



Appendix D Planning Stage Drainage Design



Legend:

- HB1 Manhole with Hydro Brake limiting discharge to 1.0lts/sec
- Existing Southern Water manhole with backdrop connection- Subject to S106 Agreement
- Domestic surface water gravity sewer
- Domestic foul water gravity sewer
- Domestic combined gravity sewer
- Type 3 manhole - 450Ø
- Type 4 inspection chamber - 280Ø
- ST Silt trap inspection chamber - 450Ø
- Surface water attenuation storage for 1 in 100yr storm + 45%CC +10% UC
- Proposed Finished Floor Level
- Garden levels
- Flood Flow Route

Foul Water Drainage Strategy:

- The nearest public sewer to achieve a gravity connection is situated 40 metres south of the site in third party land at manhole Ref9102 for which the land owner has given consent to lay a connection through to connect into this manhole.
- Southern Water have confirmed that there is capacity at manhole Ref9202 to cater for the foul water flow from the proposed development of 0.05lts/sec.
- Manhole Ref9102 is downstream of manhole Ref9202 and will allow a gravity connection from the site rather than a pumped discharge if the connection was made at manhole Ref9202 situated north of the site in Oak Tree Lane.
- Connection to manhole Ref9102 will be subject to a S106 agreement with Southern Water

Surface Water Drainage Strategy:

- In order to provide an acceptable surface water drainage strategy for the proposed development the SuDS hierarchy for sustainable drainage has been followed. Winter monitoring has shown that the recorded groundwater levels preclude the use of domestic soakaways as the means of surface water disposal with the highest recorded level being 0.09m below ground level so it will only be possible to utilise a shallow infiltration system for the permeable block paved drives and access. The nearest watercourse is 0.25km east of the site and any access to it will be over third party land to which the developer has no rights. The new Water UK 'Design & Construction Guidance for Foul and Surface Water Sewers' precludes the requisitioning of a surface water outfall to a watercourse so this solution is not achievable. Southern Water asset plans show that there is a public sewer south of the site in third party land for which the land owner has given consent to lay a connection through to connect into manhole Ref9102. Southern Water confirmed in July 2021 that there is adequate capacity in this sewer network to discharge a surface water flow of 1.0lts/sec. Although Southern Water stated that the results were only valid for a 12 months period there has been no material change to the network that would preclude their acceptance of such a small discharge. It should be noted that in line with SuDS it is proposed to install water butts for each property which will help further reduce the flow into the network. Connection will be into manhole Ref9102, which is downstream of manhole Ref9202, this will be subject to a S106 Agreement with Southern Water.
- Utilising the allowable discharge of 1.0 lts/sec and catering for the 1 in 100 year storm event with an additional 45% allowance for climate change and incorporating a further 10% allowance on the impermeable area for 'urban creep' the volume of attenuation required calculated by the MicroDrainage suite is 22.1m³.
- It is proposed that this volume will be stored in a cellular 'Aquacell' tank at the southern end of the site prior to discharging through a 'Hydro Brake' vortex flow control into the sewer network.
- All surface water drainage features and pollution control measures will be maintained by the site specific management company set up for any site maintenance requirements and which will be funded by an annual payment from residents.
- Prior to discharging into manhole Ref9102 the surface water and foul discharge from the site will be combined into a single outlet which will be subject to a S106 connection Agreement with Southern Water.

D	28.11.24	Drainage layout amended	KN
C	15.10.24	Drainage layout amended & rainwater butts added	KN
B	06.09.24	Issue size amended	KN
A	02.09.24	Initial issue	KN
Rev.	Date	Details	Initials

Drawing Status

PRELIMINARY FOR PLANNING

Project

RYEFIELD FARMHOUSE, WOODGATE BARNHAM

Client



KAZYS NARBUTAS CONSULTING
Civil Engineering Consultant
Unit 24b, Romsey Industrial Estate, Greatbridge Road, Romsey, Hants. SO51 0HE
Telephone: 01794 223146 Email: kazys.n@knc.email

Drawing Title

Engineering Details
Drainage Strategy

Drawn	Checked	Scales	Paper Size	Date
KN		1:500	A2	09.24
Job No.	Drawing No.	Revision		
KNC2107	602-02	D		



EXTRACT FROM PYE HOMES DRAINAGE PROPOSALS

- In order to provide an acceptable surface water drainage strategy for the proposed development the SUDS hierarchy for sustainable drainage has been followed, with the following has been allowed for:

 - 1. The use of soakaways as the means of surface water disposal with the highest recorded level required is 0.9m below ground level.
 - 2. The nearest watercourse is 0.228km east of the site and any access to it will be on a clearly land to which the developer has no rights. The new Water U/L Design & Construction Guidance for Foul and Surface Water Sewers' precludes the requiring of a surface water outfall to a watercourse so this solution is not an option.
 - 3. Southern Water asset plans show that there are no public surface water sewers in the vicinity that would provide a discharge solution.
 - 4. Southern Water asset plans show that there are no public surface water drains in the vicinity that would provide a discharge solution.

It is proposed that the following measures will be implemented:

 - 1. All surface water from the site will be collected by a drainage network from the site of 2.0 litres/sec can drain into the drainage network serving their adjacent development.
 - 2. Utilising the allowable discharge of 2.0 litres/sec and catering for the 1 in 100 year storm event with an additional 40% allowance for climate change and incorporating a further 10% allowance on the impermeable area for 'urban crease' the volume of attenuation required calculated by the MicroDrainage site is 61.5m³.
 - 3. It is proposed that this volume will be stored in a cellular 'Aquifer' bank at the southern end of the site prior to discharging into a 'Hydro Brak' vortex flow control tank into the Dye-Homes network.
 - 4. All surface water drainage features and pollution control measures will be maintained in accordance with the requirements of the drainage system and any site maintenance requirements and which will be funded by an annual payment from residents.

1. The nearest public foul sewer is situated 55 metres west of the site in Oak Tree Lane. Due to the level differences between the site and the nearest manhole Ref 9202 it is not possible to provide a gravity discharge from the site to the public sewer.
2. Agreement has been reached with Pye Homes that the foul water discharge from the development can discharge into the foul sewer system serving their adjacent development.

