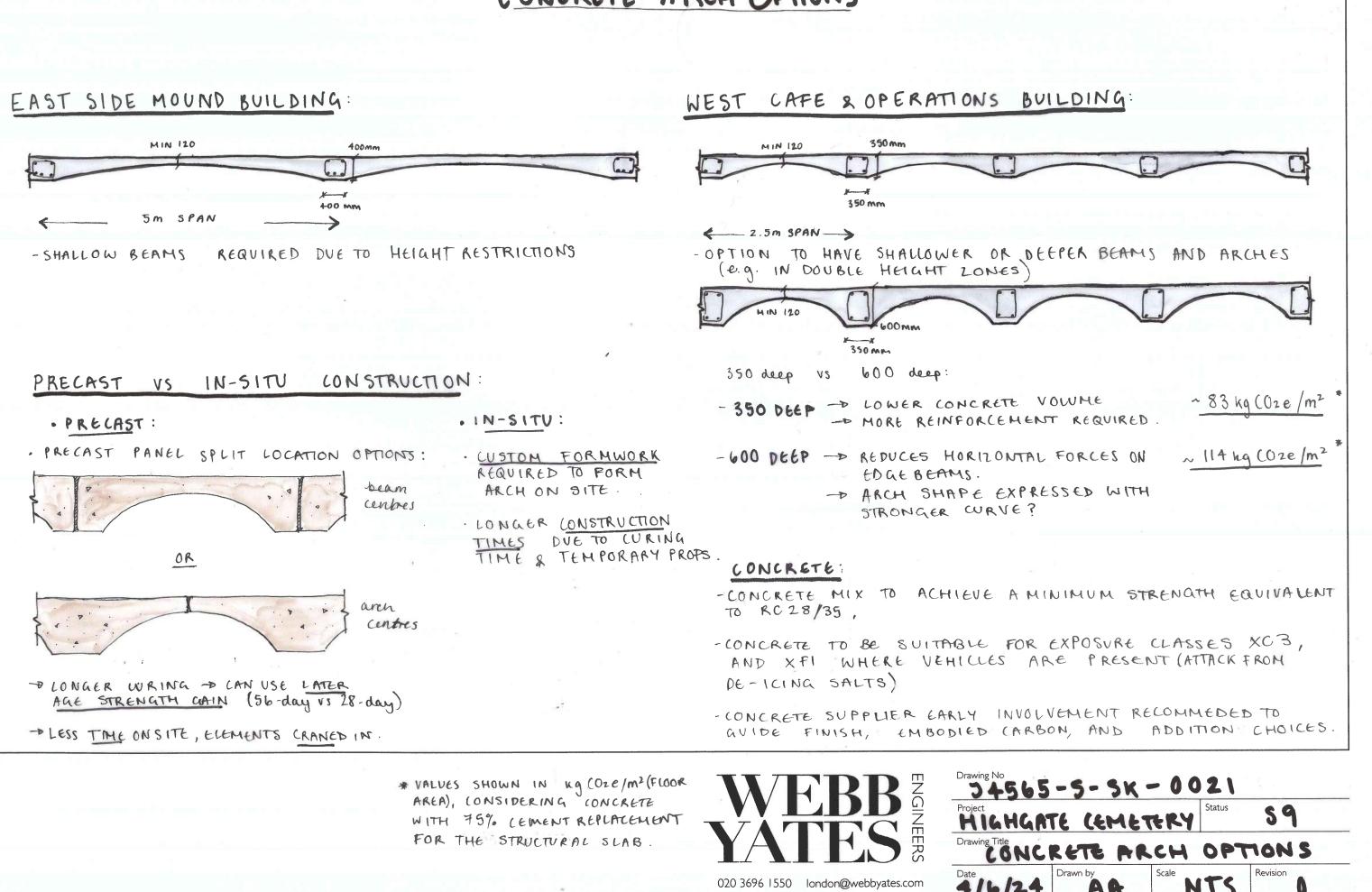
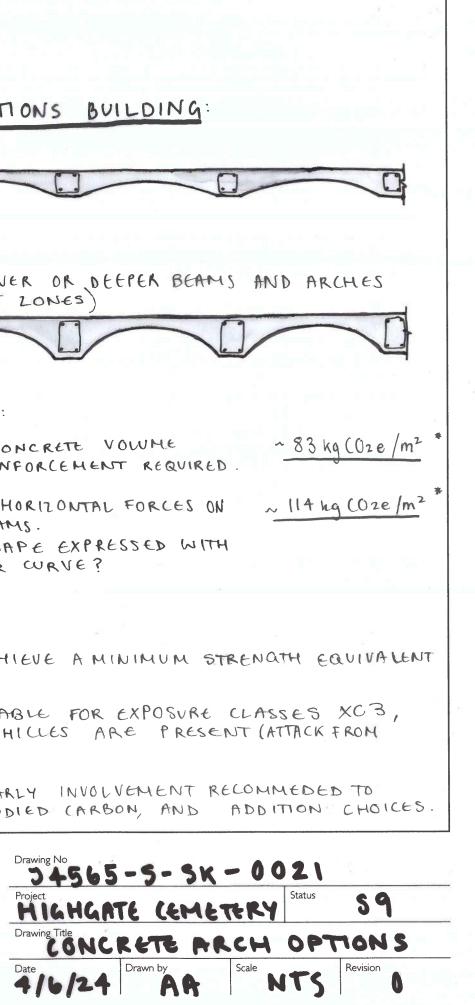
CONCRETE ARCH OPTIONS









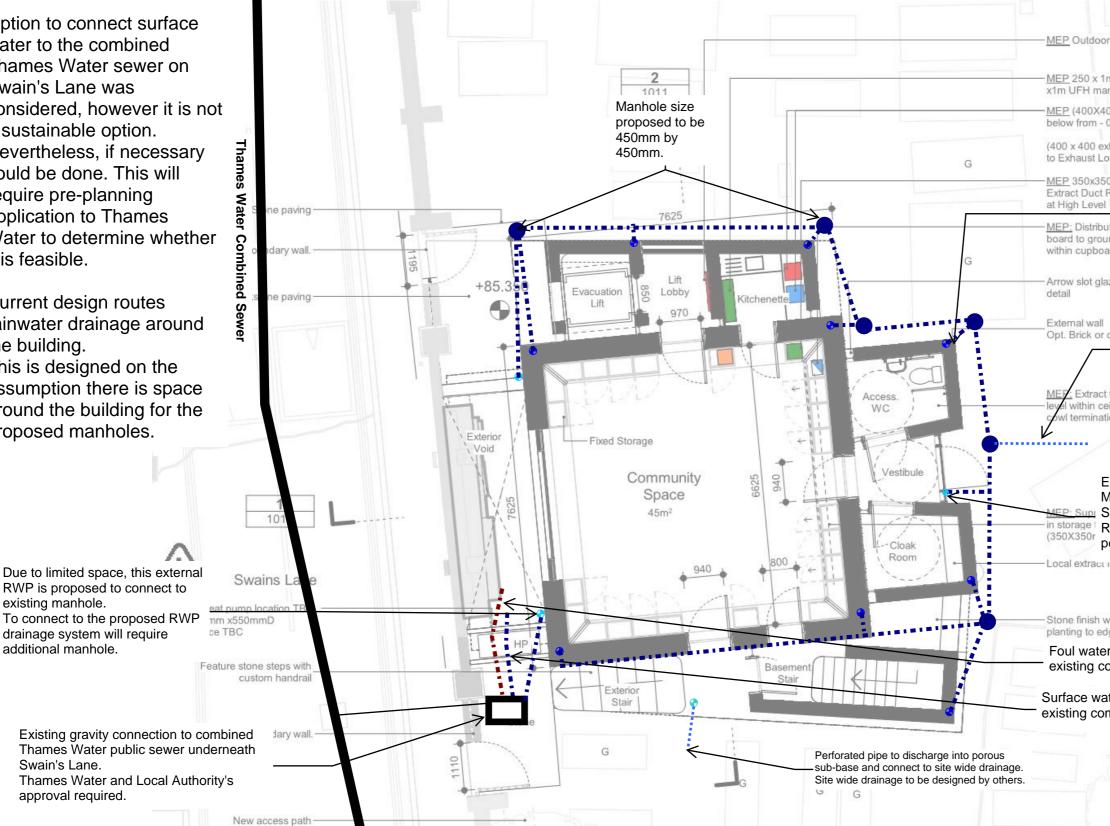
#### **APPENDIX C. STAGE 3 CIVIL SKETCHES**

Option to connect surface water to the combined Thames Water sewer on Swain's Lane was considered, however it is not a sustainable option. Nevertheless, if necessary could be done. This will require pre-planning application to Thames Water to determine whether it is feasible.

Current design routes rainwater drainage around the building. This is designed on the assumption there is space around the building for the proposed manholes.

RWP is proposed to connect to existing manhole. To connect to the proposed RWP drainage system will require additional manhole.

Existing gravity connection to combined Thames Water public sewer underneath Swain's Lane. Thames Water and Local Authority's approval required.

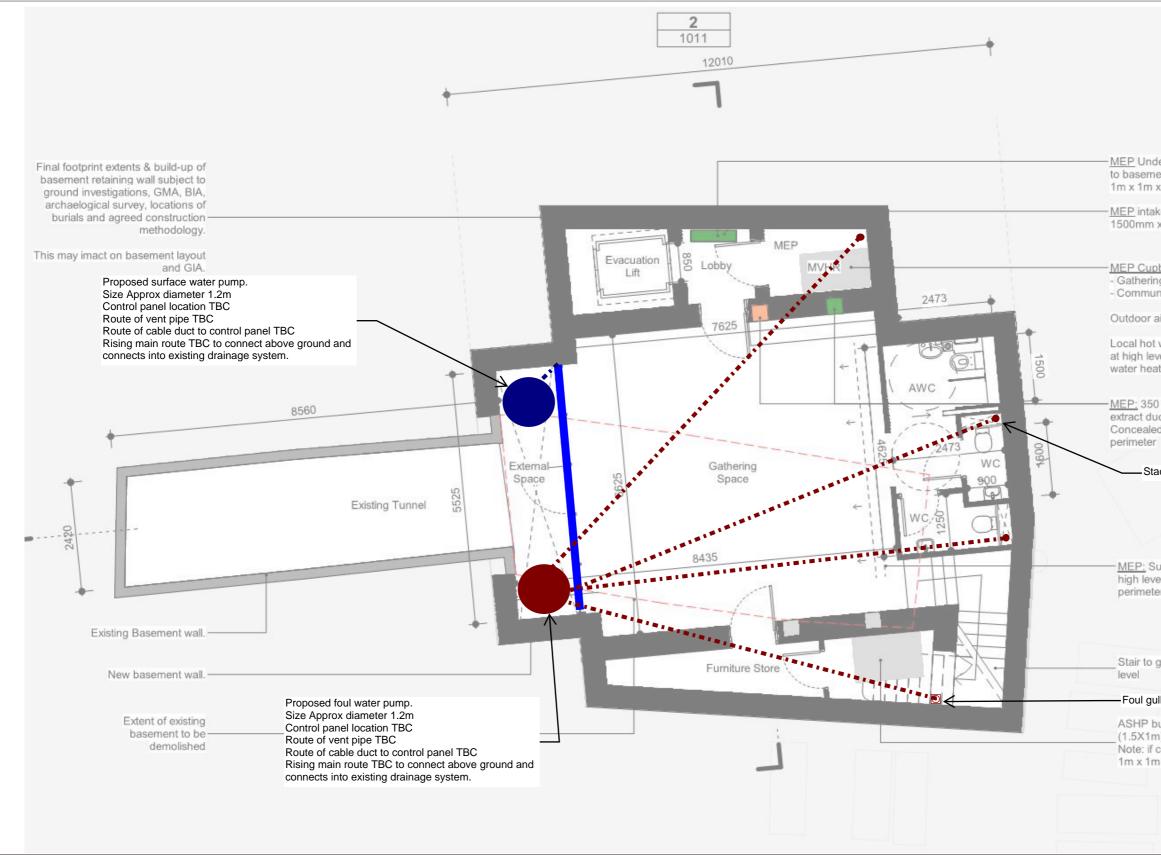




J45 Pro Hi P1 Dat 03

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Date 03.07.24	Drawn by ZA	Scale NTS	Revision DRAFT





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MEP Underfloor heating manifold to basement flooor. 1m x 1m x 250mm

MEP intake and distribution board 1500mm x 300d full height.

MEP Cupboard Vertical MVHR unit - to serve - Gathering space assuming 20 people - Community space assuming 30 people.

Outdoor air duct exhaust 400mm x 400mm

Local hot water storage heater for WC's at high level, alternative local point of use hot water heater to each location

MEP: 350 x350 supply and extract duct to above. Concealed within coffer to

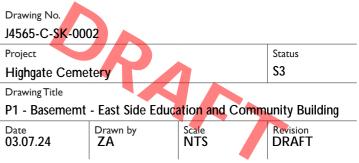
Stack location proposed by MEP Engineer.

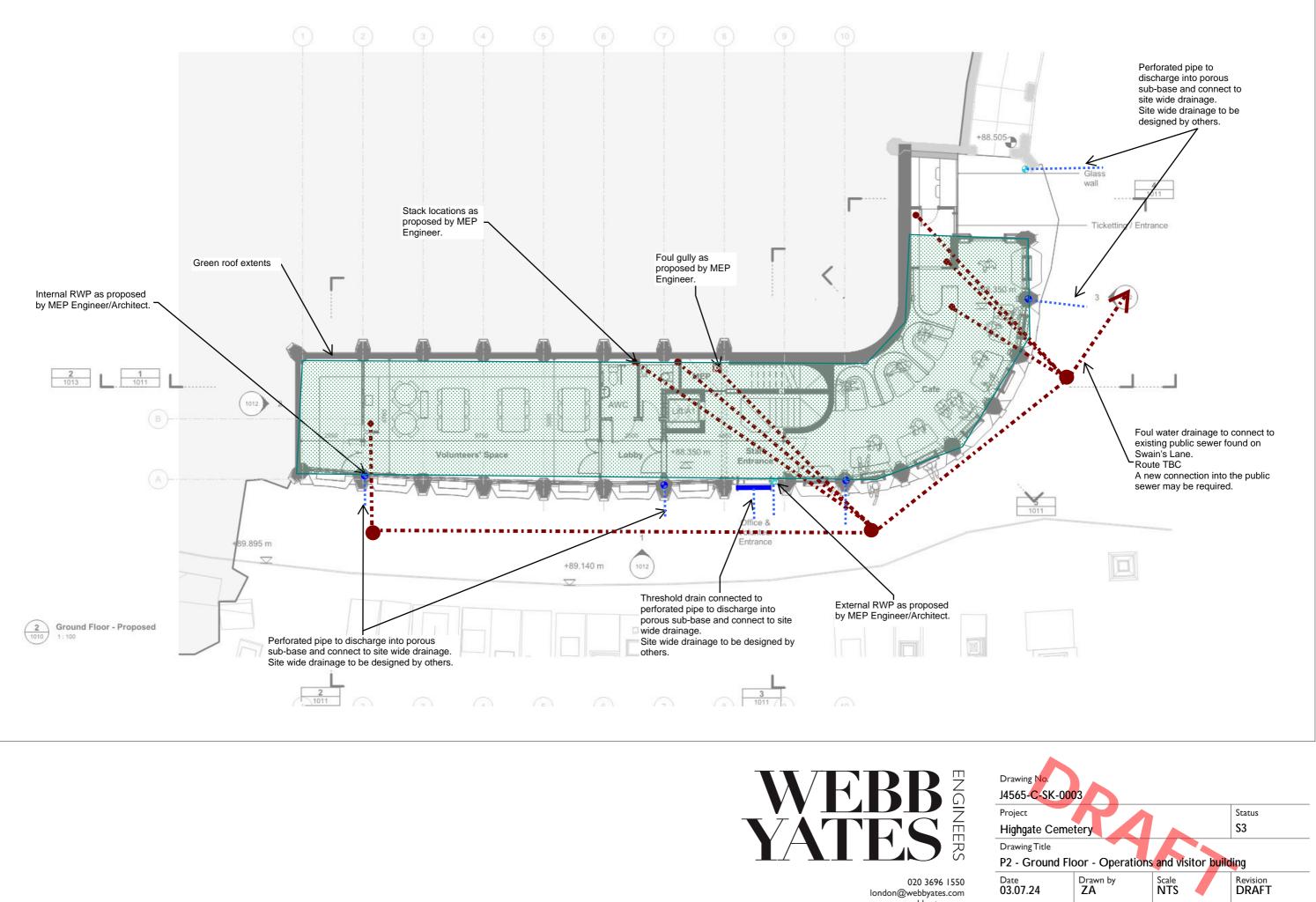
MEP: Supply Duct exposed at high level or coffer to perimeter. (250X250mm)

Stair to ground

#### Foul gully location proposed by MEP Engineer.

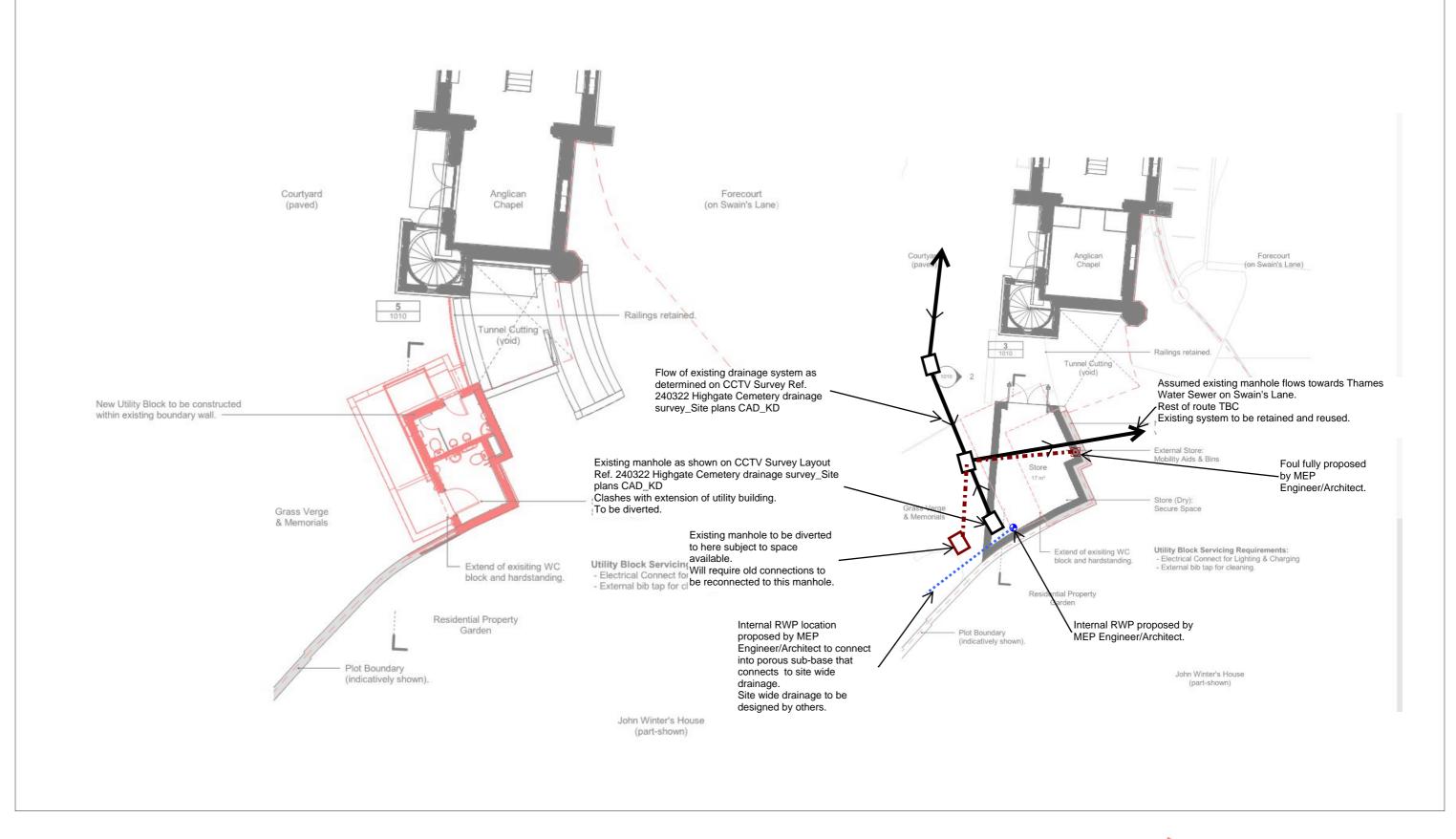
ASHP buffer vesel and pumps (1.5X1m) Note: if cooling required additional 1m x 1m space will be needed.







