Furners Lane, Henfield

Flood Risk Assessment

Project No: AC23068

File Name: AC23068-ABS-XX-XX-RP-X-5801

Revision: P03

January 2025

Version Record

Rev: P01			Signed	Date
Created By	Martin Howell	MEng (Hons)		13/09/24
Checked By	Matthew Woods	BEng (Hons)		13/09/24
Approved By	Matthew Woods	BEng (Hons)		13/09/24

Revision	**Details**	**Created By**	**Checked By**	**Date**
P01	First Issue	MH	MRW	13/09/24
P02	Site plan updated	MH	MH	20/09/24
P03	Site plan updated	MH	MH	23/01/25

Contents

1. Introduction

ABSTRUCT Consulting have been appointed by Elivia Homes Eastern to prepare a Flood Risk Assessment (FRA) to support a planning application for a new development of 29 dwellings.

The purpose of this FRA is to support a planning application by establishing the risk of flooding to the proposed development. Suitable mitigation methods will be recommended where required to reduce any potential risk to a more acceptable level. The FRA will show that the development will be safe for its lifetime (assumed to be 100 years) considering the vulnerability of the users, without increasing flood risk elsewhere.

This FRA will consider risk from tidal, fluvial, surface water, groundwater, sewer, and artificial sources in accordance with the National Planning Policy Framework and the corresponding Planning Practice Guidance and the Non Statutory Technical Standards for Sustainable Drainage Systems.

1.1. Site Address / Location

Furners Lane, Henfield, West Sussex, BN5 9HS

Ordnance Survey Grid TQ 217 161

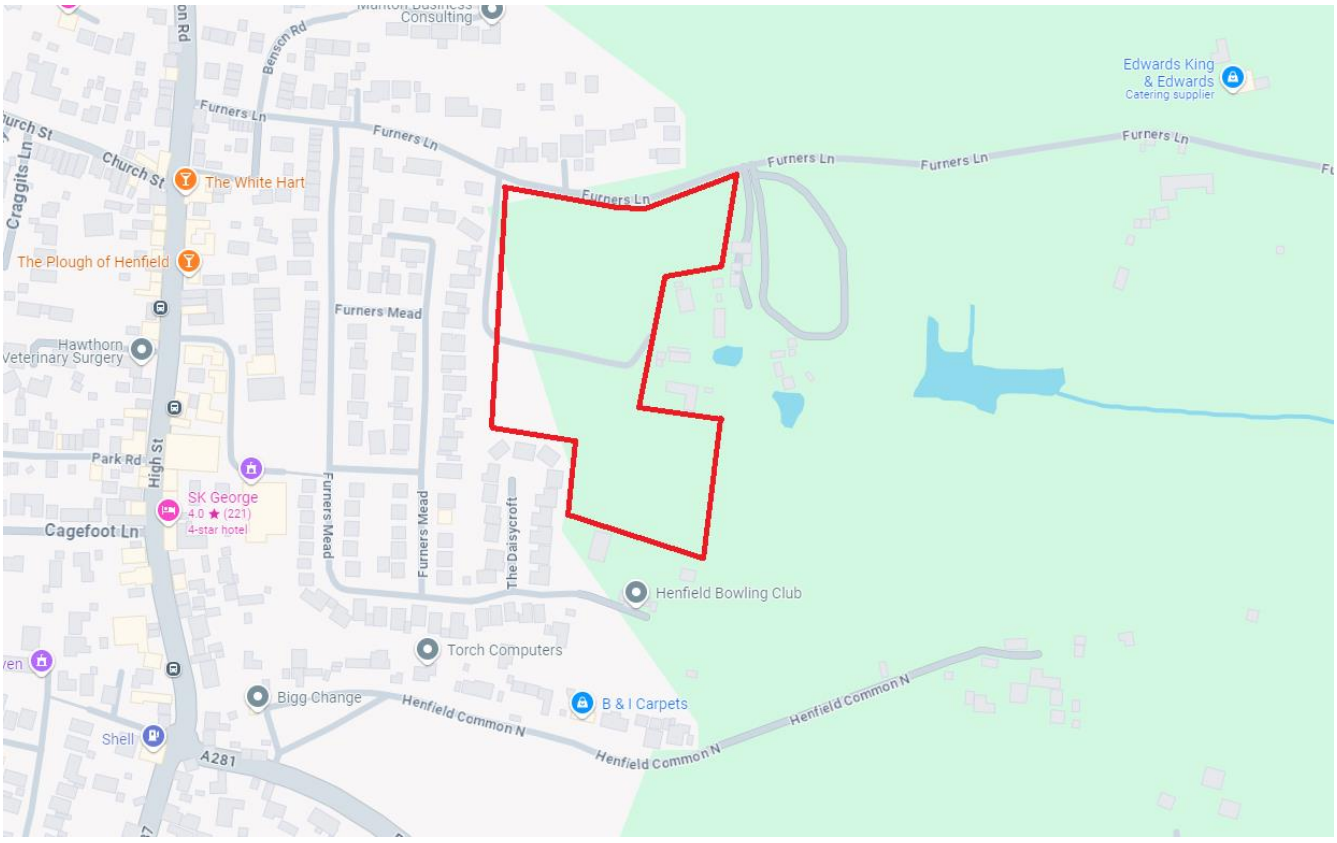

Figure 1 – Site Location Plan

1.2. Description of Site

1.2.1. Site

The site extends to 2.90ha and is located within the administrative boundary of Horsham District Council. The site comprises a greenfield with a track running through it which serves several dwellings on the eastern side of the site.

1.2.2. Surrounding Area

The site is immediately south of Furners Lane

To the west is the village of Henfield, whilst to the south is Henfield Bowling Club. There are further fields and small areas of woodland to the north and east.

1.2.3. Access

The site is accessed via an existing track, accessed off Furners Lane (public highway), beyond the existing track access Furners Lane changes to private. The existing access onto the development will be upgraded and formalised into a junction whilst the development is built out.

1.3. Description of Development

The development will comprise 29 dwellings along with associated access roads, parking areas, driveways, and landscaping. A proposed site layout can be found in Appendix A.

2. Site Information

2.1. Topography

The topographic survey of the site in Appendix B shows that the site generally falls from a high point at the south west of the site towards a low point at the north east of the site. Site levels shown on the topographic survey are to ordnance datum and generally range from 31.50 in the south western corner to 29.70 in the north eastern corner. There is a corner in the south east which is higher than this (highest level is 33.20), however this part of the site will remain green post development.

2.2. Hydrology

The nearest open water feature is a pond to the east of the site, approximately 60m away and 1m below the site. This is the first of a small series of ponds to the east of the site. However, levels continue to fall away from the site to the east as evidenced by the watercourse flowing east away from this series of ponds.

2.3. Geology

The British Geological Society (BGS) mapping for the site shows the site to underlain by the Lower Greensand Group – Sandstone, silty. Mapping is included within Appendix C.

Nearby BGS borehole backs this up and a log is presented in Appendix C which shows clay beneath the sandstone.

2.4. Hydrogeology

Online mapping provided by Magic Maps shows the site is underlain by a Principal aquifer, with a groundwater vulnerability of Medium High to High.

The mapping also shows that the site is not within a Source Protection Zone. Mapping is included within Appendix C.

2.5. Existing Sewer Drainage

The area around the proposed development is served by Southern Water for sewerage and a copy of the sewer records can be found in Appendix D. The records show that there is a Southern Water foul water sewer to the north west of the site entrance. The nearest surface water sewer is further west, along Furners Lane.

It is not anticipated that there will be any existing drainage within the site boundary.

2.6. Internal Drainage Board

The site does not lie within any internal drainage board area.

3. Source of Information

A number of online mapping services have been used to gather information on the site, these can be found in Appendix C.

3.1. Environment Agency

The EA Flood Zone mapping shows the site to be within Flood Zone 1, meaning that there is a less than 1:1000 year probability of flooding from fluvial sources.

The EA Flood Risk from Surface Water takes into account the likelihood of surface water flooding from rainfall events. This shows the site to be at Very Low risk of flooding, with some areas of High in the areas around the site.

3.2. Local Authorities

The Lead Local Flood Authority (LLFA) for the area is Horsham District Council.

The West Sussex County Council Preliminary Flood Risk Assessment shows no particular flood risk to the site.

4. Flood Risk

4.1. Fluvial / Tidal Flood Risk

The EA flood zone map shows that the site is classified as Flood Zone 1, representing a less than 1:1000 year probability of flooding from fluvial sources. The nearest open water (a pond) is approximately 60m to the east and 1m below the site. This is the first of a small series of ponds to the east of the site. However, levels continue to fall away from the site to the east as evidenced by the watercourse flowing east away from this series of ponds. Therefore, these pose a low flood risk.

As the site is within Flood Zone 1 the EA will not have any detailed flood risk modelling for the site.

The West Sussex County Council Preliminary Flood Risk Assessment Historical Flood Map information shows no record of any historic flooding within the site. However, there was a flooding incident within Henfield to the east of the site. No specific details on this event were available.

4.2. Surface Water Flooding

Large rainfall events can overwhelm the local infiltration and drainage capacity leading to localised flooding and surface water flowing overland. Surface water flooding can also be caused by a reduction in the capacity of the local surface water drainage due to blockage.

The site topographic survey shows that the site falls from a point on the south western boundary to the north eastern boundary, therefore surface water is likely to be conveyed away from the site towards the open fields and highway to the north east. The EA's surface water flood map shows the site to be at very low risk of flooding from pluvial sources.

The proposed site layout shows that impermeable area will be increased post development. However, by employing the drainage strategy discussed in Section 6 we can ensure that surface water flood risk will not be increased as a result of the development through the use of a restricted outfall, set to the Greenfield QBar runoff rate, to ensure that offsite flows are not increased post development.

Therefore, the overall risk of pluvial flooding to the site can be considered low.

Due to surface water flooding likely increasing in the future due to the effects of climate change this should be accounted for in the surface water drainage strategy.

4.3. Groundwater Flood Risk

Groundwater flooding generally occurs after long periods of sustained high rainfall. High rainfall means more water will infiltrate into the ground and cause the water table to rise above normal levels. Groundwater tends to flow from areas of higher ground level to areas of lower ground level. Low lying areas typically have the water table at shallower depths, but during very wet periods this can raise to the surface causing groundwater flooding.