	Manhole with Hydro Brake limiting discharge
	Domestic surface water gravity sewer
	Domestic foul water gravity sewer
	Type 3 manhole - 450Ø
	Type 4 inspection chamber - 280Ø
	Silt trap inspection chamber - 450Ø
	Surface water attenuation storage
FFL: 11.60	Proposed Finished Floor Level
	Garden levels
	Flood Flow Route

E	22.03.22	Layout revised	KI
D	23.11.21	Drainage levels added	KI
C	10.11.21	Parking amended	KI
B	08.11.21	Foul & surface water drainage systems amended to gravity discharges	KI
A	12.05.21	Initial issue	KI
Rev.	Date	Details	Initial

Drawing Status
PRELIMINARY FOR PLANNING

Project
RYEFIELD FARMHOUSE
WOODGATE



Drawing Title

Engineering Details

Drainage Strategy

Drawn KN	Checked	Scales 1:500	Paper Size A1	Date 05.21
Job No. KNC2107		Drawing No. 602-01		Revision E

SAFETY, HEALTH & ENVIRONMENTAL
INFORMATION
CDM Regulations 2015

In addition to the hazards/risks normally associated with the type of work detailed in this drawing note should be made of the following:

- Working in vicinity of live highway
- Services to be located prior to any excavation work being undertaken
- Working on live foul sewers
- Deep excavations

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement. Contractor is not relieved of any of his obligations under all applicable health and safety regulations.



Appendix E

Southern Water S106 Approval



Mrs Mandy Lake
Unit 24b
Romsey Industrial Estate
Greatbridge Road
Romsey
Hampshire
SO51 0HR

Your ref
17050

Our ref
DSA000037049

Date
09 January 2025

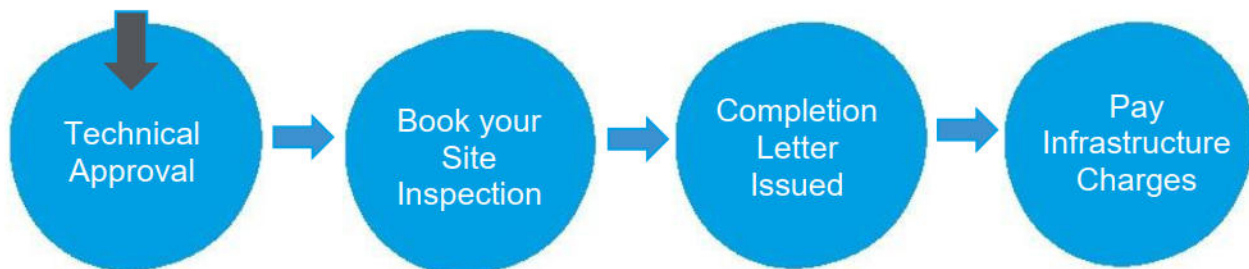


Dear Mrs Lake,

Application to Connect to the Public Sewerage System - Section 106.

Location: Ryefields Farmhouse, Oak Tree Lane, Woodgate, Aldingbourne, West Sussex, PO20 3GU.

You are here



What happens next?

1. This is your technical approval.
2. Construction of the wastewater connection begins. Once completed, ensure you book a site inspection, so we know the connection is in line with your application.
3. Once the site inspection has confirmed the work is satisfactory, a completion letter will be issued. See the Essential Sewer Connection Information document to find out why this letter is important.
4. Your infrastructure charge invoice will be issued (if applicable*).

How to book your site inspection

To progress, select the '**Accept**' option on the Get Connected customer dashboard. Or, if you have further questions, please select the 'Query' option. If you do not wish to progress with the application, then please select the 'Withdraw' option.

Now you have received our approval, you will need to arrange with your contractor to carry out your works on site to connect into our sewer. Once the connection has been made it is a mandatory requirement for the point of connection to be inspected by one of our Assistant Adoption Managers.

To arrange this inspection, please select '**Ready for Inspection**' on your Get Connected customer dashboard. Once this has been selected, please contact **Mick Vince** our Assistant Adoption Manager for this area on [REDACTED] and request an inspection giving at least two full working days' notice.

Once we are happy that your connection to the public sewer complies with our requirements and have passed our inspection, we will send you a completion letter within 7 working days. It's important to ensure your connection is inspected to prevent any risk of disconnection at a later date.

Technical Approval

We are pleased to advise that your Section 106 application to connect to the public **foul** sewer, as shown on your drawing **602-02**, Revision **D**, dated **28/11/24**, is approved by Southern Water for **both the site's foul and surface water discharges**. Our approval means we are satisfied with your connection method. Inspection of the wastewater connection is required to complete your Section 106 application.

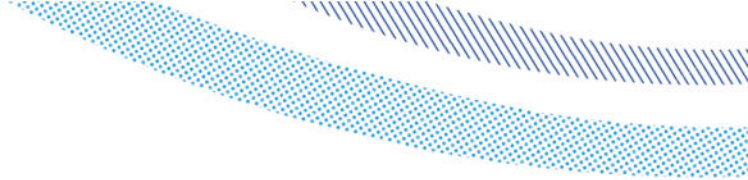
Please note, that the peak flow rate for the site's surface water discharge must not exceed the agreed flow rate of 1.0L/S.

Connections to existing/new Southern Water assets (i.e., manholes) and the arrangement of Southern Water assets (i.e., pipe junctions within manholes) should always be in accordance with the new Design and Construction Guidance manual ("the Code") and Southern Water's guidance documentation. [water.org.uk/sewerage-sector-guidance-approved-documents/](https://www.water.org.uk/sewerage-sector-guidance-approved-documents/)

This Section 106 approval does not confirm that public sewer network capacity is available at your location for the proposed development. The availability of capacity may be assessed through the Pre-Planning Enquiry process.

Please note that your connection should not proceed if:

- There are unapproved changes to your submitted plan or to the intended connection point. Any unapproved changes may lead to us disconnecting your connection under Section 109 of the Water Industry Act 1991.
- The relevant Planning Authority has set out conditions relating to the site's drainage and those conditions have not yet been discharged.
- You have not consulted our Health and Safety Advisory that can be viewed at the following link southernwater.co.uk/developing-building/health-and-safety

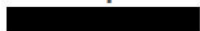
- 
- You have not obtained the necessary Building Regulations Approvals or, if relevant, obtained a Highway Authority Road Opening License.
 - Landowner consent has not been obtained where your connection is to be made through another Party's land.

Please contact the Developer Services Team via the Get Connected customer dashboard / on [REDACTED] should you require any further advice.

Yours sincerely,



Dale Hughes
Technical Coordinator - Wastewater
Developer Services





Essential Sewer Connection Information

1. Site Inspection Checklist
2. What happens if the sewer connection is not inspected?
3. Adoption of a sewer
4. Infrastructure charges
5. Enforcement Policy

1. Site Inspection Checklist

We have prepared a site inspection checklist so that inspection of your sewer connection can be passed first time southernwater.co.uk/media/3028/ds-site-inspection-checklist.pdf

2. What happens if the sewer connection is not inspected and a completion letter is not issued?

Incidences where construction of the sewer connection has been completed but a site inspection has not been requested then the sewer connection application is not completed. You will need to request for a site inspection to finalise the application. If the sewer connection has not been built as per the designs submitted then we will ask you to rectify.

