

Drainage Strategy

Fairfax Avenue, Manchester

CIT03 2024

Citystruct LTD

Ground Floor | Two Four Nine North | Lynnfield House | Altrincham WA14 4DZ

www.citystruct.com

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Quality Assurance – Approval Status

This document has been prepared and checked in accordance with Citystruct's internal governing processes

Issue	Date	Prepared by	Checked by	Approved by
P01	15/07/2024	LS	MB	MB

Comments

Comments

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1. Introduction

CityStruct have been instructed to provide a drainage strategy to support the proposed development to the rear of 8 Fairfax Avenue, Manchester, M20 6AJ. This report will outline the methods and assumptions behind the design and detail how the site is being developed in accordance with national and local sustainable drainage guidance.This report has also been developed to satisfy the surface water drainage related Condition 18 of the Manchester City Council Planning Application reference 134755/FO/2022.

This report is to accompany CityStruct drawings CIT03-CTY-HGN-ZZ-DR-D-0300 Proposed Drainage Layout and CIT03-CTY-HGN-ZZ-DR-D-0305 Proposed Drainage Details.

1.1 Site Description

The centre of the site is located at approximately SJ 84841 91802 and currently hosts one semi-detached dwelling which is accessed directly from Fairfax Avenue. The rear garden of the property extends all the way through to Essex Avenue which runs parallel to Fairfax Avenue. The existing site is unkept grassland as per Figure 1 below which shows the site from Essex Avenue.



Figure 1 Existing site (Taken by CityStruct 12/07/24)

The site is an approximately 0.057ha rectangular parcel of land with residential dwellings on all sides. A topographic survey indicates the site to fall from east to west from 34.6mAOD down to 34.2mAOD around the existing No.8 dwelling. Essex Avenue is situated approximately 34.5mAOD immediately outside the site.

1.2 Development Proposals

The development proposals are to construct a new detached dwelling in the rear garden of Fairfax Avenue. The new dwelling will front onto Essex Avenue where a new access with new dropped crossings to be constructed. A site plan has been included as Figure 2 below.

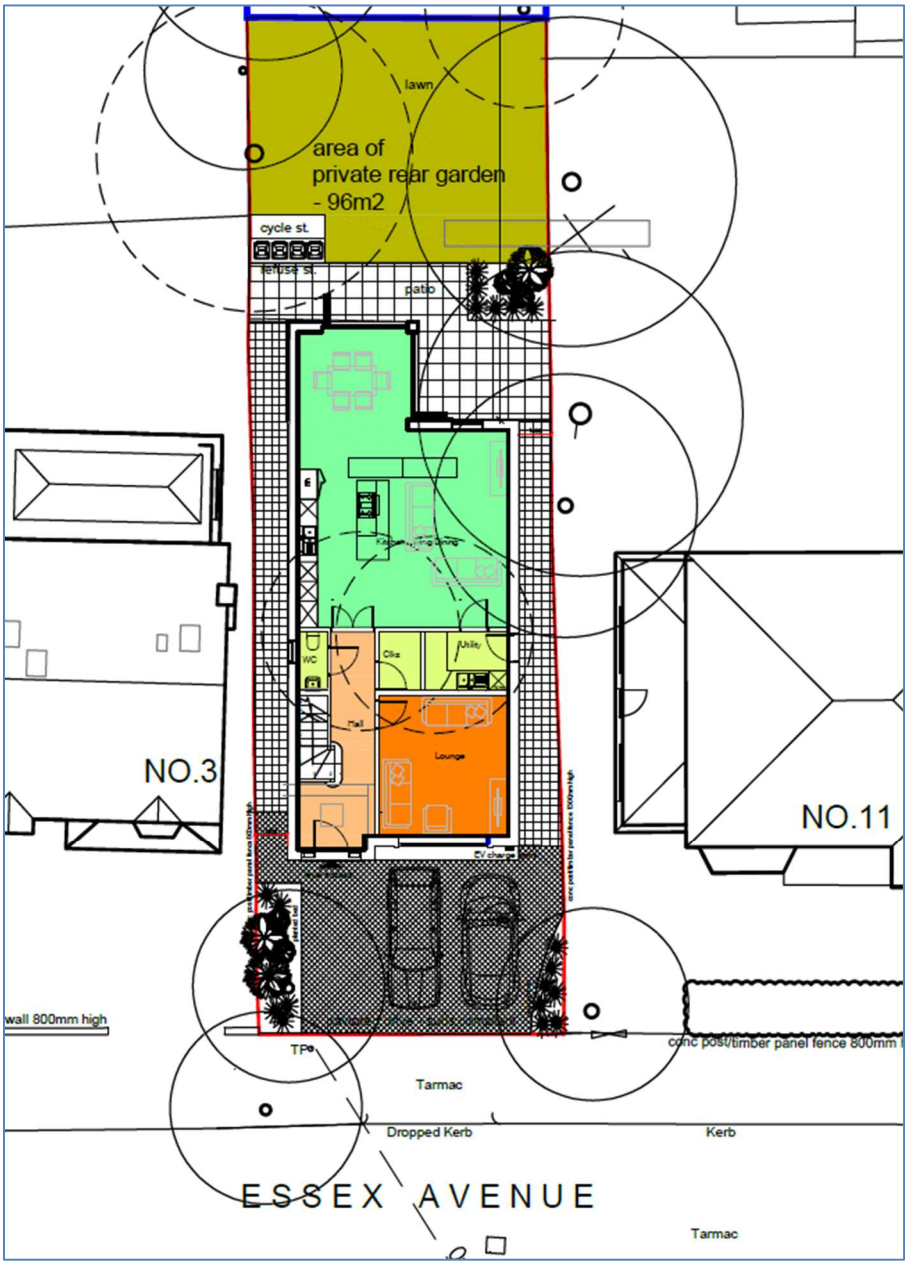


Figure 2 Proposed Site plan (c/o SRM Architects)