Geological mapping shows the site to be underlain by the Lower Greensand Group – Sandstone, silty. The site is generally higher than the ground levels to the east and it is unlikely that groundwater flooding will be an issue on this site.

As the proposed development does not include any basement works and taking into account the above the risk of groundwater flooding to the site is assessed as low.

4.4. Sewer Flood Risk

Flooding of sewers is typically caused by either a blockage of the system reducing the capacity, or an excess of surface water entering the system overwhelming the sewer.

The Southern Water sewer records show that there is a Southern Water foul water sewer to the north west of the site entrance. The nearest surface water sewer is further west, along Furners Lane.

Post development all surface water will be dealt with via discharge to ground as described in Section 6 which will further decrease the flood risk.

The impact of climate change is likely to cause more regular flooding from sewers due to increased rainfall overwhelming the local network. However, this is not significant in terms of the proposed development.

4.5. Reservoir Flood Map

The EA no longer publish Reservoir Flood Maps showing the maximum extent of flooding that would occur if a reservoir were to fail.

Reservoir flooding is extremely unlikely with no loss of life in the UK from reservoir flooding since 1925. Reservoir safety legislation has been introduced since then to ensure reservoirs are maintained. Reservoirs can be further managed by controlling inflow and outflow of water, therefore helping to control the effects of climate change. It is therefore unlikely that there will be a substantial change to the risk of flooding for this site.

4.6. Canals

There are no Canal and River Trust owned canals within the vicinity of the site.

4.7. Blockage of Artificial Drainage Systems

There is a possibility that flooding may occur due to blockage of drainage systems by debris, or structural failure. This would cause water to backup and localised flooding.

The new drainage will require maintenance to reduce the risk of blockage, this is described within the Drainage Strategy Report which is issued separately.

5. Planning Context

The NPPF and PPG set out criteria for development and flood risk based on inappropriate development in high risk flood areas should be avoided with these directed towards areas of low risk.

PPG includes a list of land uses and their suitability in each flood zone. This is reproduced in Table 1 below with the site classification highlighted. Table 2 of the PPG shows the proposed development is classified as More Vulnerable.

Flood Risk Classification		Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone	Zone 1	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate
	Zone 2	Appropriate	Appropriate	Exception Test Required	Appropriate	Appropriate
	Zone 3a	Exception Test Required	Appropriate	Should not be permitted	Exception Test Required	Appropriate
	Zone 3b functional floodplain	Exception Test Required	Appropriate	Should not be permitted	Should not be permitted	Should not be permitted

Table 1 – Flood Risk Vulnerability and Flood Zone Compatibility

As demonstrated in Table 1 above, the usage classification of the site is suitable for the Flood Zone the sequential test can be shown as passed, with no need for an exception test.

6. Surface Water Drainage Strategy

AC23068-ABS-XX-XX-RP-C-5800 – Drainage Strategy Report (issued separately) contains details on how surface water will be managed on site.

In summary the site will use temporary storage features and a restricted, pumped, outfall to manage surface water runoff from the site to the Greenfield QBar Runoff Rate.

7. Flood Mitigation Measures and Other Constraints

As the site is within Flood Zone 1, no further measures to control external runoff to the site are recommended beyond ensuring any drainage features in this area are protected via levels to divert water flow around the attenuation.

Surface water runoff generate on site will be dealt with via controlled discharge to the sewer. The temporary storage features will be designed to cope with all storms up to and including the 1:100 year event with a 45% allowance for climate change.

As the site is in Flood Zone 1 no finished floor level requirements or further flood mitigation is required.

8. Conclusions

This document complies with the NPPF and Planning Practice Guidance and demonstrates that flood risk from all sources has been considered in the proposed development. It is also consistent with the Local Planning Authority requirements with regard to flood risk.

Based on the available information, the site is located within Flood Zone 1 and is considered to be at a low risk of flooding from all sources considered (fluvial / tidal, reservoir, surface water, groundwater, and artificial sources).

All surface water run-off generated by the site will be dealt with on site through controlled discharge of surface water to the sewer.

Therefore, this development should not be refused on grounds of flood risk.

Appendix A – Proposed Site Plan

CDM 2015 Health & Safety Information

This information relates only to 'Significant Hazards' identified on this drawing and is to be read in conjunction with the Designer's Hazard Register.

Designers Hazard Register

1. Conflict between construction work and Furners Lane highway.
2. Sloping site could cause subsidence when strip foundations are dug.
3. Construction works on an existing highway to create site access.
4. Close proximity to existing dwellings on Furners Mead and The Daisycroft.
5. Existing mature trees on site that are to be retained, full arboriculturalist recommended protection measures to be implemented.
6. Overhead cables to be buried as part of the works.

Accommodation Schedule

Affordable Rented Dwellings [10no. - 34.5%]

2no.	1-Bedroom M4(3) Flats	AFF Type 1	Block	607sqft
2no.	2-Bedroom Flats	AFF Type 2	Block	716sqft
2no.	2-Bedroom Houses	AFF Type 3	Terraced	874sqft
4no.	3-Bedroom Houses	AFF Type 4	Terraced	1003sqft

Open Market Dwellings [19no. - 65.5%]

2no.	3-Bedroom Chalet Bungalows	New House Type A	Detached	1526sqft
2no.	2-Bedroom Chalet Bungalows	New House Type B	Detached	1261sqft
2no.	3-Bedroom Chalet Bungalows	New House Type C	Semi-D	1295sqft
3no.	3-Bedroom Chalet Bungalows	Birtley	Detached	1238sqft
3no.	4-Bedroom Houses	Ashcombe II	Detached	1427sqft
5no.	4-Bedroom Houses	Barnham	Detached	1605sqft
2no.	4-Bedroom w/ Study Houses	Goring	Detached	1854sqft

Total; 29 Dwellings

Parking

Allocated Spaces:	54 spaces
Visitor Parking:	11 spaces
Private Garages	18 (Garages to Plot 26 & 23 to be included in allocated spaces)

Total Parking Spaces: 65 spaces

N

SITE PLAN

Rev	Date	Revision Details	Dr	Ch
P5	03.01.25	Issued to Planning	LP	TW
P4	23.12.24	Issued to Planning	LP	TW
P3	18.12.24	Amended to clients comments	LP	TW
P2	12.12.24	Amended to clients comments	LP	TW
P1	27.09.24	Planning Submission	NK	TW

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Sussex: 64 - 68 Brighton Road, Worthing, West Sussex, BN11 2EN
T 01903 248777 E sussex@ecearchitecture.com
Bristol: Westworks, Beacon Tower, Colston Street, Bristol, BS1 4XE
T 0117 214 1101 E bristol@ecewestworks.com
ECE Architecture www.ecearchitecture.com

Client's Name: Elivia Homes

Job Title: Land West of Backsettown, Furners Lane, Henfield

Drawing Title: Proposed Site Plan: Presentation

Scale: 1:500 @ A1 / 1:1000 @ A3

metres 10 20 30 40 50

Drawn	Checked	Date
AK	KE	17.09.24

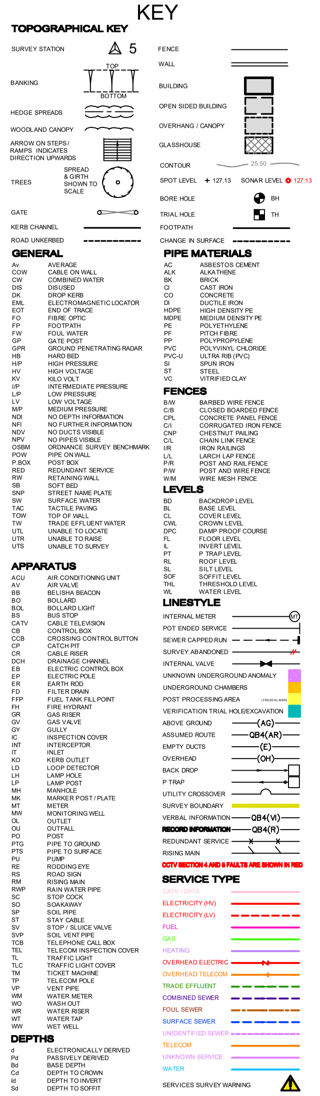
Job No	Drawing No	Rev
7227	PL-04	P5

Status: APPROVAL

CAD Plot date: 3/01/2025 - 14:35:07 7227m henfield site plan - planning comments.dwg