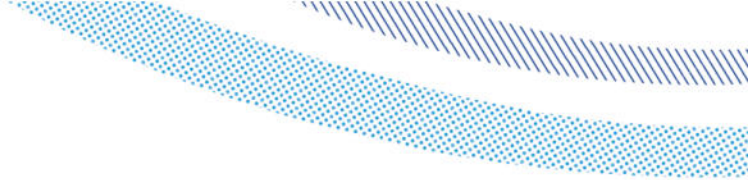
3. Adoption of a sewer

When a new development is planned, the developer can construct the sewers using approved materials and to a standard, which makes them suitable for adoption by Southern Water when construction is complete.

An adoption agreement can be entered into under Section 104 of the Water Industry Act 1991, prior to the sewers being built. This is the most desirable arrangement and if all new developments were covered by such adoption agreements, there would be few, if any, new private sewers on housing estates. However, there are many kilometres of existing private sewers that were built without an adoption agreement in place.

Section 102 of the Water Industry Act 1991 provides for the adoption of such sewers to be considered. It is important to draw a distinction between sewers, drains, and lateral drains:

- Sewers are pipes carrying sewage from more than one property
- Drains are pipes carrying sewage from only one property to the curtilage of the building or premises
- Lateral drains are those pipes which extend from the curtilage of a single building to the point of connection with an existing public or private sewer



To start the process of having the private sewer adopted, please visit our website and fill in the S102 Adoption Form.

4. Infrastructure charges

New developments increase the load on our networks and may require investment in upstream network reinforcement. This investment is funded through the Infrastructure Charge where the cost of network reinforcement is levied per property at the time of final connection.

* In addition to the sewer connection application charge, a charge for sewerage infrastructure is levied on each dwelling connecting onto the sewerage system. Non domestic properties will be individually assessed according to the number of appliances/fittings producing wastewater. Infrastructure charges are applicable even if the connection is made via a private sewer providing that the private sewer ultimately discharges into the public system.

There are three scenarios:

1. Water and wastewater connections are made within Southern Waters supply area. Infrastructure charges will be included in you water connection quote.
2. Water connections are made within another water company's supply zone and Wastewater is within the Southern Water supply area. Infrastructure charges will be invoiced following connection of the meters as advised by each water company.
3. You already have a water connection and require a wastewater connection in the Southern Water supply area. Infrastructure charges will be invoiced directly following completion of the wastewater connection.

For information and our current Connection Charges please refer to section 2 of the Southern Water Charging Arrangements [Connection charging arrangements \(southernwater.co.uk\)](https://www.southernwater.co.uk/connection-charging-arrangements)

5. Enforcement Policy

It is an offence to not comply with the requirements of a S106 Water Industry Act 1991, which are detailed in the body of the letter. This can result in prosecution and a fine and/or removal of the illegal connection.



Appendix F

Evidence of Deed of Easement

From: [Edward Rees](#)
To: [Edward Rees](#)
Subject: Ryefields.
Date: 03 October 2024 12:18:01
Attachments: [image038778.png](#)
[image429206.png](#)
[image244617.png](#)
[image969620.png](#)
[image045315.png](#)

Your reference: DSA000037049

To whom it may concern,

We write in relation to an application to connect to the public sewerage system – Section 106. This application concerns land at Ryefields Farmhouse, Oak Tree Lane, Woodgate, Aldingbourne, West Sussex, PO20 3GU (Dominant Land) and relates to a connection into a public sewer that adjoins a neighbouring parcel of land to the south known as Woodgate Centre, Oak Tree Lane, Woodgate, Chichester PO20 3GU (Servient Land). Please take this email as confirmation that the Dominant Land benefits from a legal agreement with the owner of the Servient Land which will provide the Dominant Land with legal easements so that surface and foul water can be drained from the Dominant Land over the adjoining Servient Land.

Yours faithfully
Moore Barlow LLP

Ben Loosemore
Partner



For and on behalf of Moore Barlow LLP
Gateway House, Tollgate, Chandler's Ford, Eastleigh SO53 3TG



Private wealth | Family | Employment | Property | Corporate | Commercial | Schools | Charities | Disputes | Serious injury

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Appendix G Hydraulic Modelling Calculations

Network Details

Manhole Schedule

Manhole	Catchment Area (ha)	Size (mm)	Type	CL (m)	IL (m)	Depth To Soffit (m)	Easting (m)	Northing (m)
RWHT6	0.005	180	Type E	9.900	9.400	0.400	494023.640	104243.212
PS14	0.000	250	250 Inspection	9.904	9.350	0.454	494024.695	104243.230
RWHT7	0.003	180	Type E	9.900	9.400	0.400	494022.744	104250.221
D2	0.004	710x710	Type E	9.920	9.350	0.470	494025.958	104249.717
PS8	0.000	450	450 Inspection	9.915	9.210	0.555	494024.713	104251.599
RWHT5	0.003	180	Type E	9.800	9.300	0.400	494011.110	104250.300
PS7	0.000	450	450 Inspection	9.812	9.115	0.547	494011.106	104251.654
RWHT4	0.005	180	Type E	9.800	9.300	0.400	494009.593	104243.194
PS16	0.000	450	450 Inspection	9.815	9.250	0.465	494008.452	104243.540
D3	0.008	710x710	Type E	9.817	9.250	0.467	494006.018	104249.173
PS6	0.000	450	450 Inspection	9.788	9.095	0.543	494008.451	104251.187
D4	0.026	710x710	Type E	9.676	9.080	0.446	494008.658	104257.378
PS5	0.000	450	450 Inspection	9.805	9.035	0.620	494002.101	104257.339
PS11	0.004	180	Type E	9.890	9.340	0.450	493994.670	104243.224
RWHT3	0.005	180	Type E	9.900	9.400	0.400	493994.991	104254.934
PS10	0.000	450	450 Inspection	9.949	9.050	0.799	493994.597	104255.470
PS12	0.003	180	Type E	9.890	9.340	0.450	493994.055	104243.400
RWHT2	0.002	180	Type E	9.900	9.400	0.400	493993.617	104254.956
PS4	0.000	450	450 Inspection	10.018	8.980	0.888	493993.973	104257.318
D1	0.007	710x710	Type E	9.798	9.300	0.398	493985.867	104267.131
PS9	0.000	450	450 Inspection	9.816	9.100	0.616	493983.854	104266.299
RWHT1	0.005	180	Type E	9.895	9.395	0.400	493984.359	104251.654
PS13	0.000	180	Type E	9.890	9.340	0.450	493983.803	104251.768
PS3	0.000	600	Type E	9.804	8.910	0.744	493983.756	104257.293
PS2	0.000	450	450 Inspection	9.732	8.835	0.747	493972.584	104257.264
PS1	0.000	1200	Type B	9.400	8.460	0.790	493968.944	104201.402
PS0_out	0.000	180	Type E	9.270	8.404	0.716	493968.802	104192.979