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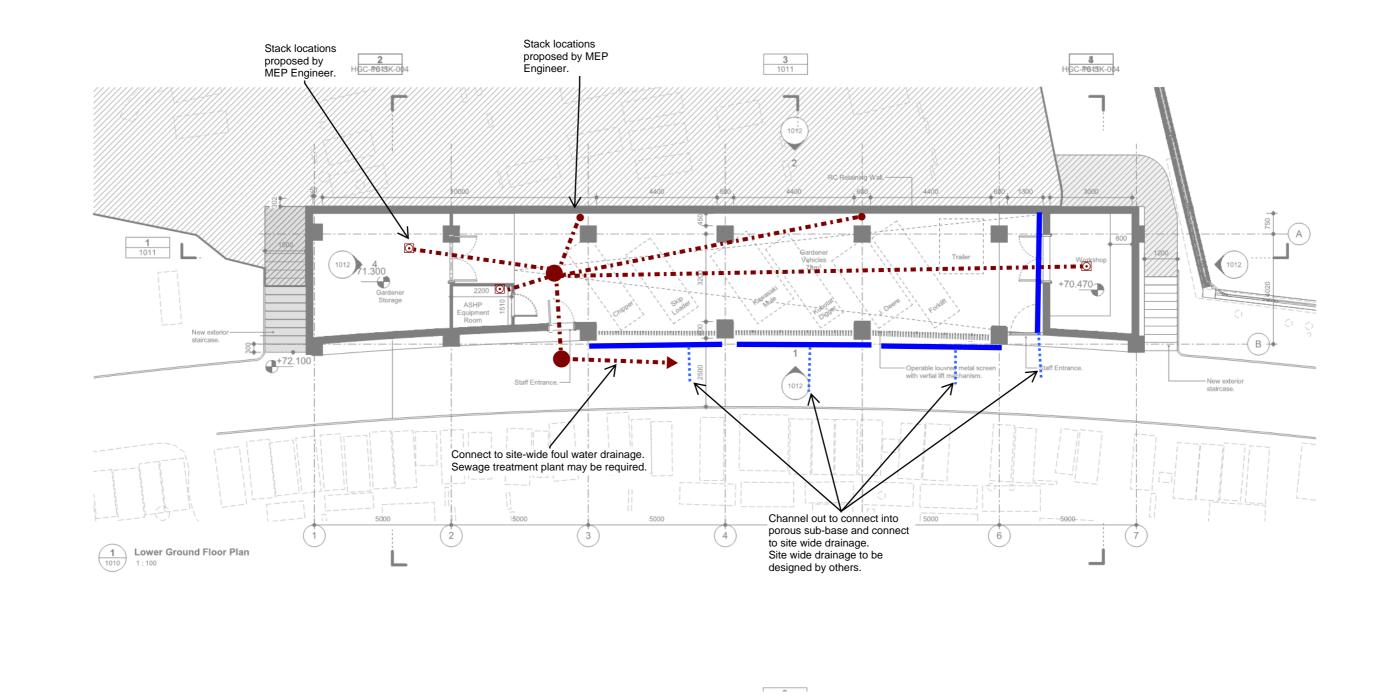




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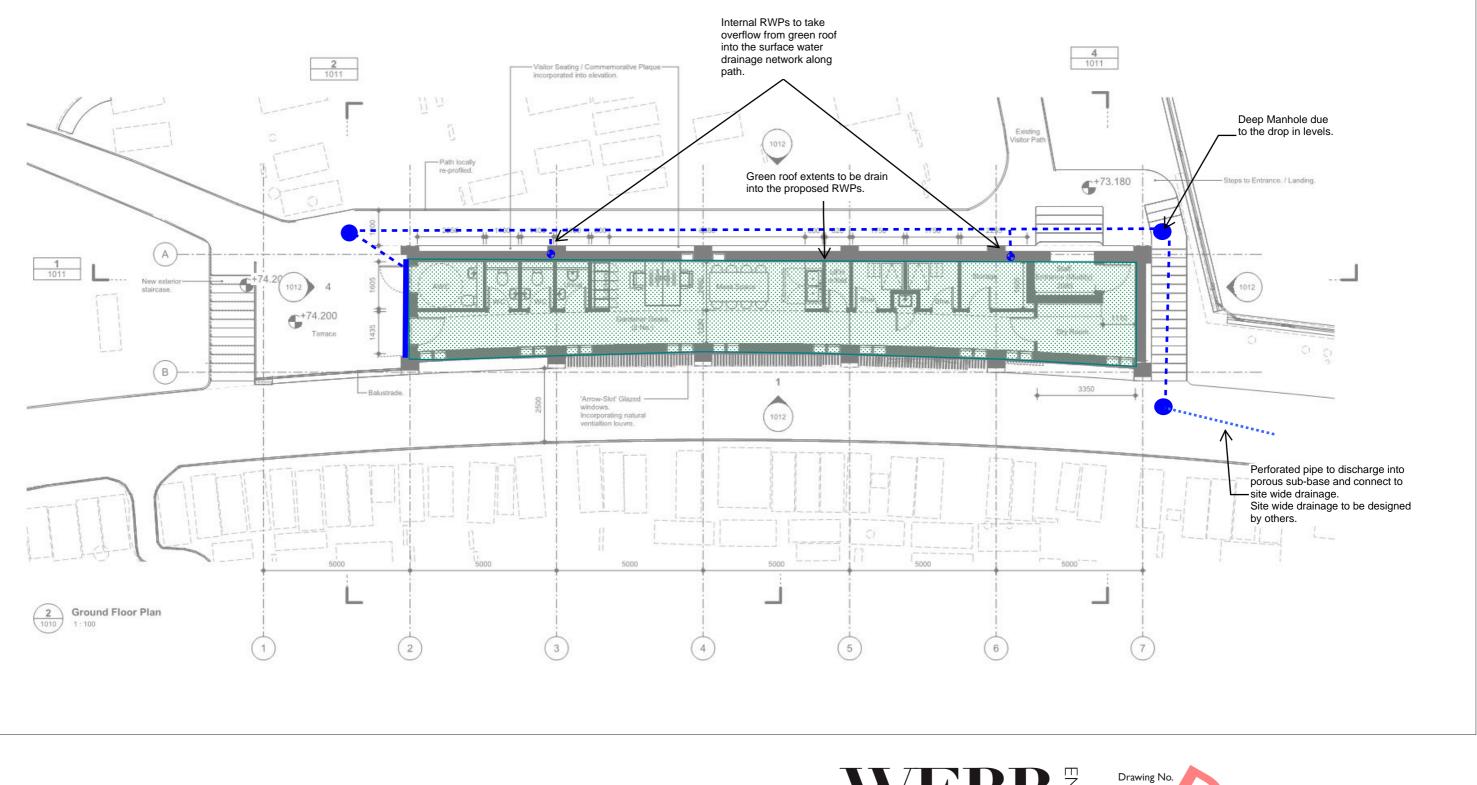


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#### APPENDIX D. EXISTING DRAINAGE AND GROUND INVESTIGATION REPORTS

Registered in England No. 2727193



Old Timber Yard House, 55 The Timber Yard Drysdale Street, London N1 6ND Tel: 020 7324 7270 Fax: 020 7729 1196 Email: london@themortonpartnership.co.uk www.themortonpartnership.co.uk

Structural Engineers

The Morton Partnership

Our ref: EJM/CH/20360~02

29th July 2021

Ross Macaskill Artelia UK High Holborn House 52-54 High Holborn London WC1V 6RL

by email only: ross.macaskill@uk.arteliagroup.com

Dear Ross,

#### RE: HIGHGATE CEMETERY, SWAIN'S LANE, HIGHGATE, LONDON N6 6PJ

We have now received the final report from Albury SI. We had agreed to provide a summary report of the findings and we do so below.

The site investigation was carried out in June 2021 and involved 2No boreholes to depth and 10No trial pits to existing buildings across the site. A desk based study of the site and its history was also included.

The site historically was part of the 17thC Ashurst estate until the founding of the cemetery in the 1830's. There is no evidence of industrial use on the site and no contamination or hazardous waste was found during the investigation. There is also no evidence of UXO's in close proximity and the risk is considered small for any being on site.

Borehole 1 extended to a depth of 25m and revealed 200mm made ground over 4m of soft clay over London Clay formation to the base of the borehole. From nearby published data, the layer of London Clay is approximately 125m thick. Standpipes were installed in the boreholes to monitor long term water levels. Monitoring indicates that there is groundwater 2.5m below ground level which could be the result of a perched water table.

Borehole 2 also extended to a depth of 25m and revealed 1m of made ground over 1.5m soft clay over stiffer London Clay formation to the base of the borehole. Ground water in borehole 2 was recorded at 1.5 and 1.2m below ground level following return visits and 5m depth during drilling.

The trial pits exposed stepped brick footings and concrete strip foundations to the various buildings and structures as one would expect. The ground around these structures was generally made ground and water levels varied between 1.2m and 3.3m below ground level. Sections and photographs of the existing foundation arrangements are in the full report.

Laboratory testing was carried out to samples retrieved from the boreholes. The mechanical properties are included in the report which will provide data for foundation and pile design and retaining wall design.

The report concludes that traditional mass concrete foundations can achieve a permissible bearing pressure of 100kPa provided the foundations extend into the Clay formation and not the made ground. Considerations will be required in close proximity to trees where tree roots can cause volumetric change of shrinkable clay. To avoid risks of settlement or if the loads will apply greater pressures than 100kPa consideration of piled foundations will be necessary.

If basement structures are proposed, heave will need to be considered and allowed for. The report suggests that the underlying soils have moderate to high potential of heave occurring. Therefore if any overburden is removed, the ground will apply upwards pressure as heave recovery occurs so it will be necessary to consider ground anchors or suspended floor slabs with anti heave protection under.

The report has identified a perched water table across the site therefore any large excavations will need a dewatering system to manage the inflow of groundwater or a water exclusion system to prevent water entering the excavation. The permanent structure will also need to be designed to resist hydrostatic pressures.

#### RE: HIGHGATE CEMETERY, SWAIN'S LANE, HIGHGATE, LONDON N6 6PJ

Any buried concrete in contact with the ground should have a design sulphate class of DS-2.

A preliminary test of the ground for waste assessment has concluded that any materials removed from site can be disposed of as non hazardous waste. Regular testing of any excavated material will need to be carried out as excavations are ongoing.

If you have any comments or queries on the above then please do not hesitate to contact me.

Yours sincerely
For THE MORTON PARTNERSHIP LTD

PETER CORCORAN BSc (Hons) MICE CEng



**BUILDING SERVICES** 

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#### STEENSEN VARMING



# Highgate Cemetery M&E Infrastructure Review

Project No: 204057

**Document Revision and Status** 

London 23/11/2021 Project No. 204057

Tom Taylor Associate Director

tom.taylor@steensenvarming.com

Date	Rev	Issue	Notes	Checked	Approved
23/11/2021	01	Draft	For Comment	TT	TT

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2.0	Services Overview	3
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#### **BUILDING SERVICES**

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# **1.0 Introduction**

Steensen Varming were appointed in November 2020 to undertake surveys and site investigations in order to establish the extent of existing services infrastructure at Highgate Cemetery.

Following an initial site visit and visual survey at the end of 2020 the project was paused before a follow up Ground Penetrating Radar (GPR) survey was completed in October 2021.

This report presents the findings from the initial non-intrusive visual survey and the follow up GPR survey. The report also includes some commentary with regards to the extent of the existing services and incoming supplies to the site in light of planned future development works. It should however be noted that Steensen Varming have not re-visited the site since late 2020 and as such the commentary included in this report with respect to the existing services relates to the findings from the initial site visit.

Sketches summarising the existing services and the full CPR survey results are included as appendices to this report.

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# 2.0 Services Overview

The services as described below are marked on the existing services sketch and CPR survey information included in the appendices to this report.

## 2.1 West Cemetery

#### Water

There is a single incoming water supply to the West Cemetery at the North Lodge. The supply runs through the West Cemetery to serve the South Lodge and the Main Office/ Chapel. Additional pipework branches serve watering points along the route. A second supply runs parallel to the site supply to serve a private house adjacent to the cemetery grounds.

#### Electricity

There are three incoming electrical supplies (fed from Swain's Lane) to the West Cemetery feeding the Main Office/ Chapel; the South Lodge; and the North Lodge.



Figure 1 and 2 – Main Office Electrical Intake and Distribution Board



Figure 3 – South Lodge Electric Meter/ Distribution Board and Cas Meter Page 3 / 10

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Secondary supplies are taken from the North Lodge intake to serve the Terrace Catacombs; the Julius Beer Mausoleum; and the Simpson Vault.



Figure 4 and 5 – North Lodge Electrical Distribution Board and Secondary Supply

Secondary supplies are taken from the Office/ Chapel intake to serve the adjacent WC block; the Colonnade; and the Gardener's Compound containers.



Figure 6 and 7 Electrical Distribution Boards in Colonnade and Gardener's Compound

As the above images show, the existing electrical installations vary in age and condition. The installation in the South Lodge is relatively new. The Main Office/ Chapel incoming supply and associated switchgear is considerably older (and difficult to access). The externally mounted 'secondary' distribution boards are generally in poor condition have been exposed to external conditions.

#### Gas

There are two gas supplies to the West Cemetery, one serving the South Lodge via an internal meter (Figure 3) and one serving the Office/ Chapel via an external gas meter (Figure 8).



Figure 8 – Main Office/ Chapel Gas Meter Page 4 / 10

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The existing supplies which are typical for domestic installations each serve a single gas boiler. The supplies are fed from a gas main in Swain's Lane.

#### **BT/**Fibre

A BT supply fed from Swain's Lane serves the Main Office/ Chapel.

#### Drainage

Refer to GPS survey results for details of surface, foul and combined drains.

### 2.2 East Cemetery

#### Water

A single incoming supply serves the East Cemetery. The supply enters the site at the Chester Road entrance from where it runs through the site to serve the Gardener's Compound, branching off to serve various watering points along the route.

#### Electricity

There are two electrical supplies to the East Cemetery.

A relatively new 3-phase supply has been installed at the Chester Road entrance.

An older single-phase supply feeds an external electrical intake adjacent to the Strathcona. The external intake in turn supplies the Strathcona, the Entrance Kiosk, and the East Cemetery Gardener's Compound.



Figure 9 and 10 – Strathcona Electrical Intake



Figure 11 – East Cemetery Gardener's Compound Distribution Board

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#### Gas

There is no gas supply to the East Cemetery.

#### **BT/**Fibre

A BT supply fed from Swain's Lane serves the Entrance Kiosk.

#### Drainage

Refer to GPS survey results for details of surface, foul and combined drains.

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# 3.0 Findings in relation to masterplan proposals

It is understood that the main area of interest in terms of future development plans is the area identified as 'Project Area 01' on the existing services sketch in Appendix A which comprises the Main Office and Chapel; the Colonnade; and the courtyard in between.

The existing services in the vicinity of Project Area 01 are of interest with respect to both potential clashes with the any new development works and the potential to meet the services demands of any new development.

## 3.1 Existing Services

The site survey sketch and GRP survey outputs in the appendices show that there are multiple services running below ground within the courtyard area including electrical feeds from the main office building to the WC Block, Colonnade and Gardener's Compound; and a combined sewer. In addition, there are several unidentified traces.

Whilst there are multiple services running below ground, the GPR survey results suggest that these services generally run around the perimeter of the courtyard, and that the central courtyard area is relatively free from any existing services that could potentially be impacted by any excavation works with the main incoming electrical and gas supplies to the site are fed from Swain's Lane and stop short of the courtyard.

## 3.2 Capacity to serve new development

#### Water

The existing water supply to the Western Cemetery is fed through the site from the North Lodge.

Whilst the existing supply is understood to be sufficient to meet the existing water demand across the Western Cemetery, depending on the demands associated with any new development, it may be necessary to upgrade the supply which could mean renewing the existing pipework from the point of entry to the site at the North Lodge. Alternatively, it may be possible to install local storage to help meet any peaks in demand that may be associated with any new development.

#### Electricity

There are two existing electrical supplies in the area of the proposed development works, one which serves the Main Office/ Chapel building, and one serving the South Lodge. Secondary supplies are taken from the Main Office/ Chapel intake to serve adjacent buildings and areas including the Colonnade and Cardener's Compound.

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Whilst dependent on the extent of works, it is likely that any significant new build works would require a new electrical supply connection from Swain's Lane, with any significant works in the area of the Courtyard perhaps presenting the opportunity to upgrade and rationalise the existing electrical supply and local distribution in this area.

Whilst the extent of proposed works are unknown, it may be necessary to install a new 3-phase supply to serve any new development, particularly if there are likely to be significant electrical loads as may for example be associated with heat pumps or cooling equipment.

#### Gas

There are two existing gas supplies in the area of the proposed development works, one supplying the Main Office/ Chapel and one supplying the South Lodge. Both supplies and associated meters are as would be expected for a typical domestic installation.

If there is likely to be any significant gas demand associated with the new development, for example as may be expected of a commercial size gas boiler, or a commercial kitchen, it is likely that a new supply connection (from Swain's Lane) or an upgrade to one of the existing supplies would be required to meet the associated demand.

#### Drainage

A combined sewer runs behind the Main Office/ Chapel building. It is assumed that this sewer picks up foul and surface water drainage connections from the Main Office/ Chapel building, and the adjacent WC block before discharging to the public sewer in Swain's Lane.

Depending on the extent of any proposed development works, it may be possible to utilise the existing sewer, with alterations as may be required, to meet associated drainage demands.

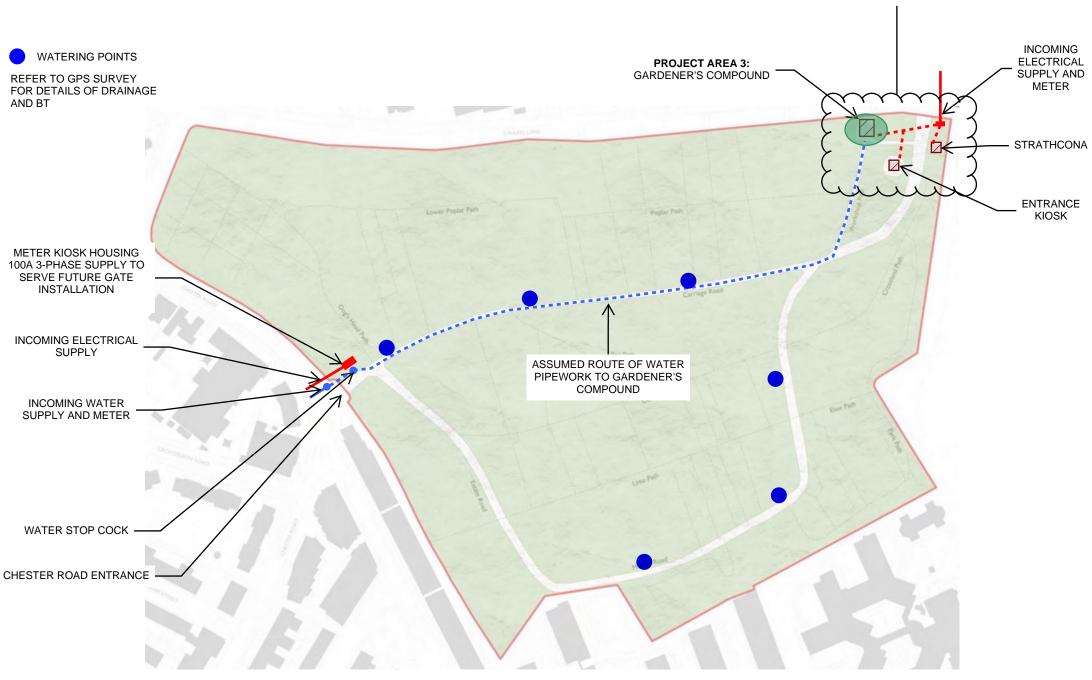
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# 4.0 Appendix A – Existing Services Sketches



