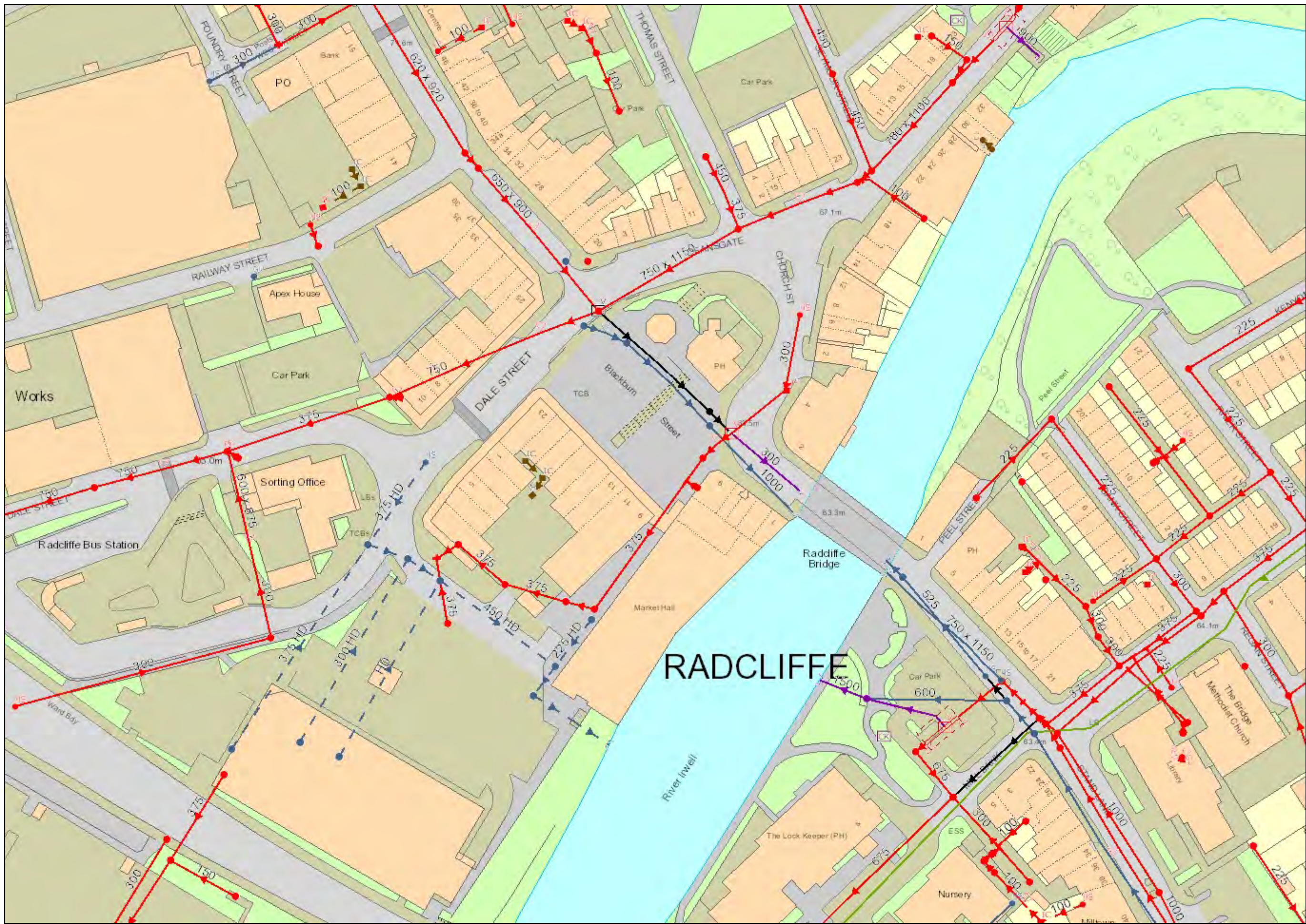


Appendix F – United Utilities Sewer Maps



**United Utilities Maps
for SafeDig**

Date :	25/04/2022 16:45:40
Centre X:	378556
Centre Y:	406965
Scale :	1000
UserName:	4MY37

**Extract from maps of United Utilities'
Underground Assets**

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. The actual positions may be different from those shown on the plan and private service pipes may be shown by a blue broken line. United Utilities Water will not accept liability for any damage caused by the actual position being different from those shown.

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John Speers

From: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Sent: 16 May 2022 11:13
To: John Speers
Cc: Wastewater Developer Services
Subject: PDE 4200049361 Dale Street M26 1AB

Follow Up Flag: Follow up
Flag Status: Completed

Good morning John,

Pre Development Enquiry for: Dale Street M26 1AB UU Reference Number : 4200049361

<https://www.unitedutilities.com/builders-developers/larger-developments/pre-development/wastewater-pre-dev/>

We have carried out an assessment of your application which is based on the information provided. This pre-development advice on your drainage strategy will be valid for 12 months. Your drainage strategy will need to be reviewed by other competent authorities as part of the planning process, and we advise that you carry out the necessary site investigations to confirm the viability of your proposals.

If your investigations require access to our public sewer network, we ask that you contact our network engineers with a request for an access certificate via our main contact telephone number 0345 6723 723 or refer to the link below:

<https://www.unitedutilities.com/builders-developers/working-near-our-assets/>

Foul Water

Foul flow from this site will be allowed to drain into the public foul water/combined sewer system.

Our preferred point of discharge would be to the 375mm diameter public combined sewer within the your proposed development site at an unrestricted rate.

If you are able to identify an alternative, more suitable point of discharge, we request that you contact us at your earliest convenience so that we can assess suitability.

In accordance with our infrastructure plans we may ask you to change your point of connection. Therefore please contact us when you are ready to formalise your drainage proposals, we would suggest before you submit for Full Planning.

Surface Water

All surface water flow from the proposed development should drain in-line with the drainage hierarchy, as outlined in Paragraph 80, (Reference ID: 7-080-20150323), of the National Planning Practice Guidance. We also recommend you prioritise the use of multi-functional sustainable drainage systems for the management of surface water in accordance with national planning policy.

Generally, the aim should be to discharge surface run off as high up the following hierarchy of drainage options as reasonably practicable.

This is outlined as follows, in order of priority:

1. into the ground (infiltration);

2. to a surface waterbody;
3. to a surface water sewer or highway drain;
4. to a combined sewer.

For guidance, The [North West SuDS Pro-Forma](#) provides information on the appropriate evidence required at each stage of the hierarchy, to demonstrate how each level has been discounted.

The Lead Local Flood Authority has responsibility for all surface water drainage concerns and their input to your proposal is critical. You should also consider whether it is necessary to discuss your proposal with the Environment Agency, or Internal Drainage Board (if operating in your area).

The Local Planning Authority are the determining authority for any application for planning permission and the appropriate authority for determining cost viability of a proposed drainage scheme, such assessments are outside of the jurisdiction of United Utilities.

Infiltration

Surface water runoff generated from this development should discharge to the ground via infiltration system where feasible.

A detailed evidence based feasibility assessment must be carried out in line with Chapter 25 of the CIRIA SuDS Manual 2015 to determine whether infiltration is a suitable method of surface water disposal.

Particular attention must be paid to Ground Water Source Protection Zones to ensure that the risk of pollution to these valuable resources is not compromised. Details can be obtained from the government website:

<https://www.gov.uk/guidance/groundwater-source-protection-zones-spzs#find-groundwater-spzs>

If your site is in a Groundwater Source Protection Zone, you should have regard to the Environment Agency's approach to Groundwater Protection. Information on this is available via the link below:

<https://www.gov.uk/government/publications/groundwater-protection-position-statements>

Please note that such a location could have implications for the principle of your development and the need for additional mitigating measures to protect the groundwater environment and public water supply in the detailed design of your site.

Waterbody

If an evidence based assessment has been carried out and confirms that infiltration is not feasible, we recommend that you contact the Lead Local Flood Authority and/or Environment Agency to discuss a point of discharge to the main river located southeast of the proposed site.

We would encourage you to identify and engage with any third party landowner and riparian owner to agree access and discharge rights to the water body if this is not in your ownership.

Highway Drainage

If an evidence based assessment has been carried out and confirms that infiltration is not feasible, we recommend that you investigate the possibility of draining surface water to the highway drain located to the south of the site where this ultimately discharges to a watercourse, by contacting the relevant Highway Authority.

Public Sewer

In accordance with the hierarchy of drainage options within the National Planning Practice Guidance, both discharge to ground via infiltration and discharge to a waterbody should be discounted prior to consideration of discharging

surface water to the public sewer system. Evidence should be provided to demonstrate how these have been discounted, as outlined in the North West SuDS pro-forma.

Once evidence is provided as outlined above, United Utilities will consider a connection to the 900mm diameter public surface water sewer located to the north of the proposed site at a pass forward flow to be agreed by the Lead Local Flood Authority. United Utilities request that any agreed rate does not exceed 50% betterment of the existing 1 in 2 year flow rate. We would require evidence of there being positive connectivity for surface water drainage of all existing impermeable areas communicating with the public sewer to determine the existing flow rates accurately. Please provide a existing drainage survey plan showing the existing drainage, collection points and connection to the public sewer in order to agree brownfield surface water discharge rate.

As a Water Company, we have no obligation to accept highway drainage into our public sewer network. However, should your proposals include runoff from highways, we would request that consideration is given to SuDS components that deliver source control are incorporated within the design of the scheme to reduce the volume and frequency of discharges of these flows to the public sewer.

Levels

For low-lying sites, (where the ground level of the site or the level of a basement is below the ground level at the point where the drainage connects to the public sewer), care should be taken to ensure that the property is not at increased risk of flooding. If these circumstances exist, we recommend that you contact us to discuss further. It could affect the detailed design of your site and result in the need to incorporate appropriate mitigating measures in your drainage scheme.

Land drainage / Overland flows / track drainage

United Utilities have no obligation, and furthermore we do not accept land drainage, overland flows or track drainage into the public sewerage network under any circumstances

SuDS

If your development proposal incorporates any SuDS component(s) which interact with a sewer network you plan on offering for adoption to United Utilities; contact should be made with our technical team at your earliest convenience, please complete the 'Section 104 pre-application form : ' and include as much relevant detail as you can. These discussions can help prevent delays later in the development process.

Section 104 Pre application form (1b)

As per the sewerage sector guidance, all SuDS should be designed in accordance with the standards within the Design & construction guidance & the CIRIA SuDS manual (C753)

Codes For Adoption

The new Codes for Adoption are outlined on the Water UK Website. The link below takes you to their webpage:

<https://www.water.org.uk/technical-guidance/developers-services/codes-for-adoption/>

A free copy of the new Design & Construction Guidance can be downloaded via the link below:

<https://www.water.org.uk/sewerage-sector-guidance-approved-documents/>

Existing Wastewater Assets Crossing the Site

In response to your query regarding the downstream section of the 375mm combined sewer within your site – this is not currently shown on our records.

According to our public sewer records there are public sewers located within your site boundary. We will require unrestricted access to the sewer for maintenance purposes, we would ask that you maintain a minimum clearance of 6m which is measured 3m from the centre line of the pipe unless there happens to be a formal easement agreement in place, in which case the specified easement width would apply. If you cannot achieve this then you may wish to consider diverting and or abandoning the public sewer.

Please be aware that any proposed diversion may require modelling. This process may take up to 6 months in order to reach an acceptable design.

Please refer to the link below to obtain full details of the processes involved with sewer diversions:

<https://www.unitedutilities.com/builders-developers/larger-developments/wastewater/sewer-diversions/>

Existing Water Assets Crossing the Site

It is the developer responsibility to identify utilities on-site. Where clean water assets are shown on our records, we recommend that you contact our Water Pre-Development Team, via the following email address: DeveloperServicesWater@uuplc.co.uk. Further information for this service can be found on our website via the link below:

<https://www.unitedutilities.com/builders-developers/larger-developments/pre-development/water-pre-dev/>

Connection Application

Although we may discuss and agree discharge points and rates in principle, please be aware that you will have to apply for a formal sewer connection. This is so that we can assess the method of construction, Health & Safety requirements and to ultimately inspect the connection when it is made. Details of the application process and the form itself can be obtained from our website by following the link below:

<https://www.unitedutilities.com/builders-developers/wastewater-services/sewer-connections/sewer-connection/>

We recommend that the detailed design should confirm the locations of all utilities in the area and ensure that any proposed drainage solution considers routing and clash checks where required.

If we can be of any further assistance please don't hesitate to contact us further.

Kind regards,

Shoaib.



Shoaib Tauqeer
Developer Engineer
Developer Services & Metering
M: 07876745601
[unitedutilities.com](https://www.unitedutilities.com)

If you have received a great service today why not tell us?

Visit: [unitedutilities.com/wow](https://www.unitedutilities.com/wow)

Did you know we now have a live chat facility available to you Mon to Friday 8 -5pm. You just click on the orange live chat box on our webpage and one of our advisors will be ready to chat to you and help you

with your enquiry <https://www.unitedutilities.com/builders-developers/> or you can email us at developerserviceswater@uuplc.co.uk

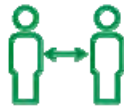
Coronavirus | Prevent the spread



Wash your
hands



Disinfect
common surfaces



Practise social
distancing



FEVER +
COUGH

Stay home if you
have symptoms

[Click for our message to customers](#)

From: John Speers [mailto:johnspeers@ajpltd.co.uk]

Sent: 04 May 2022 11:19

To: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>

Subject: 221-145 - Radcliffe Civic Hub - Pre Dev Enquiry

EXTERNAL EMAIL This email originated outside of the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Please find attached a pre-development form and associated information for your consideration.