Pipe Schedule

Pipe Number	US Manhole	US IL (m)	DS Manhole	DS IL (m)	Shape	Dimension (mm)	Length (m)	Gradient (1:x)	Roughness (mm)	US Depth To Soffit (m)	DS Depth To Soffit (m)
1.000	RWHT6	9.400	PS14	9.350	Circ	100	1.055	21	0.600	0.400	0.454
1.001	PS14	9.350	PS8	9.260	Circ	100	8.369	93	0.600	0.454	0.555
2.000	RWHT7	9.400	PS8	9.260	Circ	100	2.403	17	0.600	0.400	0.555
3.000	D2	9.350	PS8	9.260	Circ	100	2.257	25	0.600	0.470	0.555
1.002	PS8	9.210	PS7	9.115	Circ	150	13.606	143	0.600	0.555	0.547
4.000	RWHT5	9.300	PS7	9.165	Circ	100	1.354	10	0.600	0.400	0.547
1.003	PS7	9.115	PS6	9.095	Circ	150	2.696	135	0.600	0.547	0.543
5.000	RWHT4	9.300	PS16	9.250	Circ	100	1.192	24	0.600	0.400	0.465
5.001	PS16	9.250	PS6	9.145	Circ	100	7.647	73	0.600	0.465	0.543
6.000	D3	9.250	PS6	9.145	Circ	100	3.158	30	0.600	0.467	0.543
1.004	PS6	9.095	PS5	9.035	Circ	150	8.842	147	0.600	0.543	0.620
7.000	D4	9.080	PS5	9.035	Circ	150	6.557	146	0.600	0.446	0.620
1.005	PS5	9.035	PS4	8.980	Circ	150	8.128	148	0.600	0.620	0.888
8.000	PS11	9.340	PS10	9.050	Circ	100	12.246	42	0.600	0.450	0.799
9.000	RWHT3	9.400	PS10	9.050	Circ	100	0.665	2	0.600	0.400	0.799
8.001	PS10	9.050	PS4	9.030	Circ	100	1.951	98	0.600	0.799	0.888
10.000	PS12	9.340	PS4	9.030	Circ	100	13.918	45	0.600	0.450	0.888
11.000	RWHT2	9.400	PS4	9.030	Circ	100	2.389	6	0.600	0.400	0.888
1.006	PS4	8.980	PS3	8.910	Circ	150	10.216	146	0.600	0.888	0.744
12.000	D1	9.300	PS9	9.100	Circ	100	2.179	11	0.600	0.398	0.616
12.001	PS9	9.100	PS3	8.960	Circ	100	9.006	64	0.600	0.616	0.744
13.000	RWHT1	9.395	PS13	9.340	Circ	100	0.568	10	0.600	0.400	0.450

Pipe Schedule

Pipe Number	US Manhole	US IL (m)	DS Manhole	DS IL (m)	Shape	Dimension (mm)	Length (m)	Gradient (1:x)	Roughness (mm)	US Depth To Soffit (m)	DS Depth To Soffit (m)
13.001	PS13	9.340	PS3	8.960	Circ	100	5.525	15	0.600	0.450	0.744
1.007	PS3	8.910	PS2	8.835	Circ	150	11.172	149	0.600	0.744	0.747
1.008	PS2	8.835	PS1	8.460	Circ	150	55.981	149	0.600	0.747	0.790
1.009	PS1	8.460	PS0_out	8.404	Circ	150	8.424	150	0.600	0.790	0.716

Permeable Paving Schedule

Permeable Paving	Assigned Manhole	Effective Storage Volume (m3)	CL (m)	IL (m)	Storage Infil Rate (m/hr)	Safety Factor	Easting (m)	Northing (m)
PP2	D2	3.879	9.920	9.440	0.00000000	2.00	494025.708	104248.862
PP3	D3	8.084	9.817	9.337	0.00000000	2.00	494005.846	104244.091
PP4	D4	34.517	9.676	9.096	0.00000000	2.00	494023.722	104256.127
PP1	D1	7.138	9.798	9.318	0.00000000	2.00	493987.462	104264.424