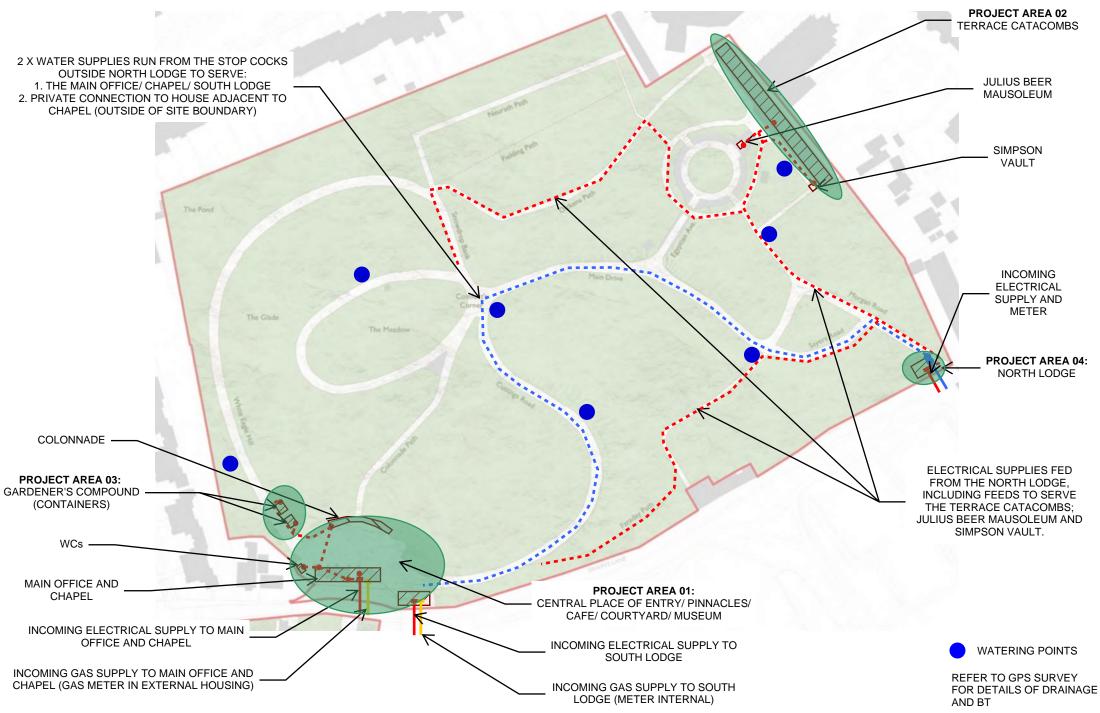


STRATHCONA, ENTRANCE KIOSK AND

GARDENER'S COMPOUND SERVED FROM

STRATHCONA ELECTRICAL INTAKE

#### HIGHGATE CEMETERY EXISTING SERVICES SKETCH - WEST CEMETERY



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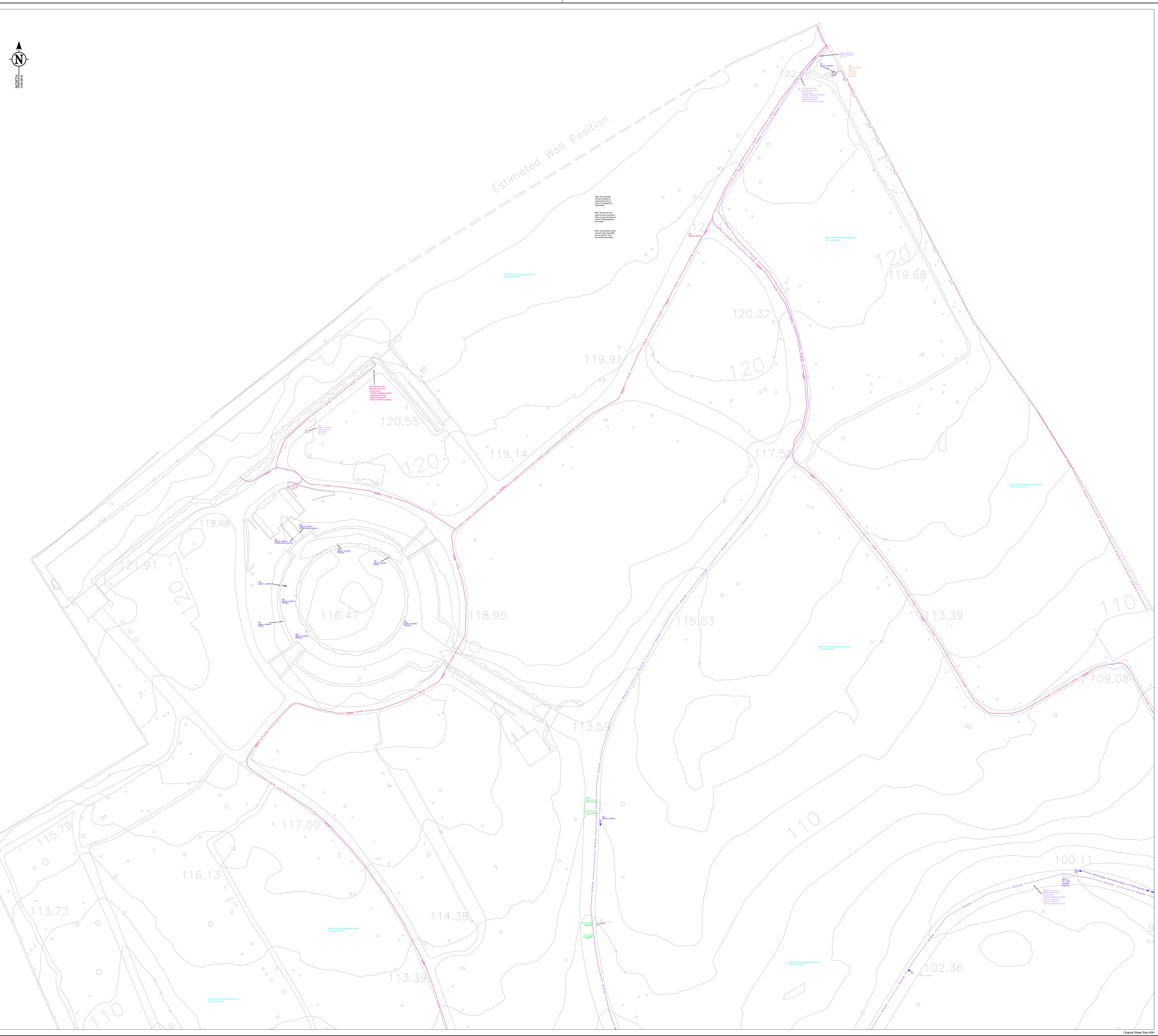
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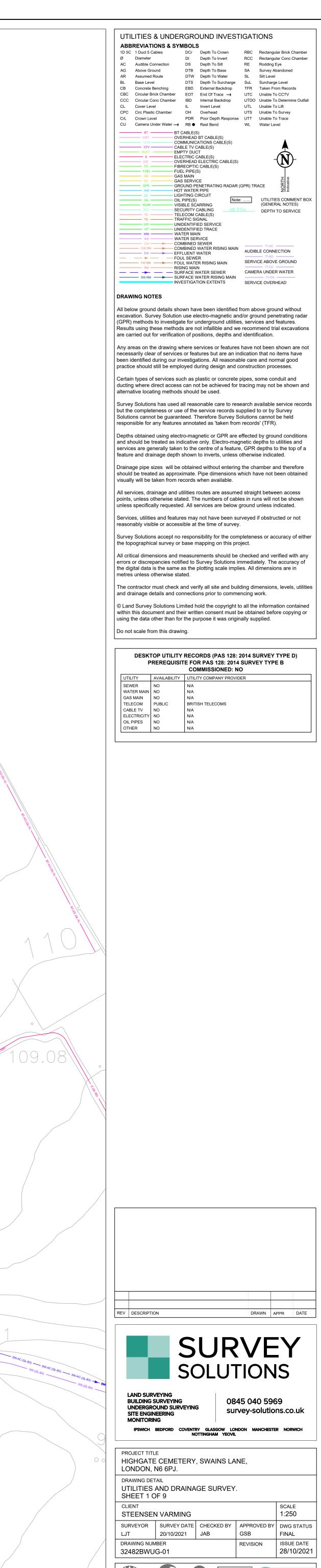
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# 5.0 Appendix B – GRP Surveys

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Q-LEVEL     DES       QL-D     Service       QL-C     Visual       QL-B3     Visual       QL-B3     Visual       DETECTIO     Index       IN ACCOR     DRAINAGE       All accessit     covers lifted       covers lifted     recorded fractor       CACV DRA     All accessit       COVERNAL     All accessit       Covers lifted     recorded fractor       for post prototopographic     indicative o       Electricity     Electronical       British Tele     British Tele       British Tele     British Tele       Compare al     service layou       we may onla     all the indiv       apparatus,     Cable TV &       Cable TV &     Cover by the       Fibre Optic     Fibre Optic       Fio cables v     due to the r       cabling or c     ducting. Wh       combined to     Text	CRIPTION Corpositions taken from re- devidence of service exists catable service presents (AR) ON METH DANCE WITH ESURVEY Die Manholess d with pipe sist om ground le conservice service service will have bee r sonde instru- uccessful the INAGE SURVEY Die Manholess d with pipe sist om ground le conservice service service will have bee ly derived de cater quality le all BT appara l our telecom- bil bale to ridual duct po- please conta Com cabless gy with electro o achieve gro- will have bee r sonde instru- service service service service will have bee atter quality le coms will have bee service sonde service service com cabless gy with electro o achieve gro- will have bee materials use conductible n- hen this is the o identify service service service service service service conductible n- hen this is the o identify service servi	cords.  terrice but chnology Down as an assumed  thysical technique but ation.  OD  TH PAS 124  as and Inspec tizes, inverts en proven v umentation en assumed  VEY s and Inspec sare in predomin goths shown levels as re tuus, cabling n findings ag instances, r identify a lin paths shown levels as re ations. For act Openreat  s will have b onically der eater quality en predomin fibre opf e case, both vice network	Acc. Undefined Undefined B: 201 Stimute S: 201 Ction of S, char ork ha ut, incl d (AR) ction of S, char ork ha ut, incl n from inantly I n. GPF quirect g can of g can of g can of g can of g can of g can of g can of g can of g can of g ca	Q-LEVEL QL-B2 QL-B1 QL-A QL-A A Stanber mber siz shamber straight chamber straight stra	DESCRIPTION Horcontal & vertical locati geophysical technique. Horcontal & vertical locati geophysical techniques (EY TYPE B s have had the es/types and DPs, Gullies, ible using aud ble. Where the line connection is have had the es/type and s raced, access anhole cover: chainage and d using EML me ques will be en our ent laws ocated remote information to nount of cable each signal rather hation regardin	on using multiple on verification by open for inspection chambers. In the inspection chambers service data , Drains, VP's dible connecti leese methods ons will be shown heir respective ervice data sed and collect s not located will be shown methodology wi employed to and legislatic ely. We there produce the f e ducts are pro- ner than identi ng Telecoms using EML echniques will ethodology. T re instances, ithin some or gy will be
Q-LEVEL       DES         QL-D       Service         QL-D       Service         QL-B3       Visual         QL-B3       Worker         DETECTION       In ACCOR         DRAINAGE       All accessitic         Covers lifteer       recorded fraction of the proved unsitic         CCTV DRA       All accessitic         Covers lifteer       recorded fraction of the proved unsitic         CCTV DRA       All accessitic         All accessitic       covers lifteer         recorded fraction of the proved unsitic       Fibre optic         British Tele       BT cables vertice layce         BT cables vertice layce       generatus,         CTV and/or       methodologe         employed to       Fibre Optic         For cables vertice layce       CTV and/or         methodologe       employed to         Fibre Optic       For cables vertice layce         CTV and/or       methodologe         employed to       Fibre Optic         Fibre Optic       For cables vertice         Gas & Wate       Gas & Wate	CRIPTION Consults taken from re- revelopes of service exists catable service presents a CARP CON METH DANCE WIT SURVEY Del Manholess d with pipe sist orn ground le- ples have bee r sonde instru- uccessful the CONS will have bee ly derived de- cater quality l coms will have bee ly be able to idual duct po- please conta concables gy with electrr o achieve gro- will have bee materials use conductible n- nen this is the o identify ser affic Signal & /or Sec cables gy with electrr o achieve gro- men this is the o identify ser affic Signal & /or Sec cables gy with electrr o achieve gro-	cords.  terrote but chnology.  DD CH PAS 124  as and Inspe cizes, inverts evel. All con en proven v umentation en assumed  VEY and Inspe cizes, inverts evel. Pipewa anage layou anay be taken en predomin epths shown levels as re n predomin epths shown levels as re and Inspe cizes, inverts evel. Pipewa anage layou anay be taken en predomin epths shown levels as re n predomin epths shown levels as re and Inspe cites, cabling n findings ag instances, li dentify a li dot openrea  atoms a will have b onically der eater quality an predomir ed within fib on fibe opti e case, bott vice networ a Security C es will have b onically der eater quality en predomir ed avithin fib on fiber opti e case, bott vice networ a Security C es will have b onically der eater quality en predomir extra quality extra q	Acc. Underled Underled Acc.	Q-LEVEL QL-B2 QL-B1 QL-A QL-A A Chambel mber siz ons from ver poss a application straight chamber siz s been t uding m CCTV of v located the techni l. Occated fit high an entre per ectly. ver domir lepths s s as reco located ic cablin ling will and GF achieve predomir lepths s s as reco	DESCRIPTION Horcontal & vertical locati geophysical technique. Horcontal & vertical locati geophysical techniques excavation, marboles and device and the es/types and device pDPs, Gullies, ible using audible. Where the line connection is have had the es/type and service the shave had the es/type a	everification by open for impection chambers. In everification by open for impection chambers. In prains, VP's dible connecting esservice data set and collect service data sed and collect service data sed and collect s not located will be shown imployed to and legislation ely. We there produce the display with molece the display of the ener than identifing Telecoms using EML echniques will ethodology. T re instances, ithin some or gy will be ity levels.
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Scarring (QL-C)

present.

Scarring has been identified on site with a potential of an undetectable service

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

risers/ics/valves/meters (service evidence) etc. around site area 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

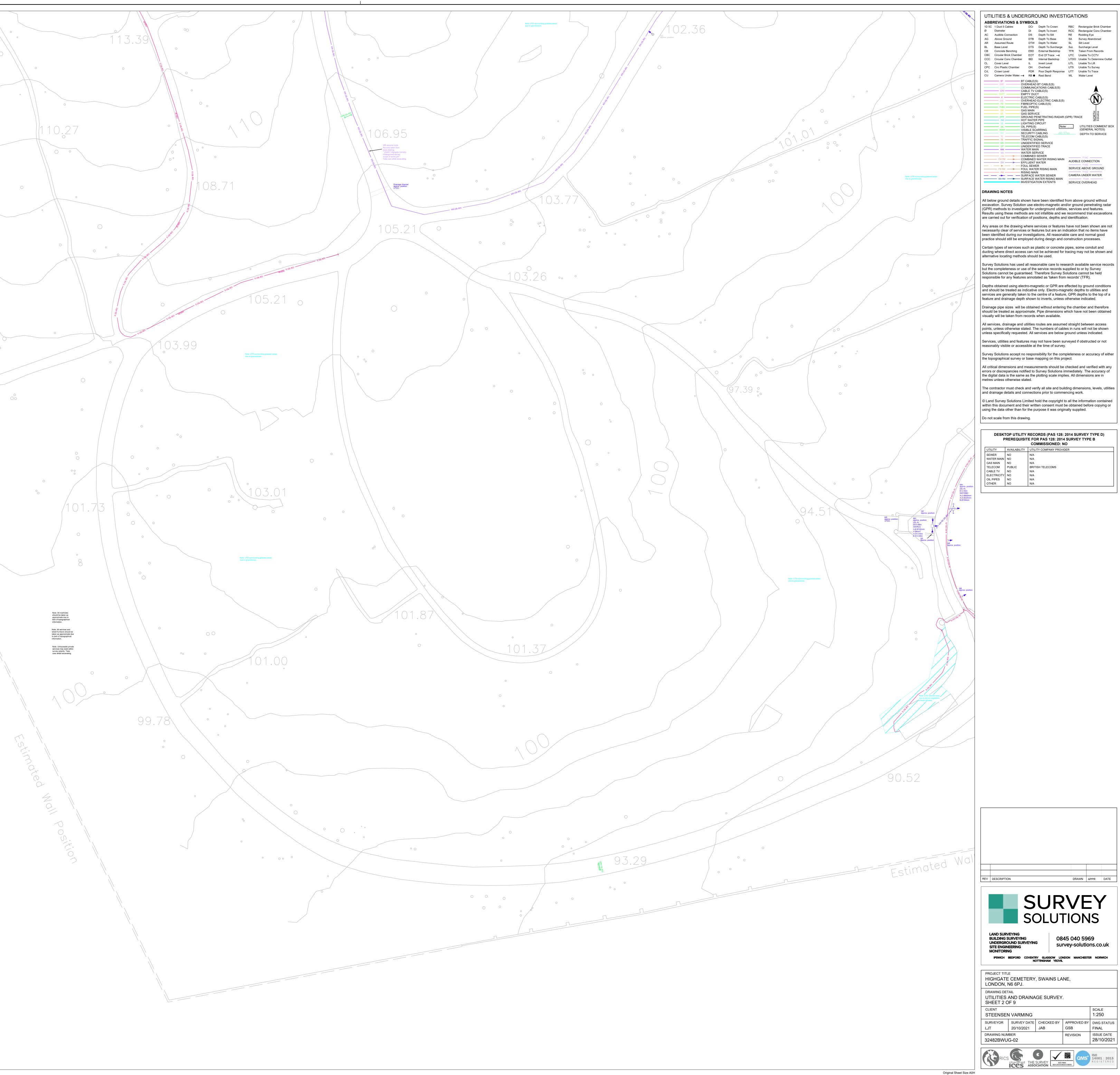
Taken from records (TFR) are service routes that are taken from STAT record plans or previous survey information and overlaid onto our drawings.

Assumed Routes & Taken from Records (QL-B4/D)

an assumed route shall be employed.

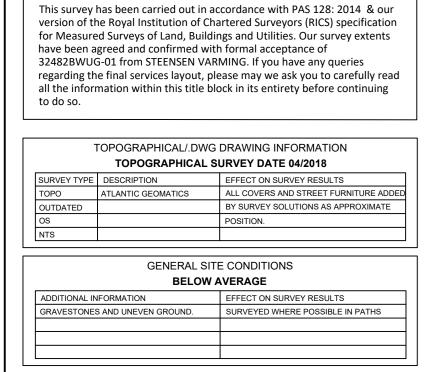
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 $-(\mathbf{N})$ Z 107.85 103.13



DESKTOP UTILITY RECORDS (PAS 128: 2014 SURVEY TYPE
PREREQUISITE FOR PAS 128: 2014 SURVEY TYPE B
COMMISSIONED: NO

UTILITYAVAILABILITYUTILITY CSEWERNON/AWATER MAINNON/AGAS MAINNON/ATELECOMPUBLICBRITISHCABLE TVNON/AELECTRICITYNON/AOIL PIPESNON/AOTHERNON/A			
WATER MAIN     NO     N/A       GAS MAIN     NO     N/A       TELECOM     PUBLIC     BRITISH       CABLE TV     NO     N/A       ELECTRICITY     NO     N/A       OIL PIPES     NO     N/A	UTILITY	AVAILABILITY	UTILITY C
GAS MAIN     NO     N/A       TELECOM     PUBLIC     BRITISH <sup>-1</sup> CABLE TV     NO     N/A       ELECTRICITY     NO     N/A       OIL PIPES     NO     N/A	SEWER	NO	N/A
TELECOM         PUBLIC         BRITISH           CABLE TV         NO         N/A           ELECTRICITY         NO         N/A           OIL PIPES         NO         N/A	WATER MAIN	NO	N/A
CABLE TV NO N/A ELECTRICITY NO N/A OIL PIPES NO N/A	GAS MAIN	NO	N/A
ELECTRICITY NO N/A OIL PIPES NO N/A	TELECOM	PUBLIC	BRITISH
OIL PIPES NO N/A	CABLE TV	NO	N/A
	ELECTRICITY	NO	N/A
OTHER NO N/A	OIL PIPES	NO	N/A
	OTHER	NO	N/A



# SURVEY RECOMMENDATIONS

LIST RECOMMENDATIONS TO IMPROVE SURVEY DATA Due to the geophysical nature of subsurface technology, we always recommend excavation works to be carried out for verification, especially within critical areas.

We would suggest an up to date, more detailed and comprehensive topographical survey.

PAS 1	DESCRIPTION	ACC.	Q-I EVEI	DESCRIPTION
QL-D	Service positions taken from records.	Undefined	QL-B2	Horizontal & vertical location using only one geophysical technique.
QL-C	Visual evidence of service existence but	Undefined	QL-B1	Horizontal & vertical location using multiple
QL-B4	undetectable by geophysical technology. Undetectable service present shown as an assumed route. (AR)	H: +/- 500mm V: N/A	QL-BT	geophysical techniques. Horizontal & vertical position verification by open
QL-B3	Horizontal location by one geophysical technique but with none or poor depth information.	v. 1975		excavation, manholes and/or inspection chambers.
IN ACC	CTION METHOD CORDANCE WITH PAS 120 AGE SURVEY	<u>8: 201</u>	4 SUR\	/EY TYPE B
All acc covers recorde and lar (AC) a	essible Manholes and Inspe lifted with pipe sizes, inverts ed from ground level. All con npholes have been proven v nd/or sonde instrumentation	s, chai inectic vherev where	mber siz ons from ver poss e applica	
All acc covers recorde for pos topogra	t processing. Drainage layo	s, chai ork ha ut, inc	mber siz s been t luding m	
electro		n. GPI	R techni	d using EML methodology with ques will be employed to
BT cab electro achieve protect compa service we ma all the	nically derived depths shown e greater quality levels as re ing all BT apparatus, cabling re all our telecom findings a layout. In some instances,	n. GPl quirec g can o gainst where near o r furth	R techni d. Due to only be record i high an entre pe er inforn	o current laws and legislation located remotely. We therefore information to produce the final nount of cable ducts are present, eak signal rather than identifying
CTV ar method	TV & Communications nd/or Com cables will have b dology with electronically der red to achieve greater qualit	rived o	lepths s	hown. GPR techniques will be
due to cabling ducting	oles will have been predomir the materials used within fib	re opt tic cab h EML	ic cablir bling will . and GF	
LC, TS method	g, Traffic Signal & Security C and/or Sec cables will have dology with electronically der yed to achieve greater qualit	been vived o	predom depths s	hown. GPR techniques will be

Gas & Water Inc. Fuel Pipes and Hot Water Pipes GM/GS and/or WM/WS pipe work will have been attempted and located using both EML & 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 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.

GPR methodology is used to identify and locate all non metallic, non conductible piping and cabling. We also employ GPR to obtain a greater accuracy levels on EML located services. The GPR has a greater success rate on pipe or service diameter upward of Ø63mm,C63mm, as size increments increase, so does the chance of detection. The GPR can produces varying results and as such, wouldn't be used as an independent utility surveying instrument.