Appendix B – Topographic Survey

KEY

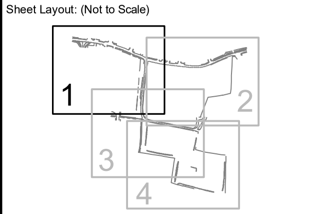


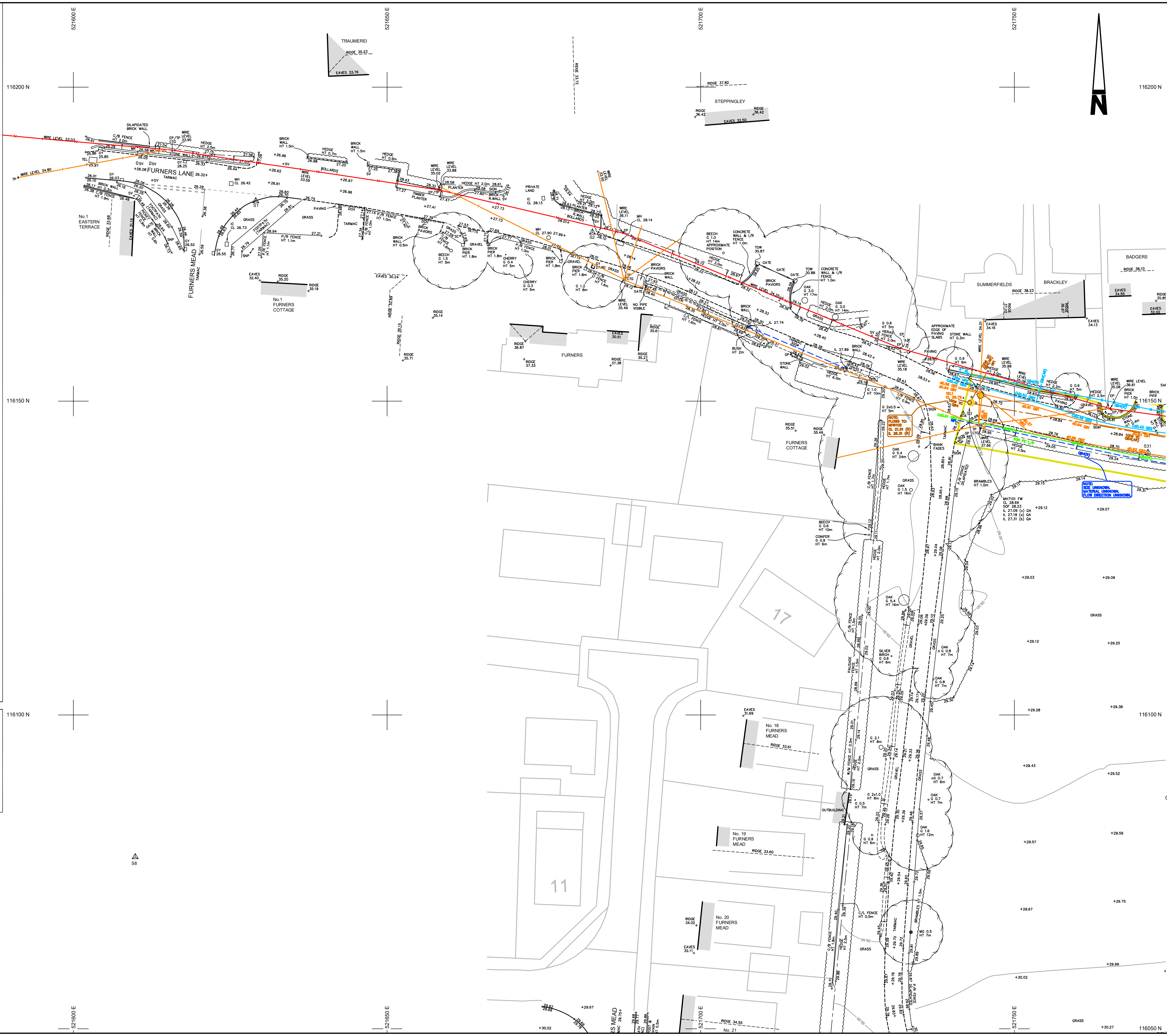
CAUTIONARY NOTES

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, wherever 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 0.99978 APPLIED.
2. TREE AND HEDGE SPECIES HAVE BEEN IDENTIFIED AS ACCURATELY AS POSSIBLE BUT SHOULD BE CROSS CHECKED IN CRITICAL AREAS.
3. THIS SURVEY SHOULD ALWAYS BE READ IN CONJUNCTION WITH THE DESKTOP UTILITY REPORT. THAT WAS CARRIED OUT AS A PREREQUISITE TO THIS DETECTION SURVEY.
4. BACKGROUND INFORMATION (SHOWN GREY) PROVIDED BY THE CLIENT.

Coordinate Table

Station	Description	Easting	Northing	Level
S1	ROAD NAIL	521629.085	116181.868	26.633
S2	ROAD NAIL	521682.736	116176.876	28.082
S3	ROAD NAIL	521741.829	116147.849	28.712
S31	ROAD NAIL	521771.278	116141.770	28.815
S32	ROAD NAIL	521845.803	116136.759	27.762
S33	ROAD NAIL	521902.803	116162.273	27.368
S4	PEG	521775.036	116083.947	29.641
S5	PEG	521775.547	116004.393	30.514
S51	PEG	521826.232	115955.317	30.432
S6	ROAD NAIL	521730.851	116039.591	30.274
S61	PEG	521827.959	116018.801	29.417
S7	ROAD NAIL	521680.337	116044.756	30.272
S8	ROAD NAIL	521609.859	116077.368	28.910

Equipment Information

Equipment	Manufacturer	Model	Serial Number	MKS REF	Date of Calibration
EML Tx Transmitter	SPX Radiodetection	RD8100	10896	RD16	27/08/2021
EML Rx Receiver	SPX Radiodetection	RD8100	2707	RD16	27/08/2021
GPR	IDS Georadar	Opera	8991A	GPR7	29/03/2022

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.

DESKTOP UTILITY REPORT
Prior to the survey commencing record information was gathered and compiled in a separate desktop utility report. This report should be read in conjunction with the information contained in this utility detection survey. Record information was at the time of the survey less than 90 days old in accordance with the requirements of the PAS 128:2014. For a full list of the providers searched, records received and the dates the information was obtained, please refer to the attachments page of the desktop utility report.

DETECTION SURVEY
DRAINAGE
Drainage was lifted with pipe sizes and invert levels recorded. Wherever possible the chamber sizes have been recorded and positioned on the drawing. All connections from gullies, external rainwater pipes and external soil stacks have been proven wherever possible into manholes and sewer runs by radio sonde location and/or GPR. Where a saddle connection is present the position is assumed only until proven to QB2 or above. In instances where other detection methods were unsuccessful connections between manholes have been assumed to be straight and labelled as QB4. All drainage should be cross checked in critical areas by CCTV survey or verification survey type A. Supplied information from our client suggests some drainage to be present in the field. These utilities do not feature in the Thames Water records and therefore have limited information regarding these.

WATER
Water utilities have been located using GPR with depths recorded to the crown of the pipe. Undetected routes have been added from the supplied record information. Trial excavations are recommended to confirm location and depth of pipes in critical areas.

GAS
Gas utilities have been located using GPR with depths recorded to the crown of the pipe. Undetected routes have been added from the supplied record information. Trial excavations are recommended to confirm location and depth of pipes in critical areas.

ELECTRICITY
Electricity utilities have been located using GPR and EML methods with depths recorded electronically and to the crown of the duct. Trial excavations are recommended to confirm location and depth of pipes in critical areas.

TELECOM
Telecom ducts have been traced with depths recorded. Due to laws protecting British Telecom apparatus all ducts have been located using remote detection techniques only and compared with record information. Chamber sizes have been recorded using GPR techniques wherever possible. For further information regarding BT apparatus please contact Openreach directly.

CATV
There were no CATV utilities detected on site which matches with the supplied record information.

UNKNOWNS
Some unknown targets identified on the drawing using GPR are classified as "non-linear targets". These are not consistent with what we expect to see when identifying a buried utility, and appear on the drawing as single targets with depths (i.e. not linking two or more depth readings). This does not mean they are not utilities, we are just unable to positively identify them as a utility. We would strongly recommend that further verification surveys (PAS 128:2014 survey type A) are carried out to identify these targets in critical areas. Unknown anomalies located using EML or GPR techniques with electronically derived depths recorded where possible. Recommend trial excavations to confirm identity position and depths in critical areas.

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), (V)	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

Desktop Utility Records

Utility Type	Provider Details	Date Acquired
Drainage	Southern Water	08/02/2022
Water	Southern Water	08/02/2022
Gas	SGN	09/03/2022
Electricity	UK Power Networks	09/03/2022
Telecom	Openreach	08/02/2022
CATV	Virgin Media	09/03/2022
Tunnels & Pipelines	Linesearchbeforeudig	09/03/2022

Revision	Description	Surv. by	Check. by	Appr. by	Date

0m 2 4 6 8 10 12 14 16 18 20 22

Topographical and PAS 128:2014 Utility Survey

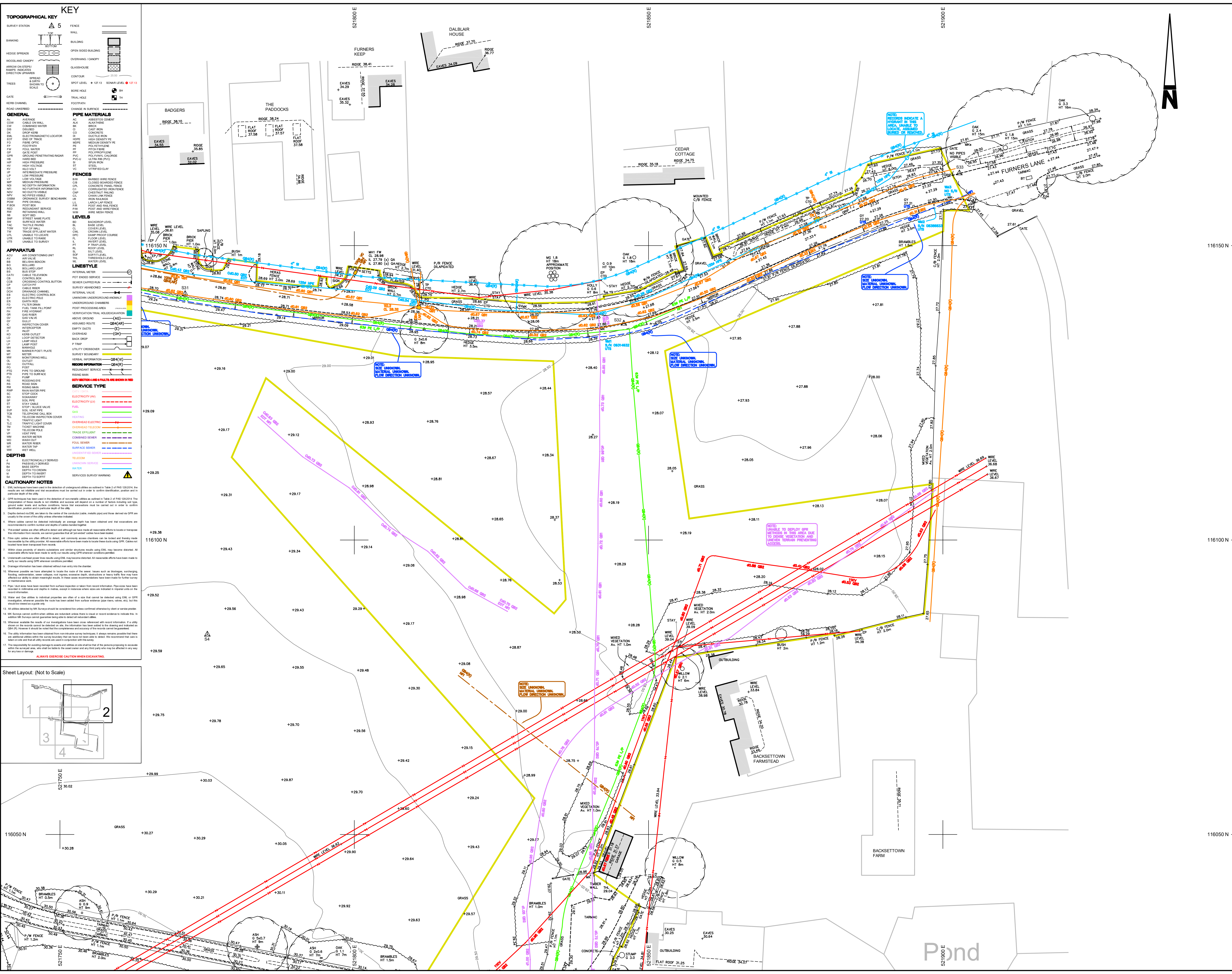
MILLWOOD

Furners Lane
Henfield
West Sussex

Scale:	Sheet Size:	Sheet Number:	Date:
1:200	A0	1	March 2022
Project Number:	Rev:	Surveyed by:	Checked by:	Approved by:
31022	-	JL/LW	AJ/TW	CP/NF

