

20239678

23 Ringley Road Below Ground Drainage Strategy

April 2023

Document Control

Revision	Originator	Checked By	Reviewed By	Approved By	Issued to	Issue Date
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	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 technical feasibility of providing surface water drainage for the development proposals and detailed hydraulic analysis to demonstrate the proposed solution. 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 deal with any 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 stages 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 regards 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 Ringley Road, Whitefield, M45 7LD. Approx grid ref – OS: 79949E, 405746N

3.2 Description

The existing site is brownfield and contains a detached residential dwelling.

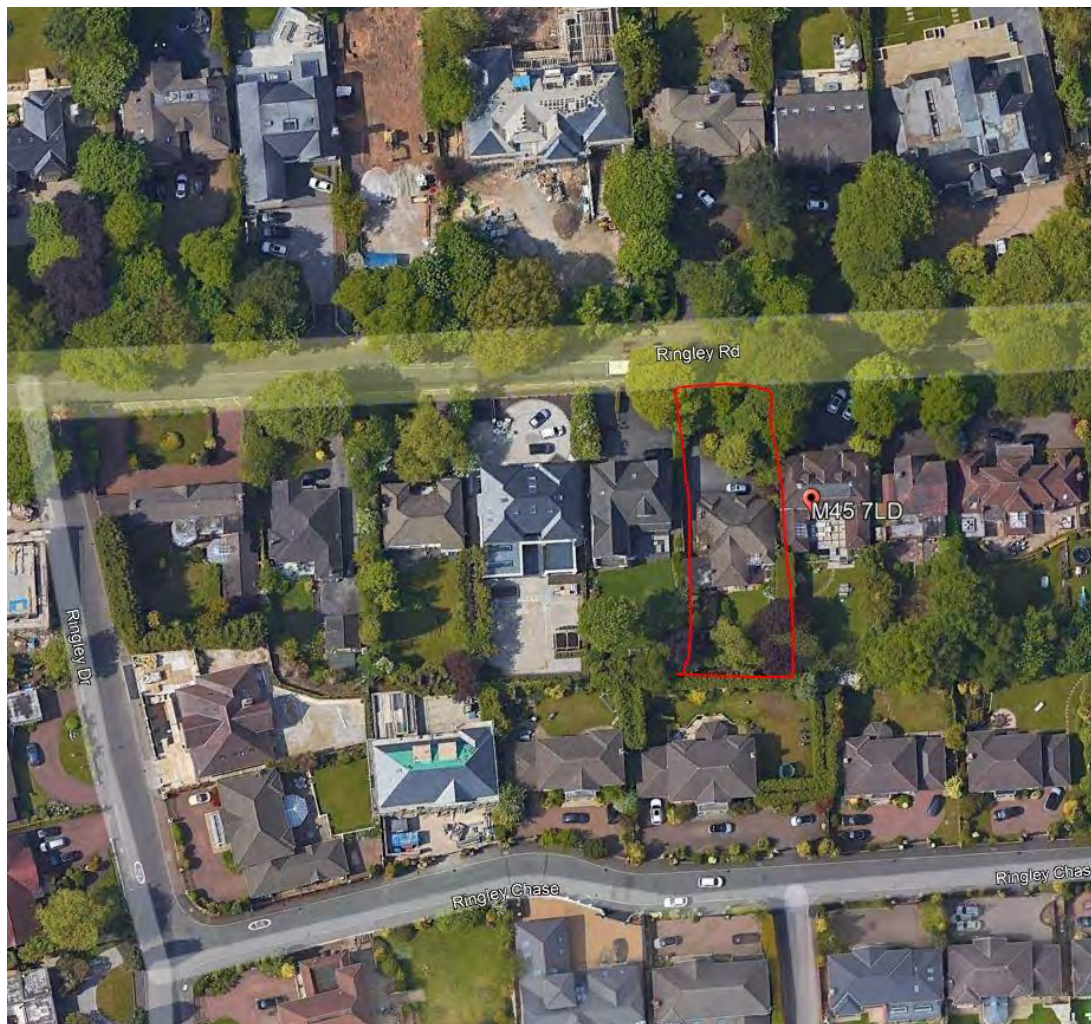


Figure 1: Google Earth Image: Existing Development Site

3.2.1 Topography

A site topography survey has been undertaken and shows the site is generally level with a fall on the driveway towards Ringley Road

3.2.2 Geology and Groundwater

Cranfield soilscapes denotes the geological description as freely draining slightly acid sandy soils, see below image extract.

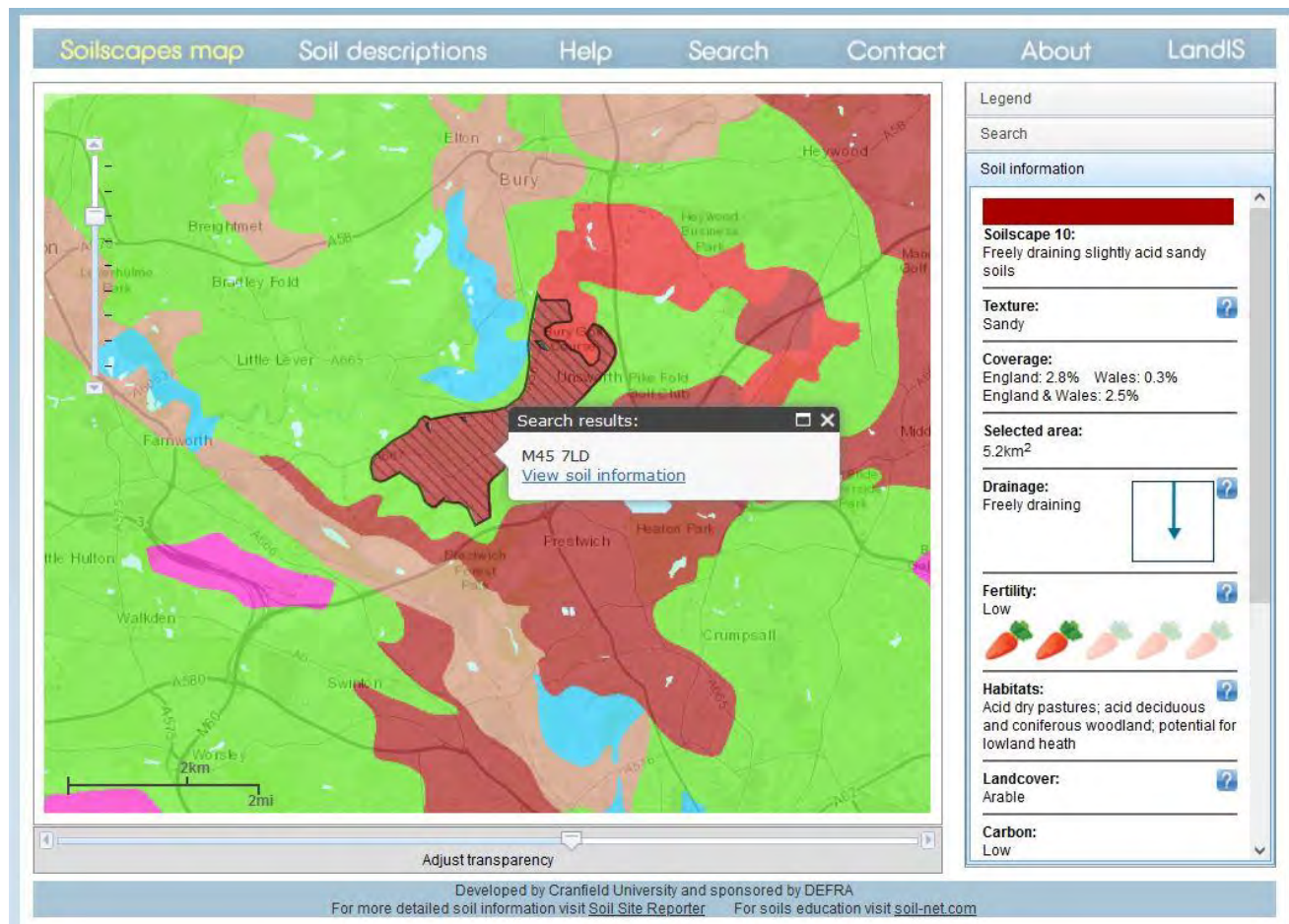


Figure 2: Cranfield University soil scape map

A ground investigation was undertaken and this included a set of falling head tests to determine infiltration rate of the subsoils. The ground conditions discovered were silty to very silty Sands with depth proven to 6m. Falling head tests determined an infiltration rate of 1.59E-07 to 4.21E-07. These rates are not suitable for infiltration alone.

Ground water was not discovered in the boreholes (6m below ground level).

3.2.3 Current Site Drainage

There is a 300mm dia public combined sewer mapped on United Utilities drawings directly outside the site in Ringley Road. The existing combined drainage network discharges unrestricted to this sewer via manhole within the driveway. There are no watercourses

within reach of the site boundaries. The existing site has significant vegetation and it is assumed that storm water soaks into the ground and is taken up by this vegetation in the predevelopment condition.

4 Development Proposal

It is proposed to construct a replacement detached dwelling with new below ground drainage network and renovation to the soft and hard landscape finishes onsite.

4.1 Existing peak runoff rate

According to requirements set out within the technical documents NSSDS (2011) and NSTSSD (2015), development must not increase the risk of flooding elsewhere. In practical terms this results in the proposed development runoff rate must provide a betterment against the predevelopment rate or be equal to the calculated greenfield rate.

Greenfield run off rate has been calculated using the estimation tool at www.uksuds.com using IH124 method(see Appendix C):

- Site area = 0.1Ha
- $Q_{bar} = 0.73l/s$. Restricting to this rate will present significant blockage risk.

The site is brownfield and has positive unrestricted outfall discharge to the public sewer. The below determine existing 5min runoff according to the Wallingford procedure without climate change uplift.

- Existing roof area = 188m²
- 1 year existing runoff rate = 3l/s
- 2 year Q_{bar} existing runoff rate = 3l/s
- 30 year existing runoff rate = 6l/s
- 100 year existing runoff rate = 7l/s

We propose to set restriction at 5l/s to mitigate blockage risk at the flow control.

4.2 Sequential & Exceptions Test

The development is residential and is thus considered "more vulnerable" as defined in Table 2 of the NPPF Technical Guidance. Although the development falls into Flood zone 1 and thus according to Table 3 of NPPF Technical Guidance sequential and exceptions test are not required.

4.3 Development Flood Risk

The site is wholly within flood zone 1 and is below 1Ha in area, thus a flood risk assessment is not necessary. See Appendix A.

There are no restrictions on finished floor levels in Flood zone 1 and there is very low risk of surface water flooding.

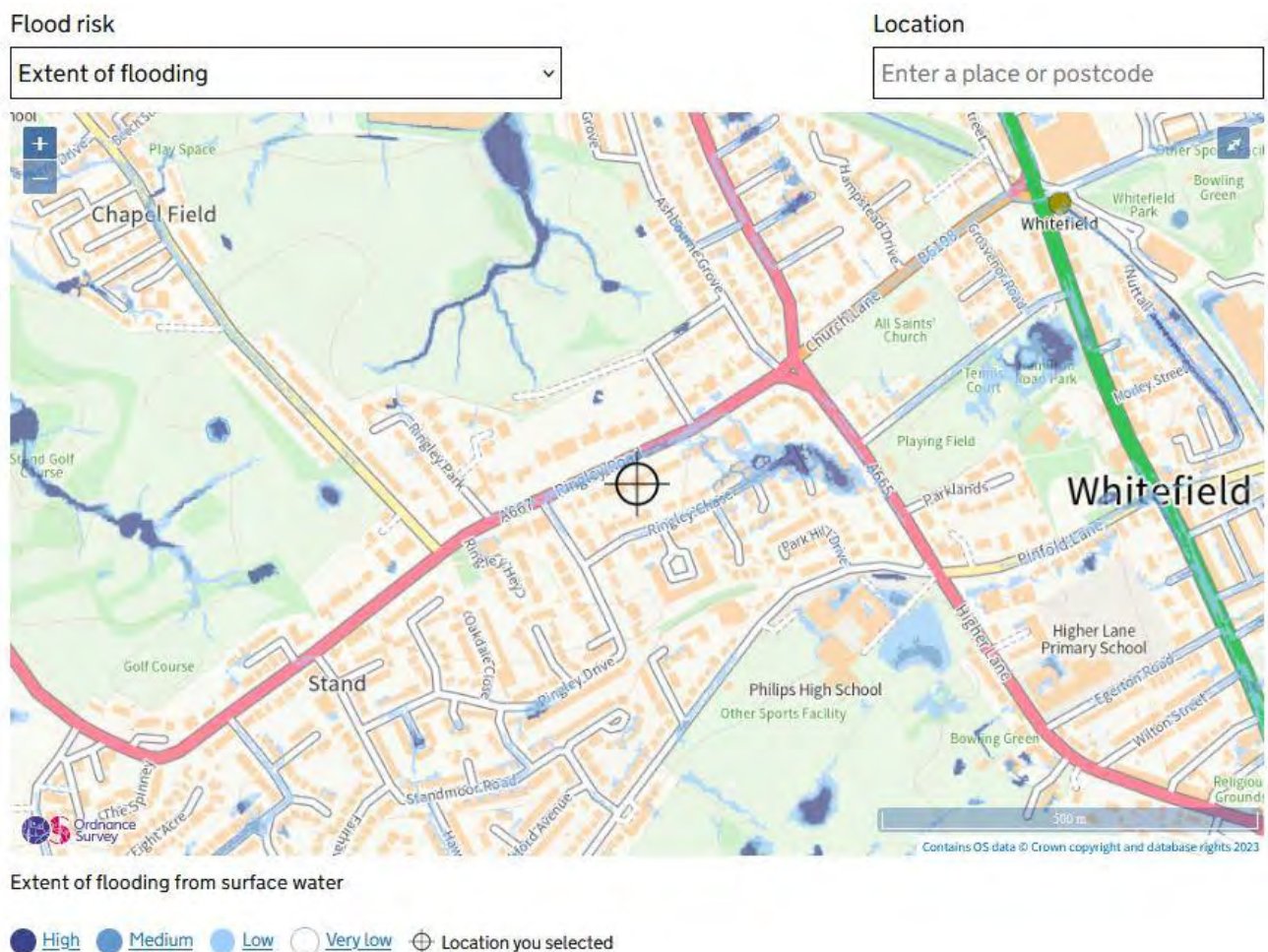


Figure 3: Flood risk map

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 100 year 6 hour storm 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. Discharge to ground (infiltration)
2. Discharge to surface water body
3. Discharge to surface water sewer
4. Discharge to combined sewer

Consideration to discharge destination of site generated surface water within the above hierarchy as listed below:

1. Infiltration tests show that the subsoils are not suitable for infiltration onsite.
2. There are no waterbodies or watercourses in reach of the site boundaries.
3. There are no surface water sewers within reach of the site.
4. There is a combined sewer directly outside the site and an existing positive connection from site.

Use of SuDs features are discussed below:

6.1 Source control

6.1.1 Green Roofs

Green roofs intercept runoff from roofs and the flora contained within the system extract water as required thus contributes to a reduction in runoff entering drainage network.

Green roofs are included on flat roofs proposed.

6.1.2 Planting

There are areas of the site to be landscaped and vegetation including mature trees on the boundaries to be retained. Where new trees are to be planted onsite the use of tree pits are to be adopted. Vegetated areas are to be retained in the predevelopment condition and not positively drained in conventional manner with piped network.

6.1.3 Rainwater Harvesting

Rainwater harvesting can be used to intercept run off and store for use in grey water flushing, irrigation of planted areas and washing of external areas.

Harvesting within water butts 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

Infiltration offers site control and where viable mimics the natural behaviour of the predeveloped site.

Widespread infiltration is not viable given subsoils prevailing on the site.

6.2.2 Permeable paving

Whilst type A permeable paving systems (which promote full) is not viable for this site, a type B system is to be adopted to promote runoff passing through permeable finishes and some infiltration to occur but connection to the piped network provided. This slows the interception rate down and offers filtration of contaminants improving water quality prior to discharge to public sewer.

6.3 Hydraulic Design

The site wide drainage and below ground storage is designed conservatively with no reduction in peak flows by mechanisms discussed above. The site is to contain and control surface water flows up to and including the 100 year storm event + allowance for 45% climate change. Storage onsite has been sized to contain the full 100 year rainfall event and avoid site flooding given we feel that this cannot be adequately contained onsite given the natural landscape levels and falls.

The site is to be positively drained to the existing combined public sewer at 5l/s via new connection. Flow rate is to be restricted by means of a flow control device at 5l/s. Storage is provided within piped network including manholes in addition to geocellular below ground storage tanks.

The new surface water network onsite is to be kept private and managed collectively by the land owner/s. All drainage is to be formed in accordance with current building regulations and also with Ciria C753 The SUDS Manual.

7 Foul Water Strategy

All foul drainage to be designed in detail at later date in accordance with Building Regulations. All foul to be combined with SW network (post flow control) within the final manhole onsite and reuse existing connection to the public sewer.

20239678 23 Ringley Road
Below Ground Drainage Strategy

Appendix A. UU Sewer Map and flood risk 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: 20239678 23 Ringley Road
Our Ref: UUPS-ORD-483162
Date: 26/04/2023

Dear Sirs

Location: 23 RINGLEY ROAD, WHITEFIELD, MANCHESTER, M45 7LD

I acknowledge with thanks your request dated 25/04/2023 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,



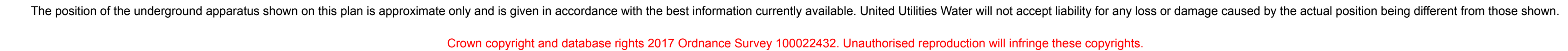
Karen McCormack
Property Searches Manager

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

FO	Foul
SW	Surface Water
CO	Combined
OV	Overflow

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

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
MA	Masonry, Random
U	Unspecified

23 RINGLEY ROAD,
WHITEFIELD,
MANCHESTER,
M45 7LD

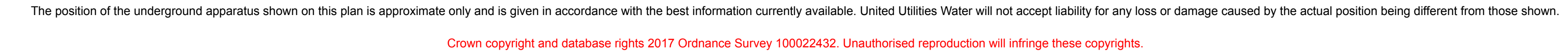
**SEWER
RECORDS**

 **United
Utilities**
Water for the North West



Reho	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
1201	109.23	CO	105.61	375	375	VC	6.082763	VC	1 in 22
1302	106.88	SW	105.45	375	375	VC	6.082763	VC	1 in 3
0103		SW		2100		CO	31.73372	CO	
3401		CO		150		VC	28.62114	VC	
1109		FO		150		VC	9.719573	VC	
3003	117.22	CO	113.69	300	300	VC	65.21503	VC	1 in 33
3003	117.22	CO	113.69	300	300	VC	65.21503	VC	1 in 33
1401	104.23	CO	100.93	300	300	VC	27.76489	VC	1 in 68
2108	113.8	CO	107.5	300	300	VC	22.85242	VC	1 in 163
0414		CO		150		VC	9.351862	VC	
0501		CO		150		VC	148.5194	VC	
0302	105.16	CO	104.54	225	225	VC	44.89461	VC	1 in 98
0407		CO		225		VC	22.78133	VC	
0406		CO		225		VC	10.18927	VC	
0308		CO		225		VC	4.702791	VC	
0307		CO		225		VC	14.74508	VC	
2105	113.44	CO	107.34	300	300	VC	4.123106	VC	1 in 137
1404		CO		300		VC	32.44996	VC	
1110		FO		150		VC	43.11696	VC	
8400	95.08	SW	90.25	225	225	VC	39.65125	VC	
0404	101.44	CO	99.44	375	375	VC	57.38467	VC	1 in 7
2001	114.45	CO	112.58	225	225	VC	24.18677	VC	1 in 13
4901		CO		225		VC	55.26605	VC	
4901		CO		225		VC	55.26605	VC	
1101		SW		150		VC	46.8541	VC	
2521		CO		150		VC	12.66953	VC	
0515		CO		100		VC	28.36241	VC	
1001	112.85	CO	107.79	300	300	VC	29.96955	VC	1 in 176
0301	103.33	CO	98.71	375	375	VC	71.40028	VC	1 in 204
0412		CO		150		VC	7.845401	VC	
2310		CO		100		VC	3.852415	VC	
1102		SW		150		VC	10.47271	VC	
2219		CO		100		VC	19.23125	VC	
2019		CO		100		VC	19.23125	VC	
3503		CO		285		VC	34.27148	VC	
2005	110.85	CO	105.79	285	285	VC	41.5079	VC	
2005	110.85	CO	105.79	285	285	VC	41.5079	VC	
2006		CO		150		VC	16.67074	VC	
2006		CO		150		VC	16.67074	VC	
2119		PVC		25.7181	100	VC	21.06637	VC	
0504		CO		100		VC	37.73774	VC	
2403	104.04	CO	102.04	150	150	VC	35.8994	VC	
1108		FO		150		VC	43.47357	VC	1 in 13
2191	114.28	CO	110.74	300	300	VC	36.25711	VC	1 in 22
2402	101.8	CO	100	225	225	VC	31.241	VC	
2205	112.48	CO	0	375	375	VC	10	VC	
2202		CO		150		VC	8.164732	VC	
1007		CO		150		VC	12.66953	VC	
1001		CO		112.32	225	VC	42.19004	VC	1 in 16
2004	113.79	CO	112.32	225	225	VC	42.19004	VC	1 in 16
3002	112.91	CO	110.98	225	225	VC	72.34659	VC	1 in 168
3505		CO		150		VC	43.7374	VC	
2113		SW		27.91617	100	VC	34.91344	VC	
3402		CO		100		VC	31.21645	VC	
0303	106.08	CO	104.08	225	225	VC	8.250743	VC	1 in 125
1205		CO		150		VC	37.29404	VC	
1105		SW		225		VC	68.893	VC	1 in 14
0503	92.49	CO	88.75	375	375	VC	21.54428	VC	
2009		CO		100		VC	21.54428	VC	
2302	107.9	CO	105.3	300	300	VC	115.421	VC	1 in 26
2217		CO		100		VC	11.71434	VC	
0311		CO		150		VC	10.6149	VC	
2405		CO		100		VC	129.4296	VC	
1307		CO		100		VC	2.356404	VC	
3004	115.33	CO	112.55	225	225	VC	10.19804	VC	1 in 13
3004	115.33	CO	112.55	225	225	VC	10.19804	VC	1 in 13
1212		CO		100		VC	2.201133	VC	
2109	113.72	CO	107.62	300	300	VC	35.35034	VC	1 in 295
2101	112.49	CO	0	375	375	VC	35.35034	VC	
1402		VC		43.56042	300	VC	16.12452	VC	1 in 61
1002	111.25	CO	107.79	450	450	VC	43.56042	VC	
2107	113.68	CO	107.36	300	300	VC	13.1465	VC	1 in 806
2012		FO		150		VC	17.34705	VC	
0401	95.22	CO	91.46	375	375	VC	53.8165	VC	1 in 10
1204		CO		150		VC	33.77914	VC	
9103		SW		300		VC	28.67228	VC	
1206		CO		150		VC	5.99915	VC	
0102		SW		225		VC	29.30577	VC	
2309		CO		100		VC	27.66884	VC	
0502	96.5	CO	93.01	375	375	VC	71.44928	VC	1 in 16
2313		CO		108.8	150	VC	29.00484	VC	
2303	109.73	CO	108.8	150	150	VC	20	VC	
3001	114.68	CO	0	300	300	VC	13.89244	VC	1 in 16
2401	100.19	CO	98.34	225	225	VC	61.37146	VC	
4900	119.71	CO	115.59	225	225	VC	10.50005	VC	
4900	119.71	CO	115.59	225	225	VC	10.50005	VC	
5901		CO		28.1725	375	VC	89.04641	VC	1 in 35
5901	91.78	CO	85.68	375	375	VC	89.04641	VC	
1203		CO		150		VC	62.49333	VC	
1111		FO		150		VC	24.87773	VC	
0416		CO		150		VC	5.02248	VC	
0106		FO		225		VC	8.85215	VC	
1103		SW		150		VC	18.66355	VC	
3201	113.06	CO	111.03	225	225	VC	73.76	VC	1 in 75
1108		FO		150		VC	18.82415	VC	
2002	114.61	SW	113.29	225	225	VC	42.48529	VC	1 in 60
0506		CO		150		VC	5.86999	VC	
1107		FO		150		VC	8.86501	VC	
2218		CO		100		VC	36.80213	VC	
2203	112.6	CO	110.04	225	225	VC	23.43075	VC	1 in 1172
2106	113.56	CO	112.14	150	150	VC	4	VC	
2016		CO		100		VC	15.86954	VC	
0105		FO		150		VC	39.87742	VC	
0305		CO		100		VC	4.432375	VC	
2102	113.29	CO	0	150	150	VC	3.162278	VC	
2305		CO		105.3	150	VC	8.50584	VC	1 in 2
2529		SW		150		VC	38.75031	VC	
6005	90.73	SW	88.52	300	300	VC	103.983	VC	
3901		CO		150		VC	10.71682	VC	
3901		CO		150		VC	10.71682	VC	
9401	96.63	CO	0	225	225	VC	18.38478	VC	1 in 171
4800	121.54	CO	117.38	225	225	VC	73.5527	VC	1 in 171
4800	121.54	CO	117.38	225	225	VC	73.5527	VC	1 in 171
2104	113.38	CO	107.31	300	300	VC	7.81025	VC	
2107	113.68	CO	0	300	300	VC	6.708204	VC	
0107		FO		150		VC	15.88801	VC	
2301	106.97	CO	104.79	225	225	VC	108.0189	VC	
2501	96.31	CO	94.61	225	225	VC	41.59499	VC	1 in 15
0402	95.32	SW	93.28	375	375	VC	40.36337	VC	1 in 16
0104		SW		300		VC	23.40652	VC	
1202		CO		150		VC	13.7304	VC	
2201	111.57	CO	106.54	375	375	VC	65	VC	1 in 70
1114		FO		150		VC	7.561779	VC	
2900		CO		150		VC	45.60702	VC	
2900		CO		150		VC	45.60702	VC	
1301	106.79	CO	103.15	375	375	VC	66.61081	VC	1 in 19
0403	98.75	SW	95.34	375	375	VC	63.89053	VC	1 in 31
2102	113.29	CO	0	300	300	VC	2.824217	VC	
1113		FO		190		PVC	6.902071	PVC	1 in 53
0304		VC		35.8469	225	VC	3.890206	VC	
9104	107.33	SW	103.83	225	225	VC	20.24846	VC	1 in 165
3002	115.17	CO	111.74	300	300	VC	24.78884	VC	
2204	112.09	FO	108.69	375	375	VC	11.21444	VC	
1124		SW		150		VC	16.38307	VC	
3404		CO		150		VC	14.8597	VC	
0101		CO		225		VC	29.1793	VC	1 in 364
2003	114.63	CO	112.73	225	225	VC	54.58937	VC	1 in 364
2003	114.63	CO	112.73	225	225	VC	54.58937	VC	1 in 364
1104		SW		150		VC	9.244235	VC	
2127		FO		150		VC	4.199998	VC	