The total site covers an area of approximately 0.614ha and is currently a brownfield site. The overall site planning boundary (red boundary on attached drainage strategy drawing) is larger but all areas outside of the development site planning boundary are to be completed by others as part of the Section 278 works and therefore have not been included within the proposed development boundary (blue boundary on attached drainage strategy drawing). The existing site currently consists of an existing building and surrounding hard landscaping areas. The site location plan and existing topo survey are attached to indicate the existing site and the proposed development is indicated on the attached drainage strategy drawing.

Only a partial site investigation has been completed to date but this indicates that infiltration is not suitable due to the high water table (approx. 4mbgl) which is likely to fluctuate with the adjacent River Irwell. As such, discharge to watercourse has been considered. The nearest watercourse is the River Irwell, which is located adjacent to the south-east of the site and as such it is envisaged that the surface water runoff from the site will discharge into this watercourse via the existing surface water drainage network which currently serves the existing site.

Therefore, the surface water runoff from the proposed development will be collected and conveyed to the south-east of the site, where it will discharge into the existing public surface water sewer which then discharges into the River Irwell. The foul water runoff will discharge into the existing 375mm diameter public combined water sewer which is to be diverted, to the south-west of the site. It is envisaged that the surface water discharge will be restricted to a maximum discharge rate which provides a 50% betterment on the existing 1-year brownfield runoff rate, in line with LLFA requirements, while the foul water runoff will discharge at unrestricted rates.

Can you please confirm that United Utilities are happy with this drainage arrangement and as such have no objections to the drainage strategy or discharge restrictions proposed?

Also, the existing UU sewer map is not clear on where the existing 375mm diameter public combined water sewer discharges into. It looks as though the existing public combined water sewer discharges into the existing 450mm diameter highway drain located to the south-west of the site. Is this information correct or do United Utilities have

any further information regarding the existing public sewers in this area? Any further information you could provide would be extremely helpful.

Please contact me immediately to discuss any matters further.

Kind Regards

John



John Speers

Associate

☎ 0151 227 1462

☎ 07841 832 409

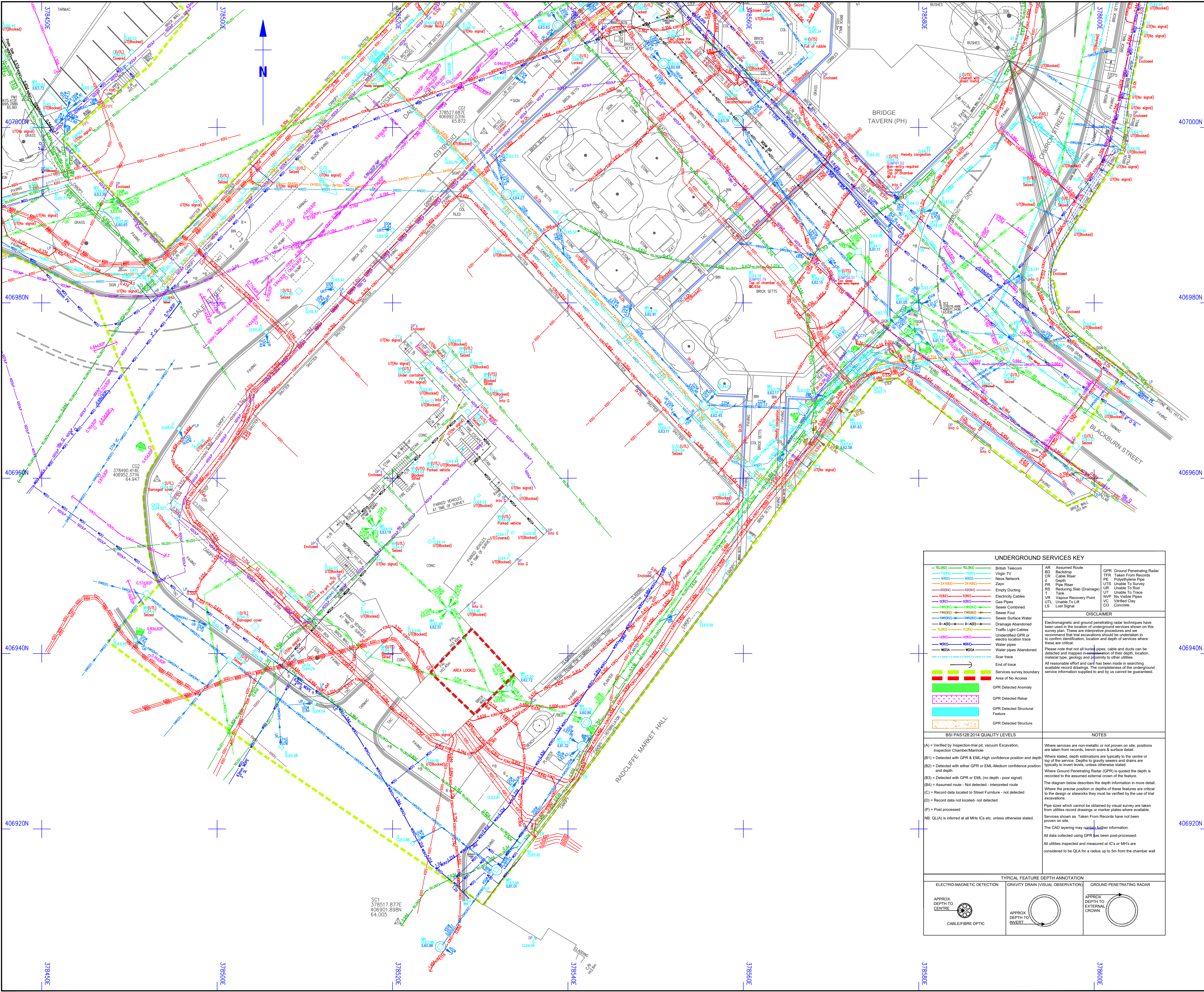
✉ johnspeers@ajpltd.co.uk

📍 1 Dale St, Liverpool, L2 2ET

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Registered in England and Wales. Registered No 6559020

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Survey Notes

Grid: Local Plane Grid Fixed to National Grid at Survey Control Station SC2

Levels: OS Datum from GNSS positioning converted using the National Geoid Model OSGM15

Notes

Topographical Survey Legend

BUILDINGS AND WALLS	GENERAL INFORMATION
Building	Patrol Pump
Open Road	Basement Light
Ruin	Footbridge
Passage	Dial Type Channel
Wall with height	Slit Type Channel
Retaining Wall	Grate Type Channel
	Tactile Paving
	Crown Barrier
	Column
	Stone
	Car Vacuum
	Car Vac
	AV
	Chimney
	Telephone Call Box

FENCE STYLES AND DESCRIPTIONS	OVERHEAD FEATURES
Close Boarded	Electricity Pylon
Corrugated Iron	Electricity
Chainlink	Telephone
Handrail	
Interwoven	
Iron Railings	
Lattice	
Miscellaneous	
Post & Chain	
Post & Rail	
Post & Wire	
Post & Bored Wire	
Wire mesh	
Wire	
Gate	
Fence Inset	

ROADS	WATER FEATURES
Kerbs	Canal
Edge of Surfacing	Stream
Pedestrian Crossing	Ditch
Track	Wall
Footpath	Curvet
	Slip (Land Drain)
	Spring

STREET FURNITURE	RELIEF AND VEGETATION
Bellman Beacon	Hedge
Bus Stop	Edge of wood/Bushes
Barbed	Shrub
Coils Eye	Individual Tree
Cool Chute	Slopes with Height
Closed Circuit TV	Greater than 1m
Drain	Cliff Face
Electricity Pole	Marsh
Fog Staff	Reeds
Lamp Post	
Letter Box	
Name Plate (street)	
Moving Ring	
Mail Post or Mooring Post	
Service Marker	
Mail Stone	
Post	
Parking Meter	
Reflector Post	
Reading Eye	
Road Sign	
Speed Camera	
Information Sign	
Shop	
Street Light	
Telegraph Pole	
Traffic Light	
Traffic Light Push Button Post	
Traffic Light Control	
Control Box	
British Telecom Box	
Electricity Box	
Gas Box	

INSPECTION CHAMBERS AND PIPES	LEVEL AND HEIGHT INFORMATION
Inspection Cover (Dial)	Standard Spot Height
Manhole	Precision Spot Height
Manhole	Bed Level
Manhole	Water Level
Manhole	Soft Level
Manhole	Threshold Level
Manhole	Cover Level
Manhole	Invert Level
Manhole	Pipe Spot Level
Manhole	Floor Level
Manhole	Finished Floor Level
Manhole	Top of Trench Level
Manhole	Eave Level
Manhole	Ridge Level
Manhole	Roof Hip Level
Manhole	Flat Roof Level
Manhole	Top of Canopy Level
Manhole	Underline of Canopy Level
Manhole	Window Sill Level
Manhole	Springing Level
Manhole	Window Head Level
Manhole	Arch Level
Manhole	Cable Level
Manhole	Top of Wall Level
Manhole	Underline of Beam Level
Manhole	General Height

SURVEY INFORMATION SIGNS	GEOTECHNICAL INFORMATION
Permanent Ground Marker	Borehole
O.S. Trig Station	Test Pit
O.S. Bench Mark	Monitor Pit
	Probe Hole
	Midway Sample
	MS

UNDERGROUND SERVICES KEY

TEL (02)	British Telecom	AR	Assumed Route	GPR	Ground Penetrating Radar
TEL (02)	Virgin TV	BD	Backdrop	TFR	Taken From Records
TEL (02)	Virgin TV	CR	Cable Riser	PE	Polyethylene Pipe
TEL (02)	Virgin TV	GR	Gravel	UTS	Unable To Survey
TEL (02)	Virgin TV	PR	Pipe Riser	UR	Unable To Rod
TEL (02)	Virgin TV	RS	Residual Site (Drainage)	UT	Unable To Trace
TEL (02)	Virgin TV	VR	Vapour Recovery Point	NVP	No Visible Pipes
TEL (02)	Virgin TV	UTL	Unable To Lift	VC	Verified Clay
TEL (02)	Virgin TV	LS	Last Signal	CO	Concrete

DISCLAIMER

Electromagnetic and ground penetrating radar techniques have been used in the location of underground services shown on this survey. Where the precise position or depth of these features are critical to the design or otherwise they must be verified by the use of trial excavations.

Please note that not all buried pipes, cable and ducts can be detected and mapped. The completeness of the underground service information supplied to and by us cannot be guaranteed.

BSI PAS128:2014 QUALITY LEVELS

(A) = Verified by Inspection-trial pit, vacuum Excavation, Inspection Chamber/Manhole	Where services are non-metallic or not proven on site, positions are taken from records, trench scans & surface detail.
(B1) = Detected with GPR & EML-High confidence position and depth	Where stated, depth estimations are typically to the centre or top of the service. Depths to gravity sewers and drains are typically to invert levels, unless otherwise stated.
(B2) = Detected with either GPR or EML-Medium confidence position and depth	Where Ground Penetrating Radar (GPR) is quoted the depth is recorded to the assumed external crown of the feature.
(B3) = Detected with GPR or EML (no depth - poor signal)	The diagram below describes the depth information in more detail.
(B4) = Assumed route - Not detected - interpreted route	Where the precise position or depth of these features are critical to the design or otherwise they must be verified by the use of trial excavations.
(C) = Record data located to Street Furniture - not detected	Pipe sizes which cannot be obtained by visual survey are taken from utilities record drawings or market plates where available.
(D) = Record data not located - not detected	Services shown as Taken From Records have not been proven on site.
(P) = Post processed	The CAD layering may contain further information.
NB: QL(A) is inferred at all MHS ICs etc. unless otherwise stated.	All data collected using GPR has been post-processed.

