 × 0.55	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CRB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.35			TOPSOIL: Brown slightly clayey slightly gravelly sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
▼				1.20			Medium dense brown gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz. End of pit at 1.20 m

Remarks: Soils slightly damp below 1.1m depth.

Stability: Pit walls stable.

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Trial Pit Log

Trialpit No
SA06
Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 30/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 1.20	1.75 / 0.55	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CRB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.35			TOPSOIL: Brown slightly clayey slightly gravelly sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
				1.15			Medium dense brown gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.
				1.20			Firm to stiff grey slightly gravelly CLAY. Gravel is fine subrounded chalk. End of pit at 1.20 m

Remarks: No groundwater encountered.

Stability: Pit walls stable.

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Trial Pit Log

Trialpit No **SA07**

Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 28/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 1.20	1.6 × 0.55	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CFC

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.28			TOPSOIL: Brown slightly gravelly very clayey sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
				1.20			Medium dense brown gravelly SAND with frequent pockets of clay. Gravel is fine to coarse subangular to subrounded flint and quartz.
							End of pit at 1.20 m

Remarks: No groundwater encountered.

Stability: Pit walls stable.

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Trial Pit Log

Trialpit No
SA08
Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 28/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 1.30	1.6 × 0.55	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CFC

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							TOPSOIL: Brown slightly gravelly very clayey sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
				0.37			Medium dense brown gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.
				0.98			Firm to stiff grey mottled brown sandy gravelly CLAY with frequent pockets of gravel. Gravel is fine to coarse subangular to subrounded flint.
▼				1.30			End of pit at 1.30 m

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Remarks: Slight groundwater seepage at base of pit.

Stability: Pit walls stable.

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Trial Pit Log

Trialpit No
SA09
Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 30/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 1.42	1.9 × 0.55	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CRB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30			TOPSOIL: Brown slightly clayey slightly gravelly sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
				1.20			Medium dense brown gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.
				1.42			Medium dense orange gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.
							End of pit at 1.42 m

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Remarks: No groundwater encountered.

Stability: Pit walls stable.

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Trial Pit Log

Trialpit No **SA10**

Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 29/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 1.50	1.5 × 0.55	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CRB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.00			TOPSOIL: Brown slightly clayey gravelly sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
				0.50			Medium dense yellow brown slightly clayey gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.
▼				1.50			End of pit at 1.50 m

Remarks: Slight groundwater seepage at base of pit.

Stability: Pit walls stable.

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Trial Pit Log

Trialpit No **SA11**

Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 29/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 1.24	1.5 / 0.55	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CRB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							TOPSOIL: Brown slightly clayey gravelly sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
				0.40			Medium dense brown and yellow brown gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.
				1.05			Medium dense light brown gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.
				1.24			End of pit at 1.24 m

Remarks: No groundwater encountered.

Stability: Pit walls stable.

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Trial Pit Log

Trialpit No
SA12
Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 29/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 1.68	1.4 × 0.55	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CFC

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							TOPSOIL: Brown slightly gravelly very clayey sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
				0.33			Medium dense brown very clayey SAND with frequent pockets of clay.
				0.63			Stiff blue grey slightly gravelly sandy CLAY with occasional pockets of gravelly sand. Gravel is of medium to coarse subangular to subrounded flint, sandstone and chalk.
				1.51			Stiff blue grey fissured CLAY.
				1.68			End of pit at 1.68 m

Remarks: No groundwater encountered.

Stability: Pit walls stable.

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Trial Pit Log

Trialpit No
SA13
Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 28/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 2.50	1.85 / 0.55	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CFC

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.33			TOPSOIL: Brown slightly gravelly very clayey sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
				0.62			Medium dense brown gravelly SAND with frequent pockets of clay. Gravel is fine to coarse subangular to subrounded flint and quartz.
				1.60			Firm light brown mottled light grey sandy CLAY with frequent pockets of gravelly sand.
				2.50			Stiff blue grey fissured CLAY.
							End of pit at 2.50 m

1
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4
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Remarks: No groundwater encountered.

Stability: Pit walls stable.

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Trial Pit Log

Trialpit No **SA14**

Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 29/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 1.25	1.45 / 0.55	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CFC

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.36			TOPSOIL: Brown slightly gravelly very clayey sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
				1.21			Medium dense brown clayey gravelly SAND. Gravel is of medium to coarse sub-angular to sub-rounded flint, quartz and sandstone.
				1.25			Stiff blue grey slightly gravelly sandy CLAY with occasional pockets of sand. Gravel is of medium to coarse subangular to subrounded flint, sandstone and chalk.
							End of pit at 1.25 m

Remarks: No groundwater encountered.

Stability: Pit walls stable.

Rolton Group Limited
The Charles Parker Building
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Higham Ferrers
Northants
NN10 8DN

Trial Pit Log

Trialpit No **TP02**

Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 28/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 3.10	2 / 0.6	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CEH

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10	ES		0.30			TOPSOIL: Light brown gravelly slightly clayey sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
▼	0.60	B					Medium dense brown slightly clayey SAND & GRAVEL. Gravel is fine to coarse subangular to rounded flint.
	1.50	B	HVP=90	1.40			Stiff blue grey CLAY with numerous shell fragments.
				3.10			End of pit at 3.10 m

Remarks: Minor groundwater seepage encountered around 1.3m depth.

Stability: Pits walls Minorly unstable and collapsing between 0.5 and 1.4m.

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Higham Ferrers
Northants
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Trial Pit Log

Trialpit No
TP03
Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 28/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 3.20	2 / 0.6	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CEH

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.30	ES		0.50			TOPSOIL: Light brown gravelly clayey sand. Gravel is medium to coarse subrounded chalk and flint.
▼	1.00	B		1.80			Medium dense orange brown slightly gravelly clayey SAND. Gravel is fine to coarse rounded flint.
	2.50	B		3.20			Firm to stiff blue grey silty CLAY.
							End of pit at 3.20 m

1
2
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4
5

Remarks: Minor groundwater seepage encountered around 1.2m depth.

Stability: Pit walls stable.

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Trial Pit Log

Trialpit No **TP05**

Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 28/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 2.20	2.5 / 0.8	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CEH

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	ES		0.40			TOPSOIL: Light brown gravelly clayey sand. Gravel is medium to coarse subangular to rounded chalk and flint.
	0.90	B		1.20			Medium dense brown sandy clayey GRAVEL of fine to coarse angular to rounded flint.
▼	1.80	B		2.20			Loose brown fine to coarse gravelly SAND. Gravel is fine to medium angular to subangular flint.
							End of pit at 2.20 m

1 2 3 4 5

Remarks: Moderate groundwater seepage encountered around 1.2m depth. Pit unable to advance past 2.2m due to instability.

Stability: Pit walls unstable and collapsing below 1.1m depth.

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Trial Pit Log

Trialpit No
TP07
Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 28/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 2.10	2.5 / 0.9	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CEH

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.30	ES		0.40			TOPSOIL: Light brown gravelly clayey sand. Gravel is medium to coarse subangular to rounded chalk and flint.
	0.70	B					Medium dense brown sandy clayey GRAVEL of fine to coarse angular to rounded flint.
▼				1.10			Loose brown fine to coarse gravelly SAND. Gravel is fine to medium angular to subangular flint.
	1.50	B					
				2.10			End of pit at 2.10 m

1
2
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4
5

Remarks: Moderate groundwater seepage encountered around 1.1m depth. Pit unable to advance past 2.1m due to instability.

Stability: Pit walls unstable and collapsing below 1.0m depth.

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Trial Pit Log

Trialpit No **TP09**

Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 28/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 3.20	2 / 0.6	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CEH

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	ES		0.40			TOPSOIL: Brown gravelly clayey sand. Gravel is medium to coarse subrounded chalk and flint.
	0.60	B					Firm grey brown slightly gravelly sandy CLAY. Gravel is fine to coarse angular to rounded flint.
▼				1.20			
	1.50	B					Medium dense yellow brown slightly clayey fine to coarse SAND & GRAVEL. Gravel is fine to coarse angular to subrounded flint.
				1.90			
	2.50	B	HVP=80				Firm to stiff blue grey CLAY with occasional shell fragments.
				3.20			End of pit at 3.20 m

Remarks: Minor groundwater seepage encountered around 1.2m depth.

Stability: Pits walls Minorly unstable and collapsing between 1.2 and 1.9m.

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Trial Pit Log

Trialpit No
TP10
Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 28/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 2.00	2.5 / 1	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CEH

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	ES		0.40			TOPSOIL: Brown gravelly clayey sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
▼	1.50	B		2.00			Medium dense becoming loose yellow brown slightly clayey fine to coarse SAND & GRAVEL. Gravel is fine to coarse angular to subrounded flint.
							End of pit at 2.00 m

1 2 3 4 5

Remarks: Minor groundwater seepage encountered around 1.5m depth.Pit unable to advance past 2.0m due to instability.

Stability: Pit walls unstable and collapsing below 1.0m depth.

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Trial Pit Log

Trialpit No **TP11**

Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 28/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 3.20	2 / 0.6	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CEH

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10	ES		0.30			TOPSOIL: Light brown slightly gravelly clayey sand. Gravel is medium to coarse subangular chalk and flint.
	0.80	B		1.30			Medium dense orange brown gravelly SAND. Gravel is fine to coarse subrounded to subangular flint and quartz.
▼	2.00	B	HVP=83	3.20			Firm to stiff blue grey slightly gravelly CLAY. Gravel is fine to medium subrounded chalk. Rare shell fragments. End of pit at 3.20 m

Remarks: Minor groundwater seepage encountered around 1.5m depth.

Stability: Pits walls Minorly unstable and collapsing between 0.5 and 1.4m.

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Trial Pit Log

Trialpit No
TP13
Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 28/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 3.30	2 / 0.6	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CEH

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	ES		0.45			TOPSOIL: Light brown slightly gravelly clayey sand. Gravel is medium to coarse subangular chalk and flint.
	0.80	B		1.10			Medium dense orange brown sandy GRAVEL of fine to coarse angular to rounded flint.
▼	2.00	B	HVP=77	3.30			Firm to stiff blue grey slightly gravelly CLAY. Gravel is fine to coarse rounded chalk. Rare shell fragments. End of pit at 3.30 m

1 2 3 4 5

Remarks: Minor groundwater seepage encountered around 1.2m depth.

Stability: Pits walls Minorly unstable and collapsing between 0.5 and 1.5m.

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Trial Pit Log

Trialpit No **TP14**

Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 28/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 3.30	2 / 0.6	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CEH

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.40			TOPSOIL: Brown gravelly clayey sand. Gravel is fine to coarse subangular to subrounded chalk and flint.
	1.00	B					Medium dense yellow brown slightly clayey fine to coarse SAND & GRAVEL. Gravel is fine to coarse angular to subrounded flint.
▼				1.60			Firm to stiff blue grey slightly gravelly CLAY. Gravel is fine to coarse rounded chalk. Rare shell fragments.
	3.00	B		3.30			End of pit at 3.30 m

1 2 3 4 5

Remarks: Minor groundwater seepage encountered around 1.5m depth.

Stability: Pits walls Minorly unstable and collapsing from surface.

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Trial Pit Log

Trialpit No
TP29
Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 29/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 3.00	3 / 0.8	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CRB

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							TOPSOIL: Brown slightly clayey gravelly sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
				0.34			Medium dense yellow brown gravelly SAND. Gravel is fine to coarse subangular to subrounded chalk and flint.
				1.10			Firm to stiff light grey mottled yellow very sandy SILT.
▼				2.20			Firm to stiff grey slightly gravelly CLAY. Gravel is fine subrounded chalk.
				3.00			End of pit at 3.00 m

Remarks: Slight groundwater seepage encountered around 2.2m depth.

Stability: Pit walls stable.

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Trial Pit Log

Trialpit No **TP31**

Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 29/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 2.60	3 / 0.7	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CFC

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.34			TOPSOIL. Light brown slightly gravelly clayey sand. Gravel is of medium to coarse sub-angular to sub-rounded flint, quartz and occasional chalk.
	0.80	B					Medium dense reddish brown slightly gravelly clayey medium SAND with occasional pockets of silty clay. Gravel is of medium to coarse sub-angular to sub-rounded flint, sandstone and quartz.
				1.45			Medium dense yellow brown gravelly coarse SAND. Gravel is of medium to coarse sub-angular to sub-rounded flint, sandstone and quartz.
▼	1.80	B					
				2.05			Firm dark blue grey silty CLAY with occasional pockets of sandy gravel. Gravel is of medium to coarse sub-angular to sub-rounded flint, sandstone and quartz.
			HVP=60				
			HVP=68				
				2.60			End of pit at 2.60 m

1 2 3 4 5

Remarks: Moderate seepage of groundwater encountered at 2.05m depth.

Stability: Pit walls unstable and collapsing below 2.05m depth.

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Trial Pit Log

Trialpit No **TP36**

Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 29/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 3.10	3 / 0.7	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CFC

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.51			TOPSOIL. Light brown slightly gravelly clayey sand. Gravel is of medium to coarse sub-angular to sub-rounded flint, quartz and occasional chalk.
	0.60	B		0.75			Medium dense light brown clayey gravelly medium SAND with occasional pockets of clay. Gravel is of medium to coarse sub-angular to sub-rounded flint and quartz.
			HVP=91				Stiff (becoming firm below 2.3m depth) blue grey slightly gravelly sandy CLAY with occasional pockets of sand. Gravel is of medium to coarse sub-angular to sub-rounded flint and quartz.
	2.30	B	HVP=50				
			HVP=100	2.65			Stiff blue grey silty fissured CLAY with frequent crystals of selenite.
	3.00	B		3.10			End of pit at 3.10 m

Remarks: No groundwater encountered

Stability: Pit walls remained stable.

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Trial Pit Log

Trialpit No **TP38**

Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 29/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 3.00	3 / 0.7	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CFC

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							TOPSOIL. Light brown slightly gravelly clayey sand. Gravel is of medium to coarse sub-angular to sub-rounded flint, quartz and occasional chalk.
				0.40			MADE GROUND. Medium dense light brown clayey gravelly medium sand. Gravel is of medium to coarse sub-angular to sub-rounded flint, sandstone and quartz.
				0.89			MADE GROUND. Firm blue grey sandy gravelly clay with occasional pockets of dark grey organic material. Gravel is of medium to coarse sub-angular to sub-rounded flint, sandstone and quartz, with fragments of brick. Becoming soft to firm below 1.6m depth. Large pocket of sandy gravel observed in trial pit walls from 1.95m - 2.55m depth. Slight organic odour noted.
	1.20	ES					
	1.30	B					
	1.80	ES					
▼	1.90	B					
			HVP=90	2.55			Stiff blue grey silty fissured CLAY with frequent crystals of selenite.
			HVP=99				
	2.90	B					
				3.00			End of pit at 3.00 m

1 2 3 4 5

Remarks: Moderate seepage of groundwater encountered at 2.1m depth.

Stability: Pit walls remained stable.

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Trial Pit Log

Trialpit No **TP42**

Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 29/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 3.50	3 / 0.7	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CFC

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	ES		0.46			TOPSOIL. Light brown slightly gravelly clayey sand occasional pockets of ash. Gravel is of medium to coarse sub-angular to sub-rounded flint, quartz and occasional chalk.
				1.12			MADE GROUND. Moderately compact grey and orange brown slightly gravelly clayey medium sand with frequent pockets of silty clay. Gravel is of medium to coarse sub-angular to sub-rounded flint, sandstone, quartz and occasional fragments of brick. Slight organic odour noted.
	1.40	B	HVP=80				MADE GROUND. Stiff dark blue grey sandy gravelly clay with occasional cobbles of sub-angular brick and dark grey pockets of organic material. Gravel is of medium to coarse sub-angular to sub-rounded flint, sandstone and quartz, with fragments of brick and tile. Slight organic odour noted.
	1.50	ES		1.75			MADE GROUND. Very soft light brown slightly gravelly very sandy clay with occasional cobbles of sub-angular brick and pockets of dark grey organic material. Gravel is of medium to coarse sub-angular to sub-rounded flint, sandstone and quartz, with fragments of brick.
▼	2.50	ES					
	2.80	B		3.35			Stiff blue grey silty fissured CLAY with frequent crystals of selenite.
				3.50			End of pit at 3.50 m

Remarks: Minor seepage of groundwater encountered at 2.05m depth.

Stability: Pit walls remained stable.

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Trial Pit Log

Trialpit No **TP43**

Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 29/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 3.70	3 / 0.7	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CFC

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							TOPSOIL. Light brown slightly gravelly clayey sand. Gravel is of medium to coarse sub-angular to sub-rounded flint, quartz and occasional chalk.
				0.47			MADE GROUND. Stiff (becoming firm below 1.2m depth) grey mottled brown slightly gravelly very sandy CLAY with frequent pockets of clayey sand. Gravel is of medium to coarse sub-angular to sub-rounded flint, quartz and sandstone, with fragments of brick.
			HVP=79				
	1.00	B					
	1.10	ES					
			HVP=69				
				1.45			MADE GROUND. Firm to stiff blue grey mottled dark grey sandy gravelly clay with occaional cobbles of sub-angular brick and pockets of dark grey organic material. Rare boulder of sub-angular concrete observed. Gravel is of medium to coarse sub-angular to sub-rounded flint, sandstone and quartz, with fragments of brick, tile, concrete, wood and clinker. Slight organic odour noted.
	1.60	B					
	1.80	ES					
				2.35			MADE GROUND. Medium dense dark grey gravelly very clayey sand with occasional cobbles of sub-angular brick. Gravel is of medium to coarse sub-angular to sub-rounded flint, sandstone and quartz, with fragments of brick and clinker. Slight organic odour noted.
				2.85			MADE GROUND. Very soft light brown clay.
				3.55			Stiff blue grey silty fissured CLAY with frequent crystals of selenite.
				3.70			End of pit at 3.70 m

1 2 3 4 5

Remarks: No groundwater encountered

Stability: Pit walls remained stable.

