

Q#	R#	DESCRIPTION	ACC.	Q#	R#	DESCRIPTION
Q1	Q1	Genetic results on human from accident.	analyzed	Q1	Q12	PC (speed) control failure using only one passenger's testimony.
Q1	Q1	Time & distance of open communication with witnesses & passengers on flight 101.	analyzed	Q1	Q11	PC (speed) control failure using only one passenger's testimony.
Q1	Q14	Investigate & identify possible causes on an involved flight.	in a state of progress	Q1	Q1A	PC (speed) control failure verification to speed of 100 or more in the involved direction.

DRAINAGE SURVEY
All accessible Manholes and Inspection chambers have had their respective covers lifted with pipe sizes, inverts, chamber sizes/types and service data recorded from ground level. All connections from DPs, Gullies, Drains, VPs, RE's and Jampoles have been proven wherever possible using audible connections (AC) and/or sonde instrumentation where applicable. Where these methods have proved unsuccessful then assumed (AR) straight line connections will be shown.

All accessible Manholes and Inspection chambers have had their respective covers lifted with pipe sizes, inverts, chamber sizes/type and service data recorded from ground level. Pipework has been traced, accessed and collected for post processing. Drainage layout, including manhole covers not located by topographical survey, may be taken from CCTV chainage and will be shown as indicative only.

Electricity
Elec cables will have been predominantly located using EML methodology with electronically derived depths shown. GPR techniques will be employed to achieve greater quality levels as required.

British Telecoms

BT cables will have been predominantly located using GIL methodology with dedicatedly derived depths shown. GPS techniques will be employed to achieve greater quality levels as required. Due to current laws and legislation protecting all BT apparatus, cabling can only be located remotely. We therefore compare all the telecom findings against record information to produce the final service layout. In some instances, where high amount of cable ducts are present, we may only be able to identify a **near** centre peak signal rather than identifying all the individual duct positions. For further information regarding Telecoms apparatus, please contact Openreach directly.

CTV and/or Com cables will have been predominantly located using EML methodology with electronically derived depths shown. GPR techniques will be employed to achieve greater quality levels as required.

Fibre Optic
FO cables will have been predominantly located using GPR methodology. This is due to the materials used within fibre optic cabling. In some rare instances, tracer cabling or conductive non fibre optic cabling will be present within some or all ducting. When this is the case, both EML and GPR methodology will be combined to identify service network and achieve greater quality levels.

LC, TS and/or Sec cables will have been predominantly located using EML methodology with electronically derived depths shown. GPR techniques will be employed to achieve greater quality levels as required.

GMGS and/or WAWMS pipe work will have been attempted and located using both EML and GPR methodology with electronically derived depths shown for the former and depths to crown levels shown for the latter.

When the Gas/Water pipe work is constructed using conductible materials, then we are able to employ multiple geophysical techniques to identify service network and achieve greater quality levels. When a non conductible material is used, GPR methodology will be employed to locate and plot the final service layout.

Ground Penetrating Radar
GPR methodology is used to identify and locate all non-metallic, non-conductive piping and cabling. We also employ GPR to obtain a greater accuracy level on EMI located services. The GPR has a greater success rate on pipe or service diameter upward of 663mm, 663mm, as size increments increase, so does the chance of detection. The GPR can produce varying results and are such:

Unidentified Traces
All UITS will have been predominantly located using EML methodology with electronically derived depths shown. GPR techniques will be employed to achieve greater quality levels as required. Every effort has been made to identify the service but in this instance, is not achievable. We recommend excavation work to determine identity and depth where applicable.

Scarring (OL-C)
Scarring has been identified on site with a potential of an undetectable service present.

Assumed Routes (AR) are shown if there is evidence that a service exists but we are unable to trace it whilst on site. The surveyor will attempt to locate various identifiers/values/markers (service evidence) etc., around site areas to successfully determine an assumed route between these points. If there is little evidence on site but they believe a service is still present, then a common sense approach to an assumed route shall be employed.