2. Surface Water Drainage

2.1 Overview

It is a requirement that sustainable drainage systems (SuDS) are incorporated into new developments to provide effective drainage whilst mitigating against new flood risk and providing an opportunity to address existing flood risk issues.

This SuDS Strategy has been developed in accordance with the Non-statutory technical standards for sustainable drainage systems, The SuDS Manual Ciria C753 and the Lead Local Flood Authorities (LLFA) specific requirements.

The LLFA for this site is Manchester City Council.

2.2 Discharge location

The surface water discharge locations has been determined using the hierarchical approach which requires that each of the following are considered in priority order.

1. Into the ground (infiltration);
2. To a surface water body or watercourse;
3. To a surface water sewer or highway drain;
4. To a combined sewer.

Infiltration is the preferred method of water disposal as this reflects the natural ground conditions, recharges aquifers, lowers the risk of flooding as a result of urbanisation and reduces the risks of pluvial flooding to surrounding areas.

The site is located just over 1km north east of the River Mersey and therefore poor infiltration potential was suspected. A desktop study was conducted using the LandIS Soilscapes viewer which described the local soils as slowly permeable loamey and clayey soils with impeded drainage and high groundwater. The built up nature of the brownfield site also means that situating a soakaway more than 5m away from existing and proposed property is not viable. Infiltration has therefore been discounted as a means of surface water disposal.

There are no watercourses or surface water sewers within close proximity to the site. United Utilities mapping indicates a 300mm internal diameter Vitrified Clay combined sewer to be located in Essex Avenue. A new connection is therefore proposed into the existing sewer via the chamber located adjacent the site. Connection subject to agreement with United Utilities. United Utilities sewer mapping has been provided as Appendix C.

The greenfield runoff rate for the site was calculated using IH124 methodology for the equivalent 1ha site. This estimated a Qbar runoff rate of 2.26l/s and therefore 0.13l/s pro rata for the site area. A restriction to this rate will not be technically achievable due to risks of blockages to the site surface water system.

All surface water runoff will therefore be restricted to 1l/s which is recognised as the minimum achievable discharge rate and as close to the greenfield runoff rate as practical.

3. Proposed Surface Drainage

3.1 Surface Water - Roofs Areas

Roof water will be collected via traditional gutters and gullies. These will be connected to a below ground piped drainage system which will route flows towards the front of the property. All rainwater downpipes will be fitted with silt traps to manage sediment.

3.2 Surface Water – Private Driveways

The proposed private drive will consist of a permeable pavement construction with a resin bound finish. Surface water will percolate through the pavement construction layers and through the sub-base consisting of minimum 30% voids. The pavement will be fully lined to prevent ingress of groundwater. The formation of the pavement will be laid at falls to a perforated pipe.

Surface water will then be restricted to 1l/s via an orifice plate into the combined system.

A Proposed Drainage Layout Drawing is included as Appendix A.

3.3 Modelled Results

The network described above has been modelled using Causeway Flows drainage software for a variety of scenarios including the 2 year, 30 year and 100 year (including 40% uplift for climate change) storms. Modelled results indicate no flooding in all modelled storm scenarios.

The proposed permeable pavement provides adequate attenuation volumes for all storms included above.

Modelled results are included as Appendix B.

4. Proposed Foul Drainage

A below ground gravity drainage system will convey domestic foul water flows from the proposed dwellings into the public sewer. The below ground gravity drainage system has been designed to ensure self-cleansing velocities are achieved. Foul drainage will be designed in accordance with Building Regulations and discharge units contained within BS EN 12056-2:2000.

The proposed method of foul water disposal is to connect into the United Utilities Combined manhole located in Essex Avenue. This connection is subject to agreement with United Utilities. A plan of existing United Utilities Assets has been included as Appendix C.

In accordance with 'Design and Construction Guidance' the proposed peak foul flows have been calculated as follows:

4000 litres per dwelling per day; 1 dwellings x 0.05 l/s = 0.05 l/s

A Proposed Drainage Layout Drawing is included as Appendix A.

5. Maintenance

It is crucial that the elements mentioned in the drainage elements and water quality are maintained to a sufficient standard to ensure that the devices can still function. Generally, the maintenance requirements are either from CIRIA 753, or manufacturer's guidance.

