

202310249

17 Pownall Avenue SW Drainage Strategy Report

December 2023

Document Control

Revision	Originator	Checked By	Reviewed By	Approved By	Issued to	Issue Date
A0	Steve Gill	Steve Gill	Steve Gill	Steve Gill	Client	December 2023
	MEng (Hons)	MEng (Hons)	MEng (Hons)	MEng (Hons)		

The above signatures confirm that:

- the **originator** has to the best of their ability produced a document of high quality work, and made any amendments as required during the checking and reviewing process
- the **checker** has completed a line by line check using source data and agreed changes to be made with the originator
- the **reviewer** has completed a high level review and agreed any changes/corrections with the originator and ensured they have been completed
- the **approver** has confirmed that the check and review has been completed by persons appropriately qualified and that the document is fit for issue

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1 Introduction

1.1 General

This strategy has been developed in relation to the above-mentioned project. This report provides outline technical feasibility of providing surface water drainage for the development proposal. This report may be modified and updated to suit requirements and obligations of the Local Planning Authority, Environment Agency, Sewerage Undertakers and any other statutory authorities.

This strategy report aims to include the following:

- Identify available data relating to drainage at the existing site.
- Discuss Sustainable Urban Drainage Systems (SUDS) as an option for reducing surface water flood risk
- Determine any potential increase or decrease in surface runoff as a result of the proposed development
- Devise an appropriate high level surface water drainage strategy to control surface water runoff and include for climate change

The proposed drainage network must be capable of operating effectively following climate-change over the anticipated lifespan of the development. Residential developments are considered likely to remain for at least 100 years. According to Table 2 of DEFRA guidance on climate change, the peak rainfall intensity that is used to test the system performance must be increased by 45%. The drainage network, therefore, must be effective at managing surface water on the site for rainfall up to and including the 1 in 100 year + 45% storm event.

2 Policy and Guidance

2.1 National planning policy framework & technical guidance

The National Planning Policy Framework (NPPF) published in February 2019 superseded the previous Planning Policy Guidance (PPG) and Planning Policy Statements (PPS) including PPS25: Development and Flood Risk. One of the key aims of the NPPF is to ensure that flood risk is accounted for at all stages of the planning process to help mitigate inappropriate development in areas at risk of flooding thus directing development away from such areas. It advises that development in areas of higher risk should be safe and that flood resilience should be incorporated into the design. New developments should not increase flood risk elsewhere and new development should help mitigate flood risk to the wider area.

2.2 Planning Practice Guidance. Climate change & flood risk

The NPPF is accompanied by a Technical Guidance document that is similar to the superseded PPS 25 document in regard to:

- Climate change allowance

- Flood zone categories
- Flood zone / usage compatibility
- Sequential test
- Exception test

3 Existing Site

3.1 Site Address

The site is located off Pownall Avenue, Bramhall, SK7 2HE. Approx grid ref – OS: 390070E, 385036N

3.2 Description

The existing site is brownfield and contains a detached building and driveway / gardens.



Figure 1: Google Earth Image: Existing Development Site

3.2.1 Topography

A site topography survey has been undertaken and shows the site is generally flat and level.

3.2.2 Geology and Groundwater

LandIS soilscape denotes the geological description as slowly permeable, seasonally wet slightly acid but base rich loamy and clayey soils, see below image extract.

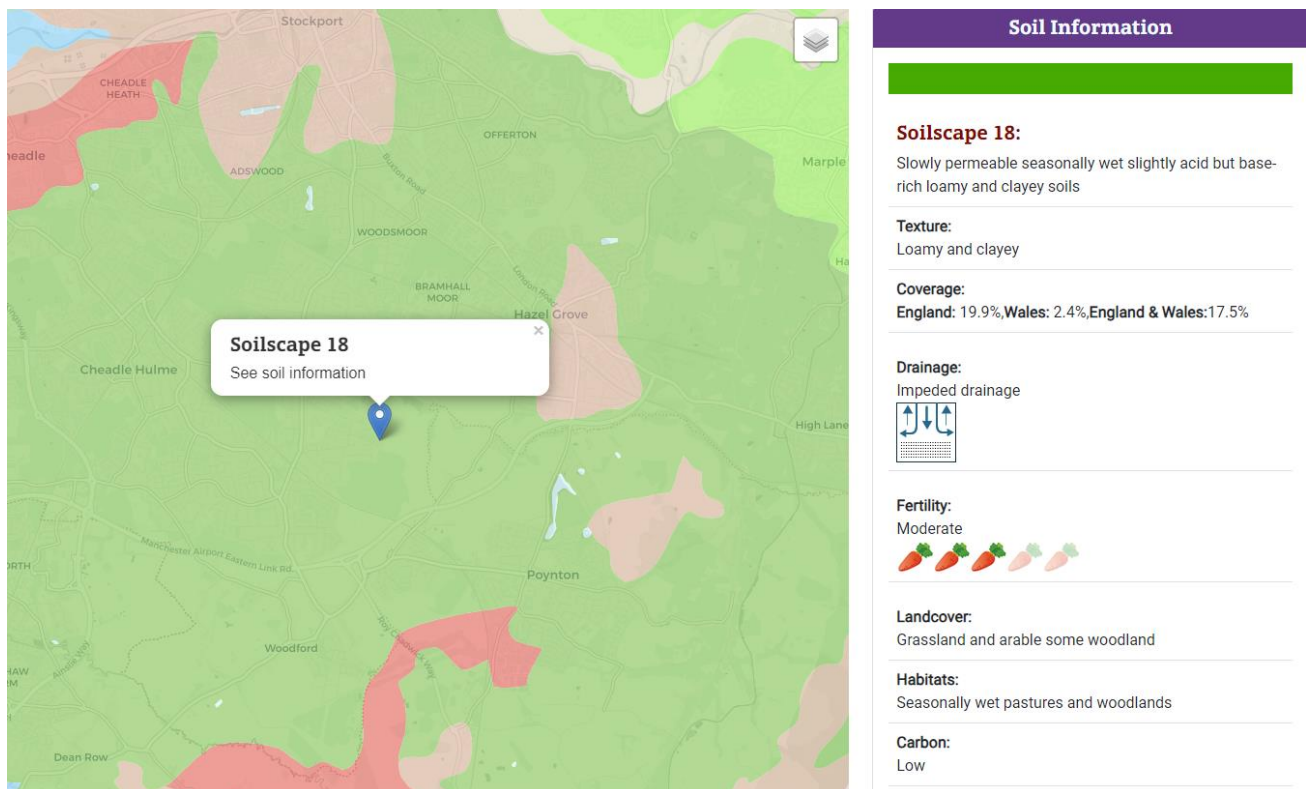


Figure 2: LandIS soilscape map

3.2.3 Current Site Drainage

It is believed that there is a public SW sewer within Pownall Avenue outside the site entrance, though UU mapping appears to be incomplete (see Appendix B for sewer map). There is an existing foul water sewer directly outside the site in Pownall Avenue also. Whilst a CCTV survey has not (at this stage) been completed it is expected that the existing dwelling has connections to both of these sewers currently.

4 Development Proposal

It is proposed to demolish the existing building and construct a new detached dwelling, extended driveway to the front and gardens to the rear.

4.1 Existing peak runoff rate

The site is brownfield and has positive unrestricted outfall discharge to the public sewer. The existing outfall rate for the SW runoff from roof and hardstanding has been calculated using the modified rational method as the following:

Pre-development discharge

Site Makeup	Brownfield	OK
Brownfield Method	MRM	Cancel
Contributing Area (ha)	0.039	
PIMP (%)	100	
CV	0.840	
Time of Concentration (mins)	5.00	
Betterment (%)	0	
	Calc	

Return Period (years)	Q (l/s)
1	5.5
30	12.9
100	16.3

4.2 Development Flood Risk

As described above, the site is wholly within flood zone 1 and is below 1Ha in area, thus a flood risk assessment is not necessary.

There are no restrictions on finished floor levels in Flood zone 1 but a minimum 150mm step down to external ground levels is advised.

5 Climate Change

Climate change allowance is included to account for increased rainfall intensity in the future, to reduce vulnerability and increase resilience to flooding. Upper end and central allowances should be applied to rainfall intensity. The central allowance must be applied to the surface water network for assessment of its performance and ability to contain critical events. The upper end allowance must be applied to assess the potential flood risk implications to the site and ensure that flooding is wholly contained onsite.

The development is assumed to be operational beyond 2085 and thus the Upper end 45% allowance is to be added to the 1% annual exceedance probability event.

6 Surface Water Strategy

National standards for sustainable drainage systems (NSSDS) and National planning practice guidance outline the following hierarchy of surface water destinations:

1. Collection of runoff for use onsite
2. Discharge to ground (infiltration)
3. Discharge to watercourse

4. Discharge to surface water sewer
5. Discharge to combined sewer

Considering the above :

- It is possible to incorporate some collection of runoff for reuse but this will not be sufficient to negate draining.
- Discharge to the ground does not look feasible based on the anticipated subsoils which will likely be slow draining.
- There are no watercourses within realistic reach of the site.

Thus discharge to the surface water sewer presents the highest plausible solution for draining the site post development and after partial collection for recycling onsite.

Potential SuDs features are discussed below:

6.1 Source control

6.1.1 Planting

There is a large area to the rear of the site to be landscaped with new and existing vegetation including trees. Where new trees are to be planted these can be worked into the wider SW drainage scheme via tree pits. This will effectively reduce overall volume of run off from site entering the public sewer network. This also helps to irrigate and support landscape vegetation and encourage biodiversity across the site.

6.1.2 Rainwater Harvesting

Rainwater harvesting within water butts (fed from rainwater pipes) or similar is considered viable and to be provided for within the scheme for external washing and irrigation.

6.2 Site Control

6.2.1 Infiltration – discharge to the ground onsite

Widespread infiltration is not viable given subsoils prevailing on the site. This is to be verified at detailed design stage via BRE 365 percolation tests.

6.2.2 Permeable paving

Whilst type A and B permeable paving systems (which promote full or partial infiltration) are not viable for this site, a type C system with pipe connection to SW network is to be adopted. This slows the interception rate down and offer filtration of contaminants, thus improving water quality prior to discharge to public sewer. Permeable subbases offer additional storage potential following more extreme events and helps to mitigate site wide flooding by containing such water volume in void spaces without compromising structural integrity of the pavement.

6.2.3 Wetlands

Wetlands provide surface water storage and treatment; they comprise shallow ponds and areas that are covered in aquatic vegetation. They are good at removing pollutants and

siltation and provide ecological diversity. They do however present H&S issues following heavy rainfall. These are **not considered suitable** given the proposed site layout and use.

6.2.4 Swales / dry basins

Swales and other above ground natural conveyance / storage systems offer benefit in removing contaminants and silts from run off prior to discharge, can be planted with vegetation which helps to reduce water volume discharging from site. They are **not considered suitable** for the proposed site.

6.3 Required storage sizing

The site wide surface water drainage (including storage) is to be designed to contain and control surface water flows up to and including the 100 year storm event + allowance for 45% climate change. This has been sized as below, ranging in size from 22 – 37m³ depending upon the specifics of routing and hydraulic analysis.