All utilities inspected and measured at IC's or MHS's are considered to be QA for a radius up to 5m from the chamber wall

TYPICAL FEATURE DEPTH ANNOTATION

ELECTRO-MAGNETIC DETECTION	GRAVITY DRAIN (VISUAL OBSERVATION)	GROUND PENETRATING RADAR
APPROX DEPTH TO CENTRE	APPROX DEPTH TO INVERT	APPROX DEPTH TO EXTERNAL CROWN
CABLE/FIBRE OPTIC		

Rev.	Date	Description
A	13/04/22	Underground services survey extended
B	29/08/22	Underground services survey extended
C	11/11/22	Underground services survey extended

Accreditations

MALCOLM HUGHES

CHARTERED LAND SURVEYORS

65 Cross Street, Sale, Manchester
M33 7HF, Tel: 0161 905 1265
www.malcolmhughes.co.uk
survey@mh.co.uk

RICS

THE SURVEY ASSOCIATION

ICIES

Client

VINCI CONSTRUCTION UK LTD

DITTON ROAD, WIDNES

CHESHIRE, WA8 0PG

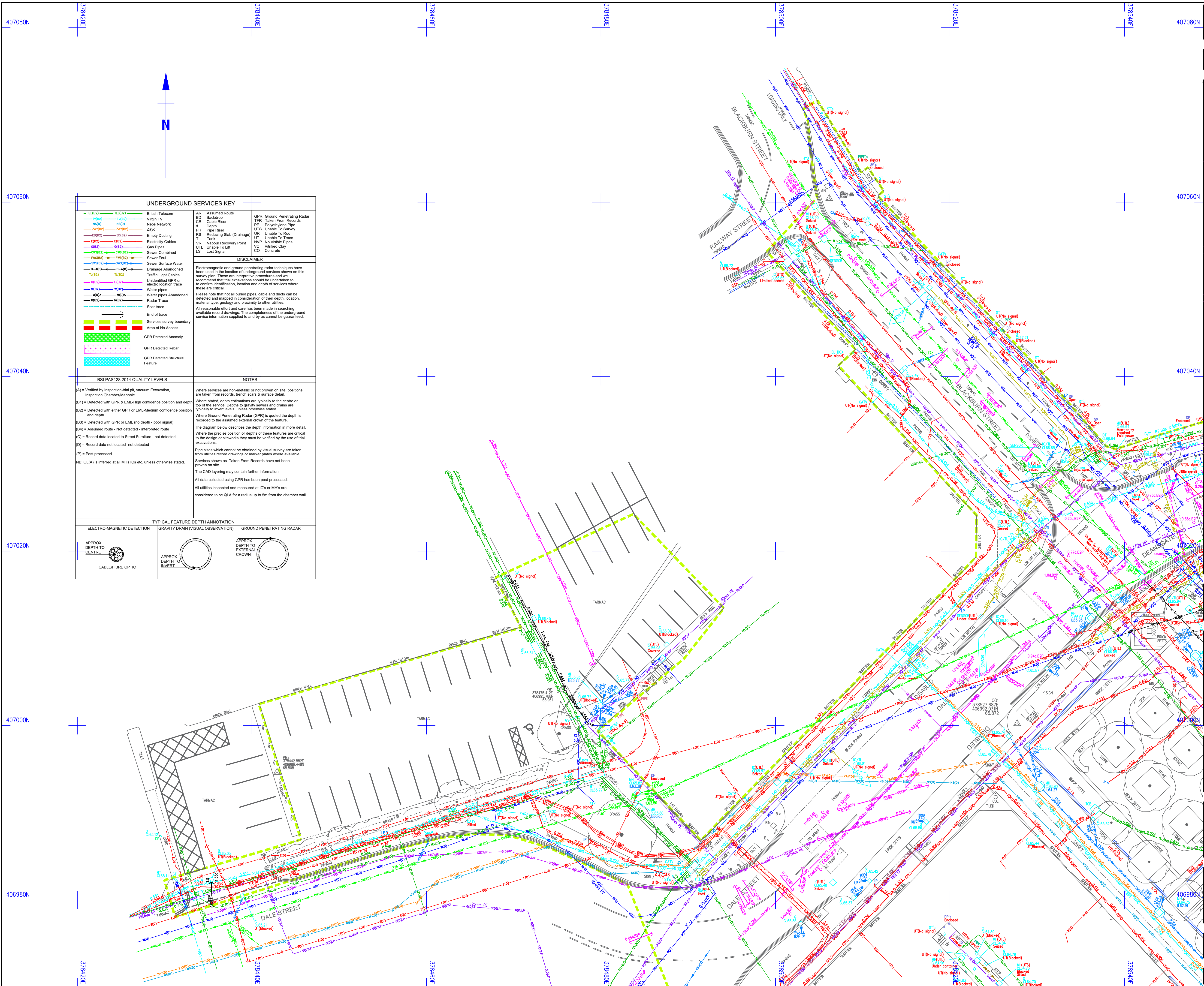
Project

RADCLIFFE HUB

Drawing Title

UNDERGROUND SERVICES SURVEY

Drawn By	JM	09/02/22	Survey Date	JANUARY 2022
Checked by	DJ	09/02/22	Scale	A1@1:200
Drawing No	57969/UG1			Revision
				C



Survey Notes
Grid: Local Plane Grid Fixed to National Grid at Survey Control Station SC2
Levels: OS Datum from GNSS positioning converted using the National Geoid Model OSGM15

Notes

Topographical Survey Legend

BUILDINGS AND WALLS	GENERAL INFORMATION
Building Open Road Run Passage Wall with height Retaining Wall	Petrol Pump Basement Light Footbridge Dish Type Channel Spot Type Channel Grate Type Channel Tactile Paving Crown Barrier Column Staircase Car Vacuum Air Valve Trough Chimney Telephone Call Box
FENCE STYLES AND DESCRIPTIONS	OVERHEAD FEATURES
Cross Boarded Corrugated Iron Chainlink Fencing Quadrant Handrail Interlocking Iron Railings Lattice Miscellaneous Palisade Post & Rail Post & Wire Post & Barbed Wire Wire mesh Side Gate Fence Inset	Electricity Pylon Electricity Telephone
ROADS	WATER FEATURES
Kerbs Edge of Surfacing Pedestrian Crossing Track Footpath	Canal Stream Ditch Well Culvert Grip (Land Drain) Spring
STREET FURNITURE	RELIEF AND VEGETATION
Bellis Beacon Bus Stop Bulb Coffin Cool Chute Closed Circuit TV Drain Electricity Pole Flag Staff Flood Light Lamp Post Letter Box Name Plate (street) Mast Mile Post or Mooring Post Service Marker Misc Stone Post Parking Meter Reflector Post Road Sign Speed Camera Information Sign Shop Traffic Light Telegraph Pole Traffic Light Push Button Post Traffic Light Control Control Box British Telecom Box Electricity Box Gas Box	Hedge Edge of wood/Bushes Shrub Individual Tree Slopes with Height Greater than 1m Cliff Face Marsh Reeds
INSPECTION CHAMBERS AND PIPES	LEVEL AND HEIGHT INFORMATION
Inspection Cover (Dial) Inspection Cover (Comm) British Telecom Cover Cable TV Inspection Cover Traffic Signals Gully Vent Pipe Down Pipe Rain Water Pipe Soil Pipe Gas Pipe Unable to lift cover Stop Top Stop View Longhole Hydrant Earth Pit Gas Valve Water Meter Washout Roading Eye	Standard Spot Height Precision Spot Height Bed Level Water Level Soffit Level Threshold Level Cover Level Invert Level Pipe Soffit Level Top of Tank Level Finished Floor Level Top of Tank Level Eave Level Ridge Level Roof Hip Level Top of Roof Level Top of Canopy Level Underline of Canopy Level Window Head Level Window Sill Level Arch Level Top of Wall Level Underline of Beam Level General Height
SURVEY INFORMATION SIGNS	GEOTECHNICAL INFORMATION
Permanent Ground Marker O.S. Trip Station O.S. Bench Mark	Borehole Trial Pit Monitor Pit Probe Hole Mud Sample

BSI PAS128:2014 QUALITY LEVELS

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NB: QLA is inferred at all MHE ICs etc. unless otherwise stated.

NOTES

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Where stated, depth estimations are typically to the centre or top of the service. Depths to gravity sewers and drains are typically to invert levels, unless otherwise stated.
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The diagram below describes the depth information in more detail.
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Pipe sizes which cannot be obtained by visual survey are taken from utilities record drawings or marker plates where available.
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The CAD layering may contain further information.
All data collected using GPR has been post-processed.
All utilities inspected and measured at IC's or MHEs are considered to be QLA for a radius up to 5m from the chamber wall

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APPROX DEPTH TO CENTRE CABLE/FIBRE OPTIC	APPROX DEPTH TO INVERT	APPROX DEPTH TO EXTERNAL CROWN

Rev.	Date	Description
A	13/04/22	Underground services survey extended
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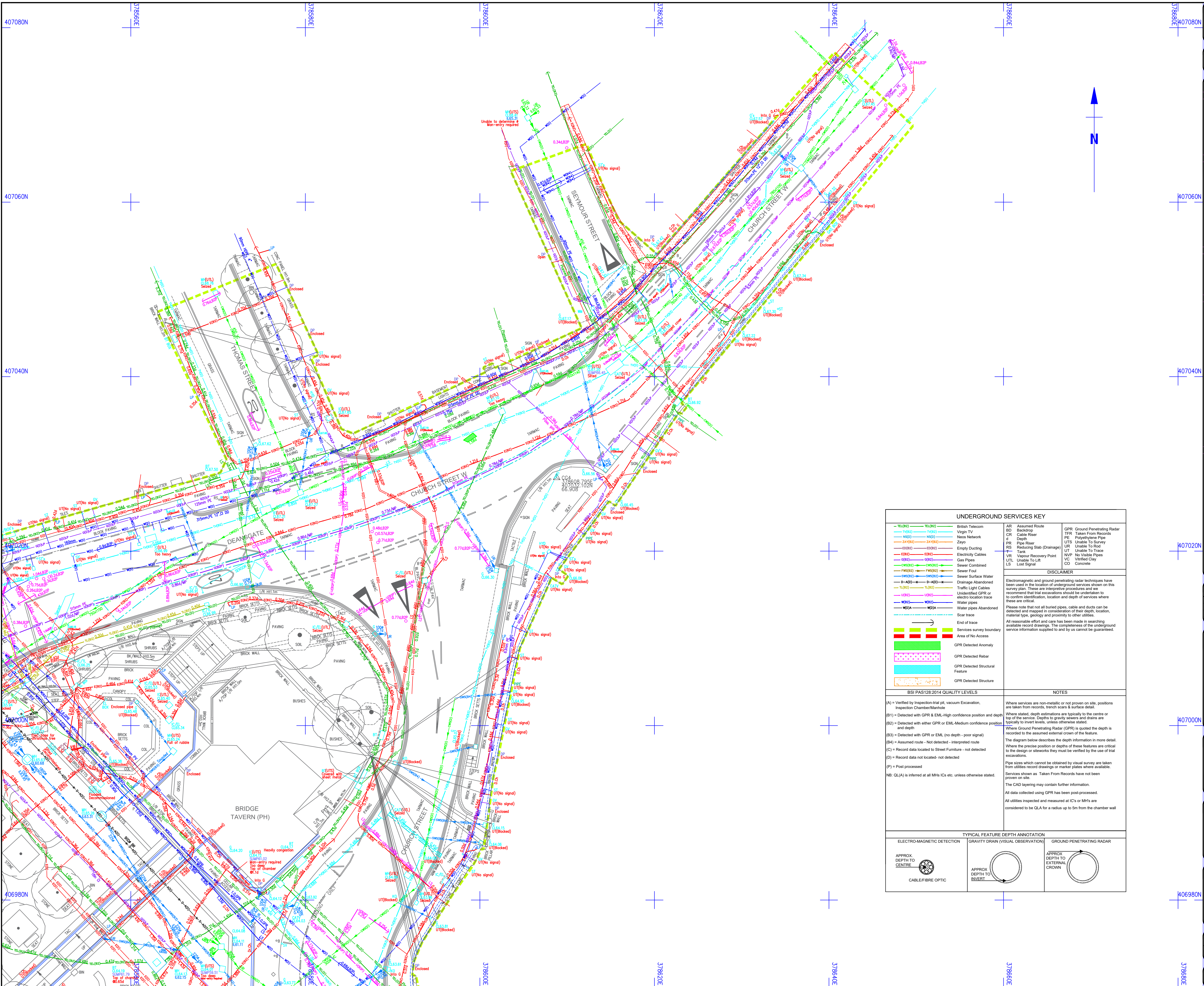
RICS THE SURVEY ASSOCIATION

Client
VINCI CONSTRUCTION UK LTD
DITTON ROAD, WIDNES
CHESHIRE, WA8 0PG

Project
RADCLIFFE HUB

Drawing Title
UNDERGROUND SERVICES
SURVEY

Drawn By JM	09/02/22	Survey Date JANUARY 2022
Checked By DJ	09/02/22	Scale A1@1:200
Drawing No 57969/UG2		Revision C



Survey Notes
Grid: Local Plane Grid Fixed to National Grid at Survey Control Station SC2
Levels: OS Datum from GNSS positioning converted using the National Geoid Model OSGM15

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Topographical Survey Legend

BUILDINGS AND WALLS	GENERAL INFORMATION
Building Open Road Ruin Passage Wall with height Retaining Wall	Petrol Pump Basement Light Footbridge Dish Type Channel Spot Type Channel Grate Type Channel Tactile Paving Columns Staircase Car Vacuum Air Valve Chimney Telephone Call Box
FENCE STYLES AND DESCRIPTIONS	OVERHEAD FEATURES
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STREET FURNITURE	RELIEF AND VEGETATION
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Inspection Cover (Dial) Manhole British Telecom Cover Inspection Cover (Comms) Inspection Cover Traffic Signals Gully Kerf Outlet Vent Pipe Down Pipe Rain Water Pipe Soil Pipe Gas Pipe Unable to lift cover Stop Top Stop Valve Lamphead Hydrant Earth Pipe Gas Valve Water Meter Washout Rooding Eye	Standard Spot Height Precision Spot Height Bed Level Rear Level Softest Level Threshold Level Cover Level Invert Level Pipe Softest Level Top of Tank Level Finished Floor Level Top of Tank Level Ridge Level Eave Level Roof Hip Level Flat Roof Level Top of Canopy Level Underline of Canopy Level Window Sill Level Window Head Level Arch Level Cable Level Top of Wall Level Underline of Beam Level General Height
SURVEY INFORMATION SIGNS	GEOTECHNICAL INFORMATION
Permanent Ground Marker O.S. Trip Station O.S. Bench Mark	Borehole Trial Pit Monitor Pin Probe Hole Mudcore Sample

UNDERGROUND SERVICES KEY

TL000	TL000	Virgin TV	AR	Assumed Route	GPR	Ground Penetrating Radar
TL001	TL001	Neos Network	BD	Backdrop	TFR	Taken From Records
TL002	TL002	Empty Ducting	CR	Cable Riser	PE	Polyethylene Pipe
TL003	TL003	Electricity Cables	PR	Pipe Riser	UTR	Unable To Survey
TL004	TL004	Gas Pipes	RS	Reducing Slab (Drainage)	UR	Unable To Rod
TL005	TL005	Sewer Combined	Tank	Tank	UT	Unable To Trace
TL006	TL006	Sewer Surface Water	VR	Vapour Recovery Point	VVP	No Visible Pipes
TL007	TL007	Drainage Abandoned	UTL	Unable To Lift	VC	Voided Clay
TL008	TL008	Traffic Light Cables	LS	Lost Signal	CO	Concrete
TL009	TL009	Identified GPR or electro location trace				
TL010	TL010	Water pipes				
TL011	TL011	Water pipes Abandoned				
TL012	TL012	Scar trace				

BSI PAS128:2014 QUALITY LEVELS

(A) = Verified by Inspection-trial pit, vacuum Excavation, Inspection Chamber/Manhole
(B1) = Detected with GPR & EML-High confidence position and depth
(B2) = Detected with either GPR or EML-Medium confidence position and depth
(B3) = Detected with GPR or EML (no depth - poor signal)
(B4) = Assumed route - Not detected - interpreted route
(C) = Record data located to Street Furniture - not detected
(D) = Record data not located - not detected
(F) = Post processed
NB: QLA(A) is inferred at all MHA ICs etc. unless otherwise stated.