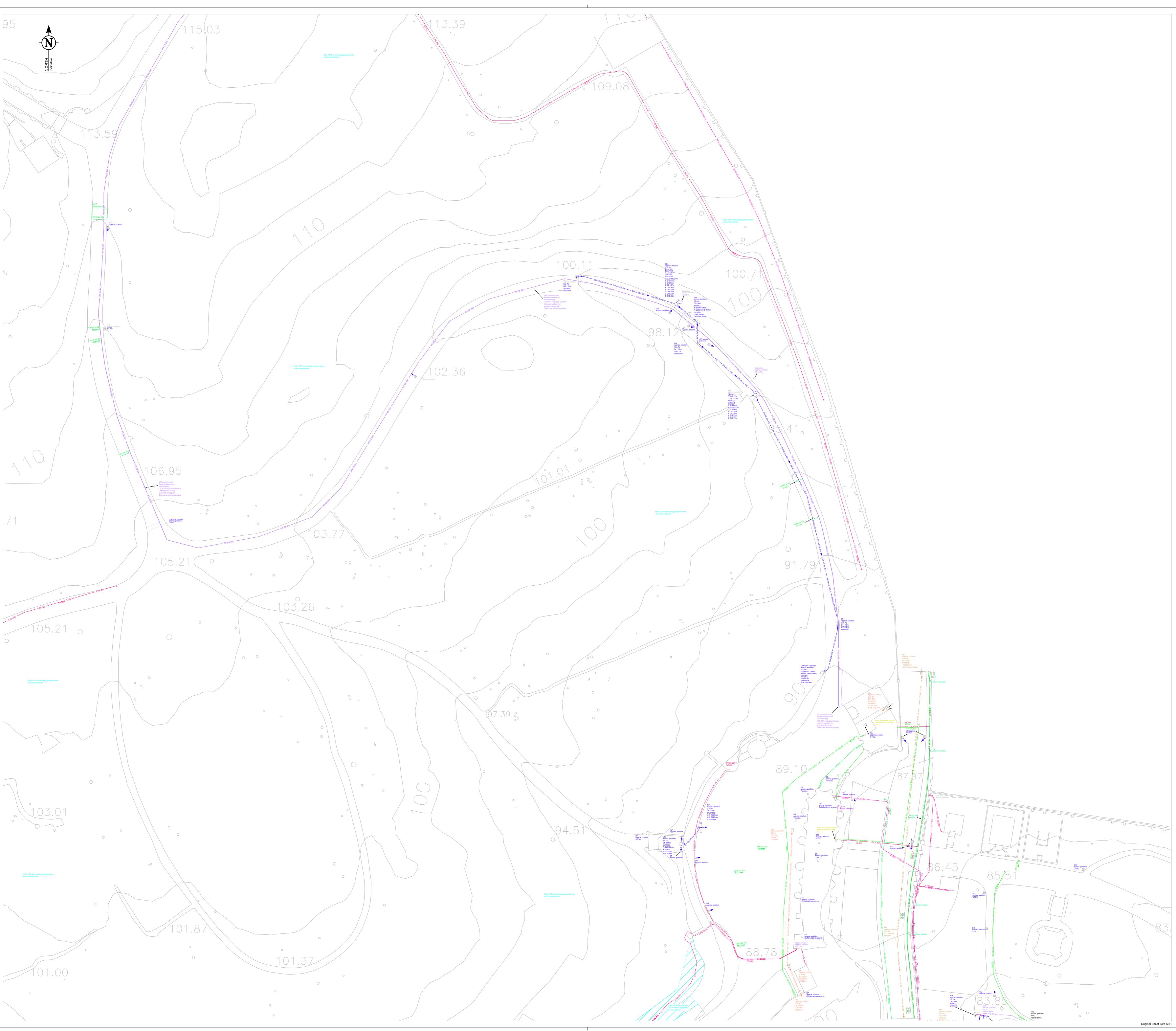
**Jnidentified Traces** 

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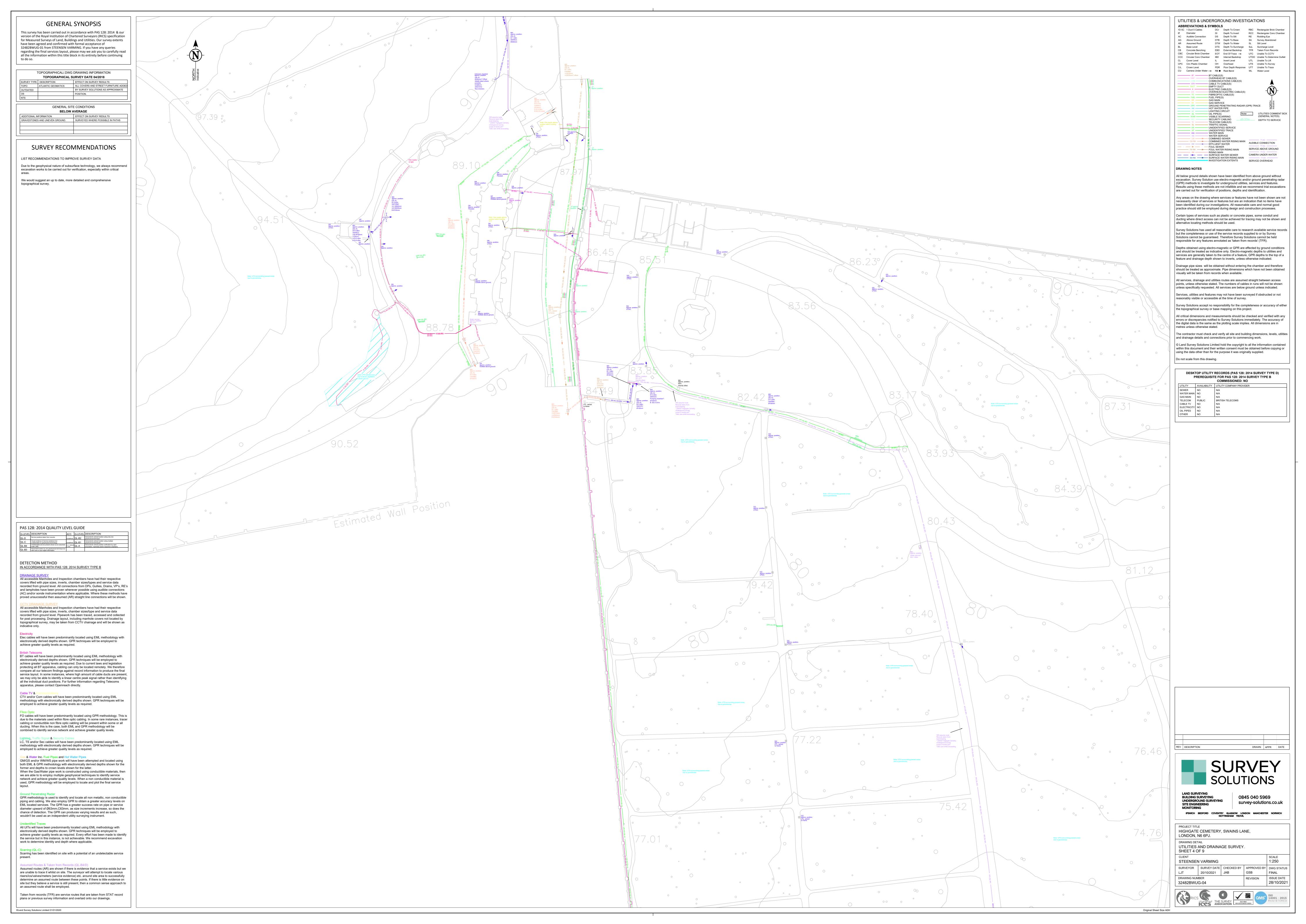
All UITs will have been predominantly located using EML methodology with electronically derived depths shown. GPR techniques will be employed to achieve greater quality levels as required. Every effort has been made to identify the service but in this instance, is not achievable. We recommend excavation work to determine identity and depth where applicable. Scarring (QL-C) Scarring has been identified on site with a potential of an undetectable service present.

Assumed Routes & Taken from Records (QL-B4/D) 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 risers/ics/valves/meters (service evidence) etc. around site area 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 plans or previous survey information and overlaid onto our drawings.



UTIL	REVIATIO 1 Duct 5 Cabl Diameter	es ection d	DCr DI DS	Depth To Crown Depth To Invert Depth To Silt	RBC RCC RE SA	Rectang	ular Brick Cham ular Conc Cham
1D 5C Ø		d		Depth To Slit			<b>F</b>
AC AG AR BL	Audible Conn Above Ground Assumed Rou Base Level		DTB DTW DTS	Depth To Base Depth To Water Depth To Surchar	SL	Silt Leve	Abandoned
CB CBC CCC	Concrete Ben Circular Brick Circular Conc	Chamber	EBD EOT IBD	External Backdrop End Of Trace — Internal Backdrop	p TFR I UTC D UTD	Taken F Unable 1 O Unable 1	rom Records To CCTV To Determine Ou
CL CPC CrL	Cover Level Circ Plastic C Crown Level		il Oh Pdr	Invert Level Overhead Poor Depth Resp		Unable 1 Unable 1	Γο Survey Γο Trace
CU	Camera Unde	BT OV	CABLE(S ERHEAD	Rest Bend ) BT CABLE(S) ATIONS CABLE(S	WL	Water Le	evel
	CTV DUCT E O/E	OV	PTY DUC ECTRIC C ERHEAD	T ABLE(S) ELECTRIC CABLI	E(S)		-(N)-
	F0	FUE GAS	EL PIPE(S S MAIN S SERVIC	E		BACE	NORTH
		HO	T WATER	RCUIT	Note:	UTILITI	임현 IES COMMENT RAL NOTES)
	TC TS	TEL	ECOM C	ABLING ABLE(S)	d0.37m	`	TO SERVICE
	WM ws	UN	TER MAII	ED TRACE N VICE			
	CW RM EW	EFF	MBINED \ FLUENT V JL SEWE	WATER RISING M VATER	AUL	IBLE CONN ??-AG VICE ABOV	NECTION
	RM	RIS SUI	ING MAIN RFACE W RFACE W			IERA UNDE ??-OH VICE OVER	RWATER
	ING NOTE						
excava (GPR)	ition. Surve methods to	y Solutior investiga	i use ele ite for u	e been identif ectro-magnetic nderground ut ot infallible and	c and/or g ilities, ser	round per vices and	netrating rac I features.
are car	ried out for	verificatio	on of po	sitions, depths	and iden	tification.	
been io	lentified du	ring our in	vestiga	ures but are a tions. All reaso uring design a	onable ca	re and no	ormal good
ducting		ect access	can no	lastic or concr t be achieved l be used			
Survey	Solutions I	nas used	all reaso	onable care to service record			
respon	sible for an	y features	annota	nerefore Surve ited as 'taken t	from reco	rds' (TFR	).
and sh service	ould be trea s are gene	ated as in rally taker	dicative n to the	netic or GPR a only. Electro- centre of a fea to inverts, unle	magnetic ature, GPI	depths to R depths	o utilities and to the top of
Draina should	ge pipe size be treated	es will be as approx	obtaine kimate.	d without ente Pipe dimensio	ering the c	hamber a	and therefor
visually All serv	/ will be tak /ices, drain	en from re age and u	ecords v Itilities r	when available outes are assu	e. umed stra	ight betw	een access
unless	specifically	requeste	d. All se	e numbers of o ervices are bel not have beer	ow groun	d unless i	indicated.
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GENERAL	SYNOPSIS
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	version of th for Measure have been a 32482BWUC regarding th	ne Royal Institution of Cha ed Surveys of Land, Buildir greed and confirmed with G-01 from STEENSEN VAR e final services layout, ple	cordance with PAS 128: 2014 & our intered Surveyors (RICS) specification ags and Utilities. Our survey extents in formal acceptance of MING. If you have any queries ease may we ask you to carefully read ock in its entirety before continuing					
	٦	TOPOGRAPHICAL/.DWG	DRAWING INFORMATION					
		TOPOGRAPHICAL SI	URVEY DATE 04/2018					
	SURVEY TYPE	DESCRIPTION	EFFECT ON SURVEY RESULTS					
	TOPO	ATLANTIC GEOMATICS	ALL COVERS AND STREET FURNITURE ADDED					
	OUTDATED		BY SURVEY SOLUTIONS AS APPROXIMATE					
	OS		POSITION.					
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ſ		GENERAL SITE	ECONDITIONS					
		BELOW A	VERAGE					
	ADDITIONAL IN	IFORMATION	EFFECT ON SURVEY RESULTS					

SURVEY RECOMMENDATIONS

LIST RECOMMENDATIONS TO IMPROVE SURVEY DATA Due to the geophysical nature of subsurface technology, we always recommend excavation works to be carried out for verification, especially within critical areas.

We would suggest an up to date, more detailed and comprehensive topographical survey.

GRAVESTONES AND UNEVEN GROUND. SURVEYED WHERE POSSIBLE IN PATHS

PAS 12	28: 2014 QUALITY LE	VEL	GUIDE	
Q-LEVEL	DESCRIPTION	ACC.	Q-LEVEL	DESCRIPTION
QL-D	Service positions taken from records.	Undefined	QL-B2	Horizontal & vertical location using only one geophysical technique.
QL-C	Visual evidence of service existence but undetectable by geophysical technology	Undefined	QL-B1	Horizontal & vertical location using multiple geophysical techniques

vn as an assumed H: #/= 500m		Horizontal & vertical position verification by open
V: N/A	QL-A	excavation, manholes and/or inspection chambers.
sical technique but on.		
	sical technique but	

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, VP's, RE's
and lampholes 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.
CCTV DRAINAGE SURVEY
All accessible Manholes and Inspection chambers have had their respective

C	covers lifted with pipe sizes, inverts, chamber sizes/type and service data
r	ecorded from ground level. Pipework has been traced, accessed and collected
f	or post processing. Drainage layout, including manhole covers not located by
t	opographical survey, may be taken from CCTV chainage and will be shown as
i	ndicative only.

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

Brush Telecoms BT 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. Due to current laws and legislation protecting all BT apparatus, cabling can only be located remotely. We therefore compare all our 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 linear centre peak signal rather than identifying all the individual duct positions. For further information regarding Telecoms apparatus, please contact Openreach directly.

Cable TV & Communications 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 conductible 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.

Lighting, Traffic Signal & Security Cables 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. Gas & Water Inc. Fuel Pipes and Hot Water Pipes GM/GS and/or WM/WS pipe work will have been attempted and located using both EML & 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 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. GPR methodology is used to identify and locate all non metallic, non conductible

piping and cabling. We also employ GPR to obtain a greater accuracy levels on EML located services. The GPR has a greater success rate on pipe or service diameter upward of Ø63mm,C63mm, as size increments increase, so does the chance of detection. The GPR can produces varying results and as such, wouldn't be used as an independent utility surveying instrument.

Inidentified Traces

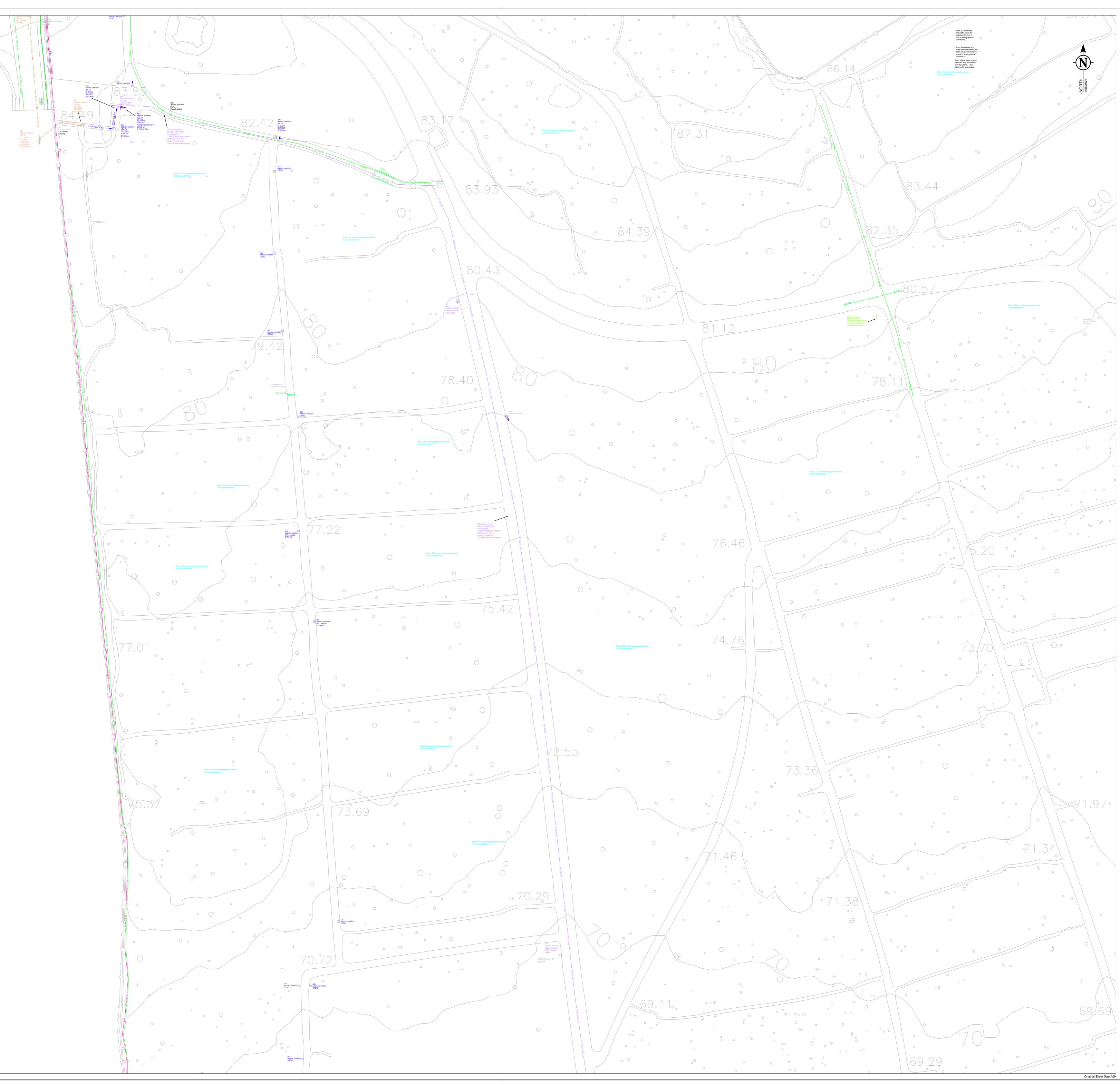
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present.

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

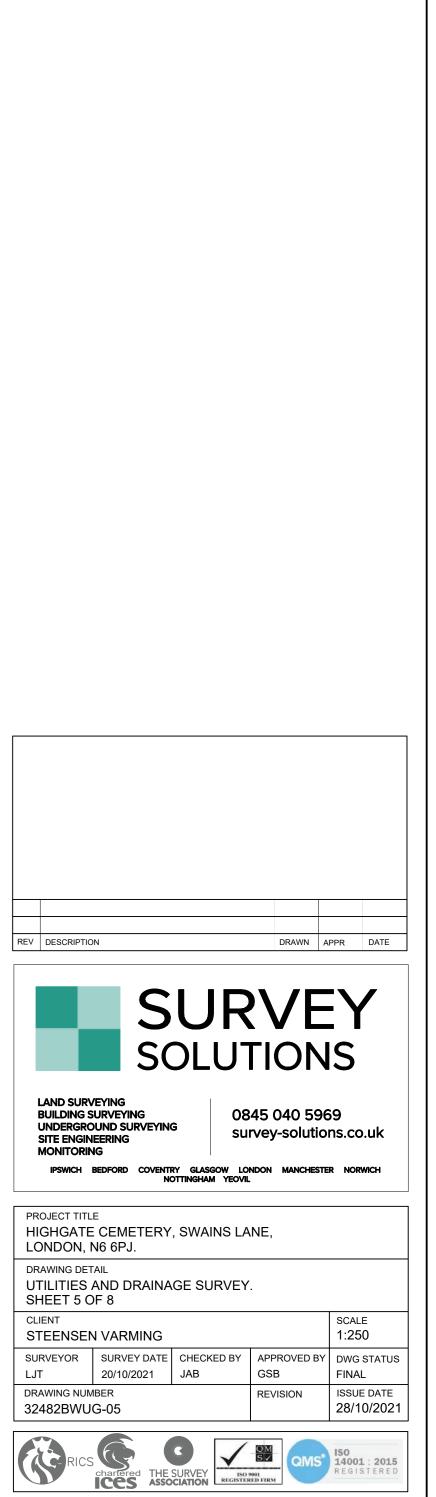
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plans or previous survey information and overlaid onto our drawings.