Reho	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Gra



**SEWER
RECORDS**

 **United
Utilities**
Water for the North West

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.

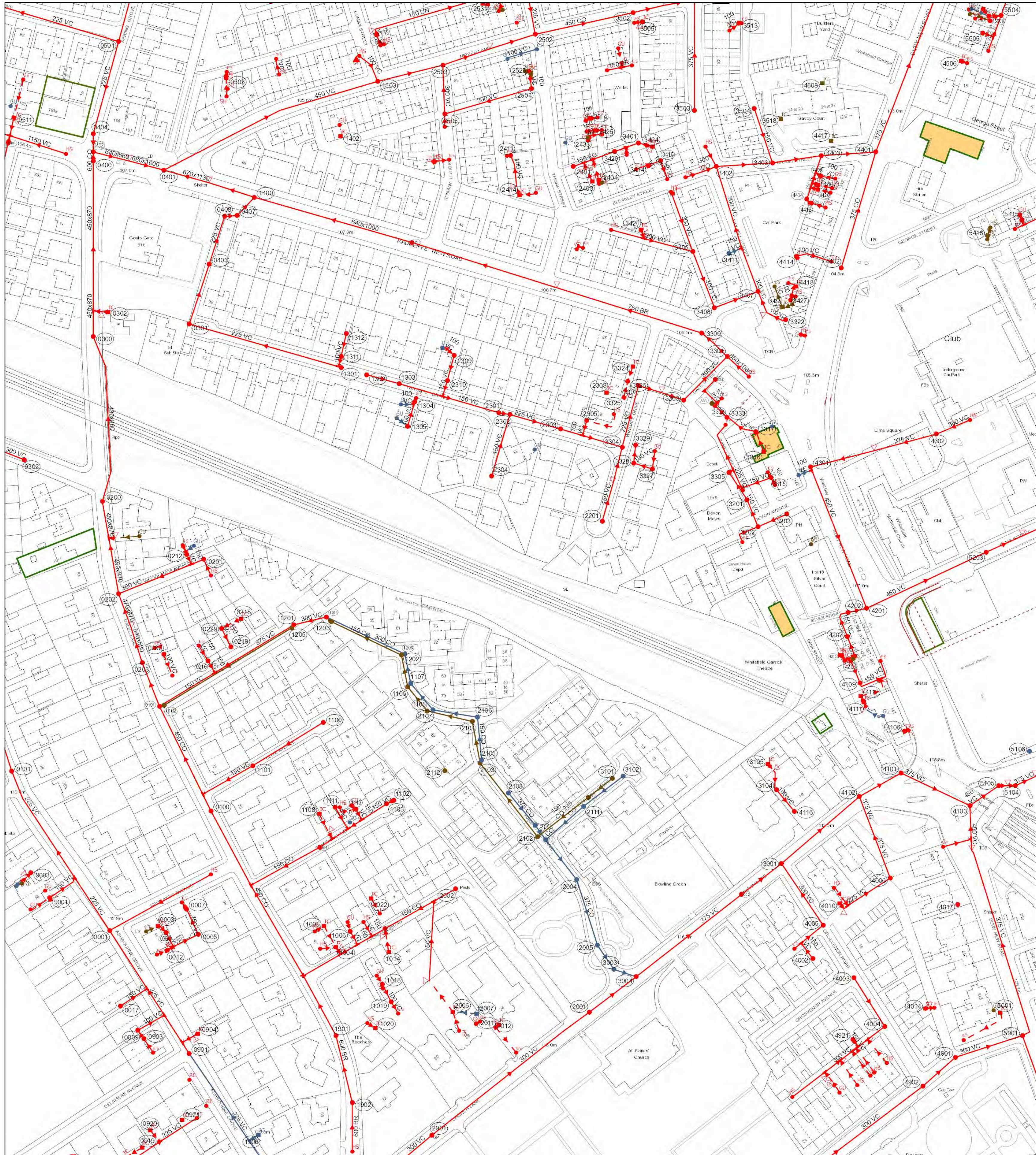
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Ref	Cover	Func	Invert	Size x	Size y	Shape	Matt	Length	Grad	R/Ref	Cover	Func	Invert	Size x	Size y	Shape	Matt	Length	Grad
7507		CO		150			VC	48.8528		5805		CO		150			VC	3.576873	
8501		CO		150			VC	20.8628		5805		SW		225			VC	20.13662	
6507		CO		150			VC	20.85531		5804		CO		150			VC	30.13882	
8501	131.18	CO	129.28	150			VC	20.85531	1 in 15	7514		CO		150			VC	3.81978	
7702		SW	0	150			VC	25.80806		7408		CO		150			VC	4.316849	
6504		CO		150			VC	4.485884		7408		CO		150			VC	4.316849	
8504		CO		150			VC	4.485884		5400	128.97	CO	127.19	225			VC	37.58889	1 in 4
7702		CO		150			VC	50.89952	1 in 24	9401	128.97	CO	127.19	225			VC	37.58889	1 in 4
6400	127.46	CO	125.89	225			VC	50.89952	1 in 24	9401	115.46	CO	113.18	300			VC	51.62264	1 in 11
6400	127.46	CO	125.89	225			VC	50.89952	1 in 24	9401	115.46	CO	113.18	300			VC	51.62264	1 in 11
6400		CO		150			VC	10.86194		9401	115.46	CO	113.18	300			VC	51.62264	1 in 11
6400		CO		150			VC	10.86194		9401	115.46	CO	113.18	300			VC	51.62264	1 in 11
6702		SW	0	225			VC	35.77382		9401	115.46	CO	113.18	300			VC	51.62264	1 in 11
8506		CO		150			VC	32.44722		7411		CO		150			VC	7.357652	
5806		CO		150			VC	32.47724		7411		CO		150			VC	7.357652	
5803		CO		150			VC	19.34302		7411		CO		150			VC	7.357652	
0605		FO	100				VC	7.908143		5804		CO	0	225			VC	62.62037	
0605		FO	100				VC	10.81433		5806		CO		150			VC	17.98893	
0606		FO	100				VC	6.718084		7408		CO		150			VC	17.98893	
0606		FO	100				VC	6.718084		6808		FO	0	150			VC	15.98635	
6516		CO		150			VC	24.49144		9411		CO		150			VC	5.421054	
0601	119.94	CO	117.51	225			VC	24.49144		9411		CO		150			VC	5.421054	
0601	119.94	CO	117.51	225			VC	80.93883	1 in 19	8420		CO		150			VC	5.988878	
6416		CO		150			VC	19.32294		8420		CO		150			VC	18.265	
6416		CO		150			VC	80.93884	1 in 19	8420		CO		150			VC	18.265	
7409	128.13	CO	126.53	225			VC	41.4307	1 in 49	4413		CO		150			VC	18.265	
7409	128.13	CO	126.53	225			VC	41.4307	1 in 49	4413		CO		150			VC	18.265	
4402	128.2	CO	122.77	225			VC	42.2019	1 in 73	4800	121.54	CO	117.38	225			VC	73.5527	1 in 17
4402	128.2	CO	122.77	225			VC	42.2019	1 in 73	4800	121.54	CO	117.38	225			VC	73.5527	1 in 17
4402	128.2	CO	122.77	225			VC	42.2019	1 in 73	0811		FO	100				VC	5.750876	
4402	128.2	CO	122.77	225			VC	42.2019	1 in 73	0811		FO	100				VC	5.750876	
0810		CO		150			VC	10.01788		5806		CO		150			VC	5.524722	
0810		CO		150			VC	10.01788		5806		CO		150			VC	5.524722	
7701		SW	0	150			VC	21.21833		7414		CO		150			VC	5.02872	
9502		CO	0	225			VC	20.12481		7414		CO		150			VC	5.02872	
7416		CO		150			VC	20.12481		8702	128.24	CO	122.94	300			VC	10.77033	
7416		CO		150			VC	5.44445		9608		FO	0	150			VC	22.8281	
7416		CO		150			VC	5.44445		9608		FO	0	150			VC	22.8281	
0802	120.99	CO	0	300			VC	125.9365		0001	115.72	CO	112.38	225			VC	103.5225	1 in 4
0802	120.99	CO	0	300			VC	125.9365		0001	115.72	CO	112.38	225			VC	103.5225	1 in 4
9509	128.68	CO	125.83	225			VC	83.48553	1 in 37	1001	115.72	CO	112.38	225			VC	103.5225	1 in 4
9509	128.68	CO	125.83	225			VC	5.884386		9604		CO		150			VC	36.09051	
0609		FO	100				VC	5.884386		7407		CO		150			VC	15.18566	
8524		CO		100			VC	8.622495		7407		CO		150			VC	15.18566	
8524		CO		100			VC	8.622495		9610		FO	100				VC	20.73739	
8417		CO		100			VC	6.332728		9610		FO	100				VC	22.14335	
8417		CO		100			VC	6.332728		0404		SW	0	225			VC	45.89117	
7505		CO		150			VC	3.206396		8419		CO	0	225			VC	45.89117	
7505		CO		150			VC	3.206396		8419		CO	0	225			VC	12.72383	
8514		CO		150			VC	10.77888		7404		CO		150			VC	11.25204	
8514		CO		150			VC	10.77888		7404		CO		150			VC	11.25204	
8601	128.23	CO	125.85	225			VC	95.96353	1 in 50	6505		CO		150			VC	27.95849	
6809		CO	0	300			VC	12.32013		6505		CO	0	150			VC	43.86011	
6401	126.14	CO	123.76	225			VC	59.8333	1 in 50	8404		CO	0	225			VC	60.53024	
6401	126.14	CO	123.76	225			VC	59.8333	1 in 50	8404		CO	0	225			VC	60.53024	
8513		CO		150			VC	13.05898		8502		SW	0	225			VC	13.05898	
8513		CO		150			VC	13.08806		7405		CO		150			VC	12.72383	
6509		CO		150			VC	19.05244		7405		CO		150			VC	12.72383	
9609		FO	100				VC	19.42329		0402		CO		100			VC	2.973739	
9609		FO	100				VC	19.42329		0402		CO		100			VC	2.973739	
6801		SW	0	225			VC	13.45607		0402		CO		100			VC	2.973739	
5401	127.89	CO	0	225			VC	68.42514		0402		CO		100			VC	2.973739	
5509		CO		150			VC	68.42514		0701	126.24	CO	122.95	300			VC	104.7895	1 in 4
5509		CO		150			VC	15.77471		8511		CO		150			VC	9.103456	
0608		FO	100				VC	15.77471		8511		CO		150			VC	9.103456	
0608		FO	100				VC	8.670054		0917		CO	100				VC	2.88819	
8407	129.42	CO	128.81	225			VC	8.670054		1609		CO		150			VC	42.11688	
8407	129.42	CO	128.81	225			VC	28.6007	1 in 3	0918		CO		225			VC	48.21898	
8407	129.42	CO	128.81	225			VC	28.6007	1 in 3	5408		CO		100			VC	10.88621	
7401	127.86	CO	125.69	225			VC	21.84023	1 in 115	1609		CO		150			VC	10.88621	
6510		CO		150			VC	21.84023	1 in 115										
6510		CO		150			VC	28.41625											
6519		CO		150			VC	15.44911											
5848		CO		150			VC	5.84834											
8418		CO		150			VC	5.94834											
6810		CO	0	225			VC	20.64704											
8515		CO		150			VC	12.53483											
8515		CO		150			VC	12.53483											
5701	125.71	CO	123.3	225			VC	88.4138	1 in 37										
0612		FO		150			VC	16.7036											
8400	127.51	CO	0	225			VC	16.7036											
8400	127.51	CO	0	225			VC	14.86607											
8507		CO		150			VC	14.77238											
8507		CO		150			VC	14.77238											
8405		CO		225			VC	65.14599											
8405		CO		225			VC	65.14599											
8602	129.77	CO	128.07	225			VC	83.54639	1 in 33										
5801	123.62	CO	118.98	225			VC	83.54639	1 in 54										
5801	123.62	CO	118.98	225			VC	83.54639	1 in 54										
9506	118.64	CO	117.67	225			VC	23.08679	1 in 6										
9506	118.64	CO	117.67	225			VC	23.08679	1 in 6										
5504		CO		150			VC	23.08679	1 in 6										
5504		CO		150			VC	10.52487											
7704		CO	</																

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:	
	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
CB	Concrete Box Culvertted
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:	
23 RINGLEY ROAD, WHITEFIELD, MANCHESTER, M45 7LD	
OS sheet Number:	SD7905NE
Scale: 1:1250	Date: 26/04/2023
Nodes:	272
Sheet:	4 of 9
Printed by:	Property Searches

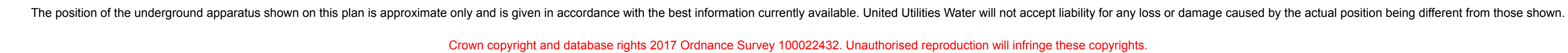


Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
102338	FO	100	109.93	100	100	VC	10	1 in 47	
0608	FO	100		100	100	VC	8.687064		
4205	113.65	FO	111.43	300	300	VC	41.04875		
4205	113.65	FO	111.43	300	300	VC	41.04875		
1710	FO	150		150	150	VC	25.35556		
5501	CO	0	300	300	300	VC	16.02702		
5501	CO	0	300	300	300	VC	16.02702		
0005	CO	150		150	150	VC	15.46227		
2802	114.74	CO	111.67	300	300	VC	120.7394	1 in 41	
0612	FO	150		150	150	VC	16.7036		
0612	FO	150		150	150	VC	16.7036		
1019	CO	100		100	100	VC	7.575516		
1019	CO	100		100	100	VC	7.575516		
2706	CO	150		150	150	VC	8.74897		
2810	CO	100		100	100	VC	9.560204		
4901	109.37	CO	106.2	300	300	VC	38.8973	1 in 83	
4901	109.37	CO	106.2	300	300	VC	38.8973	1 in 83	
4902	109.52	CO	108.44	300	300	VC	24.08319	1 in 127	
4902	109.52	CO	108.44	300	300	VC	24.08319	1 in 127	
9506	118.64	CO	117.67	225	225	VC	23.08679	1 in 6	
9506	118.64	CO	117.67	225	225	VC	23.08679	1 in 6	
9506	118.64	CO	117.67	225	225	VC	23.08679	1 in 6	
5502	CO	0	300	300	300	VC	58.0483		
5502	CO	0	300	300	300	VC	58.0483		
9503	SW	0	225	225	225	VC	22.70985		
4701	114.78	FO	112.3	225	225	VC	27.85979	1 in 127	
1707	FO	0	150	150	150	VC	60.99294		
1802	CO	225		225	225	VC	66.36268		
0903	CO	100		100	100	VC	5.734529		
0903	CO	100		100	100	VC	5.734529		
2801	116.61	CO	113.69	225	225	VC	68.96948	1 in 57	
2804	113.65	CO	112.01	225	225	VC	19.14649		
2708	FO	150		150	150	VC	5.753428		
1808	FO	100		100	100	VC	26.96921		
9608	FO	100		100	100	VC	7.369126		
9608	FO	100		100	100	VC	7.369126		
1805	FO	300		300	300	VC	45.49759		
2004	117.72	SW	114.02	375	375	VC	37.95515	1 in 271	
0601	SW	0	150	150	150	VC	31.02328		
9400	117.17	CO	114.07	300	300	VC	21.0238	1 in 24	
9400	117.17	CO	114.07	300	300	VC	21.0238	1 in 24	
9400	117.17	CO	114.07	300	300	VC	21.0238	1 in 24	
1501	113.57	CO	111.61	225	225	VC	173.0029	1 in 97	
1501	113.57	CO	111.61	225	225	VC	173.0029	1 in 97	
9407	CO	150		150	150	VC	22.1028		
9407	CO	150		150	150	VC	22.1028		
9407	CO	150		150	150	VC	22.1028		
9417	CO	100		100	100	VC	14.9431		
9417	CO	100		100	100	VC	14.9431		
9417	CO	100		100	100	VC	14.9431		
9417	CO	100		100	100	VC	14.9431		
1705	SW	0	1200	1200	1200	VC	28.49199		
2709	SW	0	150	150	150	VC	3.476002		
3703	113.18	CO	111.67	225	225	VC	43.26662		
1601	118.5	CO	115.18	225	225	VC	31.40541		
0701	123.61	CO	120.34	300	300	VC	123.4362	1 in 61	
0006	CO	100		100	100	VC	8.78903		
2001	117.53	CO	0	375	375	VC	32.31869		
2001	117.53	CO	0	375	375	VC	32.31869		
0009	CO	100		100	100	VC	16.92433		
1803	SW	0	100	100	100	VC	6.76206		
2603	113.01	CO	111.51	225	225	VC	38.01316	1 in 97	
3701	113.02	CO	111.56	225	225	VC	13.34166	1 in 83	
1901	115.48	CO	112.1	600	600	BR	37.58989		
1901	115.48	CO	112.1	600	600	BR	37.58989		
1802	115.47	CO	112.5	600	600	BR	38.07887	1 in 10	
1802	115.47	CO	112.5	600	600	BR	38.07887	1 in 10	
1721	FO	150		150	150	VC	10.61644		
9407	CO	100		100	100	VC	12.68036		
9407	CO	100		100	100	VC	12.68036		
9407	CO	100		100	100	VC	12.68036		
9407	CO	100		100	100	VC	12.68036		
0703	FO	100		100	100	PVC	16.31157		
2602	112.58	CO	111.2	225	225	VC	71.84706	1 in 87	
1702	SW	0	300	300	300	VC	60.68901		
0702	FO	150		150	150	VC	12.25103		
2607	CO	100		100	100	VC	17.68196		
0017	CO	150		150	150	VC	17.68196		
0017	CO	150		150	150	VC	17.68196		
0017	CO	150		150	150	VC	17.68196		
4702	114.2	CO	112.08	150	150	VC	17.68196	1 in 308	
4605	CO	150		150	150	VC	40.0125		
2707	CO	150		150	150	VC	10.31801		
1603	119.03	CO	117.28	150	150	VC	18.78829	1 in 49	
9607	FO	150		150	150	VC	77.40688		
9607	FO	150		150	150	VC	77.40688		
1606	FO	150		150	150	VC	14.26602		
0602	SW	0	225	225	225	VC	35.4407		
1703	SW	0	225	225	225	VC	28.44882		
1801	119.49	CO	116.11	300	300	VC	88.72903	1 in 161	
3702	112.57	CO	111.79	225	225	VC	19.31321	1 in 161	
1006	FO	150		150	150	VC	8.498909		
1006	FO	150		150	150	VC	8.498909		
2002	117.13	CO	115.85	150	150	VC	44.77723	1 in 26.9742327	
0404	CO	150		150	150	VC	7.861057		
0404	CO	150		150	150	VC	7.861057		
0415	CO	100		100	100	VC	8.459923		
0415	CO	100		100	100	VC	8.459923		
9604	SW	0	225	225	225	VC	73.67468		
9604	SW	0	225	225	225	VC	73.67468		
2005	117.8	SW	113.88	375	375	VC	16.12351	1 in 230	
2005	117.8	SW	113.88	375	375	VC	16.12351	1 in 230	
4002	CO	150		150	150	VC	10.73072		
3004	117.02	CO	113.72	375	375	VC	73.8961		
3004	117.02	CO	113.72	375	375	VC	73.8961		
9401	115.46	CO	113.18	300	300	VC	51.62364	1 in 15	
9401	115.46	CO	113.18	300	300	VC	51.62364	1 in 15	
9401	115.46	CO	113.18	300	300	VC	51.62364	1 in 15	
9401	115.46	CO	113.18	300	300	VC	51.62364	1 in 15	
4401	112.47	CO	110.48	225	225	VC	87.50242	1 in 96	
4401	112.47	CO	110.48	225	225	VC	87.50242	1 in 96	
1711	FO	100		100	100	PVC	7.022055		
2712	CO	150		150	150	VC	3.274664		
1804	FO	0	150	150	150	VC	8.567781		
4004	FO	150		150	150	VC	7.780704		
3501	118.47	CO	116.17	225	225	VC	25.40152	1 in 1	
2901	118.47	CO	116.17	225	225	VC	110.4324		
2901	118.47	CO	116.17	225	225	VC	110.4324		
5901	108.98	CO	104.88	375	375	VC	108.6284		
5901	108.98	CO	104.88	375	375	VC	108.6284		
3003	117.42	SW	113.81	375	375	VC	12.9159	1 in 144	
1708	FO	150		150	150	VC	28.6567	1 in 144	
1708	FO	150		150	150	VC	28.6567		
1604	114.44	SW	112.5	225	225	VC	39.92493	1 in 81	
0605	FO	100		100	100	VC	7.908143		
0605	FO	100		100	100	VC	7.908143		
3801	111.42	CO	108.71	300	300	VC	119.2015	1 in 55	
0606	FO	100		100	100	VC	6.710804		
0606	FO	100		100	100	VC	6.710804		
2801	116.17	CO	112.04	225	225	VC	16.15549		
0901	119.94	CO	117.51	225	225	VC	80.9083	1 in 19	
0901	119.94	CO	117.51	225	225	VC	80.9083	1 in 19	
0610	FO	100		100	100	VC	10.01788		
0610	FO	100		100	100	VC	10.01788		
5401	111.45	CO	108.08	100	100	VC	125.3754	1 in 58	
0701	CO	300		300	300	VC	65.77296		
1806	FO	150		150	150	VC	15.0181		
0007	CO	150		150	150	VC	4.530468		
0007	CO	150		150	150	VC	4.530468		
0802	120.99	CO	0	300	300	VC	125.9085		
0802	120.99	CO	0	300	300	VC	125.9085		
2701	115.49	FO	112.54	225	225	VC	72.94518	1 in 65	
2808	CO	100		100	100	VC	1.720785		
0909	FO	100		100	100	VC	5.884386		
0909	FO	100		100	100	VC	5.884386		
4502	SW	0	225	225	225	VC	30.8614	1 in 1	
4502	CO	300		300	300	VC	51.27372	1 in 1	
4502	CO	300		300	300	VC	51.27372		
4203	113.65	CO	111.43	300	300	VC	4.921508		
4203	113.65	CO	111.43	300	300	VC	31.85163	1 in 5	
4203	113.65	CO	111.43	300	300	VC	31.85163	1 in 5	
1802	118.8	CO	116.54	225	225	VC	28.40076	1 in 19	
2713	CO	150		150	150	VC			