NOTES

Where services are non-metallic or not proven on site, positions are taken from records, trench scans & surface detail.
Where stated, depth estimations are typically to the centre or top of the service. Depths to gravity sewers and drains are typically to invert levels, unless otherwise stated.
Where Ground Penetrating Radar (GPR) is quoted the depth is recorded to the assumed external crown of the feature.
The diagram below describes the depth information in more detail.
Where the precise position or depths of these features are critical to the design or siteworks they must be verified by the use of trial excavations.
Pipe sizes which cannot be obtained by visual survey are taken from utilities record drawings or marker plates where available.
Services shown as Taken From Records have not been proven on site.
The CAD layering may contain further information.
All data collected using GPR has been post-processed.
All utilities inspected and measured at ICs or MHs are considered to be QLA for a radius up to 5m from the chamber wall

TYPICAL FEATURE DEPTH ANNOTATION

ELECTRO-MAGNETIC DETECTION APPROX. DEPTH TO CENTRE CABLE/FIBRE OPTIC	GRAVITY DRAIN (VISUAL OBSERVATION) APPROX. DEPTH TO INVERT	GROUND PENETRATING RADAR APPROX. DEPTH TO EXTERNAL CROWN
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Rev.	Date	Description
A	13/04/22	Underground services survey extended
B	29/09/22	Underground services survey extended
C	11/11/22	Underground services survey extended

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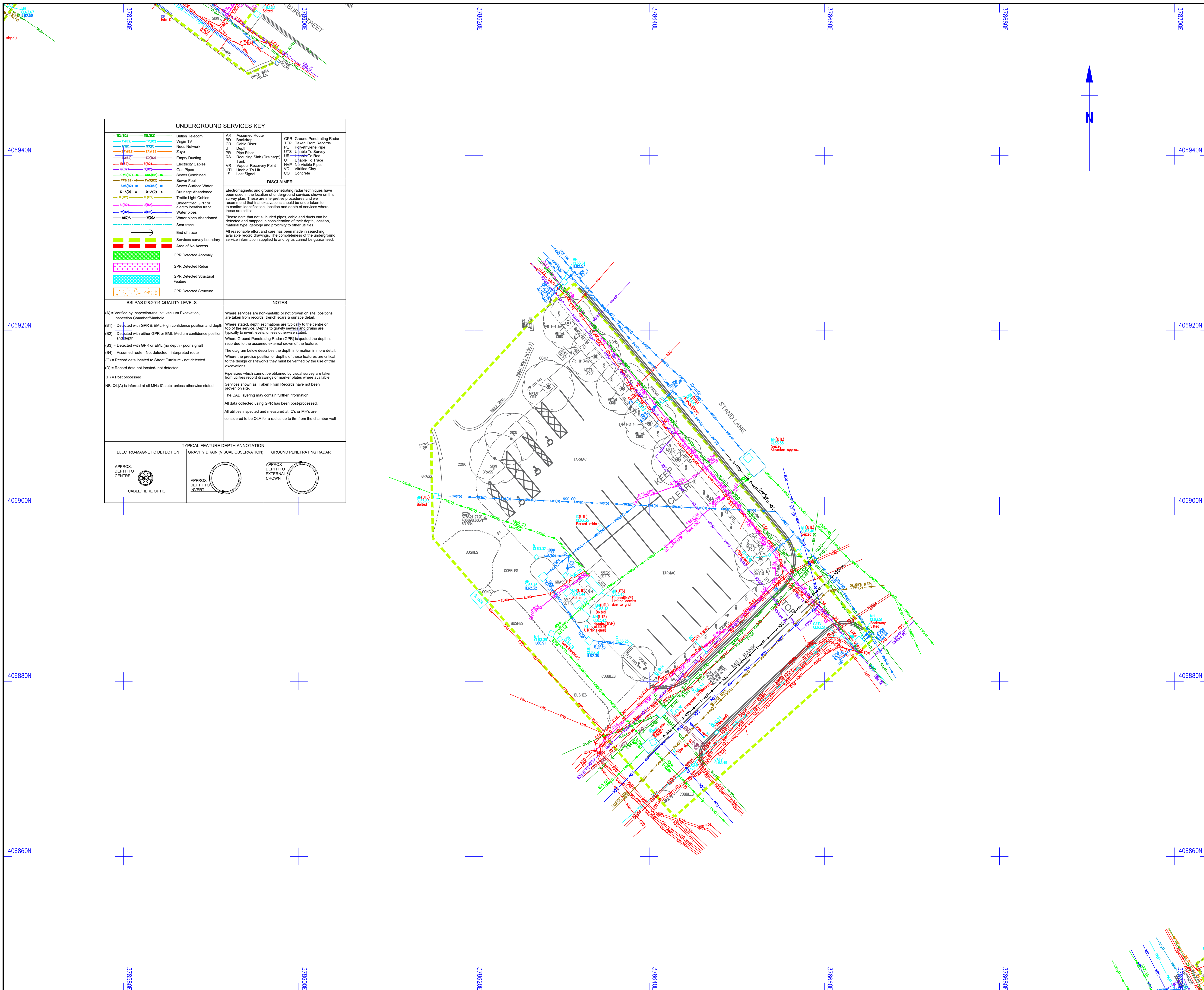
Accreditations

Client
VINCI CONSTRUCTION UK LTD
DITTON ROAD, WIDNES
CHESHIRE, WA8 0PG

Project
RADCLIFFE HUB

Drawing Title
UNDERGROUND SERVICES SURVEY

Drawn By JM	09/02/22	Survey Date JANUARY 2022	Revision C
Checked by DJ	09/02/22	Scale A1@1:200	
Drawing No 57969/UG3			



<

Rev.	Date	Description
A	13/04/22	Underground services survey extended
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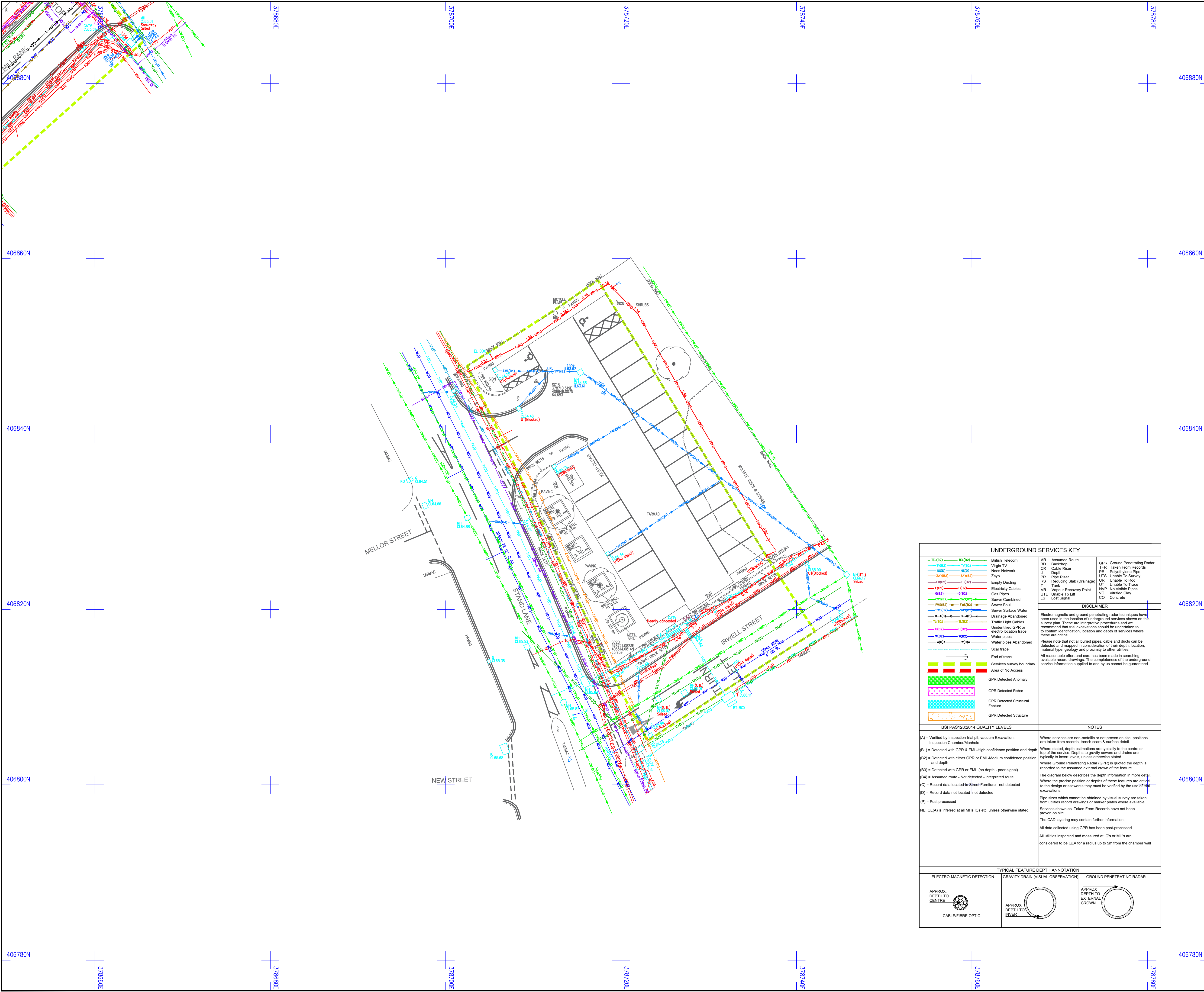
Client

VINCI CONSTRUCTION UK LTD
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Project

RADCLIFFE HUB

Drawing Title	UNDERGROUND SERVICES SURVEY
Drawn By JM 09/02/22	Survey Date JANUARY 2022
Checked by DJ 09/02/22	Scale A1@1:200
Drawing No 57969/UG4	Revision C



Survey Notes
Grid: Local Plane Grid Fixed to National Grid at Survey Control Station SC2
Levels: OS Datum from GNSS positioning converted using the National Geoid Model OSGM15

Notes

Topographical Survey Legend

BUILDINGS AND WALLS	GENERAL INFORMATION
Building Open Road Run Passage Wall with height Retaining Wall	Petrol Pump Basement Light Footbridge Dish Type Channel Slot Type Channel Grate Type Channel Tactile Paving Crown Barrier Column Stanchion Car Vacuum Air Valve Trough Chimney Telephone Call Box
FENCE STYLES AND DESCRIPTIONS	OVERHEAD FEATURES
Cable Boarded Corrugated Iron Chainlink Paving Chainlink Handrail H/W Interwoven Iron Railings L/U Miscellaneous PAL Post & Chain Post & Rail Post & Wire Post & Barbed Wire Wire mesh Sole Gate Fence Instyle	Electricity Pylon Electricity Telephone
ROADS	WATER FEATURES
Kerbs Edge of Surfacing Pedestrian Crossing Track Footpath	Canal Stream Ditch Weir Culvert Grip (Land Drain) Spring
STREET FURNITURE	RELIEF AND VEGETATION
Beltina Beacon Bus Stop Bollard Coffin Eye Cool Chute Closed Circuit TV Drain Electricity Pole Flood Light Flag Staff Lamp Post Letter Box Name Plate (street) Moor Wall Mile Post or Mooring Post Service Marker Mile Stone Post Parking Meter Reflector Post Rooding Eye Road Sign Speed Camera Information Sign Shop Traffic Light Telegraph Pole Traffic Light Push Button Post Traffic Light Control Control Box British Telecom Box Electricity Box Gas Box	Hedge Edge of wood/Bushes Shrub Individual Tree Slopes with Height Greater than 1m Cliff Face Reeds
INSPECTION CHAMBERS AND PIPES	LEVEL AND HEIGHT INFORMATION
Inspection Cover (Duct) Manhole British Telecom Cover Inspection Cover (Comms) Cable TV Inspection Cover Traffic Signals Gully Kerf Outlet Vent Pipe Down Pipe Rain Water Pipe Soil Pipe Gas Pipe Unable to lift cover Stop Top Shoe Valve Longhole Hydrant Earth Pit Gas Valve Water Meter Washout Rooding Eye	Standard Spot Height Precision Spot Height Bed Level Water Level Soft Level Threshold Level Cover Level Invert Level Pipe Soft Level Top of Tank Level Finished Floor Level Window Sill Level Ridge Level Roof Hip Level Flat of Canopy Level Underline of Canopy Level Window Sill Level Window Head Level Springing Level Arch Level Cable Level Top of Wall Level Underline of Beam Level General Height
SURVEY INFORMATION SIGNS	GEOTECHNICAL INFORMATION
Permanent Ground Marker O.S. Trip Station O.S. Bench Mark	Borehole Trial Pit Monitor Pin Probe Hole Washout Washout Sample