Storage Estimate

Return Period (years)	<input type="text" value="100"/>	<input type="button" value="OK"/>
Climate Change (%)	<input type="text" value="45"/>	<input type="button" value="Cancel"/>
Impermeable Area (ha)	<input type="text" value="0.086"/>	<input type="button" value="Update"/>
Peak Discharge (l/s)	<input type="text" value="5.000"/>	
Infiltration Coefficient (m/hr) (leave blank if no infiltration)	<input type="text"/>	<input type="button" value="Calc"/>
Required Storage (m ³)	<input type="button" value="Calc"/>	
from	<input type="text" value="22"/>	
to	<input type="text" value="37"/>	
With infiltration (m ³)		
from	<input type="text"/>	
to	<input type="text"/>	

Exceedance events (in excess of 1% probability + 45% climate change allowance) will likely result in some site flooding but the site is to be landscaped in such a manner to direct flows away from the building and boundaries into areas of the site that are less vulnerable in a controlled manner.

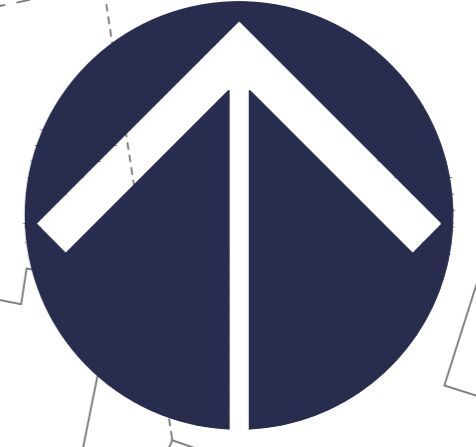
7 Foul Water Strategy

All foul drainage is to be drained conventionally to the public foul water sewer within Pownall Avenue. This is to be designed at detailed design stage.

202310249 17 Pownall Avenue
Surface Water Drainage Strategy

Appendix A. Topo and Flood Risk Map

SUNNINGDALE DRIVE



Do not scale from this drawing for the purpose of construction - Work to figured dimensions only. All dimensions to be checked on site prior to the execution of any work.

Where any discrepancy is found to exist within or between drawings and/or documents it should be reported to the architect immediately.

Point Cloud Surveys shall not be liable for any use of drawings, CAD files & documents for any purpose other than for which the same were prepared by or on behalf of the client.



Rev.	Date	Description

Jonathan Porter
17 Pownall Ave, Bramhall, Stockport, SK7 2HE
EXISTING TOPOGRAPHICAL SURVEY
May 2022 By Jim Scale 1:200@A1 [P]
22-104 (TOP)42 Rev *

Flood map for planning

Your reference
<Unspecified>

Location (easting/northing)
390071/385055

Created
8 Dec 2023 11:01

Your selected location is in flood zone 1, an area with a low probability of flooding.

You will need to do a flood risk assessment if your site is **any of the following:**

- bigger than 1 hectare (ha)
- In an area with critical drainage problems as notified by the Environment Agency
- identified as being at increased flood risk in future by the local authority's strategic flood risk assessment
- at risk from other sources of flooding (such as surface water or reservoirs) and its development would increase the vulnerability of its use (such as constructing an office on an undeveloped site or converting a shop to a dwelling)

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence **which** sets out the terms and conditions for using government data. <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2022 OS 100024198. <https://flood-map-for-planning.service.gov.uk/os-terms>

Flood map for planning

Your reference
<Unspecified>

Location (easting/northing)
390071/385055

Scale
1:2500

Created
8 Dec 2023 11:01



-  Selected area
-  Flood zone 3
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Water storage area

0 20 40 60m

202310249 17 Pownall Avenue
Surface Water Drainage Strategy

Appendix B. UU Sewer Map

BDI Structural Solutions

Stafford Court
145 Washway Road,
Sale,
M33 7PE

FAO:

How to contact us:

**United Utilities Water Limited
Property Searches
Haweswater House
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP**

Telephone: 0370 7510101

E-mail: propertysearches@uuplc.co.uk

Your Ref: 202310249 17 Pownall Avenue
Our Ref: UUPS-ORD-530339
Date: 10/11/2023

Dear Sirs

Location: 17 POWNALL AVENUE, BRAMHALL, STOCKPORT, SK7 2HE

I acknowledge with thanks your request dated 09/11/2023 for information on the location of our services.

Please find enclosed plans showing the approximate position of United Utilities' apparatus known to be in the vicinity of this site.

The enclosed plans are being provided to you subject to the United Utilities terms and conditions for both the wastewater and water distribution plans which are shown attached.

If you are planning works anywhere in the North West, please read United Utilities' access statement before you start work to check how it will affect our network. <http://www.unitedutilities.com/work-near-asset.aspx>.

I trust the above meets with your requirements and look forward to hearing from you should you need anything further.

If you have any queries regarding this matter please [contact us](#).

Yours Faithfully,



Karen McCormack
Property Searches Manager

TERMS AND CONDITIONS - WASTEWATER AND WATER DISTRIBUTION PLANS

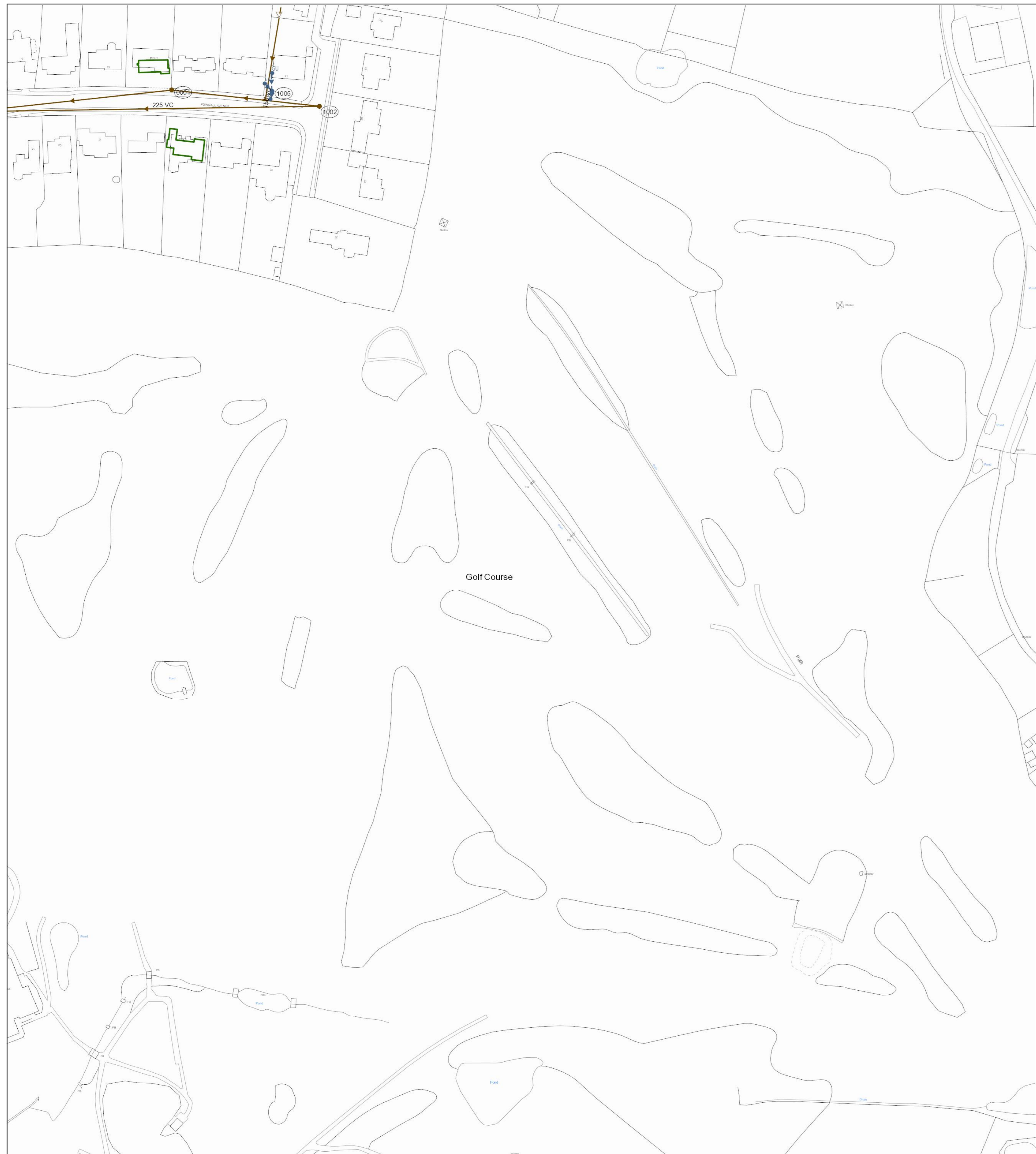
These provisions apply to the public sewerage, water distribution and telemetry systems (including sewers which are the subject of an agreement under Section 104 of the Water Industry Act 1991 and mains installed in accordance with the agreement for the self construction of water mains) (UUWL apparatus) of United Utilities Water Limited "(UUWL)".

TERMS AND CONDITIONS:

- This Map and any information supplied with it is issued subject to the provisions contained below, to the exclusion of all others and no party relies upon any representation, warranty, collateral contract or other assurance of any person (whether party to this agreement or not) that is not set out in this agreement or the documents referred to in it.
- This Map and any information supplied with it is provided for general guidance only and no representation, undertaking or warranty as to its accuracy, completeness or being up to date is given or implied.
- In particular, the position and depth of any UUWL apparatus shown on the Map are approximate only. UUWL strongly recommends that a comprehensive survey is undertaken in addition to reviewing this Map to determine and ensure the precise location of any UUWL apparatus. The exact location, positions and depths should be obtained by excavation trial holes.
- The location and position of private drains, private sewers and service pipes to properties are not normally shown on this Map but their presence must be anticipated and accounted for and you are strongly advised to carry out your own further enquiries and investigations in order to locate the same.
- The position and depth of UUWL apparatus is subject to change and therefore this Map is issued subject to any removal or change in location of the same. The onus is entirely upon you to confirm whether any changes to the Map have been made subsequent to issue and prior to any works being carried out.
- This Map and any information shown on it or provided with it must not be relied upon in the event of any development, construction or other works (including but not limited to any excavations) in the vicinity of UUWL apparatus or for the purpose of determining the suitability of a point of connection to the sewerage or other distribution systems.
- No person or legal entity, including any company shall be relieved from any liability howsoever and whensoever arising for any damage caused to UUWL apparatus by reason of the actual position and/or depths of UUWL apparatus being different from those shown on the Map and any information supplied with it.
- If any provision contained herein is or becomes legally invalid or unenforceable, it will be taken to be severed from the remaining provisions which shall be unaffected and continue in full force and affect.
- This agreement shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts, save that nothing will prevent UUWL from bringing proceedings in any other competent jurisdiction, whether concurrently or otherwise.