mksurveys

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



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DETECTION SURVEY
DRAINAGE
Drainage was lifted with pipe sizes and invert levels recorded. Wherever possible the chamber sizes have been recorded and positioned on the drawing. All connections from gullies, external rainwater pipes and external soil stacks have been proven wherever possible into manholes and sewer runs by radio sonde location and/or GPR. Where a saddle connection is present the position is assumed only until proven to QB2 or above. In instances where other detection methods were unsuccessful connections between manholes have been assumed to be straight and labelled as QB4. All drainage should be cross checked in critical areas by CCTV survey or verification survey type A. Supplied information from our client suggests some drainage to be present in the field. These utilities do not feature in the Thames Water records and therefore have limited information regarding these.

WATER
Water utilities have been located using GPR with depths recorded to the crown of the pipe. Undetected routes have been added from the supplied record information. Trial excavations are recommended to confirm location and depth of pipes in critical areas.

GAS
Gas utilities have been located using GPR with depths recorded to the crown of the pipe. Undetected routes have been added from the supplied record information. Trial excavations are recommended to confirm location and depth of pipes in critical areas.

ELECTRICITY
Electricity utilities have been located using GPR and EML methods with depths recorded electronically and to the crown of the duct. Trial excavations are recommended to confirm location and depth of pipes in critical areas.

TELECOM
Telecom ducts have been traced with depths recorded. Due to laws protecting British Telecom apparatus all ducts have been located using remote detection techniques only and compared with record information. Chamber sizes have been recorded using GPR techniques wherever possible. For further information regarding BT apparatus please contact Openreach directly.

CATV
There were no CATV utilities detected on site which matches with the supplied record information.

UNKNOWNS
Some unknown targets identified on the drawing using GPR are classified as "non-linear targets". These are not consistent with what we expect to see when identifying a buried utility, and appear on the drawing as single targets with depths (i.e. not linking two or more depth readings). This does not mean they are not utilities, we are just unable to positively identify them as a utility. We would strongly recommend that further verification surveys (PAS 128:2014 survey type A) are carried out to identify these targets in critical areas. Unknown anomalies located using EML or GPR techniques with electronically derived depths recorded where possible. Recommend trial excavations to confirm identity position and depths in critical areas.

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

Desktop Utility Records

Utility Type	Provider Details	Date Acquired
Drainage	Southern Water	08/02/2022
Water	Southern Water	08/02/2022
Gas	SGN	09/03/2022
Electricity	UK Power Networks	09/03/2022
Telecom	Openreach	08/02/2022
CATV	Virgin Media	08/02/2022
Tunnels & Pipelines	LinesearchbeforeUdig	09/03/2022

Revision	Description	Surv. by	Check. by	Appr. by	Date

0m 2 4 6 8 10 12 14 16 18 20 22

Topographical and PAS 128:2014 Utility Survey

MILLWOOD

Furners Lane
Henfield
West Sussex

Scale:	Sheet Size:	Sheet Number:	Date:
1:200	A0	2	March 2022

Project Number:	Rev:	Surveyed by:	Checked by:	Approved by:
31022	-	JL/LW	AJ/TW	CP/NF

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KEY

TOPOGRAPHICAL KEY

SURVEY STATION — FENCE
BANKING — 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
CONTOUR 25.50
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
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
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

DEPTHS

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

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

LINESTYLE

INTERNAL METER (MT)
POT ENDED SERVICE
SEWER CAPPED RUN
SURVEY ABANDONED
INTERNAL VALVE
UNKNOWN UNDERGROUND ANOMALY
UNDERGROUND CHAMBERS
POST PROCESSING AREA (FROZEN LAYER)
VERIFICATION TRIAL HOLE/EXCAVATION
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

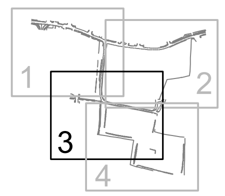
CATV / DATA
ELECTRICITY (HV)
ELECTRICITY (LV)
FUEL
GAS
HEATING
OVERHEAD ELECTRIC
OVERHEAD TELECOM
TRADE EFFLUENT
COMBINED SEWER
FOUL SEWER
SURFACE SEWER
UNIDENTIFIED SEWER
TELECOM
UNKNOWN SERVICE
WATER
SERVICES SURVEY WARNING

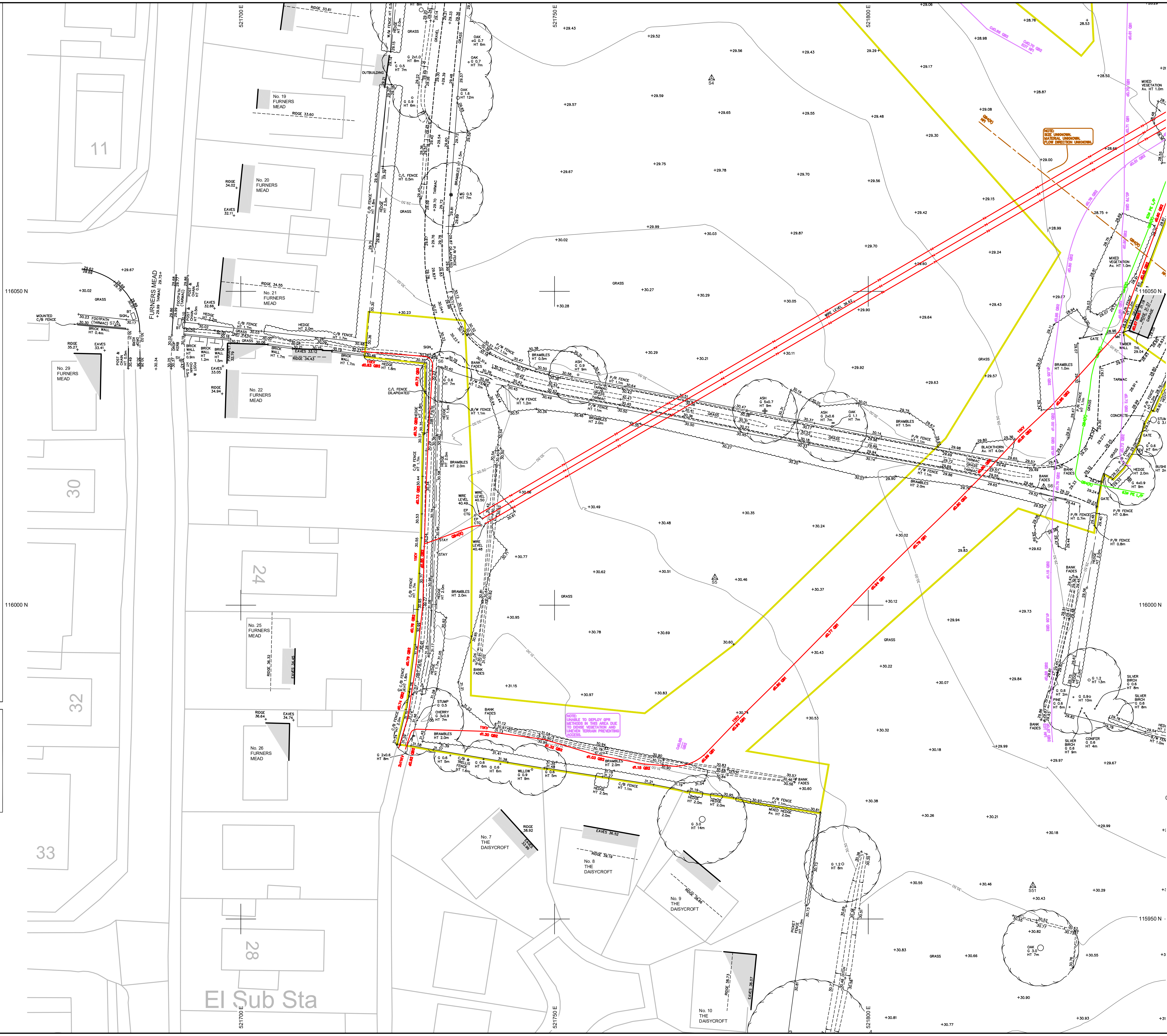
CAUTIONARY NOTES

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 0.99978 APPLIED.
2. TREE AND HEDGE SPECIES HAVE BEEN IDENTIFIED AS ACCURATELY AS POSSIBLE BUT SHOULD BE CROSS CHECKED IN CRITICAL AREAS.
3. THIS SURVEY SHOULD ALWAYS BE READ IN CONJUNCTION WITH THE DESKTOP UTILITY REPORT, THAT WAS CARRIED OUT AS A PREREQUISITE TO THIS DETECTION SURVEY.
4. BACKGROUND INFORMATION (SHOWN GREY) PROVIDED BY THE CLIENT.