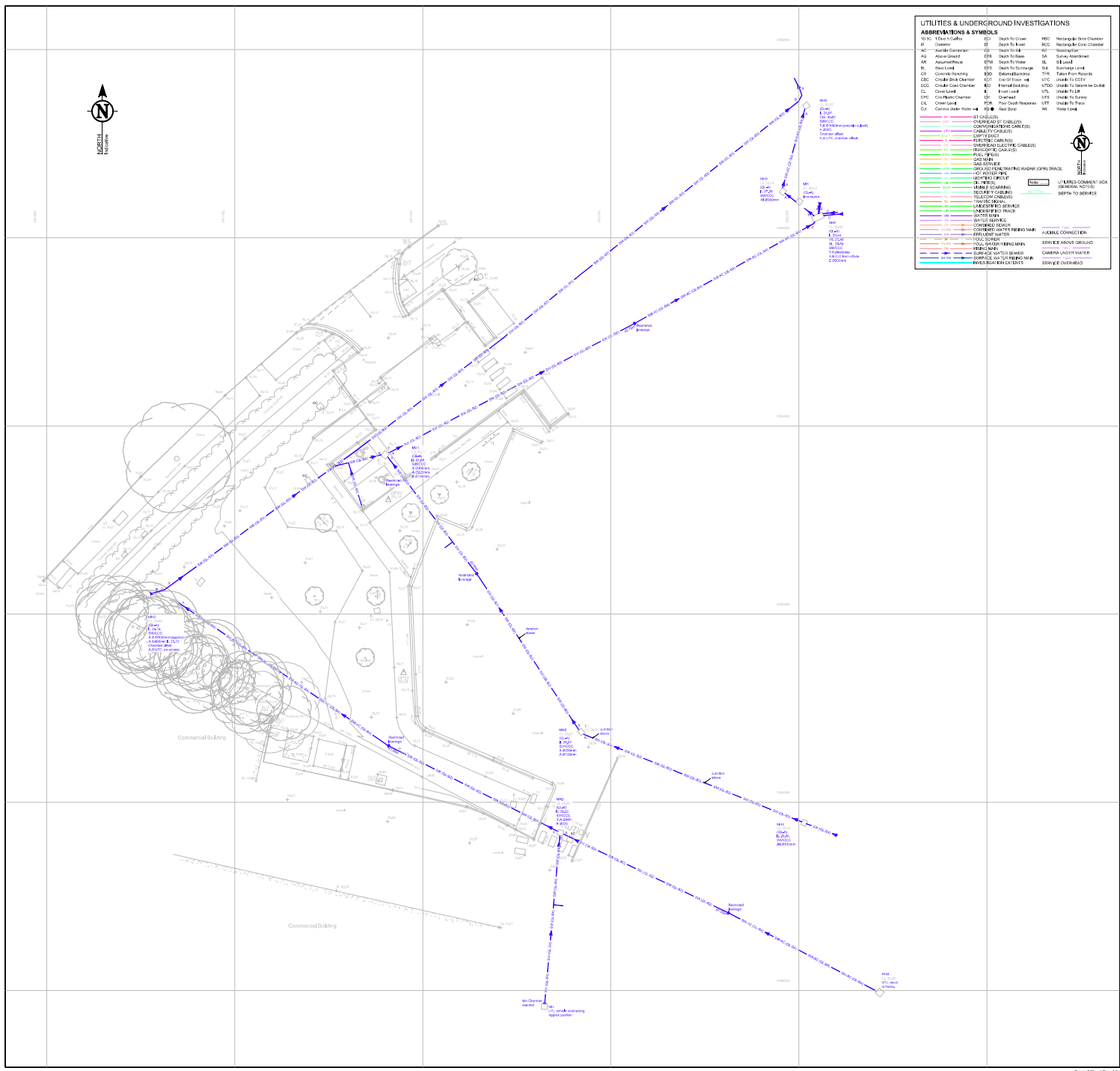
Taken from records (TFR) are service routes that are taken from STAT record files or previous survey information and overlaid onto our drawings.

We recommend a PAS utility survey of the entire site to establish the position of underground services.

The sewers with high levels of silt or blockages to be jetted to extend the CCTV drainage survey, if any of these areas are deemed critical or of high importance.