Refo	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad	Refo	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
3502	106.93	CO	104.11	225			VC	13.6047	1 in 170	3502	112.14	CO	108.54	450			BR	51.78858	1 in 39.2337751
5502		CO	0	150			VC	4.843003		2301	111.4	CO	0	225			VC	6.082763	
1400	106.87	CO	101.1	150			BR	25.48881	1 in 525	2302	117.53	CO	105.65	150			CO	44.77723	1 in 26.9742327
1302	112.58	CO	111.15	150			VC	18.68154		0207		CO	0	100			VC	12.58763	
1311		CO	111.15	150			BR	5.848488		3301	105.65	CO	101.77	650			BR	9.894495	
0001	115.72	CO	112.36	225			VC	103.5225	1 in 40	2305	117.8	SW	113.88	375			CO	16.12351	1 in 230
0001	115.72	CO	112.36	225			VC	103.5225	1 in 40	2305	117.8	SW	113.88	375			CO	16.12351	1 in 230
0001	115.72	CO	112.36	225			VC	103.5225	1 in 40	4002		CO	0	100			VC	10.73872	
2304	111.41	CO	110.25	150			VC	35.44009	1 in 30	2303	110.36	CO	105.65	150			VC	23.37768	
3001	113.83	CO	0	375			VC	56.72742	1 in 62	3304	117.02	CO	113.72	375			VC	73.8961	
4404	103.72	CO	102.56	150			VC	25.28622	1 in 36	3004	117.02	CO	113.72	375			VC	10.73872	
2110	117.08	SW	114.13	150			CO	27.97388	1 in 254	3332		CO	0	100			VC	11.48509	
3302	106.98	CO	105.81	150			VC	16.15048		3333		CO	0	100			PVC	17.50646	
3405	105.28	CO	0	300			VC	33.24154		3337		CO	0	100			VC	18.13799	
1204	112.41	CO	118.4388	300			VC	18.43881	1 in 46	3331		CO	0	100			PVC	18.30789	
1104	114.09	CO	112.76	150			VC	43.41609		3330		FO	0	100			VC	1.983302	
1111		CO	0	150			PVC	13.8001											
0501		CO	0	225			VC	52.88667											
4412		CO	0	100			VC	3.471077											
2411		CO	0	100			VC	2.023158											
4401	103.28	CO	0	100			VC	102.8634											
3104		CO	0	100			VC	15.5441											
2201	106.98	CO	106.45	150			VC	21.84023	1 in 47										
1106	114	FO	110.79	150			CO	17.62605	1 in 145										
1202	113	FO	110.64	150			CO	42.529	1 in 130										
5415		CO	0	100			VC	3.091213											
1000	116.99	CO	114.14	150			CO	51.97115											
1000	116.99	CO	114.14	150			CO	51.97115											
0301	111.1	CO	109.35	225			VC	34.78505	1 in 43										
3501		CO	0	225			VC	96.20865											
0201	111.87	CO	109.2	300			VC	50.69517	1 in 94										
3304	107.45	CO	104.54	225			VC	35.71701	1 in 82										
1506		CO	0	150			VC	3.224707											
2106	114.39	SW	111.41	300			CO	24.88187	1 in 146										
1301	112.69	CO	107.3012	225			VC	87.30132	1 in 60										
1903		SW	0	225			VC	84.87638											
1100	109.52	CO	106.1	225			VC	35.44009	1 in 119										
1100	113.47	CO	112.03	150			VC	45.79301	1 in 79										
3305	107.02	CO	105.3	150			VC	2.760402											
4202		CO	0	150			VC	10.45152											
3315		CO	0	150			VC	3.478241											
0916		CO	0	225			VC	48.21898											
0916		CO	0	225			VC	48.21898											
3801	111.42	CO	108.71	300			VC	119.2015	1 in 55										
3327		CO	0	100			VC	10.77755											
9302	110.08	CO	0	300			VC	49.39635											
8302	110.08	CO	0	300			VC	49.39635											
3300		CO	0	750			BR	83.81527											
4201	107.37	CO	105.16	450			VC	72.91778											
0402	106.58	CO	101.53	640			BR	20.61553											
0402	106.58	CO	101.53	640			BR	20.61553											
3102	115.5	SW	114.42	225			CO	27.49973	1 in 183										
4402		CO	0	375			CO	66.76077											
4921	104.2	CO	0	150			VC	4.921058											
4921		CO	0	150			VC	4.921058											
4921	113.65	CO	111.43	300			VC	4.921058											
4903		CO	0	300			VC	31.85103	1 in 5										
4903	113.65	CO	111.43	300			VC	31.85103	1 in 5										
0401	106.76	CO	104.76	450			VC	128.3075	1 in 338										
0300	108.9	CO	105.25	450			BR	97	1 in 40										
0300	108.9	CO	105.25	450			BR	97	1 in 40										
9101	116.48	CO	0	225			VC	98.67117											
9101	116.48	CO	0	225			VC	98.67117											
9401	106.26	CO	103.76	1150			BR	4.123106											
9401	106.26	CO	103.76	1150			BR	4.123106											
0212		CO	0	150			VC	6.65916											
0408		CO	0	225			VC	6.941458											
1201	111.25	CO	109.84	375			VC	86.84301	1 in 140										
2102	117.02	FO	113.18	150			CO	51.69206	1 in 152										
2901	116.47	CO	0	300			VC	110.432											
2901	116.47	CO	0	300			VC	110.432											
5901	108.98	CO	104.88	375			VC	109.6284											
5901	108.98	CO	104.88	375			VC	109.6284											
3003	117.42	SW	113.81	375			CO	12.9189	1 in 144										
3003	117.42	SW	113.81	375			CO	12.9189	1 in 144										
3504	105.53	CO	104.43	150			VC	31.62278	1 in 20										
4301	106.32	CO	102.37	450			VC	83.5345	1 in 42										
0901	119.94	CO	117.51	225			VC	80.90383	1 in 19										
0901	119.94	CO	117.51	225			VC	80.90383	1 in 19										
1305		CO	0	100			VC	14.03988											
3407	104.58	CO	102.03	300			VC	72.7595	1 in 125										
2310		CO	0	150			VC	9.03817											
0007		CO	0	150			VC	4.530648											
0009		CO	0	150			VC	4.530648											
4302	106.58	CO	102.93	375			VC	35.76873	1 in 238										
0100	114.65	CO	110.82	450			CO	64.46184	1 in 40										
0404	106.53	CO	102.45	225			VC	10	1 in 11										
0404	106.53	CO	102.45	225			VC	10	1 in 11										
1304		CO	0	100			VC	2.387807											
1018		CO	0	100			VC	10.8874											
1018		CO	0	100			VC	10.8874											
3201	107.11	CO	105.88	150			VC	18.02776	1 in 31										
4201	112.67	CO	110.56	375			VC	48.10489	1 in 30										
4206		CO	0	150			VC	11.50354											
3427		CO	0	150			VC	9.904835											
3333		CO	0	100			VC	9.460779											
5903	107.87	SW	106.93	150			VC	19.23538	1 in 47										
2107	114.55	CO	111.24	300			VC	19.14209	1 in 128										
1203	112.48	FO	110.31	150															





Sl. No.	Particulars	Amount
1	Salaries	
2	Wages	
3	Gratuities	
4	Dividends	
5	Interest	
6	Commission	
7	Profit	
8	Loss	
9	Other Income	
10	Other Expenses	
11	Net Profit	
12	Net Loss	
13	Net Income	
14	Net Expense	
15	Net Profit	
16	Net Loss	
17	Net Income	
18	Net Expense	
19	Net Profit	
20	Net Loss	
21	Net Income	
22	Net Expense	
23	Net Profit	
24	Net Loss	
25	Net Income	
26	Net Expense	
27	Net Profit	
28	Net Loss	
29	Net Income	
30	Net Expense	
31	Net Profit	
32	Net Loss	
33	Net Income	
34	Net Expense	
35	Net Profit	
36	Net Loss	
37	Net Income	
38	Net Expense	
39	Net Profit	
40	Net Loss	
41	Net Income	
42	Net Expense	
43	Net Profit	
44	Net Loss	
45	Net Income	
46	Net Expense	
47	Net Profit	
48	Net Loss	
49	Net Income	
50	Net Expense	
51	Net Profit	
52	Net Loss	
53	Net Income	
54	Net Expense	
55	Net Profit	
56	Net Loss	
57	Net Income	
58	Net Expense	
59	Net Profit	
60	Net Loss	
61	Net Income	
62	Net Expense	
63	Net Profit	
64	Net Loss	
65	Net Income	
66	Net Expense	
67	Net Profit	
68	Net Loss	
69	Net Income	
70	Net Expense	
71	Net Profit	
72	Net Loss	
73	Net Income	
74	Net Expense	
75	Net Profit	
76	Net Loss	
77	Net Income	
78	Net Expense	
79	Net Profit	
80	Net Loss	
81	Net Income	
82	Net Expense	
83	Net Profit	
84	Net Loss	
85	Net Income	
86	Net Expense	
87	Net Profit	
88	Net Loss	
89	Net Income	
90	Net Expense	
91	Net Profit	
92	Net Loss	
93	Net Income	
94	Net Expense	
95	Net Profit	
96	Net Loss	
97	Net Income	
98	Net Expense	
99	Net Profit	
100	Net Loss	

Abandoned Foul Surface Water Combined

Public Sewer
Private Sewer
Section 104
Rising Main
Studge Main
Overflow
Water Course
Highway Drain

- 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

FO	Foul
SW	Surface Water
CO	Combined
OV	Overflow

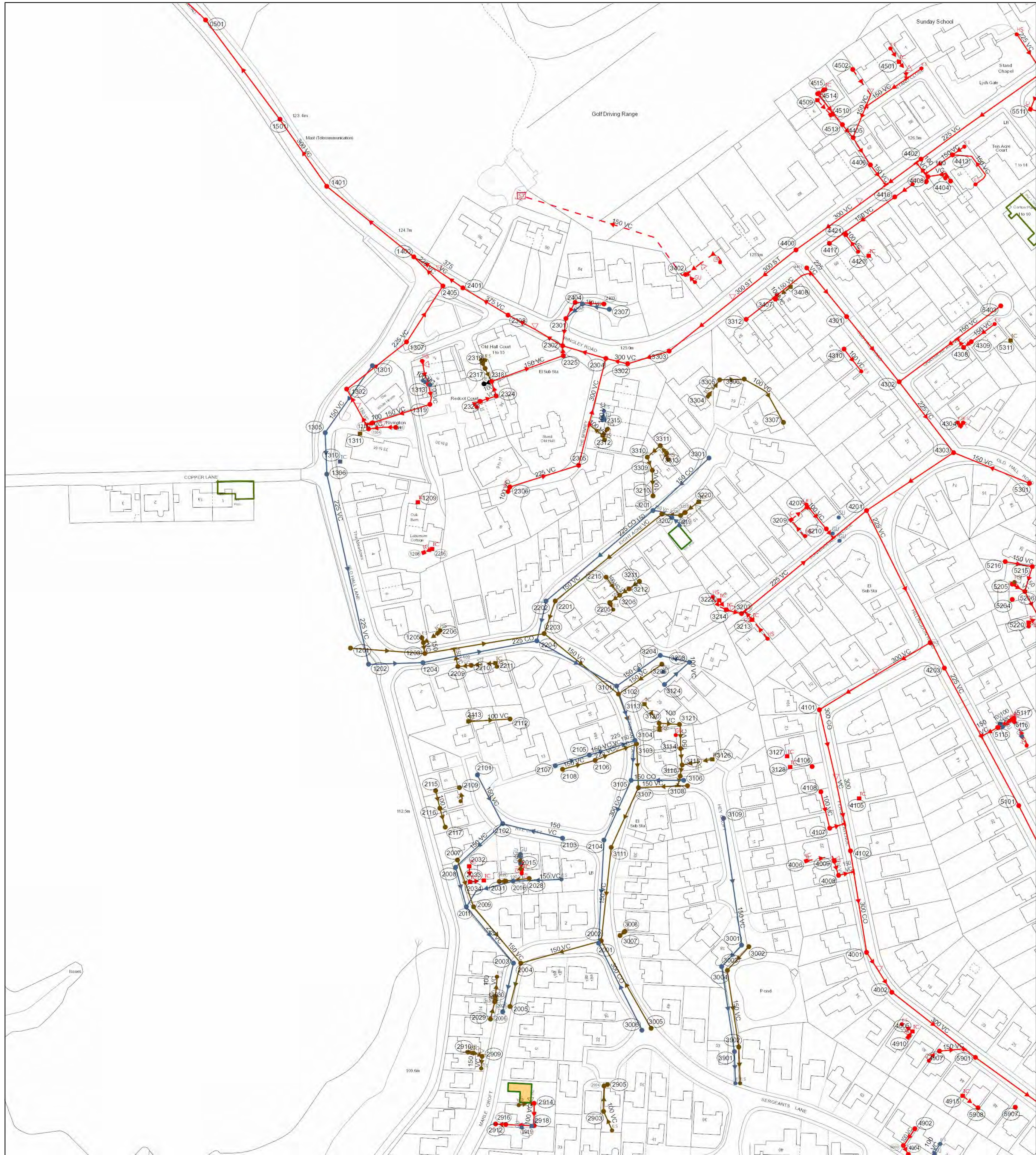
CI	Circular	TR	Trapezoidal
EG	Egg	AR	Arch
OV	Oval	BA	Barrel
FT	Flat Top	HO	HorseShoe
RE	Rectangular	UN	Unspecified
SQ	Square		

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	Glass / Steel Composite
GRG	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

23 RINGLEY ROAD,
WHITEFIELD,
MANCHESTER,
M45 7LD

**SEWER
RECORDS**

 **United
Utilities**
Water for the North West



Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
1401	CO	0	300	45.22168	VC	9.98234	VC	8.106113	
1401	CO	0	300	45.22168	VC	8.106113	VC	9.972022	
3312	CO	0	150	13	VC	61.84658	VC	44.27579	
2106	116.11	CO	113.87	150	13	VC	10.87582	1 in 34	
5205	CO	0	150	13	VC	18.265	VC	18.265	
2026	FO	0	100	10	VC	10.87582	VC	18.265	
4413	CO	0	150	13	VC	18.265	VC	18.265	
4413	CO	0	150	13	VC	18.265	VC	18.265	
4413	CO	0	150	13	VC	18.265	VC	18.265	
3103	115.99	FO	113.27	150	13	VC	24.02082	1 in 19	
3302	125.34	CO	121.37	300	VC	12.36932	VC	1 in 206	
4309	CO	0	150	13	VC	5.330358	VC		
4309	CO	0	150	13	VC	5.330358	VC		
2105	116.13	SW	113.55	150	VC	13.60147	VC		
5206	CO	0	150	13	VC	16.43005	VC		
5206	CO	0	150	13	VC	16.43005	VC		
4401	CO	0	225	VC	34.82834	VC			
5115	CO	0	150	13	VC	10.11559	VC		
5115	CO	0	150	13	VC	10.11559	VC		
2305	CO	0	150	13	VC	10.11559	VC		
4514	CO	0	150	13	VC	16.44018	VC		
4514	CO	0	150	13	VC	21.89248	VC		
3004	112.78	FO	110.72	300	VC	15.22984	VC		
1501	123.31	CO	118.72	300	VC	42.7998	VC		
1501	123.31	CO	118.72	300	VC	68.60029	VC	1 in 221	
4203	118.21	CO	117.71	225	VC	68.60029	VC	1 in 221	
4203	118.21	CO	117.71	225	VC	86.35393	VC	1 in 63	
5216	CO	0	150	13	VC	86.35393	VC	1 in 63	
5216	CO	0	150	13	VC	15.22984	VC		
4514	CO	0	150	13	VC	15.22984	VC		
3407	CO	0	100	VC	1.336337	VC			
2903	CO	0	100	VC	14.13377	VC			
4310	CO	0	100	VC	15.49564	VC			
4303	CO	0	225	VC	57.68882	VC			
2103	111.45	SW	109.85	150	VC	27.68882	VC	1 in 3396	
2912	CO	0	100	VC	33.95585	VC			
2401	124.52	CO	120.23	375	VC	6.716243	VC		
3201	120.43	SW	117.77	225	VC	15.81139	VC	1 in 0	
2318	CO	0	150	13	VC	17.35992	VC	1 in 107	
2205	CO	0	100	VC	42.10062	VC			
4102	116.03	FO	112.73	100	VC	4.271188	VC	1 in 44	
4101	118.29	CO	115.95	300	VC	56.71881	VC	1 in 38	
3211	CO	0	100	VC	40.02499	VC			
4001	113.38	CO	111.42	300	VC	7.095155	VC	1 in 16	
2210	CO	0	100	VC	13.0384	VC			
1203	117.35	FO	114.9	150	VC	17.27082	VC	1 in 8	
4301	CO	0	100	VC	66.91051	VC			
4301	CO	0	100	VC	6.06587	VC			
4308	CO	0	150	VC	6.06587	VC			
3106	115.56	SW	113.84	150	VC	39	VC	1 in 24	
5215	CO	0	100	VC	14.31174	VC			
3311	CO	0	100	VC	14.31174	VC			
5101	117.84	CO	0	225	VC	14.31174	VC		
5101	117.84	CO	0	225	VC	61.7171	VC		
3309	CO	0	100	VC	61.7171	VC			
2308	CO	0	375	VC	14.16288	VC			
3204	116.52	SW	114.44	150	VC	20.15476	VC	1 in 67	
2004	110.2	FO	107.88	150	VC	29.41088	VC	1 in 88	
3203	118.57	CO	117.4	225	VC	24.73863	VC	1 in 289	
1307	93	CO	89.42	225	VC	89.498	VC	1 in 1	
3305	CO	0	100	VC	36.89174	VC			
1201	116.7	FO	115.76	150	VC	13.50292	VC	1 in 48	
1205	CO	0	100	VC	41.10951	VC			
4400	125.26	CO	121.65	300	VC	0.08922	VC		
4400	125.26	CO	121.65	300	VC	44.61187	VC	1 in 448	
2904	CO	0	100	VC	44.61187	VC			
2102	112.04	SW	109.78	150	VC	2.005244	VC	1 in 62	
3006	110.12	SW	108.1	300	VC	35.38381	VC		
2315	CO	0	100	VC	53.65653	VC			
4201	118.84	SW	117.09	225	VC	4.890518	VC		
5116	CO	0	100	VC	97.04638	VC			
3114	CO	0	100	VC	10.01389	VC			
3108	115.57	FO	113.53	150	VC	10.01389	VC		
4402	126.2	CO	122.77	225	VC	9.00303	VC	1 in 20	
4402	126.2	CO	122.77	225	VC	27.01851	VC	1 in 73	
4402	126.2	CO	122.77	225	VC	42.2019	VC	1 in 73	
4402	126.2	CO	122.77	225	VC	42.2019	VC	1 in 73	
4402	126.2	CO	122.77	225	VC	42.2019	VC	1 in 73	
2204	118.05	SW	114.58	300	VC	50.60032	VC	1 in 71	
2002	111.56	FO	108.43	150	VC	46.1871	VC		
4202	118.38	CO	0	300	VC	34.98571	VC		
4202	118.38	CO	0	300	VC	34.98571	VC		
2323	CO	0	100	VC	9.315995	VC			
3306	CO	0	100	VC	33.56476	VC			
2319	CO	0	100	VC	3.507447	VC			
2403	CO	0	150	VC	10.03122	VC			
4107	CO	0	100	VC	6.840237	VC			
3402	CO	0	100	VC	105.1416	VC			
3206	CO	0	100	VC	6.704538	VC			
2215	CO	0	100	VC	12.42779	VC			
1302	124.01	FO	121.99	225	VC	42.2119	VC	1 in 1	
3303	125.48	CO	121.51	300	VC	24.04163	VC	1 in 160	
3901	CO	0	100	VC	17.63088	VC			
4301	CO	0	225	VC	46.2277	VC			
3124	SW	0	150	VC	18.50434	VC			
2304	CO	0	100	VC	8.43028	VC			
2108	115.81	FO	114.21	150	VC	18.68154	VC	1 in 78	
1305	123.43	SW	121.81	150	VC	23.03173	VC	1 in 12	
2304	125.43	CO	121.3	300	VC	25	VC	1 in 47	
1313	CO	0	100	VC	11.50002	VC			
3301	121.38	SW	119.94	150	VC	42.44997	VC	1 in 51	
3313	CO	0	100	VC	5.374379	VC			
3219	CO	0	150	VC	10.38882	VC			
2001	113.24	SW	111.42	150	VC	16.27882	VC	1 in 54	
2201	118.97	FO	116.87	150	VC	18.97367	VC	1 in 2	
3105	114.48	SW	111.78	300	VC	36.24914	VC	1 in 28	
2209	CO	0	150	VC	10.16288	VC			
1301	124.55	SW	123.04	150	VC	45.22168	VC	1 in 37	
2405	62	CO	58.63	225	VC	22.62742	VC		
4902	CO	0	100	VC	11.12386	VC			
4902	CO	0	100	VC	11.12386	VC			
3310	CO	0	100	VC	7.686519	VC			
2302	125.02	CO	120.72	300	VC	17.49286	VC	1 in 435	
3205	116.52	FO	114.44	150	VC	20.04902	VC		
2305	123.62	CO	121.19	300	VC	60.87693	VC		
2009	CO	0	150	VC	40.6998	VC			
4907	CO	0	150	VC	13.88816	VC			
4907	CO	0	150	VC	13.88816	VC			
2007	111.11	CO	108.95	150	VC	13.88816	VC		
4405	CO	0	150	VC	27.51383	VC			
4405	CO	0	150	VC	17.74082	VC			
4405	CO	0	150	VC	17.74082	VC			
2003	110.2	SW	108.41	225	VC	27.65863	VC	1 in 92	
4302	CO	0	225	VC	49.03985	VC			
1304	CO	0	150	VC	12.52997	VC			
3902	CO	0	150	VC	19.96967	VC			
2306	123.18	FO	121.51	150	VC	36.8517	VC	1 in 142	
3005	110.15	FO	107.76	150	VC	55.598	VC	1 in 32	
1204	117.34	CO	115.32	225	VC	64.13088	VC	1 in 87	
2010	CO	0	150	VC	31.40937	VC			
2112	CO	0	100	VC	6.782371	VC			
1202	117	SW	115.75	225	VC	30.01666	VC	1 in 70	
2402	124.69	CO	122.84	100	VC	10.29963	VC	1 in 34	
2116	CO	0	100	VC	10.89513	VC			
1303	CO	0	150	VC	8.154164	VC			
4008	CO	0	100	VC	6.604594	VC			
2909	CO	0	150	VC	15.20705	VC			
2007	124.73	SW	123.73	150	VC	13.05856	VC		
2028	CO	0	100	VC	5.713146	VC			
3116	CO	0	150	VC	13.42749	VC			
3121	CO	0	150	VC	14.16031	VC			
4406	CO	0	150	VC	14.16031	VC			
4406	CO	0	150	VC	14.16031	VC			
2008	111.13	SW	109.2	225	VC	22.80351	VC	1 in 34	
3104	116.2	CO	113.8	300	VC	22.06072	VC	1 in 17	
1319	CO	0	150	VC	33.10301	VC			
4903	CO	0	100	VC	5.502602	VC			
5502	127.74	CO	124.18	225	VC	82.422	VC	1 in 59	
5502	127.74	CO	124.18	225	VC	82.422	VC	1 in 59	
2914	CO	0	100	VC	12.43913	VC			
2107	115.84	SW	113.89	150	VC	19.92486	VC	1 in 59	
4421	CO	0	100	VC	1.306221	VC			
3225	CO	0	100	VC	2.982241	VC			
3226	SW	110.48	150	VC	11.20422	VC			
2104	CO	0	300	VC	57.07888	VC			
4904	CO	0	100	VC	6.050972	VC			
1306	121.34	SW	119.71	225	VC	107.4895	VC	1 in 27	
5403	125.62								

