

### KEY

#### TOPOGRAPHICAL KEY

**SURVEY STATION** 5

**BANKING**

**HEDGE SPREADS**

**WOODLAND CANOPY**

**ARROW ON STEPS / RAMPS INDICATES DIRECTION UPWARDS**

**TREES**

**GATE**

**KERB CHANNEL**

**ROAD UNKERRIED**

**GENERAL**

**PIPE MATERIALS**

**FENCES**

**LEVELS**

#### APPARATUS

**LINESTYLE**

#### SERVICE TYPE

#### DEPTHS

#### CAUTIONARY NOTES

1. EML techniques have been used in the detection of underground utilities as outlined in Table 2 of PAS 128:2022, the results are not definitive and trial excavations must be carried out in order to confirm identification, position and in particular depth of the utility.

2. GPR techniques have been used in the detection of non-metallic utilities as outlined in Table 2 of PAS 128:2022. 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. Free optic cables are often difficult to detect, commonly access chambers can be located 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-invasive 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.**

### Desktop Utility Records

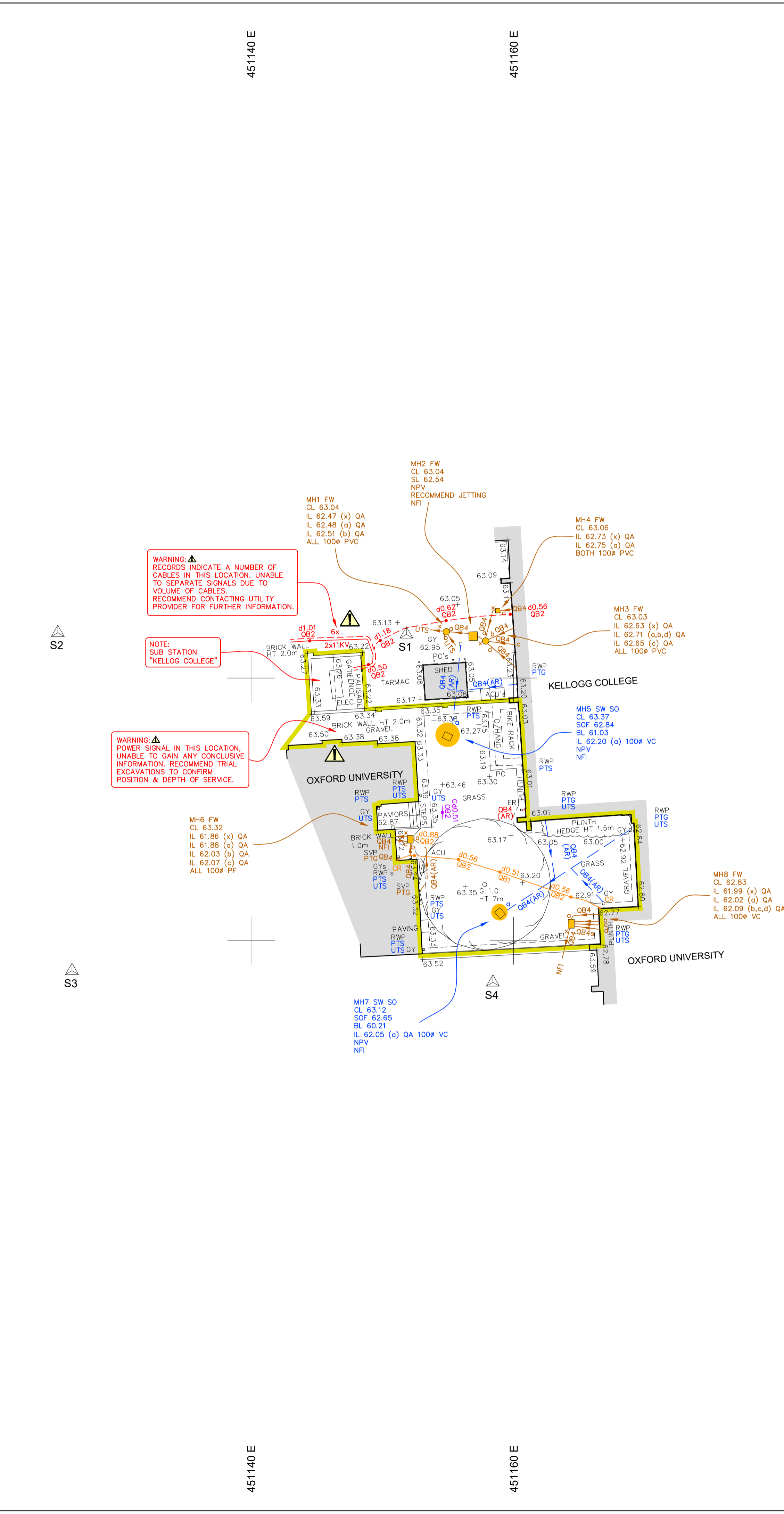
Utility Type	Provider Details	Date Acquired
Drainage	Thames Water	31/08/2023
Water	Thames Water	31/08/2023
Gas	SGN	30/08/2023
Electricity	Scottish & Southern Electricity Networks	30/08/2023
Telecom	Openreach	30/08/2023
CATV	Virgin Media	30/08/2023
Tunnels & Pipelines	LinesearchbeforeDig	30/08/2023