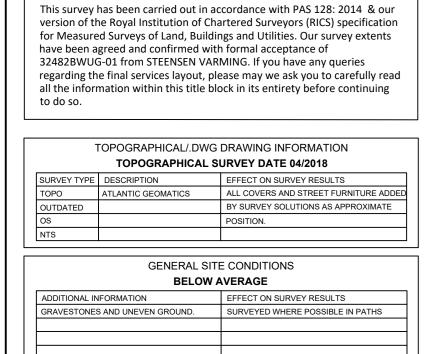


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should visuall All ser points,				ervices are belo	ow ground	d unless indicated.
should visuall	unless othe	erwise state	ed. Th	e numbers of c	ables in r	ight between access uns will not be shown
should				when available		
Draina	be treated	as approxi	mate.	Pipe dimensior	ns which I	hamber and therefore have not been obtaine
				to inverts, unle		
service	es are gener	ally taken	to the	centre of a fea	ture, GPF	depths to utilities and R depths to the top of
•		•				ed by ground condition
				herefore Surve ated as 'taken f		ns cannot be held rds' (TFR).
but the	completene	ess or use	of the	service record	s supplied	available service reco d to or by Survey
	tive locating					
ducting	g where dire	ct access	can no	t be achieved		some conduit and g may not be shown a
•				0 0		
been i	dentified dur	ring our inv	vestiga	tions. All reaso	nable ca	e and normal good
						not been shown are r on that no items have
				sitions, depths		
(GPR)	methods to	investigat	e for u	nderground util	lities, serv	vices and features.
	0					bove ground without ound penetrating rad
DRAW	ING NOTES	S				
		INVE	STIGAT	ION EXTENTS	SER'	VICE OVERHEAD
	SW RM	SUR → SUR	FACE W	/ATER SEWER /ATER RISING MA	IN —	ERA UNDER WATER
				R RISING MAIN		VICE ABOVE GROUND
	CW RM	COM	BINED	WATER RISING M. VATER	AUD	IBLE CONNECTION
	WM WS CW	WAT	ER MAI ER SEF	N		
_	UIS UIS UIT		ENTIFI	ED SERVICE ED TRACE		
	SEC TC	SEC		ABLINGd ABLE(S)	0.37m	DEPTH TO SERVICE
	OIL	OIL F	TING C PIPE(S) BLE SCA		Note:	UTILITIES COMMENT (GENERAL NOTES)
	GPR	GRO HOT	UND PE WATER	ENETRATING RAD	AR (GPR) T	NORTH Indicative
	GM GS	GAS	MAIN SERVIC	) E		TH ative
	O/E F0 FUEL	FIBR		ELECTRIC CABLE CABLE(S)	:(S)	$\Psi$
	DUCT	EMP ELEC	TY DUC	ABLE(S)		
	О/ВТ СОМ СТV			BT CABLE(S) ATIONS CABLE(S) ABLE(S)		
	Camera Unde	вт с	RB ● ABLE(S		WL	Water Level
	Circ Plastic Ch Crown Level		OH PDR	Overhead Poor Depth Respo		Unable To Trace
CPC CrL CU	Circular Conc Cover Level		IBD IL	Internal Backdrop Invert Level	UTL	D Unable To Determine Ou Unable To Lift
CL CPC CrL	Concrete Ben Circular Brick	Chamber	EBD EOT	External Backdrop End Of Trace -	UTC	Unable To CCTV
CBC CCC CL CPC CrL	Assumed Rou Base Level		DTW DTS	Depth To Water Depth To Surcharg	-	Silt Level Surcharge Level
BL CB CBC CCC CL CPC CrL	Audible Conne Above Ground	ł	DS DTB	Depth To Silt Depth To Base	RE SA	Rodding Eye Survey Abandoned
AG AR BL CB CBC CCC CL CPC CrL			DCr DI	Depth To Crown Depth To Invert	RBC RCC	Rectangular Brick Chamb Rectangular Conc Chamb
Ø AC AG BL CB CBC CCC CL CPC CrL	1 Duct 5 Cable Diameter		DCr		DDC	

UTILITY	AVAILABILITY	UTILITY COMPANY PF
SEWER	NO	N/A
WATER MAIN	NO	N/A
GAS MAIN	NO	N/A
TELECOM	PUBLIC	BRITISH TELECOMS
CABLE TV	NO	N/A
ELECTRICITY	NO	N/A
OIL PIPES	NO	N/A
OTHER	NO	N/A



CENEDAL	SYNOPSIS
GENERAL	STINUPSIS



## SURVEY RECOMMENDATIONS

LIST RECOMMENDATIONS TO IMPROVE SURVEY DATA Due to the geophysical nature of subsurface technology, we always recommend excavation works to be carried out for verification, especially within critical areas.

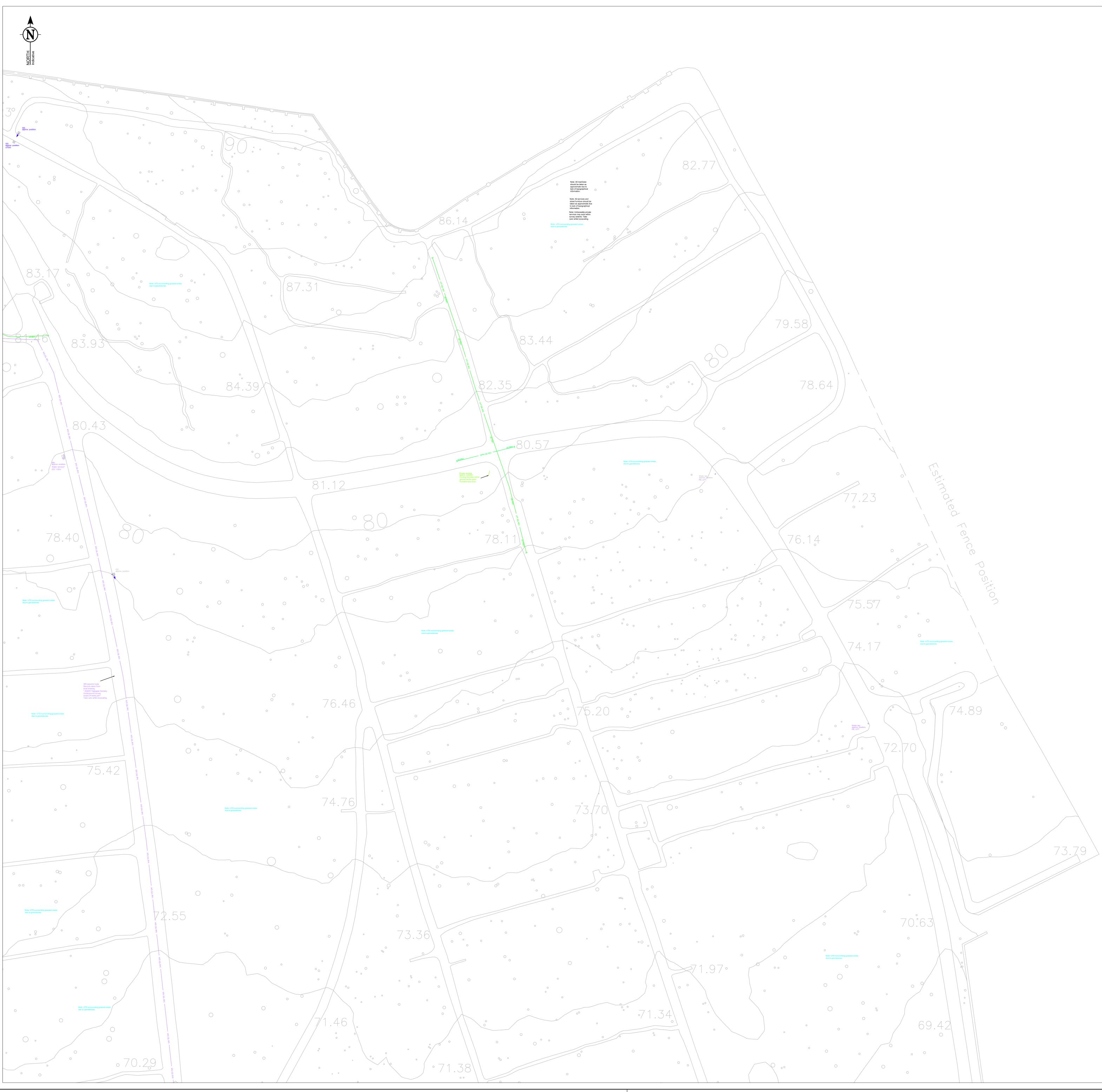
We would suggest an up to date, more detailed and comprehensive topographical survey.

					1	
Q-LEVEL QL-D	DESCRIPTION Service positions ta		ACC.	Q-LEVEL QL-B2	DESCRIPTION Horizontal & vertical location usi geophysical technique.	ing only one
QL-C	undetectable by geo	ervice existence but ophysical technology. e present shown as an as	Undefined sumed H: +/- 500mm	QL-B1	Horizontal & vertical location usi geophysical techniques. Horizontal & vertical position ver	
QL-B4 QL-B3	route. (AR)	y one geophysical technic	V: N/A	QL-A	excavation, manholes and/or ins	
	CTION M	IETHOD	3 128: 201	4 SUR	/EY TYPE B	
All acce covers recorde and lan (AC) an	lifted with p d from gro pholes ha d/or sonde	holes and In pipe sizes, inv und level. All ve been prov i instrumenta	verts, chai connectio en where tion where	mber siz ons from ver poss e applica	rs have had their tes/types and se DPs, Gullies, Dr ible using audibl able. Where thes the connections	rvice data rains, VP's, RE's le connections se methods have
All acce covers recorde for post	lifted with p d from gro processin phical surv	holes and In bipe sizes, inv und level. Pip g. Drainage I	verts, cha bework ha ayout, inc	mber siz Is been t luding m	rs have had their es/type and sen rraced, accessed nanhole covers n chainage and wi	vice data d and collected not located by
electror	bles will ha nically deriv	•	nown. GP	, R techni	d using EML met ques will be emp	0,
BT cabl electror achieve protecti compar service we may all the in	nically derives greater quing all BT a e all our te layout. In se only be all ndividual d	ved depths sh uality levels a pparatus, cal lecom finding some instanc ble to identify	nown. GP is required bling can gs against res, where a linear c . For furth	R techni d. Due to only be record i e high an centre pe er inforn	using EML meth- ques will be emp o current laws an located remotely information to pre- nount of cable du eak signal rather nation regarding	bloyed to Id legislation We therefore oduce the final ucts are present, than identifying
CTV an method	d/or Com o ology with		, derived o	depths s	nantly located us hown. GPR tech quired.	
due to t cabling ducting	les will hav he materia or conduct . When this	Is used within tible non fibre is the case,	n fibre opt optic cat both EML	ic cablir bling will and GF	using GPR meth g. In some rare be present withi PR methodology e greater quality	instances, tracer n some or all will be
LC, TS method	and/or Sec ology with		nave been v derived o	predom depths s	ninantly located u hown. GPR tech quired.	
GM/GS both EN former a When the we are network	and/or WM AL & GPR and depths he Gas/Wa able to to e and achie	methodology to crown lev iter pipe work employ multip ve greater qu	ork will ha with elect rels showr k is constr ole geophy uality leve	tronically for the ucted us vsical te ls. When	attempted and I derived depths	shown for the materials, then tify service ble material is
GPR m piping a EML loo diamete chance	and cabling cated servi er upward o of detectio	is used to id . We also em ces. The GPI of Ø63mm,C6 n. The GPR	nploy GPF R has a gr 63mm, as can produ	R to obta reater su size inc uces var	all non metallic, r in a greater accu uccess rate on pi rements increase ying results and ying instrument.	uracy levels on pe or service e, so does the
All UITs electror achieve the serv	nically deriv greater qu vice but in t	been predom /ed depths sł µality levels a	nown. GP is required is not acl	R techni J. Every nievable	ing EML method ques will be emp effort has been i . We recommend icable.	bloyed to made to identify

Scarring (QL-C) Scarring has been identified on site with a potential of an undetectable service present. ned Routes & Taken from Records (QL-B4/D) 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

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risers/ics/valves/meters (service evidence) etc. around site area 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 plans or previous survey information and overlaid onto our drawings.



Ø AC	1 Duct 5 Diameter Audible (	r	SYMBOL DCr DI DS	Depth To Crown Depth To Invert	RBC RCC RE	Rectangular Brick Chamber Rectangular Conc Chamber Rodding Eve
AG AR	Above G Assumed	d Route	DTB DTW		SA SL	Rodding Eye Survey Abandoned Silt Level
BL CB CBC	Circular I	e Benching Brick Chambe		Depth To Surcharge External Backdrop End Of Trace	TFR UTC	Surcharge Level Taken From Records Unable To CCTV
CCC CL CPC	Cover Le Circ Plas	stic Chamber	IL OH	Internal Backdrop Invert Level Overhead	UTDO UTL UTS	Unable To Lift Unable To Survey
CrL CU	BT	Under Water		Rest Bend	se UTT WL	Unable To Trace Water Level
	— 0/ВТ — СОМ — СТV — DUCT		OVERHEA	D BT CABLE(S) CATIONS CABLE(S) CABLE(S)		
			OVERHEA	CABLE(S) D ELECTRIC CABLE( IC CABLE(S)	5)	-( <b>N</b> )-
	GM GS GPR		GAS MAIN GAS SERV GROUND F	ICE PENETRATING RADA	R (GPR) TF	NACE ACC ACC ACC ACC ACC ACC ACC ACC ACC
			HOT WATE LIGHTING OIL PIPE(S VISIBLE S(	CIRCUIT ) N CARRING	ote:	UTILITIES COMMENT BO (GENERAL NOTES)
	TC TS UIS		TELECOM TRAFFIC S UNIDENTIF	CABLE(S) IGNAL IED SERVICE	<u>.37m</u>	DEPTH TO SERVICE
	UIT WM WS CW		UNIDENTIF WATER MA WATER SE COMBINED	FIED TRACE AIN RVICE D SEWER		- 22.45
	CW RN		COMBINED EFFLUENT FOUL SEW	WATER RISING MAI	AUDIE	2?-AC BLE CONNECTION ??-AG ICE ABOVE GROUND
	FW RM		RISING MA SURFACE SURFACE		CAME	RA UNDER WATER
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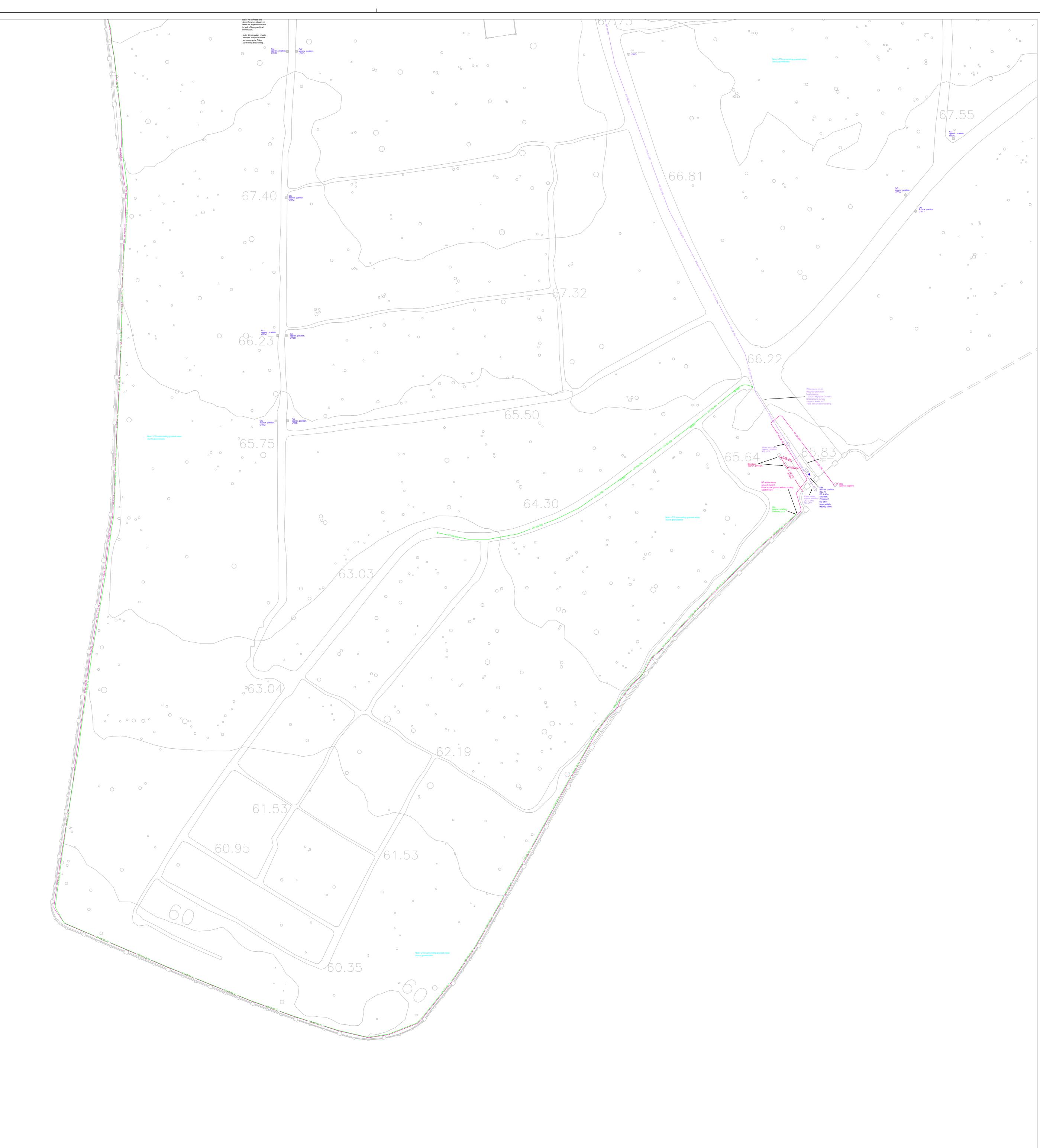
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Q-LEVEL DES         QL-D       Visual         QL-C       Visual         QL-B4       Visual         QL-B3       Visual         DETECTION       Indee         IN ACCORI       DRAINAGE         All accessitic       covers lifted         covers lifted       recorded fra         and lamphod       (AC) and/or         proved unsu       CCTV DRA         All accessitic       covers lifted         recorded fra       achieve gree         British Televe       Bectronical         achieve gree       BT cables v         electronical       achieve gree         Brobe CV &       CTV and/or         methodology       employed to         Fibre Optic       For cables v         GM/GS and       both EML &         former and       service layo         we may onl       all the indivial         achieve gree       Coble TV &         CTV and/or       methodology         employed to       Coble SV         GM/GS and       both EML &         former and       Vine the G         we are able       network and         used, GPR       layout.	ACRIPTION	ACC. Undefined Undefined AS 128: 201 AS 128: 201 Inspection inverts, cha All connectue tation where tation antly shown. GP as required dominantly shown. GP as required dominantly hopenreach di have been p illy derived of quality leve and Hot Wa work will have gy with elece evels shown ork is constri- tiple geoph quality leve be employed identify and provide the shown ork is constri- tiple geoph quality leve be employed and Hot Wa and	Q-LEVEL QL-B2 QL-B1 QL-B1 QL-B1 QL-B1 QL-A QL-B1 QL-A QL-A QL-B1 QL-A QL-A QL-A QL-A QL-A QL-A QL-A QL-A	DESCRIPTION Motorotal & vertical location using only one geophysical techniques. Horizontal & vertical location using multiple geophysical techniques. //EY TYPE B rs have had their respective tes/types and service data 1 DPs, Gullies, Drains, VP's, RE sible using audible connections able. Where these methods have t line connections will be shown rs have had their respective tes/type and service data traced, accessed and collected anhole covers not located by chainage and will be shown as d using EML methodology with ques will be employed to be current laws and legislation located remotely. We therefore information to produce the final nount of cable ducts are preser- eak signal rather than identifying nation regarding Telecoms hown. GPR techniques will be aured. PR methodology will be agreater quality levels. thinantly located using EML hown. GPR techniques will be agreater quality levels. thinantly located using EML hown. GPR techniques will be agreater quality levels. thinantly located using EML hown. GPR techniques will be agreater quality levels. thinantly located using EML hown. GPR techniques will be agreater quality levels. thinantly located using EML hown. GPR techniques will be agreater quality levels. thinantly located using EML hown. GPR techniques will be agreater accuracy levels on the latter. Sing conductible materials, then chniques to identify service the anon conductible materials, then chniques to identify service the anon conductible materials is ate and plot the final service all non metallic, non conductible in a greater accuracy levels on the anon conductible material is the and plot the final service the anon conductible material is the anon conductible material i	re i. tt, g is er
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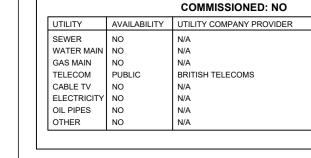