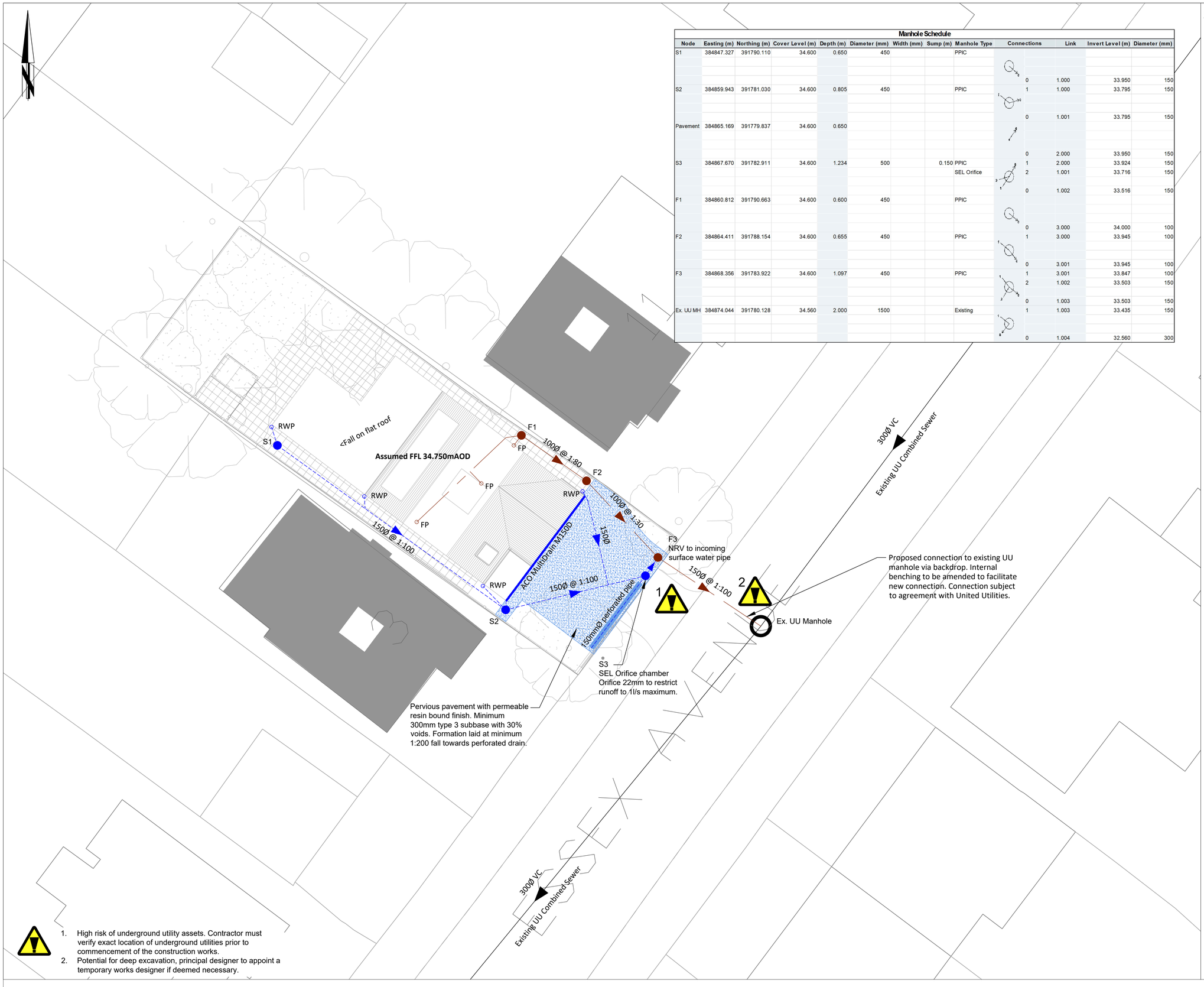
Maintenance of the proposed drainage systems shall remain the responsibility of the property maintenance company to ensure long term performance to design parameters. The piped network has been designed to ensure self-cleansing velocities therefore regular specialist maintenance is not envisaged.

The suggested maintenance regime for the pervious pavement is in line with the CIRIA SuDS Manual recommendations as per Figure 3 below.

Operation and maintenance requirements for pervious pavements		
Maintenance schedule	**Required action**	**Typical frequency**
Regular maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment
Occasional maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphospate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50 mm of the level of the paving	As required
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48 h after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

Figure 3 Porous Paving Maintenance Requirements (Source: CIRIA 753)

Appendix A – Proposed Drawings



Manhole Schedule

Node	Easting (m)	Northing (m)	Cover Level (m)	Depth (m)	Diameter (mm)	Width (mm)	Sump (m)	Manhole Type	Connections	Link	Invert Level (m)	Diameter (mm)
S1	384847.327	391790.110	34.600	0.650	450			PPIC				
									0	1.000	33.950	150
S2	384859.943	391781.030	34.600	0.805	450			PPIC	1	1.000	33.795	150
									0	1.001	33.795	150
Pavement	384865.169	391779.837	34.600	0.650								
									0	2.000	33.950	150
S3	384867.670	391782.911	34.600	1.234	500		0.150	PPIC	1	2.000	33.924	150
								SEL Orifice	2	1.001	33.716	150
									0	1.002	33.516	150
F1	384860.812	391790.663	34.600	0.600	450			PPIC				
									0	3.000	34.000	100
F2	384864.411	391788.154	34.600	0.655	450			PPIC	1	3.000	33.945	100
									0	3.001	33.945	100
F3	384868.356	391783.922	34.600	1.097	450			PPIC	1	3.001	33.847	100
									2	1.002	33.503	150
									0	1.003	33.503	150
Ex. UU MH	384874.044	391780.128	34.560	2.000	1500			Existing	1	1.003	33.435	150
									0	1.004	32.560	300