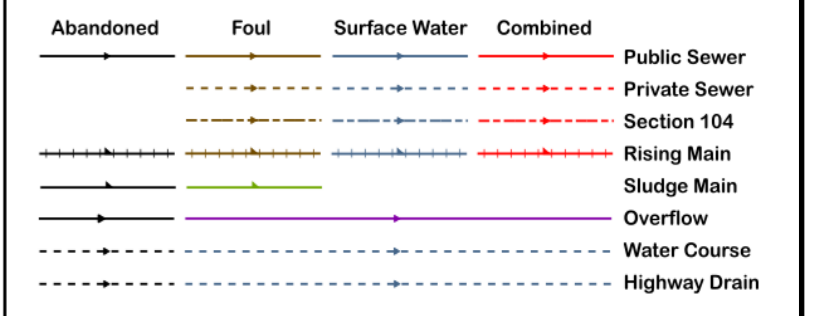
Manhole ID	Cover	Func	Invert	Size x	Shape	Matl	Length	Grad	Manhole ID	Cover	Func	Invert	Size x	Shape	Matl	Length	Grad
6512	76.86	SW	76.01	150	VC	VC	17.20448	1 in 80	8607	77.90	SW	77.90	450	VC	VC	13.81928	1 in 743
0209	84.25	SW	82.41	150	VC	VC	65.6077	1 in 86	5913	SW	SW	150	150	VC	VC	74.70903	1 in 86
8305	80.74	FO	78.43	225	VC	VC	43.28972	1 in 88	5913	SW	SW	150	150	VC	VC	74.70903	1 in 86
0211	FO	FO	150	150	VC	VC	23.11442	1 in 88	5913	SW	SW	74.12	150	VC	VC	19.13399	1 in 86
0211	FO	FO	150	150	VC	VC	15.74244	1 in 88	5913	SW	SW	79.42	225	VC	VC	8.17324	1 in 86
5112	80.13	FO	150	150	VC	VC	13.2861	1 in 56	7205	79.74	SW	76.87	300	VC	VC	64.31893	1 in 184
8140	80.13	SW	77.91	150	VC	VC	16.68291	1 in 90	5104	77.63	SW	75.53	150	VC	VC	17.02939	1 in 86
9108	FO	FO	150	150	VC	VC	58.69291	1 in 90	5432	FO	FO	150	150	VC	VC	4.749495	1 in 64
4302	79.3	FO	77.9	225	VC	VC	16.68291	1 in 90	5432	FO	FO	150	150	VC	VC	4.749495	1 in 64
6315	FO	FO	0	0	VC	VC	10.0372	1 in 88	5401	77.25	FO	75.61	225	VC	VC	21.2132	1 in 142
0001	FO	FO	0	0	VC	VC	110.8879	1 in 88	5401	77.25	FO	75.61	225	VC	VC	21.2132	1 in 142
0001	FO	FO	0	0	VC	VC	110.8879	1 in 88	5401	77.25	FO	75.61	225	VC	VC	21.2132	1 in 142
9110	FO	FO	150	150	VC	VC	17.64718	1 in 87	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
5302	79.01	SW	76.7	150	VC	VC	50.30429	1 in 140	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
4402	79.01	SW	76.7	225	VC	VC	54.64093	1 in 140	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
4402	79.01	SW	76.7	225	VC	VC	47.67599	1 in 140	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
0301	81.59	SW	79.88	450	VC	VC	67.47592	1 in 250	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
0301	81.59	SW	79.88	450	VC	VC	67.47592	1 in 250	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
8401	79.87	FO	78.02	150	VC	VC	58.16777	1 in 88	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
7402	78.82	FO	76.21	300	VC	VC	60.41523	1 in 87	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
7111	FO	FO	75.98	150	VC	VC	11.67942	1 in 109	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
8209	FO	FO	76.21	225	VC	VC	5.544093	1 in 109	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
4103	77.97	FO	76.21	225	VC	VC	50	1 in 106	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
6405	SW	SW	0	525	VC	VC	57.80138	1 in 119	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
8207	81.91	FO	80.51	225	VC	VC	31.0238	1 in 1051	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
8503	79.35	FO	77.72	150	VC	VC	29.96665	1 in 34	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
8114	FO	FO	0	225	VC	VC	5.20571	1 in 34	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
4505	FO	FO	0	225	VC	VC	24.69818	1 in 34	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
4505	FO	FO	0	225	VC	VC	24.69818	1 in 34	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
8203	82.51	FO	80.26	375	VC	VC	20.99918	1 in 183	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
0203	82.51	SW	80.96	375	VC	VC	20.99918	1 in 183	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
8205	81.36	FO	79.35	150	VC	VC	51.09002	1 in 225	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
5114	FO	FO	150	150	VC	VC	13.11522	1 in 225	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
9408	FO	FO	150	150	VC	VC	83.95518	1 in 225	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
9408	FO	FO	150	150	VC	VC	83.95518	1 in 225	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
7417	FO	FO	150	150	VC	VC	4.069208	1 in 225	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
8410	FO	FO	150	150	VC	VC	12.20192	1 in 225	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
7901	80.82	FO	0	225	VC	VC	74.86992	1 in 225	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
7215	FO	FO	150	150	VC	VC	14.19692	1 in 225	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
6306	77.82	FO	75.28	225	VC	VC	55.7863	1 in 180	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
8432	FO	FO	74.1	150	VC	VC	58.16555	1 in 180	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
7412	FO	FO	150	150	VC	VC	10.99374	1 in 177	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
8511	76.61	FO	77.54	225	VC	VC	5.386165	1 in 77	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
8008	FO	FO	150	150	VC	VC	14.21308	1 in 38	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
6201	77.62	SW	76.08	225	VC	VC	21.9445	1 in 37	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
6325	FO	FO	150	150	VC	VC	4.179099	1 in 37	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
8102	82.32	FO	80.48	150	VC	VC	30.30416	1 in 210	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
7202	80.07	FO	78.19	150	VC	VC	14.56022	1 in 190.04033	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
7901	80.12	FO	77.67	150	VC	VC	18.19232	1 in 133	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
7906	81.75	CO	79.13	225	VC	VC	81.63332	1 in 130	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
6001	80.98	SW	79.19	150	VC	VC	51.47815	1 in 120	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
8504	80.11	FO	77.22	225	VC	VC	68.842	1 in 50	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
8005	80.2	SW	77.67	450	VC	VC	33.30376	1 in 50	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
9203	82.42	SW	80.78	450	VC	VC	130.2306	1 in 207	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
8402	82.42	SW	80.78	450	VC	VC	130.2306	1 in 207	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
6515	76.6	FO	75.4	225	VC	VC	9.84888	1 in 123	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
5505	78.48	FO	77.63	225	VC	VC	15.52417	1 in 119	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
8408	FO	FO	150	150	VC	VC	18.89192	1 in 119	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
8106	SW	SW	100	100	VC	VC	12.55689	1 in 108	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
7902	80.86	SW	79.36	225	VC	VC	71.47028	1 in 108	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
8409	FO	FO	150	150	VC	VC	24.2429	1 in 69	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
5202	77.48	FO	75.99	225	VC	VC	26	1 in 153	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
8420	FO	FO	150	150	VC	VC	3.888204	1 in 123	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
8420	FO	FO	150	150	VC	VC	3.888204	1 in 123	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
6213	79.43	FO	77.99	150	VC	VC	11.04336	1 in 0.14436380	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
7403	77.81	FO	76.97	150	VC	VC	10.3087	1 in 53	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
4115	FO	FO	150	150	VC	VC	11.50065	1 in 53	1002	85.74	FO	84.03	225	VC	VC	192.0234	1 in 142
5310	FO	FO	150	150	VC	VC	4.482512	1 in 179	1002	85.74	FO	84.03	225	VC	VC		



Reho	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
1002	85.74	FO	84.03	0		VC		42.2405	
1002	85.74	FO	84.03	0		VC		52.2405	
0001		FO						110.8079	
0001		FO						110.8079	
1002	85.74	FO	84.03	225		VC		192.0234	
1002	85.74	FO	84.03	225		VC		192.0234	
1005		SW		150				4.874483	
1005		SW		150				4.874483	

Reho	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
------	-------	------	--------	--------	--------	-------	------	--------	------

LEGEND



All point assets follow the standard colour convention:
 red - combined blue - surface water
 brown - foul purple - overflow

- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- Change of Characteristic

MANHOLE FUNCTION

- FO Foul
- SW Surface Water
- CO Combined
- OV Overflow

SEWER SHAPE

- CI Circular
- EG Egg
- OV Oval
- FT Flat Top
- RE Rectangular
- SG Square
- TR Trapezoidal
- AR Arch
- BA Barrel
- HO HorseShoe
- UN Unspecified

SEWER MATERIAL

- AC Asbestos Cement
- BR Brick
- PE Polyethylene
- RP Reinforced Plastic Matrix
- CO Concrete
- CSB Concrete Segment Bolted
- CSU Concrete Segment Unbolted
- CC Concrete Box Culvert
- PSC Plastic / Steel Composite
- GRC Glass Reinforced Plastic
- DI Ductile Iron
- PVC Polyvinyl Chloride
- CI Cast Iron
- SI Spun Iron
- ST Steel
- VC Vitrified Clay
- PP Polypropylene
- PF Pitch Fibre
- MAC Masonry, Coursed
- MAR Masonry, Random
- U Unspecified

Address or Site Reference:

17 POWNALL AVENUE,
 BRAMHALL,
 STOCKPORT,
 SK7 2HE

OS sheet Number: SJ9084NW
 Scale: 1:1250 Date: 10/11/2023
 Nodes: 8
 Sheet: 3 of 10

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The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