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Trial Pit Log

Trialpit No **TP44**

Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 29/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 3.00	3 / 0.7	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CFC

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.40			TOPSOIL. Light brown slightly gravelly clayey sand. Gravel is of medium to coarse sub-angular to sub-rounded flint, quartz and occasional chalk.
				0.79			MADE GROUND. Medium dense light brown mottled dark grey slightly gravelly very clayey medium sand. Gravel is of medium to coarse sub-angular to sub-rounded flint, quartz and sandstone, with fragments of brick.
			HVP=142				MADE GROUND. Stiff brown mottled grey sandy gravelly clay. Gravel is of medium to coarse sub-angular to sub-rounded flint, sandstone and quartz, with fragments of brick.
	1.40	B					
			HVP=61	1.55			MADE GROUND. Firm light brown slightly gravelly very sandy clay with frequent pockets of sandy gravel. Gravel is of medium to coarse sub-angular to sub-rounded flint, sandstone and quartz, with fragments of brick.
	2.00	B					
			HVP=91	2.25			Stiff blue grey silty fissured CLAY with frequent crystals of selenite.
	3.00	B		3.00			End of pit at 3.00 m

Remarks: No groundwater encountered

Stability: Pit walls remained stable.

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Trial Pit Log

Trialpit No **TP56**
Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 29/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 2.80	3 / 0.7	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CFC

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
							MADE GROUND. Moderately compact light brown slightly gravelly clayey medium sand with frequent pockets of silty clay. Gravel is of medium to coarse sub-angular to sub-rounded flint, quartz and sandstone, with fragments of brick.
				0.62			MADE GROUND. Stiff dark grey sandy gravelly clay with occasional cobbles of sub-angular brick and dark grey patches of organic material. Gravel is of medium to coarse sub-angular to sub-rounded flint, sandstone and quartz, with fragments of brick, tile, concrete, wood and clinker. Slight organic odour noted.
	1.00	B	HVP=84				
	1.50	ES	HVP=78				
	2.20	ES	HVP=109				
				2.40			Stiff blue grey silty fissured CLAY with frequent crystals of selenite.
				2.80			End of pit at 2.80 m

Remarks: No groundwater encountered

Stability: Pit walls remained stable.

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Trial Pit Log

Trialpit No **TP57**

Sheet 1 of 1

Project Name:	Land off Willen Road, Newport Pagnell	Project No. 19-0021	Co-ords: - Level:	Date 29/09/2020
Location:	Newport Pagnell, Buckinghamshire	Dimensions (m): Depth 3.80	3 / 0.7	Scale 1:25
Client:	Bloor Homes South Midlands			Logged CFC

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.70	B	HVP=60				MADE GROUND. Firm dark blue grey sandy gravelly clay with occasional cobbles of sub-angular brick and dark grey patches of organic material. Rare boulder of sub-angular sandstone observed at 1.01m depth. Gravel is of medium to coarse sub-angular to sub-rounded sandstone, flint and quartz, with fragments of brick, wood and tile. Slight organic odour noted.
	1.80	B	HVP=58				
				2.01			MADE GROUND. Soft dark brown gravelly very sandy clay. Gravel is of medium to coarse sub-angular to sub-rounded sandstone, flint and quartz, with fragments of brick and tile.
	2.40	B					
				2.61			MADE GROUND. Very soft light brown clay.
	2.80	B					
				3.65			POSSIBLE NATURAL. Stiff blue grey silty fissured CLAY.
				3.80			End of pit at 3.80 m

1 2 3 4 5

Remarks: No groundwater encountered

Stability: Pit walls unstable and collapsing below 0.5m depth.

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

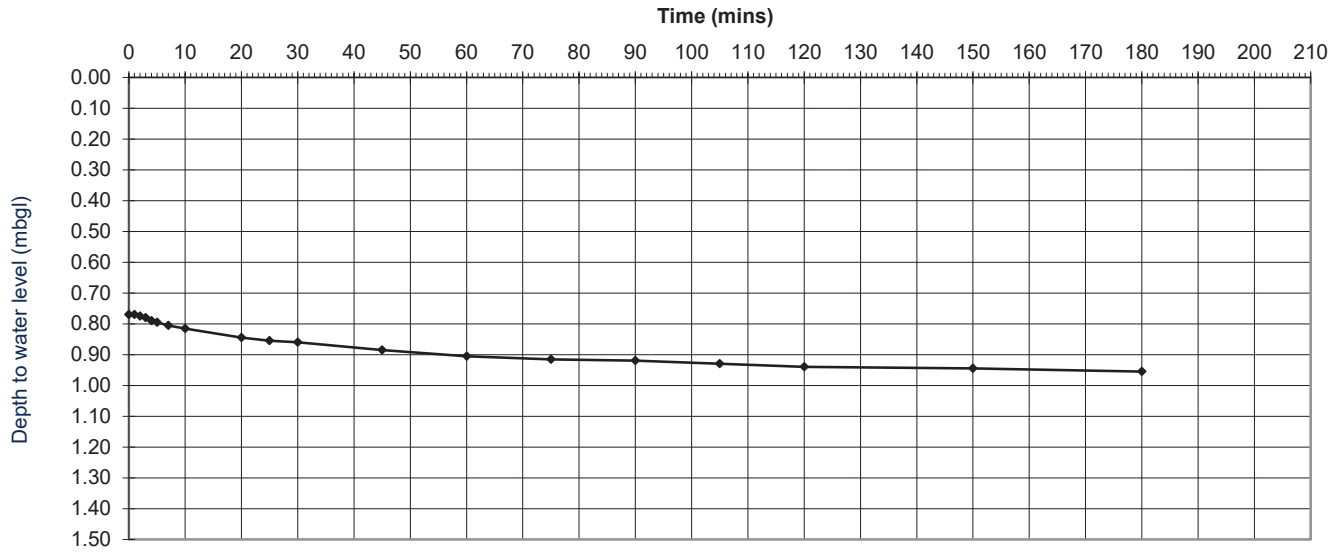
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.50	1.60

Test Date 28/09/2020

Soakaway No. SA01 R1

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.0925	m	= Depth drop between 75% and 25% of maximum depth to final depth
55	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 =	0.0763125	m^3
ap50 =	3.84875	m^2
tp75-25 =	55.0	mins

General Geological Profile :

0.00-0.45m	TOPSOIL: Brown slightly gravelly very clayey sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
0.45-1.00m	Firm to stiff brown sandy CLAY.
1.00-1.45m	Firm to stiff grey mottled brown sandy gravelly CLAY. Gravel is fine to coarse subangular to subrounded flint.
1.45-1.60m	Medium dense brown gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.

Notes : Slight groundwater seepage in base of soakaway.

			Permeability Guideline (m/s)		
Soil Infiltration Rate (f) =	**6.01E-06**	m/s	Good	Poor	Practically Impervious
			10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

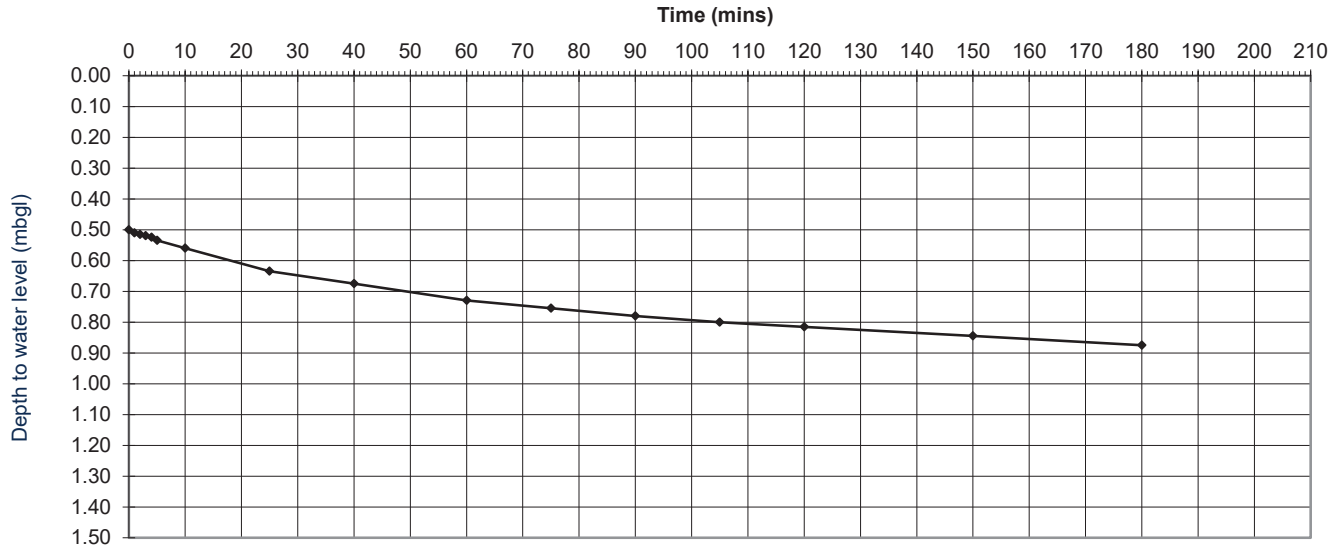
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.50	1.60

Test Date 28/09/2020

Soakaway No. SA01 R2

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.1875	m	= Depth drop between 75% and 25% of maximum depth to final depth
74.5	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 =	0.1546875 m^3
ap50 =	4.56625 m^2
tp75-25 =	74.5 mins

General Geological Profile :

0.00-0.45m	TOPSOIL: Brown slightly gravelly very clayey sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
0.45-1.00m	Firm to stiff brown sandy CLAY.
1.00-1.45m	Firm to stiff grey mottled brown sandy gravelly CLAY. Gravel is fine to coarse subangular to subrounded flint.
1.45-1.60m	Medium dense brown gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.

Notes : Slight groundwater seepage in base of soakaway.

			Permeability Guideline (m/s)		
Soil Infiltration Rate (f) =	**7.58E-06**	m/s	Good	Poor	Practically Impervious
			10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

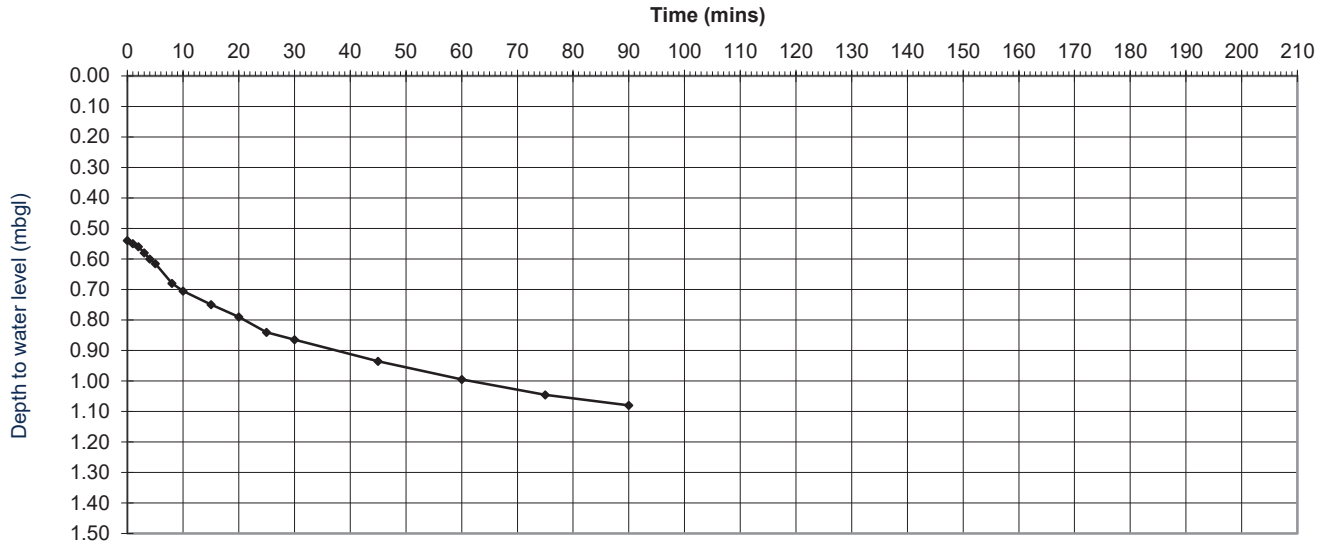
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.50	1.08

Test Date 28/09/2020

Soakaway No. SA02 R1

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.27	m	= Depth drop between 75% and 25% of maximum depth to final depth
39	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.

ap50 = Mean surface area through which the outflow occurs.

tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 =	0.22275 m³
ap50 =	2.7643 m²
tp75-25 =	39.0 mins

General Geological Profile :

0.00-0.49m	TOPSOIL. Light brown slightly clayey slightly gravelly sand. Gravel is of medium to coarse subrounded flint, quartz and occasional chalk.
0.49-1.08m	Medium dense orange brown slightly clayey gravelly medium SAND. Gravel is of medium to coarse subrounded flint, quartz, sandstone and occasional chalk.

Notes : No standing water noted.

			Permeability Guideline (m/s)		
Soil Infiltration Rate (f) =	**3.44E-05**	m/s	Good	Poor	Practically Impervious
			10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

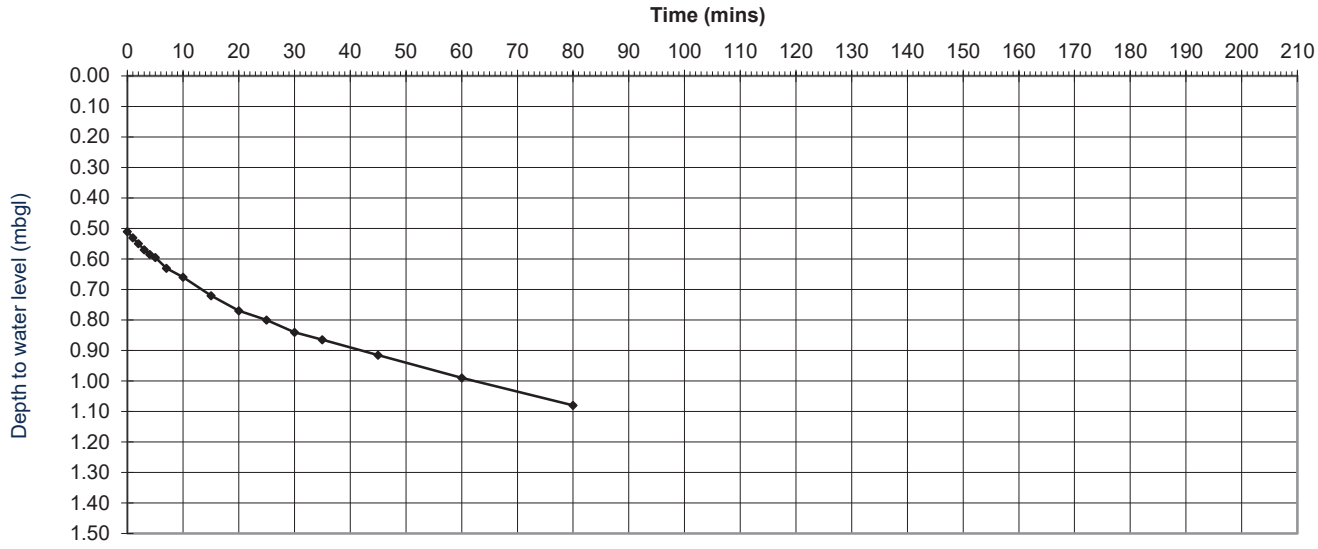
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.50	1.08

Test Date 28/09/2020

Soakaway No. SA02 R2

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.285	m	= Depth drop between 75% and 25% of maximum depth to final depth
40	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.

ap50 = Mean surface area through which the outflow occurs.

tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 =	0.235125 m³
ap50 =	2.7643 m²
tp75-25 =	40.0 mins

General Geological Profile :

0.00-0.49m	TOPSOIL. Light brown slightly clayey slightly gravelly sand. Gravel is of medium to coarse subrounded flint, quartz and occasional chalk.
0.49-1.08m	Medium dense orange brown slightly clayey gravelly medium SAND. Gravel is of medium to coarse subrounded flint, quartz, sandstone and occasional chalk.

Notes : No standing water noted.

			Permeability Guideline (m/s)		
Soil Infiltration Rate (f) =	**3.54E-05**	m/s	Good	Poor	Practically Impervious
			10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

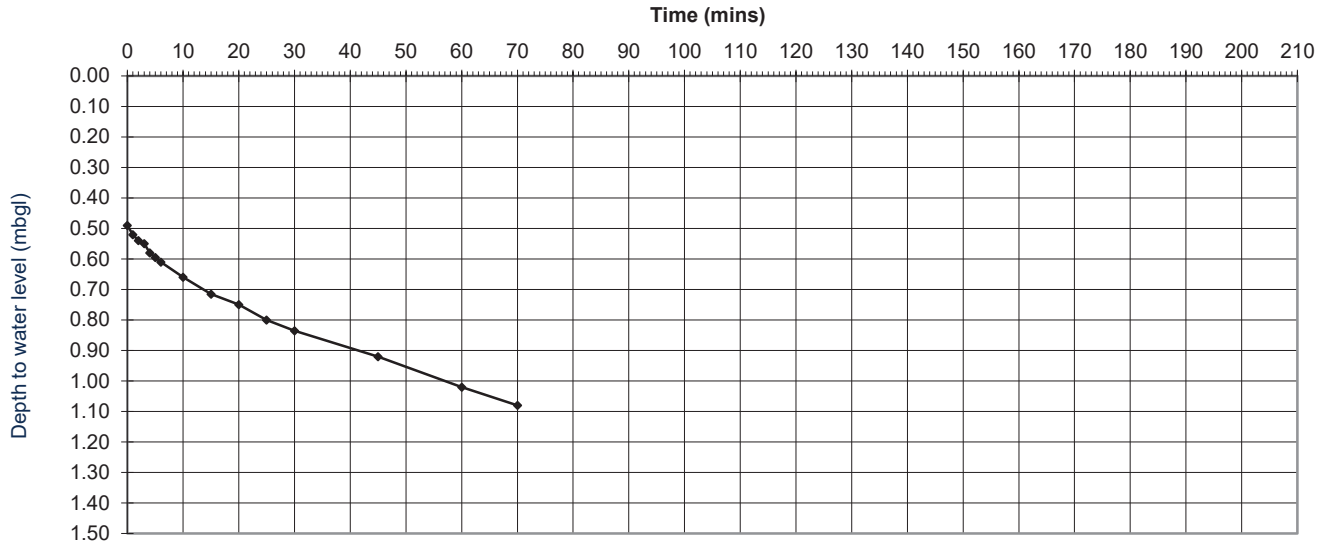
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.50	1.08

Test Date 28/09/2020

Soakaway No. SA02 R3

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.295	m	= Depth drop between 75% and 25% of maximum depth to final depth
39	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.

ap50 = Mean surface area through which the outflow occurs.

tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 =	0.243375 m³
ap50 =	2.7643 m²
tp75-25 =	39.0 mins

General Geological Profile :

0.00-0.49m	TOPSOIL. Light brown slightly clayey slightly gravelly sand. Gravel is of medium to coarse subrounded flint, quartz and occasional chalk.
0.49-1.08m	Medium dense orange brown slightly clayey gravelly medium SAND. Gravel is of medium to coarse subrounded flint, quartz, sandstone and occasional chalk.