Flood map for planning

Your reference
<Unspecified>

Location (easting/northing)
379948/405744

Created
25 Apr 2023 12:37

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

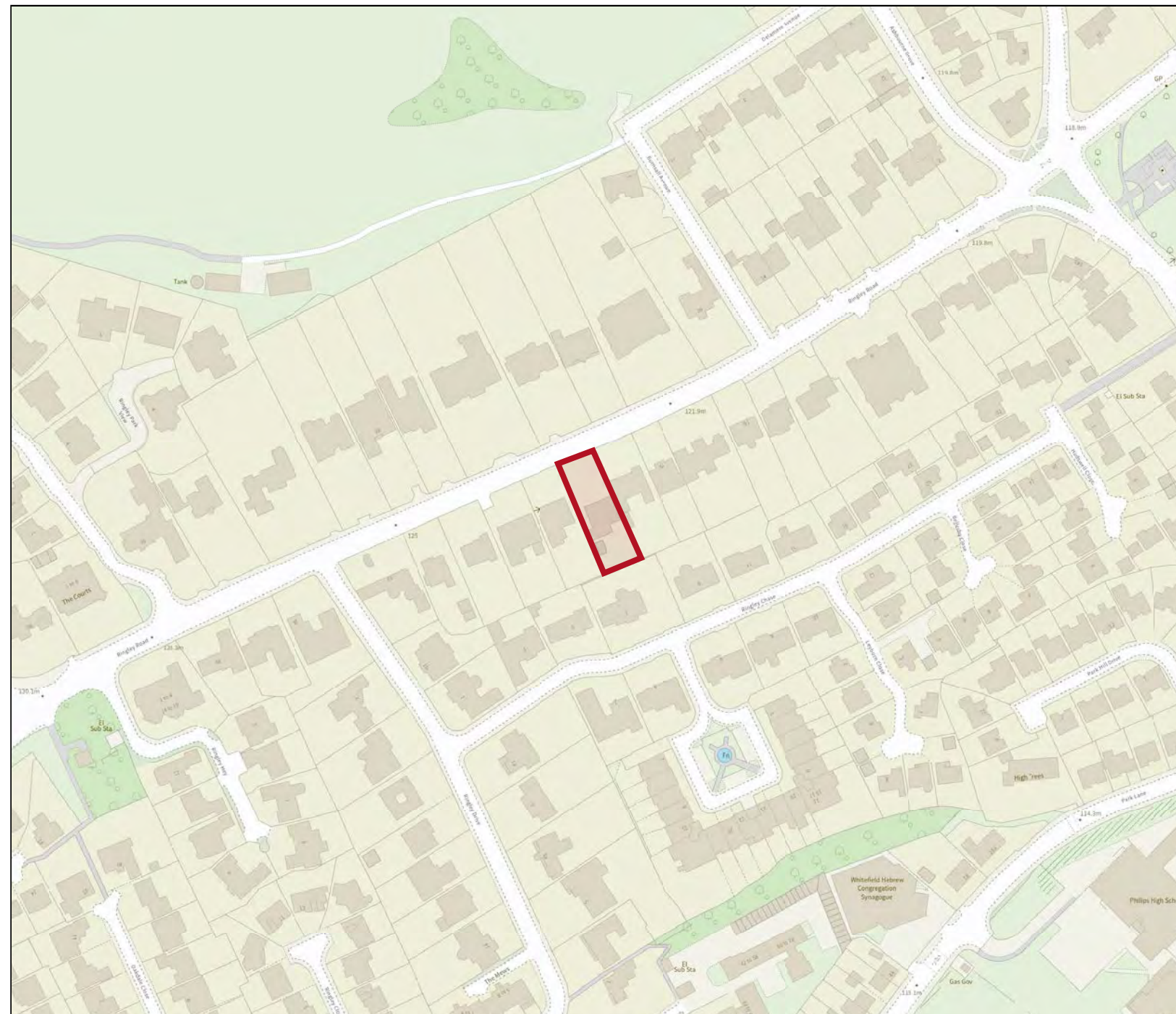
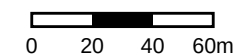
Your reference
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Location (easting/northing)
379948/405744

Scale
1:2500

Created
25 Apr 2023 12:37

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



20239678 23 Ringley Road
Below Ground Drainage Strategy

Appendix B. Falling head test results



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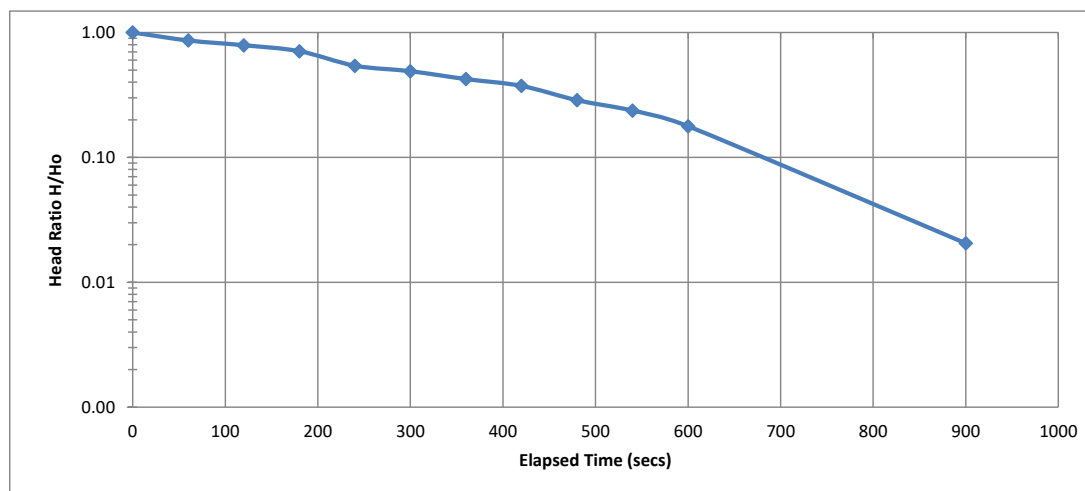
FALLING HEAD TEST

(To: BS5930 :1999 Page 50)

Job No: A5255
Site: 23 Ringley Road, Whitefield
Client: BDI Structural Solutions

Location Reference:	WS1	
Date	28 March 2023	
Geology in test section	Sand	
Depth of test section	4.44	metres
Depth to Standing Water Level (or base of well)	4.44	metres
Height of Casing	0.00	metres
Height of Casing above water level	4.44	metres
Depth to water at start of test below casing level (or base of well)	0.05	metres
Depth to water at end of test below casing level	4.35	metres
Response zone length	1.10	metres
Standpipe diameter in test section	0.018	metres
Cross sectional area of standpipe	2.55E-04	metres
Intake Factor (BS5930 p50) Figure d	1.44	
Basic Time Lag at H/Ho =0.37	420.00	sec
Coefficient of Permeability	4.21E-07	m/s

Time Elapsed (secs)	Depth of water below top of casing (m)	h(m)	h1/ho
0	0.05	4.39	1.00
60	0.65	3.79	0.86
120	0.97	3.47	0.79
180	1.33	3.11	0.71
240	2.06	2.38	0.54
300	2.29	2.15	0.49
360	2.58	1.86	0.42
420	2.80	1.64	0.37
480	3.18	1.26	0.29
540	3.40	1.04	0.24
600	3.66	0.78	0.18
900	4.35	0.09	0.02





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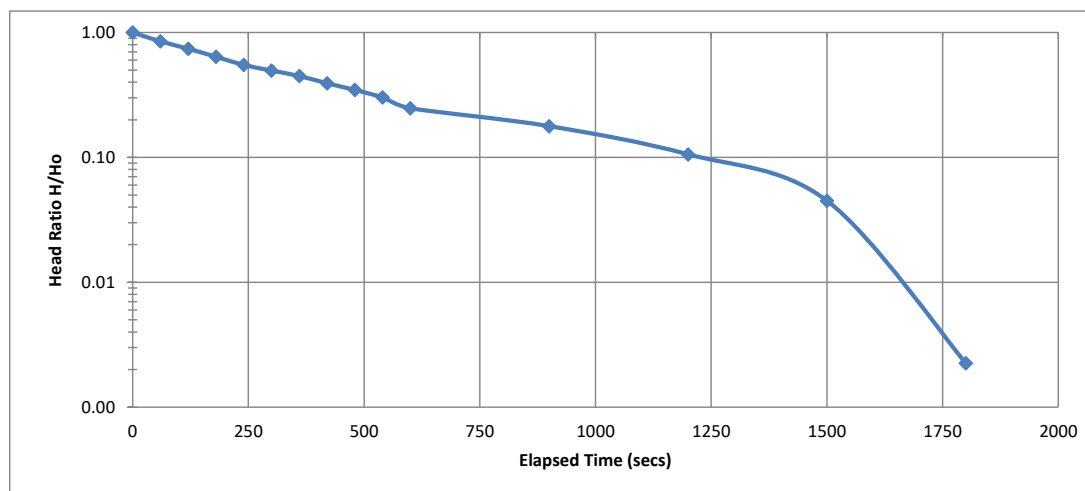
FALLING HEAD TEST

(To: BS5930 :1999 Page 50)

Job No: A5255
Site: 23 Ringley Road, Whitefield
Client: BDI Structural Solutions

Location Reference:	WS1	
Date	28 March 2023	
Geology in test section	Sand	
Depth of test section	4.44	metres
Depth to Standing Water Level (or base of well)	4.44	metres
Height of Casing	0.00	metres
Height of Casing above water level	4.44	metres
Depth to water at start of test below casing level (or base of well)	0.00	metres
Depth to water at end of test below casing level	4.43	metres
Response zone length	1.10	metres
Standpipe diameter in test section	0.018	metres
Cross sectional area of standpipe	2.55E-04	metres
Intake Factor (BS5930 p50) Figure d	1.44	
Basic Time Lag at H/Ho =0.37	450.00	sec
Coefficient of Permeability	3.93E-07	m/s

Time Elapsed (secs)	Depth of water below top of casing (m)	h(m)	h1/ho
0	0.00	4.44	1.00
60	0.67	3.77	0.85
120	1.15	3.29	0.74
180	1.60	2.84	0.64
240	2.00	2.44	0.55
300	2.24	2.20	0.50
360	2.45	1.99	0.45
420	2.70	1.74	0.39
480	2.90	1.54	0.35
540	3.10	1.34	0.30
600	3.34	1.10	0.25
900	3.65	0.79	0.18
1200	3.97	0.47	0.11
1500	4.24	0.20	0.05
1800	4.43	0.01	0.00





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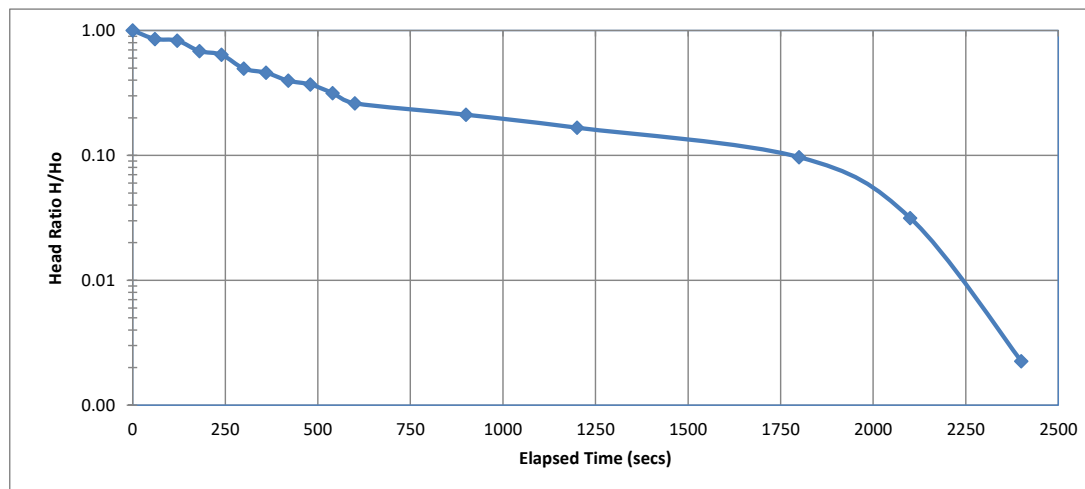
FALLING HEAD TEST

(To: BS5930 :1999 Page 50)

Job No: A5255
Site: 23 Ringley Road, Whitefield
Client: BDI Structural Solutions

Location Reference:	WS1	
Date	28 March 2023	
Geology in test section	Sand	
Depth of test section	4.44	metres
Depth to Standing Water Level (or base of well)	4.44	metres
Height of Casing	0.00	metres
Height of Casing above water level	4.44	metres
Depth to water at start of test below casing level (or base of well)	0.00	metres
Depth to water at end of test below casing level	4.43	metres
Response zone length	1.10	metres
Standpipe diameter in test section	0.018	metres
Cross sectional area of standpipe	2.55E-04	metres
Intake Factor (BS5930 p50) Figure d	1.44	
Basic Time Lag at H/Ho =0.37	480.00	sec
Coefficient of Permeability	3.69E-07	m/s

Time Elapsed (secs)	Depth of water below top of casing (m)	h(m)	h1/ho
0	0.00	4.44	1.00
60	0.64	3.80	0.86
120	0.75	3.69	0.83
180	1.40	3.04	0.68
240	1.60	2.84	0.64
300	2.24	2.20	0.50
360	2.40	2.04	0.46
420	2.68	1.76	0.40
480	2.80	1.64	0.37
540	3.04	1.40	0.32
600	3.28	1.16	0.26
900	3.50	0.94	0.21
1200	3.70	0.74	0.17
1800	4.01	0.43	0.10
2100	4.30	0.14	0.03
2400	4.43	0.01	0.00





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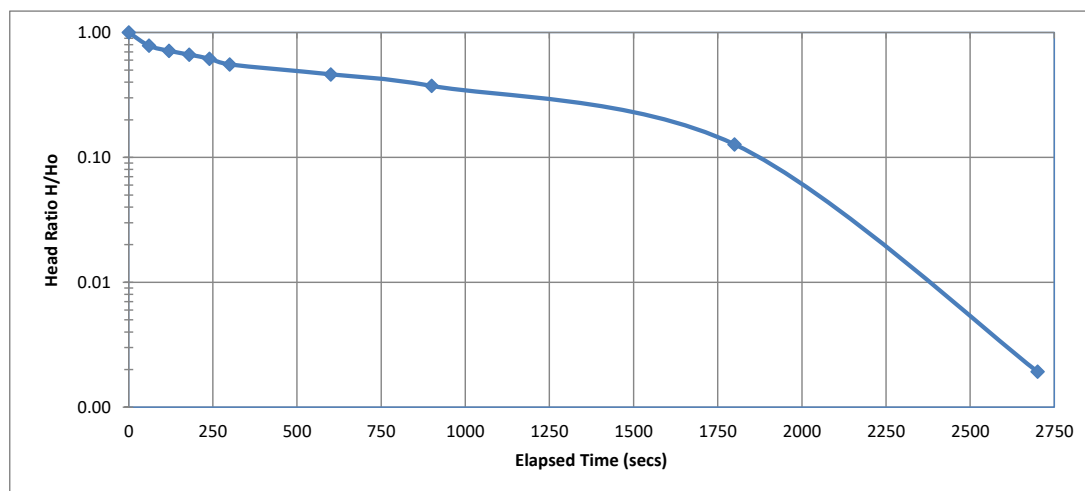
FALLING HEAD TEST

(To: BS5930 :1999 Page 50)

Job No: A5255
Site: 23 Ringley Road, Whitefield
Client: BDI Structural Solutions

Location Reference:	WS2	
Date	28 March 2023	
Geology in test section	Sand	
Depth of test section	5.20	metres
Depth to Standing Water Level (or base of well)	5.20	metres
Height of Casing	0.00	metres
Height of Casing above water level	5.20	metres
Depth to water at start of test below casing level (or base of well)	0.01	metres
Depth to water at end of test below casing level	5.19	metres
Response zone length	1.00	metres
Standpipe diameter in test section	0.018	metres
Cross sectional area of standpipe	2.55E-04	metres
Intake Factor (BS5930 p50) Figure d	1.33	
Basic Time Lag at H/Ho =0.37	900.00	sec
Coefficient of Permeability	2.12E-07	m/s

Time Elapsed (secs)	Depth of water below top of casing (m)	h(m)	h1/ho
0	0.01	5.19	1.00
60	1.13	4.07	0.78
120	1.50	3.70	0.71
180	1.75	3.45	0.66
240	2.00	3.20	0.62
300	2.32	2.88	0.55
600	2.80	2.40	0.46
900	3.26	1.94	0.37
1800	4.54	0.66	0.13
2700	5.19	0.01	0.00





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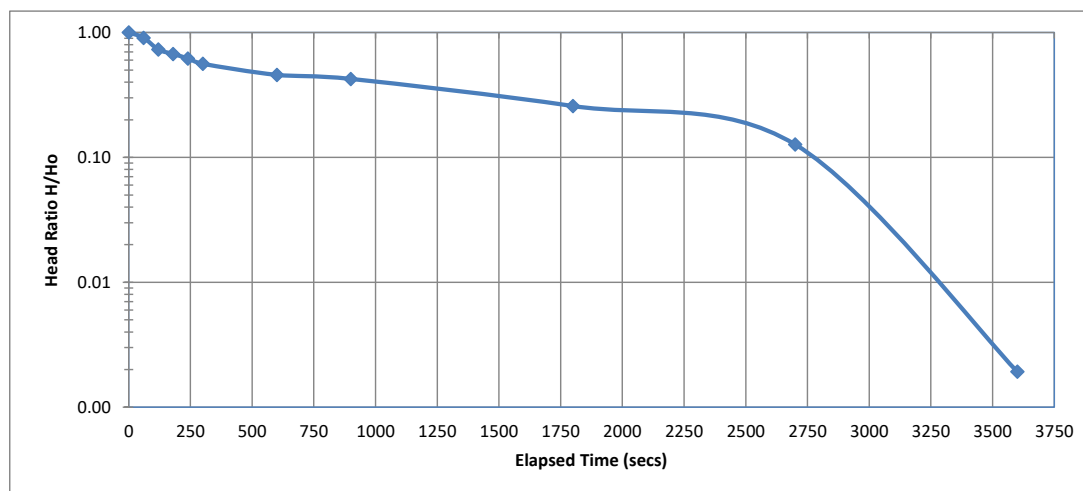
FALLING HEAD TEST

(To: BS5930 :1999 Page 50)