Coordinate Table

Station	Description	Easting	Northing	Level
S1	ROAD NAIL	521629.085	116181.868	26.633
S2	ROAD NAIL	521682.736	116176.876	28.082
S3	ROAD NAIL	521741.829	116147.849	28.712
S31	ROAD NAIL	521771.278	116141.770	28.815
S32	ROAD NAIL	521845.803	116136.759	27.762
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S5	PEG	521775.547	116004.393	30.514
S51	PEG	521826.232	115955.317	30.432
S6	ROAD NAIL	521730.851	116039.591	30.274
S61	PEG	521827.959	116018.801	29.417
S7	ROAD NAIL	521680.337	116044.756	30.272
S8	ROAD NAIL	521609.859	116077.368	28.910

Equipment Information

Equipment	Manufacturer	Model	Serial Number	MKS REF	Date of Calibration
EML Tx Transmitter	SPX Radiodetection	RD8100	10896	RD16	27/09/2021
EML Rx Receiver	SPX Radiodetection	RD8100	2707	RD16	27/09/2021
GPR	IDS Georadar	Opera	8991A	GPR7	29/03/2022

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.

DESKTOP UTILITY REPORT
Prior to the survey commencing record information was gathered and compiled in a separate desktop utility report. This report should be read in conjunction with the information contained in this utility detection survey. Record information was at the time of the survey less than 90 days old in accordance with the requirements of the PAS 128:2014. For a full list of the providers searched, records received and the dates the information was obtained, please refer to the attachments page of the desktop utility report.

DETECTION SURVEY
DRAINAGE
Drainage was lifted with pipe sizes and invert levels recorded. Wherever possible the chamber sizes have been recorded and positioned on the drawing. All connections from gullies, external rainwater pipes and external soil stacks have been proven wherever possible into manholes and sewer runs by radio sonde location and/or GPR. Where a saddle connection is present the position is assumed only until proven to QB2 or above. In instances where other detection methods were unsuccessful connections between manholes have been assumed to be straight and labelled as QB4. All drainage should be cross checked in critical areas by CCTV survey or verification survey type A. Supplied information from our client suggests some drainage to be present in the field. These utilities do not feature in the Thames Water records and therefore have limited information regarding these.

WATER
Water utilities have been located using GPR with depths recorded to the crown of the pipe. Undetected routes have been added from the supplied record information. Trial excavations are recommended to confirm location and depth of pipes in critical areas.

GAS
Gas utilities have been located using GPR with depths recorded to the crown of the pipe. Undetected routes have been added from the supplied record information. Trial excavations are recommended to confirm location and depth of pipes in critical areas.

ELECTRICITY
Electricity utilities have been located using GPR and EML methods with depths recorded electronically and to the crown of the duct. Trial excavations are recommended to confirm location and depth of pipes in critical areas.

TELECOM
Telecom ducts have been traced with depths recorded. Due to laws protecting British Telecom apparatus all ducts have been located using remote detection techniques only and compared with record information. Chamber sizes have been recorded using GPR techniques wherever possible. For further information regarding BT apparatus please contact Openreach directly.

CATV
There were no CATV utilities detected on site which matches with the supplied record information.

UNKNOWNS
Some unknown targets identified on the drawing using GPR are classified as "non-linear targets". These are not consistent with what we expect to see when identifying a buried utility, and appear on the drawing as single targets with depths (i.e. not linking two or more depth readings). This does not mean they are not utilities, we are just unable to positively identify them as a utility. We would strongly recommend that further verification surveys (PAS 128:2014 survey type A) are carried out to identify these targets in critical areas. Unknown anomalies located using EML or GPR techniques with electronically derived depths recorded where possible. Recommend trial excavations to confirm identity position and depths in critical areas.

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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N

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Topographical and PAS 128:2014 Utility Survey

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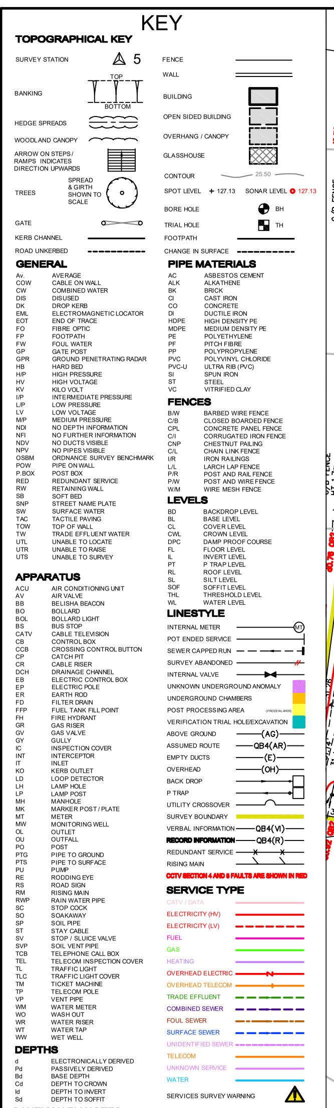
KEY



TRADE EFFLUENT
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FOUL SEWER
SURFACE SEWER
UNIDENTIFIED SEWER
TELECOM
UNKNOWN SERVICE
WATER
SERVICES SURVEY WARNING

DEPTHS

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Pd	PASSIVELY DERIVED
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CAUTIONARY NOTES

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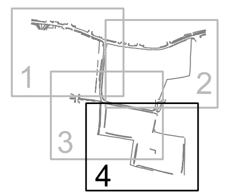

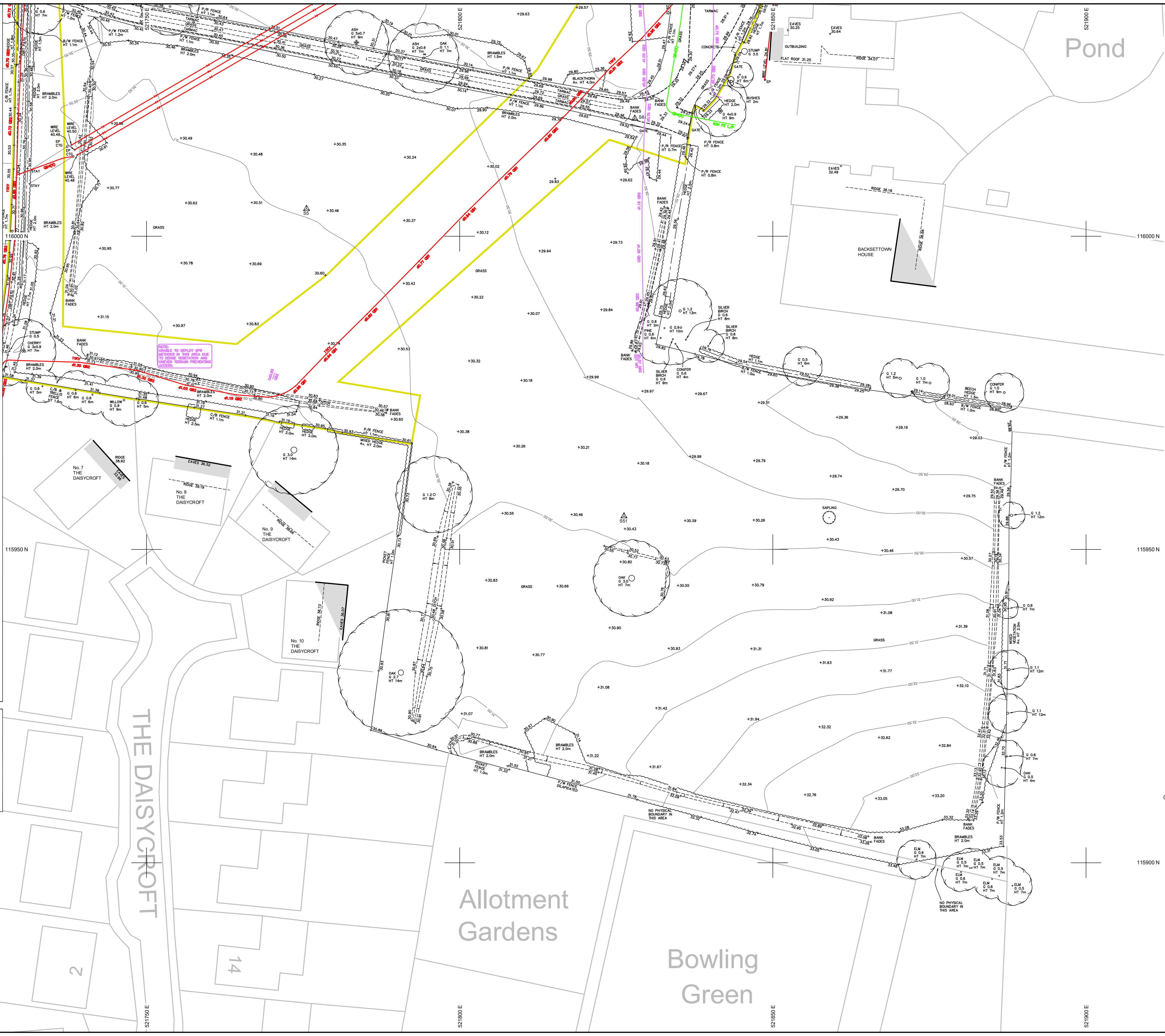

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Equipment	Manufacturer	Model	Serial Number	MKS REF	Date of Calibration
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DETECTION SURVEY REPORT

GENERAL
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DETECTION SURVEY
DRAINAGE
Drainage was lifted with pipe sizes and invert levels recorded. Wherever possible the chamber sizes have been recorded and positioned on the drawing. All connections from gullies, external rainwater pipes and external soil stacks have been proven wherever possible into manholes and sewer runs by radio sonde location and/or GPR. Where a saddle connection is present the position is assumed only until proven to QB2 or above. In instances where other detection methods were unsuccessful connections between manholes have been assumed to be straight and labelled as QB4. All drainage should be cross checked in critical areas by CCTV survey or verification survey type A. Supplied information from our client suggests some drainage to be present in the field. These utilities do not feature in the Thames Water records and therefore have limited information regarding these.

WATER
Water utilities have been located using GPR with depths recorded to the crown of the pipe. Undetected routes have been added from the supplied record information. Trial excavations are recommended to confirm location and depth of pipes in critical areas.

GAS
Gas utilities have been located using GPR with depths recorded to the crown of the pipe. Undetected routes have been added from the supplied record information. Trial excavations are recommended to confirm location and depth of pipes in critical areas.