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Reho	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
2403	FO	FO	100	100		VC	11.4547	1	1n 52
0108	84.99	SW	82.94	150		VC	56.0603	1	1n 52
2225	FO	FO	82.71	150		VC	8.102741	1	1n 106
2211	84.54	SW	82.71	150		VC	10.296653	1	1n 106
2308	84.22	SW	82.52	225		VC	40.248222	1	1n 96
1208	81.84	SW	80.33	150		VC	8.657153	1	1n 140
0209	84.25	SW	82.41	150		VC	55.3017	1	1n 140
0304	81.84	SW	80.33	150		VC	26.4764	1	1n 140
0116	82.06	FO	81.14	150		VC	12.54197	1	1n 62
1403	82.06	FO	81.14	150		VC	30.50584	1	1n 62
0211	FO	FO	150			VC	23.11442	1	1n 62
0211	FO	FO	150			VC	23.11442	1	1n 62
0110	FO	FO	150			VC	2.638855	1	1n 62
2111	FO	FO	100			VC	7.845041	1	1n 62
0117	FO	FO	100			VC	19.87305	1	1n 62
0414	82.23	SW	80.81	300		VC	35.44009	1	1n 62
2203	84.4	FO	82.64	150		VC	6.23124	1	1n 62
9108	FO	FO	150			VC	18.68291	1	1n 62
9108	FO	FO	150			VC	18.68291	1	1n 62
0303	81.52	FO	79.69	150		VC	22.90072	1	1n 144
0303	81.52	FO	79.69	225		VC	22.90072	1	1n 144
0101	83.24	SW	81.53	300		CO	63.56999	1	1n 144
0101	83.24	SW	81.53	300		CO	63.56999	1	1n 144
0206	82.68	FO	80.68	150		VC	29.61419	1	1n 135
0206	82.68	FO	80.68	150		VC	29.61419	1	1n 135
0001	FO	FO	0			VC	110.8879	0	
0317	81.59	FO	0	150		VC	8.544003	0	
0413	82.14	FO	79.99	150		VC	30.36757	1	1n 108
9407	FO	FO	150			VC	11.37467	1	1n 108
9407	FO	FO	150			VC	11.37467	1	1n 108
9110	FO	FO	150			VC	17.54718	1	1n 108
0119	FO	FO	150			VC	13.52226	1	1n 108
0119	FO	FO	150			VC	13.52226	1	1n 108
2235	FO	FO	150			VC	8.920201	1	1n 477
9405	FO	FO	100			VC	8.920201	1	1n 477
2401	83.36	SW	82.51	225		VC	14.31782	1	1n 477
0118	FO	FO	150			VC	23.81788	1	1n 250
0301	81.59	SW	79.88	450		CO	67.47592	1	1n 250
0301	81.59	SW	79.88	450		CO	67.47592	1	1n 250
9305	FO	FO	150			VC	24.12725	1	1n 250
2104	87.03	SW	85.22	150		VC	30.36445	1	1n 53
0208	82.9	FO	0	150		VC	8.219544	0	
0208	82.9	FO	0	150		VC	8.219544	0	
2116	FO	FO	150			VC	5.203282	1	1n 241
1403	83.24	SW	82.48	225		VC	43.18569	1	1n 61
1317	83.43	FO	82.43	150		VC	22.74603	1	1n 61
9304	SW	SW	150			VC	22.74603	1	1n 61
9304	SW	SW	150			VC	22.74603	1	1n 61
1314	CO	CO	150			VC	27.31001	1	1n 61
9402	81.9	FO	80.7	225		VC	15.0147	1	1n 61
0212	FO	FO	150			VC	6.766073	1	1n 33
0212	FO	FO	150			VC	6.766073	1	1n 33
1319	83.57	FO	82.86	150		VC	5.65854	1	1n 33
1210	82.51	SW	81.16	150		VC	21.4285	1	1n 134
0310	82.51	SW	81.16	225		VC	28.07134	1	1n 134
0203	82.51	SW	80.96	375		CO	22	1	1n 183
0203	82.51	SW	80.96	375		CO	22	1	1n 183
1405	82.55	FO	80.76	150		VC	50.20956	1	1n 66
9408	FO	FO	150			VC	9.485138	1	1n 66
9408	FO	FO	150			VC	9.485138	1	1n 66
2108	86.3	FO	84.44	150		VC	36.05551	1	1n 49
1333	FO	FO	150			VC	8.19564	1	1n 49
1304	83.07	SW	81.98	300		VC	16.78305	1	1n 419
0305	81.91	FO	80.71	225		VC	47.83394	1	1n 71
2406	FO	FO	100			VC	2.07051	1	1n 71
1409	FO	FO	100			VC	7.402217	1	1n 71
1318	83.43	FO	82.67	150		VC	6.433981	1	1n 39
2407	FO	FO	150			VC	6.37915	1	1n 39
9201	82.43	FO	80.37	225		VC	72.39712	1	1n 250
9201	82.43	FO	80.37	225		VC	72.39712	1	1n 250
2303	84.36	SW	82.5	150		VC	44.14238	1	1n 221
0215	83.35	FO	0	150		VC	15.0333	0	1n 71
2107	86.17	SW	84.64	150		VC	47.83394	1	1n 71
0314	82.23	FO	80.08	225		VC	45.70558	1	1n 109
0314	82.23	FO	80.08	225		VC	45.70558	1	1n 109
0210	83.77	SW	82.62	150		VC	21.84033	1	1n 109
2208	85.76	FO	83.85	150		VC	49.87897	1	1n 34
2227	FO	FO	100			VC	10.78955	1	1n 155
1410	CO	CO	100			VC	9.483969	1	1n 155
1408	83.2	FO	82.25	225		VC	44.81052	1	1n 155
2301	83.3	FO	81.95	225		VC	37.53804	1	1n 134
1209	FO	FO	150			VC	12.55588	1	1n 53
1301	83.14	SW	81.74	150		VC	27.20294	1	1n 53
0204	82.57	FO	80.77	150		VC	13	1	1n 144
0204	82.57	FO	80.77	150		VC	13	1	1n 144
0315	81.84	FO	80.6	150		VC	18	1	1n 72
1201	FO	FO	150			VC	38.27322	1	1n 58
2404	FO	FO	150			VC	5.902353	1	1n 58
1101	85.05	FO	83.82	150		VC	51.0098	1	1n 121
1408	83.33	FO	82.36	225		VC	12.98305	1	1n 121
1105	85.98	FO	83.54	150		VC	49.19447	1	1n 70
9203	82.42	SW	80.78	450		CO	130.2306	1	1n 207
9203	82.42	SW	80.78	450		CO	130.2306	1	1n 207
1103	84.83	FO	83.43	150		VC	17.89449	1	1n 207
0205	FO	FO	150			VC	12.86025	1	1n 159
0205	FO	FO	150			VC	12.86025	1	1n 159
1404	82.46	SW	81.07	300		VC	38.18377	1	1n 159
1415	FO	FO	100			VC	11.81336	1	1n 43
2102	86.38	FO	84.3	150		VC	26.07881	1	1n 43
2311	CO	CO	150			VC	23.93441	1	1n 43
1005	SW	SW	150			VC	4.674663	1	1n 19
1005	SW	SW	150			VC	4.674663	1	1n 19
1202	83.95	FO	82.06	300		VC	63.34555	1	1n 19
2101	86.56	SW	85.28	225		VC	1.952044	1	1n 46
2209	85.66	SW	83.69	225		VC	44.04543	1	1n 46
1203	83.92	FO	82.06	100		VC	22.4722	1	1n 19
1203	83.92	FO	82.06	100		VC	22.4722	1	1n 19
0207	82.82	SW	81.8	150		VC	37.48333	1	1n 377
0207	82.82	SW	81.8	150		VC	37.48333	1	1n 377
1305	83.1	FO	81.66	225		VC	26.38508	1	1n 88
1106	85.6	FO	83.7	150		VC	11.80715	1	1n 88
0308	82.13	SW	80.93	225		VC	33.95855	1	1n 84
1214	FO	FO	150			VC	9.48531	1	1n 135
0308	81.76	SW	80.15	450		CO	35.05709	1	1n 135
0308	81.76	SW	80.15	450		CO	35.05709	1	1n 135
2108	FO	FO	150			VC	31.92278	1	1n 157
0102	83.17	FO	81.13	150		VC	55.10888	1	1n 157
0102	83.17	FO	81.13	150		VC	55.10888	1	1n 157
0004	SW	SW	150			VC	2.037283	1	1n 178
0004	SW	SW	150			VC	2.037283	1	1n 178
0104	83.27	FO	81.35	150		VC	39.11623	1	1n 178
0104	83.27	FO	81.35	150		VC	39.11623	1	1n 178
2201	84.33	FO	82.11	225		VC	44.14238	1	1n 117
2201	84.33	FO	82.11	225		VC	44.14238	1	1n 117
2105	87.08	FO	85.21	150		VC	10.440211	1	1n 141
1104	84.98	SW	83.33	150		VC	62.17717	1	1n 141
1002	85.74	FO	84.03	0		VC	82.2405	0	
1002	85.74	FO	84.03	0		VC	82.2405	0	
1332	FO	FO	150			VC	13.15034	1	1n 76
0312	83.1	FO	81.5	150		VC	48.90773	1	1n 35
0107	83.39	SW	81.54	375		CO	53.14132	1	1n 35
2223	84.85	FO	82.74	150		VC	12.52996	1	1n 35
0316	81.82	FO	80.07	150		VC	4.123106	1	1n 88
0316	81.82	FO	80.07	150		VC	4.123106	1	1n 88
0307	81.8	FO	0	225		VC	29.15884	0	
0307	81.8	FO	0	225		VC	29.15884	0	
1302	83.04	SW	81.91	300		VC	75.31288	1	1n 91
0309	FO	FO	0	150		VC	11.6436	0	
0311	82.52	FO	80.82	150		VC	11	1	1n 39
2306	84.78	FO	82.84	225		VC	26.82822	1	1n 121
1204	83.48	FO	82.27	150		VC	12.52996	1	1n 121
0103	83.24	SW	81.81	225		VC	35.05709	1	1n 121
0103	83.24	SW	81.81	225		VC	35.05709	1	1n 121
1111	CO	CO	100			VC	10.72578	1	1n 222
0302	81.45	FO	79.75	225		VC	13.86244	1	1n 222
0302	81.45	FO	79.75	225		VC	13.		



The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

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Refo Cover Func Invert Size x Size y Shape Mat Length Grad

LEGEND

Abandoned	Foul	Surface Water	Combined	Public Sewer
-----	-----	-----	-----	-----
-----	-----	-----	-----	-----
-----	-----	-----	-----	-----
-----	-----	-----	-----	-----
-----	-----	-----	-----	-----
-----	-----	-----	-----	-----
-----	-----	-----	-----	-----
-----	-----	-----	-----	-----
-----	-----	-----	-----	-----
-----	-----	-----	-----	-----

All point assets follow the standard colour convention:
 red - combined blue - surface water
 brown - foul purple - overflow

- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- Change of Characteristic

MANHOLE FUNCTION

- FO Foul
- SW Surface Water
- CO Combined
- OV Overflow

SEWER SHAPE

- CI Circular
- EG Egg
- OV Oval
- FT Flat Top
- RE Rectangular
- SQ Square
- TR Trapezoidal
- AR Arch
- BA Barrel
- HO HorseShoe
- UN Unspecified

SEWER MATERIAL

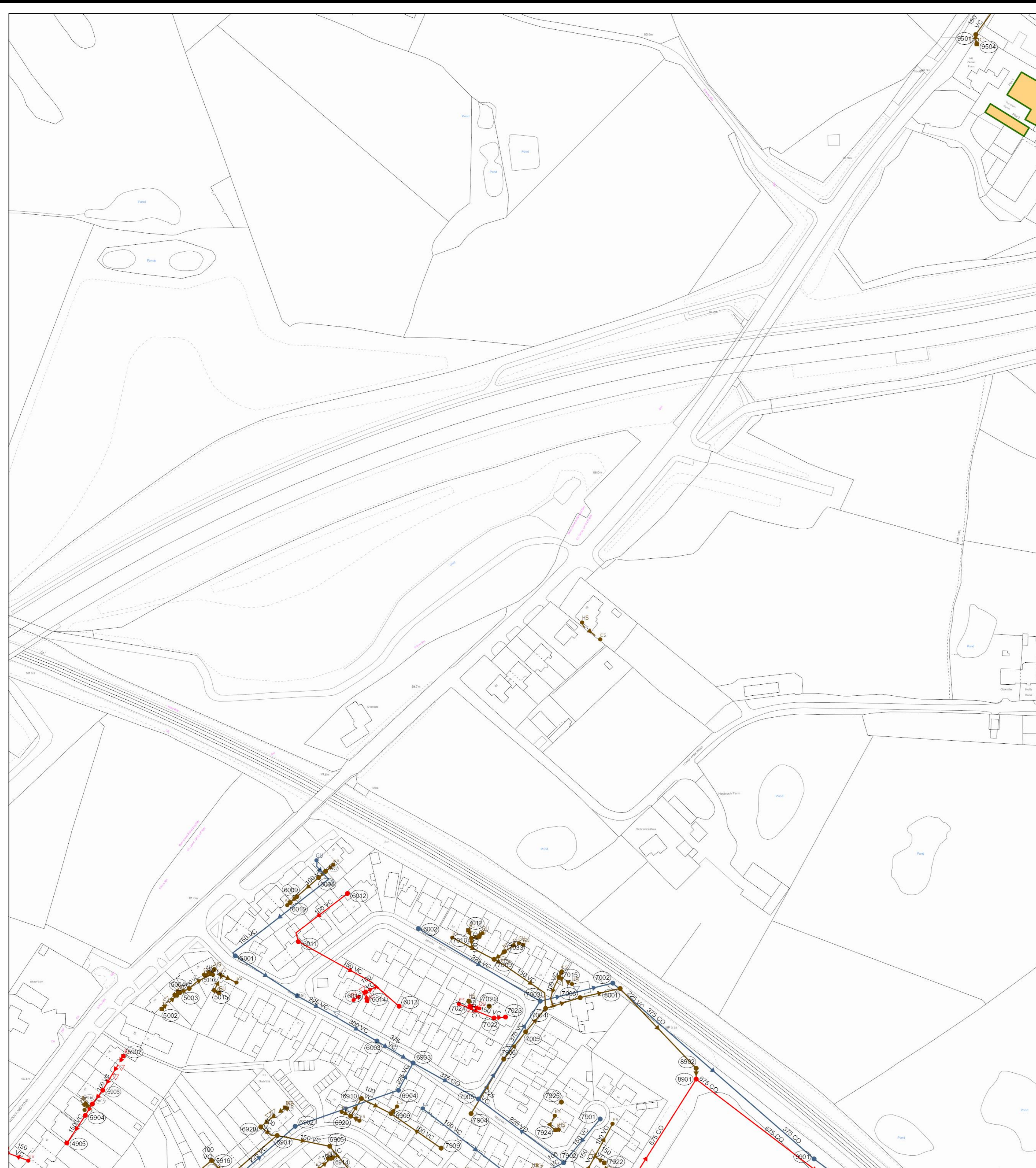
- AC Asbestos Cement
- BR Brick
- PE Polyethylene
- RP Reinforced Plastic Matrix
- CO Concrete
- CSB Concrete Segment Bolted
- CSU Concrete Segment Unbolted
- CC Concrete Box Culvert
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- GRC Glass Reinforced Plastic
- DI Ductile Iron
- PVC Polyvinyl Chloride
- CI Cast Iron
- SI Spun Iron
- ST Steel
- VC Vitrified Clay
- PP Polypropylene
- PF Pitch Fibre
- MAC Masonry, Coursed
- MAR Masonry, Random
- U Unspecified