Job No: A5255
Site: 23 Ringley Road, Whitefield
Client: BDI Structural Solutions

Location Reference:	WS2	
Date	28 March 2023	
Geology in test section	Sand	
Depth of test section	5.20	metres
Depth to Standing Water Level (or base of well)	5.20	metres
Height of Casing	0.00	metres
Height of Casing above water level	5.20	metres
Depth to water at start of test below casing level (or base of well)	0.00	metres
Depth to water at end of test below casing level	5.19	metres
Response zone length	1.00	metres
Standpipe diameter in test section	0.018	metres
Cross sectional area of standpipe	2.55E-04	metres
Intake Factor (BS5930 p50) Figure d	1.33	
Basic Time Lag at H/Ho =0.37	1100.00	sec
Coefficient of Permeability	1.73E-07	m/s

Time Elapsed (secs)	Depth of water below top of casing (m)	h(m)	h1/ho
0	0.00	5.20	1.00
60	0.48	4.72	0.91
120	1.40	3.80	0.73
180	1.70	3.50	0.67
240	1.98	3.22	0.62
300	2.28	2.92	0.56
600	2.82	2.38	0.46
900	2.99	2.21	0.43
1800	3.86	1.34	0.26
2700	4.54	0.66	0.13
3600	5.19	0.01	0.00





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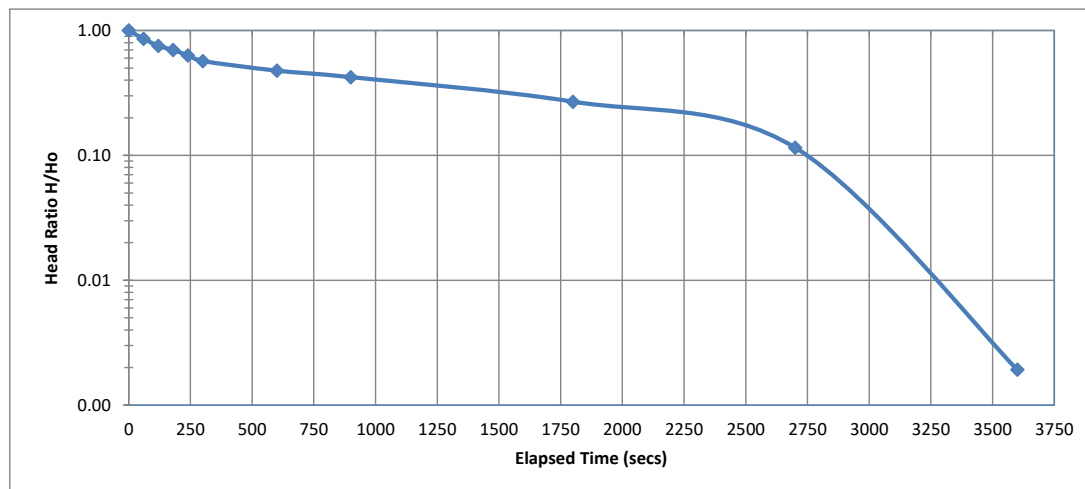
FALLING HEAD TEST

(To: BS5930 :1999 Page 50)

Job No: A5255
Site: 23 Ringley Road, Whitefield
Client: BDI Structural Solutions

Location Reference:	WS2	
Date	28 March 2023	
Geology in test section	Sand	
Depth of test section	5.20	metres
Depth to Standing Water Level (or base of well)	5.20	metres
Height of Casing	0.00	metres
Height of Casing above water level	5.20	metres
Depth to water at start of test below casing level (or base of well)	0.00	metres
Depth to water at end of test below casing level	5.19	metres
Response zone length	1.00	metres
Standpipe diameter in test section	0.018	metres
Cross sectional area of standpipe	2.55E-04	metres
Intake Factor (BS5930 p50) Figure d	1.33	
Basic Time Lag at H/Ho =0.37	1200.00	sec
Coefficient of Permeability	1.59E-07	m/s

Time Elapsed (secs)	Depth of water below top of casing (m)	h(m)	h1/ho
0	0.00	5.20	1.00
60	0.74	4.46	0.86
120	1.28	3.92	0.75
180	1.57	3.63	0.70
240	1.92	3.28	0.63
300	2.24	2.96	0.57
600	2.72	2.48	0.48
900	3.00	2.20	0.42
1800	3.80	1.40	0.27
2700	4.60	0.60	0.12
3600	5.19	0.01	0.00





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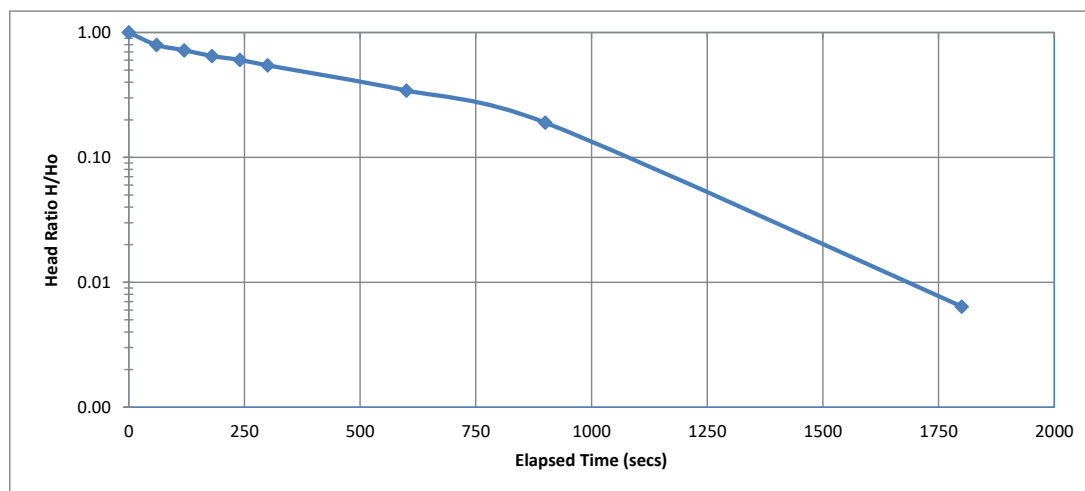
FALLING HEAD TEST

(To: BS5930 :1999 Page 50)

Job No: A5255
Site: 23 Ringley Road, Whitefield
Client: BDI Structural Solutions

Location Reference:	WS3	
Date	28 March 2023	
Geology in test section	Sand	
Depth of test section	4.73	metres
Depth to Standing Water Level (or base of well)	4.73	metres
Height of Casing	0.00	metres
Height of Casing above water level	4.73	metres
Depth to water at start of test below casing level (or base of well)	0.04	metres
Depth to water at end of test below casing level	4.70	metres
Response zone length	1.10	metres
Standpipe diameter in test section	0.018	metres
Cross sectional area of standpipe	2.55E-04	metres
Intake Factor (BS5930 p50) Figure d	1.44	
Basic Time Lag at $H/H_0 = 0.37$	550.00	sec
Coefficient of Permeability	3.22E-07	m/s

Time Elapsed (secs)	Depth of water below top of casing (m)	h(m)	h1/ho
0	0.04	4.69	1.00
60	1.00	3.73	0.80
120	1.35	3.38	0.72
180	1.69	3.04	0.65
240	1.90	2.83	0.60
300	2.17	2.56	0.55
600	3.12	1.61	0.34
900	3.84	0.89	0.19
1800	4.70	0.03	0.01





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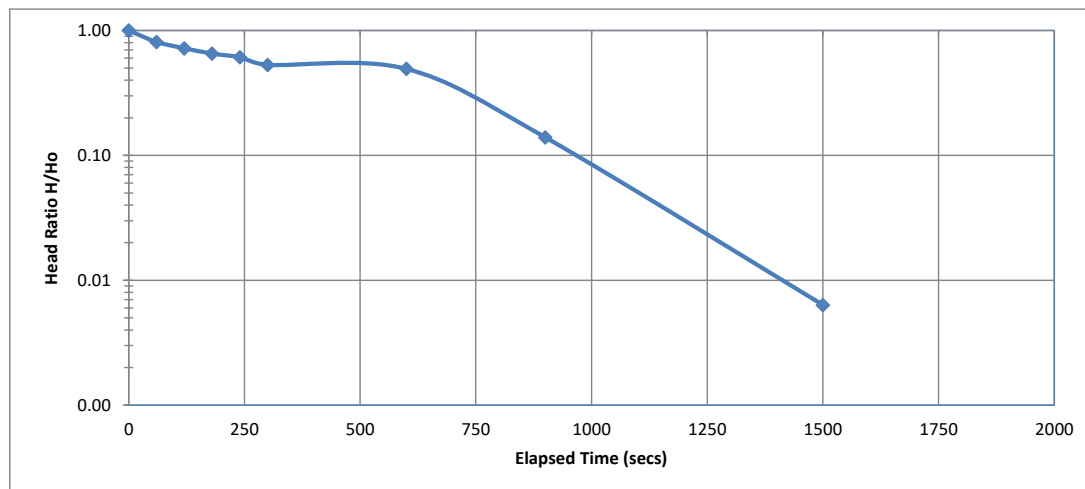
FALLING HEAD TEST

(To: BS5930 :1999 Page 50)

Job No: A5255
Site: 23 Ringley Road, Whitefield
Client: BDI Structural Solutions

Location Reference:	WS3	
Date	28 March 2023	
Geology in test section	Sand	
Depth of test section	4.73	metres
Depth to Standing Water Level (or base of well)	4.73	metres
Height of Casing	0.00	metres
Height of Casing above water level	4.73	metres
Depth to water at start of test below casing level (or base of well)	0.00	metres
Depth to water at end of test below casing level	4.70	metres
Response zone length	1.10	metres
Standpipe diameter in test section	0.018	metres
Cross sectional area of standpipe	2.55E-04	metres
Intake Factor (BS5930 p50) Figure d	1.44	
Basic Time Lag at $H/H_0 = 0.37$	700.00	sec
Coefficient of Permeability	2.53E-07	m/s

Time Elapsed (secs)	Depth of water below top of casing (m)	h(m)	h1/h0
0	0.00	4.73	1.00
60	0.90	3.83	0.81
120	1.32	3.41	0.72
180	1.64	3.09	0.65
240	1.84	2.89	0.61
300	2.22	2.51	0.53
600	2.40	2.33	0.49
900	4.07	0.66	0.14
1500	4.70	0.03	0.01





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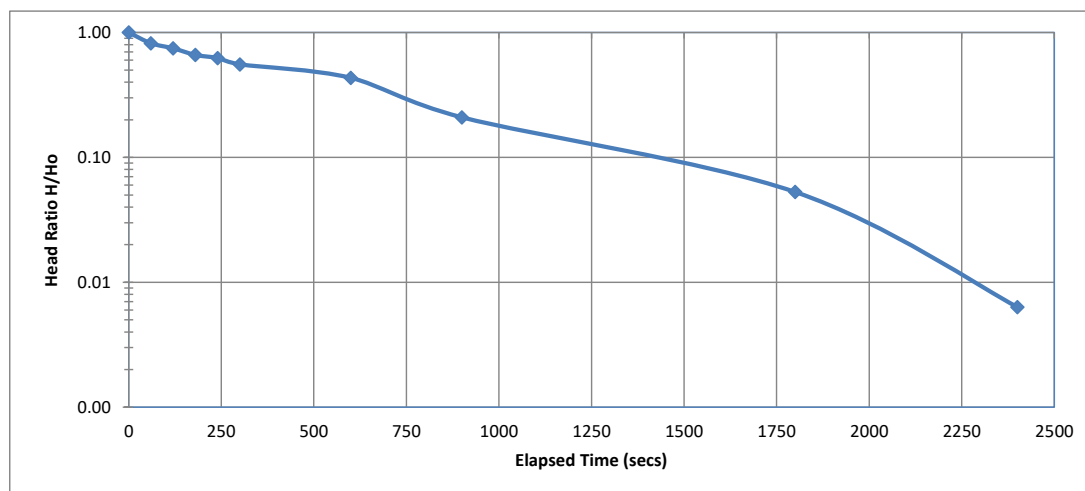
FALLING HEAD TEST

(To: BS5930 :1999 Page 50)

Job No: A5255
Site: 23 Ringley Road, Whitefield
Client: BDI Structural Solutions

Location Reference:	WS3	
Date	28 March 2023	
Geology in test section	Sand	
Depth of test section	4.73	metres
Depth to Standing Water Level (or base of well)	4.73	metres
Height of Casing	0.00	metres
Height of Casing above water level	4.73	metres
Depth to water at start of test below casing level (or base of well)	0.00	metres
Depth to water at end of test below casing level	4.70	metres
Response zone length	1.10	metres
Standpipe diameter in test section	0.018	metres
Cross sectional area of standpipe	2.55E-04	metres
Intake Factor (BS5930 p50) Figure d	1.44	
Basic Time Lag at H/Ho =0.37	650.00	sec
Coefficient of Permeability	2.72E-07	m/s

Time Elapsed (secs)	Depth of water below top of casing (m)	h(m)	h1/ho
0	0.00	4.73	1.00
60	0.85	3.88	0.82
120	1.20	3.53	0.75
180	1.60	3.13	0.66
240	1.78	2.95	0.62
300	2.10	2.63	0.56
600	2.68	2.05	0.43
900	3.74	0.99	0.21
1800	4.48	0.25	0.05
2400	4.70	0.03	0.01





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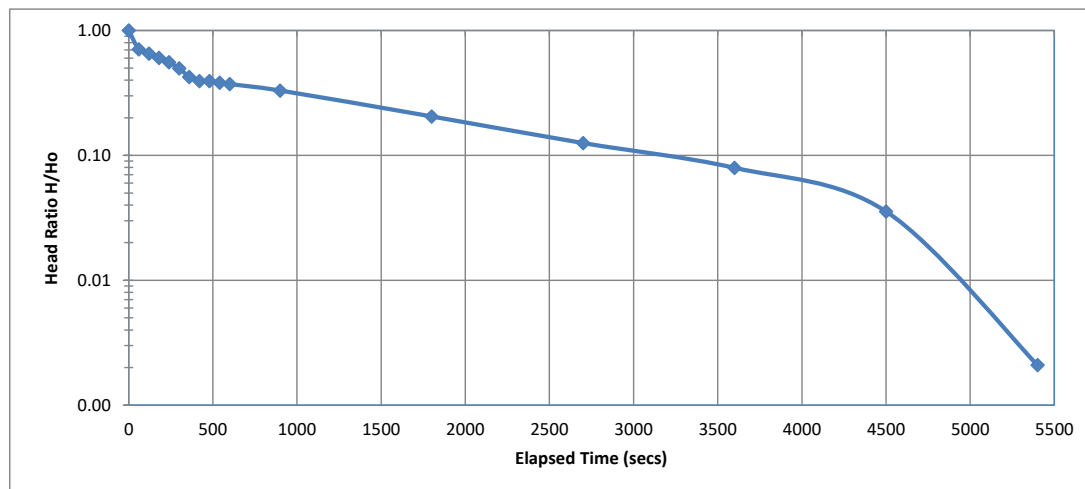
FALLING HEAD TEST

(To: BS5930 :1999 Page 50)

Job No: A5255
Site: 23 Ringley Road, Whitefield
Client: BDI Structural Solutions

Location Reference:	WS4	
Date	28 March 2023	
Geology in test section	Sand	
Depth of test section	4.78	metres
Depth to Standing Water Level (or base of well)	4.78	metres
Height of Casing	0.00	metres
Height of Casing above water level	4.78	metres
Depth to water at start of test below casing level (or base of well)	0.00	metres
Depth to water at end of test below casing level	4.77	metres
Response zone length	1.10	metres
Standpipe diameter in test section	0.018	metres
Cross sectional area of standpipe	2.55E-04	metres
Intake Factor (BS5930 p50) Figure d	1.44	
Basic Time Lag at H/Ho =0.37	550.00	sec
Coefficient of Permeability	3.22E-07	m/s

Time Elapsed (secs)	Depth of water below top of casing (m)	h(m)	h1/ho
0	0.00	4.78	1.00
60	1.40	3.38	0.71
120	1.66	3.12	0.65
180	1.90	2.88	0.60
240	2.12	2.66	0.56
300	2.40	2.38	0.50
360	2.75	2.03	0.42
420	2.90	1.88	0.39
480	2.90	1.88	0.39
540	2.95	1.83	0.38
600	3.00	1.78	0.37
900	3.20	1.58	0.33
1800	3.80	0.98	0.21
2700	4.18	0.60	0.13
3600	4.40	0.38	0.08
4500	4.61	0.17	0.04
5400	4.77	0.01	0.00





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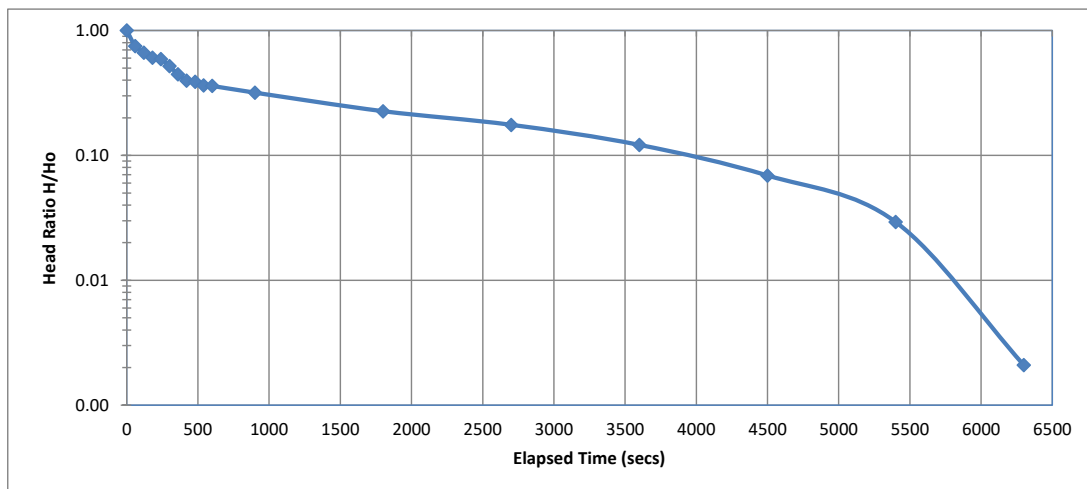
FALLING HEAD TEST

(To: BS5930 :1999 Page 50)

Job No: A5255
Site: 23 Ringley Road, Whitefield
Client: BDI Structural Solutions

Location Reference:	WS4	
Date	28 March 2023	
Geology in test section	Sand	
Depth of test section	4.78	metres
Depth to Standing Water Level (or base of well)	4.78	metres
Height of Casing	0.00	metres
Height of Casing above water level	4.78	metres
Depth to water at start of test below casing level (or base of well)	0.00	metres
Depth to water at end of test below casing level	4.77	metres
Response zone length	1.10	metres
Standpipe diameter in test section	0.018	metres
Cross sectional area of standpipe	2.55E-04	metres
Intake Factor (BS5930 p50) Figure d	1.44	
Basic Time Lag at H/Ho =0.37	500.00	sec
Coefficient of Permeability	3.54E-07	m/s

Time Elapsed (secs)	Depth of water below top of casing (m)	h(m)	h1/ho
0	0.00	4.78	1.00
60	1.20	3.58	0.75
120	1.60	3.18	0.67
180	1.88	2.90	0.61
240	1.95	2.83	0.59
300	2.30	2.48	0.52
360	2.65	2.13	0.45
420	2.88	1.90	0.40
480	2.92	1.86	0.39
540	3.04	1.74	0.36
600	3.06	1.72	0.36
900	3.26	1.52	0.32
1800	3.70	1.08	0.23
2700	3.94	0.84	0.18
3600	4.20	0.58	0.12
4500	4.45	0.33	0.07
5400	4.64	0.14	0.03
6300	4.77	0.01	0.00



Appendix C. Pre-development Greenfield / Brownfield flow rates and post-development hydraulic calculations

Greenfield runoff rate estimation for sites

www.uksubs.com | Greenfield runoff tool

Calculated by:

Site name:

Site location:

Site Details

Latitude:

Longitude:

Reference:

Date:

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

Site characteristics

Total site area (ha):

Methodology

Q_{BAR} estimation method:

SPR estimation method:

Soil characteristics

SOIL type:

HOST class:

SPR/SPRHOST:

Hydrological characteristics

SAAR (mm):

Hydrological region:

Growth curve factor 1 year:

Growth curve factor 30 years:

Growth curve factor 100 years:

Growth curve factor 200 years:

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 $SPR/SPRHOST \leq 0.3$?

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):	0.73	0.73
1 in 1 year (l/s):	0.64	0.64
1 in 30 years (l/s):	1.24	1.24
1 in 100 year (l/s):	1.52	1.52
1 in 200 years (l/s):	1.73	1.73

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.