Outfall Details

Outfall Manhole PS0_out : Free Discharge

Flow Control Details

Controls within Manhole RWHT6

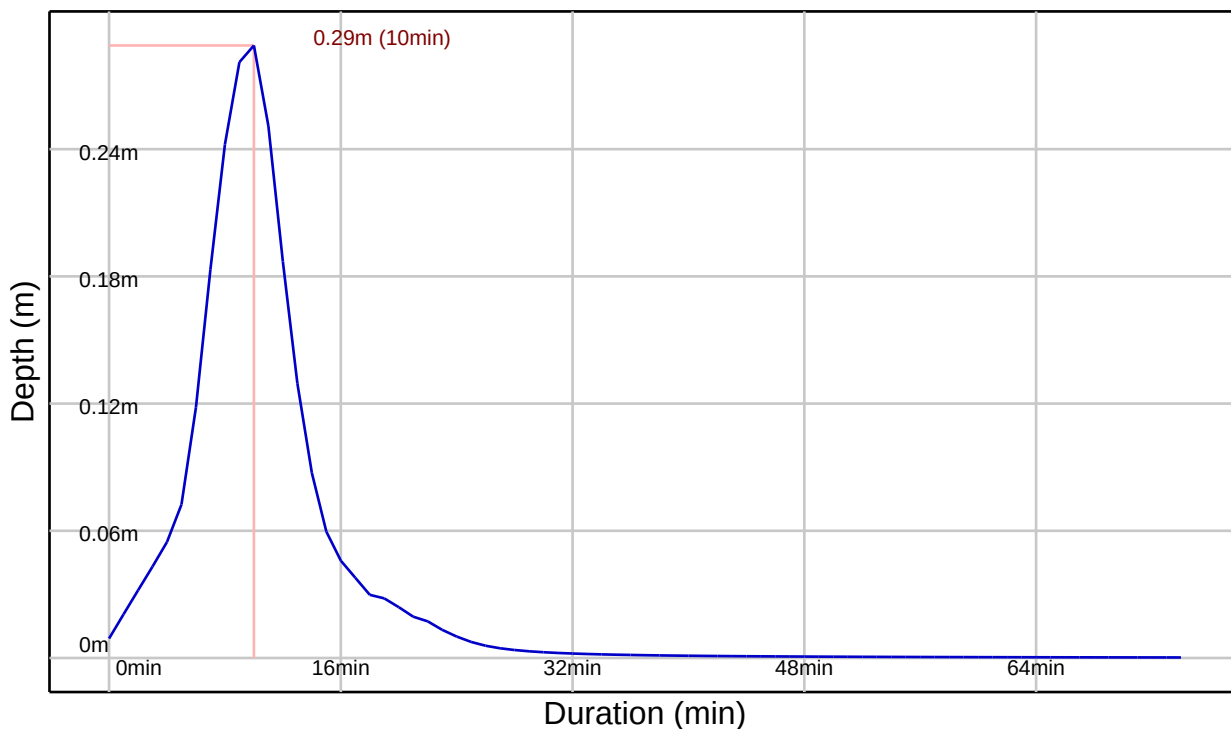
Orifice Control

Invert Offset (m)	Orifice Diameter (m)	Discharge Coeff
0.000	0.060	0.600

Tank Structure at Manhole RWHT6

Tank Invert (m)	Tank Height (m)	Porosity Ratio (%)	Area (m2)	Effective Area (m2) Area x Porosity Ratio	Max Storage (m3) Effective Area x Height	Infil Base (m/hr)	Infil Side (m/hr)	Safety Factor
9.400	0.500	100.00	0.600	0.600	0.300	0.00000000	0.00000000	2.00

Tank 6 at RWHT6 (100Yr+45% 15Min Summer)



Controls within Manhole RWHT7

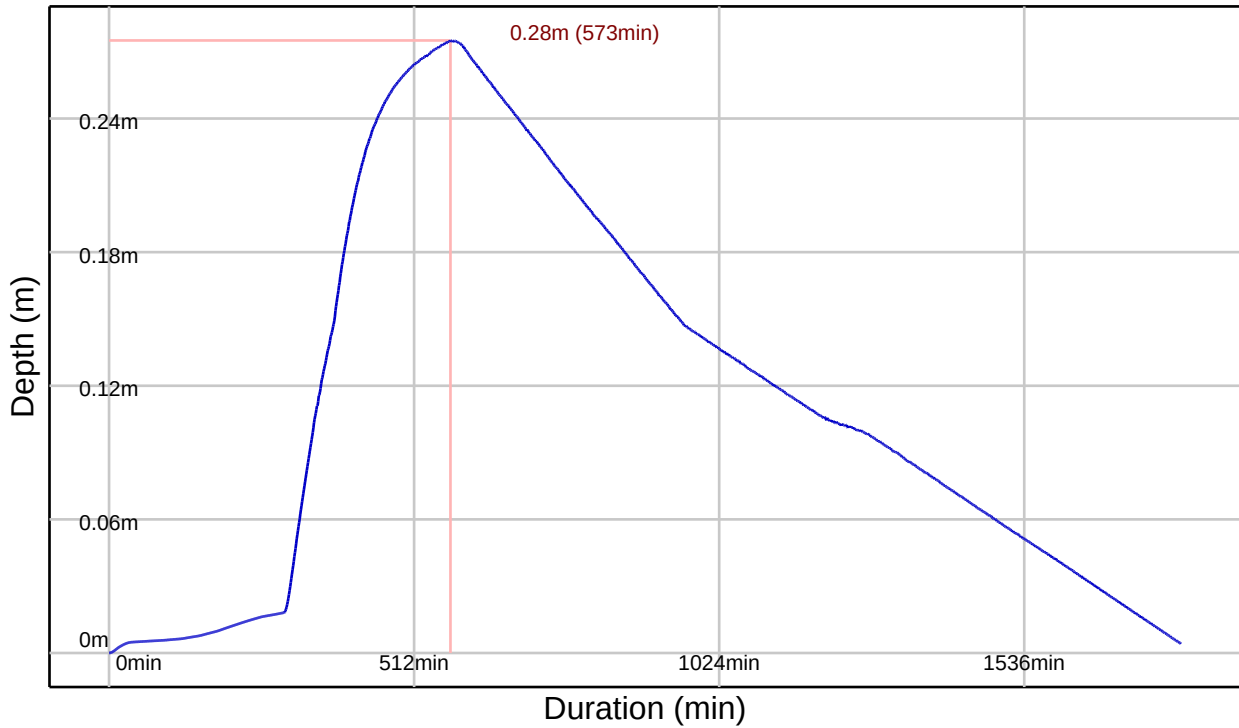
Orifice Control

Invert Offset (m)	Orifice Diameter (m)	Discharge Coeff
0.000	0.060	0.600

Tank Structure at Manhole RWHT7

Tank Invert (m)	Tank Height (m)	Porosity Ratio (%)	Area (m2)	Effective Area (m2) Area x Porosity Ratio	Max Storage (m3) Effective Area x Height	Infil Base (m/hr)	Infil Side (m/hr)	Safety Factor
9.400	0.500	100.00	0.600	0.600	0.300	0.00000000	0.00000000	2.00

Tank 7 at RWHT7 (100Yr+45% 600Min Winter)