Notes : No standing water noted.

			Permeability Guideline (m/s)		
Soil Infiltration Rate (f) =	**3.76E-05**	m/s	Good	Poor	Practically Impervious
			10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

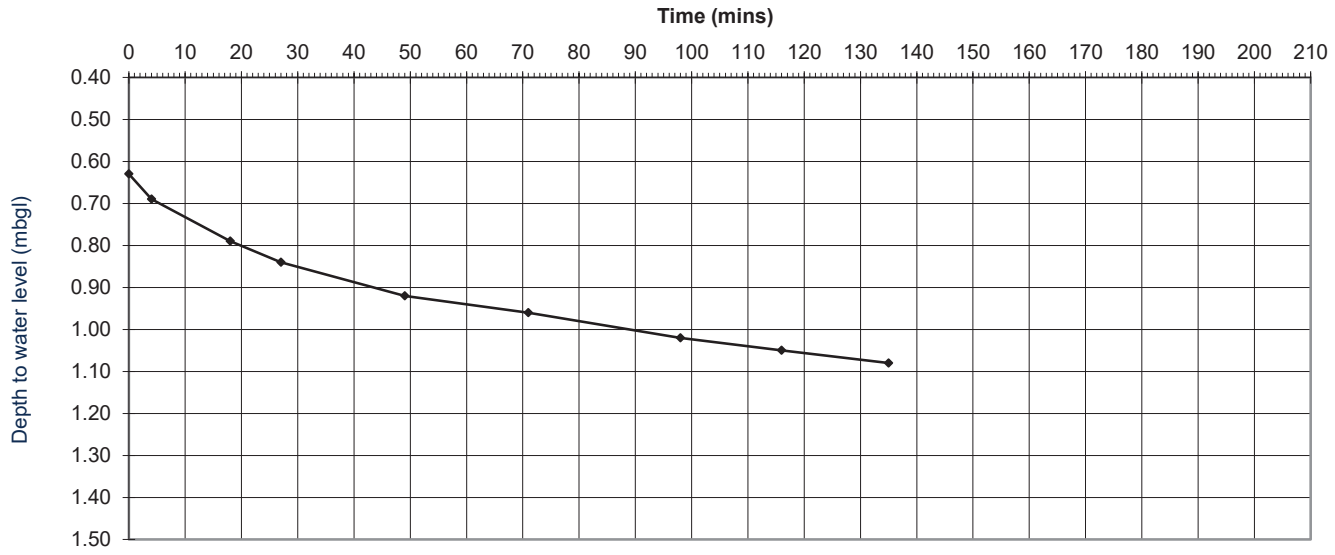
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.60	1.36

Test Date 30/09/2020

Soakaway No. SA03 R1

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.225	m	= Depth drop between 75% and 25% of maximum depth to final depth
64	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 =	0.198 m^3
ap50 =	3.0515 m^2
tp75-25 =	64.0 mins

General Geological Profile :

0.00-0.39m	TOPSOIL: Brown slightly gravelly very clayey sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
0.39-1.30m	Medium dense light brown clayey gravelly SAND. Gravel is of medium to coarse subangular to subrounded flint, quartz and sandstone.
1.30-1.36m	Medium dense orange brown sandy GRAVEL. Gravel is of medium to coarse subangular to subrounded flint, sandstone and quartz.

Notes :

			Permeability Guideline (m/s)		
Soil Infiltration Rate (f) =	**1.69E-05**	m/s	Good	Poor	Practically Impervious
			10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

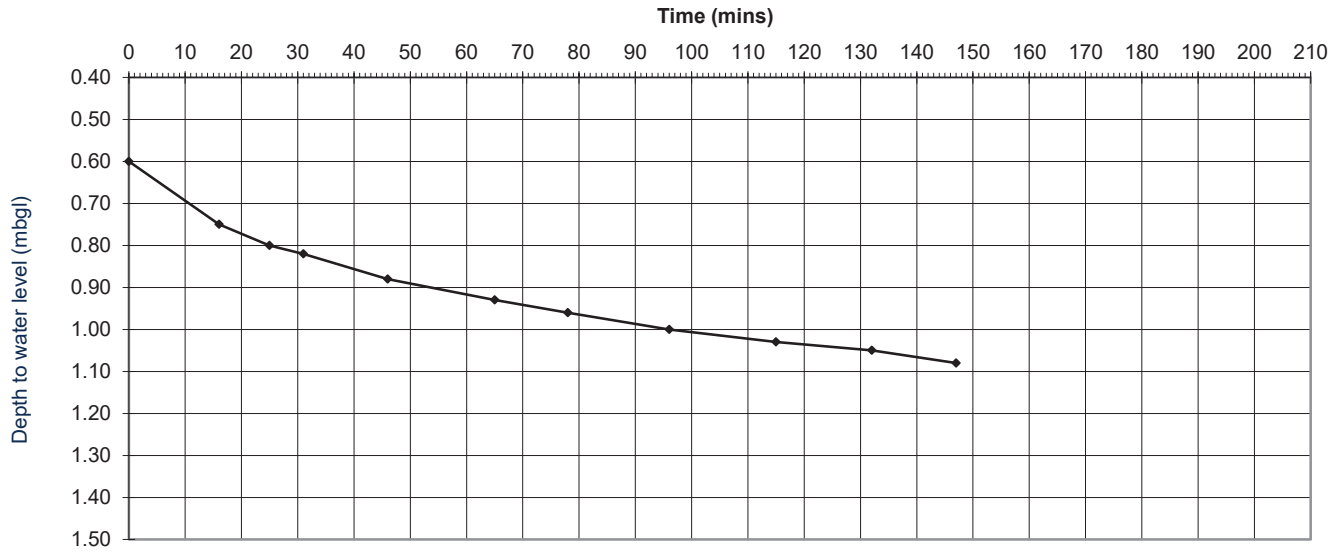
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.60	1.25

Test Date 30/09/2020

Soakaway No. SA03 R2

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.24	m	= Depth drop between 75% and 25% of maximum depth to final depth
66	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 =	0.2112 m³
ap50 =	2.643 m²
tp75-25 =	66.0 mins

General Geological Profile :

0.00-0.39m	TOPSOIL: Brown slightly gravelly very clayey sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
0.39-1.30m	Medium dense light brown clayey gravelly SAND. Gravel is of medium to coarse subangular to subrounded flint, quartz and sandstone.
1.30-1.36m	Medium dense orange brown sandy GRAVEL. Gravel is of medium to coarse subangular to subrounded flint, sandstone and quartz.

Notes : Partial pit wall collapse has resulted in base of pit becoming shallower.

			Permeability Guideline (m/s)		
Soil Infiltration Rate (f) =	**2.02E-05**	m/s	Good	Poor	Practically Impervious
			10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

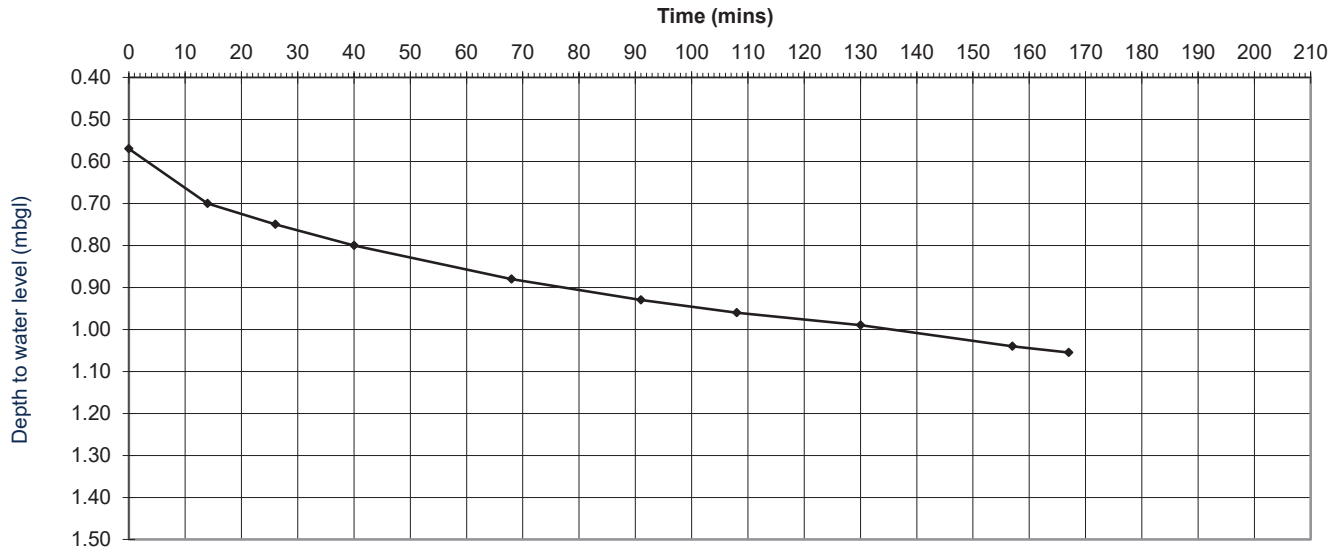
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.60	1.23

Test Date 30/09/2020

Soakaway No. SA03 R3

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.2425	m	= Depth drop between 75% and 25% of maximum depth to final depth
80	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 = 0.2134 m³
ap50 = 2.67525 m²
tp75-25 = 80.0 mins

General Geological Profile :

0.00-0.39m	TOPSOIL: Brown slightly gravelly very clayey sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
0.39-1.30m	Medium dense light brown clayey gravelly SAND. Gravel is of medium to coarse subangular to subrounded flint, quartz and sandstone.
1.30-1.36m	Medium dense orange brown sandy GRAVEL. Gravel is of medium to coarse subangular to subrounded flint, sandstone and quartz.

Notes : Partial pit wall collapse has resulted in base of pit becoming shallower.

			Permeability Guideline (m/s)		
Soil Infiltration Rate (f) =	**1.66E-05**	m/s	Good	Poor	Practically Impervious
			10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

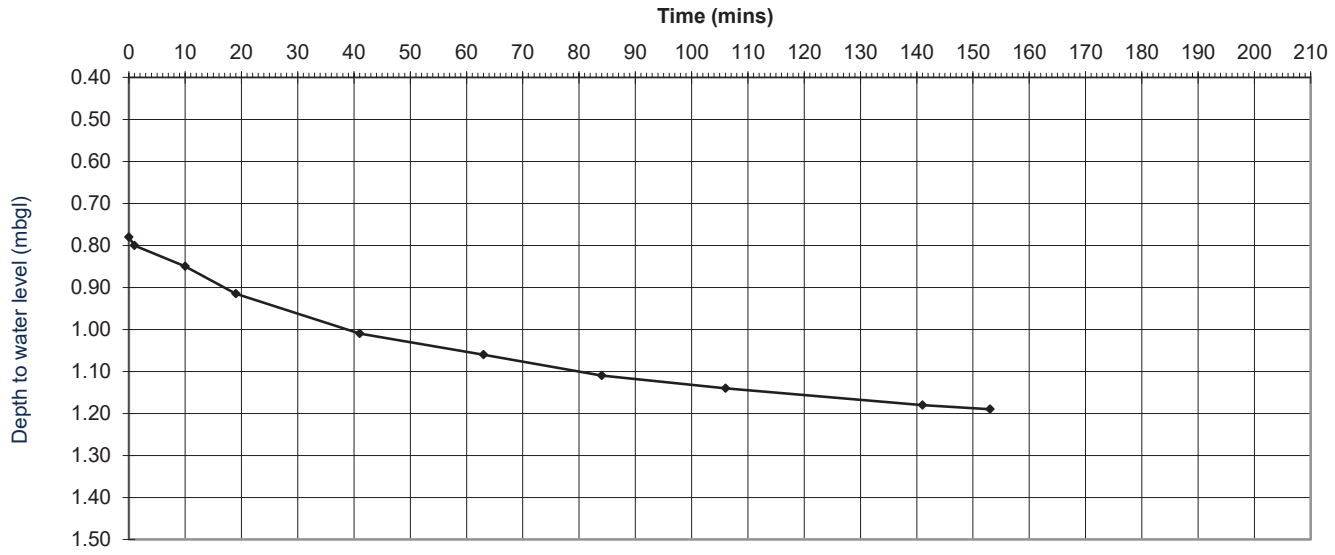
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.72	1.50

Test Date 30/09/2020

Soakaway No. SA04 R1

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.205	m	= Depth drop between 75% and 25% of maximum depth to final depth
60.5	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 =	0.19393 m³
ap50 =	3.2841 m²
tp75-25 =	60.5 mins

General Geological Profile :

0.00-0.50m	TOPSOIL: Brown slightly clayey slightly gravelly sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
0.50-1.00m	Medium dense brown clayey gravelly SAND. Gravel is medium to coarse subangular to subrounded chalk and flint.
1.00-1.45m	Medium dense brown slightly clayey gravelly SAND. Gravel is medium to coarse subangular to subrounded chalk and flint.
1.45-1.50m	Firm to stiff grey slightly gravelly CLAY. Gravel is fine subrounded chalk.

Notes : Slight groundwater seepage at base of pit.

			Permeability Guideline (m/s)		
Soil Infiltration Rate (f) =	**1.63E-05**	m/s	Good	Poor	Practically Impervious
			10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

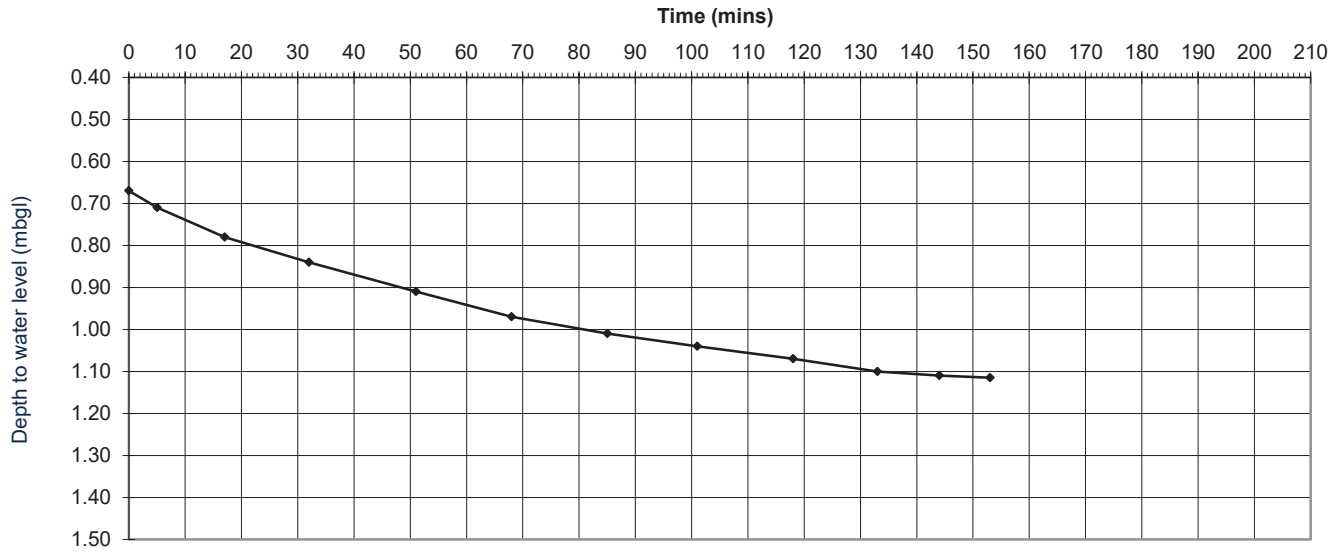
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.72	1.50

Test Date 30/09/2020

Soakaway No. SA04 R2

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.2225	m	= Depth drop between 75% and 25% of maximum depth to final depth
64	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 = 0.210485 m³
ap50 = 3.70405 m²
tp75-25 = 64.0 mins

General Geological Profile :

0.00-0.50m	TOPSOIL: Brown slightly clayey slightly gravelly sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
0.50-1.00m	Medium dense brown clayey gravelly SAND. Gravel is medium to coarse subangular to subrounded chalk and flint.
1.00-1.45m	Medium dense brown slightly clayey gravelly SAND. Gravel is medium to coarse subangular to subrounded chalk and flint.
1.45-1.50m	Firm to stiff grey slightly gravelly CLAY. Gravel is fine subrounded chalk.

Notes : Slight groundwater seepage at base of pit.