 BDI Structural Solutions Ltd Stafford Court Washway Road Sale, M33 7PE	Project 23 Ringley Road				Job no. 20239678	
	Calcs for Existing 1 yr Brownfield rate				Start page no./Revision 1	
	Calcs by SG	Calcs date 27/04/2023	Checked by	Checked date	Approved by	Approved date

DESIGN RAINFALL

In accordance with the Wallingford Procedure

Tedds calculation version 2.0.02

Design rainfall intensity

Location of catchment area	Manchester
Storm duration	D = 5 min
Return period	Period = 1 yr
Ratio 60 min to 2 day rainfall of 5 yr return period	r = 0.360
5-year return period rainfall of 60 minutes duration	M5_60min = 18.0 mm
Increase of rainfall intensity due to global warming	p _{climate} = 0 %
Factor Z1 (Wallingford procedure)	Z1 = 0.36
Rainfall for 5min storm with 5 year return period	M5_5min _i = Z1 × M5_60min = 6.5 mm
Factor Z2 (Wallingford procedure)	Z2 = 0.62
Rainfall for 5min storm with 1 year return period	M1_5min = Z2 × M5_5min _i = 4.0 mm
Design rainfall intensity	I _{max} = M1_5min / D = 48.0 mm/hr

Maximum surface water runoff

Catchment area	A _{catch} = 188 m ²
Percentage of area that is impermeable	p = 100 %
Maximum surface water runoff	Q _{max} = A _{catch} × p × I _{max} = 2.5 l/s

 BDI Structural Solutions Ltd Stafford Court Washway Road Sale, M33 7PE	Project				Job no.	
	23 Ringley Road				20239678	
	Calcs for				Start page no./Revision	
	Existing 2 yr Brownfield rate				1	
	Calcs by	Calcs date	Checked by	Checked date	Approved by	Approved date
	SG	27/04/2023				

DESIGN RAINFALL

In accordance with the Wallingford Procedure

Tedds calculation version 2.0.02

Design rainfall intensity

Location of catchment area	Manchester
Storm duration	D = 5 min
Return period	Period = 2 yr
Ratio 60 min to 2 day rainfall of 5 yr return period	r = 0.360
5-year return period rainfall of 60 minutes duration	M5_60min = 18.0 mm
Increase of rainfall intensity due to global warming	p _{climate} = 0 %
Factor Z1 (Wallingford procedure)	Z1 = 0.36
Rainfall for 5min storm with 5 year return period	M5_5min _i = Z1 × M5_60min = 6.5 mm
Factor Z2 (Wallingford procedure)	Z2 = 0.79
Rainfall for 5min storm with 2 year return period	M2_5min = Z2 × M5_5min _i = 5.1 mm
Design rainfall intensity	I _{max} = M2_5min / D = 61.4 mm/hr

Maximum surface water runoff

Catchment area	A _{catch} = 188 m ²
Percentage of area that is impermeable	p = 100 %
Maximum surface water runoff	Q _{max} = A _{catch} × p × I _{max} = 3.2 l/s

 BDI Structural Solutions Ltd Stafford Court Washway Road Sale, M33 7PE	Project				Job no.	
	23 Ringley Road				20239678	
	Calcs for				Start page no./Revision	
	Existing 30 yr Brownfield rate				1	
	Calcs by	Calcs date	Checked by	Checked date	Approved by	Approved date
	SG	27/04/2023				

DESIGN RAINFALL

In accordance with the Wallingford Procedure

Tedds calculation version 2.0.02

Design rainfall intensity

Location of catchment area	Manchester
Storm duration	D = 5 min
Return period	Period = 30 yr
Ratio 60 min to 2 day rainfall of 5 yr return period	r = 0.360
5-year return period rainfall of 60 minutes duration	M5_60min = 18.0 mm
Increase of rainfall intensity due to global warming	p _{climate} = 0 %
Factor Z1 (Wallingford procedure)	Z1 = 0.36
Rainfall for 5min storm with 5 year return period	M5_5min _i = Z1 × M5_60min = 6.5 mm
Factor Z2 (Wallingford procedure)	Z2 = 1.45
Rainfall for 5min storm with 30 year return period	M30_5min = Z2 × M5_5min _i = 9.4 mm
Design rainfall intensity	I _{max} = M30_5min / D = 112.4 mm/hr

Maximum surface water runoff

Catchment area	A _{catch} = 188 m ²
Percentage of area that is impermeable	p = 100 %
Maximum surface water runoff	Q _{max} = A _{catch} × p × I _{max} = 5.9 l/s

 BDI Structural Solutions Ltd Stafford Court Washway Road Sale, M33 7PE	Project				Job no.	
	23 Ringley Road				20239678	
	Calcs for				Start page no./Revision	
	Existing 100 yr Brownfield rate				1	
	Calcs by	Calcs date	Checked by	Checked date	Approved by	Approved date
	SG	27/04/2023				

DESIGN RAINFALL

In accordance with the Wallingford Procedure

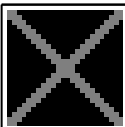
Tedds calculation version 2.0.02

Design rainfall intensity

Location of catchment area	Manchester
Storm duration	D = 5 min
Return period	Period = 100 yr
Ratio 60 min to 2 day rainfall of 5 yr return period	r = 0.360
5-year return period rainfall of 60 minutes duration	M5_60min = 18.0 mm
Increase of rainfall intensity due to global warming	p _{climate} = 0 %
Factor Z1 (Wallingford procedure)	Z1 = 0.36
Rainfall for 5min storm with 5 year return period	M5_5min _i = Z1 × M5_60min = 6.5 mm
Factor Z2 (Wallingford procedure)	Z2 = 1.83
Rainfall for 5min storm with 100 year return period	M100_5min = Z2 × M5_5min _i = 11.8 mm
Design rainfall intensity	I _{max} = M100_5min / D = 142.0 mm/hr

Maximum surface water runoff

Catchment area	A _{catch} = 188 m ²
Percentage of area that is impermeable	p = 100 %
Maximum surface water runoff	Q _{max} = A _{catch} × p × I _{max} = 7.4 l/s



Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	1	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	0.70
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	18.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.360	Preferred Cover Depth (m)	0.600
CV	0.840	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Depth (m)
s1	0.023	5.00	124.010	450	0.810
s3	0.025	5.00	124.280	450	0.880
s2	0.015	5.00	124.450	450	1.441
s4	0.015	5.00	124.150	450	1.307
s5			123.740	1200	1.125
c1			123.680	1200	1.101
tank		5.00	123.740		1.100

Links

Name	US Node	DS Node	Length (m)	Slope (1:X)	Dia (mm)
1.001	s1	s2	19.100	100.0	150
1.002	s3	s4	30.800	100.0	150
1.003	s2	s4	16.600	100.0	150
1.004	s4	s5	6.300	100.0	150
1.005	s5	c1	3.600	100.0	150
1.006	tank	s5	2.500	100.0	150

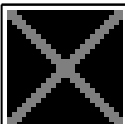
Name	US Node	DS Node	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.001	s1	s2	1.005	17.8	3.2
1.002	s3	s4	1.005	17.8	3.4
1.003	s2	s4	1.005	17.8	5.1
1.004	s4	s5	1.005	17.8	10.5
1.005	s5	c1	1.005	17.8	10.4
1.006	tank	s5	1.005	17.8	0.0

Simulation Settings

Rainfall Methodology	FSR	Skip Steady State	x
FSR Region	England and Wales	Drain Down Time (mins)	60
M5-60 (mm)	18.000	Additional Storage (m ³ /ha)	0.0
Ratio-R	0.360	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x
Analysis Speed	Normal		

Storm Durations

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



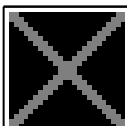
Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
2	0	0	0
30	0	0	0
100	45	0	0

Node s5 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	122.615	Product Number	CTL-SHE-0103-5000-1160-5000
Design Depth (m)	1.160	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	5.0	Min Node Diameter (mm)	1200

Node tank Soakaway Storage Structure

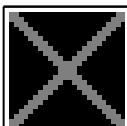
Base Inf Coefficient (m/hr)	0.00062	Invert Level (m)	122.640	Depth (m)	0.400
Side Inf Coefficient (m/hr)	0.00062	Time to half empty (mins)	66	Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	5.000	Number Required	1
Porosity	0.95	Pit Length (m)	8.500		



Results for 1 year 15 minute winter. 75 minute analysis at 1 minute timestep. 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	123.240	0.040	2.8	0.0063	0.0000	OK
15 minute winter	s3	11	123.442	0.042	3.1	0.0067	0.0000	OK
15 minute winter	s2	11	123.060	0.051	4.5	0.0081	0.0000	OK
15 minute winter	s4	11	122.927	0.084	9.1	0.0134	0.0000	OK
15 minute winter	s5	13	122.707	0.092	9.2	0.1036	0.0000	OK
15 minute winter	c1	1	122.579	0.000	3.1	0.0000	0.0000	OK
15 minute winter	tank	16	122.693	0.053	6.2	2.1538	0.0000	OK

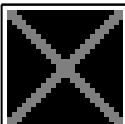
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	s1	1.001	s2	2.7	0.612	0.154	0.0859	
15 minute winter	s3	1.002	s4	3.0	0.746	0.168	0.1231	
15 minute winter	s2	1.003	s4	4.4	0.583	0.250	0.1279	
15 minute winter	s4	1.004	s5	9.2	0.960	0.518	0.0603	
15 minute winter	s5	Hydro-Brake®	c1	3.1				4.0
15 minute winter	tank	1.006	s5	-6.2	-1.022	-0.348	0.0196	
15 minute winter	tank	Infiltration		0.0				



Results for 1 year 30 minute winter. 90 minute analysis at 1 minute timestep. 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	18	123.236	0.036	2.2	0.0057	0.0000	OK
30 minute winter	s3	18	123.438	0.037	2.4	0.0060	0.0000	OK
30 minute winter	s2	18	123.055	0.046	3.6	0.0073	0.0000	OK
30 minute winter	s4	18	122.916	0.073	7.4	0.0116	0.0000	OK
30 minute winter	s5	20	122.706	0.091	7.3	0.1026	0.0000	OK
30 minute winter	c1	1	122.579	0.000	3.1	0.0000	0.0000	OK
30 minute winter	tank	25	122.699	0.059	4.6	2.3765	0.0000	OK

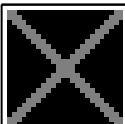
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute winter	s1	1.001	s2	2.2	0.573	0.124	0.0737	
30 minute winter	s3	1.002	s4	2.4	0.698	0.134	0.1048	
30 minute winter	s2	1.003	s4	3.6	0.554	0.202	0.1082	
30 minute winter	s4	1.004	s5	7.3	0.909	0.412	0.0507	
30 minute winter	s5	Hydro-Brake®	c1	3.1				5.5
30 minute winter	tank	1.006	s5	-4.6	-0.806	-0.260	0.0206	
30 minute winter	tank	Infiltration		0.0				



Results for 1 year 60 minute winter. 120 minute analysis at 1 minute timestep. 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	34	123.229	0.029	1.5	0.0047	0.0000	OK
60 minute winter	s3	34	123.431	0.031	1.6	0.0049	0.0000	OK
60 minute winter	s2	34	123.047	0.038	2.5	0.0060	0.0000	OK
60 minute winter	s4	34	122.902	0.059	5.1	0.0094	0.0000	OK
60 minute winter	s5	43	122.698	0.083	5.1	0.0934	0.0000	OK
60 minute winter	c1	1	122.579	0.000	2.8	0.0000	0.0000	OK
60 minute winter	tank	43	122.698	0.058	2.5	2.3315	0.0000	OK

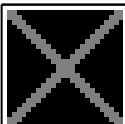
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	s1	1.001	s2	1.5	0.509	0.084	0.0566	
60 minute winter	s3	1.002	s4	1.6	0.624	0.090	0.0790	
60 minute winter	s2	1.003	s4	2.5	0.508	0.141	0.0825	
60 minute winter	s4	1.004	s5	5.1	0.831	0.287	0.0386	
60 minute winter	s5	Hydro-Brake®	c1	2.8				7.2
60 minute winter	tank	1.006	s5	-2.5	-0.582	-0.138	0.0202	
60 minute winter	tank	Infiltration		0.0				



Results for 1 year 120 minute winter. 180 minute analysis at 2 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	s1	64	123.224	0.024	1.0	0.0038	0.0000	OK
120 minute winter	s3	66	123.424	0.024	1.0	0.0039	0.0000	OK
120 minute winter	s2	64	123.039	0.030	1.6	0.0048	0.0000	OK
120 minute winter	s4	64	122.889	0.046	3.2	0.0072	0.0000	OK
120 minute winter	s5	76	122.688	0.073	3.2	0.0825	0.0000	OK
120 minute winter	c1	2	122.579	0.000	2.3	0.0000	0.0000	OK
120 minute winter	tank	76	122.688	0.048	1.2	1.9405	0.0000	OK

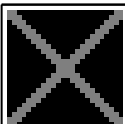
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute winter	s1	1.001	s2	1.0	0.459	0.056	0.0418	
120 minute winter	s3	1.002	s4	1.0	0.544	0.056	0.0567	
120 minute winter	s2	1.003	s4	1.6	0.457	0.090	0.0586	
120 minute winter	s4	1.004	s5	3.2	0.736	0.180	0.0274	
120 minute winter	s5	Hydro-Brake®	c1	2.3				9.2
120 minute winter	tank	1.006	s5	-1.2	-0.286	-0.068	0.0167	
120 minute winter	tank	Infiltration		0.0				



Results for 1 year 180 minute winter. 240 minute analysis at 4 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	s1	92	123.220	0.020	0.7	0.0032	0.0000	OK
180 minute winter	s3	96	123.422	0.022	0.8	0.0035	0.0000	OK
180 minute winter	s2	96	123.035	0.026	1.2	0.0042	0.0000	OK
180 minute winter	s4	96	122.883	0.040	2.5	0.0064	0.0000	OK
180 minute winter	s5	112	122.682	0.067	2.5	0.0762	0.0000	OK
180 minute winter	c1	4	122.579	0.000	2.0	0.0000	0.0000	OK
180 minute winter	tank	112	122.682	0.042	0.8	1.7104	0.0000	OK

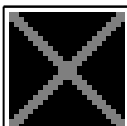
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
180 minute winter	s1	1.001	s2	0.7	0.414	0.039	0.0335	
180 minute winter	s3	1.002	s4	0.8	0.509	0.045	0.0484	
180 minute winter	s2	1.003	s4	1.2	0.417	0.068	0.0485	
180 minute winter	s4	1.004	s5	2.5	0.689	0.141	0.0229	
180 minute winter	s5	Hydro-Brake®	c1	2.0				10.7
180 minute winter	tank	1.006	s5	-0.8	-0.224	-0.047	0.0147	
180 minute winter	tank	Infiltration		0.0				



Results for 1 year 240 minute winter. 300 minute analysis at 4 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	s1	120	123.219	0.019	0.6	0.0030	0.0000	OK
240 minute winter	s3	128	123.421	0.020	0.7	0.0033	0.0000	OK
240 minute winter	s2	120	123.033	0.024	1.0	0.0038	0.0000	OK
240 minute winter	s4	128	122.880	0.036	2.1	0.0058	0.0000	OK
240 minute winter	s5	140	122.678	0.063	2.1	0.0709	0.0000	OK
240 minute winter	c1	4	122.579	0.000	1.8	0.0000	0.0000	OK
240 minute winter	tank	140	122.678	0.038	0.6	1.5239	0.0000	OK

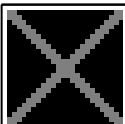
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
240 minute winter	s1	1.001	s2	0.6	0.388	0.034	0.0297	
240 minute winter	s3	1.002	s4	0.7	0.489	0.039	0.0441	
240 minute winter	s2	1.003	s4	1.0	0.403	0.056	0.0426	
240 minute winter	s4	1.004	s5	2.1	0.657	0.118	0.0201	
240 minute winter	s5	Hydro-Brake®	c1	1.8				11.8
240 minute winter	tank	1.006	s5	-0.6	0.211	-0.033	0.0130	
240 minute winter	tank	Infiltration		0.0				



Results for 1 year 360 minute winter. 424 minute analysis at 8 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	s1	184	123.217	0.017	0.5	0.0028	0.0000	OK
360 minute winter	s3	184	123.417	0.017	0.5	0.0028	0.0000	OK
360 minute winter	s2	184	123.031	0.022	0.8	0.0034	0.0000	OK
360 minute winter	s4	184	122.875	0.032	1.6	0.0050	0.0000	OK
360 minute winter	s5	200	122.671	0.056	1.6	0.0629	0.0000	OK
360 minute winter	c1	8	122.579	0.000	1.5	0.0000	0.0000	OK
360 minute winter	tank	200	122.671	0.031	0.3	1.2380	0.0000	OK

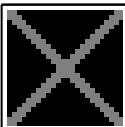
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute winter	s1	1.001	s2	0.5	0.373	0.028	0.0257	
360 minute winter	s3	1.002	s4	0.5	0.442	0.028	0.0349	
360 minute winter	s2	1.003	s4	0.8	0.379	0.045	0.0354	
360 minute winter	s4	1.004	s5	1.6	0.610	0.090	0.0165	
360 minute winter	s5	Hydro-Brake®	c1	1.5				14.1
360 minute winter	tank	1.006	s5	0.3	-0.136	0.020	0.0107	
360 minute winter	tank	Infiltration		0.0				



Results for 1 year 480 minute winter. 544 minute analysis at 8 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	s1	232	123.216	0.016	0.4	0.0025	0.0000	OK
480 minute winter	s3	232	123.416	0.016	0.4	0.0025	0.0000	OK
480 minute winter	s2	240	123.028	0.019	0.6	0.0030	0.0000	OK
480 minute winter	s4	240	122.870	0.027	1.2	0.0043	0.0000	OK
480 minute winter	s5	264	122.663	0.048	1.2	0.0547	0.0000	OK
480 minute winter	c1	8	122.579	0.000	1.2	0.0000	0.0000	OK
480 minute winter	tank	264	122.663	0.023	0.2	0.9423	0.0000	OK

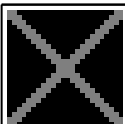
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute winter	s1	1.001	s2	0.4	0.358	0.023	0.0214	
480 minute winter	s3	1.002	s4	0.4	0.413	0.023	0.0298	
480 minute winter	s2	1.003	s4	0.6	0.350	0.034	0.0288	
480 minute winter	s4	1.004	s5	1.2	0.562	0.068	0.0134	
480 minute winter	s5	Hydro-Brake®	c1	1.2				14.2
480 minute winter	tank	1.006	s5	0.3	-0.130	0.017	0.0083	
480 minute winter	tank	Infiltration		0.0				



Results for 1 year 600 minute winter. 660 minute analysis at 15 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	s1	270	123.214	0.014	0.3	0.0022	0.0000	OK
600 minute winter	s3	270	123.414	0.014	0.3	0.0022	0.0000	OK
600 minute winter	s2	270	123.026	0.017	0.5	0.0028	0.0000	OK
600 minute winter	s4	285	122.868	0.025	1.0	0.0040	0.0000	OK
600 minute winter	s5	360	122.659	0.044	1.0	0.0500	0.0000	OK
600 minute winter	c1	15	122.579	0.000	1.0	0.0000	0.0000	OK
600 minute winter	tank	360	122.659	0.019	0.2	0.7740	0.0000	OK

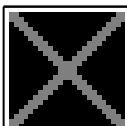
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute winter	s1	1.001	s2	0.3	0.314	0.017	0.0183	
600 minute winter	s3	1.002	s4	0.3	0.380	0.017	0.0243	
600 minute winter	s2	1.003	s4	0.5	0.332	0.028	0.0253	
600 minute winter	s4	1.004	s5	1.0	0.534	0.056	0.0118	
600 minute winter	s5	Hydro-Brake®	c1	1.0				15.2
600 minute winter	tank	1.006	s5	0.3	-0.122	0.014	0.0070	
600 minute winter	tank	Infiltration		0.0				



Results for 1 year 720 minute winter. 780 minute analysis at 15 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	s1	345	123.214	0.014	0.3	0.0022	0.0000	OK
720 minute winter	s3	330	123.414	0.014	0.3	0.0022	0.0000	OK
720 minute winter	s2	345	123.026	0.017	0.5	0.0028	0.0000	OK
720 minute winter	s4	345	122.868	0.025	1.0	0.0040	0.0000	OK
720 minute winter	s5	405	122.659	0.044	1.0	0.0499	0.0000	OK
720 minute winter	c1	15	122.579	0.000	1.0	0.0000	0.0000	OK
720 minute winter	tank	405	122.659	0.019	0.2	0.7712	0.0000	OK

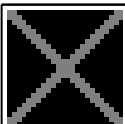
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	s1	1.001	s2	0.3	0.314	0.017	0.0183	
720 minute winter	s3	1.002	s4	0.3	0.380	0.017	0.0243	
720 minute winter	s2	1.003	s4	0.5	0.332	0.028	0.0253	
720 minute winter	s4	1.004	s5	1.0	0.534	0.056	0.0118	
720 minute winter	s5	Hydro-Brake®	c1	1.0				16.6
720 minute winter	tank	1.006	s5	0.2	0.099	0.013	0.0070	
720 minute winter	tank	Infiltration		0.0				



Results for 1 year 960 minute winter. 1020 minute analysis at 15 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	s1	390	123.211	0.011	0.2	0.0018	0.0000	OK
960 minute winter	s3	495	123.414	0.014	0.3	0.0022	0.0000	OK
960 minute winter	s2	495	123.025	0.016	0.4	0.0025	0.0000	OK
960 minute winter	s4	495	122.867	0.024	0.9	0.0038	0.0000	OK
960 minute winter	s5	495	122.654	0.039	0.9	0.0438	0.0000	OK
960 minute winter	c1	15	122.579	0.000	0.8	0.0000	0.0000	OK
960 minute winter	tank	495	122.653	0.013	0.1	0.5253	0.0000	OK

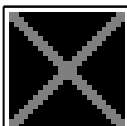
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute winter	s1	1.001	s2	0.2	0.290	0.011	0.0149	
960 minute winter	s3	1.002	s4	0.3	0.380	0.017	0.0243	
960 minute winter	s2	1.003	s4	0.4	0.297	0.023	0.0227	
960 minute winter	s4	1.004	s5	0.9	0.519	0.051	0.0109	
960 minute winter	s5	Hydro-Brake®	c1	0.8				15.1
960 minute winter	tank	1.006	s5	-0.1	-0.085	-0.008	0.0054	
960 minute winter	tank	Infiltration		0.0				



Results for 1 year 1440 minute winter. 1500 minute analysis at 30 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	s1	690	123.211	0.011	0.2	0.0018	0.0000	OK
1440 minute winter	s3	660	123.411	0.011	0.2	0.0018	0.0000	OK
1440 minute winter	s2	690	123.023	0.014	0.3	0.0022	0.0000	OK
1440 minute winter	s4	690	122.862	0.019	0.6	0.0031	0.0000	OK
1440 minute winter	s5	810	122.648	0.033	0.6	0.0377	0.0000	OK
1440 minute winter	c1	30	122.579	0.000	0.6	0.0000	0.0000	OK
1440 minute winter	tank	810	122.648	0.008	0.1	0.3367	0.0000	OK

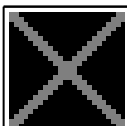
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	s1	1.001	s2	0.2	0.290	0.011	0.0132	
1440 minute winter	s3	1.002	s4	0.2	0.334	0.011	0.0184	
1440 minute winter	s2	1.003	s4	0.3	0.287	0.017	0.0175	
1440 minute winter	s4	1.004	s5	0.6	0.461	0.034	0.0082	
1440 minute winter	s5	Hydro-Brake®	c1	0.6				16.5
1440 minute winter	tank	1.006	s5	-0.1	-0.054	-0.004	0.0041	
1440 minute winter	tank	Infiltration		0.0				



Results for 2 year 15 minute winter. 75 minute analysis at 1 minute timestep. 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	123.245	0.045	3.6	0.0072	0.0000	OK
15 minute winter	s3	11	123.448	0.048	3.9	0.0076	0.0000	OK
15 minute winter	s2	10	123.068	0.059	5.9	0.0093	0.0000	OK
15 minute winter	s4	11	122.943	0.100	11.9	0.0158	0.0000	OK
15 minute winter	s5	13	122.723	0.108	11.9	0.1226	0.0000	OK
15 minute winter	c1	1	122.579	0.000	3.7	0.0000	0.0000	OK
15 minute winter	tank	16	122.714	0.074	8.4	2.9892	0.0000	OK

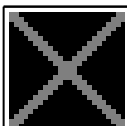
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	s1	1.001	s2	3.5	0.653	0.200	0.1040	
15 minute winter	s3	1.002	s4	3.8	0.796	0.213	0.1462	
15 minute winter	s2	1.003	s4	5.8	0.619	0.326	0.1559	
15 minute winter	s4	1.004	s5	11.9	1.016	0.669	0.0736	
15 minute winter	s5	Hydro-Brake®	c1	3.7				5.4
15 minute winter	tank	1.006	s5	-8.4	-1.112	-0.472	0.0262	
15 minute winter	tank	Infiltration		0.0				