1D 5C	REVIATIONS & S 1 Duct 5 Cables	DCr	Depth To Crown	RBC	Rectangular Brick Chambe
Ø	Diameter	DI	Depth To Invert	RCC	Rectangular Conc Chambe
AC	Audible Connection	DS	Depth To Silt	RE	Rodding Eye
AG AR	Above Ground Assumed Route	DTB DTW	Depth To Base	SA SL	Survey Abandoned Silt Level
AR BL	Base Level	DTW	Depth To Water Depth To Surcharge	SL SuL	Silt Level Surcharge Level
СВ	Concrete Benching	EBD	External Backdrop	TFR	Taken From Records
СВС	Circular Brick Chamber	EOT	End Of Trace -	UTC	Unable To CCTV
CCC	Circular Conc Chamber	IBD	Internal Backdrop	UTDO	Unable To Determine Outfa
CL	Cover Level	IL	Invert Level	UTL	Unable To Lift
CPC CrL	Circ Plastic Chamber Crown Level	OH PDR	Overhead Poor Depth Response	UTS UTT	Unable To Survey Unable To Trace
CU	Camera Under Water -			WL	Water Level
	BT F	BT CABLE(S	3)		
	— O/BT — (	OVERHEAD	BT CABLE(S)		
		COMMUNIC	ATIONS CABLE(S)		
	DUCT E	EMPTY DUC	ст		Ť
		ELECTRIC ( DVERHEAD	ELECTRIC CABLE(S)		-( N )-
	— FO — F	IBREOPTIC	C CABLE(S)		$\mathbf{\Psi}$
		FUEL PIPE( GAS MAIN	S)		
	GS (	GAS SERVI			ndicative BOV
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	LCL	IGHTING C			
		DIL PIPE(S)		:	UTILITIES COMMENT B (GENERAL NOTES)
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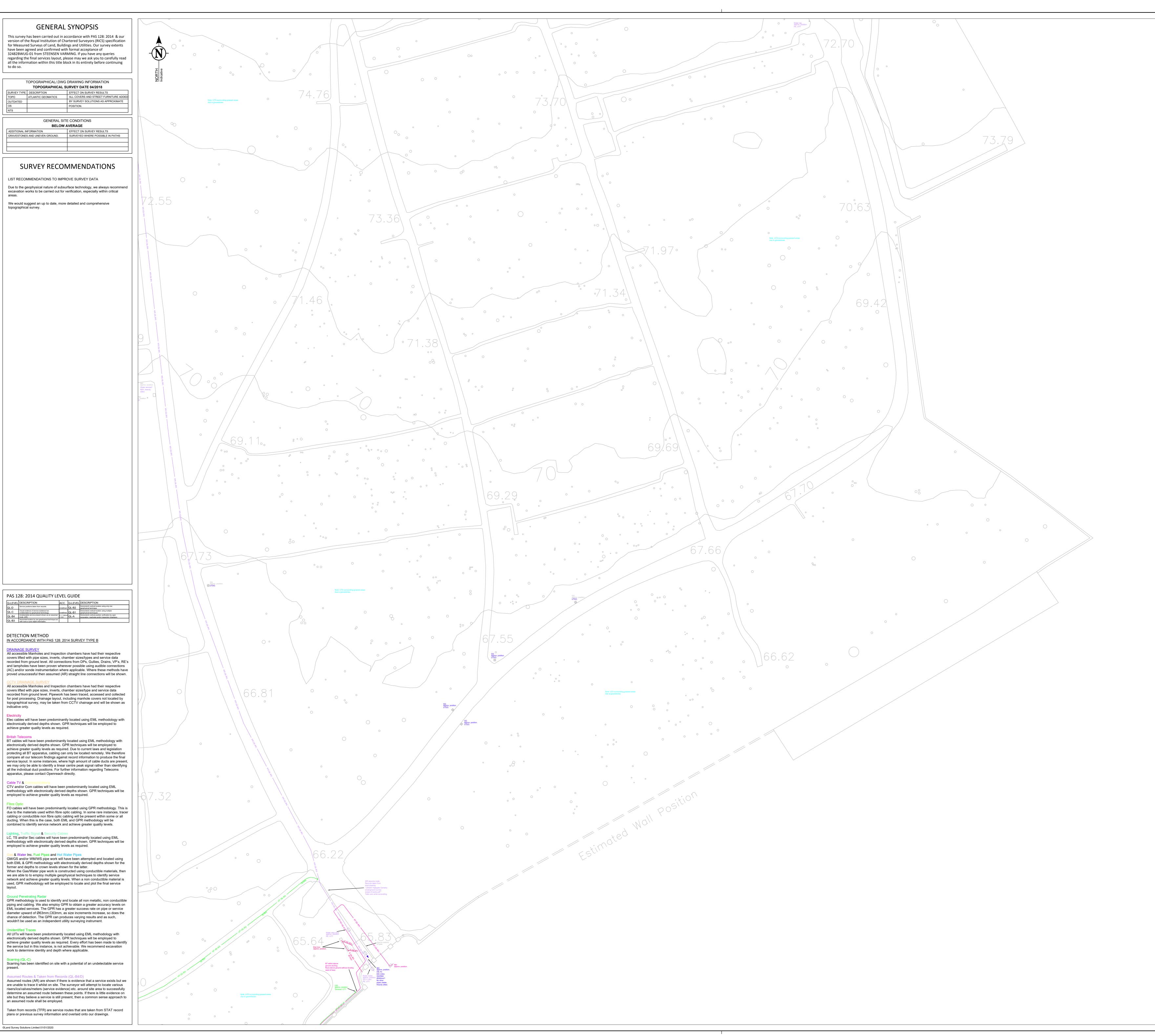
within this document and their written consent must be obtained befor using the data other than for the purpose it was originally supplied. Do not scale from this drawing.

DESKTOP UTILITY RECORDS (PAS 128: 2014 SURVEY TYPE D) PREREQUISITE FOR PAS 128: 2014 SURVEY TYPE B COMMISSIONED: NO



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Original Sheet Size A0H



AC	1 Duct 5 Diameter		DCr DI	S Depth To Crown Depth To Invert	RBC RCC	Rectangular Brick Chamber Rectangular Conc Chamber
AG AR	Audible ( Above G Assumed		DS DTB DTW	Depth To Silt Depth To Base Depth To Water	RE SA SL	Rodding Eye Survey Abandoned Silt Level
BL CB	Base Lev Concrete	vel e Benching	DTS EBD	Depth To Surcharge External Backdrop	SuL TFR	Surcharge Level Taken From Records
CBC CCC CL	Circular ( Cover Le		er IBD IL	End Of Trace – Internal Backdrop Invert Level	UTC UTDO UTL	Unable To Lift
CPC CrL CU	Circ Plas Crown Le	tic Chamber	OH PDR	Overhead Poor Depth Response	UTS	Unable To Survey Unable To Trace Water Level
	<b>BT</b> O/BT		BT CABLE(	S) ) BT CABLE(S)	vVL	vvalet LOVO
	СОМ СОМ СТV DUCT		COMMUNIC CABLE TV ( EMPTY DU	CATIONS CABLE(S)		<b>A</b>
	0/E F0		OVERHEAD FIBREOPTI	CABLE(S) DELECTRIC CABLE(S) C CABLE(S)	1	-( <b>N</b> )-
	GR		FUEL PIPE( GAS MAIN GAS SERVI	CE	(CPP) -	ACE ORTH dicative
_	GPR HW LC		GROUND P HOT WATE LIGHTING ( OIL PIPE(S)		(GPR) TR	
_	SCAR		VISIBLE SC SECURITY TELECOM	ARRING CABLING	87m	(GENERAL NOTES) DEPTH TO SERVICE
	UIS UIS		TRAFFIC S UNIDENTIF UNIDENTIF	IGNAL IED SERVICE IED TRACE		
			WATER SE COMBINED	RVICE		
	EW -		EFFLUENT FOUL SEW FOUL WAT	WATER ER ER RISING MAIN	SERVI	CE ABOVE GROUND
	SW RM		RISING MA SURFACE		CAME	CE OVERHEAD
All belo excava (GPR) Results are car	ation. Su method s using t rried out	nd details irvey Solu is to invest these meth t for verific	tion use e tigate for u hods are r ation of po	lectro-magnetic ar underground utilitie not infallible and w ositions, depths ar	nd/or gro es, servio e recom nd identif	mend trial excavations fication.
necess been io	sarily cle dentified	ear of servi I during ou	ices or fea Ir investig	atures but are an ir ations. All reasona	ndication ble care	ot been shown are no n that no items have and normal good
				luring design and opplastic or concrete		
ducting	g where	direct acc	ess can n			may not be shown and
				sonable care to res e service records s		vailable service record
Solutio	ons cann	not be gua	ranteed. 7	e service records s Therefore Survey S ated as 'taken fror	Solutions	s cannot be held
Depths	s obtaine	ed using e	lectro-ma	gnetic or GPR are	effected	l by ground conditions epths to utilities and
service	es are ge	enerally ta	ken to the		e, GPR	depths to the top of a
						amber and therefore ave not been obtained
visually	y will be	taken fror	m records	when available.		
points,	unless	otherwise	stated. Th	ne numbers of cab	les in ru	ht between access ns will not be shown unless indicated
	•			ervices are below y not have been su	0	unless indicated. if obstructed or not
reason	ably vis	ible or acc	essible at	the time of survey	<i>.</i>	
	·	•	•	nsibility for the con mapping on this pr	•	ess or accuracy of eithe
errors	or discre	epancies r	notified to	Survey Solutions i	mmedia	d and verified with any tely. The accuracy of
		is the sar otherwise		plotting scale impl	ies. All c	dimensions are in
				rify all site and bui ons prior to comm		nensions, levels, utilitio vork.
© Land	d Survey	y Solutions	s Limited I	nold the copyright	to all the	e information contained ned before copying or
using t	the data	other thar	n for the p	ten consent must urpose it was origi		
Do not	t scale fr	om this dr	awing.			
				ORDS (PAS 128:		URVEY TYPE D)
	P	REREQU	ISITE FC	R PAS 128: 2014		
. —				MMISSIONED: N	10	EY TYPE B
UTIL	/ER	AVAILABIL NO	ITY UTIL		10	EY TYPE B
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SEW WAT GAS TELE CABI ELEC	/ER TER MAIN ECOM LE TV CTRICITY PIPES	NO NO PUBLIC NO NO	ITY UTIL N/A N/A BRIT N/A N/A	OMMISSIONED: N	10	
SEW WAT GAS TELE CABI ELEC OIL F	/ER TER MAIN ECOM LE TV CTRICITY PIPES	NO NO PUBLIC NO NO	ITY UTIL N/A N/A N/A BRIT N/A N/A N/A	OMMISSIONED: N	10	
SEW WAT GAS TELE CABI ELEC OIL F	/ER TER MAIN ECOM LE TV CTRICITY PIPES	NO NO PUBLIC NO NO	ITY UTIL N/A N/A N/A BRIT N/A N/A N/A	OMMISSIONED: N	10	
SEW WAT GAS TELE CABI ELEC OIL F OTH	/ER TER MAIN ECOM LE TV CTRICITY PIPES	NO NO PUBLIC NO NO NO	ITY UTIL N/A N/A N/A BRIT N/A N/A N/A	OMMISSIONED: N		EY TYPE B

LAND SUR	VEYING	
BUILDING	SURVEYIN	١G
UNDERGR	OUND SU	RVEYI
SITE ENGI	NEERING	
MONITOR	ING	
IPSWICH	BEDFORD	COVEN

0845 040 5969

> survey-solutions.co.uk YENTRY GLASGOW LONDON MANCHESTER NORWICH NOTTINGHAM YEOVIL

> > SCALE

1:250

FINAL

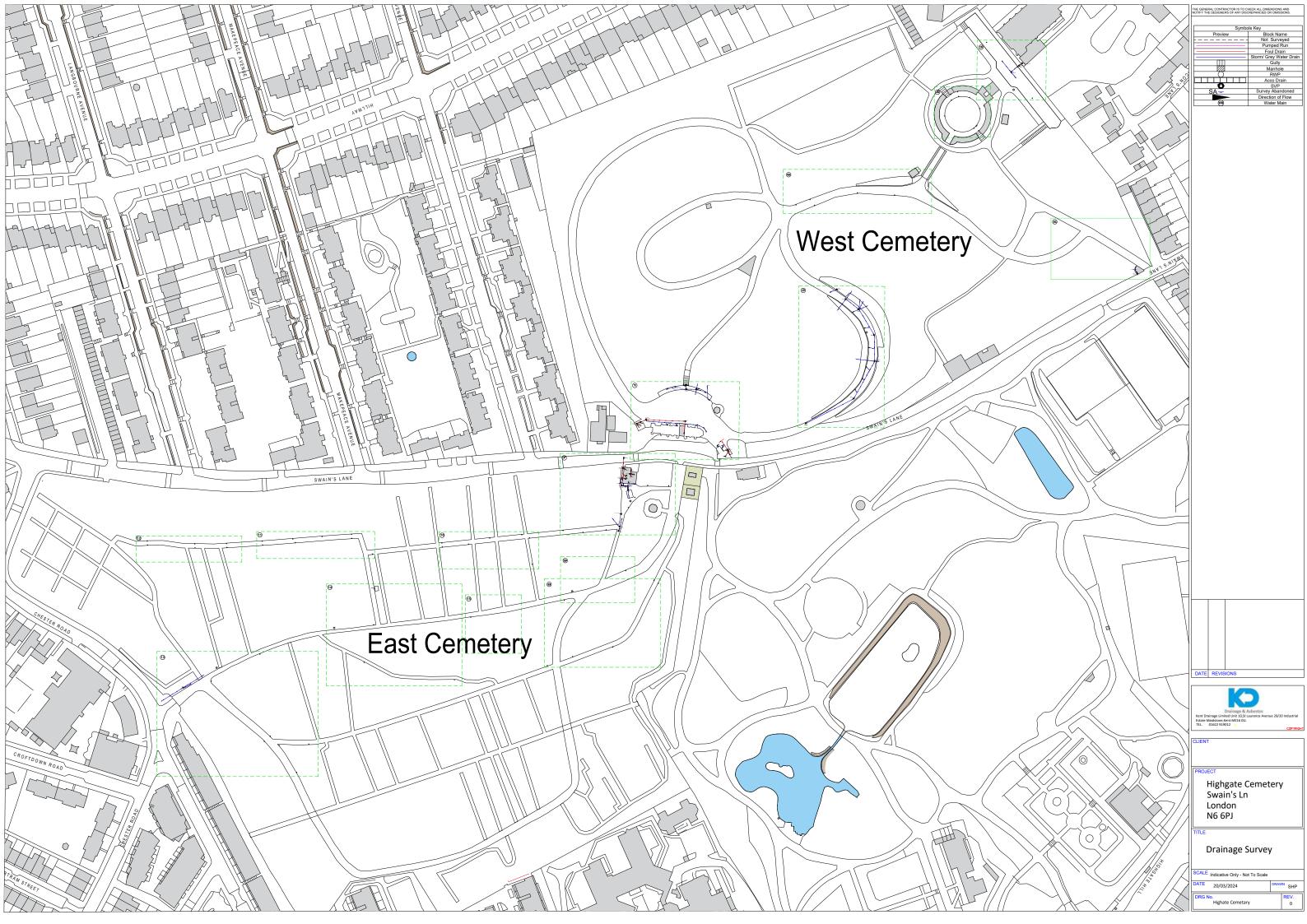
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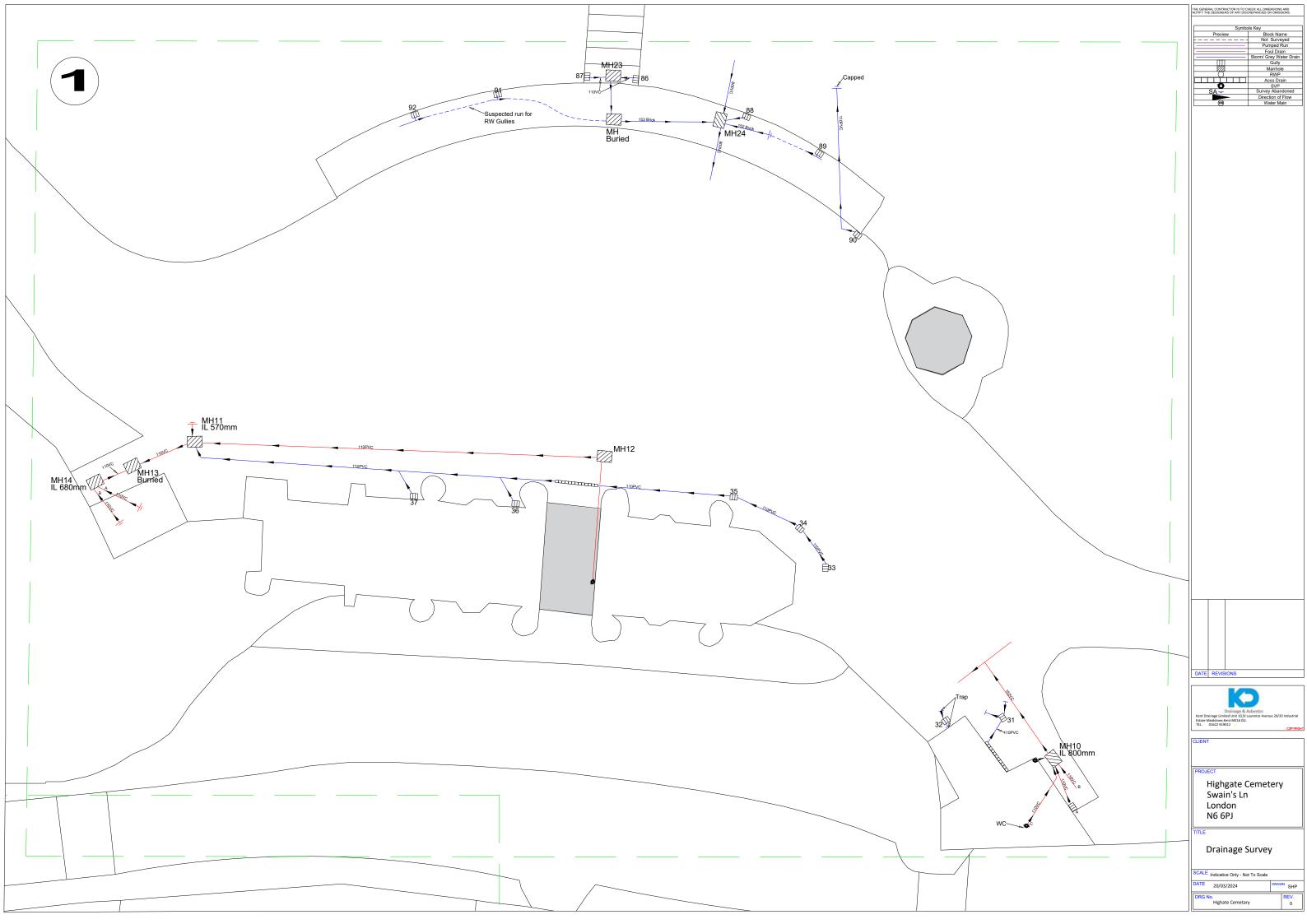
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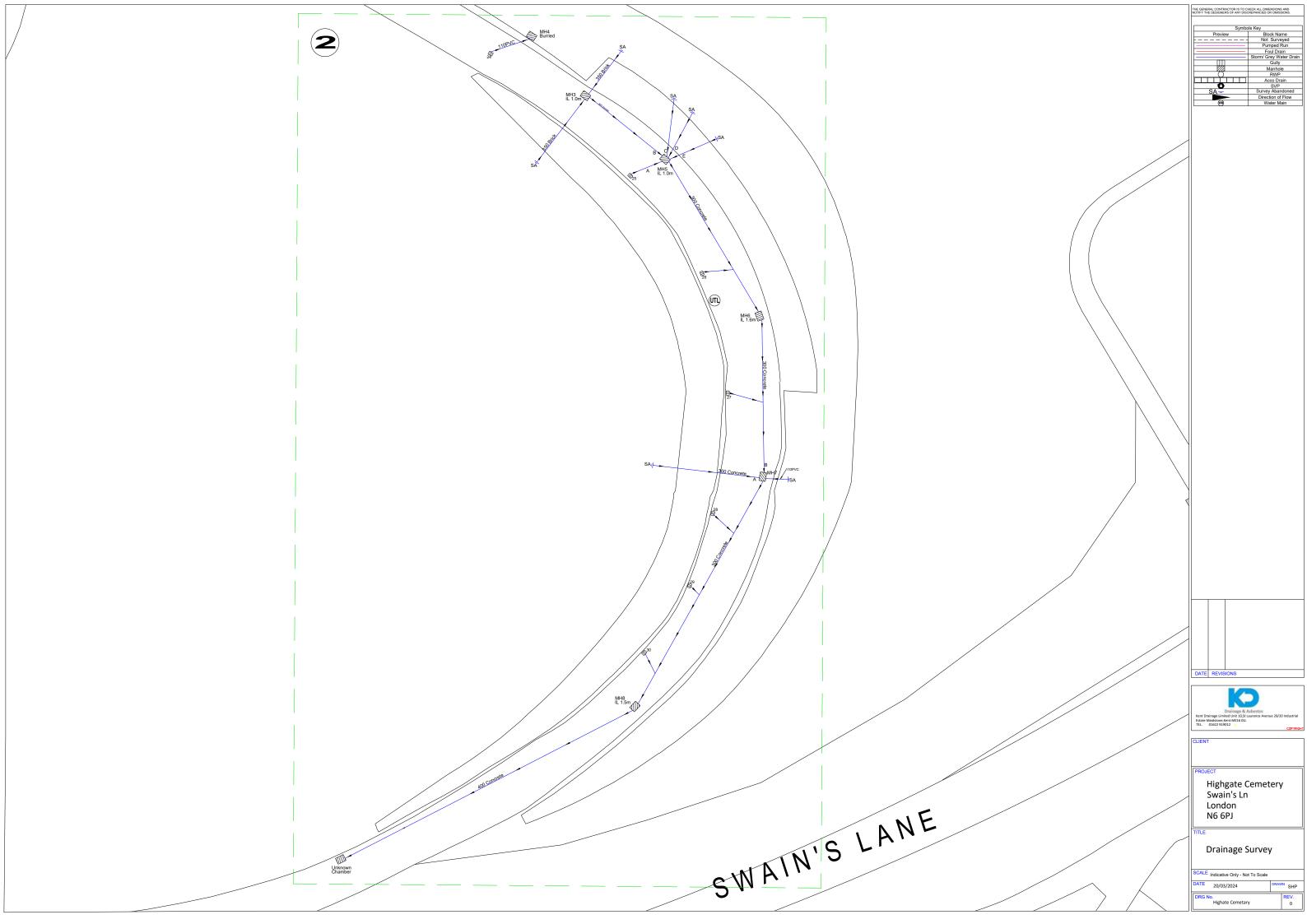
UTILITIES AND DRAINAGE SURVEY. SHEET 8 OF 8 CLIENT STEENSEN VARMING SURVEYOR SURVEY DATE CHECKED BY APPROVED BY DWG STATUS LJT 20/10/2021 JAB GSB REVISION ISSUE DATE DRAWING NUMBER 32482BWUG-08