Address or Site Reference:

17 POWNALL AVENUE,
 BRAMHALL,
 STOCKPORT,
 SK7 2HE

OS sheet Number: SJ9085SE
Scale: 1:1250 **Date:** 10/11/2023
Nodes: 0
Sheet: 5 of 10

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Reho	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
6904	89.85	SW	0	225	225	VC	17	34.98571	1 in 125
7904	89.75	FO	88.33	225	225	VC	31.241	1 in 101	
6908	89.78	FO	87.44	375	375	VC	10.29918	1 in 265	
7902	89.74	SW	88.05	225	225	VC	58.60334	1 in 183	
7003	89.76	SW	87.44	375	375	VC	20.01533	1 in 265	
7905	89.85	SW	87.7	375	375	VC	31.90811	1 in 266	
7005	89.85	FO	87.95	225	225	VC	17.23259	1 in 426	
7909	89.85	FO	87.95	225	225	VC	33.44976	1 in 426	
8010	89.85	FO	87.95	225	225	VC	2.025059	1 in 426	
7104	89.85	FO	87.95	225	225	VC	1.377054	1 in 426	
8012	89.85	FO	87.95	225	225	VC	40.72134	1 in 426	
6002	90.33	SW	88.68	225	225	VC	78.03204	1 in 79	
9901	88.74	SW	86.53	375	375	VC	88.60223	1 in 148	
7015	89.85	FO	87.95	225	225	VC	16.85421	1 in 426	
8900	89.85	FO	87.95	225	225	VC	11.33909	1 in 426	
8914	89.85	FO	87.95	225	225	VC	3.797009	1 in 426	
6011	89.85	FO	87.95	225	225	VC	66.25248	1 in 426	
7004	89.77	FO	87.9	225	225	VC	19.02486	1 in 209	
6001	89.7	SW	88.28	225	225	VC	25.05993	1 in 209	
8008	89.81	FO	87.96	375	375	VC	15.97926	1 in 10	
6003	89.81	SW	87.96	375	375	VC	11.8619	1 in 10	
8007	89.81	FO	87.96	375	375	VC	5.241953	1 in 10	
6015	89.85	FO	87.95	225	225	VC	6.745428	1 in 426	
5906	89.85	FO	87.95	225	225	VC	9.424311	1 in 426	
5906	89.85	FO	87.95	225	225	VC	9.424311	1 in 426	
5904	89.85	FO	87.95	225	225	VC	14.85932	1 in 426	
7022	89.84	FO	88.03	150	150	VC	6.43321	1 in 274	
7906	89.84	FO	88.03	150	150	VC	19.2037	1 in 274	
9901	91.03	FO	89.04	150	150	VC	85.2115	1 in 135	
9901	91.03	FO	89.04	150	150	VC	85.2115	1 in 135	
5905	89.85	FO	87.95	225	225	VC	7.367107	1 in 426	
5905	89.85	FO	87.95	225	225	VC	7.367107	1 in 426	
7022	89.85	FO	87.95	225	225	VC	6.325897	1 in 426	
6009	89.85	FO	87.95	225	225	VC	4.880205	1 in 426	
6010	89.85	FO	87.95	225	225	VC	1.073804	1 in 426	
8903	88.34	FO	87.37	225	225	VC	41.18252	1 in 15	
7006	88.6	FO	87.0	225	225	VC	22.56103	1 in 3296	
8901	88.6	FO	87.0	225	225	VC	164.906	1 in 3296	
7010	88.6	FO	87.0	225	225	VC	5.349992	1 in 3296	
8905	88.98	FO	87.29	375	375	VC	49.67899	1 in 197	
7002	90.41	SW	86.54	150	150	VC	147.411	1 in 131	
8902	91.11	SW	89.4	225	225	VC	60.49595	1 in 131	
8910	91.4	FO	90.3	150	150	VC	18.31058	1 in 184	
5003	89.85	FO	87.95	225	225	VC	5.325996	1 in 426	
6901	91.4	FO	90.3	150	150	VC	29.61419	1 in 184	
8901	88.97	FO	87.74	225	225	VC	90.81763	1 in 184	
8909	88.97	FO	87.74	225	225	VC	12.87899	1 in 184	
5904	89.85	FO	87.95	225	225	VC	5.008367	1 in 426	
5904	89.85	FO	87.95	225	225	VC	18.2785	1 in 426	
5904	89.85	FO	87.95	225	225	VC	18.2785	1 in 426	
7009	89.85	FO	87.95	225	225	VC	6.511536	1 in 426	

Reho	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
9501	95.01	FO	95.01	150	150	VC	1.0	1 in 100	
9504	95.04	FO	95.04	150	150	VC	1.0	1 in 100	

LEGEND

Abandoned Foul Surface Water Combined Public Sewer

Section 104
Rising Main
Sludge Main
Overflow
Water Course
Highway Drain

All point assets follow the standard colour convention:
red - combined blue - surface water
brown - foul purple - overflow

- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vortex Chamber
- Vent Column
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- Change of Characteristic

MANHOLE FUNCTION

FO Foul
SW Surface Water
CO Combined
OV Overflow

SEWER SHAPE

CI Circular TR Trapezoidal
EG Egg AR Arch
OV Oval BA Barrel
FT Flat Top HO HorseShoe
RE Rectangular UN Unspecified
SQ Square

SEWER MATERIAL

AC Asbestos Cement
BR Brick
PE Polyethylene
RP Reinforced Plastic Matrix
CO Concrete
CSB Concrete Segment Bolted
CSU Concrete Segment Unbolted
CC Concrete Box Culverted
PSC Plastic / Steel Composite
GRC Glass Reinforced Plastic
DI Ductile Iron
PVC Polyvinyl Chloride
CI Cast Iron
SI Spun Iron
ST Steel
VC Vitrified Clay
PP Polypropylene
PF Pitch Fibre
MAC Masonry, Coursed
MAR Masonry, Random
U Unspecified

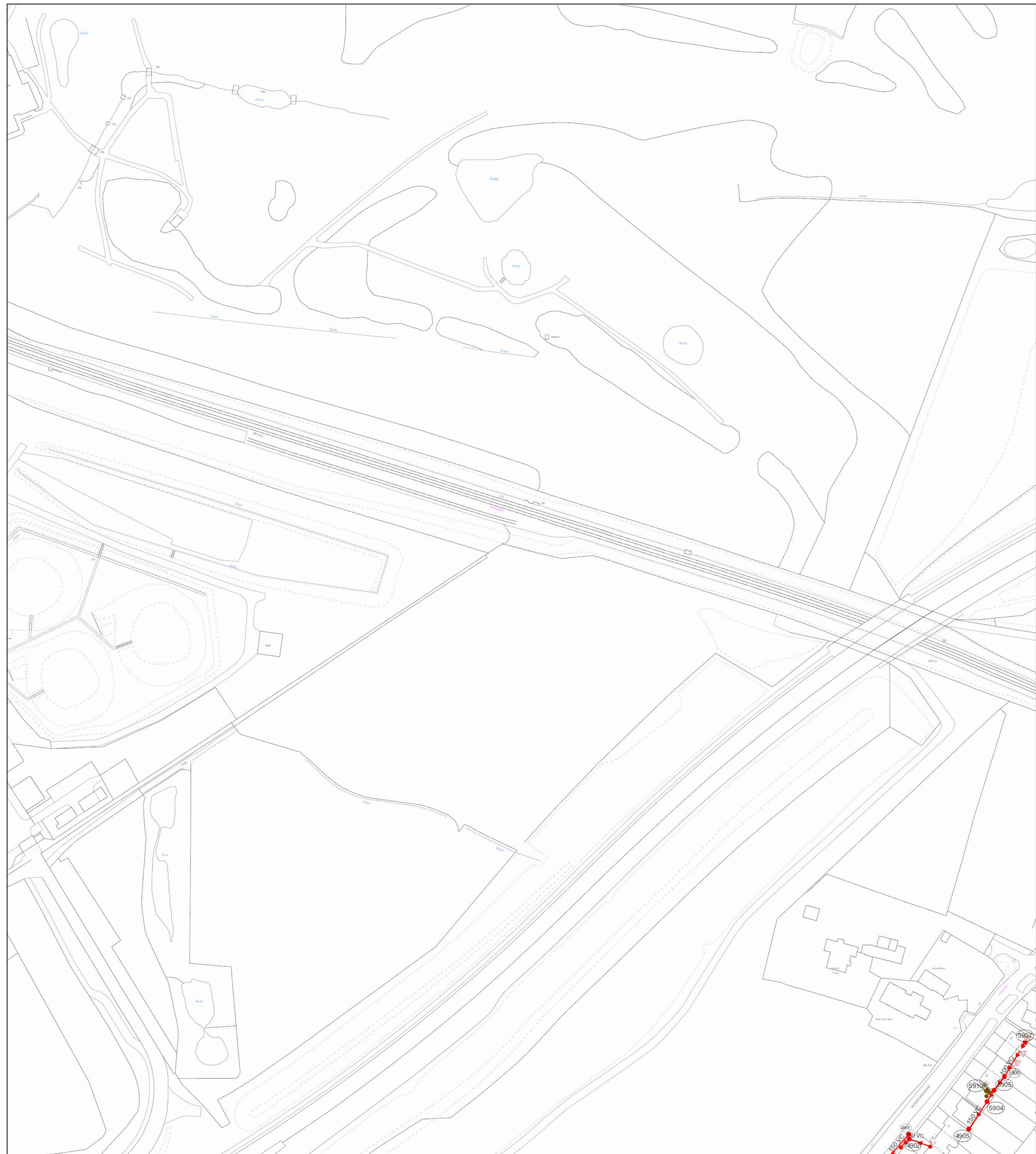
Address or Site Reference:

17 POWNALL AVENUE,
BRAMHALL,
STOCKPORT,
SK7 2HE

OS sheet SJ9084SE
Number:
Scale: 1:1250
Date: 10/11/2023
Nodes: 54
Sheet: 7 of 10
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Reho	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
5905	CO	CO	100			VC	VC	7.367107	
5905	CO	CO	100			VC	VC	7.367107	
5906	CO	CO	100			VC	VC	9.424311	
5906	CO	CO	100			VC	VC	9.424311	
4902	CO	CO	150			VC	VC	6.590302	
4901	CO	CO	92.34			VC	VC	107.9147	1 in 117
5904	CO	CO	150			VC	VC	18.2765	
5904	CO	CO	150			VC	VC	18.2765	

Reho	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
------	-------	------	--------	--------	--------	-------	------	--------	------

LEGEND

Abandoned Foul Surface Water Combined Public Sewer

Section 104
Rising Main
Sludge Main
Overflow
Water Course
Highway Drain

All point assets follow the standard colour convention:
red - combined blue - surface water
brown - foul purple - overflow

- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- Change of Characteristic

MANHOLE FUNCTION

FO Foul
SW Surface Water
CO Combined
OV Overflow

SEWER SHAPE

CI Circular TR Trapezoidal
EG Egg AR Arch
OV Oval BA Barrel
FT Flat Top HO HorseShoe
RE Rectangular UN Unspecified
SQ Square

SEWER MATERIAL

AC Asbestos Cement
BR Brick
PE Polyethylene
RP Reinforced Plastic Matrix
CO Concrete
CSB Concrete Segment Bolted
CSU Concrete Segment Unbolted
CC Concrete Box Culverted
PSC Plastic / Steel Composite
GRC Glass Reinforced Plastic
DI Ductile Iron
PVC Polyvinyl Chloride
CI Cast Iron
SI Spun Iron
ST Steel
VC Vitrified Clay
PP Polypropylene
PF Pitch Fibre
MAC Masonry, Coursed
MAR Masonry, Random
U Unspecified

Address or Site Reference:

17 POWNALL AVENUE,
BRAMHALL,
STOCKPORT,
SK7 2HE

OS sheet SJ9084SW
Number:
Scale: 1:1250 **Date:** 10/11/2023
Nodes: 8
Sheet: 8 of 10
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Refo	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
0712		FO	100				VC	22.32957	
0606		FO	100				VC	15.97486	
9501	91.03	FO	89.04	150			VC	85.2115	1 in 135
9501	91.03	FO	89.04	150			VC	85.2115	1 in 135
0605		FO	100				VC	4.245881	
0714		FO	100				VC	20.34165	
0701	86.97	FO	84.81	150			VC	30.35263	1 in 105
0709		FO	150				VC	45.31063	
0706		FO	100				VC	16.40879	
9652		CO	100				VC	11.03059	
9801		CO	100				VC	22.45136	
9711		CO	150				VC	8.900355	
9803		CO	100				VC	25.98611	

Refo	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
------	-------	------	--------	--------	--------	-------	------	--------	------

LEGEND

Abandoned Foul Surface Water Combined Public Sewer

Private Sewer
Section 104
Rising Main
Sludge Main
Overflow
Water Course
Highway Drain

All point assets follow the standard colour convention:
 red - combined
 blue - surface water
 brown - foul
 purple - overflow

- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- Change of Characteristic

- #### MANHOLE FUNCTION
- FO Foul
 - SW Surface Water
 - CO Combined
 - OV Overflow

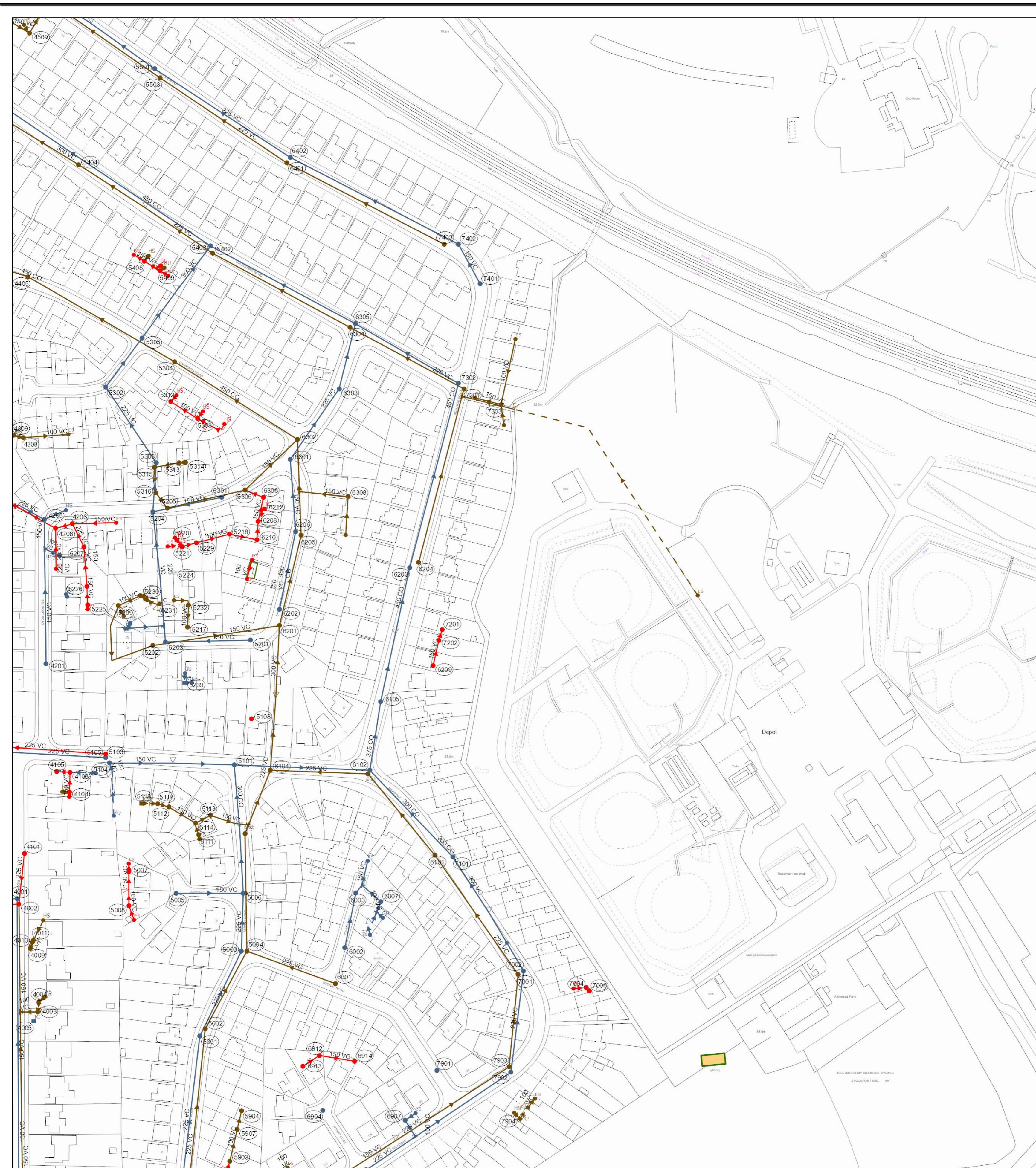
- #### SEWER SHAPE
- CI Circular
 - EG Egg
 - OV Oval
 - FT Flat Top
 - RE Rectangular
 - SG Square
 - TR Trapezoidal
 - AR Arch
 - BA Barrel
 - HO HorseShoe
 - UN Unspecified

- #### SEWER MATERIAL
- AC Asbestos Cement
 - BR Brick
 - PE Polyethylene
 - RP Reinforced Plastic Matrix
 - CO Concrete
 - CSB Concrete Segment Bolted
 - CSU Concrete Segment Unbolted
 - CC Concrete Box Culverted
 - PSC Plastic / Steel Composite
 - GRC Glass Reinforced Plastic
 - DI Ductile Iron
 - PVC Polyvinyl Chloride
 - CI Cast Iron
 - SI Spun Iron
 - ST Steel
 - VC Vitrified Clay
 - PP Polypropylene
 - PF Pitch Fibre
 - MAC Masonry, Coursed
 - MAR Masonry, Random
 - U Unspecified