Key

- Proposed Surface Water Drainage
- Proposed Foul Drainage
- Existing UU Combined Sewer
- Proposed ACO drain
- Proposed Inspection Chamber
- Existing Manhole
- RWP — Rainwater Down Pipe
- RE — Rodding Eye
- FP — Foul Drainage Point
- Pervious surfacing with open graded subbase

General notes:

1. This drawing is to be read in conjunction with all Engineer's, Architect's, Street Lighting or other relevant drawings and specifications.
2. All dimensions and levels are to be checked on site by the contractor prior to preparing any working drawings or commencing on site. any discrepancies shall be reported to the site supervisor. all dimensions are in meters unless stated otherwise.
3. The contractor must ensure and will be held responsible for the overall stability of the building/structure/excavation at all stages of the work.
4. The contractor has the responsibility to scan for underground utilities and verify, if necessary, with trial holes the location of underground utilities prior to carrying out excavation works, please refer to GPR survey and utility C2 returns.
5. Pavement material suggestions are based on a general design spec, contractor shall amend if deemed necessary to a similar specifications given that it is in line with the MCHW Clause specified.
6. Reinstatement of Carriageway surface must be done in accordance with the practices of the specification for reinstatement of opening in highways which is specified on this standard detail.
7. Should there be any conflict between the details indicated on this drawing and those indicated on other drawings the Project Engineer shall be informed prior to construction.
8. Until technical approval has been obtained from the relevant authority, it should be understood that all drawings issued are preliminary and not for construction. Should the contractor commence site work prior to such approval being given, it is entirely at their own risk.
9. All 100Ø proposed foul drainage pipes shown are to be laid at a max gradient of 1:80.
10. All 150Ø proposed foul drainage pipes shown are to be laid at a max gradient of 1:150.
11. All existing land drains encountered on site during construction are to be re-connected.
12. Pipes to be structured walled to BS EN 13476, Polypropylene to BE EN 1852 or PVC-U to BS EN 1401.
13. Both clay and concrete pipes shall be strength class 120 (100/150mm min crushing strength 28kN/m). Thermoplastic pipes shall have a minimum ring stiffness of SN8.
14. Private pipes which run adjacent to buildings shall be installed in strict accordance with Building Regulations Part H, clauses 2.23 to 2.25, and adoptable pipes in accordance with Design and Constructio Guidance
15. Class Z concrete bed and surround to all foul and surface water pipes with less than 900mm cover depth. Type S granular bed and surround to all foul and surface water pipes with greater than 900mm cover detph.
16. All manholes and inspection chambers to have D400 load-rated covers and frames to BS EN 124.
17. All private foul and surface water pipes to be constructed to Building Regulations Part H, and adoptable foul and surface water pipes to be constructed in accordance with Design and Construction Guidance.
18. If soft spots are encountered the whole area is to be excavated until firm ground is encountered and all excavated material disposed. Material excavated from soft spots should not be used for fill on site. The excavation should be reinstated with MOT Type 3 compacted in 100mm-150mm layers.
19. Adoptable sewers to be constructed in accordance with Design and Construction Guidance.
20. Private connections to adoptable sewers are to be a minimum of 100mm diameter and laid soffit-to-soffit.

1. High risk of underground utility assets. Contractor must verify exact location of underground utilities prior to commencement of the construction works.
2. Potential for deep excavation, principal designer to appoint a temporary works designer if deemed necessary.

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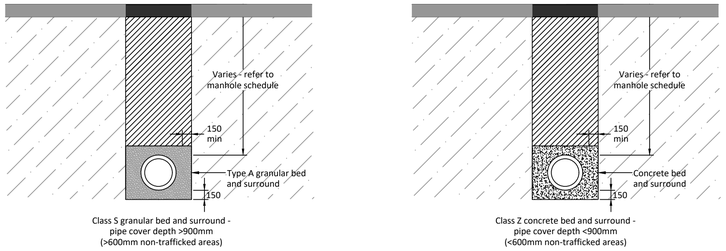
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Land to rear of 8 fairfax Avenue
Proposed Drainage Layout
Series 500

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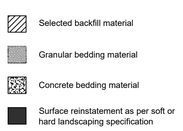
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DRAWN BY	LS	15/07/24
CHECKED BY	MB	15/07/24

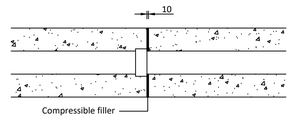
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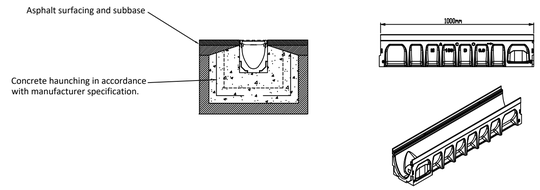