ELECTRICITY
Electricity utilities have been located using GPR and EML methods with depths recorded electronically and to the crown of the duct. Trial excavations are recommended to confirm location and depth of pipes in critical areas.

TELECOM
Telecom ducts have been traced with depths recorded. Due to laws protecting British Telecom apparatus all ducts have been located using remote detection techniques only and compared with record information. Chamber sizes have been recorded using GPR techniques wherever possible. For further information regarding BT apparatus please contact Openreach directly.

CATV
There were no CATV utilities detected on site which matches with the supplied record information.

UNKNOWNS
Some unknown targets identified on the drawing using GPR are classified as "non-linear targets". These are not consistent with what we expect to see when identifying a buried utility, and appear on the drawing as single targets with depths (i.e. not linking two or more depth readings). This does not mean they are not utilities, we are just unable to positively identify them as a utility. We would strongly recommend that further verification surveys (PAS 128:2014 survey type A) are carried out to identify these targets in critical areas. Unknown anomalies located using EML or GPR techniques with electronically derived depths recorded where possible. Recommend trial excavations to confirm identity position and depths in critical areas.

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

Desktop Utility Records

Utility Type	Provider Details	Date Acquired
Drainage	Southern Water	08/02/2022
Water	Southern Water	08/02/2022
Gas	SGN	09/03/2022
Electricity	UK Power Networks	09/03/2022
Telecom	Openreach	08/02/2022
CATV	Virgin Media	08/02/2022
Tunnels & Pipelines	LinesearchbeforeUdig	09/03/2022

N

0m 2 4 6 8 10 12 14 16 18 20 22

Topographical and PAS 128:2014 Utility Survey

MILLWOOD

Furners Lane
Henfield
West Sussex

Scale:	Sheet Size:	Sheet Number:	Date:
1:200	A0	4	March 2022
Project Number:	Rev:	Surveyed by:	Checked by:	Approved by:
31022	-	JL/LW	AJ/TW	CP/NF

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Appendix C – Online Mapping, EA, BGS, & Magic Map

Key

Rivers and the sea

- Extent
- High: More than 3.3% chance each year
- Medium: Between 1% and 3.3% chance each year
- Low: Between 0.1% and 1% chance each year
- Very low: Less than 0.1% chance each year

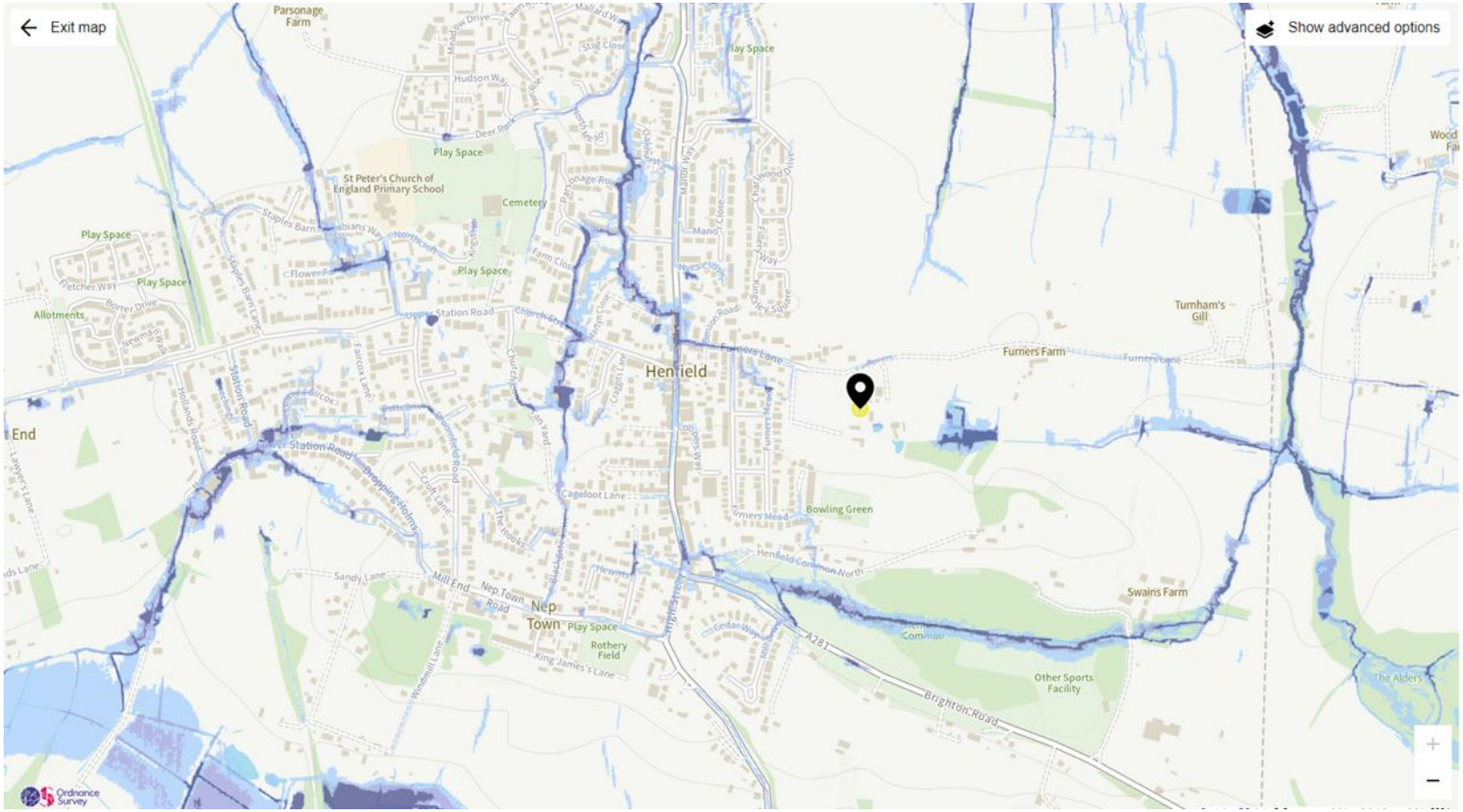
Map details

- [x] Show flooding
- [x] Selected address

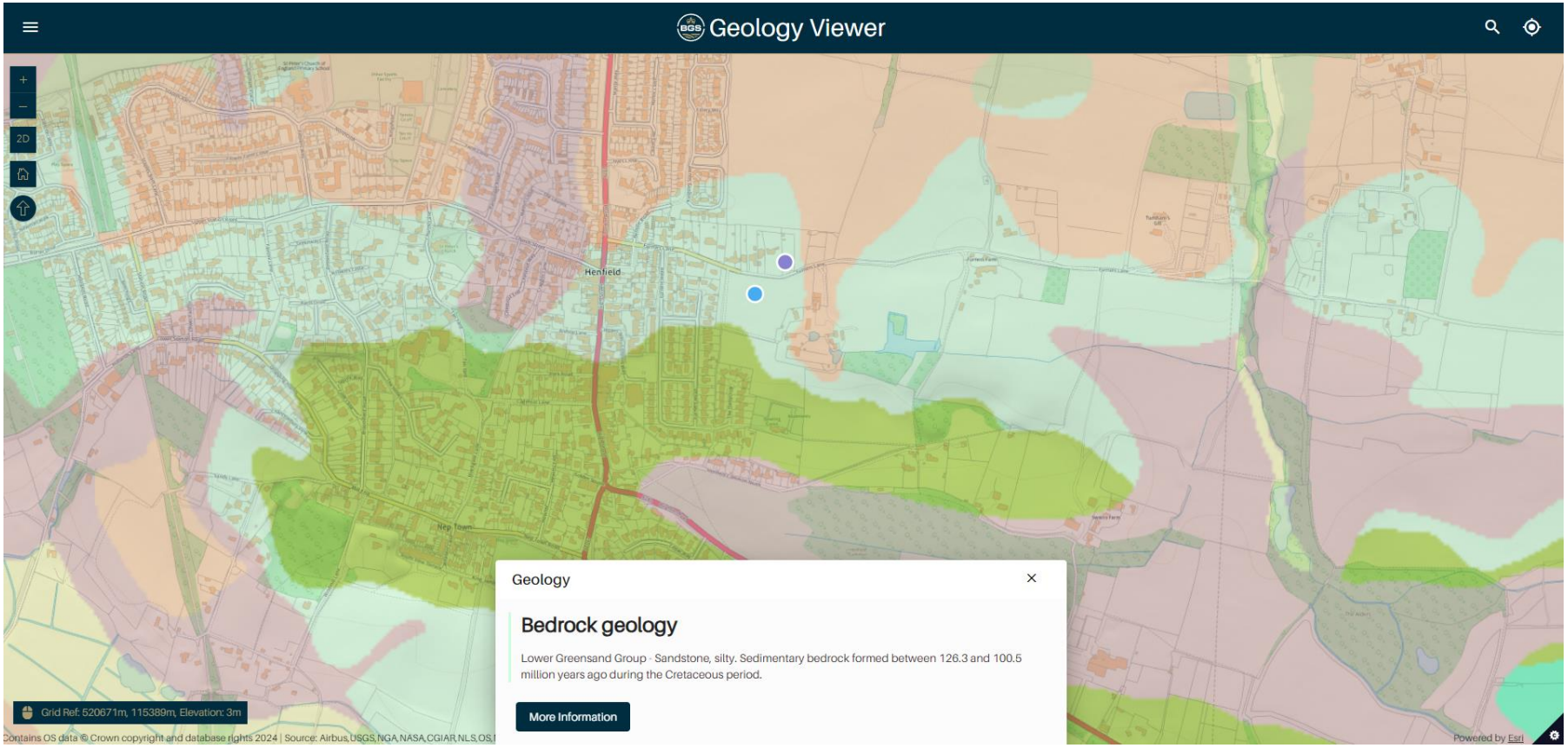
Pause to updates of flood risk data

We have paused updates to information about flood risk from rivers and the sea and surface water while we get ready for new data.