			Permeability Guideline (m/s)		
			Good	Poor	Practically Impervious
Soil Infiltration Rate (f) =	**1.48E-05**	m/s	10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

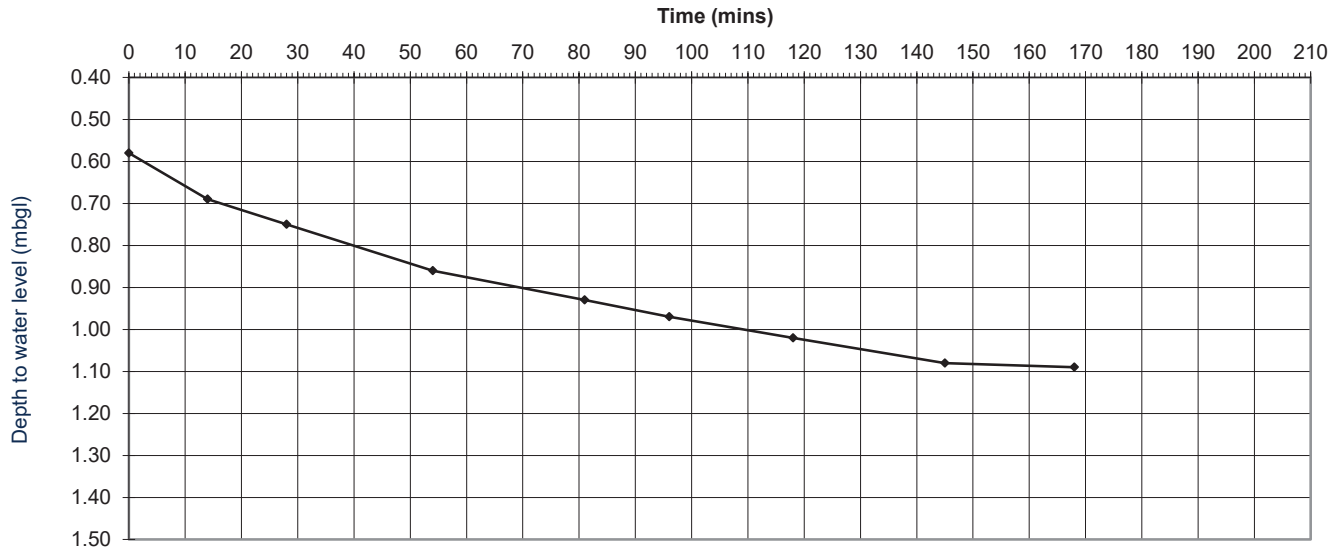
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.72	1.50

Test Date 30/09/2020

Soakaway No. SA04 R3

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.255	m	= Depth drop between 75% and 25% of maximum depth to final depth
78	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 =	0.24123 m³
ap50 =	3.9651 m²
tp75-25 =	78.0 mins

General Geological Profile :

0.00-0.50m	TOPSOIL: Brown slightly clayey slightly gravelly sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
0.50-1.00m	Medium dense brown clayey gravelly SAND. Gravel is medium to coarse subangular to subrounded chalk and flint.
1.00-1.45m	Medium dense brown slightly clayey gravelly SAND. Gravel is medium to coarse subangular to subrounded chalk and flint.
1.45-1.50m	Firm to stiff grey slightly gravelly CLAY. Gravel is fine subrounded chalk.

Notes : Slight groundwater seepage at base of pit.

			Permeability Guideline (m/s)		
Soil Infiltration Rate (f) =	**1.30E-05**	m/s	Good	Poor	Practically Impervious
			10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

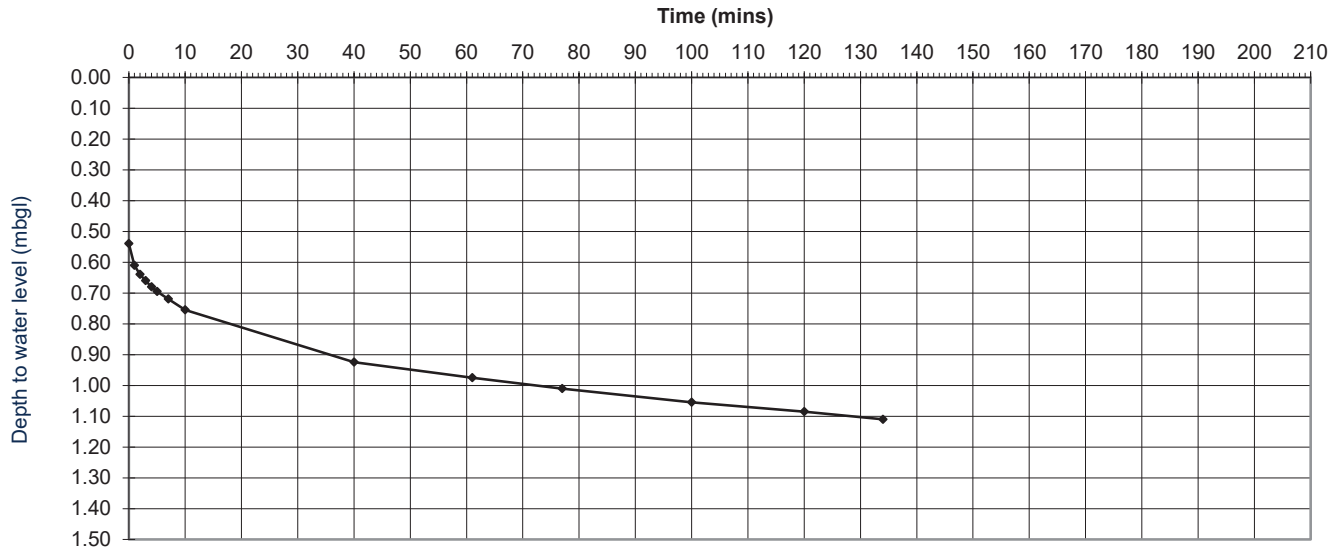
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.70	1.20

Test Date 30/09/2020

Soakaway No. SA05 R1

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.285	m	= Depth drop between 75% and 25% of maximum depth to final depth
53	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 = 0.266475 m³
ap50 = 2.6225 m²
tp75-25 = 53.0 mins

General Geological Profile :

0.00-0.35m TOPSOIL: Brown slightly clayey slightly gravelly sand. Gravel is medium to coarse subangular to subrounded chalk and flint.

0.35-1.20m Medium dense brown gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.

Notes : Soils slightly damp below 1.1m depth however no standing water noted.

			Permeability Guideline (m/s)		
Soil Infiltration Rate (f) =	**3.20E-05**	m/s	Good	Poor	Practically Impervious
			10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

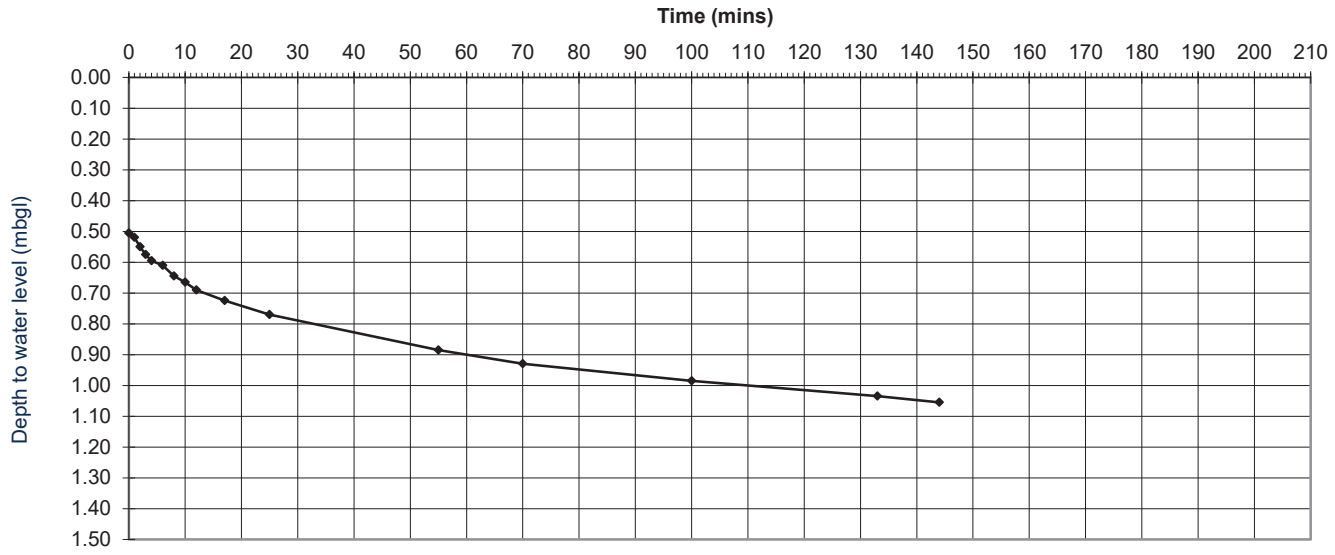
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.70	1.20

Test Date 30/09/2020

Soakaway No. SA05 R2

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.275	m	= Depth drop between 75% and 25% of maximum depth to final depth
57	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 =	0.257125 m^3
ap50 =	2.825 m^2
tp75-25 =	57.0 mins

General Geological Profile :

0.00-0.35m	TOPSOIL: Brown slightly clayey slightly gravelly sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
0.35-1.20m	Medium dense brown gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.

Notes : Soils slightly damp below 1.1m depth however no standing water noted.

			Permeability Guideline (m/s)		
			Good	Poor	Practically Impervious
Soil Infiltration Rate (f) =	**2.66E-05**	m/s	10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

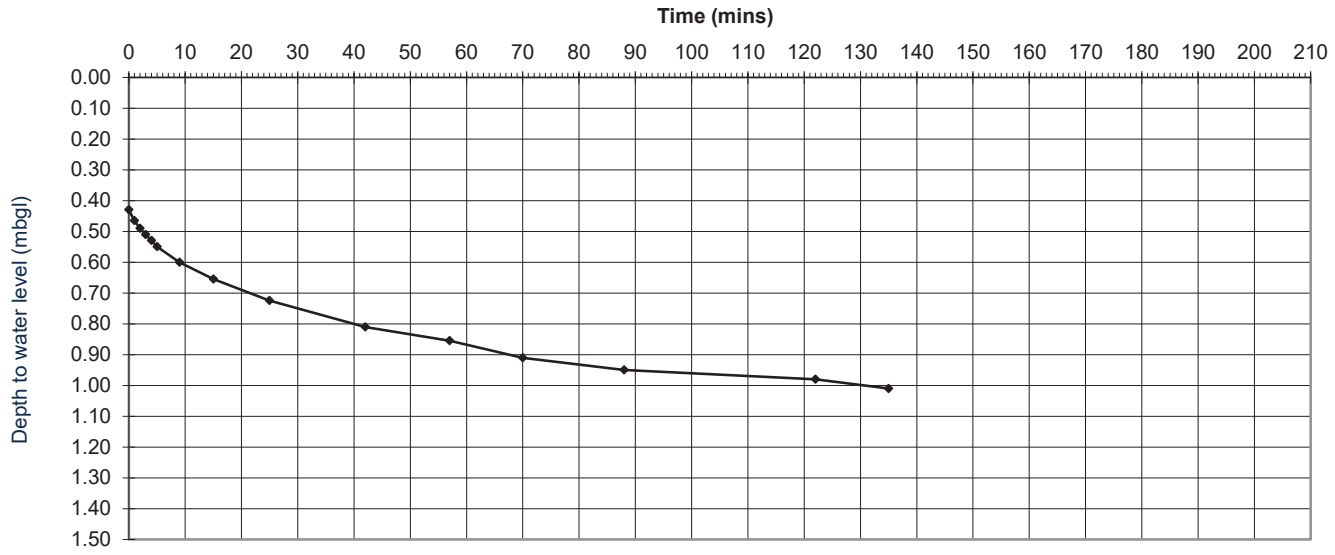
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.70	1.20

Test Date 30/09/2020

Soakaway No. SA05 R3

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.29	m	= Depth drop between 75% and 25% of maximum depth to final depth
53.5	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 =	0.27115 m³
ap50 =	3.095 m²
tp75-25 =	53.5 mins

General Geological Profile :

0.00-0.35m	TOPSOIL: Brown slightly clayey slightly gravelly sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
0.35-1.20m	Medium dense brown gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.

Notes : Soils slightly damp below 1.1m depth however no standing water noted.

			Permeability Guideline (m/s)		
Soil Infiltration Rate (f) =	**2.73E-05**	m/s	Good	Poor	Practically Impervious
			10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

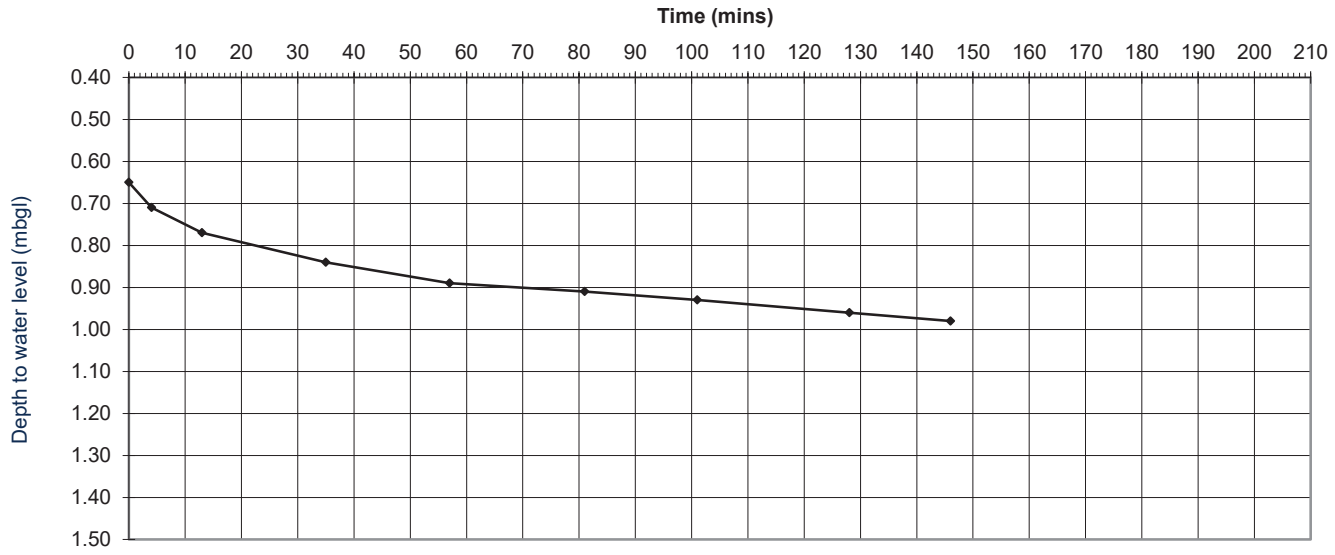
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.75	1.20

Test Date 30/09/2020

Soakaway No. SA06 R1

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.165	m	= Depth drop between 75% and 25% of maximum depth to final depth
57	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 = 0.1588125 m³
ap50 = 2.7335 m²
tp75-25 = 57.0 mins

General Geological Profile :

0.00-0.35m	TOPSOIL: Brown slightly clayey slightly gravelly sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
0.35-1.15m	Medium dense brown gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.
1.15-1.20m	Firm to stiff grey slightly gravelly CLAY. Gravel is fine subrounded chalk.

Notes :

			Permeability Guideline (m/s)		
			Good	Poor	Practically Impervious
Soil Infiltration Rate (f) =	**1.70E-05**	m/s	10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

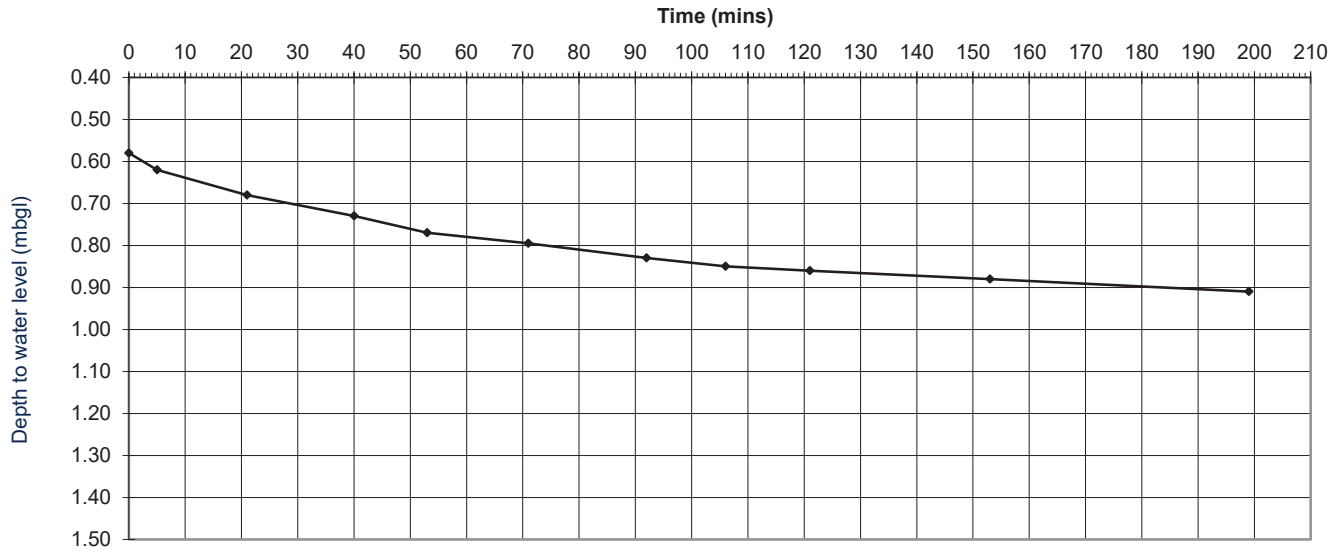
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.75	1.20

Test Date 30/09/2020

Soakaway No. SA06 R2

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.165	m	= Depth drop between 75% and 25% of maximum depth to final depth
76	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 =	0.1588125	m^3
ap50 =	3.0555	m^2
tp75-25 =	76.0	mins

General Geological Profile :

0.00-0.35m	TOPSOIL: Brown slightly clayey slightly gravelly sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
0.35-1.15m	Medium dense brown gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.
1.15-1.20m	Firm to stiff grey slightly gravelly CLAY. Gravel is fine subrounded chalk.