Typical Pipe Bedding Details
Scale 1:50

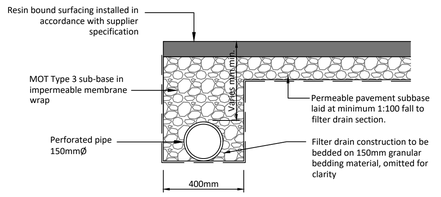




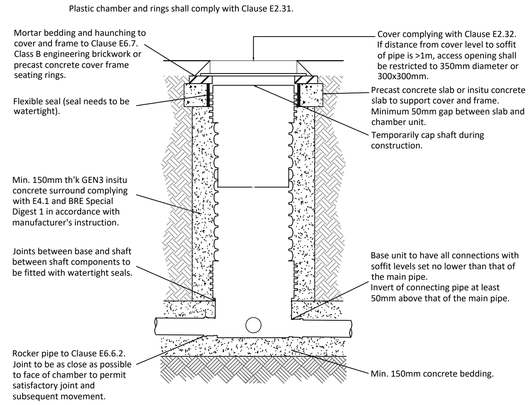
Typical Flexible Joint to Concrete Bed and Surround Detail
Scale 1:20



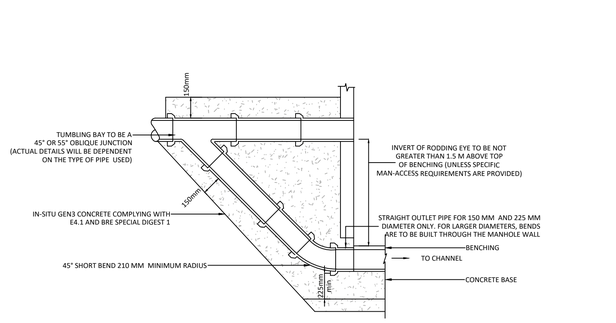
Typical ACO MultiDrain 150D
Scale 1:20



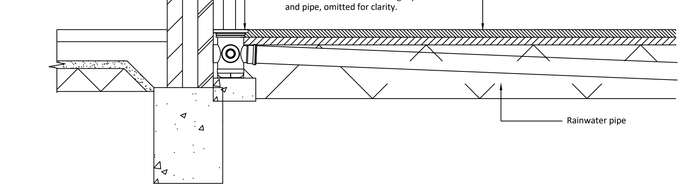
Typical Pervious Pavement Detail
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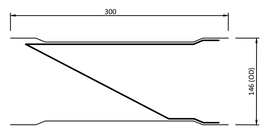
Typical Inspection Chamber Detail
Scale 1:20



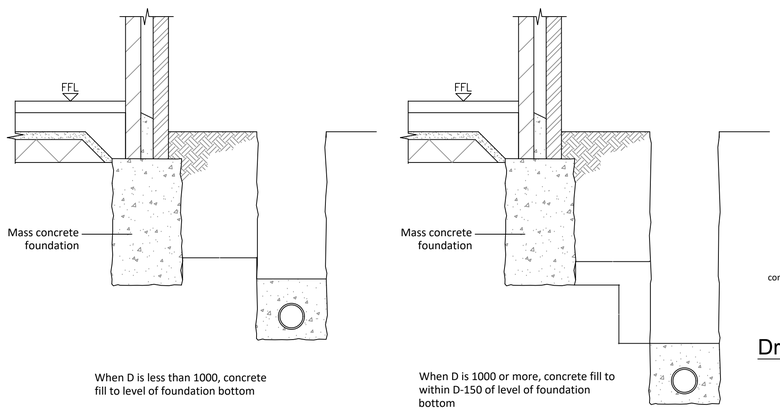
Ramped Backdrop Detail (DCG Fig. B16)
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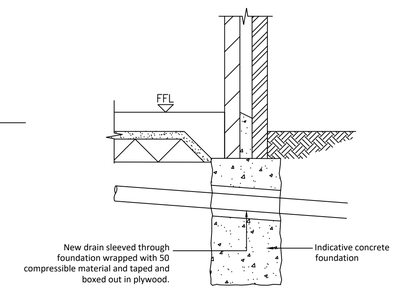


Typical Rainwater Downpipe Detail (with Silt Gully)
Scale 1:20



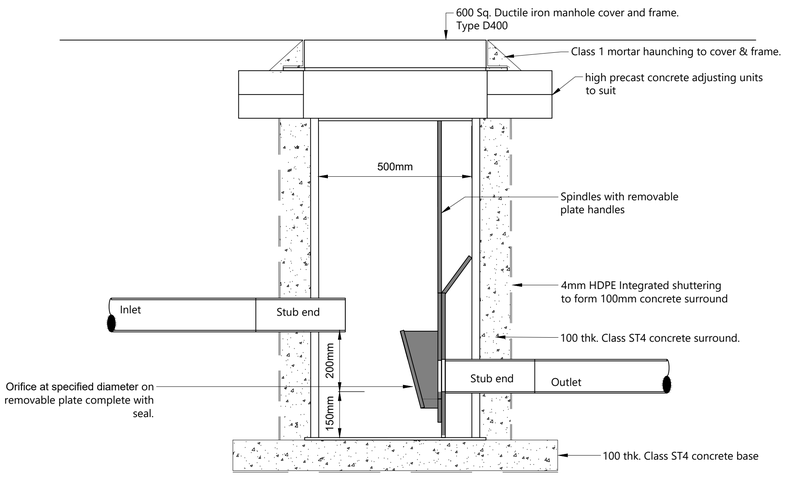
Typical WaStop non-return valve
Scale 1:20