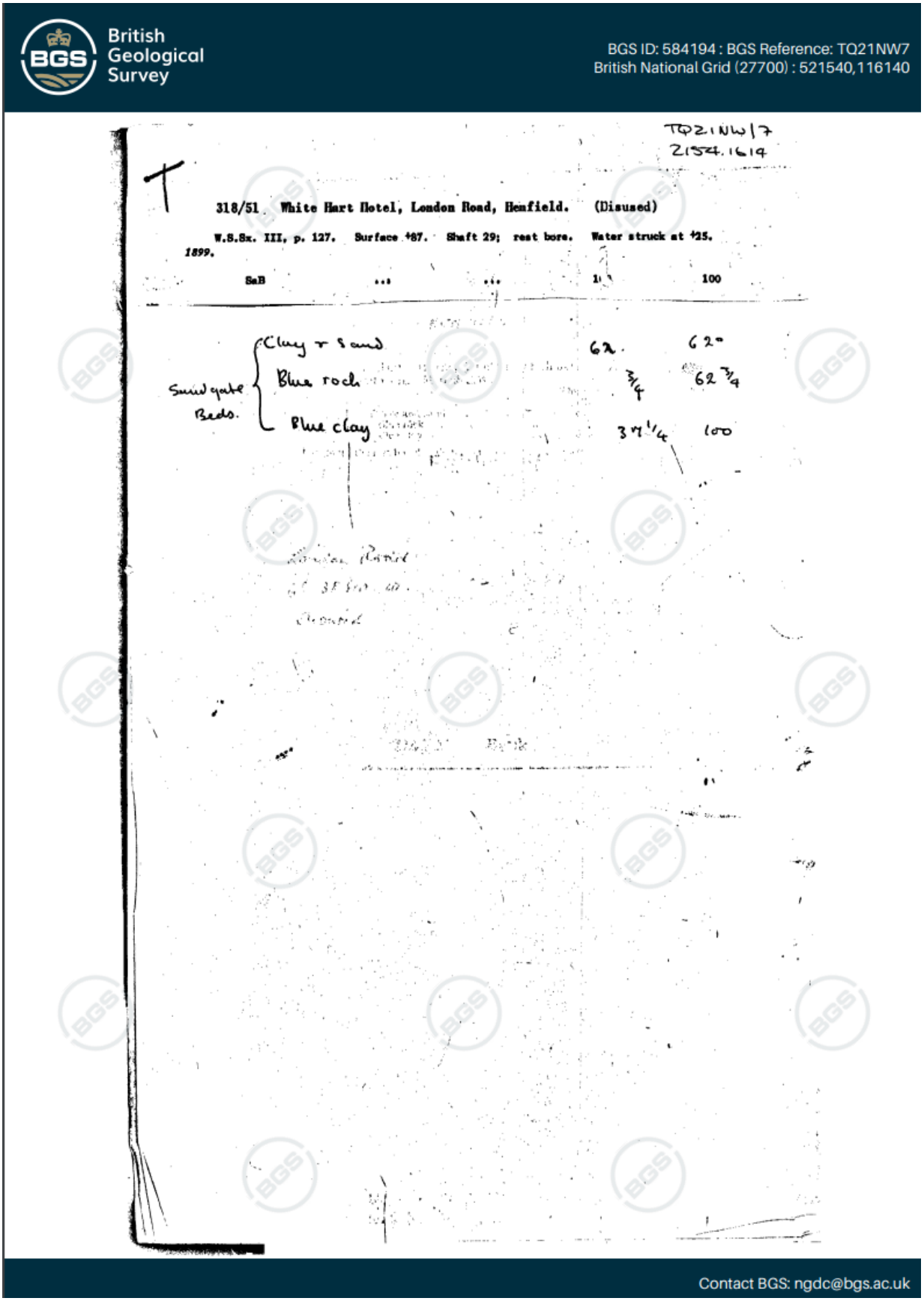
Environment Agency – Flood Risk from Rivers and Sea



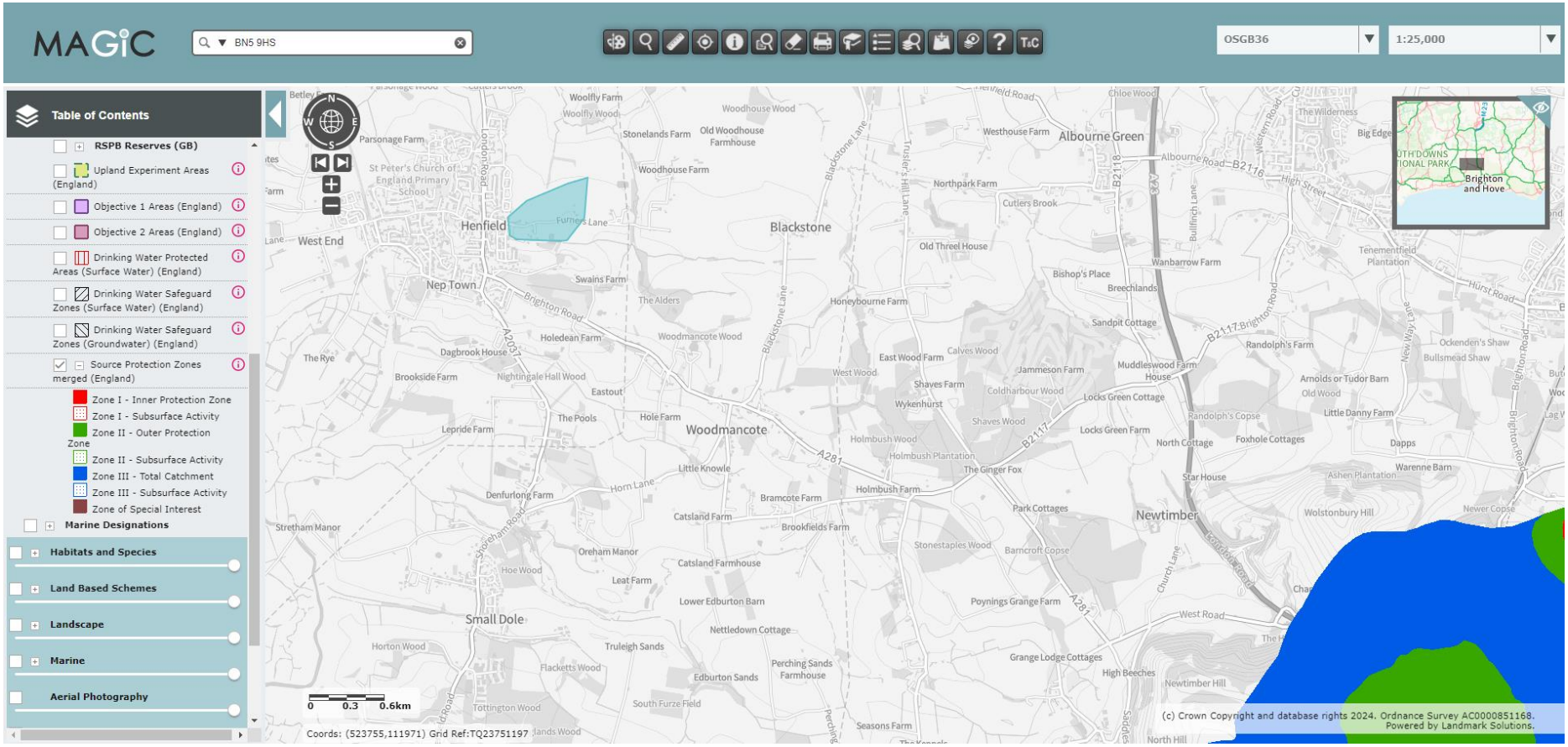
Environment Agency – Flood Risk from Surface Water



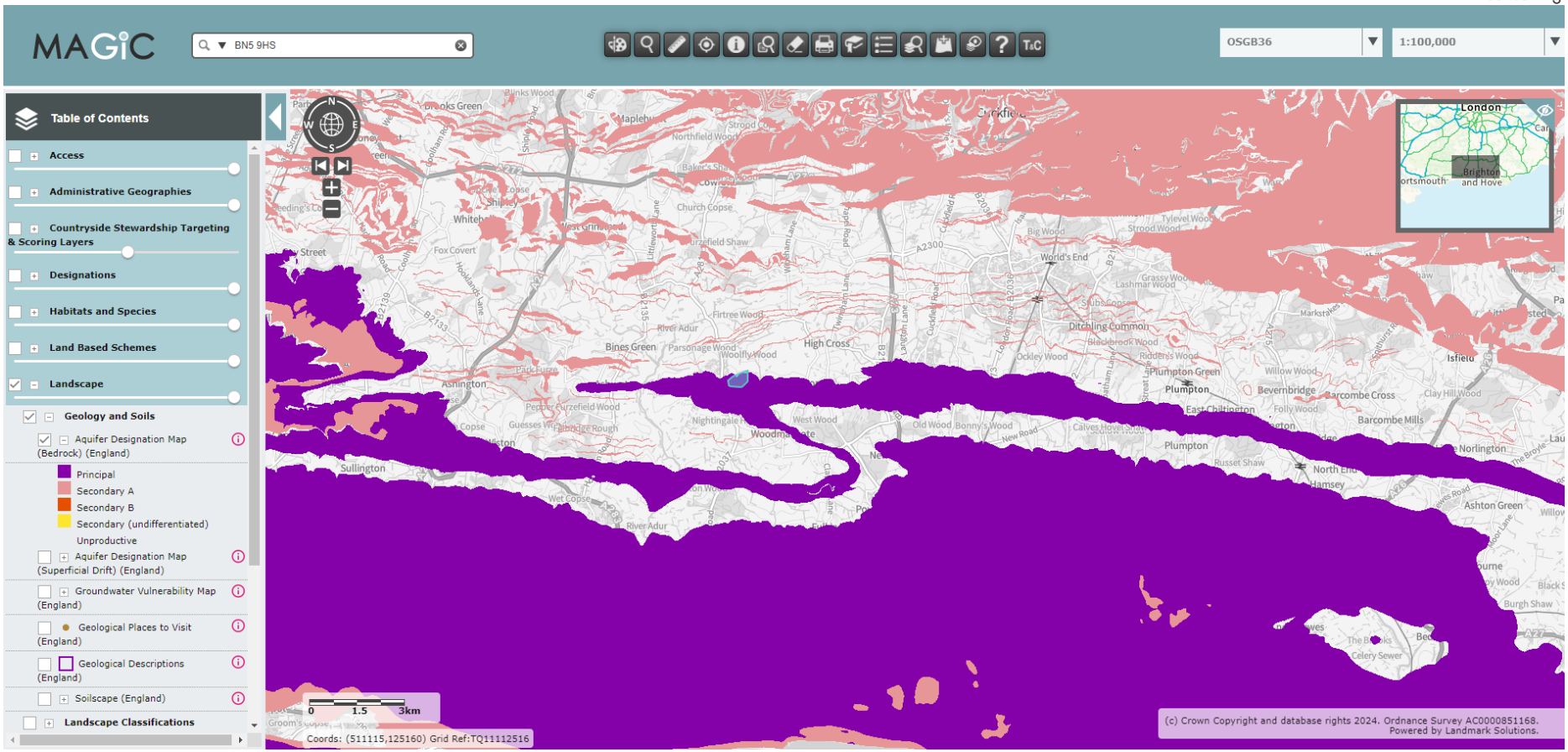
British Geological Society – Bedrock and Superficial Deposits