Controls within Manhole RWHT5

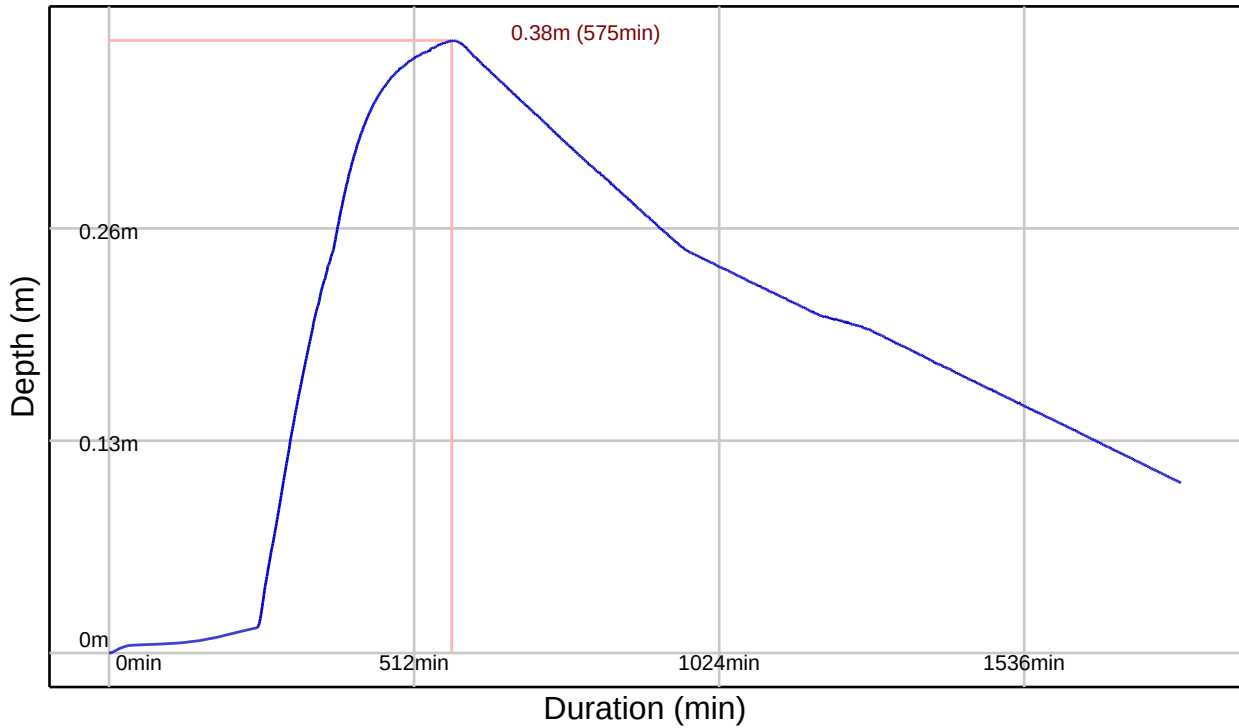
Orifice Control

Invert Offset (m)	Orifice Diameter (m)	Discharge Coeff
0.000	0.060	0.600

Tank Structure at Manhole RWHT5

Tank Invert (m)	Tank Height (m)	Porosity Ratio (%)	Area (m2)	Effective Area (m2) Area x Porosity Ratio	Max Storage (m3) Effective Area x Height	Infil Base (m/hr)	Infil Side (m/hr)	Safety Factor
9.300	0.500	100.00	0.600	0.600	0.300	0.00000000	0.00000000	2.00

Tank 5 at RWHT5 (100Yr+45% 600Min Winter)



Controls within Manhole RWHT4

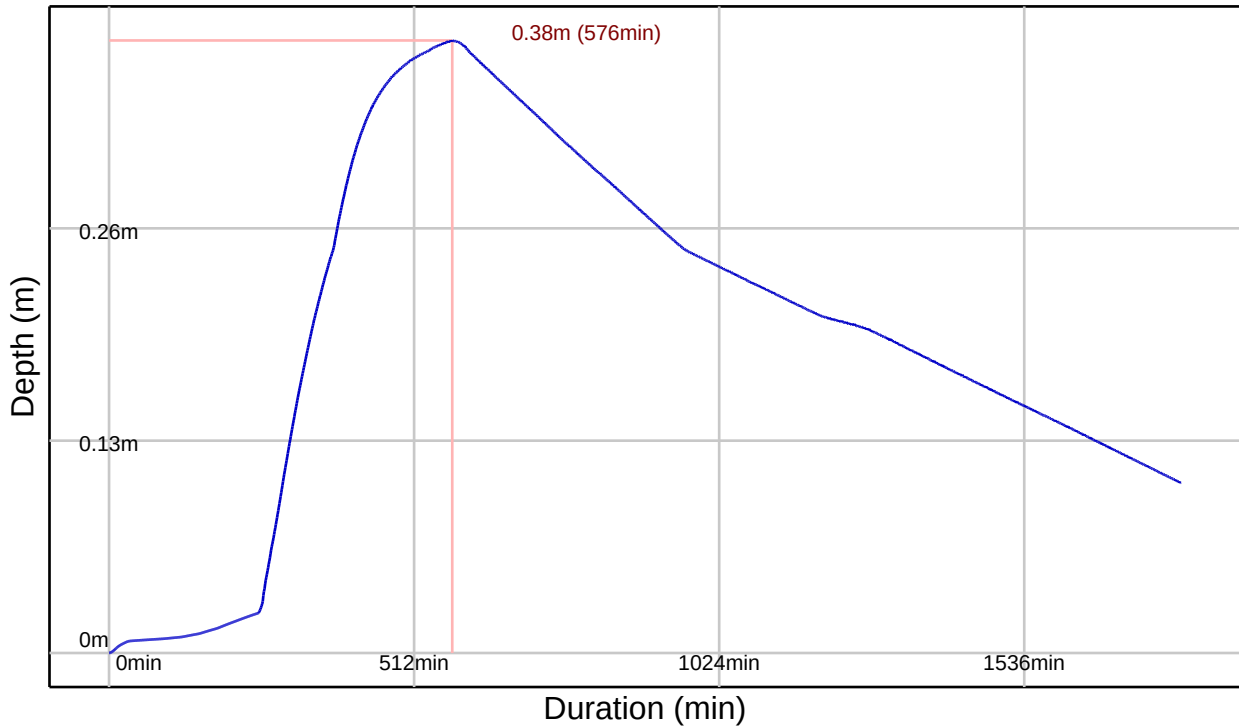
Orifice Control

Invert Offset (m)	Orifice Diameter (m)	Discharge Coeff
0.000	0.060	0.600

Tank Structure at Manhole RWHT4

Tank Invert (m)	Tank Height (m)	Porosity Ratio (%)	Area (m2)	Effective Area (m2) Area x Porosity Ratio	Max Storage (m3) Effective Area x Height	Infil Base (m/hr)	Infil Side (m/hr)	Safety Factor
9.300	0.500	100.00	0.600	0.600	0.300	0.00000000	0.00000000	2.00

Tank 4 at RWHT4 (100Yr+45% 600Min Winter)