Address or Site Reference:
 17 POWNALL AVENUE,
 BRAMHALL,
 STOCKPORT,
 SK7 2HE

OS sheet Number: SJ9084NE
Scale: 1:1250
Date: 10/11/2023
Nodes: 13
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Reho	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
5002	88.29	FO	88.23	225		VC	43.7614	1 in 100	
5305	82.02	SW	80.16	225		VC	32.20248	1 in 75	
5103	86.14	SW	84.23	225		VC	106.18978	1 in 177	
6101	86.33	FO	84.23	225		VC	68.28605	1 in 134	
5114	86.8	CO	0	225		VC	28.16026		
5308		CO	0	150		VC	8.266624		
6007		SW	100	150		VC	17.59604		
6210		CO	150	150		VC	13.83552		
5503	80.59	FO	77.72	225		VC	10.2261	1 in 138	
5503	80.59	FO	77.72	225		VC	91.26352	1 in 138	
4208		CO	225	225		VC	25.64807	1 in	
6308		CO	150	150		VC	26.88075	1 in	
5006	87.16	SW	85.45	225		VC	36.05551	1 in 56	
4100		CO	150	150		VC	7.520009		
5404	80.88	FO	78	300		VC	48.021		
5404	80.88	FO	78	300		VC	48.021		
6302	83.95	FO	80.85	450		CO	80.45466	1 in 71	
5101	86.3	SW	84.02	375		VC	75.59997	1 in 682	
4201	84.98	SW	83.41	150		VC	79.97915	1 in 90	
5408		CO	150	150		VC	6.772562		
5408		CO	150	150		VC	6.772562		
7301	82.4	FO	79.85	225		VC	71.5891	1 in 205	
7002	87.92	SW	86.22	225		VC	37.11559	1 in 44	
4002	86.89	CO	0	225		VC	130.0805		
8305	82.38	SW	79.89	450		VC	90.82401	1 in 146	
5225		CO	150	150		VC	10.19053		
5229		CO	100	100		VC	18.82901		
5231		CO	100	100		VC	8.609257		
7001	87.9	FO	85.96	225		VC	80.44874	1 in 47	
5113		CO	150	150		VC	21.78162		
5001	88.3	SW	86.79	225		VC	52.3259	1 in 58	
5218		CO	100	100		VC	15.53786		
4001		SW	0	225		VC	127.2774		
7402	81.19	SW	79.23	225		VC	104.6566	1 in 59	
7402	81.19	SW	79.23	225		VC	104.6566	1 in 59	
5203	85.05	SW	83.35	150		VC	36.12478	1 in 42	
5501	80.61	SW	77.2	225		VC	43.01163	1 in 134	
5501	80.61	SW	77.2	225		VC	43.01163	1 in 134	
7302	83.49	SW	80.65	450		CO	85.86349	1 in 91	
6304	82.39	FO	79.48	225		VC	86.35362	1 in 137	
6203	84.18	SW	81.93	450		CO	105.513	1 in 84	
5409		CO	150	150		VC	10.15308		
7101	86.34	SW	84.51	300		VC	66.48308	1 in 113	
5207		CO	150	150		VC	14.23306	225	
4206		CO	150	150		VC	9.641413	1 in	
5104	86.14	CO	84.64	150		VC	15.19178	1 in 125	
6201	85.18	FO	82.54	450		VC	51.41894	1 in 101	
4509		FO	100	100		VC	15.41878		
4509		FO	100	100		VC	15.41878		
5230		FO	86.9	100		VC	13.32053		
7903	88.79	FO	86.9	225		VC	81.34451	1 in 56	
6003	87.6	SW	79.23	225		VC	19.33488		
6105	85.5	FO	83.61	375		VC	37.54949	1 in 46	
5105	86.15	CO	82.97	225		VC	99.24717	1 in 168	
6401	80.76	FO	78.82	225		VC	84.34889	1 in 79	
6401	80.76	FO	78.82	225		VC	84.34889	1 in 79	
4104		CO	150	150		VC	10.78843		
5232		FO	100	100		VC	12.05532		
5003	87.52	SW	85.87	225		VC	32.01562	1 in 82	
5006		FO	85.87	225		VC	8.830709		
5117	85.63	FO	85.12	225		VC	6.336446		
5102	85.63	FO	85.12	225		VC	37.59156	1 in 269	
6301	84.21	SW	82.29	225		VC	47.43417	1 in 46	
5304	82.73	FO	78.7	450		VC	59.64826	1 in 46	
6001	87.99	FO	86.1	225		VC	52.01553	1 in 290	
5209		FO	0	0		VC	55.3657		
6104	86.22	FO	83.17	225		VC	49.11284	1 in 134	
4003		FO	100	100		VC	9.652862		
5238		CO	150	150		VC	22.03106		
7401	81.5	SW	79.78	150		VC	25.95903	1 in 53	
6402	80.74	SW	77.47	225		VC	89.58794	1 in 373	
6402	80.74	SW	77.47	225		VC	89.58794	1 in 373	
6202	85.12	SW	83.36	150		VC	43.93177	1 in 169	
5402	81.76	FO	78.81	225		VC	44.54243	1 in 114	
5402	81.76	FO	78.81	225		VC	44.54243	1 in 114	
5004	87.55	FO	85.92	225		VC	65.07069	1 in 81	
6306	83.96	FO	81.38	150		VC	40.31229	1 in 94	
6209		CO	150	150		VC	14.12479		
6102	85.86	SW	83.82	375		VC	38.47077	1 in 192	
7902	88.81	SW	87.21	225		VC	56.4356	1 in 59	
5112		FO	150	150		VC	17.29609		
5005	87.19	SW	85.91	150		VC	37	1 in 84	
7202		CO	150	150		VC	6.309425		
6103	85.83	FO	83.89	225		VC	54.03703	1 in 77	
6205	84.81	FO	82.01	450		CO	53.03732	1 in 46	
6002	87.88	SW	85	150		VC	30.87518		
8907		SW	150	150		VC	10.66269		
5202	84.99	FO	83.3	150		VC	70.85662	1 in 106	
6306		CO	150	150		VC	10.98814		
7303		FO	150	150		VC	14.60801		
7403	81.17	FO	78.14	225		VC	97.94897	1 in 316	
7403	81.17	FO	78.14	225		VC	97.94897	1 in 316	
6208		CO	150	150		VC	13.49961		
4214		SW	100	100		VC	0.881795		
6303	83.12	SW	81.24	225		VC	37.10795	1 in 33	
5302	81.81	SW	80.35	225		VC	33.60059	1 in 177	
5907		FO	100	100		VC	10.90356		
5403	81.79	SW	79.26	450		CO	184.4369	1 in 101	
5403	81.79	SW	79.26	450		CO	184.4369	1 in 101	
6206	84.78	SW	83.1	150		VC	40.31234	1 in 50	
5201	85.48	SW	84.18	150		VC	47.0104	1 in 57	
4205	83.48	SW	82.47	225		VC	18.35993		
8903		FO	0	100		VC	18.14831		
4405		FO	450	450		CO	33.52611		
6204	84.06	FO	81.51	225		VC	99.20181	1 in 63	
5111		SW	150	150		VC	6.871919		
5301	83.83	SW	82.19	150		VC	38.83268	1 in 76	
5316		FO	150	150		VC	10.6862		
5303	82.9	SW	81.12	225		VC	50.47772	1 in 66	
8912		CO	150	150		VC	19.82066		
5115		FO	150	150		VC	13.9485		
5007		CO	150	150		VC	4.477347		
4308		FO	100	100		VC	24.84196		
5313		FO	150	150		VC	13.87772		
5314		FO	150	150		VC	3.656573		
6204	83.35	SW	81.62	225		VC	27.87397	1 in 58	
8913		CO	150	150		VC	10.88662		
5205	83.24	FO	81.58	150		VC	44.14748	1 in 260	
7006		CO	150	150		VC	2.712848		

LEGEND

Abandoned	Foul	Surface Water	Combined	Public Sewer
--- (dashed)	--- (dashed)	--- (dashed)	--- (dashed)	--- (dashed)
--- (dashed)	--- (dashed)	--- (dashed)	--- (dashed)	--- (dashed)
--- (dashed)	--- (dashed)	--- (dashed)	--- (dashed)	--- (dashed)
--- (dashed)	--- (dashed)	--- (dashed)	--- (dashed)	--- (dashed)
--- (dashed)	--- (dashed)	--- (dashed)	--- (dashed)	--- (dashed)
--- (dashed)	--- (dashed)	--- (dashed)	--- (dashed)	--- (dashed)
--- (dashed)	--- (dashed)	--- (dashed)	--- (dashed)	--- (dashed)
--- (dashed)	--- (dashed)	--- (dashed)	--- (dashed)	--- (dashed)
--- (dashed)	--- (dashed)	--- (dashed)	--- (dashed)	--- (dashed)
--- (dashed)	--- (dashed)	--- (dashed)	--- (dashed)	--- (dashed)

- All point assets follow the standard colour convention:
 red - combined
 blue - surface water
 brown - foul
 purple - overflow
- Manhole
 - Head of System
 - Extent of Survey
 - Rodding Eye
 - Inlet
 - Discharge Point
 - Vortex
 - Penstock
 - Washout Chamber
 - Valve
 - Air Valve
 - Non Return Valve
 - Soakaway
 - Gully
 - Cascade
 - Flow Meter
 - Hatch Box
 - Oil Interceptor
 - Summit
 - Drop Shaft
 - Orifice Plate
 - Side Entry Manhole
 - Outfall
 - Screen Chamber
 - Inspection Chamber
 - Bifurcation Chamber
 - Lamp Hole
 - T Junction / Saddle
 - Catchpit
 - Valve Chamber
 - Vent Column
 - Vortex Chamber
 - Penstock Chamber
 - Network Storage Tank
 - Sewer Overflow
 - Ww Treatment Works
 - Pw Pumping Station
 - Septic Tank
 - Control Kiosk
 - Change of Characteristic

MANHOLE FUNCTION

FO	Foul
SW	Surface Water
CO	Combined
OV	Overflow

SEWER SHAPE

CI	Circular	TR	Trapezoidal
EG	Egg	AR	Arch
OV	Oval	BA	Barrel
FT	Flat Top	HO	Horse Shoe
RE	Rectangular	UN	Unspecified
SQ	Square		

SEWER MATERIAL

AC	Asbestos Cement
BR	Brick
PE	Polyethylene
RP	Reinforced Plastic Matrix
CO	Concrete
CSB	Concrete Segment Bolted
CSU	Concrete Segment Unbolted
CC	Concrete Box Culverted
PSC	Plastic / Steel Composite
GRC	Glass Reinforced Plastic
DI	Ductile Iron
PVC	Polyvinyl Chloride
CI	Cast Iron
SI	Spun Iron
ST	Steel
VC	Vitrified Clay
PP	Polypropylene
PF	Pitch Fibre
MAC	Masonry, Coursed
MAR	Masonry, Random
U	Unspecified

Address or Site Reference:
 17 POWNALL AVENUE,
 BRAMHALL,
 STOCKPORT,
 SK7 2HE

OS sheet SJ8984SE
Number:
Scale: 1:1250
Date: 10/11/2023
Nodes: 120
Sheet: 10 of 10

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Appendix C. Proposed drainage layout

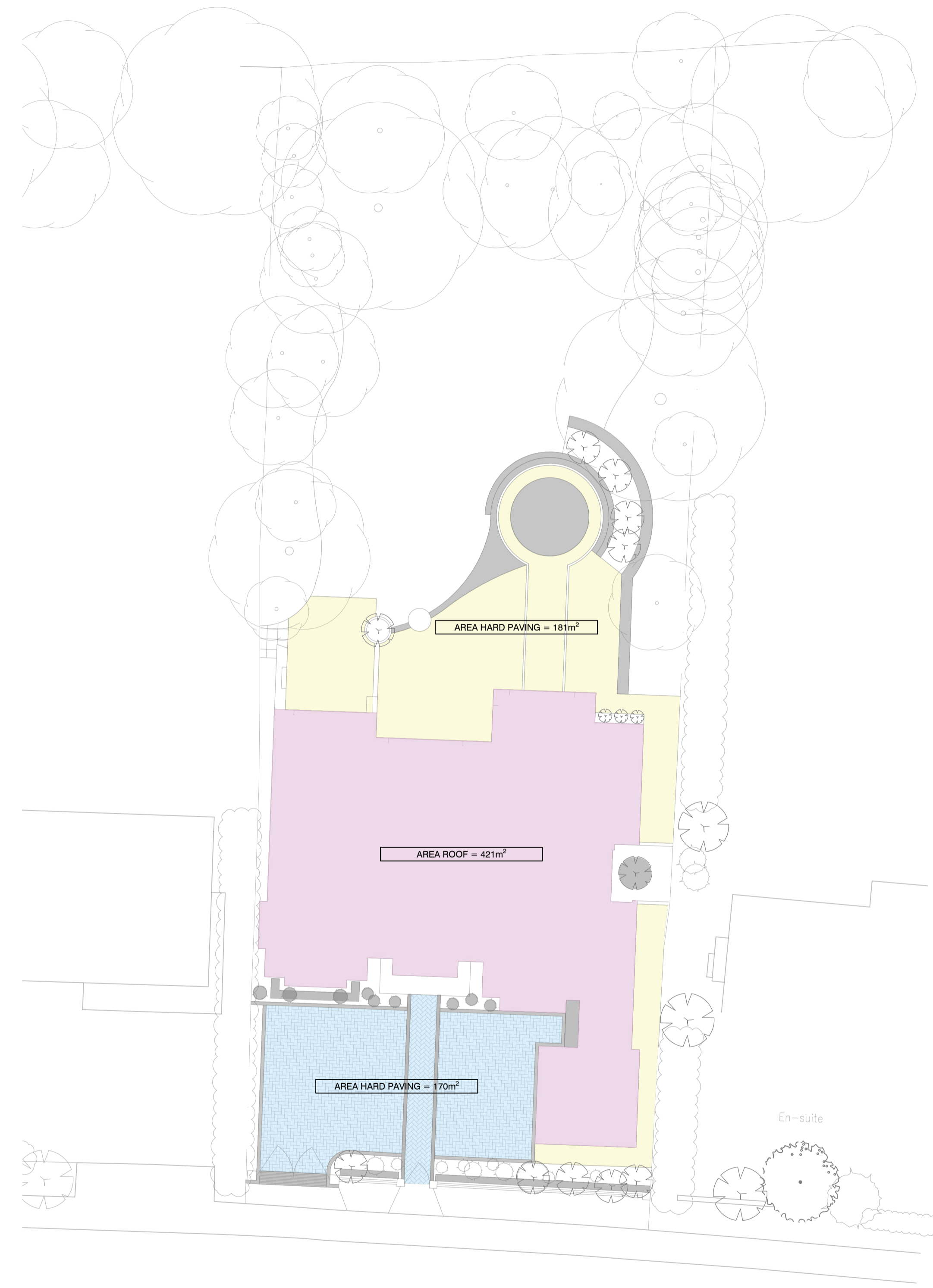
This drawing is to be read in conjunction with all other relevant documentation.
Do not Scale
 All setting out by contractor. Report all discrepancies to bdi Structural Solutions.
Drawing Copyright of BDI Structural Solutions ©
 Client required to comply with requirements of Party Wall Act as required by nature of work.