Drain Sleeved Through Foundation Detail
Scale 1:20

Pipe Protection Near Foundation Detail
Scale 1:20



Typical Orifice Chamber Detail
Scale 1:10

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REV.	DESCRIPTION	DRAWN BY	CHECKED	DATE

	INITIALS	DATE	
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DRAWN BY	LS	15/07/24	SCALE 1:100 @ A1 / FILE No. 24001
CHECKED BY	MB	15/07/24	

ORIGINAL SIZE: A1

IG-13/10/16

Appendix B – Modelled Results

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Mohammad Balan
Site name:	Fairfax
Site location:	

Site Details

Latitude:	53.42245° N
Longitude:	2.22913° W
Reference:	3887774552
Date:	Jul 11 2024 09:26

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Runoff estimation approach

IH124

Site characteristics

Total site area (ha): 1

Methodology

Q_{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Soil characteristics

	Default	Edited
SOIL type:	2	2
HOST class:	N/A	N/A
SPR/SPRHOST:	0.3	0.3

Hydrological characteristics

	Default	Edited
SAAR (mm):	840	840
Hydrological region:	10	10
Growth curve factor 1 year:	0.87	0.87
Growth curve factor 30 years:	1.7	1.7
Growth curve factor 100 years:	2.08	2.08
Growth curve factor 200 years:	2.37	2.37

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited
Q_{BAR} (l/s):	2.26	2.26
1 in 1 year (l/s):	1.96	1.96
1 in 30 years (l/s):	3.83	3.83
1 in 100 year (l/s):	4.69	4.69
1 in 200 years (l/s):	5.35	5.35

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement , which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	17.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	0.500
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	4.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
S1	0.005	4.00	34.600	450	384847.327	391790.110	0.650
S2	0.005	4.00	34.600	450	384859.943	391781.030	0.805
Pavement	0.004	4.00	34.600		384865.169	391779.837	0.650
S3			34.600	500	384867.670	391782.911	1.234
F1		4.00	34.600	450	384860.812	391790.663	0.600
F2			34.600	450	384864.411	391788.154	0.655
F3			34.600	450	384868.356	391783.922	1.097
Ex. UU MH			34.560	1500	384874.044	391780.128	2.000
Ex. Sewer			34.560		384866.501	391772.008	2.046

Links (Input)

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	S1	S2	15.544	0.600	33.950	33.795	0.155	100.3	150	4.26	50.0
1.001	S2	S3	7.953	0.600	33.795	33.716	0.079	100.7	150	4.39	50.0
2.000	Pavement	S3	3.963	0.600	33.950	33.924	0.026	150.0	150	4.08	50.0
1.002	S3	F3	1.222	0.600	33.516	33.503	0.013	94.0	150	4.41	50.0
3.000	F1	F2	4.387	0.600	34.000	33.945	0.055	80.0	100	4.08	50.0
3.001	F2	F3	5.786	0.600	33.945	33.847	0.098	59.0	100	4.18	50.0
1.003	F3	Ex. UU MH	6.837	0.600	33.503	33.435	0.068	100.5	150	4.52	50.0
1.004	Ex. UU MH	Ex. Sewer	11.083	0.600	32.560	32.514	0.046	240.9	300	4.71	50.0

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	17.000	Drain Down Time (mins)	240
Ratio-R	0.400	Additional Storage (m³/ha)	20.0
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	40	0	0

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Node S3 Online Orifice Control

Flap Valve	x	Design Depth (m)	0.900	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Flow (l/s)	1.0		
Invert Level (m)	33.516	Diameter (m)	0.022		

Node Pavement Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	34.250	Slope (1:X)	200.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)	25	Depth (m)	0.300
Safety Factor	2.0	Width (m)	7.600	Inf Depth (m)	
Porosity	0.30	Length (m)	5.600		

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Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S1	10	33.972	0.022	0.8	0.0068	0.0000	OK
30 minute winter	S2	24	33.886	0.091	1.2	0.0257	0.0000	OK
15 minute winter	Pavement	10	33.973	0.023	0.7	0.0028	0.0000	OK
30 minute winter	S3	23	33.887	0.371	1.7	0.0727	0.0000	SURCHARGED
15 minute summer	F1	1	34.000	0.000	0.0	0.0000	0.0000	OK
15 minute summer	F2	1	33.945	0.000	0.0	0.0000	0.0000	OK
30 minute winter	F3	24	33.522	0.019	0.6	0.0031	0.0000	OK
30 minute winter	Ex. UU MH	25	32.580	0.020	0.6	0.0355	0.0000	OK
30 minute winter	Ex. Sewer	25	32.531	0.017	0.6	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S1	1.000	S2	0.8	0.392	0.045	0.0865	
30 minute winter	S2	1.001	S3	1.2	0.528	0.067	0.1143	
15 minute winter	Pavement	2.000	S3	0.7	0.417	0.048	0.0066	
30 minute winter	S3	Orifice	F3	0.6				
15 minute summer	F1	3.000	F2	0.0	0.000	0.000	0.0000	
15 minute summer	F2	3.001	F3	0.0	0.000	0.000	0.0000	
30 minute winter	F3	1.003	Ex. UU MH	0.6	0.462	0.034	0.0090	
30 minute winter	Ex. UU MH	1.004	Ex. Sewer	0.6	0.335	0.008	0.0200	1.3