Rev.	Date	Description
A	13/04/22	Underground services survey extended
B	29/08/22	Underground services survey extended
C	11/11/22	Underground services survey extended

Accreditations

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RICS
THE SURVEY ASSOCIATION
ICES

Client

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CHESHIRE, WA8 0PG

Project

RADCLIFFE HUB

Drawing Title

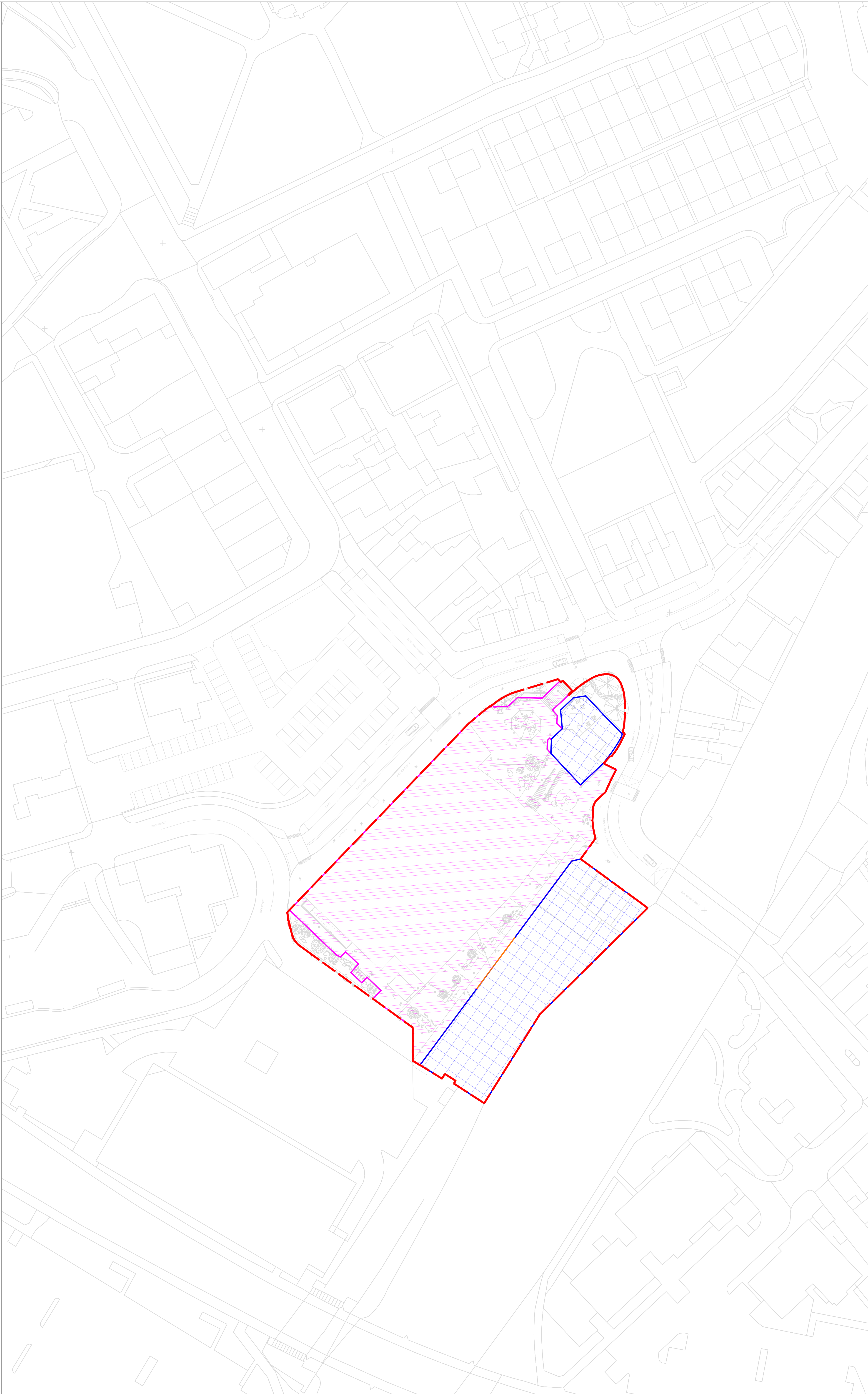
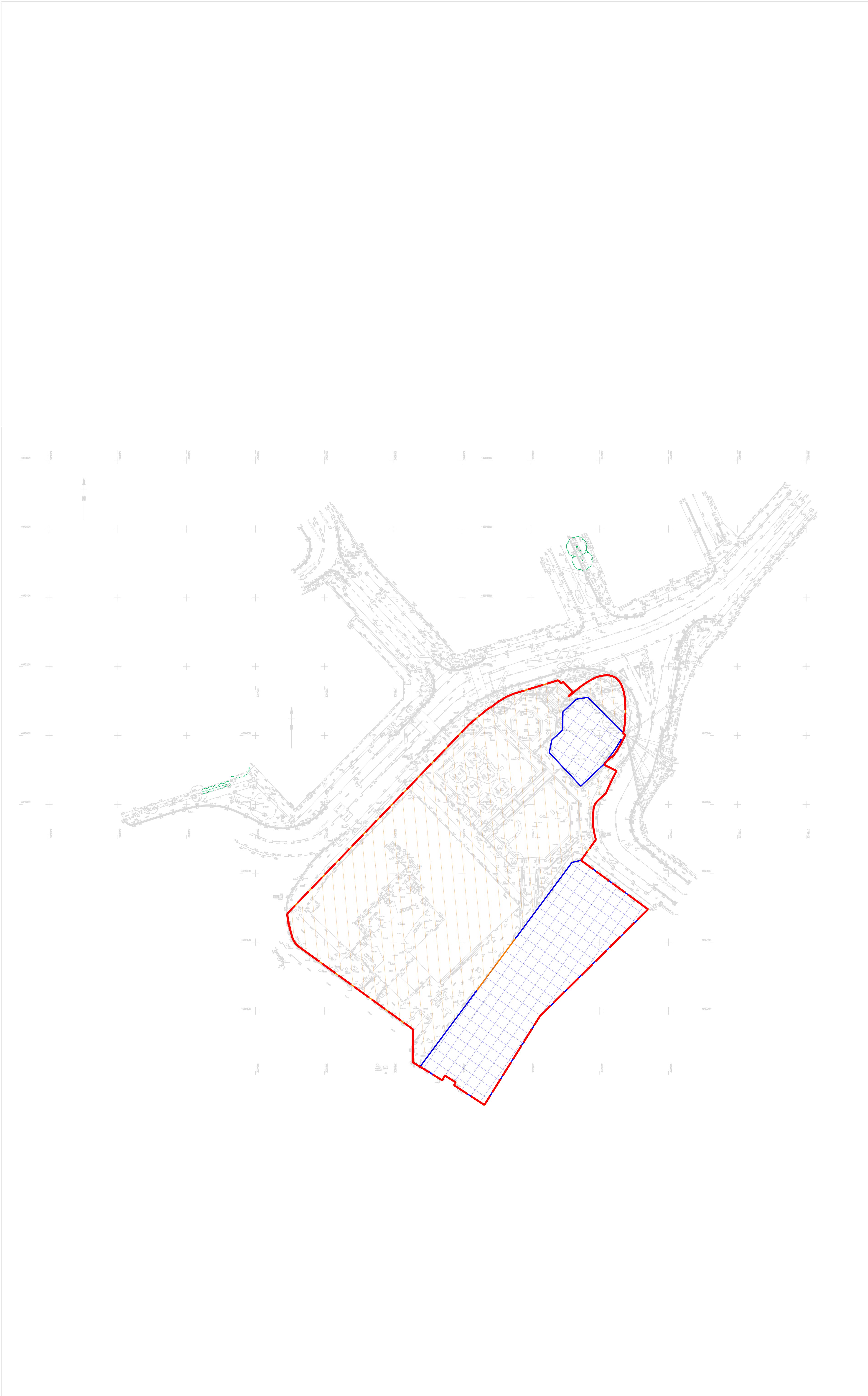
UNDERGROUND SERVICES
SURVEY

Drawn By JM 09/02/22	Survey Date JANUARY 2022
Checked by DJ 09/02/22	Scale A1@1:200
Drawing No 57969/UG5	Revision C