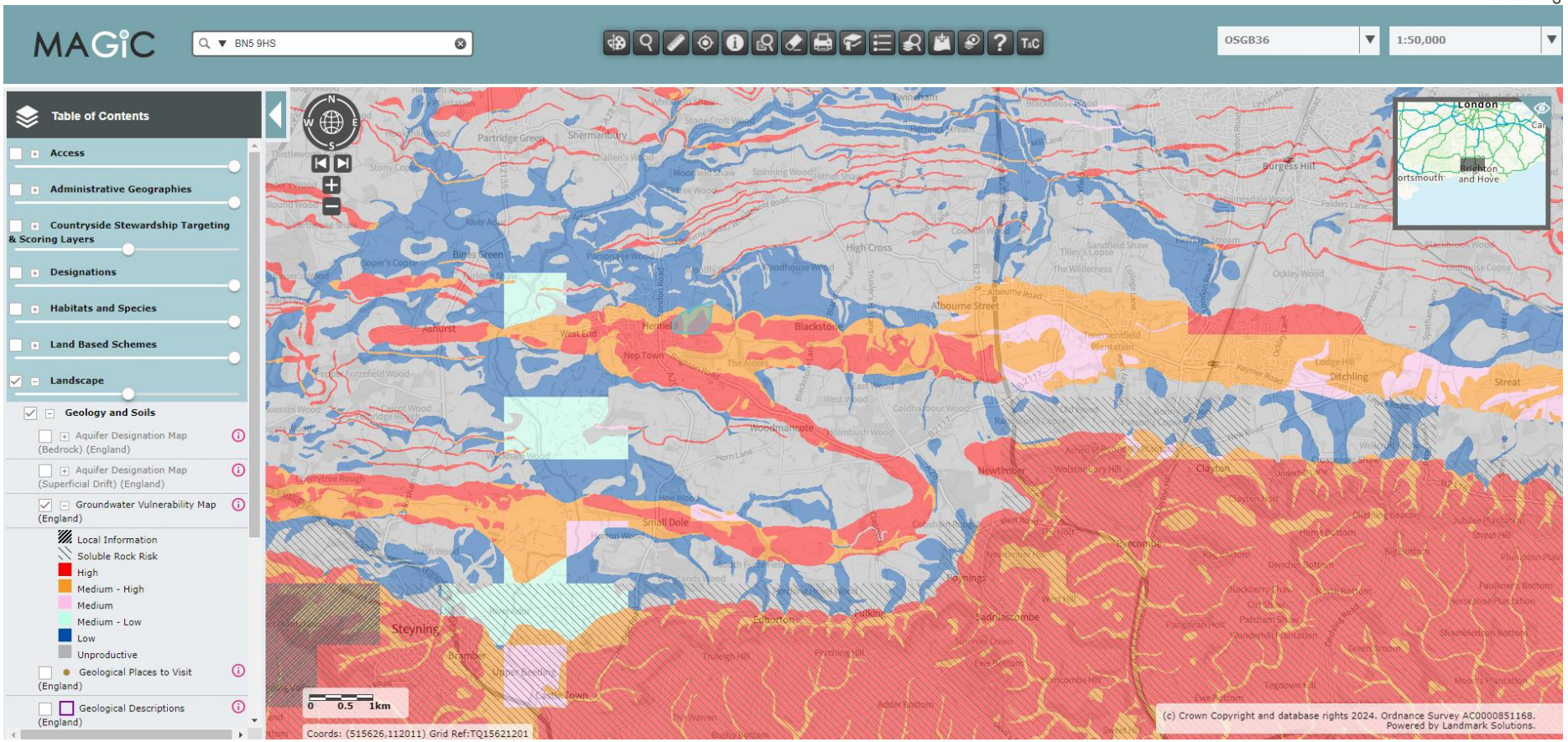
British Geological Society – Borehole Log



Magic Map – Source Protection Zones



Magic Map – Aquifer Designation



Magic Map – Groundwater Vulnerability

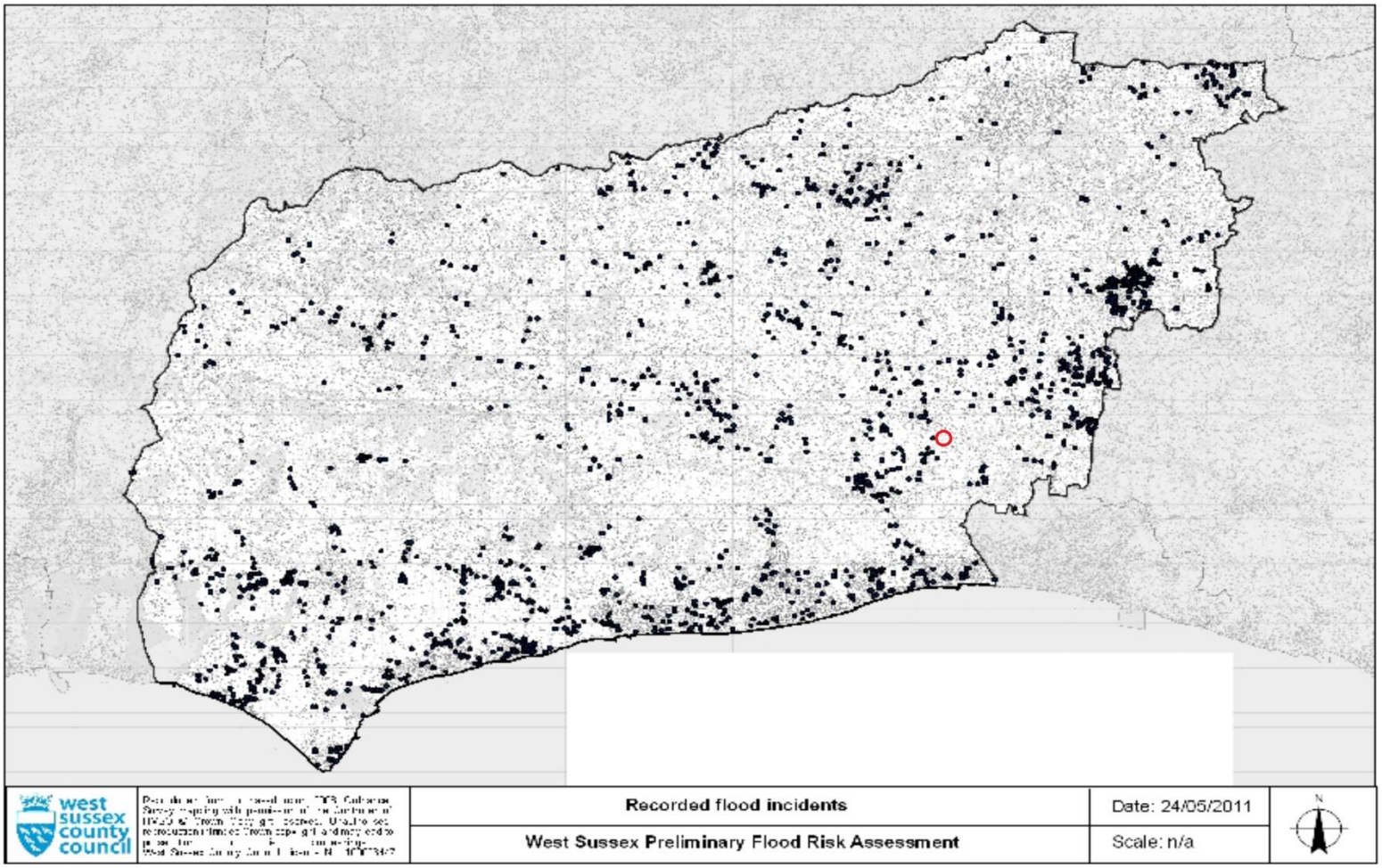


Figure 4.1 Recorded flood incidents across West Sussex from all local sources

Appendix D – Southern Water Sewer Records

(c) Crown copyright and database rights 2022 Ordnance Survey 100031673 | Date: 08/02/22 | Scale: 1:1250 | Map Centre: 521804,116094 | Data updated: 17/01/22 | Our Ref: 776904 - 3 | Wastewater Plan A1

The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy. The actual positions should be determined on site. This plan is produced by Southern Water Services Ltd (c) Crown copyright and database rights 2022 Ordnance Survey 100031673. This map is to be used for the purposes of viewing the location of Southern Water plant only. Any other uses of the map data or further copies is not permitted.

WARNING: BAC pipes are constructed of Bonded Asbestos Cement.

WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement.

Foul Gravity Sewer | Combined Gravity Sewer | Culverted Water Course or Treated Effluent | Surface Water Gravity Sewer | Rising Main, Vacuum or Syphon | Combined Pumping Station | Surface Water Pumping Station | Foul Pumping Station | Water Treatment Works | Section 104 Area | Building Over Agreement Area | Foul Manhole | Combined Manhole | Surface Water Manhole | Side Entry Manhole, Desilnation Chamber, Dummy Manhole or Surface Water Soakaway | Combined Outfall | Foul Outfall | Surface Water Outfall | Surface Water Inlet

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31022

WATER for LIFE from Southern Water