DRAWING DETAIL

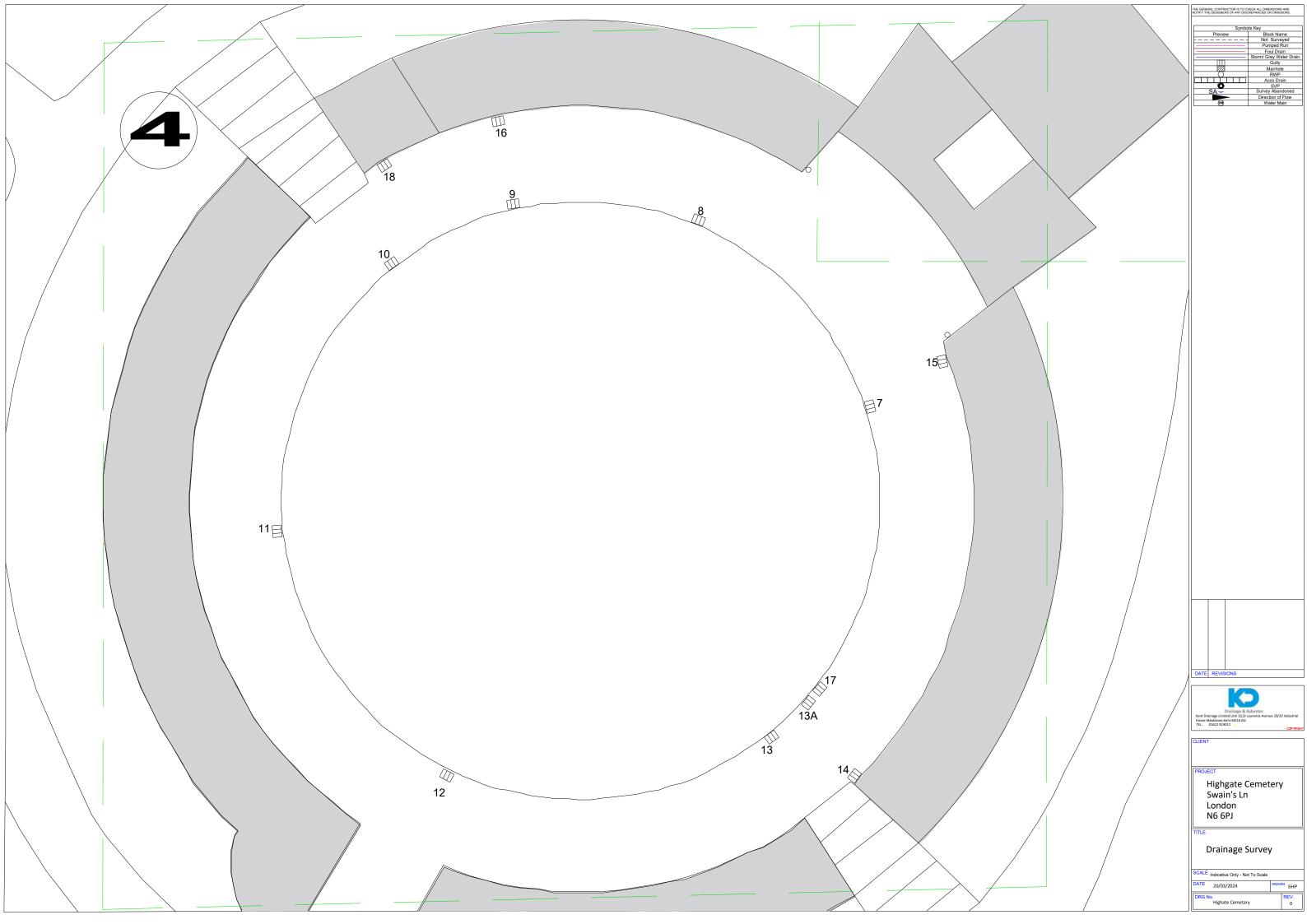
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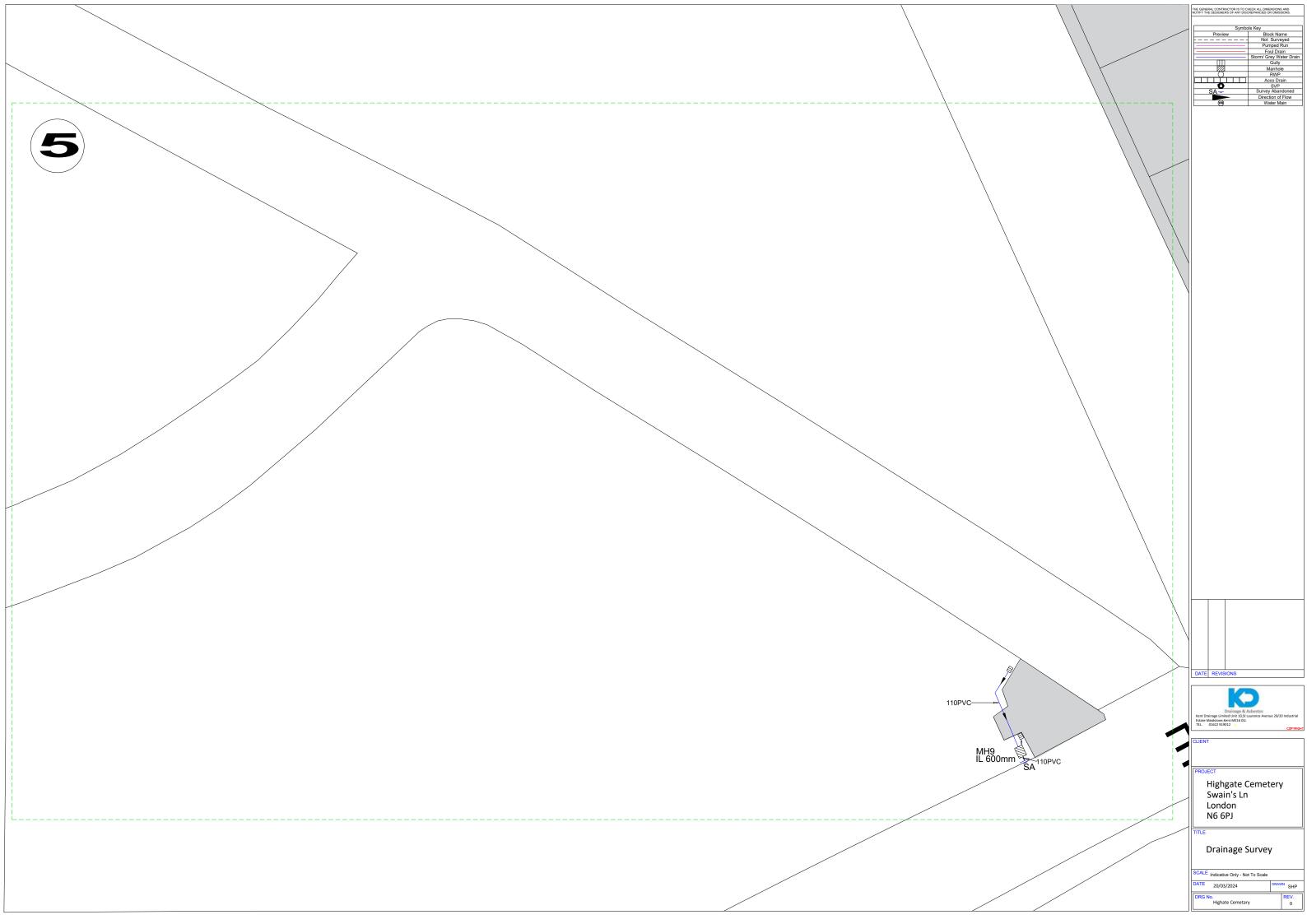