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Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	S1	25	34.069	0.119	1.2	0.0372	0.0000	OK
30 minute winter	S2	26	34.070	0.275	2.6	0.0777	0.0000	SURCHARGED
30 minute winter	Pavement	25	34.070	0.120	1.2	0.0148	0.0000	OK
30 minute winter	S3	25	34.070	0.554	2.0	0.1085	0.0000	SURCHARGED
15 minute summer	F1	1	34.000	0.000	0.0	0.0000	0.0000	OK
15 minute summer	F2	1	33.945	0.000	0.0	0.0000	0.0000	OK
30 minute winter	F3	26	33.524	0.021	0.7	0.0034	0.0000	OK
30 minute winter	Ex. UU MH	26	32.582	0.022	0.7	0.0389	0.0000	OK
30 minute winter	Ex. Sewer	26	32.533	0.019	0.7	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute winter	S1	1.000	S2	1.2	0.371	0.066	0.2533	
30 minute winter	S2	1.001	S3	1.7	0.538	0.095	0.1400	
30 minute winter	Pavement	2.000	S3	1.0	0.449	0.068	0.0646	
30 minute winter	S3	Orifice	F3	0.7				
15 minute summer	F1	3.000	F2	0.0	0.000	0.000	0.0000	
15 minute summer	F2	3.001	F3	0.0	0.000	0.000	0.0000	
30 minute winter	F3	1.003	Ex. UU MH	0.7	0.490	0.042	0.0104	
30 minute winter	Ex. UU MH	1.004	Ex. Sewer	0.7	0.357	0.010	0.0232	2.5

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Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	S1	48	34.332	0.382	1.4	0.1195	0.0000	FLOOD RISK
60 minute winter	S2	48	34.332	0.537	2.4	0.1519	0.0000	FLOOD RISK
60 minute winter	Pavement	48	34.332	0.382	2.2	0.9149	0.0000	FLOOD RISK
60 minute winter	S3	48	34.332	0.816	2.3	0.1599	0.0000	FLOOD RISK
15 minute summer	F1	1	34.000	0.000	0.0	0.0000	0.0000	OK
15 minute summer	F2	1	33.945	0.000	0.0	0.0000	0.0000	OK
60 minute winter	F3	48	33.527	0.024	0.9	0.0038	0.0000	OK
60 minute winter	Ex. UU MH	49	32.584	0.024	0.9	0.0425	0.0000	OK
60 minute winter	Ex. Sewer	49	32.536	0.022	0.9	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	S1	1.000	S2	1.1	0.334	0.063	0.2736	
60 minute winter	S2	1.001	S3	2.3	0.461	0.128	0.1400	
60 minute winter	Pavement	2.000	S3	-1.2	0.417	-0.083	0.0698	
60 minute winter	S3	Orifice	F3	0.9				
15 minute summer	F1	3.000	F2	0.0	0.000	0.000	0.0000	
15 minute summer	F2	3.001	F3	0.0	0.000	0.000	0.0000	
60 minute winter	F3	1.003	Ex. UU MH	0.9	0.519	0.051	0.0119	
60 minute winter	Ex. UU MH	1.004	Ex. Sewer	0.9	0.373	0.013	0.0269	5.6

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Appendix C – United Utilities Asset Maps

Water for the North West

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

Stormflow Solutions

34
Wallis Avenue,
Lincoln,
LN6 8AS

FAO:

Your Ref: Fairfax Avenue
Our Ref: UUPS-ORD-578689
Date: 17/06/2024

Dear Sirs

Location: 8 FAIRFAX AVENUE, MANCHESTER, M20 6AJ

I acknowledge with thanks your request dated 13/06/2024 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

United Utilities Water Limited
Registered In England & Wales No. 2366678
Registered Office Haweswater House, Lingley Mere Business Park,
Lingley Green Avenue, Great Sankey, Warrington, WA5 3LP

Water for the North West

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)".

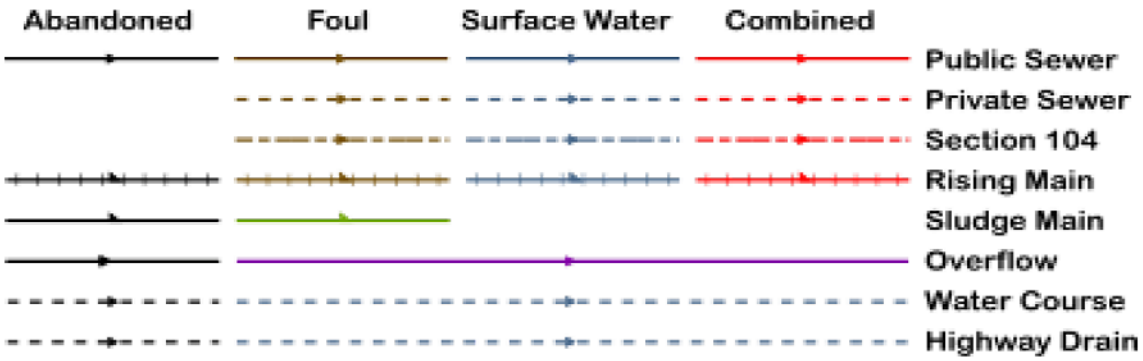
TERMS AND CONDITIONS:

- 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.