Controls within Manhole RWHT3

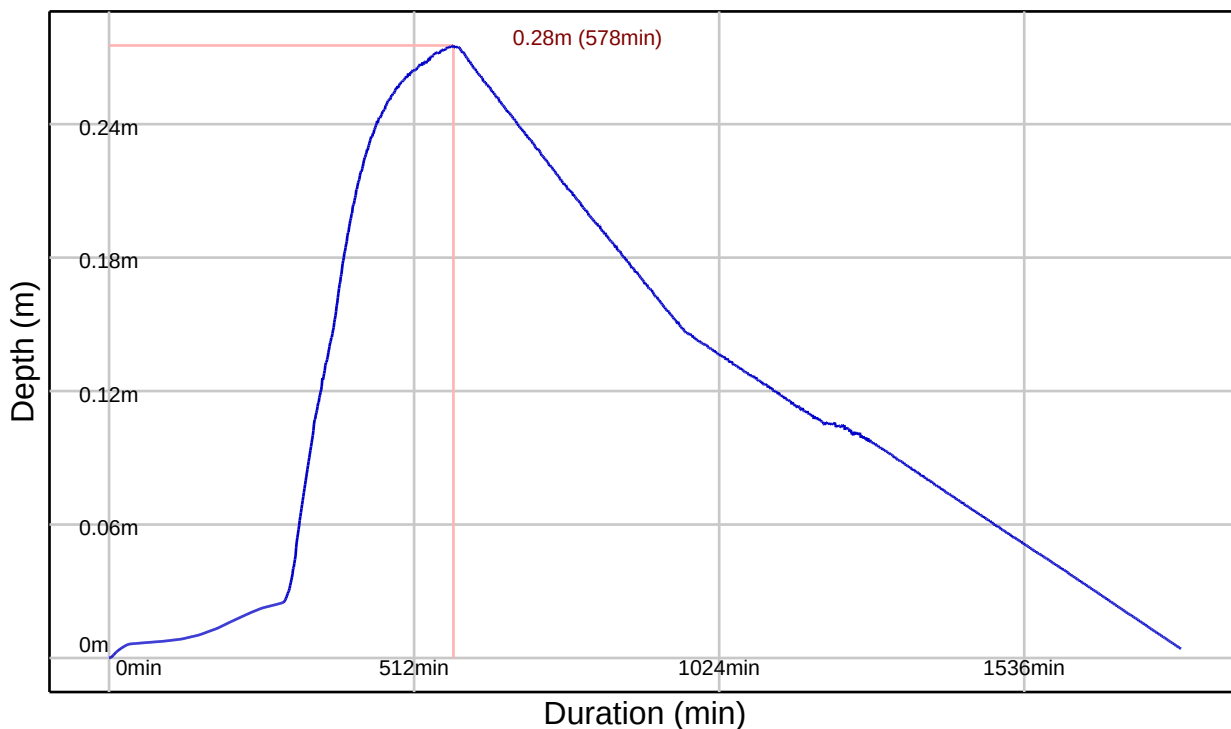
Orifice Control

Invert Offset (m)	Orifice Diameter (m)	Discharge Coeff
0.000	0.060	0.600

Tank Structure at Manhole RWHT3

Tank Invert (m)	Tank Height (m)	Porosity Ratio (%)	Area (m2)	Effective Area (m2) Area x Porosity Ratio	Max Storage (m3) Effective Area x Height	Infil Base (m/hr)	Infil Side (m/hr)	Safety Factor
9.400	0.500	100.00	0.600	0.600	0.300	0.00000000	0.00000000	2.00

Tank 3 at RWHT3 (100Yr+45% 600Min Winter)



Controls within Manhole RWHT2

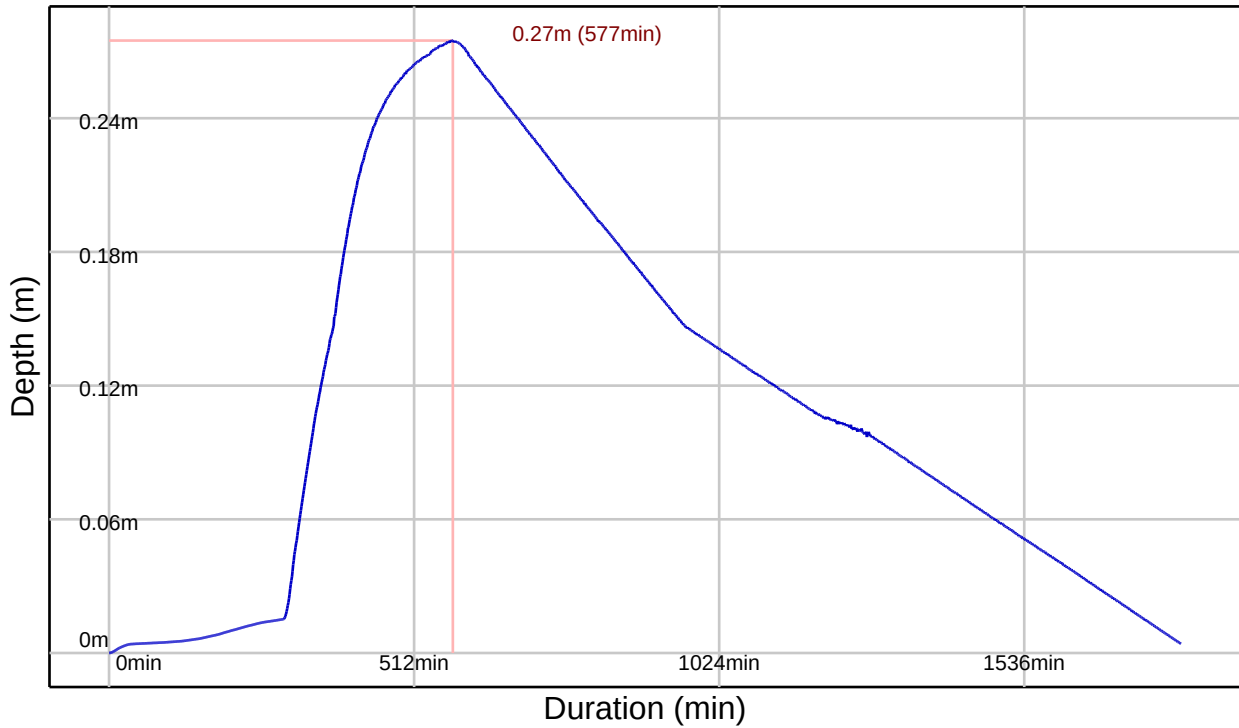
Orifice Control

Invert Offset (m)	Orifice Diameter (m)	Discharge Coeff
0.000	0.060	0.600

Tank Structure at Manhole RWHT2

Tank Invert (m)	Tank Height (m)	Porosity Ratio (%)	Area (m2)	Effective Area (m2) Area x Porosity Ratio	Max Storage (m3) Effective Area x Height	Infil Base (m/hr)	Infil Side (m/hr)	Safety Factor
9.400	0.500	100.00	0.600	0.600	0.300	0.00000000	0.00000000	2.00

Tank 2 at RWHT2 (100Yr+45% 600Min Winter)