Notes :

			Permeability Guideline (m/s)		
			Good	Poor	Practically Impervious
Soil Infiltration Rate (f) =	**1.14E-05**	m/s	10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

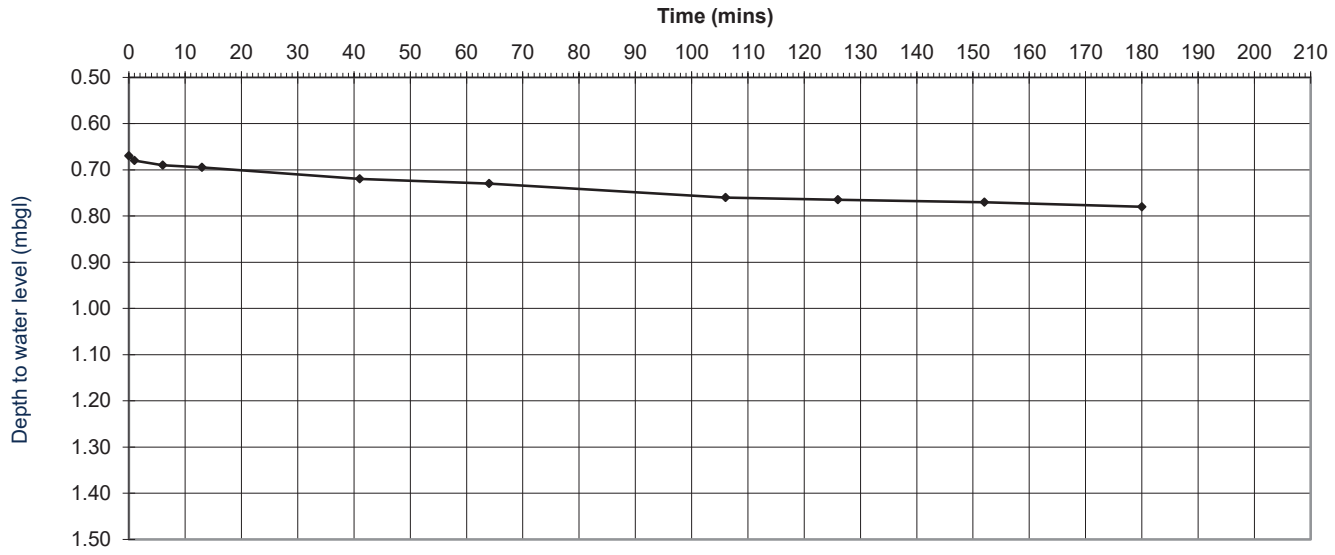
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.60	1.20

Test Date 28/09/2020

Soakaway No. SA07 R1

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.055	m	= Depth drop between 75% and 25% of maximum depth to final depth
75	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 =	0.0484 m³
ap50 =	2.9225 m²
tp75-25 =	75.0 mins

General Geological Profile :

0.00-0.28m	TOPSOIL: Brown slightly gravelly very clayey sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
0.28-1.20m	Medium dense brown gravelly SAND with frequent pockets of clay. Gravel is fine to coarse subangular to subrounded flint and quartz.

Notes :

			Permeability Guideline (m/s)		
Soil Infiltration Rate (f) =	**3.68E-06**	m/s	Good	Poor	Practically Impervious
			10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

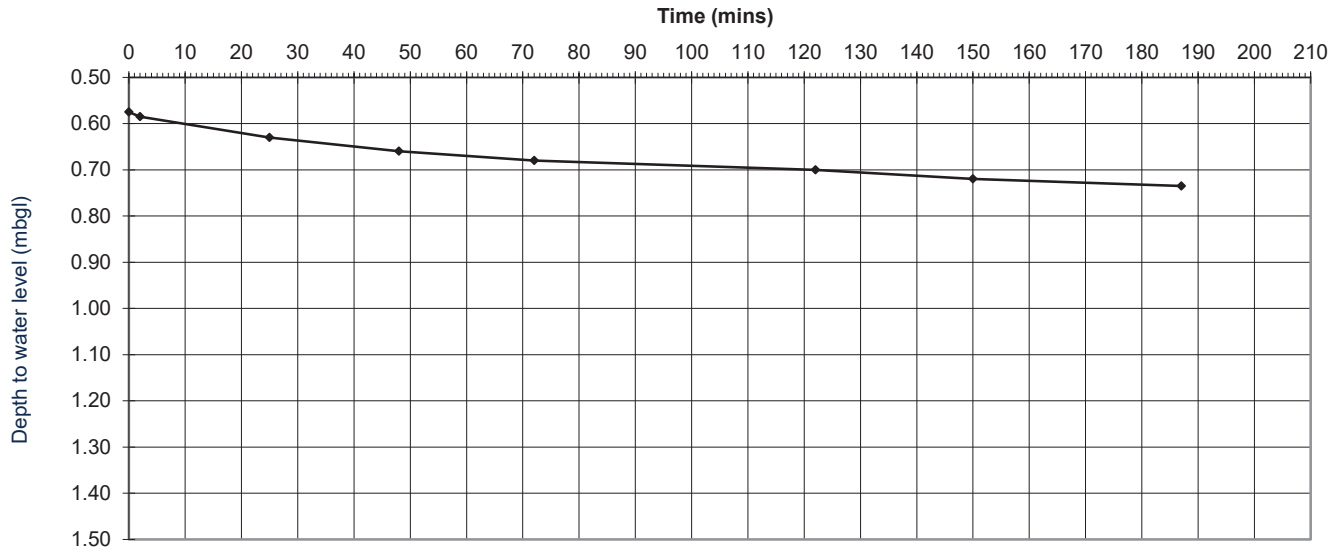
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.60	1.20

Test Date 28/09/2020

Soakaway No. SA07 R2

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.08	m	= Depth drop between 75% and 25% of maximum depth to final depth
94	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 = 0.0704 m³
ap50 = 3.2235 m²
tp75-25 = 94.0 mins

General Geological Profile :

0.00-0.28m TOPSOIL: Brown slightly gravelly very clayey sand. Gravel is medium to coarse subangular to subrounded chalk and flint.

0.28-1.2m Medium dense brown gravelly SAND with frequent pockets of clay.. Gravel is fine to coarse subangular to subrounded flint and quartz.

Notes :

			Permeability Guideline (m/s)		
Soil Infiltration Rate (f) =	**3.87E-06**	m/s	Good	Poor	Practically Impervious
			10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

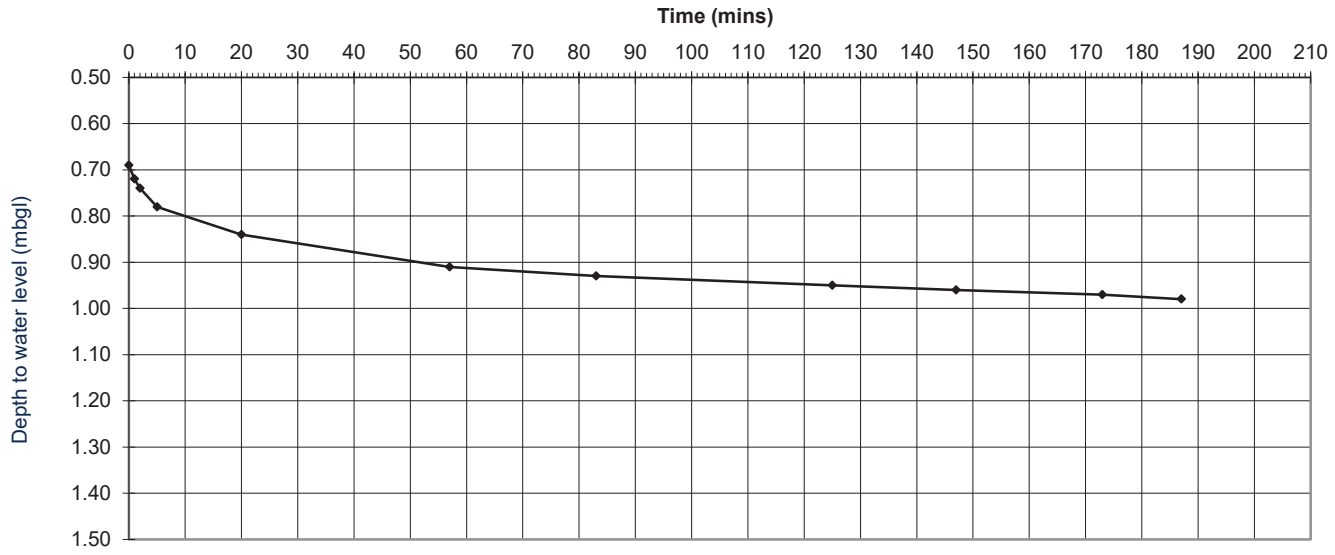
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.60	1.30

Test Date 28/09/2020

Soakaway No. SA08 R1

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.145	m	= Depth drop between 75% and 25% of maximum depth to final depth
53	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 =	0.1276 m³
ap50 =	2.8795 m²
tp75-25 =	53.0 mins

General Geological Profile :

0.00-0.37m	TOPSOIL: Brown slightly gravelly very clayey sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
0.37-0.98m	Medium dense brown gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.
0.98-1.30m	Firm to stiff grey mottled brown sandy gravelly CLAY with frequent pockets of gravel. Gravel is fine to coarse subangular to subrounded flint.

Notes : Slight groundwater seepage in base of soakaway.

			Permeability Guideline (m/s)		
			Good	Poor	Practically Impervious
Soil Infiltration Rate (f) =	**1.39E-05**	m/s	10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

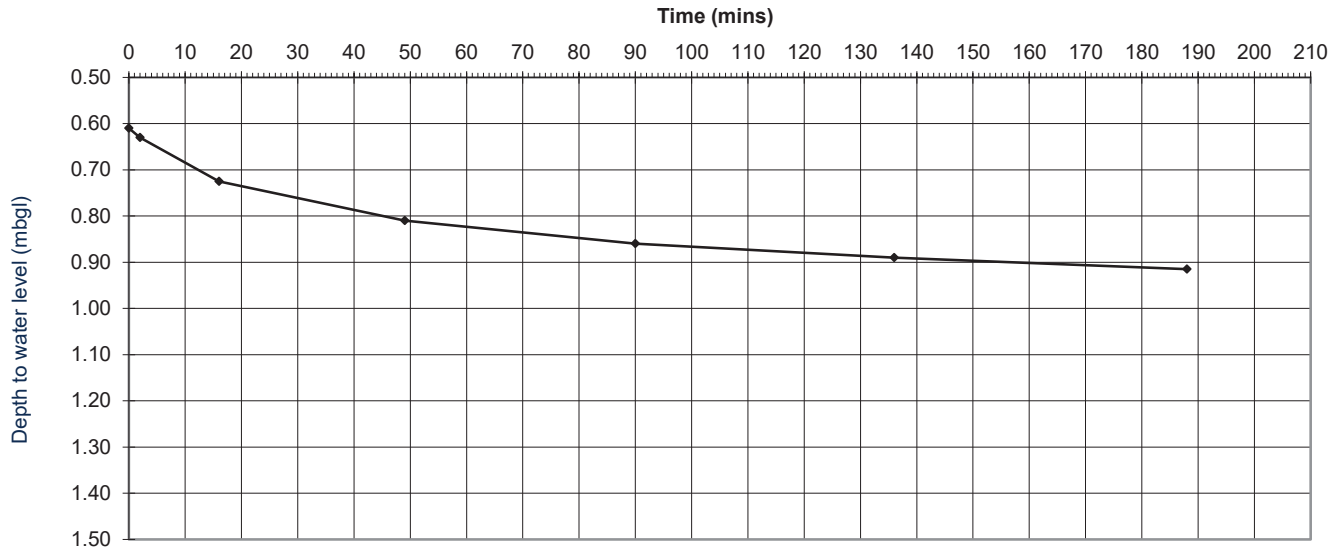
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.60	1.30

Test Date 28/09/2020

Soakaway No. SA08 R2

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.1525	m	= Depth drop between 75% and 25% of maximum depth to final depth
60	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 =	0.1342 m³
ap50 =	3.19125 m²
tp75-25 =	60.0 mins

General Geological Profile :

0.00-0.37m	TOPSOIL: Brown slightly gravelly very clayey sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
0.37-0.98m	Medium dense brown gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.
0.98-1.30m	Firm to stiff grey mottled brown sandy gravelly CLAY with frequent pockets of gravel. Gravel is fine to coarse subangular to subrounded flint.

Notes : Slight groundwater seepage in base of soakaway.

			Permeability Guideline (m/s)		
			Good	Poor	Practically Impervious
Soil Infiltration Rate (f) =	**1.17E-05**	m/s	10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

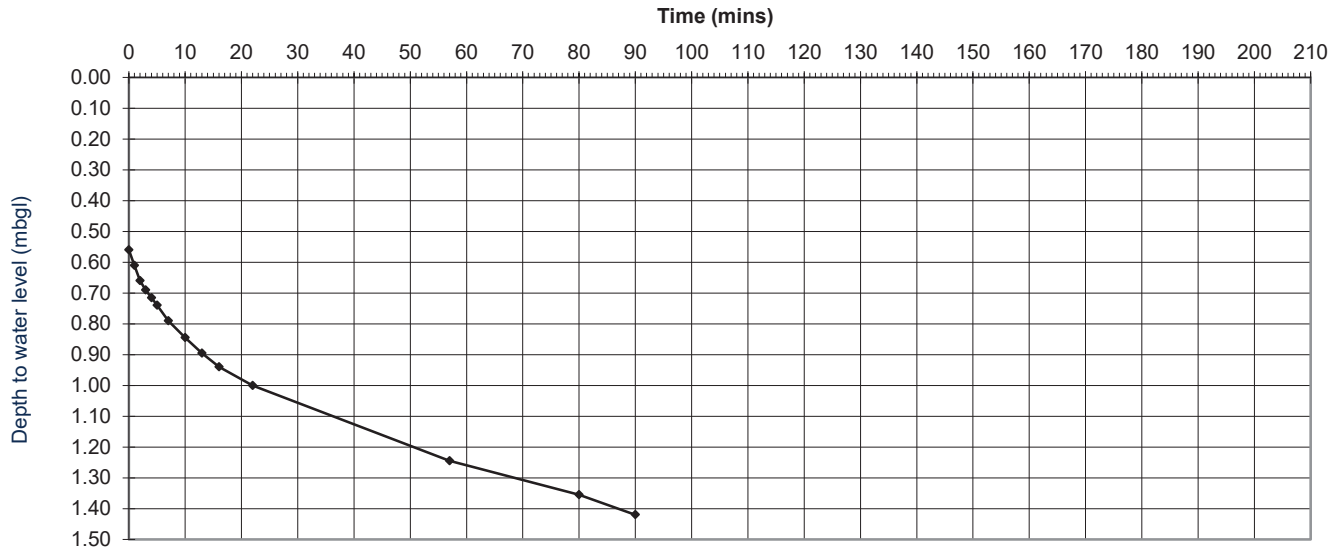
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.90	1.42

Test Date 30/09/2020

Soakaway No. SA09 R1

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.43	m	= Depth drop between 75% and 25% of maximum depth to final depth
45	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 =	0.44935 m^3
ap50 =	3.152 m^2
tp75-25 =	45.0 mins

General Geological Profile :

0.00-0.30m	TOPSOIL: Brown slightly clayey slightly gravelly sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
0.30-1.20m	Medium dense brown gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.
1.20-1.42m	Medium dense orange gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.

Notes : No standing water noted.

			Permeability Guideline (m/s)		
Soil Infiltration Rate (f) =	**5.28E-05**	m/s	Good	Poor	Practically Impervious
			10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

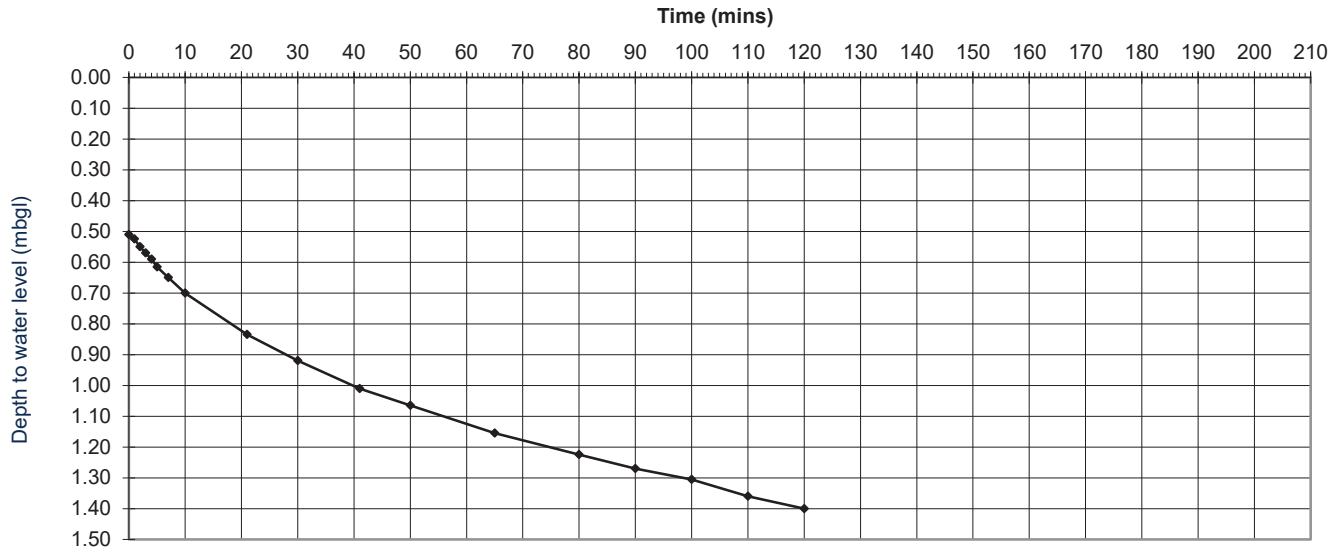
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.90	1.42

Test Date 30/09/2020

Soakaway No. SA09 R2

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.445	m	= Depth drop between 75% and 25% of maximum depth to final depth
57	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 =	0.465025 m^3
ap50 =	3.3235 m^2
tp75-25 =	57.0 mins

General Geological Profile :

0.00-0.30m	TOPSOIL: Brown slightly clayey slightly gravelly sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
0.30-1.20m	Medium dense brown gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.
1.20-1.42m	Medium dense orange gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.