United Utilities Water Limited
Registered In England & Wales No. 2366678
Registered Office Haweswater House, Lingley Mere Business Park,
Lingley Green Avenue, Great Sankey, Warrington, WA5 3LP

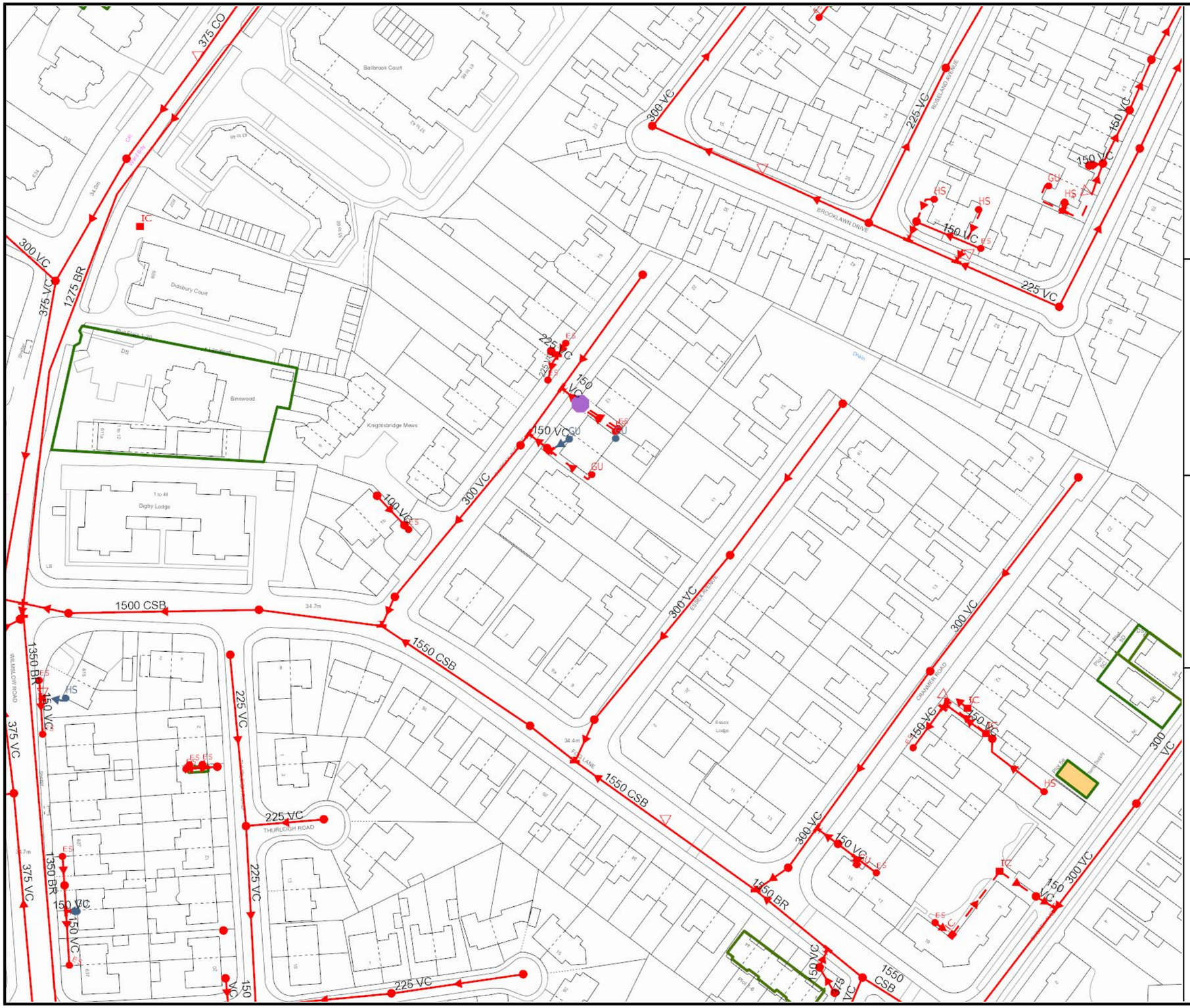
United Utilities
Water for the North West

Wastewater Symbology



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

- Manhole
- HS Head of System
- ES Extent of Survey
- RE Rodding Eye
- IN Inlet
- DP Discharge Point
- HY Vortex
- PE Penstock
- WO Washout Chamber
- VA Valve
- AV Air Valve
- NRV Non Return Valve
- SO Soakaway
- GU Gully
- CA Cascade
- FM Flow Meter
- HA Hatch Box
- OI Oil Interceptor
- SM Summit
- DS Drop Shaft
- OP Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- IC Inspection Chamber
- Bifurcation Chamber
- LH Lamp Hole
- T Junction / Saddle
- CA Catchpit
- VC Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- T Network Storage Tank
- V Sewer Overflow
- WwTW Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- CK Control Kiosk
- DNM Network Monitoring Point
- Change of Characteristic



United Utilities

Water for the North West

SEWER RECORDS

Address or Site Reference

8 FAIRFAX AVENUE,
MANCHESTER,
M20 6AJ

Scale: 1:1250

Date: 17/06/2024

Printed by: Property Searches

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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