Results for 2 year 30 minute winter. 90 minute analysis at 1 minute timestep. 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	18	123.240	0.040	2.8	0.0064	0.0000	OK
30 minute winter	s3	18	123.443	0.043	3.1	0.0068	0.0000	OK
30 minute winter	s2	18	123.061	0.052	4.6	0.0083	0.0000	OK
30 minute winter	s4	18	122.929	0.086	9.5	0.0136	0.0000	OK
30 minute winter	s5	20	122.723	0.108	9.4	0.1220	0.0000	OK
30 minute winter	c1	1	122.579	0.000	3.7	0.0000	0.0000	OK
30 minute winter	tank	25	122.722	0.082	6.2	3.2998	0.0000	OK

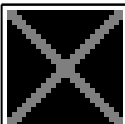
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute winter	s1	1.001	s2	2.8	0.612	0.158	0.0878	
30 minute winter	s3	1.002	s4	3.1	0.751	0.173	0.1262	
30 minute winter	s2	1.003	s4	4.6	0.585	0.259	0.1310	
30 minute winter	s4	1.004	s5	9.4	0.965	0.531	0.0616	
30 minute winter	s5	Hydro-Brake®	c1	3.7				7.2
30 minute winter	tank	1.006	s5	-6.2	-0.866	-0.348	0.0290	
30 minute winter	tank	Infiltration		0.0				



Results for 2 year 60 minute winter. 120 minute analysis at 1 minute timestep. 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	34	123.233	0.033	1.9	0.0053	0.0000	OK
60 minute winter	s3	33	123.435	0.035	2.1	0.0056	0.0000	OK
60 minute winter	s2	34	123.051	0.042	3.1	0.0067	0.0000	OK
60 minute winter	s4	33	122.910	0.067	6.4	0.0107	0.0000	OK
60 minute winter	s5	43	122.716	0.101	6.4	0.1147	0.0000	OK
60 minute winter	c1	1	122.579	0.000	3.5	0.0000	0.0000	OK
60 minute winter	tank	42	122.717	0.077	3.2	3.0894	0.0000	OK

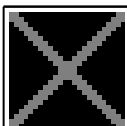
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	s1	1.001	s2	1.9	0.549	0.107	0.0664	
60 minute winter	s3	1.002	s4	2.1	0.673	0.118	0.0955	
60 minute winter	s2	1.003	s4	3.1	0.535	0.175	0.0973	
60 minute winter	s4	1.004	s5	6.4	0.879	0.359	0.0457	
60 minute winter	s5	Hydro-Brake®	c1	3.5				9.2
60 minute winter	tank	1.006	s5	-3.2	-0.607	-0.182	0.0271	
60 minute winter	tank	Infiltration		0.0				



Results for 2 year 120 minute winter. 180 minute analysis at 2 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	s1	64	123.226	0.026	1.2	0.0042	0.0000	OK
120 minute winter	s3	66	123.428	0.028	1.3	0.0044	0.0000	OK
120 minute winter	s2	64	123.043	0.034	2.0	0.0054	0.0000	OK
120 minute winter	s4	66	122.895	0.052	4.1	0.0083	0.0000	OK
120 minute winter	s5	76	122.703	0.088	4.1	0.0994	0.0000	OK
120 minute winter	c1	2	122.579	0.000	3.0	0.0000	0.0000	OK
120 minute winter	tank	76	122.703	0.063	1.7	2.5410	0.0000	OK

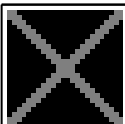
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute winter	s1	1.001	s2	1.2	0.477	0.068	0.0484	
120 minute winter	s3	1.002	s4	1.3	0.587	0.073	0.0682	
120 minute winter	s2	1.003	s4	2.0	0.479	0.113	0.0700	
120 minute winter	s4	1.004	s5	4.1	0.786	0.231	0.0329	
120 minute winter	s5	Hydro-Brake®	c1	3.0				11.4
120 minute winter	tank	1.006	s5	-1.7	-0.305	-0.093	0.0222	
120 minute winter	tank	Infiltration		0.0				



Results for 2 year 180 minute winter. 240 minute analysis at 4 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	s1	96	123.223	0.023	0.9	0.0037	0.0000	OK
180 minute winter	s3	96	123.424	0.024	1.0	0.0039	0.0000	OK
180 minute winter	s2	96	123.038	0.029	1.5	0.0047	0.0000	OK
180 minute winter	s4	96	122.888	0.045	3.1	0.0071	0.0000	OK
180 minute winter	s5	108	122.693	0.078	3.1	0.0884	0.0000	OK
180 minute winter	c1	4	122.579	0.000	2.6	0.0000	0.0000	OK
180 minute winter	tank	108	122.693	0.053	1.0	2.1484	0.0000	OK

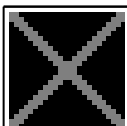
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
180 minute winter	s1	1.001	s2	0.9	0.438	0.051	0.0395	
180 minute winter	s3	1.002	s4	1.0	0.544	0.056	0.0567	
180 minute winter	s2	1.003	s4	1.5	0.447	0.084	0.0568	
180 minute winter	s4	1.004	s5	3.1	0.730	0.175	0.0267	
180 minute winter	s5	Hydro-Brake®	c1	2.6				13.1
180 minute winter	tank	1.006	s5	-1.0	-0.219	-0.056	0.0186	
180 minute winter	tank	Infiltration		0.0				



Results for 2 year 240 minute winter. 300 minute analysis at 4 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	s1	124	123.222	0.022	0.8	0.0034	0.0000	OK
240 minute winter	s3	128	123.422	0.022	0.8	0.0035	0.0000	OK
240 minute winter	s2	124	123.036	0.027	1.3	0.0043	0.0000	OK
240 minute winter	s4	124	122.884	0.041	2.6	0.0064	0.0000	OK
240 minute winter	s5	136	122.686	0.071	2.6	0.0805	0.0000	OK
240 minute winter	c1	4	122.579	0.000	2.2	0.0000	0.0000	OK
240 minute winter	tank	136	122.686	0.046	0.7	1.8671	0.0000	OK

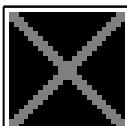
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
240 minute winter	s1	1.001	s2	0.8	0.425	0.044	0.0356	
240 minute winter	s3	1.002	s4	0.8	0.509	0.045	0.0484	
240 minute winter	s2	1.003	s4	1.3	0.429	0.072	0.0499	
240 minute winter	s4	1.004	s5	2.6	0.694	0.145	0.0233	
240 minute winter	s5	Hydro-Brake®	c1	2.2				14.1
240 minute winter	tank	1.006	s5	-0.7	0.214	-0.040	0.0161	
240 minute winter	tank	Infiltration		0.0				



Results for 2 year 360 minute winter. 424 minute analysis at 8 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	s1	184	123.219	0.019	0.6	0.0030	0.0000	OK
360 minute winter	s3	184	123.419	0.019	0.6	0.0030	0.0000	OK
360 minute winter	s2	184	123.033	0.024	1.0	0.0038	0.0000	OK
360 minute winter	s4	184	122.879	0.036	2.0	0.0057	0.0000	OK
360 minute winter	s5	200	122.678	0.063	2.0	0.0714	0.0000	OK
360 minute winter	c1	8	122.579	0.000	1.8	0.0000	0.0000	OK
360 minute winter	tank	200	122.678	0.038	0.4	1.5390	0.0000	OK

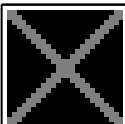
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute winter	s1	1.001	s2	0.6	0.388	0.034	0.0297	
360 minute winter	s3	1.002	s4	0.6	0.467	0.034	0.0396	
360 minute winter	s2	1.003	s4	1.0	0.403	0.056	0.0416	
360 minute winter	s4	1.004	s5	2.0	0.649	0.113	0.0194	
360 minute winter	s5	Hydro-Brake®	c1	1.8				16.8
360 minute winter	tank	1.006	s5	-0.4	-0.152	-0.023	0.0132	
360 minute winter	tank	Infiltration		0.0				



Results for 2 year 480 minute winter. 544 minute analysis at 8 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	s1	248	123.217	0.017	0.5	0.0028	0.0000	OK
480 minute winter	s3	240	123.417	0.017	0.5	0.0028	0.0000	OK
480 minute winter	s2	248	123.031	0.022	0.8	0.0034	0.0000	OK
480 minute winter	s4	248	122.875	0.032	1.6	0.0050	0.0000	OK
480 minute winter	s5	264	122.671	0.056	1.6	0.0632	0.0000	OK
480 minute winter	c1	8	122.579	0.000	1.5	0.0000	0.0000	OK
480 minute winter	tank	264	122.671	0.031	0.3	1.2458	0.0000	OK

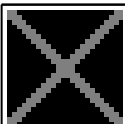
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute winter	s1	1.001	s2	0.5	0.373	0.028	0.0257	
480 minute winter	s3	1.002	s4	0.5	0.442	0.028	0.0349	
480 minute winter	s2	1.003	s4	0.8	0.379	0.045	0.0354	
480 minute winter	s4	1.004	s5	1.6	0.610	0.090	0.0165	
480 minute winter	s5	Hydro-Brake®	c1	1.5				18.2
480 minute winter	tank	1.006	s5	0.3	-0.130	0.019	0.0107	
480 minute winter	tank	Infiltration		0.0				



Results for 2 year 600 minute winter. 660 minute analysis at 15 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	s1	300	123.216	0.016	0.4	0.0025	0.0000	OK
600 minute winter	s3	285	123.416	0.016	0.4	0.0025	0.0000	OK
600 minute winter	s2	315	123.029	0.020	0.7	0.0032	0.0000	OK
600 minute winter	s4	315	122.873	0.030	1.4	0.0047	0.0000	OK
600 minute winter	s5	315	122.667	0.052	1.4	0.0584	0.0000	OK
600 minute winter	c1	15	122.579	0.000	1.3	0.0000	0.0000	OK
600 minute winter	tank	315	122.667	0.027	0.2	1.0733	0.0000	OK

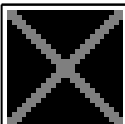
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute winter	s1	1.001	s2	0.4	0.357	0.023	0.0228	
600 minute winter	s3	1.002	s4	0.4	0.413	0.023	0.0298	
600 minute winter	s2	1.003	s4	0.7	0.365	0.039	0.0321	
600 minute winter	s4	1.004	s5	1.4	0.588	0.079	0.0150	
600 minute winter	s5	Hydro-Brake®	c1	1.3				18.4
600 minute winter	tank	1.006	s5	0.3	0.123	0.016	0.0093	
600 minute winter	tank	Infiltration		0.0				



Results for 2 year 720 minute winter. 780 minute analysis at 15 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	s1	315	123.214	0.014	0.3	0.0022	0.0000	OK
720 minute winter	s3	360	123.416	0.016	0.4	0.0025	0.0000	OK
720 minute winter	s2	315	123.026	0.017	0.5	0.0028	0.0000	OK
720 minute winter	s4	375	122.869	0.026	1.1	0.0042	0.0000	OK
720 minute winter	s5	390	122.661	0.046	1.1	0.0525	0.0000	OK
720 minute winter	c1	15	122.579	0.000	1.1	0.0000	0.0000	OK
720 minute winter	tank	390	122.661	0.021	0.2	0.8651	0.0000	OK

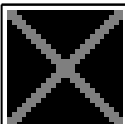
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	s1	1.001	s2	0.3	0.314	0.017	0.0183	
720 minute winter	s3	1.002	s4	0.4	0.413	0.023	0.0298	
720 minute winter	s2	1.003	s4	0.5	0.332	0.028	0.0264	
720 minute winter	s4	1.004	s5	1.1	0.549	0.062	0.0126	
720 minute winter	s5	Hydro-Brake®	c1	1.1				19.5
720 minute winter	tank	1.006	s5	0.3	0.119	0.015	0.0077	
720 minute winter	tank	Infiltration		0.0				



Results for 2 year 960 minute winter. 1020 minute analysis at 15 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	s1	465	123.214	0.014	0.3	0.0022	0.0000	OK
960 minute winter	s3	435	123.414	0.014	0.3	0.0022	0.0000	OK
960 minute winter	s2	465	123.026	0.017	0.5	0.0028	0.0000	OK
960 minute winter	s4	465	122.868	0.025	1.0	0.0040	0.0000	OK
960 minute winter	s5	525	122.659	0.044	1.0	0.0499	0.0000	OK
960 minute winter	c1	15	122.579	0.000	1.0	0.0000	0.0000	OK
960 minute winter	tank	525	122.659	0.019	0.2	0.7734	0.0000	OK

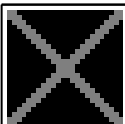
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute winter	s1	1.001	s2	0.3	0.314	0.017	0.0183	
960 minute winter	s3	1.002	s4	0.3	0.380	0.017	0.0243	
960 minute winter	s2	1.003	s4	0.5	0.332	0.028	0.0253	
960 minute winter	s4	1.004	s5	1.0	0.534	0.056	0.0118	
960 minute winter	s5	Hydro-Brake®	c1	1.0				20.6
960 minute winter	tank	1.006	s5	0.2	0.093	0.012	0.0070	
960 minute winter	tank	Infiltration		0.0				



Results for 2 year 1440 minute winter. 1500 minute analysis at 30 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	s1	630	123.211	0.011	0.2	0.0018	0.0000	OK
1440 minute winter	s3	600	123.411	0.011	0.2	0.0018	0.0000	OK
1440 minute winter	s2	630	123.023	0.014	0.3	0.0022	0.0000	OK
1440 minute winter	s4	630	122.862	0.019	0.6	0.0031	0.0000	OK
1440 minute winter	s5	870	122.648	0.033	0.6	0.0377	0.0000	OK
1440 minute winter	c1	30	122.579	0.000	0.6	0.0000	0.0000	OK
1440 minute winter	tank	870	122.648	0.008	0.1	0.3368	0.0000	OK

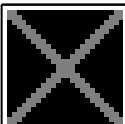
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	s1	1.001	s2	0.2	0.290	0.011	0.0132	
1440 minute winter	s3	1.002	s4	0.2	0.334	0.011	0.0184	
1440 minute winter	s2	1.003	s4	0.3	0.287	0.017	0.0175	
1440 minute winter	s4	1.004	s5	0.6	0.461	0.034	0.0082	
1440 minute winter	s5	Hydro-Brake®	c1	0.6				20.1
1440 minute winter	tank	1.006	s5	-0.1	-0.054	-0.004	0.0041	
1440 minute winter	tank	Infiltration		0.0				



Results for 30 year 15 minute winter. 75 minute analysis at 1 minute timestep. 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	123.265	0.065	6.9	0.0103	0.0000	OK
15 minute winter	s3	10	123.468	0.068	7.5	0.0109	0.0000	OK
15 minute winter	s2	11	123.110	0.101	11.4	0.0160	0.0000	OK
15 minute winter	s4	11	123.057	0.214	22.1	0.0340	0.0000	SURCHARGED
15 minute winter	s5	17	122.808	0.193	22.2	0.2185	0.0000	SURCHARGED
15 minute winter	c1	1	122.579	0.000	4.7	0.0000	0.0000	OK
15 minute winter	tank	17	122.809	0.169	17.0	6.8087	0.0000	SURCHARGED

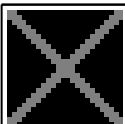
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	s1	1.001	s2	6.9	0.759	0.389	0.1869	
15 minute winter	s3	1.002	s4	7.2	0.947	0.406	0.2357	
15 minute winter	s2	1.003	s4	10.7	0.670	0.603	0.2503	
15 minute winter	s4	1.004	s5	22.2	1.260	1.249	0.1078	
15 minute winter	s5	Hydro-Brake®	c1	4.7				10.3
15 minute winter	tank	1.006	s5	-17.0	-1.327	-0.955	0.0440	
15 minute winter	tank	Infiltration		0.0				



Results for 30 year 30 minute winter. 90 minute analysis at 1 minute timestep. 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	18	123.257	0.057	5.4	0.0090	0.0000	OK
30 minute winter	s3	18	123.460	0.060	5.8	0.0095	0.0000	OK
30 minute winter	s2	18	123.084	0.075	8.9	0.0119	0.0000	OK
30 minute winter	s4	18	123.001	0.158	18.2	0.0251	0.0000	SURCHARGED
30 minute winter	s5	27	122.835	0.220	18.0	0.2493	0.0000	SURCHARGED
30 minute winter	c1	1	122.579	0.000	4.8	0.0000	0.0000	OK
30 minute winter	tank	27	122.836	0.196	13.1	7.8960	0.0000	SURCHARGED

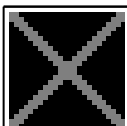
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute winter	s1	1.001	s2	5.4	0.728	0.304	0.1420	
30 minute winter	s3	1.002	s4	5.8	0.892	0.326	0.1996	
30 minute winter	s2	1.003	s4	8.9	0.655	0.501	0.2190	
30 minute winter	s4	1.004	s5	18.0	1.064	1.013	0.1043	
30 minute winter	s5	Hydro-Brake®	c1	4.8				13.8
30 minute winter	tank	1.006	s5	-13.1	-0.983	-0.739	0.0440	
30 minute winter	tank	Infiltration		0.0				



Results for 30 year 60 minute winter. 120 minute analysis at 1 minute timestep. 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	33	123.246	0.046	3.6	0.0073	0.0000	OK
60 minute winter	s3	33	123.449	0.049	4.0	0.0078	0.0000	OK
60 minute winter	s2	33	123.069	0.060	6.0	0.0095	0.0000	OK
60 minute winter	s4	33	122.946	0.103	12.4	0.0163	0.0000	OK
60 minute winter	s5	45	122.832	0.217	12.4	0.2453	0.0000	SURCHARGED
60 minute winter	c1	1	122.579	0.000	4.8	0.0000	0.0000	OK
60 minute winter	tank	45	122.832	0.192	7.7	7.7559	0.0000	SURCHARGED

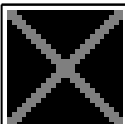
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	s1	1.001	s2	3.6	0.655	0.203	0.1060	
60 minute winter	s3	1.002	s4	4.0	0.807	0.225	0.1523	
60 minute winter	s2	1.003	s4	6.0	0.617	0.338	0.1612	
60 minute winter	s4	1.004	s5	12.4	1.024	0.697	0.0761	
60 minute winter	s5	Hydro-Brake®	c1	4.8				17.7
60 minute winter	tank	1.006	s5	-7.7	-0.614	-0.435	0.0440	
60 minute winter	tank	Infiltration		0.0				



Results for 30 year 120 minute winter. 180 minute analysis at 2 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	s1	64	123.236	0.036	2.3	0.0058	0.0000	OK
120 minute winter	s3	64	123.438	0.038	2.5	0.0061	0.0000	OK
120 minute winter	s2	64	123.056	0.047	3.8	0.0075	0.0000	OK
120 minute winter	s4	64	122.919	0.076	7.8	0.0121	0.0000	OK
120 minute winter	s5	80	122.793	0.178	7.8	0.2008	0.0000	SURCHARGED
120 minute winter	c1	2	122.579	0.000	4.7	0.0000	0.0000	OK
120 minute winter	tank	80	122.793	0.153	3.3	6.1605	0.0000	SURCHARGED

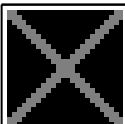
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute winter	s1	1.001	s2	2.3	0.576	0.130	0.0765	
120 minute winter	s3	1.002	s4	2.5	0.709	0.141	0.1086	
120 minute winter	s2	1.003	s4	3.8	0.560	0.214	0.1133	
120 minute winter	s4	1.004	s5	7.8	0.923	0.439	0.0532	
120 minute winter	s5	Hydro-Brake®	c1	4.7				22.1
120 minute winter	tank	1.006	s5	-3.3	0.336	-0.188	0.0440	
120 minute winter	tank	Infiltration		0.0				



Results for 30 year 180 minute winter. 240 minute analysis at 4 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	s1	96	123.231	0.031	1.7	0.0050	0.0000	OK
180 minute winter	s3	96	123.433	0.033	1.9	0.0053	0.0000	OK
180 minute winter	s2	96	123.049	0.040	2.8	0.0064	0.0000	OK
180 minute winter	s4	96	122.907	0.064	5.8	0.0101	0.0000	OK
180 minute winter	s5	112	122.758	0.143	5.8	0.1619	0.0000	OK
180 minute winter	c1	4	122.579	0.000	4.4	0.0000	0.0000	OK
180 minute winter	tank	112	122.758	0.118	1.8	4.7722	0.0000	OK

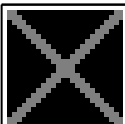
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
180 minute winter	s1	1.001	s2	1.7	0.529	0.096	0.0616	
180 minute winter	s3	1.002	s4	1.9	0.656	0.107	0.0893	
180 minute winter	s2	1.003	s4	2.8	0.518	0.158	0.0904	
180 minute winter	s4	1.004	s5	5.8	0.859	0.327	0.0426	
180 minute winter	s5	Hydro-Brake®	c1	4.4				24.6
180 minute winter	tank	1.006	s5	-1.8	-0.228	-0.103	0.0403	
180 minute winter	tank	Infiltration		0.0				



Results for 30 year 240 minute winter. 300 minute analysis at 4 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	s1	124	123.229	0.028	1.4	0.0045	0.0000	OK
240 minute winter	s3	128	123.430	0.030	1.5	0.0047	0.0000	OK
240 minute winter	s2	128	123.045	0.036	2.3	0.0058	0.0000	OK
240 minute winter	s4	128	122.899	0.056	4.7	0.0090	0.0000	OK
240 minute winter	s5	140	122.735	0.120	4.7	0.1357	0.0000	OK
240 minute winter	c1	4	122.579	0.000	4.1	0.0000	0.0000	OK
240 minute winter	tank	140	122.735	0.095	1.1	3.8369	0.0000	OK

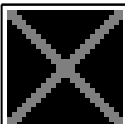
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
240 minute winter	s1	1.001	s2	1.4	0.501	0.079	0.0536	
240 minute winter	s3	1.002	s4	1.5	0.612	0.084	0.0754	
240 minute winter	s2	1.003	s4	2.3	0.497	0.130	0.0776	
240 minute winter	s4	1.004	s5	4.7	0.814	0.265	0.0364	
240 minute winter	s5	Hydro-Brake®	c1	4.1				27.0
240 minute winter	tank	1.006	s5	-1.1	0.183	-0.064	0.0336	
240 minute winter	tank	Infiltration		0.0				



Results for 30 year 360 minute winter. 424 minute analysis at 8 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	s1	184	123.224	0.024	1.0	0.0038	0.0000	OK
360 minute winter	s3	184	123.426	0.026	1.1	0.0041	0.0000	OK
360 minute winter	s2	184	123.040	0.031	1.7	0.0050	0.0000	OK
360 minute winter	s4	184	122.891	0.048	3.5	0.0076	0.0000	OK
360 minute winter	s5	200	122.710	0.095	3.5	0.1078	0.0000	OK
360 minute winter	c1	8	122.579	0.000	3.3	0.0000	0.0000	OK
360 minute winter	tank	200	122.710	0.070	0.7	2.8393	0.0000	OK