Notes : No standing water noted.

			Permeability Guideline (m/s)		
Soil Infiltration Rate (f) =	**4.09E-05**	m/s	Good	Poor	Practically Impervious
			10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

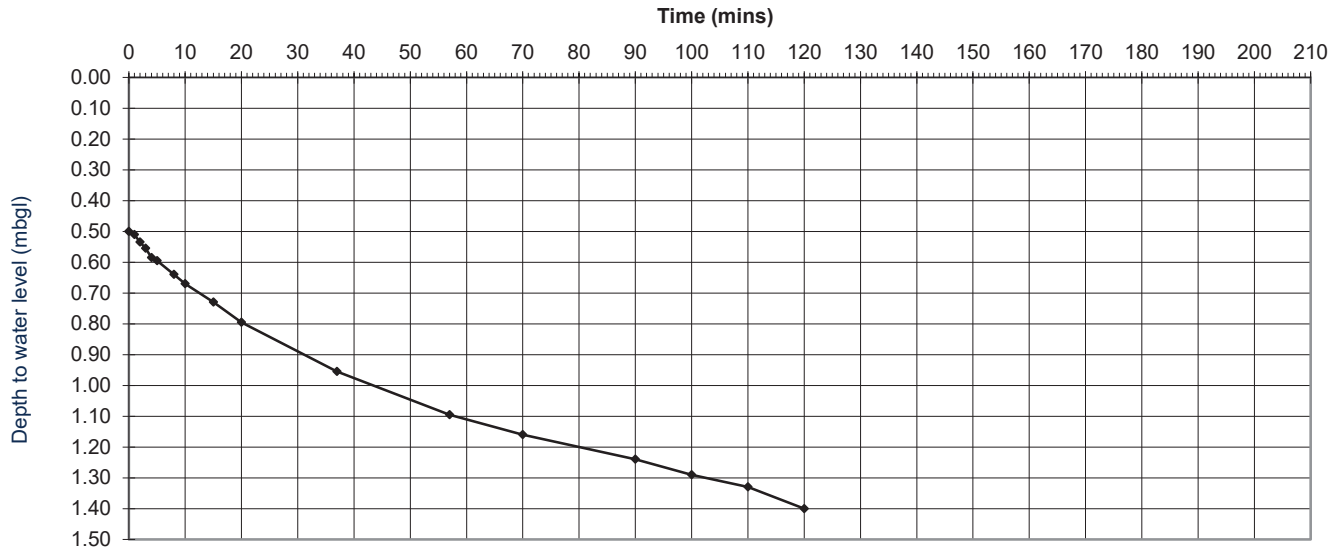
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.90	1.42

Test Date 30/09/2020

Soakaway No. SA09 R3

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.45	m	= Depth drop between 75% and 25% of maximum depth to final depth
59	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 =	0.47025 m³
ap50 =	3.348 m²
tp75-25 =	59.0 mins

General Geological Profile :

0.00-0.30m	TOPSOIL: Brown slightly clayey slightly gravelly sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
0.30-1.20m	Medium dense brown gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.
1.20-1.42m	Medium dense orange gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.

Notes : No standing water noted.

			Permeability Guideline (m/s)		
			Good	Poor	Practically Impervious
Soil Infiltration Rate (f) =	**3.97E-05**	m/s	10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

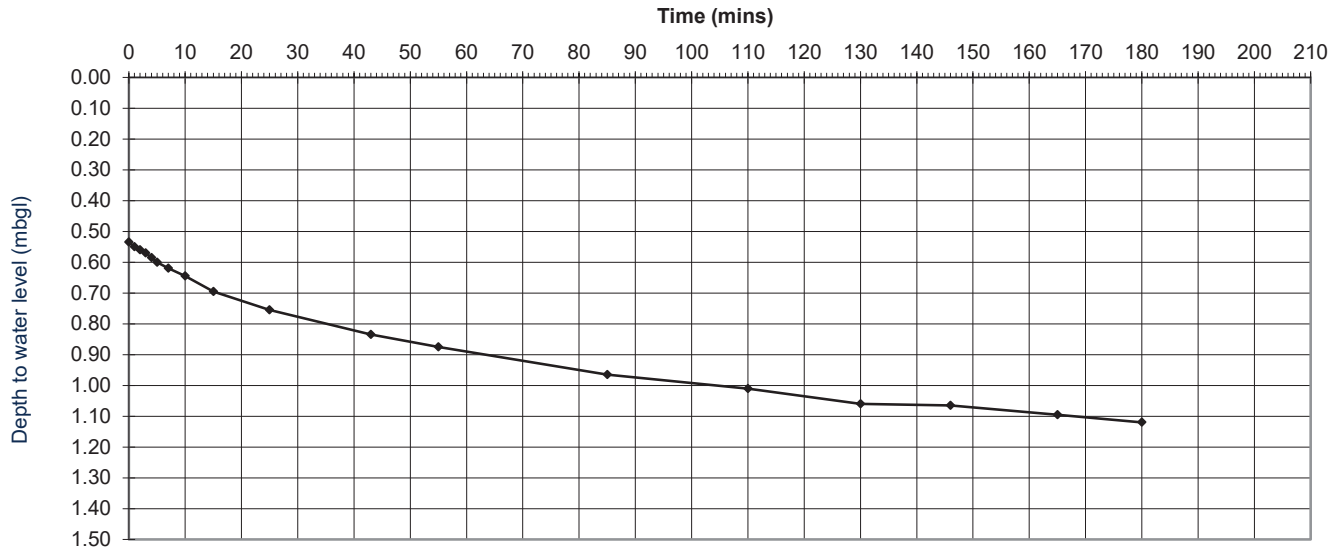
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.50	1.50

Test Date 29/09/2020

Soakaway No. SA10 R1

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.2925	m	= Depth drop between 75% and 25% of maximum depth to final depth
76	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 =	0.2413125 m^3
ap50 =	4.36125 m^2
tp75-25 =	76.0 mins

General Geological Profile :

0.00-0.50m	TOPSOIL: Brown slightly clayey gravelly sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
0.50-1.50m	Medium dense yellow brown slightly clayey gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.

Notes : Slight groundwater seepage at base of soakaway.

			Permeability Guideline (m/s)		
			Good	Poor	Practically Impervious
Soil Infiltration Rate (f) =	**1.21E-05**	m/s	10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

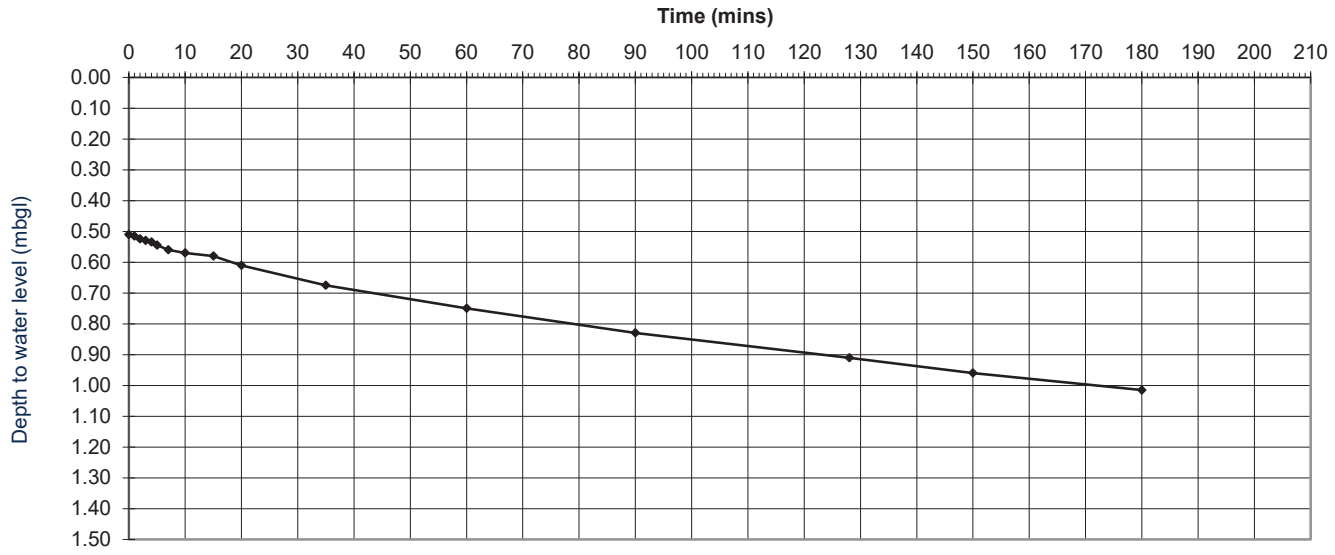
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.50	1.50

Test Date 29/09/2020

Soakaway No. SA10 R2

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.2525	m	= Depth drop between 75% and 25% of maximum depth to final depth
92.5	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 =	0.2083125 m^3
ap50 =	3.84875 m^2
tp75-25 =	92.5 mins

General Geological Profile :

0.00-0.50m	TOPSOIL: Brown slightly clayey gravelly sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
0.50-1.50m	Medium dense yellow brown slightly clayey gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.

Notes : Slight groundwater seepage at base of soakaway.

			Permeability Guideline (m/s)		
			Good	Poor	Practically Impervious
Soil Infiltration Rate (f) =	**9.75E-06**	m/s	10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

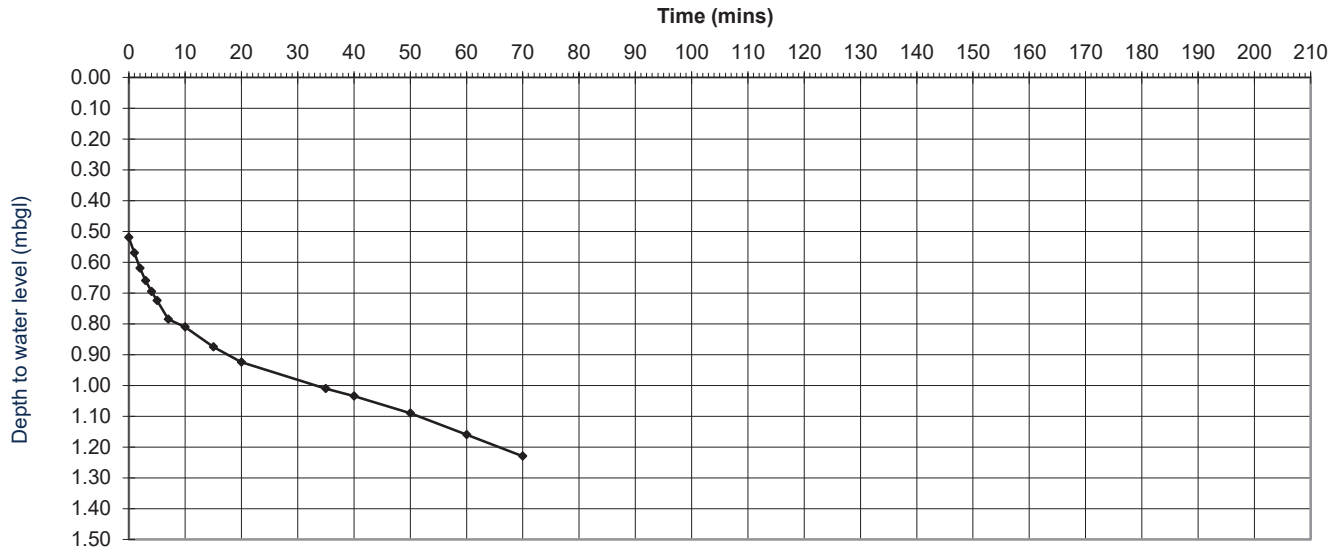
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.50	1.24

Test Date 29/09/2020

Soakaway No. SA11 R1

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.355	m	= Depth drop between 75% and 25% of maximum depth to final depth
40	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 =	0.292875 m³
ap50 =	2.3215 m²
tp75-25 =	40.0 mins

General Geological Profile :

0.00-0.40m	TOPSOIL: Brown slightly clayey gravelly sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
0.40-1.05m	Medium dense brown and yellow brown gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.
1.05-1.24m	Medium dense light brown gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.

Notes : No standing water noted.

			Permeability Guideline (m/s)		
			Good	Poor	Practically Impervious
Soil Infiltration Rate (f) =	**5.26E-05**	m/s	10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

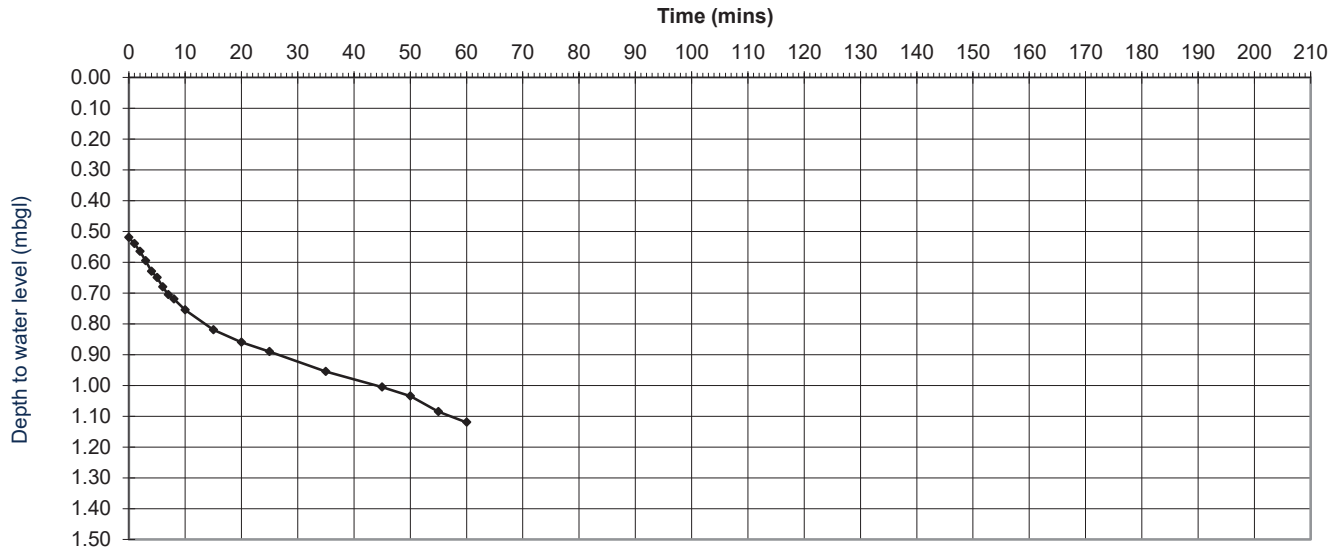
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.50	1.12

Test Date 29/09/2020

Soakaway No. SA11 R2

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.3	m	= Depth drop between 75% and 25% of maximum depth to final depth
32	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 =	0.2475 m³
ap50 =	2.055 m²
tp75-25 =	32.0 mins

General Geological Profile :

0.00-0.40m	TOPSOIL: Brown slightly clayey gravelly sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
0.40-1.05m	Medium dense brown and yellow brown gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.
1.05-1.12m	Medium dense light brown gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.

Notes : No standing water noted. Partial pit wall collapse at 19 minutes resulting in pit becoming shallower.

			Permeability Guideline (m/s)		
Soil Infiltration Rate (f) =	**6.27E-05**	m/s	Good	Poor	Practically Impervious
			10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

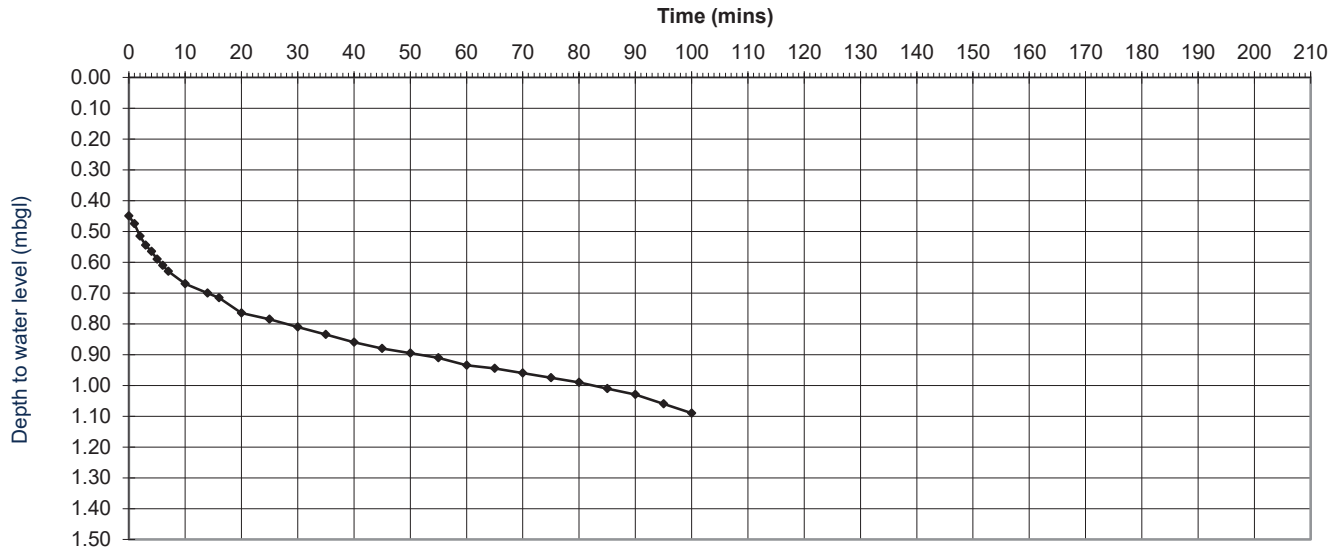
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.50	1.09

Test Date 29/09/2020

Soakaway No. SA11 R3

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.32	m	= Depth drop between 75% and 25% of maximum depth to final depth
53	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 =	0.264 m³
ap50 =	2.137 m²
tp75-25 =	53.0 mins

General Geological Profile :

0.00-0.40m	TOPSOIL: Brown slightly clayey gravelly sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
0.40-1.05m	Medium dense brown and yellow brown gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.
1.05-1.09m	Medium dense light brown gravelly SAND. Gravel is fine to coarse subangular to subrounded flint and quartz.