We recommend full statutory record information be obtained to confirm site findings and to position underground which may be present.

Due to the geophysical nature of subsurface technology, we always recommend excavation works to be carried out within critical areas for verification and to eliminate the possibility of undetectable services present.



All below ground details shown have been identified from above ground without excavation. Survey Solution use electro-magnetic and/or ground penetrating radar (GPR) methods to investigate for underground utilities, services and features. Results using these methods are not infallible and we recommend trial excavations are carried out to confirm any identifications, positions and depths.

Any areas not in drawing where services or features have not been shown are not necessarily clear of services or features but are an indication that no items have been identified during our investigations. All reasonable care and normal good practice should still be employed during design and construction process.

Survey Solutions has used all reasonable care to research available service records, but the completeness or use of the service records supplied to or by Survey Solutions cannot be guaranteed. Therefore Survey Solutions cannot be held responsible for any features annotated as 'taken from records' (TFR).

Depths obtained using electro-magnetic or GPR are induced by ground conditions and should be treated as indicative only. Electro-magnetic depths to utilities and services are generally taken to the centre of a feature, GPR depths to the top of a feature and drainage depth shown to inverts, unless otherwise indicated.

Drainage pipe sizes will be obtained without entering the chamber and therefore should be treated as approximate. Pipe dimensions which have not been obtained visually will be taken from records when available.

All services, drainage and utilities routes are assumed straight between access points, unless otherwise stated. The numbers of cables in runs will not be shown unless specifically requested. All services are below ground unless indicated.

Services, utilities and features may not have been surveyed if obstructed or not reasonably visible or accessible at the time of survey.

Survey Solutions accept no responsibility for the completeness or accuracy of either the topographic survey or base mapping on this project.

any errors or discrepancies notified to Survey Solutions immediately. The accuracy of the digital data is the same as the plotting scale implies. All dimensions are in metres unless otherwise stated.

The contractor must check and verify all site and building dimensions, levels, utilities and drainage details and connections prior to commencing work.

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This survey has been carried out in accordance with PAS 128: 2014 & our version of the Royal Institution of Chartered Surveyors (RICS) specification for Measured Surveys of Land, Buildings and Utilities. Our survey extents have been agreed and confirmed with formal acceptance of 66682 from Fortyb Design Ltd. If you have any queries regarding the final services layout, please may we ask you to carefully read all the information within this title block in its entirety before continuing to do so.

SURVEY TYPE	DESCRIPTION	EFFECT ON SURVEY RESULTS
TOPO	Survey Software	None
OUTDATED		
OS		
INTS		

ADDITIONAL INFORMATION	EFFECT ON SURVEY RESULTS

COMMISSIONED: NO		
UTILITY	AVAILABILITY	UTILITY COMPANY PROVIDER
SEWER	NO	N/A
WATER MAIN	N/A	N/A
GAS MAIN	N/A	N/A
TELECOM	N/A	N/A
CABLE TV	N/A	N/A
ELECTRICITY	N/A	N/A
OE: PIPES	N/A	N/A
OTHER	NO	N/A

[illegible]

REV	DESCRIPTION	DRAWN	CHECKED	APPROV	SURVEY DATA
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SURVEY SOLUTIONS

LAND SURVEYING
BUILDING SURVEYING
LANDSCAPE SURVEYING
SITE ENGINEERING
MONITORING

0845 040 5969
survey-solutions.co.uk

PERKIN BERKOW COWIETRY GLASGOW LEEDS MANCHESTER NOTTINGHAM

PROJECT TITLE
HERON HOUSE, OAKS BUSINESS PARK

DRAINING DETAIL
CCTV DRAINAGE SURVEY.

SHEET 1 OF 1	
CLIENT FORTY8 DESIGN LTD	SCALE 1:200

SURVEYOR NB TH	SURVEY DATE 11/05/2023	CHECKED BY DWR	APPROVED BY DWR	DWG STATUS FINAL
DRAWING NUMBER			REVISION	ISSUE DATE

48956MCUG-01a 2 19/05/202