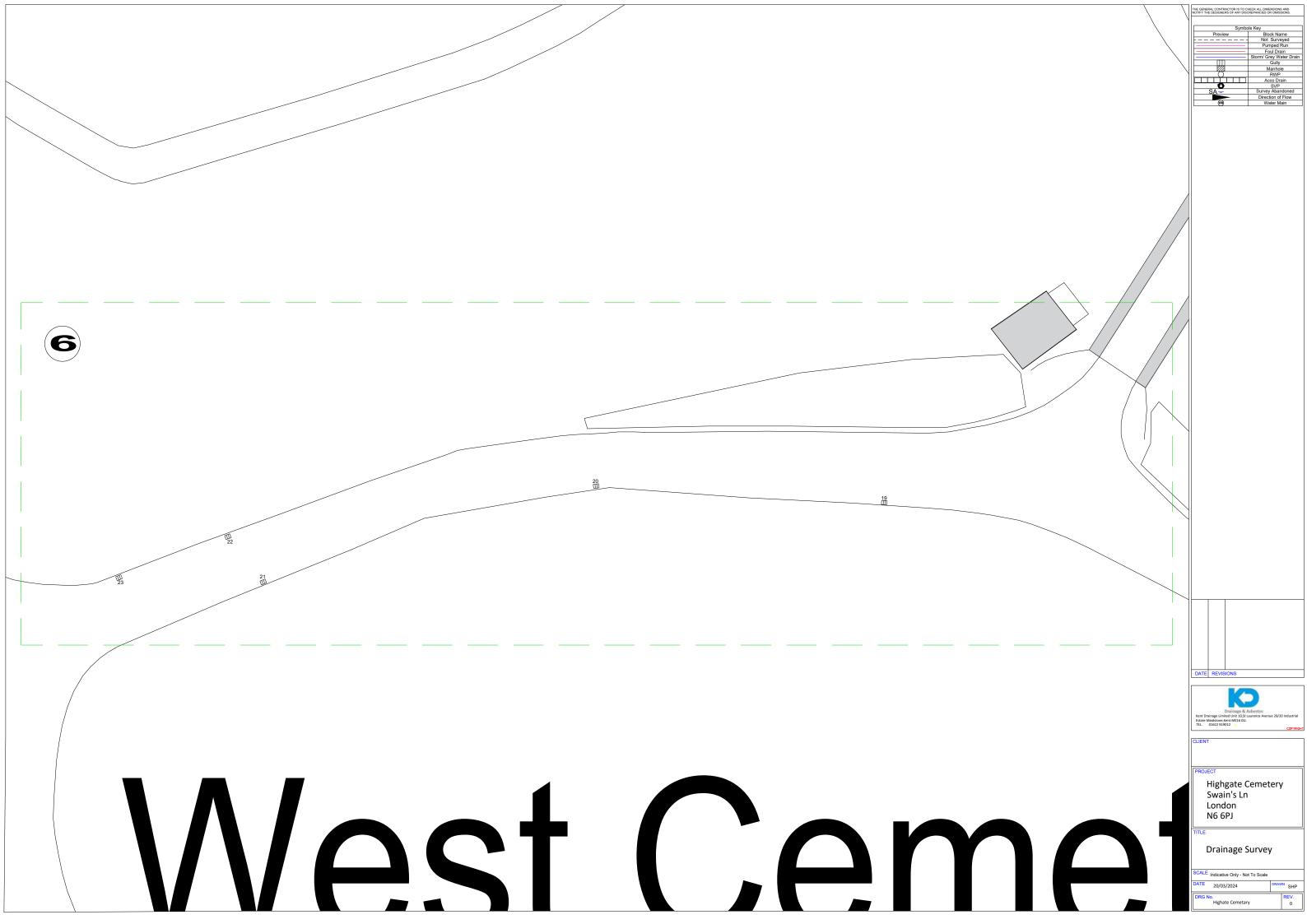


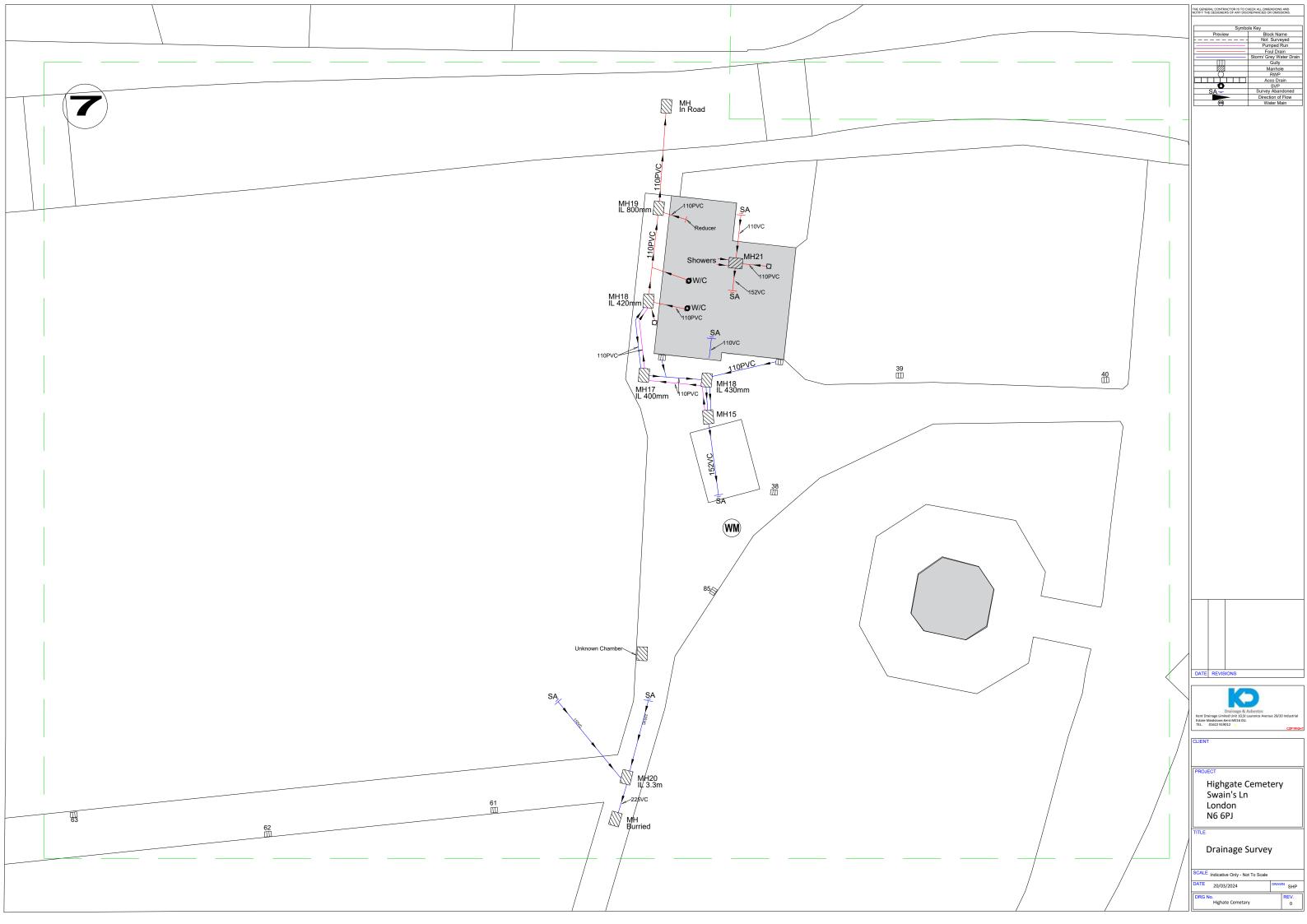


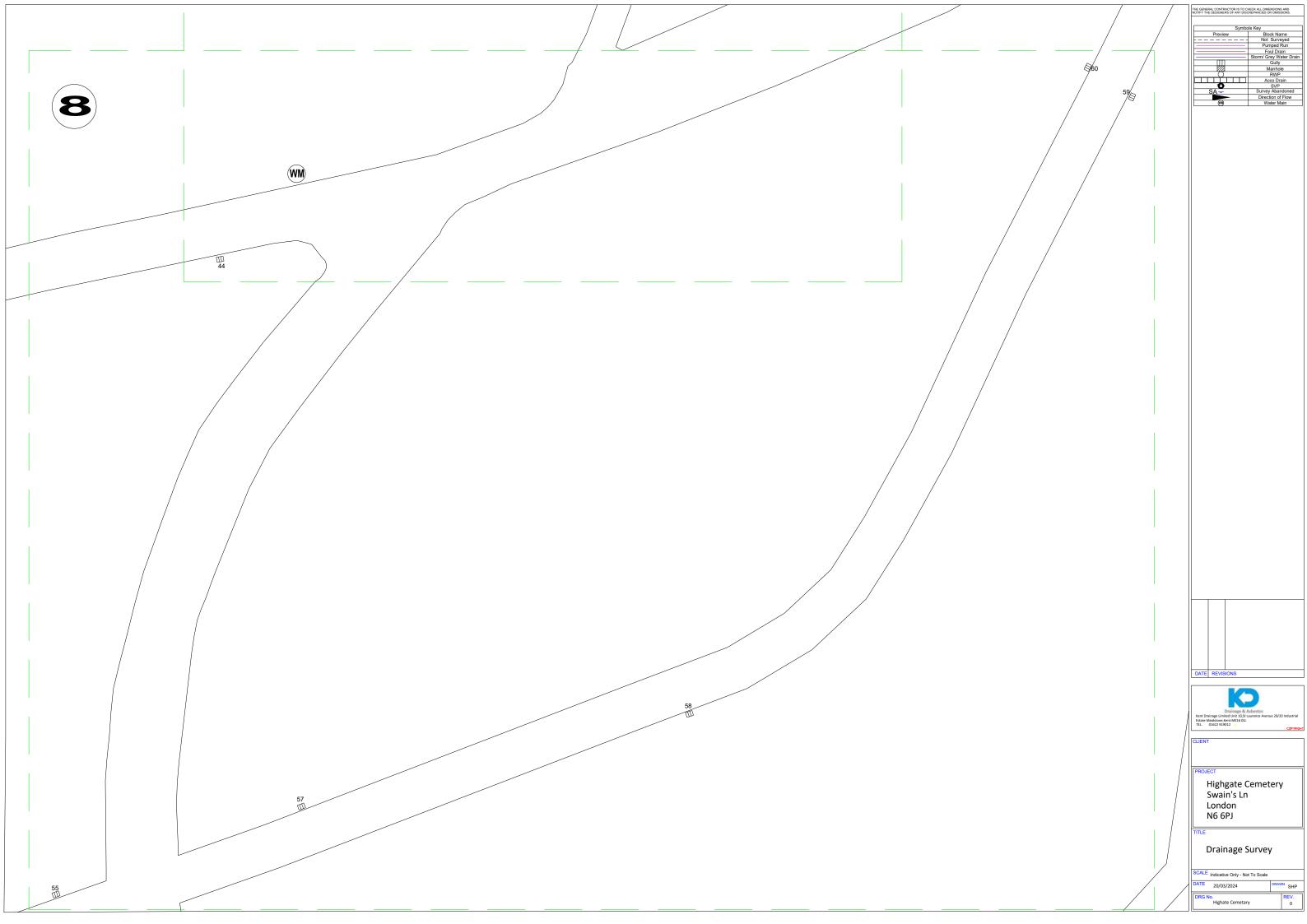


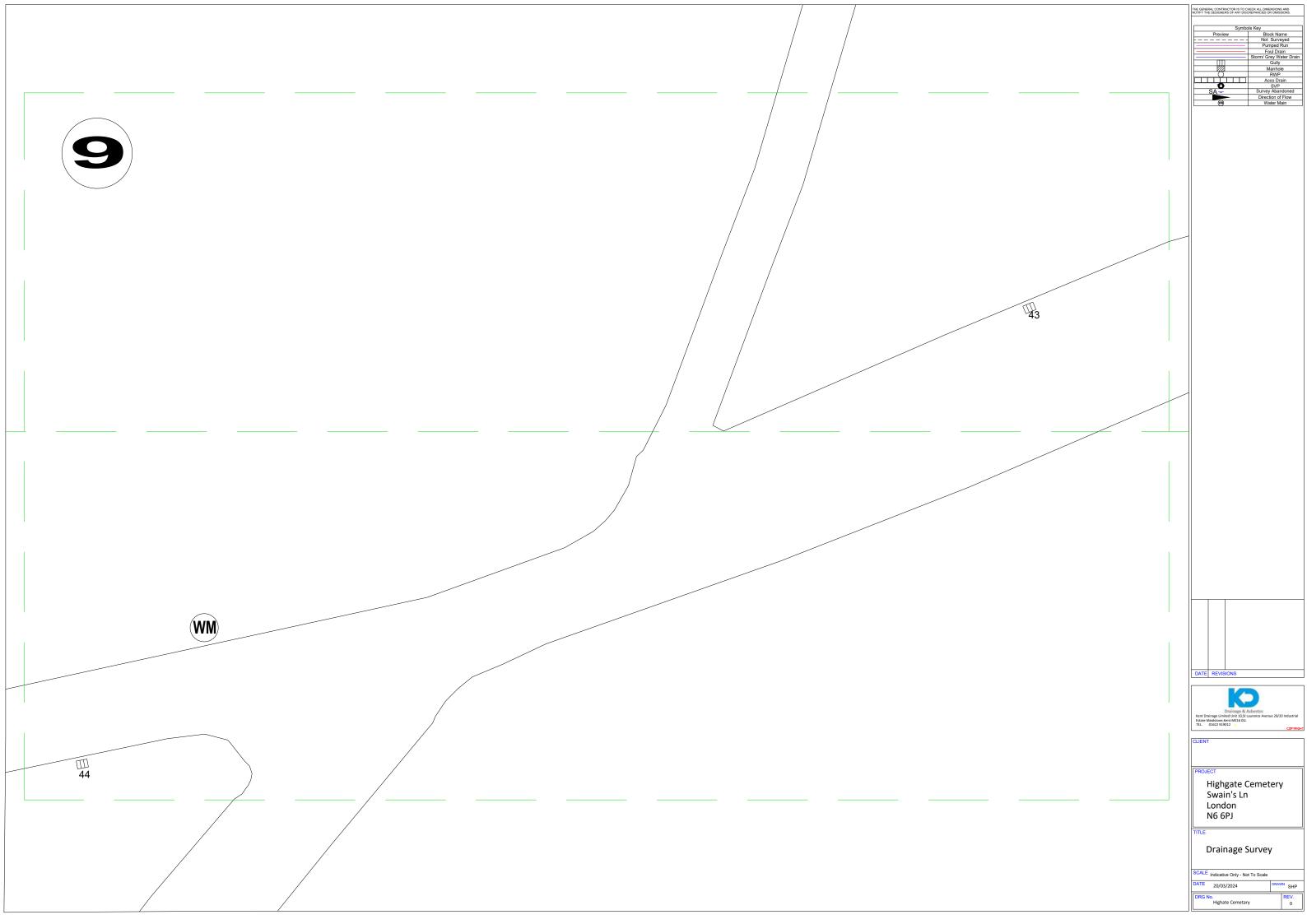


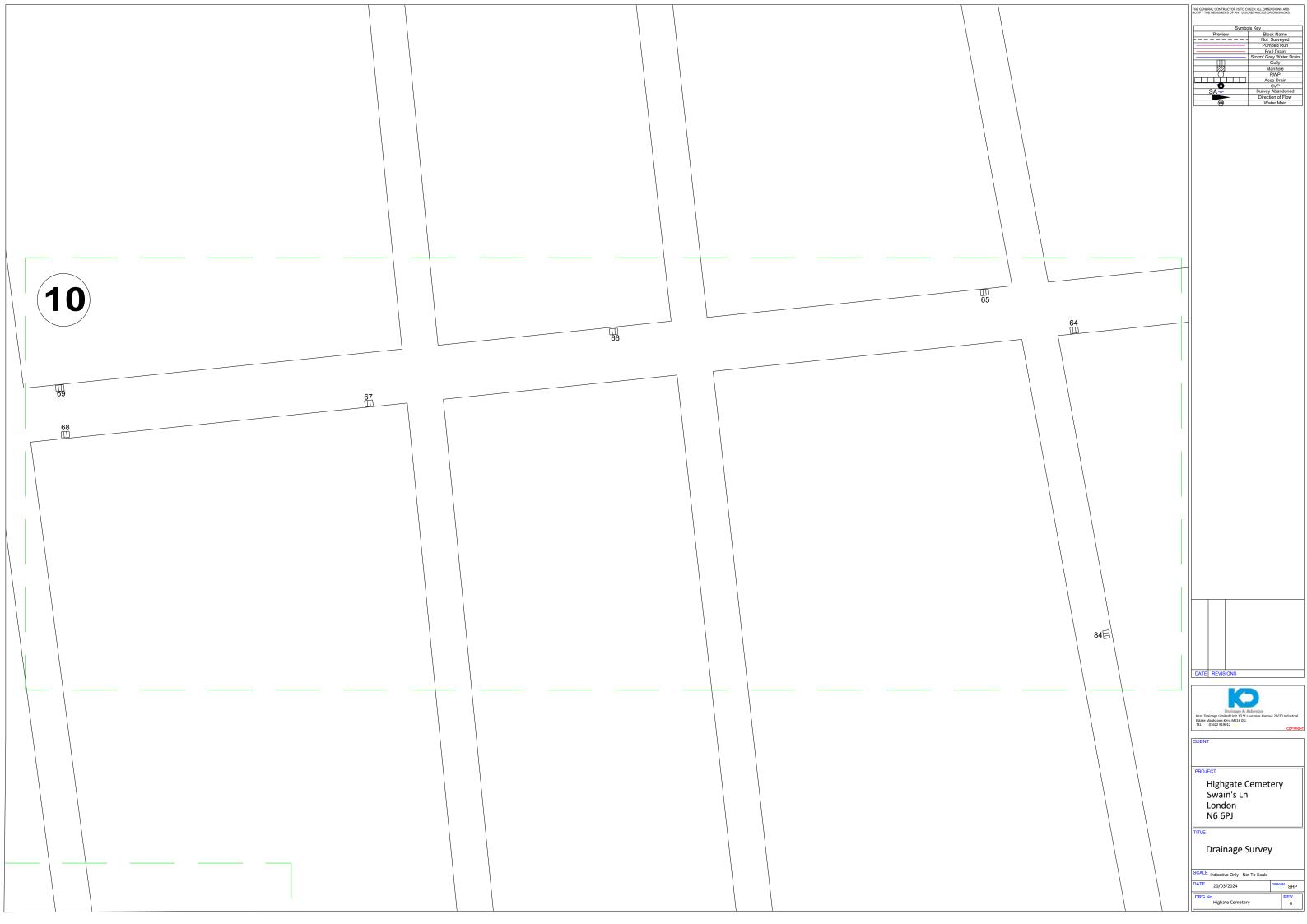


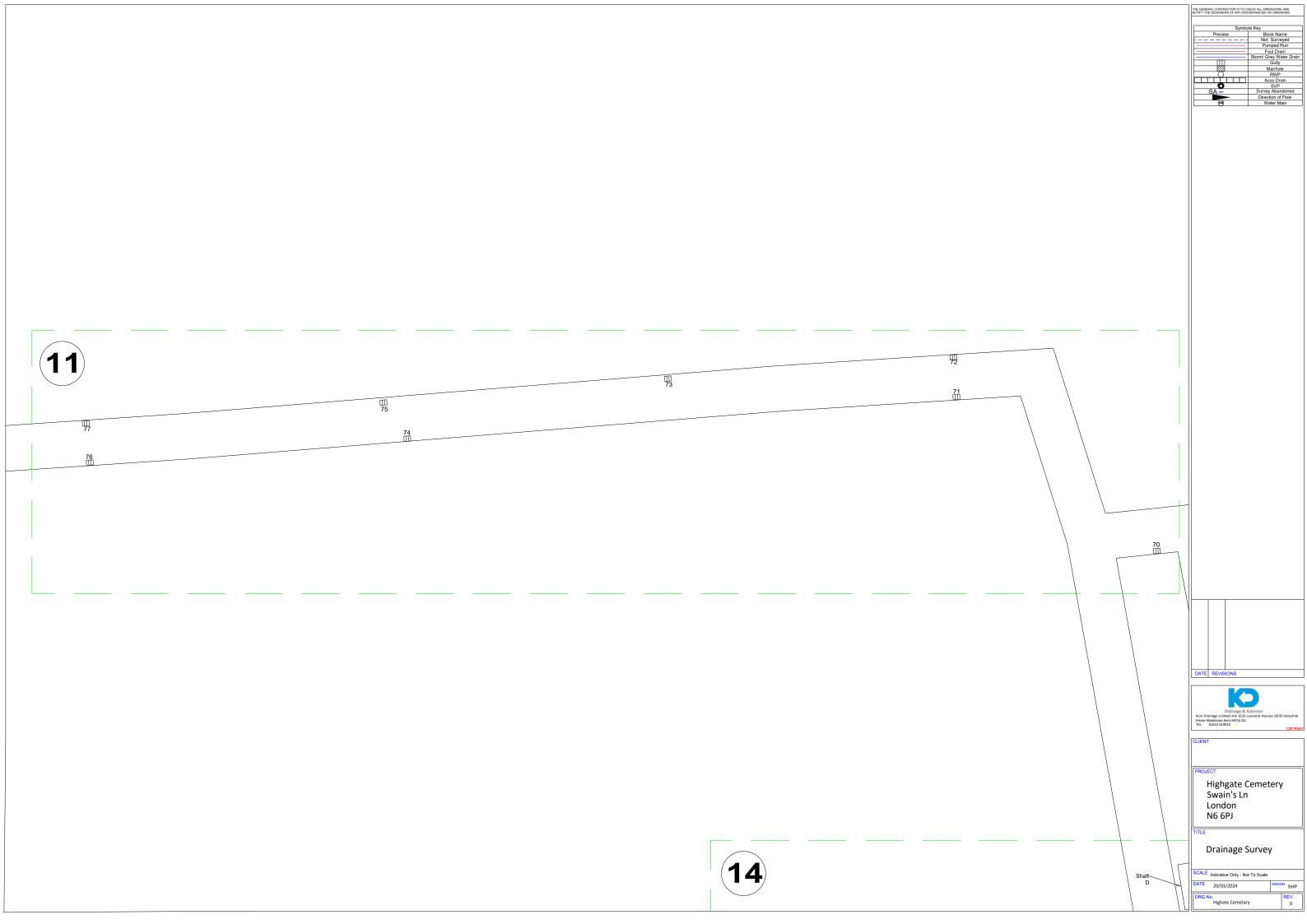


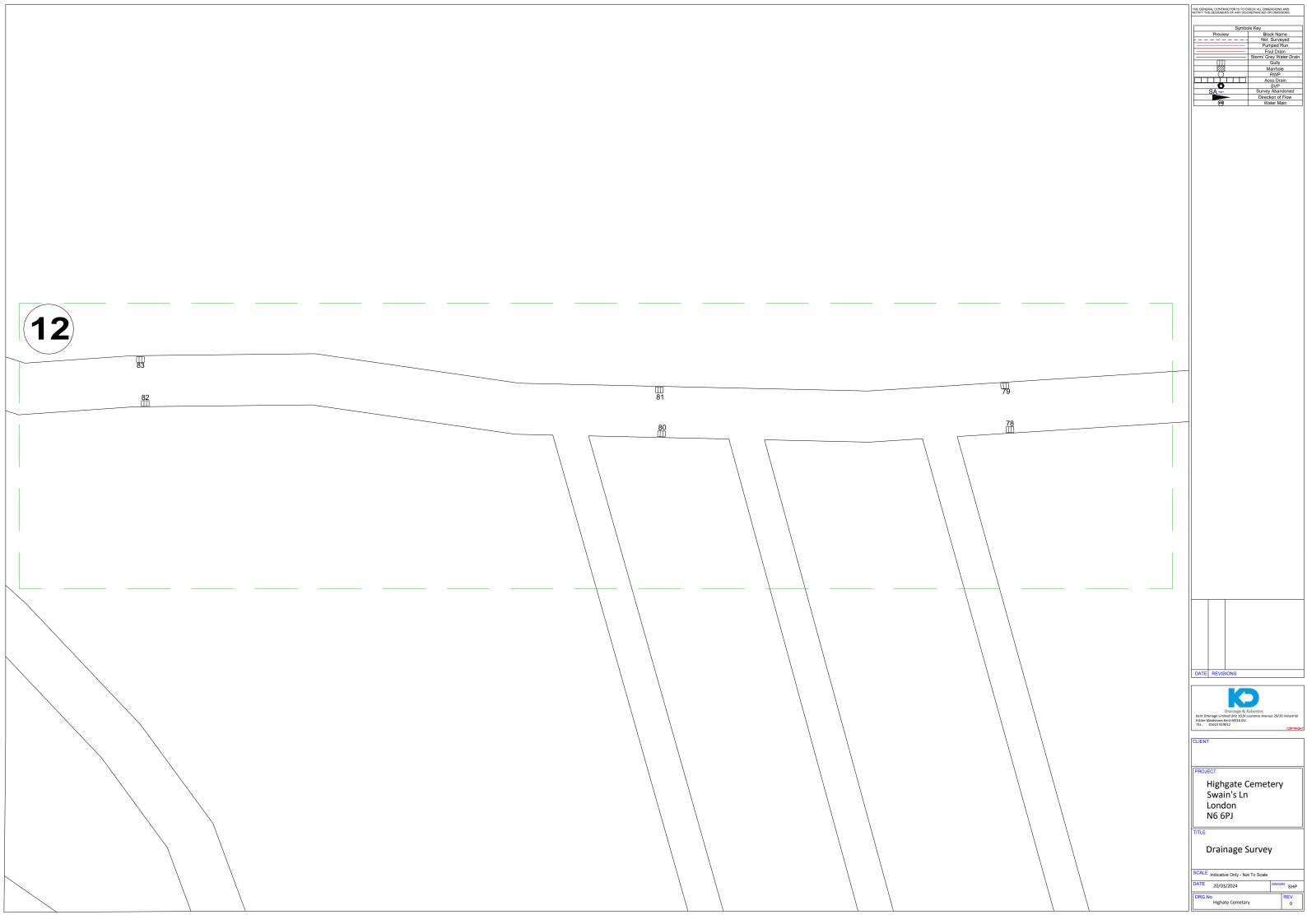


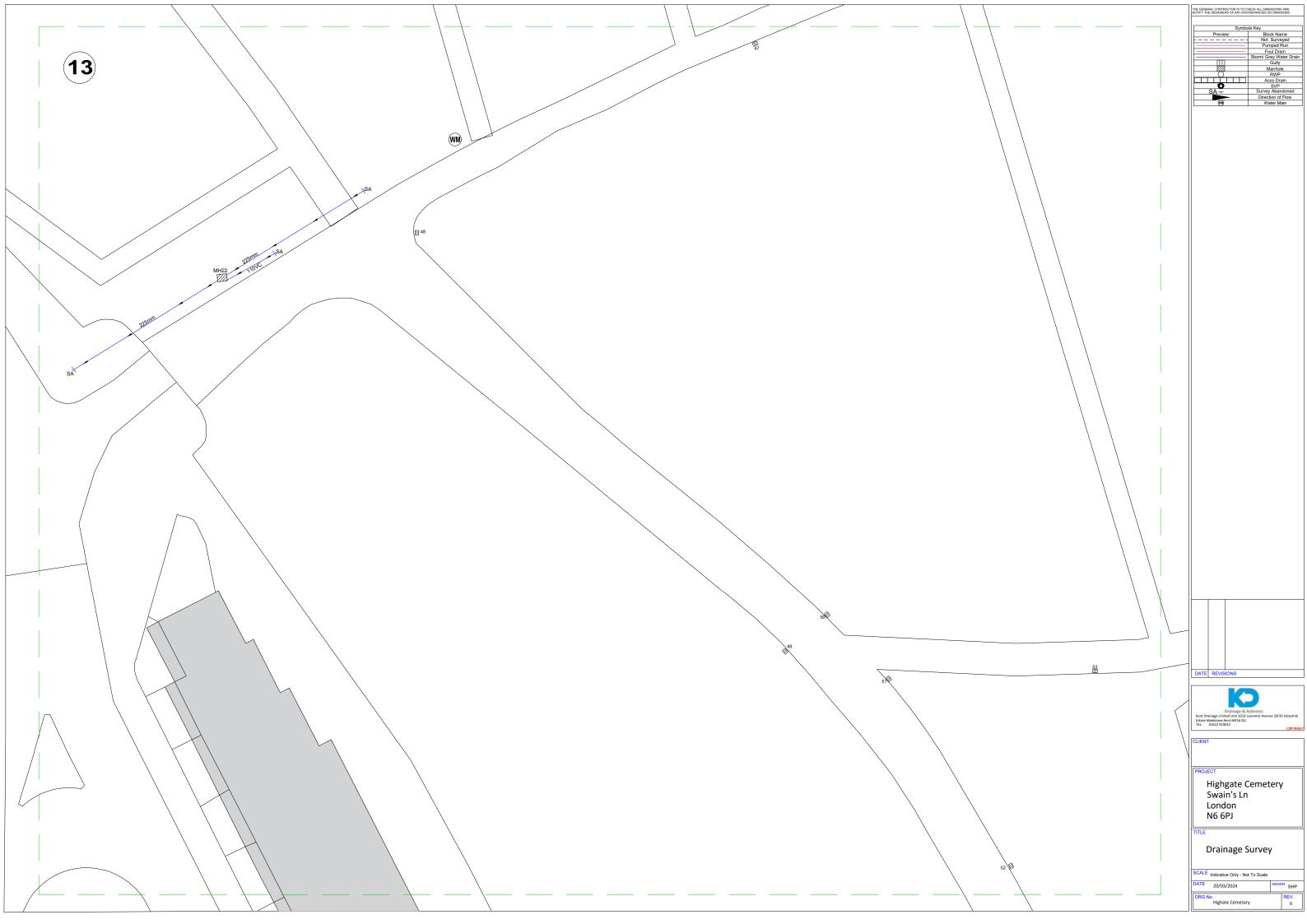




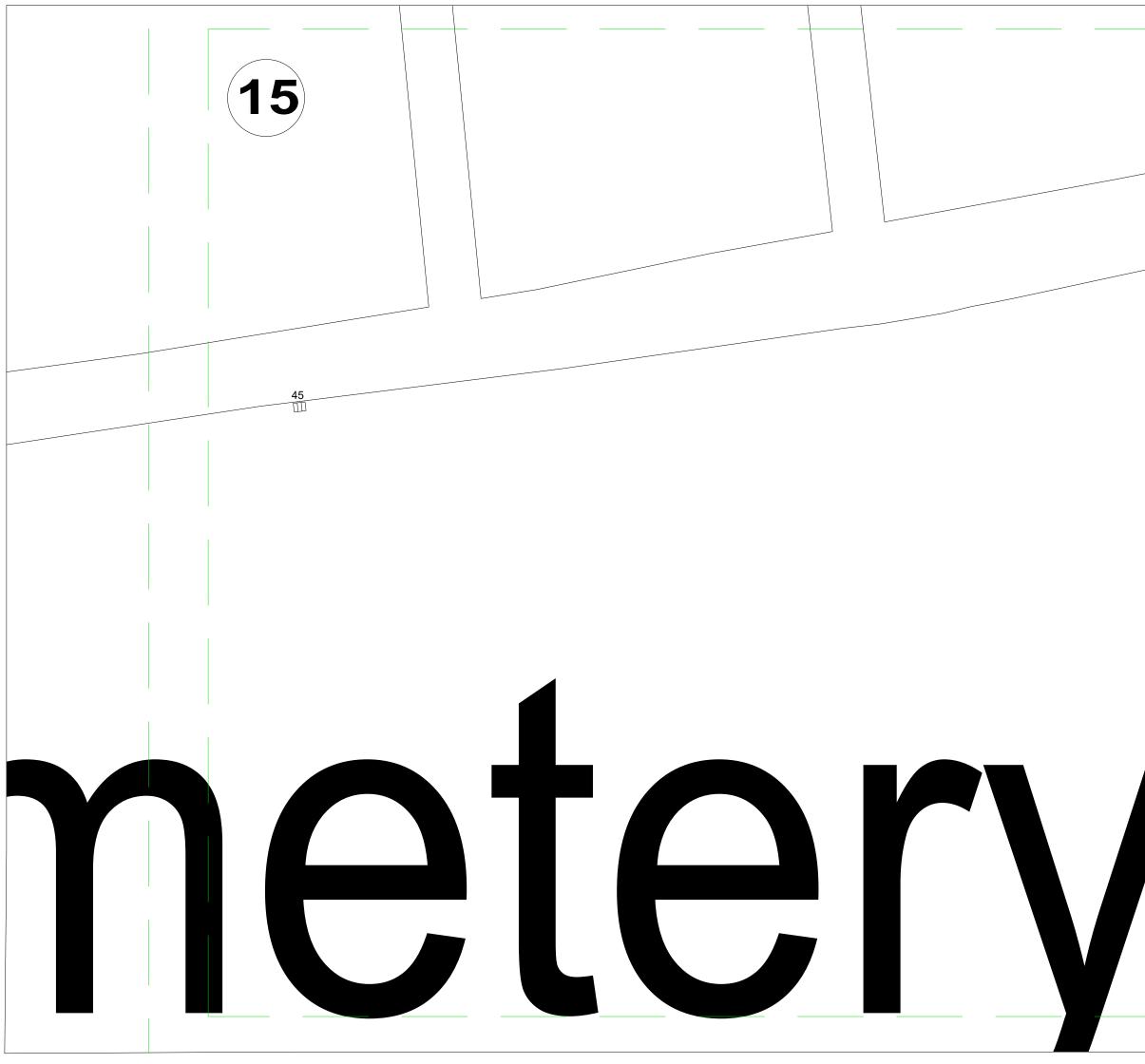












THE GENERAL CONTRACTOR IS TO CHE NOTIFY THE DESIGNERS OF ANY DISCR	ECK ALL DIMENSIONS AND
Symbol: Preview	s Key Block Name
	Not Surveyed Pumped Run
	Foul Drain Storm/ Grey Water Drain
	Gully
	Manhole RWP
0	Acco Drain SVP
SA-	Survey Abandoned Direction of Flow
	Water Main
DATE REVISIONS	
DATE REVISIONS	
Drainage & As	bestos
Kent Drainage Limited Unit 10,St Lan Estate Maidstone,Kent.ME16 0LL TEL. 01622 919012 C	urence Avenue 20/20 Industrial
	COPYRIGHT
CLIENT	
PROJECT	
Highgate C	emeterv
Swain's Ln	,
London	
N6 6PJ	
TITLE	
Drainage	
Drainage S	urvey
SCALE Indicative Only - Not	To Scale
 DATE 20/03/2024	DRAWN SHP
DRG No.	REV.
Highate Cemetary	0

Symbols Key		
Preview	Block Name	
	Blocked Drain	
	Combined Drain	
	Foul Drain	
	— Storm/ Grey Water Drain	
	Gully	
	Manhole	
$\overline{O}$	RWP	
	Road Gully	
$\overline{\mathbf{O}}$	Rodding Eye	
Ö	SVP	
	Tank	
	Direction of Flow	

H\_Ref-FW

MH\_Ref-FW 1 AS\_IL-10.000

Кеу		
Manhole	Lateral No.	Fowl (F). Storm (S)Combined (C)



## A-squared Studio Engineers Ltd One Westminster Bridge Rd London, SE1 7XW

020 7620 2868 contact@a2-studio.com www.a2-studio.com