Notes : No standing water noted. Partial pit wall collapse at 15 minutes resulting in pit becoming shallower.

			Permeability Guideline (m/s)		
Soil Infiltration Rate (f) =	**3.88E-05**	m/s	Good	Poor	Practically Impervious
			10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

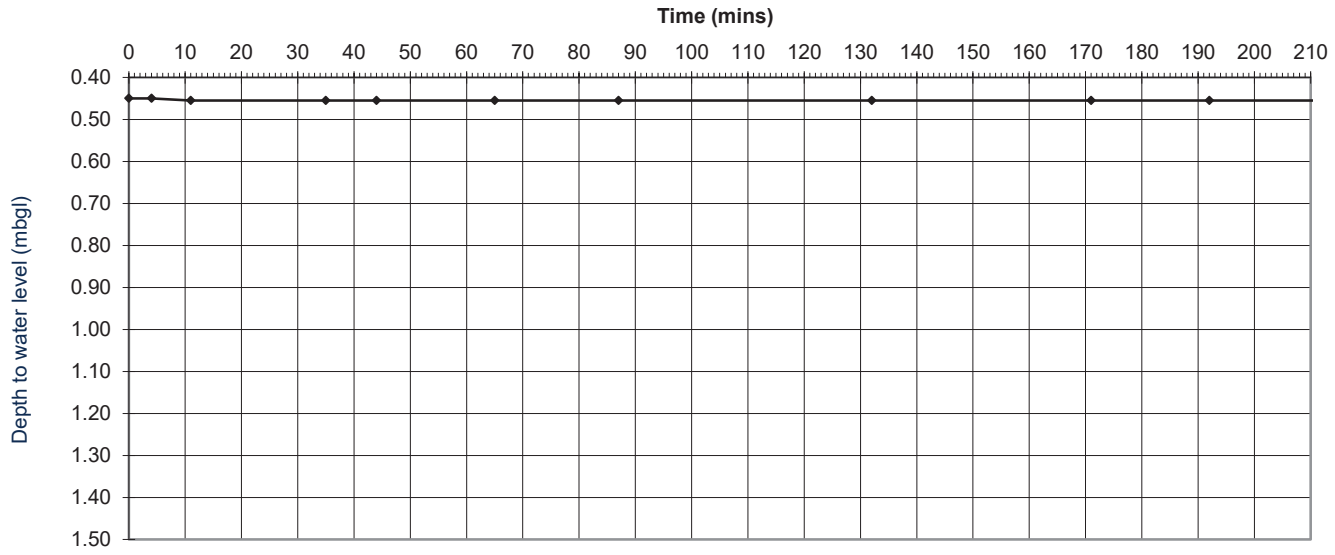
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.40	1.68

Test Date 29/09/2020

Soakaway No. SA12 R1

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.0025	m	= Depth drop between 75% and 25% of maximum depth to final depth
5	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 =	0.001925 m^3
ap50 =	5.55725 m^2
tp75-25 =	5.0 mins

General Geological Profile :

0.00-0.33m	TOPSOIL: Brown slightly gravelly very clayey sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
0.33-0.63m	Medium dense brown very clayey SAND with frequent pockets of clay.
0.63-1.51m	Stiff blue grey slightly gravelly sandy CLAY with occasional pockets of gravelly sand. Gravel is of medium to coarse subangular to subrounded flint, sandstone and chalk.
1.51-1.68m	Stiff blue grey fissured CLAY.

Notes : Negligible soakage recorded.

			Permeability Guideline (m/s)		
Soil Infiltration Rate (f) =	**N/A**	m/s	Good	Poor	Practically Impervious
			10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

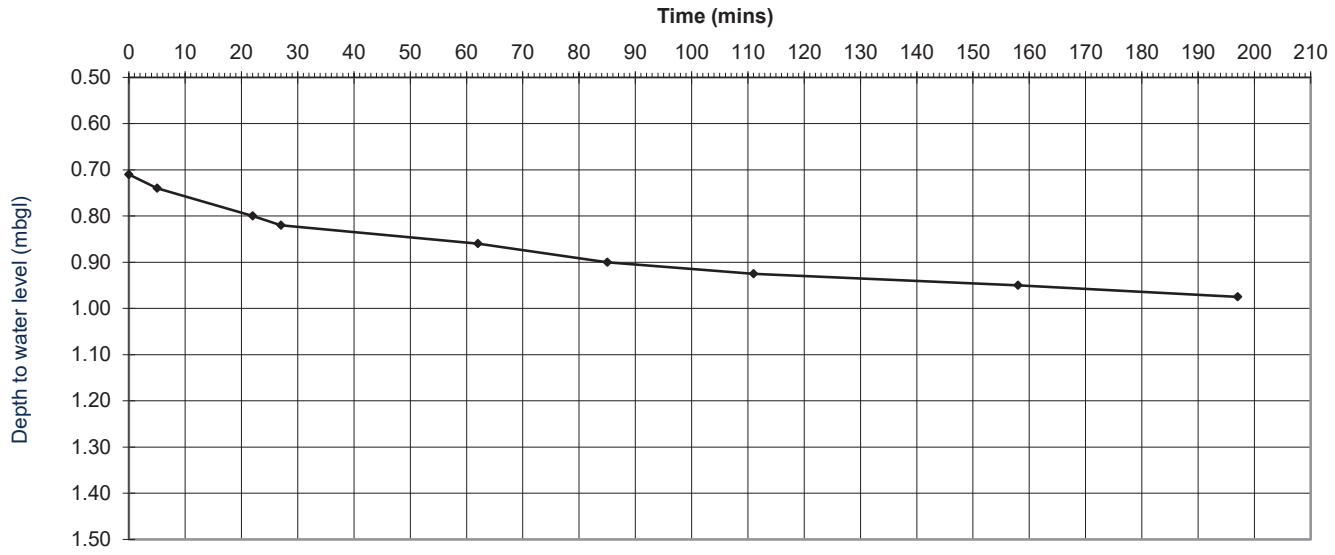
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.85	2.00

Test Date 28/09/2020

Soakaway No. SA13 R1

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.1325	m	= Depth drop between 75% and 25% of maximum depth to final depth
76	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 =	0.1348188 m³
ap50 =	6.5735 m²
tp75-25 =	76.0 mins

General Geological Profile :

0.00-0.33m	TOPSOIL: Brown slightly gravelly very clayey sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
0.33-0.62m	Medium dense brown gravelly SAND with frequent pockets of clay. Gravel is fine to coarse subangular to subrounded flint and quartz.
0.62-1.60m	Firm light brown mottled light grey sandy CLAY with frequent pockets of gravelly sand.
1.60-2.00m	Stiff blue grey fissured CLAY.

Notes :

			Permeability Guideline (m/s)		
Soil Infiltration Rate (f) =	**4.50E-06**	m/s	Good	Poor	Practically Impervious
			10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

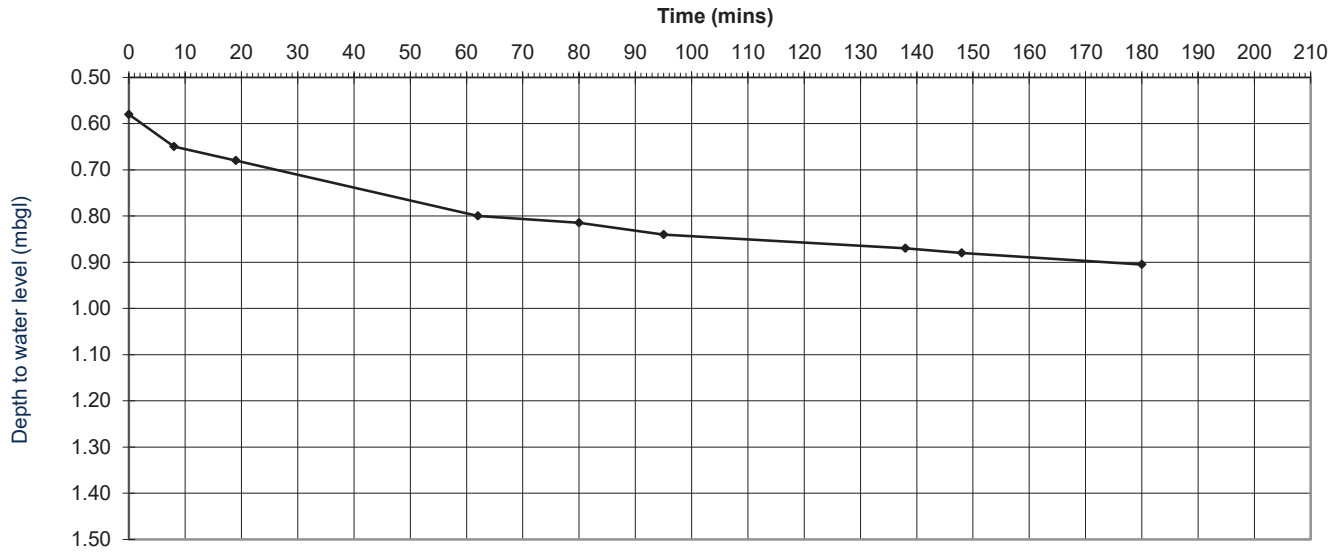
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.85	2.00

Test Date 28/09/2020

Soakaway No. SA13 R2

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.1625	m	= Depth drop between 75% and 25% of maximum depth to final depth
74	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 = 0.1653438 m³
ap50 = 7.0535 m²
tp75-25 = 74.0 mins

General Geological Profile :

0.00-0.33m	TOPSOIL: Brown slightly gravelly very clayey sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
0.33-0.62m	Medium dense brown gravelly SAND with frequent pockets of clay. Gravel is fine to coarse subangular to subrounded flint and quartz.
0.62-1.60m	Firm light brown mottled light grey sandy CLAY with frequent pockets of gravelly sand.
1.60-2.00m	Stiff blue grey fissured CLAY.

Notes :

			Permeability Guideline (m/s)		
Soil Infiltration Rate (f) =	**5.28E-06**	m/s	Good	Poor	Practically Impervious
			10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

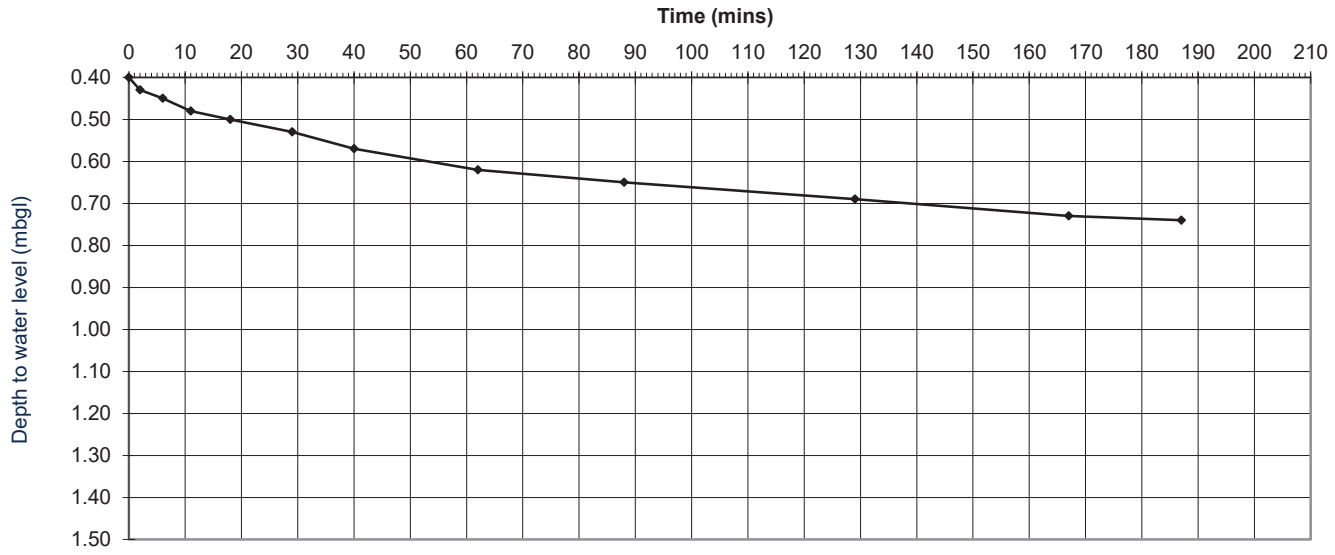
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.45	1.25

Test Date 29/09/2020

Soakaway No. SA14 R1

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.17	m	= Depth drop between 75% and 25% of maximum depth to final depth
81	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 = 0.135575 m³
ap50 = 3.5175 m²
tp75-25 = 81.0 mins

General Geological Profile :

0.00-0.36m	TOPSOIL: Brown slightly gravelly very clayey sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
0.36-1.21m	Medium dense brown clayey gravelly SAND. Gravel is of medium to coarse sub-angular to sub-rounded flint, quartz and sandstone.
1.21-1.25m	Stiff blue grey slightly gravelly sandy CLAY with occasional pockets of sand. Gravel is of medium to coarse subangular to subrounded flint, sandstone and chalk.

Notes :

			Permeability Guideline (m/s)		
Soil Infiltration Rate (f) =	**7.93E-06**	m/s	Good	Poor	Practically Impervious
			10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

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SOAKWAY TESTING SCHEDULE

PROJECT NO	19-0021
PROJECT NAME	Land off Willen Road, Newport Pagnell
DOC REF	190021-RGL-ZZ-XX-SH-G-500-0001

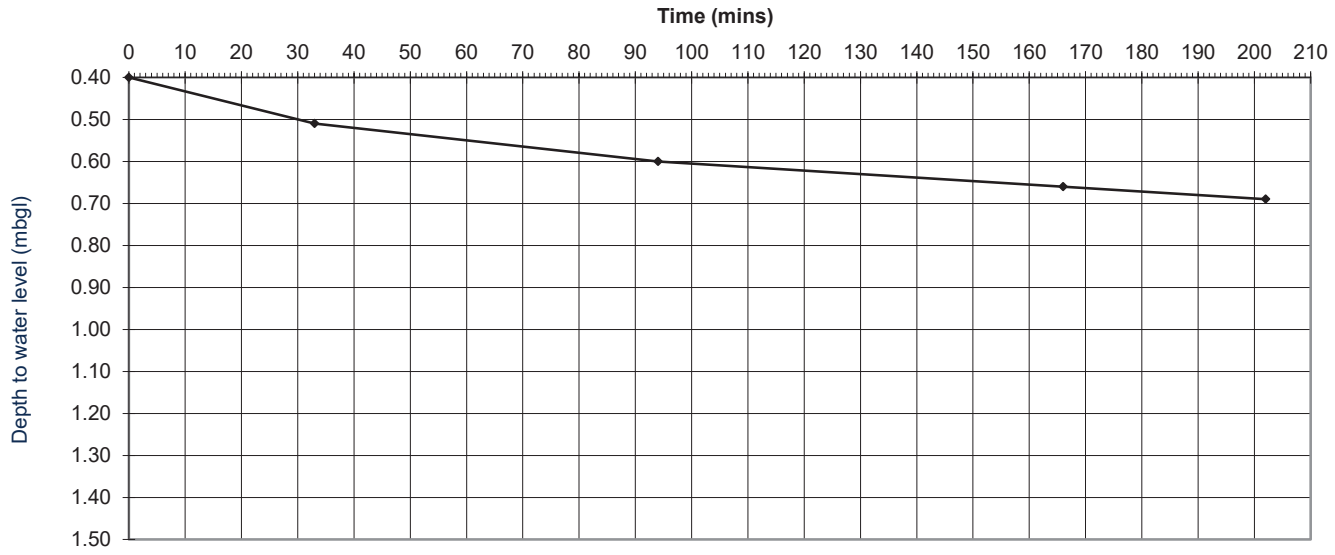
Trial Pit Dimensions (m)	Width	Length	Depth to Base
	0.55	1.45	1.25

Test Date 29/09/2020

Soakaway No. SA14 R2

Calculation of Infiltration Rate in Accordance with BRE Digest 365.

SOAKAWAY TEST RESULTS



From above graph;

0.145	m	= Depth drop between 75% and 25% of maximum depth to final depth
98	mins	= Time for outflow between 75% and 25% of maximum depth to final depth

Calculation of Soil Infiltration Rate (f):

where

$$f = \frac{VP75\text{-}25}{ap50 \times tp75\text{-}25}$$

using

VP75-25 = Volume outflowing between 75% and 25% of effective depth.
ap50 = Mean surface area through which the outflow occurs.
tp75-25 = Time for the outflow between 75% and 25% of the effective depth.

VP75-25 =	0.1156375 m^3
ap50 =	3.6175 m^2
tp75-25 =	98.0 mins

General Geological Profile :

0.00-0.36m	TOPSOIL: Brown slightly gravelly very clayey sand. Gravel is medium to coarse subangular to subrounded chalk and flint.
0.36-1.21m	Medium dense brown clayey gravelly SAND. Gravel is of medium to coarse sub-angular to sub-rounded flint, quartz and sandstone.
1.21-1.25m	Stiff blue grey slightly gravelly sandy CLAY with occasional pockets of sand. Gravel is of medium to coarse subangular to subrounded flint, sandstone and chalk.