UNDERGROUND SERVICES KEY

TL000 TL001 TL002 TL003 TL004 TL005 TL006 TL007 TL008 TL009 TL010 TL011 TL012 TL013 TL014 TL015 TL016 TL017 TL018 TL019 TL020 TL021 TL022 TL023 TL024 TL025 TL026 TL027 TL028 TL029 TL030 TL031 TL032 TL033 TL034 TL035 TL036 TL037 TL038 TL039 TL040 TL041 TL042 TL043 TL044 TL045 TL046 TL047 TL048 TL049 TL050 TL051 TL052 TL053 TL054 TL055 TL056 TL057 TL058 TL059 TL060 TL061 TL062 TL063 TL064 TL065 TL066 TL067 TL068 TL069 TL070 TL071 TL072 TL073 TL074 TL075 TL076 TL077 TL078 TL079 TL080 TL081 TL082 TL083 TL084 TL085 TL086 TL087 TL088 TL089 TL090 TL091 TL092 TL093 TL094 TL095 TL096 TL097 TL098 TL099 TL100 TL101 TL102 TL103 TL104 TL105 TL106 TL107 TL108 TL109 TL110 TL111 TL112 TL113 TL114 TL115 TL116 TL117 TL118 TL119 TL120 TL121 TL122 TL123 TL124 TL125 TL126 TL127 TL128 TL129 TL130 TL131 TL132 TL133 TL134 TL135 TL136 TL137 TL138 TL139 TL140 TL141 TL142 TL143 TL144 TL145 TL146 TL147 TL148 TL149 TL150 TL151 TL152 TL153 TL154 TL155 TL156 TL157 TL158 TL159 TL160 TL161 TL162 TL163 TL164 TL165 TL166 TL167 TL168 TL169 TL170 TL171 TL172 TL173 TL174 TL175 TL176 TL177 TL178 TL179 TL180 TL181 TL182 TL183 TL184 TL185 TL186 TL187 TL188 TL189 TL190 TL191 TL192 TL193 TL194 TL195 TL196 TL197 TL198 TL199 TL200 TL201 TL202 TL203 TL204 TL205 TL206 TL207 TL208 TL209 TL210 TL211 TL212 TL213 TL214 TL215 TL216 TL217 TL218 TL219 TL220 TL221 TL222 TL223 TL224 TL225 TL226 TL227 TL228 TL229 TL230 TL231 TL232 TL233 TL234 TL235 TL236 TL237 TL238 TL239 TL240 TL241 TL242 TL243 TL244 TL245 TL246 TL247 TL248 TL249 TL250 TL251 TL252 TL253 TL254 TL255 TL256 TL257 TL258 TL259 TL260 TL261 TL262 TL263 TL264 TL265 TL266 TL267 TL268 TL269 TL270 TL271 TL272 TL273 TL274 TL275 TL276 TL277 TL278 TL279 TL280 TL281 TL282 TL283 TL284 TL285 TL286 TL287 TL288 TL289 TL290 TL291 TL292 TL293 TL294 TL295 TL296 TL297 TL298 TL299 TL300 TL301 TL302 TL303 TL304 TL305 TL306 TL307 TL308 TL309 TL310 TL311 TL312 TL313 TL314 TL315 TL316 TL317 TL318 TL319 TL320 TL321 TL322 TL323 TL324 TL325 TL326 TL327 TL328 TL329 TL330 TL331 TL332 TL333 TL334 TL335 TL336 TL337 TL338 TL339 TL340 TL341 TL342 TL343 TL344 TL345 TL346 TL347 TL348 TL349 TL350 TL351 TL352 TL353 TL354 TL355 TL356 TL357 TL358 TL359 TL360 TL361 TL362 TL363 TL364 TL365 TL366 TL367 TL368 TL369 TL370 TL371 TL372 TL373 TL374 TL375 TL376 TL377 TL378 TL379 TL380 TL381 TL382 TL383 TL384 TL385 TL386 TL387 TL388 TL389 TL390 TL391 TL392 TL393 TL394 TL395 TL396 TL397 TL398 TL399 TL400 TL401 TL402 TL403 TL404 TL405 TL406 TL407 TL408 TL409 TL410 TL411 TL412 TL413 TL414 TL415 TL416 TL417 TL418 TL419 TL420 TL421 TL422 TL423 TL424 TL425 TL426 TL427 TL428 TL429 TL430 TL431 TL432 TL433 TL434 TL435 TL436 TL437 TL438 TL439 TL440 TL441 TL442 TL443 TL444 TL445 TL446 TL447 TL448 TL449 TL450 TL451 TL452 TL453 TL454 TL455 TL456 TL457 TL458 TL459 TL460 TL461 TL462 TL463 TL464 TL465 TL466 TL467 TL468 TL469 TL470 TL471 TL472 TL473 TL474 TL475 TL476 TL477 TL478 TL479 TL480 TL481 TL482 TL483 TL484 TL485 TL486 TL487 TL488 TL489 TL490 TL491 TL492 TL493 TL494 TL495 TL496 TL497 TL498 TL499 TL500 TL501 TL502 TL503 TL504 TL505 TL506 TL507 TL508 TL509 TL510 TL511 TL512 TL513 TL514 TL515 TL516 TL517 TL518 TL519 TL520 TL521 TL522 TL523 TL524 TL525 TL526 TL527 TL528 TL529 TL530 TL531 TL532 TL533 TL534 TL535 TL536 TL537 TL538 TL539 TL540 TL541 TL542 TL543 TL544 TL545 TL546 TL547 TL548 TL549 TL550 TL551 TL552 TL553 TL554 TL555 TL556 TL557 TL558 TL559 TL560 TL561 TL562 TL563 TL564 TL565 TL566 TL567 TL568 TL569 TL570 TL571 TL572 TL573 TL574 TL575 TL576 TL577 TL578 TL579 TL580 TL581 TL582 TL583 TL584 TL585 TL586 TL587 TL588 TL589 TL590 TL591 TL592 TL593 TL594 TL595 TL596 TL597 TL598 TL599 TL600 TL601 TL602 TL603 TL604 TL605 TL606 TL607 TL608 TL609 TL610 TL611 TL612 TL613 TL614 TL615 TL616 TL617 TL618 TL619 TL620 TL621 TL622 TL623 TL624 TL625 TL626 TL627 TL628 TL629 TL630 TL631 TL632 TL633 TL634 TL635 TL636 TL637 TL638 TL639 TL640 TL641 TL642 TL643 TL644 TL645 TL646 TL647 TL648 TL649 TL650 TL651 TL652 TL653 TL654 TL655 TL656 TL657 TL658 TL659 TL660 TL661 TL662 TL663 TL664 TL665 TL666 TL667 TL668 TL669 TL670 TL671 TL672 TL673 TL674 TL675 TL676 TL677 TL678 TL679 TL680 TL681 TL682 TL683 TL684 TL685 TL686 TL687 TL688 TL689 TL690 TL691 TL692 TL693 TL694 TL695 TL696 TL697 TL698 TL699 TL700 TL701 TL702 TL703 TL704 TL705 TL706 TL707 TL708 TL709 TL710 TL711 TL712 TL713 TL714 TL715 TL716 TL717 TL718 TL719 TL720 TL721 TL722 TL723 TL724 TL725 TL726 TL727 TL728 TL729 TL730 TL731 TL732 TL733 TL734 TL735 TL736 TL737 TL738 TL739 TL740 TL741 TL742 TL743 TL744 TL745 TL746 TL747 TL748 TL749 TL750 TL751 TL752 TL753 TL754 TL755 TL756 TL757 TL758 TL759 TL760 TL761 TL762 TL763 TL764 TL765 TL766 TL767 TL768 TL769 TL770 TL771 TL772 TL773 TL774 TL775 TL776 TL777 TL778 TL779 TL780 TL781 TL782 TL783 TL784 TL785 TL786 TL787 TL788 TL789 TL790 TL791 TL792 TL793 TL794 TL795 TL796 TL797 TL798 TL799 TL800 TL801 TL802 TL803 TL804 TL805 TL806 TL807 TL808 TL809 TL810 TL811 TL812 TL813 TL814 TL815 TL816 TL817 TL818 TL819 TL820 TL821 TL822 TL823 TL824 TL825 TL826 TL827 TL828 TL829 TL830 TL831 TL832 TL833 TL834 TL835 TL836 TL837 TL838 TL839 TL840 TL841 TL842 TL843 TL844 TL845 TL846 TL847 TL848 TL849 TL850 TL851 TL852 TL853 TL854 TL855 TL856 TL857 TL858 TL859 TL860 TL861 TL862 TL863 TL864 TL865 TL866 TL867 TL868 TL869 TL870 TL871 TL872 TL873 TL874 TL875 TL876 TL877 TL878 TL879 TL880 TL881 TL882 TL883 TL884 TL885 TL886 TL887 TL888 TL889 TL890 TL891 TL892 TL893 TL894 TL895 TL896 TL897 TL898 TL899 TL900 TL901 TL902 TL903 TL904 TL905 TL906 TL907 TL908 TL909 TL910 TL911 TL912 TL913 TL914 TL915 TL916 TL917 TL918 TL919 TL920 TL921 TL922 TL923 TL924 TL925 TL926 TL927 TL928 TL929 TL930 TL931 TL932 TL933 TL934 TL935 TL936 TL937 TL938 TL939 TL940 TL941 TL942 TL943 TL944 TL945 TL946 TL947 TL948 TL949 TL950 TL951 TL952 TL953 TL954 TL955 TL956 TL957 TL958 TL959 TL960 TL961 TL962 TL963 TL964 TL965 TL966 TL967 TL968 TL969 TL970 TL971 TL972 TL973 TL974 TL975 TL976 TL977 TL978 TL979 TL980 TL981 TL982 TL983 TL984 TL985 TL986 TL987 TL988 TL989 TL990 TL991 TL992 TL993 TL994 TL995 TL996 TL997 TL998 TL999 TL1000 TL1001 TL1002 TL1003 TL1004 TL1005 TL1006 TL1007 TL1008 TL1009 TL1010 TL1011 TL1012 TL1013 TL1014 TL1015 TL1016 TL1017 TL1018 TL1019 TL1020 TL1021 TL1022 TL1023 TL1024 TL1025 TL1026 TL1027 TL1028 TL1029 TL1030 TL1031 TL1032 TL1033 TL1034 TL1035 TL1036 TL1037 TL1038 TL1039 TL1040 TL1041 TL1042 TL1043 TL1044 TL1045 TL1046 TL1047 TL1048 TL1049 TL1050 TL1051 TL1052 TL1053 TL1054 TL1055 TL1056 TL1057 TL1058 TL1059 TL1060 TL1061 TL1062 TL1063 TL1064 TL1065 TL1066 TL1067 TL1068 TL1069 TL1070 TL1071 TL1072 TL1073 TL1074 TL1075 TL1076 TL1077 TL1078 TL1079 TL1080 TL1081 TL1082 TL1083 TL1084 TL1085 TL1086 TL1087 TL1088 TL1089 TL1090 TL1091 TL1092 TL1093 TL1094 TL1095 TL1096 TL1097 TL1098 TL1099 TL1100 TL1101 TL1102 TL1103 TL1104 TL1105 TL1106 TL1107 TL1108 TL1109 TL1110 TL1111 TL1112 TL1113 TL1114 TL1115 TL1116 TL1117 TL1118 TL1119 TL1120 TL1121 TL1122 TL1123 TL1124 TL1125 TL1126 TL1127 TL1128 TL1129 TL1130 TL1131 TL1132 TL1133 TL1134 TL1135 TL1136 TL1137 TL1138 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TL1282 TL1283 TL1284 TL1285 TL1286 TL1287 TL1288 TL1289 TL1290 TL1291 TL1292 TL1293 TL1294 TL1295 TL1296 TL1297 TL1298 TL1299 TL1300 TL1301 TL1302 TL1303 TL1304 TL1305 TL1306 TL1307 TL1308 TL1309 TL1310 TL1311 TL1312 TL1313 TL1314 TL1315 TL1316 TL1317 TL1318 TL1319 TL1320 TL1321 TL1322 TL1323 TL1324 TL1325 TL1326 TL1327 TL1328 TL1329 TL1330 TL1331 TL1332 TL1333 TL1334 TL1335 TL1336 TL1337 TL1338 TL1339 TL1340 TL1341 TL1342 TL1343 TL1344 TL1345 TL1346 TL1347 TL1348 TL1349 TL1350 TL1351 TL1352 TL1353 TL1354 TL1355 TL1356 TL1357 TL1358 TL1359 TL1360 TL1361 TL1362 TL1363 TL1364 TL1365 TL1366 TL1367 TL1368 TL1369 TL1370 TL1371 TL1372 TL1373 TL1374 TL1375 TL1376 TL1377 TL1378 TL1379 TL1380 TL1381 TL1382 TL1383 TL1384 TL1385 TL1386 TL1387 TL1388 TL1389 TL1390 TL1391 TL1392 TL1393 TL1394 TL1395 TL1396 TL1397 TL1398 TL1399 TL1400 TL1401 TL1402 TL1403 TL1404 TL1405 TL1406 TL1407 TL1408 TL1409 TL1410 TL1411 TL1412 TL1413 TL1414 TL1415 TL1416 TL1417 TL1418 TL1419 TL1420 TL1421 TL1422 TL1423 TL1424 TL1425 TL1426 TL1427 TL1428 TL1429 TL1430 TL1431 TL1432 TL1433 TL1434 TL1435 TL1436 TL1437 TL1438 TL1439 TL1440 TL1441 TL1442 TL1443 TL1444 TL1445 TL1446 TL1447 TL1448 TL1449 TL1450 TL1451 TL1452 TL1453 TL1454 TL1455 TL1456 TL1457 TL1458 TL1459 TL1460 TL1461 TL1462 TL1463 TL1464 TL1465 TL1466 TL1467 TL1468 TL1469 TL1470 TL1471 TL1472 TL1473 TL1474 TL1475 TL1476 TL1477 TL1478 TL1479 TL1480 TL1481 TL1482 TL1483 TL1484 TL1485 TL1486 TL1487 TL1488 TL1489 TL1490 TL1491 TL1492 TL1493 TL1494 TL1495 TL1496 TL1497 TL1498 TL1499 TL1500 TL1501 TL1502 TL1503 TL1504 TL1505 TL1506 TL1507 TL1508 TL1509 TL1510 TL1511 TL1512 TL1513 TL1514 TL1515 TL1516 TL1517 TL1518 TL1519 TL1520 TL1521 TL1522 TL1523 TL1524 TL1525 TL1526 TL1527 TL1528 TL1529 TL1530 TL1531 TL1532 TL1533 TL1534 TL1535 TL1536 TL1537 TL1538 TL1539 TL1540 TL1541 TL1542 TL1543 TL1544 TL1545 TL1546 TL1547 TL1548 TL1549 TL1550 TL1551 TL1552 TL1553 TL1554 TL1555 TL1556 TL1557 TL1558 TL1559 TL1560 TL1561 TL1562 TL1563 TL1564 TL1565 TL1566 TL1567 TL1568 TL1569 TL1570 TL1571 TL1572 TL1573 TL1574 TL1575 TL1576 TL1577 TL1578 TL1579 TL1580 TL1581 TL1582 TL1583 TL1584 TL1585 TL1586 TL1587 TL1588 TL1589 TL1590 TL1591 TL1592 TL1593 TL1594 TL1595 TL1596 TL1597 TL1598 TL1599 TL1600 TL1601 TL1602 TL1603 TL1604 TL1605 TL1606 TL1607 TL1608 TL1609 TL1610 TL1611 TL1612 TL1613 TL1614 TL1615 TL1616 TL1617 TL1618 TL1619 TL1620 TL1621 TL1622 TL1623 TL1624 TL1625 TL1626 TL1627 TL1628 TL1629 TL1630 TL1631 TL1632 TL1633 TL1634 TL1635 TL1636 TL1637 TL1638 TL1639 TL1640 TL1641 TL1642 TL1643 TL1644 TL1645 TL1646 TL1647 TL1648 TL1649 TL1650 TL1651 TL1652 TL1653 TL1654 TL1655 TL1656 TL1657 TL1658 TL1659 TL1660 TL1661
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Appendix G – Pre & Post Development Impermeable Areas Drawing



- PRE DEVELOPMENT
IMPERMEABLE AREAS = 5,072m²
- POST DEVELOPMENT
IMPERMEABLE AREAS = 4,711m²
- AREAS EXCLUDED FROM PROPOSED
DEVELOPMENT = 1,934m²