### PAS 128:2022 Quality Level Guide

Quality Level	Description	Accuracy
QB4 (QL-B4)	A utility is expected to exist but cannot be detected - (AR), (R), (V)	Undefined
QB3 (QL-B3)	Horizontal location only using one geophysical technique. No depth information - (ND)	+/- 500mm Horizontal Undefined Vertical
QB2 (QL-B2)	Horizontal and vertical location only using one geophysical technique	+/- 250mm or +/- 40% of depth whichever is greater
QB1 (QL-B1)	Horizontal and vertical location only using two geophysical techniques	+/- 150mm or +/- 15% of depth whichever is greater
QA (QL-A)	Service verified in an open excavation, inside an inspection chamber / draw pit, or at the point the service enters / exits the ground.	+/- 50mm Horizontal +/- 50mm Vertical

### Coordinate Table

Station	Description	Easting	Northing	Level
S1	Hill Nail	451151.836	207483.324	63.110
S2	Road Nail	451125.282	207483.451	63.195
S3	Road Nail	451126.364	207457.718	63.175
S4	Hill Nail	451158.421	207456.833	63.479



### Notes:

- GRID AND LEVELS BASED ON ORDANCE DATUM, DERIVED FROM THE NATIONAL GNSS NETWORK. LOCAL SCALE FACTOR REMOVED.
- DRAINAGE INFORMATION HAS BEEN DETERMINED WITHOUT MAN ENTRY INTO CHAMBERS AND WHILST EVERY EFFORT HAS BEEN MADE TO CORRECTLY IDENTIFY THIS INFORMATION, IT SHOULD ALWAYS BE CHECKED IN AREAS THAT ARE CRITICAL TO THE FUTURE PROPOSAL.
- ALL SEWERS ARE PRESUMED TO BE STRAIGHT BETWEEN CHAMBERS, WITH ROUTES /CONNECTIVITY OBTAINED USING ACOUSTIC METHODS ONLY. THESE ARE TO BE CONSIDERED ASSUMED AND SHOULD BE INVESTIGATED FURTHER IN CRITICAL AREAS.
- TREE AND HEDGE SPECIES HAVE BEEN IDENTIFIED AS ACCURATELY AS POSSIBLE BUT SHOULD BE CROSS CHECKED IN CRITICAL AREAS.
- THIS SURVEY SHOULD ALWAYS BE READ IN CONJUNCTION WITH THE DESKTOP UTILITY REPORT, THAT WAS CARRIED OUT AS A PREREQUISITE TO THIS DETECTION SURVEY.

### Equipment Information

Equipment	Manufacturer	Model	Serial Number	MKS REF	Date of Calibration
EML Tx Transmitter	SPX Radiodetection	RD TX10	10TX108-10549	RD15	06/02/2023
EML Rx Receiver	SPX Radiodetection	RD8100	10R10PDL-1154	RD15	06/02/2023
GPR	IDS Georadar	Leica DS2000	SN 010-16-000175	GRP12	15/09/2023

### DETECTION SURVEY REPORT

#### GENERAL

This survey was carried out in accordance with PAS 128:2022 (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 128:2022. 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 provided by the client & is classified as historical. 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 the most recent available in accordance with the requirements of the PAS 128:2022. 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.

##### WATER

No evidence of water pipes or features within survey boundary. No record information received. Recommend contacting utility provider for further information.

##### GAS

No evidence of gas pipes or features within survey boundary. Record information confirms this. Recommend contacting utility provider for further information.

##### ELECTRICITY

Electricity cables have been located using EML and GPR methodologies to quality level QB2. Areas in which GPR methods have confirmed EML results, quality level has been enhanced to QB1. Record information has been added in areas which EML & GPR are inconclusive. Recommend trial excavations to confirm position and depth of cables. Recommend contacting utility provider for any further information.

##### 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 / DATA

No evidence of CATV ducts or features within survey boundary. Record information confirms this. Recommend contacting utility provider for further information.

##### UNKNOWN

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 drawings 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 128:2024 survey type A) are carried out to identify these targets in critical areas.

**SEE CAUTIONARY NOTES WITHIN THE UTILITY KEY.**

### Topographical and PAS 128:2022 Utility Survey

**UNIVERSITY OF OXFORD**

**Kellogg College  
Boundary Road  
Oxfordshire**

Scale: 1:200 | Sheet Size: A1 | Sheet Number: 1 | Date: September 2023

Project Number: 33032 - Utility | Rev: - | Surveyed by: JC/JK | Checked by: BP/AC | Approved by: BP/NF

**mksurveys**

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