Notes :

			Permeability Guideline (m/s)		
Soil Infiltration Rate (f) =	**5.44E-06**	m/s	Good	Poor	Practically Impervious
			10^{-3} - 10^{-5}	10^{-6} - 10^{-7}	10^{-8} - 10^{-10}

SUMMARY OF SOAKAWAY INFILTRATION TESTING RESULTS FROM INVESTIGATIONS BY RGL IN SEPT 2020

Soakaway Location	Infiltration Test Results (all results normalised to x 10^{-6} m/s)			Groundwater Seepage Depth (m)
	Round 1	Round 2	Round 3	
1	6.0	7.58	-	1.5
2	34.4	35.4	37.6	Dry but nearby trial pits 1.1-1.2m
3	16.9	20.2	16.6	1.3
4	16.3	14.8	-	1.45
5	32	26.6	27.3	1.1
6	17	11.4	-	Dry
7	3.68	3.87	-	Dry
8	13.9	11.7	-	1.3
9	52.8	40.9	39.7	Dry but 1.5m nearby
10	12.1	9.75	-	1.5
11	52.6	62.7	38.8	Dry but 2.05m nearby
12	0	-	-	Dry
13	4.5	5.28	-	Dry
14	7.93	5.44	-	Dry

Appendix 4

Sewer Records supplied by Anglian Water

Data updated: 29/03/19

Scale: 1:1250 | Date: 12/04/19 | Wastewater Plan A1

Map Centre: 487419,242508 | Our Ref: 307911 - 2 | Powered by digdat

Foul Sewer
Surface Sewer
Combined Sewer
Final Effluent Sewer
Rising Main*
Private Sewer*
Decommissioned Sewer*

Outfall*
Inlet*
Manhole*

Sewage Treatment Works
Public Pumping Station
Decommissioned Pumping Station

*(Colour denotes effluent type)

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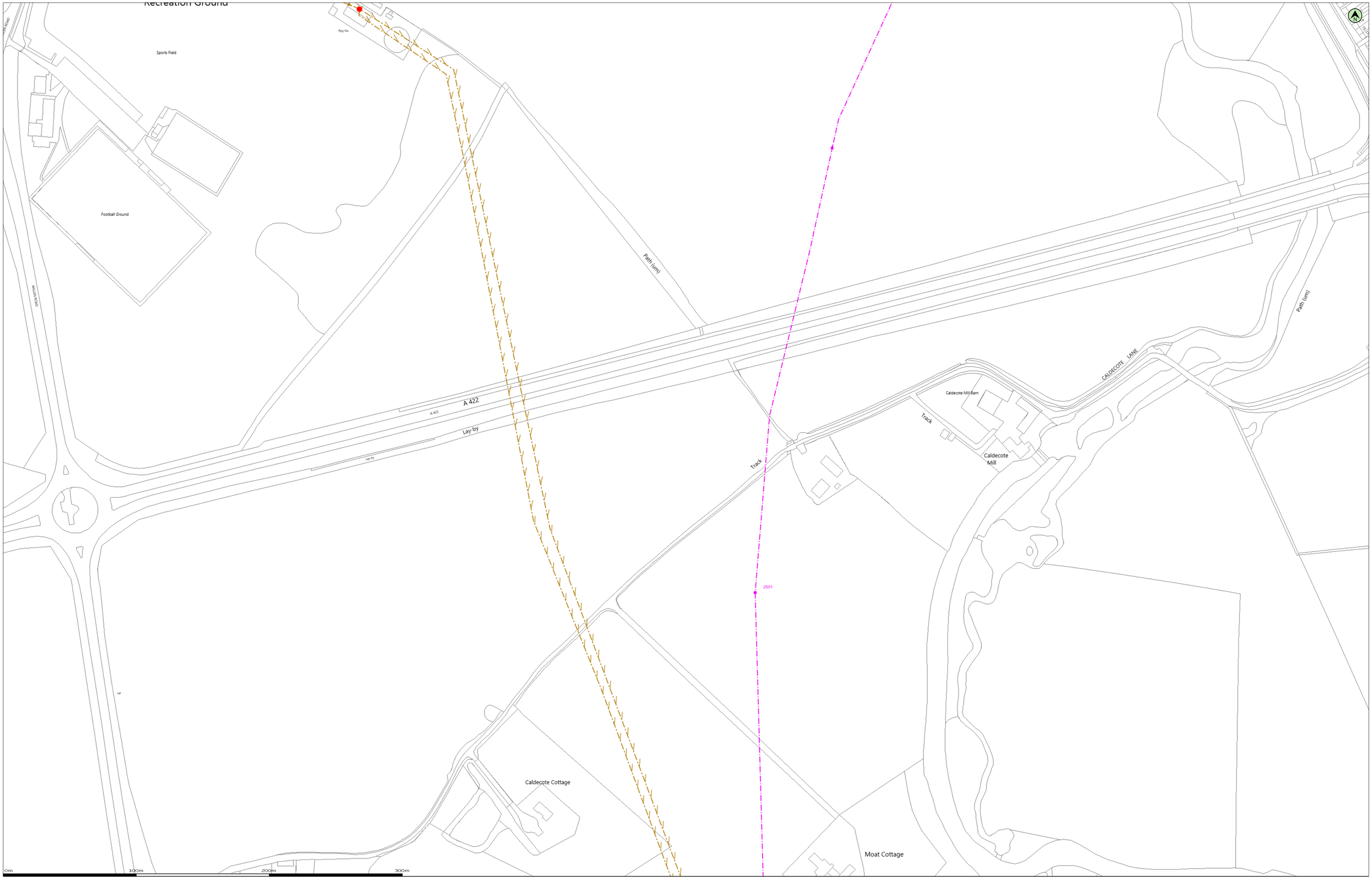
Newport Pagnell 3

love every drop anglianwater



(c) Crown copyright and database rights 2019 Ordnance Survey 100022432 | Date: 12/04/19 | Scale: 1:1250 | Map Centre: 488171,242662 | Data updated: 29/03/19 | Our Ref: 307911 - 6 | Wastewater Plan A1

Foul Sewer	Outfall*	Sewage Treatment Works	
Surface Sewer			
Combined Sewer			
Final Effluent	Inlet*	Public Pumping Station	
Rising Main*			
Private Sewer*	Manhole*	Decommissioned Pumping Station	
Decommissioned Sewer*		*(Colour denotes effluent type)	

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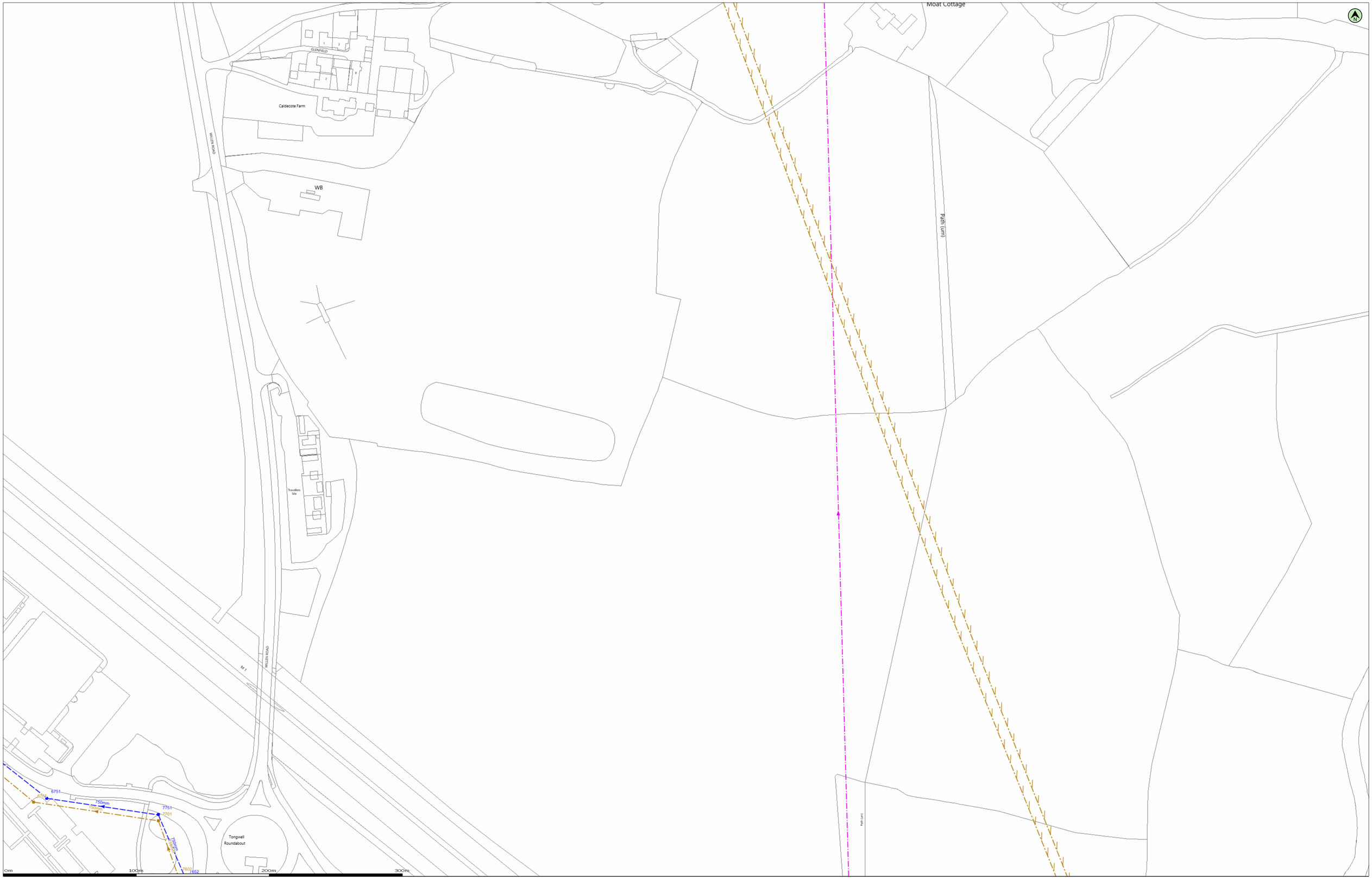
Newport Pagnell 1

love every drop anglianwater



(c) Crown copyright and database rights 2019 Ordnance Survey 100022432 | Date: 12/04/19 | Scale: 1:1250 | Map Centre: 488124,242023 | Data updated: 29/03/19 | Our Ref: 307911 - 4 | Wastewater Plan A1

Foul Sewer	Outfall*	Sewage Treatment Works	
Surface Sewer			
Combined Sewer			
Final Effluent	Inlet*	Public Pumping Station	
Rising Main*			
Private Sewer*	Manhole*	Decommissioned Pumping Station	
Decommissioned Sewer*			

*(Colour denotes effluent type)

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Newport Pagnell 2

love every drop anglianwater

Manhole Reference	Easting	Northing	Liquid Type	Cover Level	Invert Level	Depth to Invert
6701	487634	241751	F	66.05	60.5	5.55
7602	487743	241696	F	67.26	61.95	5.31
7701	487728	241737	F	67.18	61.37	5.81
6751	487644	241754	S	66.2	62.25	3.95
7751	487728	241742	S	67.7	62.54	5.16

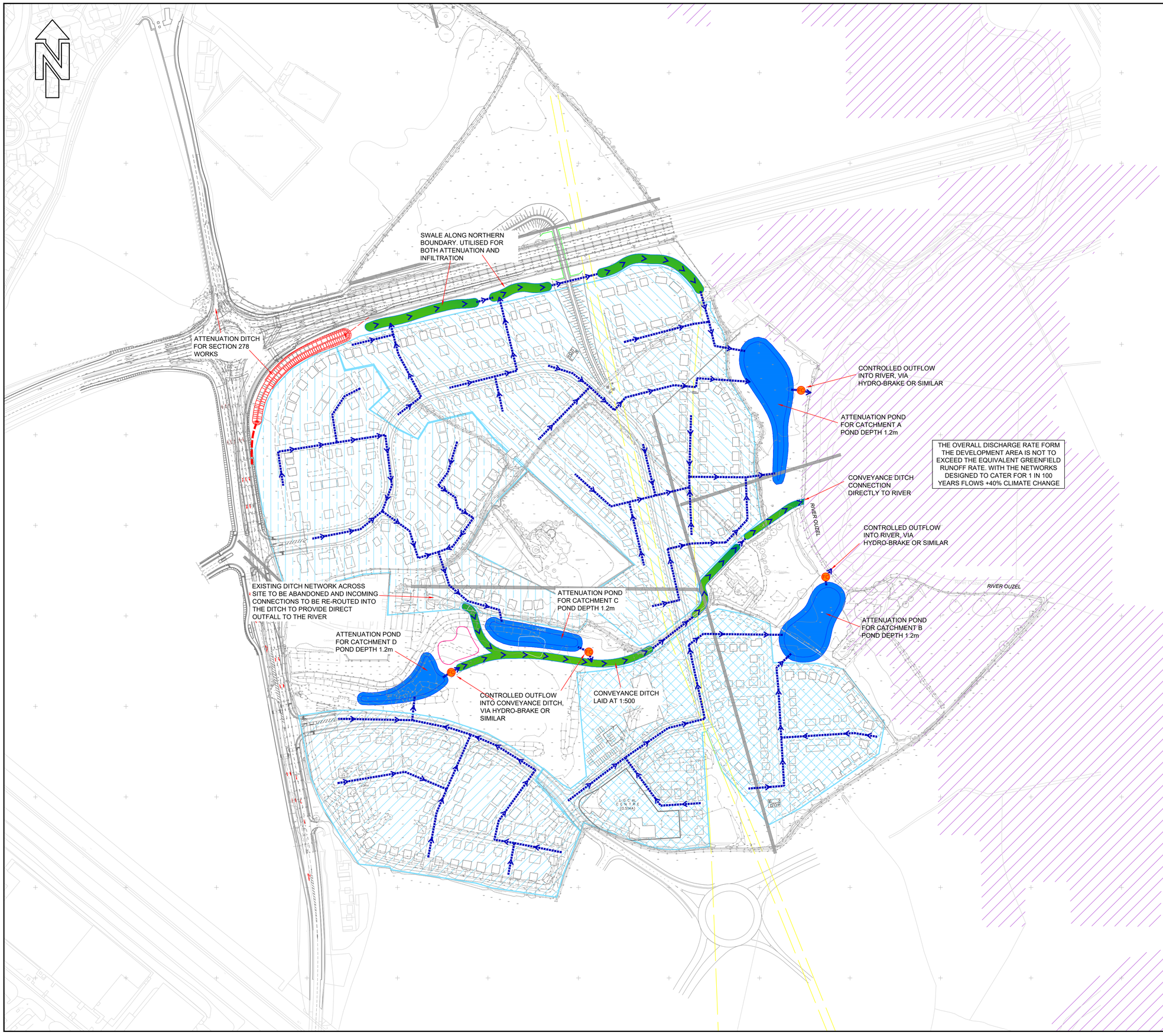
Manhole Reference	Easting	Northing	Liquid Type	Cover Level	Invert Level	Depth to Invert

Manhole Reference	Easting	Northing	Liquid Type	Cover Level	Invert Level	Depth to Invert

Manhole Reference	Easting	Northing	Liquid Type	Cover Level	Invert Level	Depth to Invert

Appendix 5

Indicative Surface Water Drainage Proposals



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- PROPOSED SWALE NETWORK
- PROPOSED FLOW CONTROL POINTS
- PROPOSED PONDS
- AREA A CATCHMENT
- AREA B CATCHEMNT
- AREA C CATCHMENT
- AREA D CATCHMENT
- FLOOD ZONE AREA

REV	DESCRIPTION	DATE	BY	AUTH

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CLIENT
BLOOR HOMES

PROJECT
NEWPORT PAGNELL

TITLE
INDICATIVE SURFACE WATER DRAINAGE PROPOSALS

DRAWN	AUTHORISED	SCALE	DATE
JC	RWT	1:2000@A1	-

PROJECT NO.	DRAWING NO.	REV
21212	1	-

STATUS.
INDICATIVE

Appendix 6

Indicative Foul Water Drainage Proposals

Point of Connection as confirmed by AWS MH ref 9901

PUMPING STATION 1

Catchment 1

Serving: 520 dwelings + pumped flows from catchment 2

Pumped outfall form PS 1 to MH 9901 Rising main length to outfall 570m

Catchment 2

Serving Primary School, Local Centre, 280 residential dwellings

Pumped outfall from PS2 to Catchment 1

Rising main length 490m

PUMPING STATION 2

1. DO NOT SCALE FROM THIS DRAWING. IF IN DOUBT CONTACT TRAVIS BAKER LIMITED.
2. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS RELATING TO THIS PROJECT.
4. ALL DIMENSIONS SHOULD BE CHECKED ON SITE PRIOR TO CONSTRUCTION. ANY DISCREPANCIES SHOULD BE IMMEDIATELY NOTIFIED IN WRITING TO TRAVIS BAKER LIMITED.
5. THE CONTRACTOR SHALL PRIOR TO CONSTRUCTION CHECK AND VERIFY THAT THE DETAILS SHOWN ON THIS DRAWING ARE FULLY COMPATIBLE WITH ANY AS CONSTRUCTED DIMENSIONS OR LEVELS. ANY DISCREPANCIES TO BE REPORTED IMMEDIATELY IN WRITING TO TRAVIS BAKER LIMITED.
6. THIS DRAWING HAS BEEN PREPARED FOR THE EXCLUSIVE USE OF THE COMMISSIONING PARTY AND UNLESS AGREED IN WRITING BY TRAVIS BAKER LIMITED NO OTHER PARTY MAY USE OR RELY ON ITS CONTENTS. NO LIABILITY IS ACCEPTED BY TRAVIS BAKER LIMITED FOR ANY USE OF THIS DRAWING OTHER THAN FOR THE PURPOSE FOR WHICH IT WAS ORIGINALLY PREPARED.
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ALL INFORMATION SHOWN IS INDICATIVE ONLY SUBJECT TO DETAILED DESIGN

KEY

- Land under control of Bloor Homes
- Proposed Foul network
- Proposed Foul Water Rising Main
- Off Site Foul sewer (rising main)
- Foul Water Point of Connection
- Catchment Area 1 (North)
- Catchment Area 2 (South)

REV	DESCRIPTION	DATE	BY	AUTH

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CLIENT
BLOOR HOMES

PROJECT
NEWPORT PAGNELL

TITLE
INDICATIVE FOUL WATER DRAINAGE PROPOSALS

DRAWN	AUTHORISED	SCALE	DATE
JC	RWT	1:2000@A1	24.08.21

PROJECT NO.	DRAWING NO.	REV
21212	2	-

STATUS.
INDICATIVE