P01		22/12/2023		PRELIMINARY - FOR INFORMATION ONLY				JRS	DJS	DJS
REV		DATE		DESCRIPTION				BY	CHK	APP

DRAWING STATUS

PRELIMINARY

CLIENT

BURY COUNCIL

ARCHITECT

POZZONI

PROJECT

RADCLIFFE CIVIC HUB

TITLE

BELOW GROUND DRAINAGE
PRE & POST DEVELOPMENT IMPERMEABLE AREAS

STATUS	PROJECT No.	PROJECT	ORIGIN	COLLUSION LEVEL	TYPE	ROLE	DRAWING No.	REV
S2	221-145	RADHUB-AJP-ZZ-XX-SK-C-0001	P01					

SCALE @ A1	DESIGNED	DRAWN	CHECKED	APPROVED	DATE
1:500	JRS	JRS	DJS	DJS	DEC 2023

consulting engineers

%0151 227 1462 | info@ajpctd.co.uk | 1 Dale Street, Liverpool, L2 2ET

Appendix H – Greenfield Runoff Calculations

The Alan Johnston Partnership		Page 1
1 Dale Street Liverpool L2 2ET	221-145 - Radcliffe Civic Hub Existing Brownfield Runoff Discharge Rates	
Date 22/12/2022 15:59	Designed by JRS	
File EXISTING BROWNFIELD RUNOFF.MDX	Checked by DJS	
Micro Drainage	Network 2019.1	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	19.000	Add Flow / Climate Change (%)	0
Ratio R	0.325	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.367	4-8	0.141

Total Area Contributing (ha) = 0.508

Total Pipe Volume (m³) = 2.121

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	10.000	0.067	149.3	0.508	5.00	0.0	0.600	o	300	Pipe/Conduit	
S1.001	10.000	0.067	149.3	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.002	10.000	0.067	149.3	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	50.00	5.13	63.500	0.508	0.0	0.0	0.0	1.28	90.8	68.8
S1.001	50.00	5.26	63.433	0.508	0.0	0.0	0.0	1.28	90.8	68.8
S1.002	50.00	5.39	63.366	0.508	0.0	0.0	0.0	1.28	90.8	68.8

The Alan Johnston Partnership		Page 2
1 Dale Street Liverpool L2 2ET	221-145 - Radcliffe Civic Hub Existing Brownfield Runoff Discharge Rates	
Date 22/12/2022 15:59	Designed by JRS	
File EXISTING BROWNFIELD RUNOFF.MDX	Checked by DJS	
Micro Drainage	Network 2019.1	

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.508	0.508	0.508
1.001	-	-	100	0.000	0.000	0.000
1.002	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.508	0.508	0.508

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
---------------------	--------------	--------------	--------------	------------------	----------	--------

S1.002	S	65.000	63.299	0.000	0	0
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Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start (mins)	0	Inlet Coefficient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 0 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	2	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Storm Duration (mins)	30
Ratio R	0.325		

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1 Dale Street Liverpool L2 2ET	221-145 - Radcliffe Civic Hub Existing Brownfield Runoff Discharge Rates	
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File EXISTING BROWNFIELD RUNOFF.MDX	Checked by DJS	
Micro Drainage	Network 2019.1	

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
 Hot Start Level (mm) 0 Inlet Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 0 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.325 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status ON

Profile(s)

Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 1, 2, 30, 100
 Climate Change (%) 0, 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
S1.000	SSW01	15 Winter	1	+0%	2/15 Summer				63.736	-0.064	0.000
S1.001	SSW02	15 Winter	1	+0%	2/15 Summer				63.668	-0.065	0.000
S1.002	SSW03	15 Winter	1	+0%	2/15 Summer				63.598	-0.068	0.000

		Pipe		Level	
PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status Exceeded
S1.000	SSW01	0.95		61.7	OK
S1.001	SSW02	0.96		62.3	OK
S1.002	SSW03	0.96		62.2	OK

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1 Dale Street Liverpool L2 2ET	221-145 - Radcliffe Civic Hub Existing Brownfield Runoff Discharge Rates	
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Micro Drainage	Network 2019.1	

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
 Hot Start Level (mm) 0 Inlet Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 0 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.325 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status ON

Profile(s)

Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 1, 2, 30, 100
 Climate Change (%) 0, 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m ³)
S1.000	SSW01	15 Winter	2	+0%	2/15 Summer				63.861	0.061	0.000
S1.001	SSW02	15 Winter	2	+0%	2/15 Summer				63.768	0.035	0.000
S1.002	SSW03	15 Winter	2	+0%	2/15 Summer				63.676	0.010	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	SSW01	1.16		75.4	SURCHARGED	
S1.001	SSW02	1.16		75.0	SURCHARGED	
S1.002	SSW03	1.16		74.9	SURCHARGED	

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1 Dale Street Liverpool L2 2ET	221-145 - Radcliffe Civic Hub Existing Brownfield Runoff Discharge Rates	
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Micro Drainage	Network 2019.1	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
 Hot Start Level (mm) 0 Inlet Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 0 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.325 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status ON

Profile(s)

Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 1, 2, 30, 100
 Climate Change (%) 0, 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
S1.000	SSW01	15 Winter	30	+0%	2/15 Summer				64.481	0.681	0.000
S1.001	SSW02	15 Winter	30	+0%	2/15 Summer				64.177	0.444	0.000
S1.002	SSW03	15 Winter	30	+0%	2/15 Summer				63.878	0.212	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	SSW01	2.08		134.9	SURCHARGED	
S1.001	SSW02	2.08		135.1	SURCHARGED	
S1.002	SSW03	2.09		135.6	SURCHARGED	

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1 Dale Street Liverpool L2 2ET	221-145 - Radcliffe Civic Hub Existing Brownfield Runoff Discharge Rates	
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Micro Drainage	Network 2019.1	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
 Hot Start Level (mm) 0 Inlet Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 0 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.000 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.325 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status ON

Profile(s)

Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 1, 2, 30, 100
 Climate Change (%) 0, 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
S1.000	SSW01	15 Winter	100	+0%	2/15 Summer			64.973	1.173	0.000
S1.001	SSW02	15 Winter	100	+0%	2/15 Summer			64.499	0.766	0.000
S1.002	SSW03	15 Winter	100	+0%	2/15 Summer			64.037	0.371	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	SSW01	2.59		168.3	FLOOD RISK	
S1.001	SSW02	2.61		169.1	SURCHARGED	
S1.002	SSW03	2.61		169.0	SURCHARGED	

Appendix I – Preliminary Storage Estimate

The Alan Johnston Partnership		Page 1
1 Dale Street Liverpool L2 2ET	221-145 - Radcliffe Civic Hub Prelim Storage Estimate 50% Betterment	
Date 03/05/2022 12:18 File Prelim Storage Estimate.SRCX	Designed by JRS Checked by DJS	
Micro Drainage	Source Control 2019.1	

Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 49 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control Σ (l/s)	Max Outflow (l/s)	Max Volume (m ³)	Status
15 min Summer	63.696	0.696	0.0	34.2	34.2	109.8	0 K
30 min Summer	63.918	0.918	0.0	34.2	34.2	144.7	0 K
60 min Summer	64.046	1.046	0.0	34.2	34.2	164.9	0 K
120 min Summer	64.060	1.060	0.0	34.2	34.2	167.1	0 K
180 min Summer	64.000	1.000	0.0	34.2	34.2	157.7	0 K
240 min Summer	63.918	0.918	0.0	34.2	34.2	144.7	0 K
360 min Summer	63.731	0.731	0.0	34.2	34.2	115.2	0 K
480 min Summer	63.574	0.574	0.0	34.2	34.2	90.6	0 K
600 min Summer	63.453	0.453	0.0	34.2	34.2	71.4	0 K
720 min Summer	63.364	0.364	0.0	34.1	34.1	57.3	0 K
960 min Summer	63.261	0.261	0.0	32.9	32.9	41.2	0 K
1440 min Summer	63.204	0.204	0.0	26.0	26.0	32.1	0 K
2160 min Summer	63.167	0.167	0.0	19.4	19.4	26.3	0 K
2880 min Summer	63.146	0.146	0.0	15.6	15.6	23.0	0 K
4320 min Summer	63.121	0.121	0.0	11.4	11.4	19.1	0 K
5760 min Summer	63.107	0.107	0.0	9.2	9.2	16.9	0 K
7200 min Summer	63.097	0.097	0.0	7.7	7.7	15.3	0 K
8640 min Summer	63.090	0.090	0.0	6.7	6.7	14.2	0 K
10080 min Summer	63.085	0.085	0.0	6.0	6.0	13.3	0 K
15 min Winter	63.797	0.797	0.0	34.2	34.2	125.6	0 K
30 min Winter	64.047	1.047	0.0	34.2	34.2	165.1	0 K
60 min Winter	64.195	1.195	0.0	34.2	34.2	188.5	0 K
120 min Winter	64.191	1.191	0.0	34.2	34.2	187.8	0 K
180 min Winter	64.092	1.092	0.0	34.2	34.2	172.3	0 K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
15 min Summer	121.440	0.0	139.5	22
30 min Summer	82.678	0.0	190.0	34
60 min Summer	53.779	0.0	247.5	54
120 min Summer	33.752	0.0	310.7	88
180 min Summer	25.289	0.0	349.2	124
240 min Summer	20.437	0.0	376.3	158
360 min Summer	15.138	0.0	418.1	220
480 min Summer	12.218	0.0	449.9	280
600 min Summer	10.337	0.0	475.8	336
720 min Summer	9.011	0.0	497.8	392
960 min Summer	7.249	0.0	533.9	502
1440 min Summer	5.324	0.0	588.1	738
2160 min Summer	3.900	0.0	646.4	1104
2880 min Summer	3.122	0.0	690.0	1468
4320 min Summer	2.278	0.0	754.9	2204
5760 min Summer	1.819	0.0	804.2	2936
7200 min Summer	1.530	0.0	845.4	3672
8640 min Summer	1.328	0.0	880.7	4360
10080 min Summer	1.179	0.0	911.7	5056
15 min Winter	121.440	0.0	156.3	23
30 min Winter	82.678	0.0	212.9	34
60 min Winter	53.779	0.0	277.2	58
120 min Winter	33.752	0.0	348.0	94
180 min Winter	25.289	0.0	391.1	132

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1 Dale Street Liverpool L2 2ET	221-145 - Radcliffe Civic Hub Prelim Storage Estimate 50% Betterment	
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Micro Drainage	Source Control 2019.1	

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Outflow (l/s)	Max Volume (m³)	Status
240 min Winter	63.964	0.964	0.0	34.2	34.2	151.9	0 K
360 min Winter	63.664	0.664	0.0	34.2	34.2	104.7	0 K
480 min Winter	63.441	0.441	0.0	34.2	34.2	69.5	0 K
600 min Winter	63.303	0.303	0.0	33.6	33.6	47.8	0 K
720 min Winter	63.243	0.243	0.0	31.8	31.8	38.4	0 K
960 min Winter	63.204	0.204	0.0	26.0	26.0	32.1	0 K
1440 min Winter	63.166	0.166	0.0	19.2	19.2	26.1	0 K
2160 min Winter	63.137	0.137	0.0	14.1	14.1	21.6	0 K
2880 min Winter	63.121	0.121	0.0	11.3	11.3	19.0	0 K
4320 min Winter	63.101	0.101	0.0	8.3	8.3	15.9	0 K
5760 min Winter	63.090	0.090	0.0	6.6	6.6	14.1	0 K
7200 min Winter	63.082	0.082	0.0	5.6	5.6	12.9	0 K
8640 min Winter	63.076	0.076	0.0	4.8	4.8	11.9	0 K
10080 min Winter	63.071	0.071	0.0	4.3	4.3	11.2	0 K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
240 min Winter	20.437	0.0	421.5	170
360 min Winter	15.138	0.0	468.3	234
480 min Winter	12.218	0.0	503.9	288
600 min Winter	10.337	0.0	532.9	336
720 min Winter	9.011	0.0	557.5	382
960 min Winter	7.249	0.0	598.0	500
1440 min Winter	5.324	0.0	658.7	738
2160 min Winter	3.900	0.0	724.0	1104
2880 min Winter	3.122	0.0	772.8	1468
4320 min Winter	2.278	0.0	845.5	2168
5760 min Winter	1.819	0.0	900.7	2912
7200 min Winter	1.530	0.0	946.9	3640
8640 min Winter	1.328	0.0	986.4	4288
10080 min Winter	1.179	0.0	1021.1	5024

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1 Dale Street Liverpool L2 2ET	221-145 - Radcliffe Civic Hub Prelim Stroage Estimate 50% Betterment	
Date 03/05/2022 12:18 File Prelim Storage Estimate.SRCX	Designed by JRS Checked by DJS	
Micro Drainage	Source Control 2019.1	

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Shortest Storm (mins)	15
Ratio R	0.325	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.614

Time (mins) Area			Time (mins) Area			Time (mins) Area		
From:	To:	(ha)	From:	To:	(ha)	From:	To:	(ha)
0	4	0.205	4	8	0.205	8	12	0.204

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1 Dale Street Liverpool L2 2ET	221-145 - Radcliffe Civic Hub Prelim Storage Estimate 50% Betterment	
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Micro Drainage	Source Control 2019.1	

Model Details

Storage is Online Cover Level (m) 65.000

Cellular Storage Structure

Invert Level (m) 63.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	166.0	0.0	1.200	166.0	0.0	1.201	0.0	0.0

Hydro-Brake® Optimum Outflow Control

Unit Reference MD-SHE-0248-3420-1200-3420
Design Head (m) 1.200
Design Flow (l/s) 34.2
Flush-Flo™ Calculated
Objective Minimise upstream storage
Application Surface
Sump Available Yes
Diameter (mm) 248
Invert Level (m) 63.000
Minimum Outlet Pipe Diameter (mm) 300
Suggested Manhole Diameter (mm) 1800