NOTES

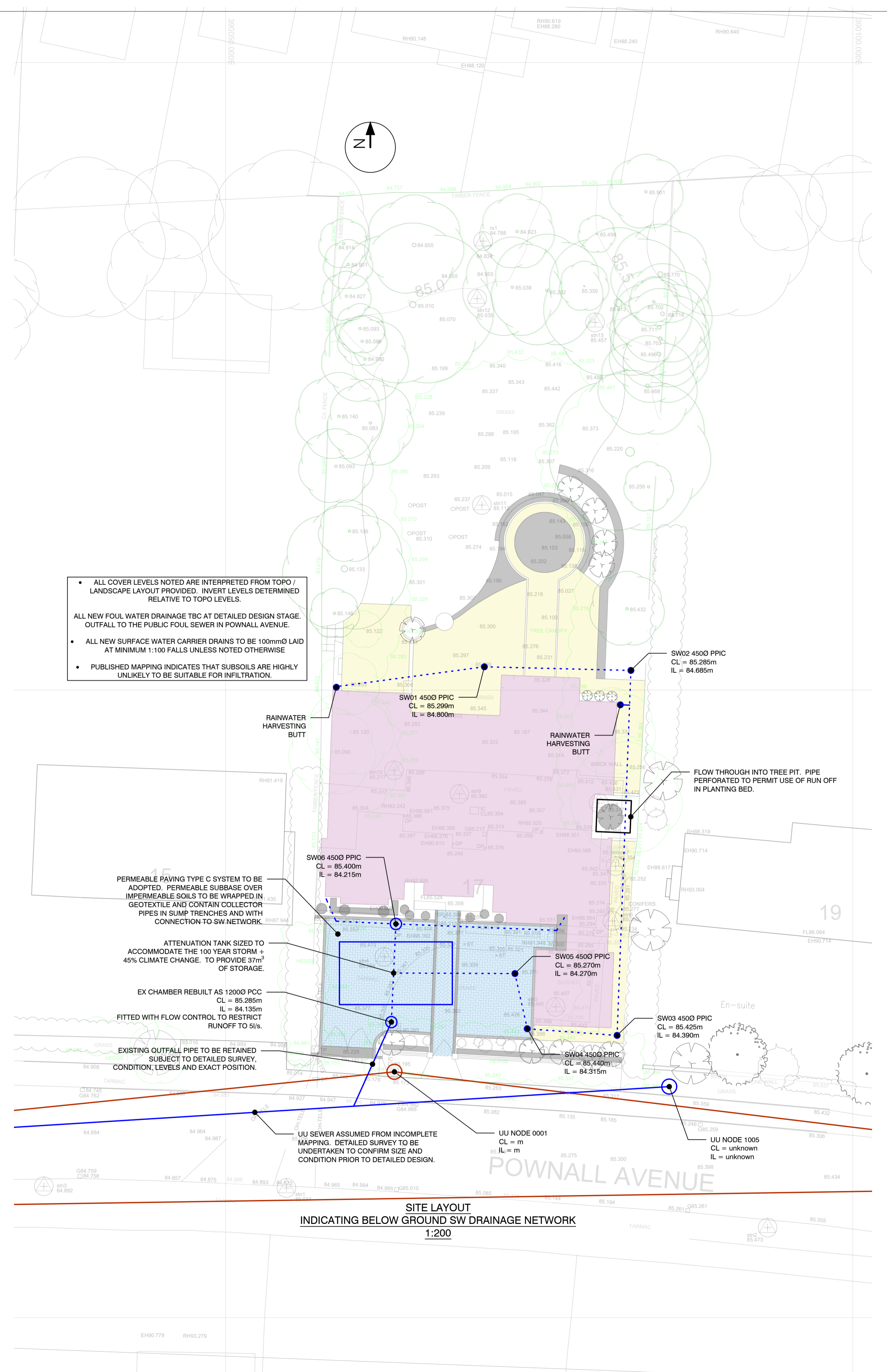
Setting Out	
All levels, setting out and dimensions are to be confirmed on site.	

Drainage Notation	
	Denotes New Surface Water Carrier Drain
	Denotes New Foul Water Carrier Drain
	Denotes Existing Surface Water Carrier Drain
	Denotes Existing Combined Water Carrier Drain
	Denotes Proposed Rainwater Gully
	Denotes Proposed Soil and Vent Pipe
	Denotes Proposed Inspection Chamber/Manhole
	Denotes Proposed overland / exceedance route

- DRAINAGE**
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT CONSULTANTS DRAWINGS AND SPECIALIST CONTRACTORS / SUPPLY CHAIN DRAWINGS AND SPECIFICATION.
 - ALL LEVELS IN M +00 UNLESS OTHERWISE SPECIFIED.
 - ALL DRAINAGE TO COMPLY WITH BS 8301:1985 TOGETHER WITH PARTS H1, 2 & 3 OF THE BUILDING REGULATIONS.
 - FOR ABOVE GROUND DRAINAGE REFER TO DRAINAGE DESIGN CONSULTANT (M/E / ARCHITECT)
 - DETAILS OF EXISTING WATERCOURSES (CULVERTED OR OTHERWISE) AND / OR PUBLIC SEWERS (DIAMETER, CONDITION, POSITION ON PLAN AND INVERT LEVEL) MUST BE CONFIRMED PRIOR TO COMMENCEMENT OF PROPOSED WORKS.
 - ALL PROPOSED WORKS MUST BE AGREED AND DISCHARGED WITH RELEVANT AUTHORITIES (LEAD LOCAL FLOOD AUTHORITY, ENVIRONMENT AGENCY, STATUTORY WATER AUTHORITY, NETWORK RAIL AND OTHER SIMILAR) BEFORE COMMENCING WORKS ON SITE.
 - ALL RWPS, GULLIES AND SVPS TO BE FITTED WITH RODDING ACCESS FOR FUTURE MAINTENANCE.
 - DRAINAGE TO BE LAID TO MINIMUM FALLS (AND TO SUIT INVERT LEVELS SHOWN) AS NOTED OR TO COMPLY WITH THE FOLLOWING:
 - FALL = 1000 AT MIN 1:40
 - SW = 1000 AT MIN 1:100
 - NEW / ALTERED CONNECTIONS TO PUBLIC SEWER MUST BE AGREED WITH STATUTORY WATER AUTHORITY VIA S106 APPLICATION BEFORE PROCEEDING WITH SITE WORKS.
 - FOUL WATER PIPES AND FITTINGS TO BE FORMED IN PLASTIC TO BS EN 1401-1:2009
 - SURFACE WATER PIPES AND FITTINGS TO BE FORMED IN PLASTIC TO BS EN 1401-1:2009
 - CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY WORKS NECESSARY TO COMPLETE THE PROPOSED WORKS.
 - MANHOLES, INSPECTION CHAMBERS AND ACCESS CHAMBERS OR RODDING EYES SHALL BE PROVIDED AT EVERY CHANGE OF DIRECTION, DRAIN & OR GRADIENT CHANGE AND ALSO AT OR WITHIN 12.5M OF A JUNCTION.
 - JOINTING SHALL BE EITHER U.P.V.C PUSHFIT COUPLINGS OR BY SEALING RUBBER 'O' RINGS IN POLYESTER MOULDINGS.
 - DRAINAGE BENEATH LANDSCAPING WITH LESS THAN 0.6m COVER TO BE CONCRETE ENCASED.
 - DRAINAGE BENEATH CAR PARKING / ROADS WITH LESS THAN 1.2m COVER TO BE CONCRETE ENCASED.
 - DRAINS THAT ARE CONCRETE ENCASED TO HAVE 18mm FIBREBOARD OR POLYSTYRENE JOINTS AT 5m (MAX) c/c.
 - PPIC DEEPER THAN 1.2m TO HAVE REDUCED ACCESS COVER < 350mm DIA.
 - ALL DRAINS WHICH ARE LOCATED WITHIN 2000MM OF EXTERNAL WALLS OR PASS UNDER BUILDINGS ARE TO BE ENCASED IN MIN 150MM CONCRETE OF FULL WIDTH OF TRENCH.
 - ALL EXTERNAL MH COVERS SHALL BE MEDIUM DUTY GALV. STEEL TO BS497 UNLESS LOCATED WITHIN CARRIAGEWAYS OR CAR PARKS WHERE HEAVY DUTY CAST IRON ARE TO BE USED.
 - MANHOLE COVER TO BE SEATED IN REBATE STEEL FRAMES AND SEALED WITH GREASE ON 100MM THK CONCRETE FRAME BASE WITH 600X600MM MIN OPENING.



**SITE LAYOUT
INDICATING CONTRIBUTING AREAS
1:200**



**SITE LAYOUT
INDICATING BELOW GROUND SW DRAINAGE NETWORK
1:200**

- ALL COVER LEVELS NOTED ARE INTERPRETED FROM TOPO / LANDSCAPE LAYOUT PROVIDED. INVERT LEVELS DETERMINED RELATIVE TO TOPO LEVELS.
- ALL NEW FOUL WATER DRAINAGE TBC AT DETAILED DESIGN STAGE. OUTFALL TO THE PUBLIC FOUL SEWER IN POWNALL AVENUE.
- ALL NEW SURFACE WATER CARRIER DRAINS TO BE 100mmØ LAID AT MINIMUM 1:100 FALLS UNLESS NOTED OTHERWISE
- PUBLISHED MAPPING INDICATES THAT SUBSOILS ARE HIGHLY UNLIKELY TO BE SUITABLE FOR INFILTRATION.

PERMEABLE PAVING TYPE C SYSTEM TO BE ADOPTED. PERMEABLE SUBBASE OVER IMPERMEABLE SOILS TO BE WRAPPED IN GEOTEXTILE AND CONTAIN COLLECTOR PIPES IN SUMP TRENCHES AND WITH CONNECTION TO SW NETWORK.

ATTENUATION TANK SIZED TO ACCOMMODATE THE 100 YEAR STORM + 45% CLIMATE CHANGE. TO PROVIDE 37m³ OF STORAGE.

EX CHAMBER REBUILT AS 1200Ø PCC CL = 85.285m IL = 84.135m FITTED WITH FLOW CONTROL TO RESTRICT RUNOFF TO 5l/s.

EXISTING OUTFALL PIPE TO BE RETAINED SUBJECT TO DETAILED SURVEY. CONDITION, LEVELS AND EXACT POSITION.

UU SEWER ASSUMED FROM INCOMPLETE MAPPING. DETAILED SURVEY TO BE UNDERTAKEN TO CONFIRM SIZE AND CONDITION PRIOR TO DETAILED DESIGN.

UU NODE 0001 CL = m IL = m

UU NODE 1005 CL = unknown IL = unknown

POWNALL AVENUE

PLANNING STRATEGY

Rev	Date	DESCRIPTION	Drawn	Appr'd
PO	08.12.23	FIRST ISSUE SUPPORTING PLANNING APPLICATION	SG	SG

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Drawing Title Site Layout Indicating SW Drainage Strategy (for planning)

Scale As shown at A1	Drawn SG	Chk'd by SG	202310249
Date 08.12.2023	Date Chkd 08.12.2023	Rev PO	C1 01