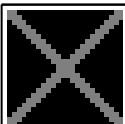
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute winter	s1	1.001	s2	1.0	0.448	0.056	0.0429	
360 minute winter	s3	1.002	s4	1.1	0.559	0.062	0.0606	
360 minute winter	s2	1.003	s4	1.7	0.458	0.096	0.0622	
360 minute winter	s4	1.004	s5	3.5	0.754	0.197	0.0293	
360 minute winter	s5	Hydro-Brake®	c1	3.3				29.4
360 minute winter	tank	1.006	s5	-0.7	0.176	-0.037	0.0249	
360 minute winter	tank	Infiltration		0.0				



Results for 30 year 480 minute winter. 544 minute analysis at 8 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	s1	232	123.222	0.022	0.8	0.0034	0.0000	OK
480 minute winter	s3	248	123.423	0.023	0.9	0.0037	0.0000	OK
480 minute winter	s2	232	123.037	0.027	1.3	0.0044	0.0000	OK
480 minute winter	s4	248	122.885	0.042	2.7	0.0066	0.0000	OK
480 minute winter	s5	264	122.695	0.080	2.7	0.0906	0.0000	OK
480 minute winter	c1	8	122.579	0.000	2.6	0.0000	0.0000	OK
480 minute winter	tank	264	122.695	0.055	0.4	2.2259	0.0000	OK

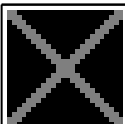
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute winter	s1	1.001	s2	0.8	0.427	0.045	0.0360	
480 minute winter	s3	1.002	s4	0.9	0.528	0.051	0.0526	
480 minute winter	s2	1.003	s4	1.3	0.431	0.073	0.0513	
480 minute winter	s4	1.004	s5	2.7	0.704	0.152	0.0242	
480 minute winter	s5	Hydro-Brake®	c1	2.6				31.6
480 minute winter	tank	1.006	s5	-0.4	0.147	-0.023	0.0193	
480 minute winter	tank	Infiltration		0.0				



Results for 30 year 600 minute winter. 660 minute analysis at 15 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	s1	300	123.220	0.020	0.7	0.0032	0.0000	OK
600 minute winter	s3	315	123.422	0.022	0.8	0.0035	0.0000	OK
600 minute winter	s2	315	123.035	0.026	1.2	0.0042	0.0000	OK
600 minute winter	s4	315	122.883	0.040	2.5	0.0064	0.0000	OK
600 minute winter	s5	315	122.690	0.075	2.5	0.0848	0.0000	OK
600 minute winter	c1	15	122.579	0.000	2.4	0.0000	0.0000	OK
600 minute winter	tank	315	122.690	0.050	0.3	2.0176	0.0000	OK

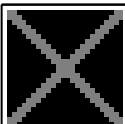
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute winter	s1	1.001	s2	0.7	0.415	0.039	0.0335	
600 minute winter	s3	1.002	s4	0.8	0.509	0.045	0.0484	
600 minute winter	s2	1.003	s4	1.2	0.416	0.068	0.0485	
600 minute winter	s4	1.004	s5	2.5	0.689	0.141	0.0229	
600 minute winter	s5	Hydro-Brake®	c1	2.4				34.4
600 minute winter	tank	1.006	s5	-0.3	0.109	-0.016	0.0174	
600 minute winter	tank	Infiltration		0.0				



Results for 30 year 720 minute winter. 780 minute analysis at 15 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	s1	360	123.219	0.019	0.6	0.0030	0.0000	OK
720 minute winter	s3	375	123.421	0.020	0.7	0.0033	0.0000	OK
720 minute winter	s2	360	123.033	0.024	1.0	0.0038	0.0000	OK
720 minute winter	s4	375	122.880	0.036	2.1	0.0058	0.0000	OK
720 minute winter	s5	375	122.683	0.068	2.1	0.0765	0.0000	OK
720 minute winter	c1	15	122.579	0.000	2.1	0.0000	0.0000	OK
720 minute winter	tank	375	122.683	0.043	0.2	1.7229	0.0000	OK

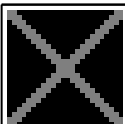
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	s1	1.001	s2	0.6	0.387	0.034	0.0297	
720 minute winter	s3	1.002	s4	0.7	0.489	0.039	0.0441	
720 minute winter	s2	1.003	s4	1.0	0.402	0.056	0.0426	
720 minute winter	s4	1.004	s5	2.1	0.657	0.118	0.0201	
720 minute winter	s5	Hydro-Brake®	c1	2.1				35.9
720 minute winter	tank	1.006	s5	0.3	0.125	0.017	0.0148	
720 minute winter	tank	Infiltration		0.0				



Results for 30 year 960 minute winter. 1020 minute analysis at 15 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	s1	465	123.217	0.017	0.5	0.0028	0.0000	OK
960 minute winter	s3	450	123.417	0.017	0.5	0.0028	0.0000	OK
960 minute winter	s2	465	123.031	0.022	0.8	0.0034	0.0000	OK
960 minute winter	s4	465	122.875	0.032	1.6	0.0050	0.0000	OK
960 minute winter	s5	525	122.673	0.058	1.6	0.0656	0.0000	OK
960 minute winter	c1	15	122.579	0.000	1.6	0.0000	0.0000	OK
960 minute winter	tank	525	122.673	0.033	0.2	1.3324	0.0000	OK

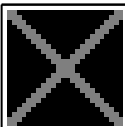
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute winter	s1	1.001	s2	0.5	0.373	0.028	0.0257	
960 minute winter	s3	1.002	s4	0.5	0.442	0.028	0.0349	
960 minute winter	s2	1.003	s4	0.8	0.379	0.045	0.0354	
960 minute winter	s4	1.004	s5	1.6	0.610	0.090	0.0165	
960 minute winter	s5	Hydro-Brake®	c1	1.6				39.5
960 minute winter	tank	1.006	s5	0.2	0.102	0.013	0.0114	
960 minute winter	tank	Infiltration		0.0				



Results for 30 year 1440 minute winter. 1500 minute analysis at 30 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	s1	750	123.216	0.016	0.4	0.0025	0.0000	OK
1440 minute winter	s3	690	123.416	0.016	0.4	0.0025	0.0000	OK
1440 minute winter	s2	750	123.028	0.019	0.6	0.0030	0.0000	OK
1440 minute winter	s4	750	122.870	0.027	1.2	0.0043	0.0000	OK
1440 minute winter	s5	750	122.664	0.049	1.2	0.0553	0.0000	OK
1440 minute winter	c1	30	122.579	0.000	1.2	0.0000	0.0000	OK
1440 minute winter	tank	750	122.664	0.024	0.1	0.9641	0.0000	OK

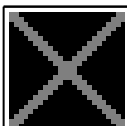
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	s1	1.001	s2	0.4	0.358	0.023	0.0214	
1440 minute winter	s3	1.002	s4	0.4	0.413	0.023	0.0298	
1440 minute winter	s2	1.003	s4	0.6	0.350	0.034	0.0288	
1440 minute winter	s4	1.004	s5	1.2	0.562	0.068	0.0134	
1440 minute winter	s5	Hydro-Brake®	c1	1.2				41.3
1440 minute winter	tank	1.006	s5	0.2	0.078	0.009	0.0085	
1440 minute winter	tank	Infiltration		0.0				



Results for 100 year +45% CC 15 minute winter. 75 minute analysis at 1 minute timestep. 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	12	123.662	0.462	12.9	0.0734	0.0000	SURCHARGED
15 minute winter	s3	11	123.502	0.102	14.0	0.0163	0.0000	OK
15 minute winter	s2	12	123.578	0.569	19.0	0.0905	0.0000	SURCHARGED
15 minute winter	s4	12	123.375	0.532	38.7	0.0846	0.0000	SURCHARGED
15 minute winter	s5	15	123.013	0.398	37.3	0.4499	0.0000	SURCHARGED
15 minute winter	c1	1	122.579	0.000	5.0	0.0000	0.0000	OK
15 minute winter	tank	18	123.008	0.368	31.5	14.8644	0.0000	SURCHARGED

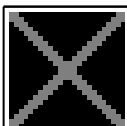
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	s1	1.001	s2	11.1	0.780	0.624	0.3363	
15 minute winter	s3	1.002	s4	13.8	0.999	0.779	0.4683	
15 minute winter	s2	1.003	s4	18.0	1.021	1.013	0.2922	
15 minute winter	s4	1.004	s5	37.3	2.116	2.098	0.1109	
15 minute winter	s5	Hydro-Brake®	c1	5.0				18.7
15 minute winter	tank	1.006	s5	-31.5	-1.790	-1.774	0.0440	
15 minute winter	tank	Infiltration		0.0				



Results for 100 year +45% CC 30 minute winter. 90 minute analysis at 1 minute timestep. Mass balance: 99.76%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute winter	s1	20	123.470	0.270	10.2	0.0429	0.0000	SURCHARGED
30 minute winter	s3	17	123.487	0.087	11.0	0.0139	0.0000	OK
30 minute winter	s2	20	123.412	0.403	16.0	0.0641	0.0000	SURCHARGED
30 minute winter	s4	31	123.405	0.562	32.9	0.0893	0.0000	SURCHARGED
30 minute winter	s5	31	123.399	0.784	30.9	0.8872	0.0000	SURCHARGED
30 minute winter	c1	1	122.579	0.000	5.0	0.0000	0.0000	OK
30 minute winter	tank	31	123.400	0.759	25.2	16.1702	0.0000	SURCHARGED

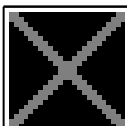
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute winter	s1	1.001	s2	9.4	0.767	0.529	0.3363	
30 minute winter	s3	1.002	s4	11.0	1.016	0.622	0.4246	
30 minute winter	s2	1.003	s4	15.2	0.864	0.857	0.2922	
30 minute winter	s4	1.004	s5	30.9	1.755	1.741	0.1109	
30 minute winter	s5	Hydro-Brake®	c1	5.0				23.3
30 minute winter	tank	1.006	s5	-25.2	-1.434	-1.421	0.0440	
30 minute winter	tank	Infiltration		0.0				



Results for 100 year +45% CC 60 minute winter. 120 minute analysis at 1 minute timestep. Mass balance: 99.78%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	s1	51	123.616	0.416	6.9	0.0662	0.0000	SURCHARGED
60 minute winter	s3	51	123.614	0.213	7.5	0.0339	0.0000	SURCHARGED
60 minute winter	s2	51	123.615	0.606	11.4	0.0963	0.0000	SURCHARGED
60 minute winter	s4	51	123.611	0.768	22.7	0.1222	0.0000	SURCHARGED
60 minute winter	s5	51	123.605	0.990	22.4	1.1194	0.0000	FLOOD RISK
60 minute winter	c1	1	122.579	0.000	5.0	0.0000	0.0000	OK
60 minute winter	tank	51	123.605	0.965	17.0	16.1702	0.0000	FLOOD RISK

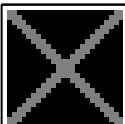
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute winter	s1	1.001	s2	6.9	0.750	0.389	0.3363	
60 minute winter	s3	1.002	s4	7.5	0.954	0.422	0.5422	
60 minute winter	s2	1.003	s4	10.7	0.654	0.604	0.2922	
60 minute winter	s4	1.004	s5	22.4	1.272	1.261	0.1109	
60 minute winter	s5	Hydro-Brake®	c1	5.0				30.0
60 minute winter	tank	1.006	s5	-17.0	-0.963	-0.955	0.0440	
60 minute winter	tank	Infiltration		0.0				



Results for 100 year +45% CC 120 minute winter. 180 minute analysis at 2 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	s1	90	123.470	0.270	4.4	0.0429	0.0000	SURCHARGED
120 minute winter	s3	92	123.467	0.067	4.7	0.0107	0.0000	OK
120 minute winter	s2	90	123.469	0.460	7.2	0.0731	0.0000	SURCHARGED
120 minute winter	s4	90	123.466	0.623	14.7	0.0990	0.0000	SURCHARGED
120 minute winter	s5	90	123.460	0.845	14.4	0.9560	0.0000	FLOOD RISK
120 minute winter	c1	2	122.579	0.000	5.0	0.0000	0.0000	OK
120 minute winter	tank	90	123.460	0.820	9.1	16.1702	0.0000	FLOOD RISK

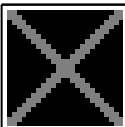
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute winter	s1	1.001	s2	4.4	0.692	0.248	0.3363	
120 minute winter	s3	1.002	s4	4.7	0.844	0.265	0.3890	
120 minute winter	s2	1.003	s4	7.2	0.637	0.406	0.2922	
120 minute winter	s4	1.004	s5	14.4	1.051	0.812	0.1109	
120 minute winter	s5	Hydro-Brake®	c1	5.0				40.9
120 minute winter	tank	1.006	s5	-9.1	-0.518	-0.514	0.0440	
120 minute winter	tank	Infiltration		0.0				



Results for 100 year +45% CC 180 minute winter. 240 minute analysis at 4 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	s1	96	123.243	0.043	3.2	0.0068	0.0000	OK
180 minute winter	s3	96	123.446	0.046	3.5	0.0073	0.0000	OK
180 minute winter	s2	96	123.065	0.056	5.3	0.0089	0.0000	OK
180 minute winter	s4	124	123.044	0.201	10.9	0.0320	0.0000	SURCHARGED
180 minute winter	s5	128	123.036	0.421	10.9	0.4763	0.0000	SURCHARGED
180 minute winter	c1	4	122.579	0.000	5.0	0.0000	0.0000	OK
180 minute winter	tank	128	123.036	0.396	5.7	15.9963	0.0000	SURCHARGED

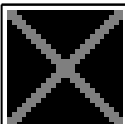
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
180 minute winter	s1	1.001	s2	3.2	0.632	0.180	0.0971	
180 minute winter	s3	1.002	s4	3.5	0.779	0.197	0.1384	
180 minute winter	s2	1.003	s4	5.3	0.600	0.299	0.1909	
180 minute winter	s4	1.004	s5	10.9	0.986	0.612	0.1109	
180 minute winter	s5	Hydro-Brake®	c1	5.0				47.3
180 minute winter	tank	1.006	s5	-5.7	0.349	-0.319	0.0440	
180 minute winter	tank	Infiltration		0.0				



Results for 100 year +45% CC 240 minute winter. 300 minute analysis at 4 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	s1	124	123.239	0.039	2.6	0.0062	0.0000	OK
240 minute winter	s3	124	123.441	0.041	2.9	0.0066	0.0000	OK
240 minute winter	s2	124	123.059	0.050	4.3	0.0080	0.0000	OK
240 minute winter	s4	156	122.972	0.129	8.9	0.0205	0.0000	OK
240 minute winter	s5	160	122.966	0.351	8.9	0.3966	0.0000	SURCHARGED
240 minute winter	c1	4	122.579	0.000	5.0	0.0000	0.0000	OK
240 minute winter	tank	160	122.966	0.326	3.9	13.1503	0.0000	SURCHARGED

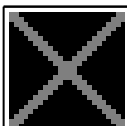
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
240 minute winter	s1	1.001	s2	2.6	0.596	0.146	0.0836	
240 minute winter	s3	1.002	s4	2.9	0.738	0.162	0.1204	
240 minute winter	s2	1.003	s4	4.3	0.576	0.242	0.1637	
240 minute winter	s4	1.004	s5	8.9	0.952	0.500	0.1062	
240 minute winter	s5	Hydro-Brake®	c1	5.0				50.9
240 minute winter	tank	1.006	s5	-3.9	0.339	-0.219	0.0440	
240 minute winter	tank	Infiltration		0.0				



Results for 100 year +45% CC 360 minute winter. 424 minute analysis at 8 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	s1	184	123.233	0.033	1.9	0.0053	0.0000	OK
360 minute winter	s3	184	123.435	0.035	2.1	0.0056	0.0000	OK
360 minute winter	s2	184	123.052	0.043	3.2	0.0068	0.0000	OK
360 minute winter	s4	184	122.912	0.069	6.6	0.0109	0.0000	OK
360 minute winter	s5	216	122.855	0.240	6.6	0.2718	0.0000	SURCHARGED
360 minute winter	c1	8	122.579	0.000	4.9	0.0000	0.0000	OK
360 minute winter	tank	216	122.855	0.215	1.8	8.6930	0.0000	SURCHARGED

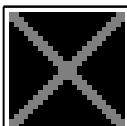
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
360 minute winter	s1	1.001	s2	1.9	0.548	0.107	0.0672	
360 minute winter	s3	1.002	s4	2.1	0.674	0.118	0.0959	
360 minute winter	s2	1.003	s4	3.2	0.536	0.180	0.0996	
360 minute winter	s4	1.004	s5	6.6	0.886	0.371	0.0489	
360 minute winter	s5	Hydro-Brake®	c1	4.9				56.2
360 minute winter	tank	1.006	s5	2.5	0.184	0.139	0.0440	
360 minute winter	tank	Infiltration		0.0				



Results for 100 year +45% CC 480 minute winter. 544 minute analysis at 8 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	s1	248	123.230	0.030	1.6	0.0048	0.0000	OK
480 minute winter	s3	248	123.432	0.032	1.7	0.0050	0.0000	OK
480 minute winter	s2	248	123.048	0.039	2.6	0.0062	0.0000	OK
480 minute winter	s4	248	122.903	0.060	5.3	0.0096	0.0000	OK
480 minute winter	s5	272	122.780	0.165	5.3	0.1870	0.0000	SURCHARGED
480 minute winter	c1	8	122.579	0.000	4.6	0.0000	0.0000	OK
480 minute winter	tank	272	122.780	0.140	0.9	5.6648	0.0000	OK

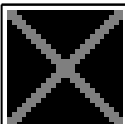
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute winter	s1	1.001	s2	1.6	0.523	0.090	0.0587	
480 minute winter	s3	1.002	s4	1.7	0.635	0.096	0.0825	
480 minute winter	s2	1.003	s4	2.6	0.513	0.146	0.0849	
480 minute winter	s4	1.004	s5	5.3	0.840	0.299	0.0398	
480 minute winter	s5	Hydro-Brake®	c1	4.6				60.8
480 minute winter	tank	1.006	s5	1.3	0.178	0.072	0.0434	
480 minute winter	tank	Infiltration		0.0				



Results for 100 year +45% CC 600 minute winter. 660 minute analysis at 15 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	s1	315	123.228	0.027	1.3	0.0044	0.0000	OK
600 minute winter	s3	315	123.429	0.029	1.4	0.0046	0.0000	OK
600 minute winter	s2	315	123.045	0.036	2.2	0.0057	0.0000	OK
600 minute winter	s4	315	122.898	0.055	4.5	0.0087	0.0000	OK
600 minute winter	s5	330	122.741	0.126	4.5	0.1422	0.0000	OK
600 minute winter	c1	15	122.579	0.000	4.2	0.0000	0.0000	OK
600 minute winter	tank	330	122.741	0.101	0.5	4.0658	0.0000	OK

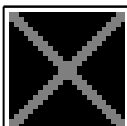
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute winter	s1	1.001	s2	1.3	0.484	0.073	0.0515	
600 minute winter	s3	1.002	s4	1.4	0.600	0.079	0.0719	
600 minute winter	s2	1.003	s4	2.2	0.491	0.124	0.0751	
600 minute winter	s4	1.004	s5	4.5	0.805	0.253	0.0352	
600 minute winter	s5	Hydro-Brake®	c1	4.2				63.6
600 minute winter	tank	1.006	s5	0.5	0.171	0.029	0.0354	
600 minute winter	tank	Infiltration		0.0				



Results for 100 year +45% CC 720 minute winter. 780 minute analysis at 15 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute winter	s1	360	123.225	0.025	1.1	0.0040	0.0000	OK
720 minute winter	s3	360	123.427	0.027	1.2	0.0042	0.0000	OK
720 minute winter	s2	360	123.041	0.032	1.8	0.0051	0.0000	OK
720 minute winter	s4	360	122.892	0.049	3.7	0.0079	0.0000	OK
720 minute winter	s5	390	122.721	0.106	3.7	0.1199	0.0000	OK
720 minute winter	c1	15	122.579	0.000	3.7	0.0000	0.0000	OK
720 minute winter	tank	390	122.721	0.081	0.4	3.2692	0.0000	OK

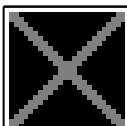
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
720 minute winter	s1	1.001	s2	1.1	0.467	0.062	0.0451	
720 minute winter	s3	1.002	s4	1.2	0.573	0.068	0.0645	
720 minute winter	s2	1.003	s4	1.8	0.465	0.101	0.0649	
720 minute winter	s4	1.004	s5	3.7	0.765	0.208	0.0305	
720 minute winter	s5	Hydro-Brake®	c1	3.7				65.0
720 minute winter	tank	1.006	s5	0.4	0.170	0.021	0.0287	
720 minute winter	tank	Infiltration		0.0				



Results for 100 year +45% CC 960 minute winter. 1020 minute analysis at 15 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	s1	465	123.223	0.023	0.9	0.0037	0.0000	OK
960 minute winter	s3	480	123.424	0.024	1.0	0.0039	0.0000	OK
960 minute winter	s2	465	123.038	0.029	1.5	0.0047	0.0000	OK
960 minute winter	s4	480	122.888	0.045	3.1	0.0071	0.0000	OK
960 minute winter	s5	510	122.705	0.090	3.1	0.1021	0.0000	OK
960 minute winter	c1	15	122.579	0.000	3.1	0.0000	0.0000	OK
960 minute winter	tank	510	122.705	0.065	0.2	2.6337	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
960 minute winter	s1	1.001	s2	0.9	0.438	0.051	0.0395	
960 minute winter	s3	1.002	s4	1.0	0.544	0.056	0.0567	
960 minute winter	s2	1.003	s4	1.5	0.449	0.084	0.0569	
960 minute winter	s4	1.004	s5	3.1	0.730	0.175	0.0267	
960 minute winter	s5	Hydro-Brake®	c1	3.1				71.4
960 minute winter	tank	1.006	s5	0.2	0.120	0.014	0.0230	
960 minute winter	tank	Infiltration		0.0				



Results for 100 year +45% CC 1440 minute winter. 1500 minute analysis at 30 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	s1	750	123.220	0.020	0.7	0.0032	0.0000	OK
1440 minute winter	s3	690	123.421	0.020	0.7	0.0033	0.0000	OK
1440 minute winter	s2	750	123.034	0.025	1.1	0.0040	0.0000	OK
1440 minute winter	s4	750	122.880	0.037	2.2	0.0059	0.0000	OK
1440 minute winter	s5	750	122.686	0.071	2.2	0.0798	0.0000	OK
1440 minute winter	c1	30	122.579	0.000	2.2	0.0000	0.0000	OK
1440 minute winter	tank	750	122.686	0.046	0.2	1.8398	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	s1	1.001	s2	0.7	0.416	0.039	0.0323	
1440 minute winter	s3	1.002	s4	0.7	0.489	0.039	0.0441	
1440 minute winter	s2	1.003	s4	1.1	0.413	0.062	0.0446	
1440 minute winter	s4	1.004	s5	2.2	0.666	0.124	0.0208	
1440 minute winter	s5	Hydro-Brake®	c1	2.2				77.3
1440 minute winter	tank	1.006	s5	-0.2	0.079	-0.010	0.0158	
1440 minute winter	tank	Infiltration		0.0				