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.200	34.2	Kick-Flo®	0.868	29.3
Flush-Flo™	0.416	34.2	Mean Flow over Head Range	-	28.7

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

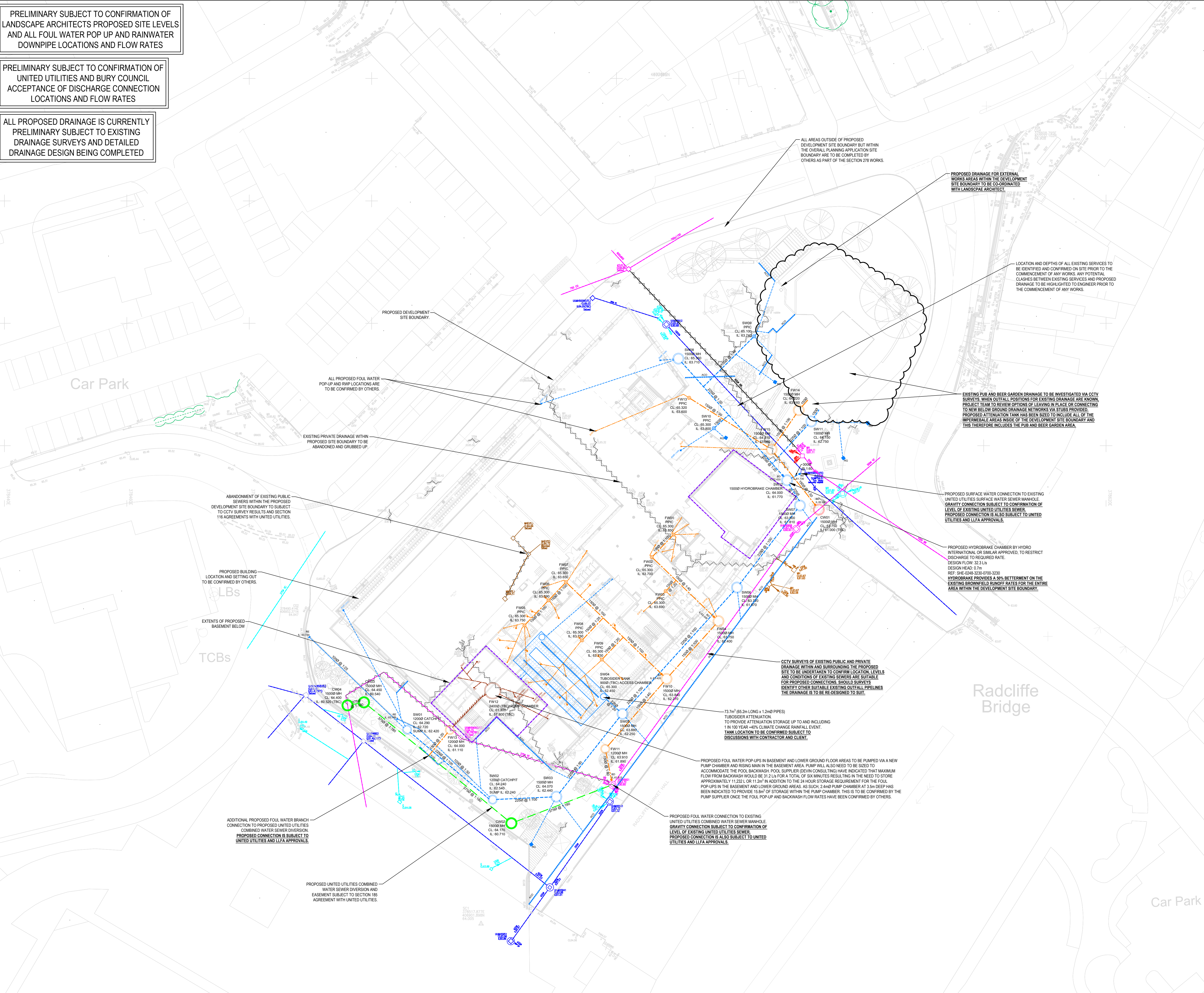
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	8.1	0.800	31.2	2.000	43.7	4.000	61.1	7.000	80.2
0.200	25.3	1.000	31.3	2.200	45.8	4.500	64.7	7.500	82.9
0.300	33.6	1.200	34.2	2.400	47.7	5.000	68.1	8.000	85.6
0.400	34.2	1.400	36.8	2.600	49.6	5.500	71.3	8.500	88.2
0.500	34.0	1.600	39.3	3.000	53.2	6.000	74.4	9.000	90.7
0.600	33.5	1.800	41.5	3.500	57.3	6.500	77.4	9.500	93.1

Appendix J – Outline Drainage Strategy Drawing & SW Calculations

PRELIMINARY SUBJECT TO CONFIRMATION OF LANDSCAPE ARCHITECTS PROPOSED SITE LEVELS AND ALL FOUL WATER POP UP AND RAINWATER DOWNPIPE LOCATIONS AND FLOW RATES

PRELIMINARY SUBJECT TO CONFIRMATION OF UNITED UTILITIES AND BURY COUNCIL ACCEPTANCE OF DISCHARGE CONNECTION LOCATIONS AND FLOW RATES

ALL PROPOSED DRAINAGE IS CURRENTLY PRELIMINARY SUBJECT TO EXISTING DRAINAGE SURVEYS AND DETAILED DRAINAGE DESIGN BEING COMPLETED



- IMPORTANT NOTES**
- SETTING OUT SHALL BE UNDERTAKEN USING ONLY THE INFORMATION GIVEN. DISTANCES SHOULD NOT BE SCALED FROM THIS DRAWING.
 - ALL SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SEWERS FOR ADOPTION 17TH EDITION AND UNITED UTILITIES DETAILS & GUIDELINES.
 - THE MINIMUM GRAVITY PIPE DIAMETER UNDER ADOPTABLE HIGHWAYS SHALL BE 150mm.
 - IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL INFORMATION GIVEN WITH REGARDS TO EXISTING SERVICES AND DRAINAGE CONNECTIONS ETC. PRIOR TO COMMENCING THE WORKS. THE NOTES SHALL INCLUDE FOR HAND DUG AROUND SERVICES WHERE NECESSARY. THE CONTRACTOR SHALL ADHERE TO THE COM REGULATIONS AT ALL TIMES.
 - THE OUTSIDES OF ALL SEWERS SHALL BE A MINIMUM OF 1.0m FROM KERB LINES AND THE OUTSIDE OF MANHOLES SHALL BE A MINIMUM OF 0.5m FROM KERB LINES.
 - EXISTING FLOWS IN WATERCOURSES, SEWERS AND LAND DRAINS SHALL BE MAINTAINED AT ALL TIMES.
 - ONLY TRAINED PERSONNEL SHALL BE PERMITTED TO ENTER CONFINED SPACES.
 - ALL MATERIALS TO BEAR THE RELEVANT B.S. KITEMARK AND COMPLY FULLY WITH THE SPECIFICATIONS. ALL CONCRETE & CONCRETE PRODUCTS MUST USE SULPHATE RESISTANT CEMENT UNLESS THE SITE INVESTIGATION REPORT PROVES THAT SULPHATE ATTACK FROM SOILS AND GROUNDWATER WILL NOT OCCUR TO WITHSTAND A CLASS.
 - ALL OPENING NOTICES ETC. AS REQUIRED UNDER HIGHWAYS ACTS ETC. ARE TO BE OBTAINED PRIOR TO COMMENCEMENT OF WORKS. ALL WORKS ARE TO BE INSPECTED BY L.A. INHSC OR THE NETWORK OPERATOR AS APPLICABLE.
 - WHEREVER TRIP RIP UPVC PIPES (OR SIMILAR APPROVED) ARE USED IN ADOPTABLE DRAINAGE THEY SHALL STILL BE HANDLED AND JOINTS IN ACCORDANCE WITH THE SPECIFICATION AND GUIDANCE ISSUED BY THE HIGH PERFORMANCE PIPE ASSOCIATION.
 - A CLASS 5 BED AND SURROUND MUST BE USED FOR SUCH PIPES. TRENCH BACKFILL IN HIGHWAYS TO WITHIN 1M OF HIGHWAY SHALL AS DIRECTED BY THE HIGHWAY AUTHORITY BE A SUITABLE GRANULAR MATERIAL ALL IN ACCORDANCE WITH SEWERS FOR ADOPTION CL 4.3.4.
 - SUB LEVELS SHALL NOT BE VARIED WITHOUT REFERENCE TO THE ENGINEER FOR GUIDANCE.
 - ALL GULLY CONNECTIONS TO BE 150mm VITRIFIED CLAY (UNLESS NOTED OTHERWISE).
 - ALL MANHOLE COVERS TO BE RECESSED TO ACCEPT FINISH AS DETAILED BY LANDSCAPE ARCHITECT.
 - SLOW REST BENDS TO BE USED IN ALL LOCATIONS MADE UP FROM 2m+45 DEG BENDS (800mm TO INVERT FROM FFL).
 - MANHOLE POSITIONS AND ACCESS COVERS TO BE ACCURATELY SET OUT BY LANDSCAPE ARCHITECT TO SUIT EXTERNAL FINISHES.
 - ALL DRAINS CAST THROUGH FOUNDATIONS TO HAVE ROCKER PIPES ON BOTH SIDES OF FOUNDATION.
 - ALL POP UP POSITIONS TO BE CONFIRMED SET OUT DIMENSIONS TO BE AGREED & PROVIDED BY OTHERS.
 - ALL DISCHARGE RATES TO BE CONFIRMED BY M&E DESIGNER.
 - ALL SURFACE WATER COLLECTION FEATURES TO BE CONFIRMED BY THE LANDSCAPE ARCHITECT.
 - STORAGE HAS BEEN PROVIDED IN A CELLULAR STORAGE TANK AND UP-SIZED MANHOLES AND PIPES.
 - EXISTING SEWER DEPTHS HAVE BEEN APPROXIMATED FROM LIMITED INFORMATION. NEW CONNECTIONS TO BE CONFIRMED PRIOR TO CONSTRUCTION OF ANY DRAINAGE WORKS.
 - LANDSCAPE ARCHITECT TO CONFIRM GULLY AND DRAINAGE CHANNEL LOCATIONS TO LANDSCAPED AREAS.
 - FOUL NETWORK TO BE CONFIRMED FOLLOWING CONFIRMATION OF BRANCH CONNECTION POINTS FROM BUILDING M&E DESIGNER.
 - CCTV SURVEY OF EXISTING SITE DRAINAGE REQUIRED PRIOR TO THE COMMENCEMENT OF ANY WORKS STARTING ON SITE.

- LEGEND**
- PROPOSED SURFACE WATER MANHOLE
 - PROPOSED FOUL WATER MANHOLE
 - PROPOSED SURFACE WATER PIP
 - PROPOSED FOUL WATER PIP
 - PROPOSED SURFACE WATER DRAINAGE
 - PROPOSED FOUL WATER DRAINAGE
 - PROPOSED BASEMENT LEVEL FOUL WATER PUMP CHAMBER
 - PROPOSED BASEMENT LEVEL FOUL WATER DRAINAGE
 - PROPOSED BASEMENT EXTENTS
 - PROPOSED BELOW GROUND TUBESIDE ATTENUATION
 - PROPOSED UNITED UTILITIES COMBINED WATER SEWER DIVERSION WITH SEWER EASEMENT
 - EXISTING UNITED UTILITIES SURFACE WATER SEWER
 - EXISTING UNITED UTILITIES FOUL WATER SEWER
 - EXISTING UNITED UTILITIES COMBINED WATER SEWER
 - EXISTING PRIVATE SURFACE WATER DRAINAGE TO REMAIN
 - EXISTING PRIVATE FOUL WATER DRAINAGE TO REMAIN
 - EXISTING PRIVATE COMBINED WATER DRAINAGE TO REMAIN
 - EXISTING UNITED UTILITIES SEWERS ALREADY ABANDONED
 - EXISTING UNITED UTILITIES SEWERS TO BE ABANDONED
 - EXISTING PRIVATE DRAINAGE TO BE ABANDONED

REV	DATE	DESCRIPTION	BY	CHK	APP
P05	22.02.2022	UPDATED TO SUIT LATEST GENERAL ARRANGEMENTS	JAR	DJS	DJS
P04	21.10.2022	REB STAGE 1 (SPATIAL COORDINATION)	JAR	JRS	DJS
P03	13.09.2022	REB STAGE 1 (DEVELOPED DESIGN)	JAR	JRS	DJS
P02	17.06.2022	STAGE 2 WORK IN PROGRESS FOR DESIGN COORDINATION	JRS	DJS	DJS
P01	04.05.2022	REB STAGE 2 (CONCEPT DESIGN)	JRS	DJS	DJS

DRAWING STATUS

PRELIMINARY

CLIENT: BURY COUNCIL

ARCHITECT: POZZONI

PROJECT: RADCLIFFE CIVIC HUB

TITLE: BELOW GROUND DRAINAGE OUTLINE DRAINAGE STRATEGY

STATUS	PROJECT NO.	PROJECT	ORIGIN	FUNCTION	SPACING	FORM	DESC.	DRAWING NO.	REV.
S2	221-145	RADHUB-AJP-V4-ZZ-DR-C-0001	P05						

SCALE & UNIT: 1:200

DESIGNED: JRS

DRAWN: JRS

CHECKED: DJS

APPROVED: DJS

SITE: MAY 2022

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