Controls within Manhole RWHT1

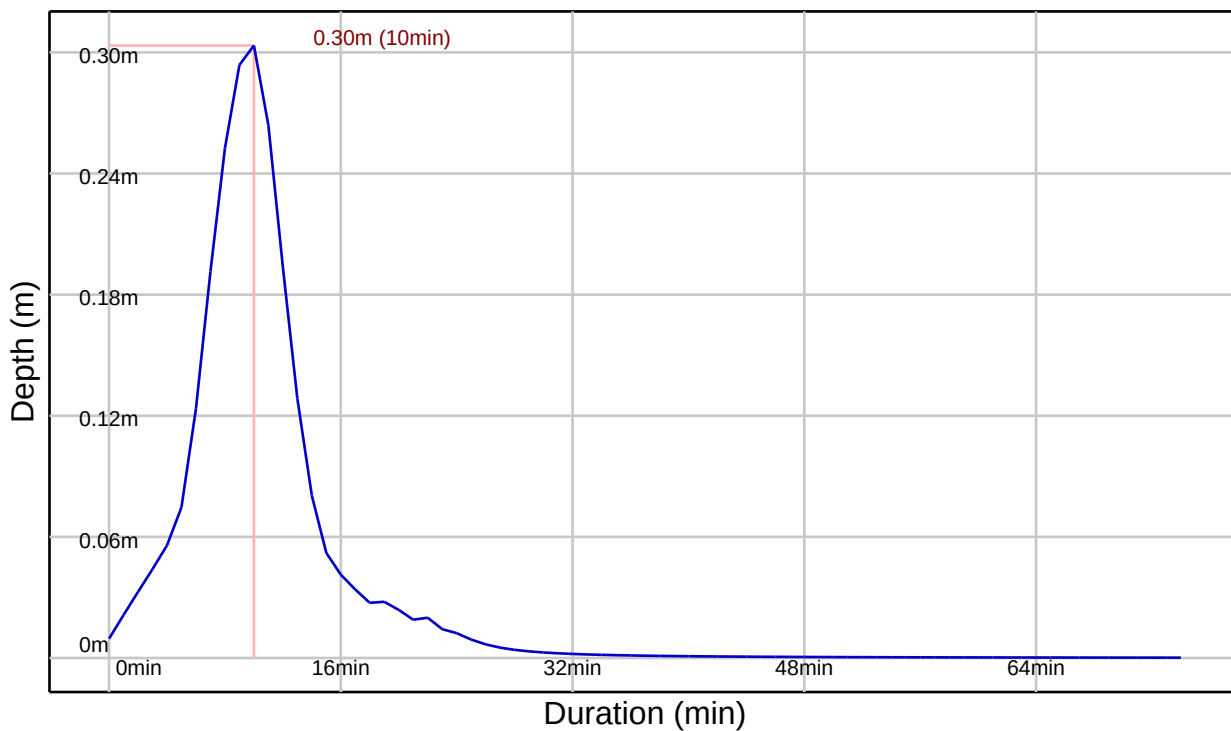
Orifice Control

Invert Offset (m)	Orifice Diameter (m)	Discharge Coeff
0.000	0.060	0.600

Tank Structure at Manhole RWHT1

Tank Invert (m)	Tank Height (m)	Porosity Ratio (%)	Area (m2)	Effective Area (m2) Area x Porosity Ratio	Max Storage (m3) Effective Area x Height	Infil Base (m/hr)	Infil Side (m/hr)	Safety Factor
9.395	0.500	100.00	0.600	0.600	0.300	0.00000000	0.00000000	2.00

Tank 1 at RWHT1 (100Yr+45% 15Min Summer)



Controls within Manhole PS3

Orifice Control

Invert Offset (m)	Orifice Diameter (m)	Discharge Coeff
0.000	0.018	0.600

Simulation Settings

FEH2022 (point): Filename=FEH_Point_Descriptors_493987_104248_v5_1_0.xml

Summer (Cv: 1.00), Winter (Cv: 1.00)

Global Time of Entry: 5.0 mins

Durations (mins): 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440

Return Periods (yrs) + Climate Change: (1, +0%), (10, +40%), (30, +40%), (100, +45%)

Manhole Flood Risk Freeboard: 0.150m

Simulated Rainfall Events

Storm	Average Intensity (mm/hr)	Runoff Continuity %	Flow Continuity %	Storm	Average Intensity (mm/hr)	Runoff Continuity %	Flow Continuity %
1Yr 15Min Winter	15.600	0.00	1.64	30Yr+40% 15Min Summer	113.152	0.00	3.64
1Yr 15Min Summer	15.600	0.00	1.60	30Yr+40% 15Min Winter	113.152	0.00	3.58
1Yr 30Min Winter	10.400	0.00	1.37	30Yr+40% 30Min Summer	75.408	0.00	4.64
1Yr 30Min Summer	10.400	0.00	1.37	30Yr+40% 30Min Winter	75.408	0.00	4.66
1Yr 60Min Winter	6.643	0.00	0.88	30Yr+40% 60Min Summer	48.093	0.00	4.86
1Yr 60Min Summer	6.643	0.00	0.88	30Yr+40% 60Min Winter	48.093	0.00	4.89
1Yr 120Min Summer	5.313	0.00	0.48	30Yr+40% 120Min Summer	29.302	0.00	4.77
1Yr 120Min Winter	5.313	0.00	0.48	30Yr+40% 120Min Winter	29.302	0.00	4.77
1Yr 180Min Summer	4.471	0.00	0.26	30Yr+40% 180Min Summer	21.664	0.00	4.30
1Yr 180Min Winter	4.471	0.00	0.26	30Yr+40% 180Min Winter	21.664	0.00	4.29
1Yr 240Min Summer	3.707	0.00	0.18	30Yr+40% 240Min Summer	17.405	0.00	3.66
1Yr 240Min Winter	3.707	0.00	0.18	30Yr+40% 240Min Winter	17.405	0.00	3.53
1Yr 360Min Summer	2.898	0.00	0.00	30Yr+40% 360Min Summer	12.632	0.00	1.44
1Yr 360Min Winter	2.898	0.00	0.00	30Yr+40% 360Min Winter	12.632	0.00	1.47
1Yr 480Min Summer	2.407	0.00	0.00	30Yr+40% 480Min Summer	10.015	0.00	0.38
1Yr 480Min Winter	2.407	0.00	0.00	30Yr+40% 480Min Winter	10.015	0.00	0.83
1Yr 600Min Summer	2.045	0.00	0.00	30Yr+40% 600Min Summer	8.343	0.00	-0.55
1Yr 600Min Winter	2.045	0.00	0.00	30Yr+40% 600Min Winter	8.343	0.00	-0.23
1Yr 720Min Winter	1.778	0.00	0.00	30Yr+40% 720Min Summer	7.172	0.00	-0.78
1Yr 720Min Summer	1.778	0.00	0.00	30Yr+40% 720Min Winter	7.172	0.00	-0.66
1Yr 960Min Summer	1.443	0.00	0.00	30Yr+40% 960Min Summer	5.647	0.00	-2.38
1Yr 960Min Winter	1.443	0.00	0.00	30Yr+40% 960Min Winter	5.647	0.00	-1.70
1Yr 1440Min Summer	1.083	0.00	0.00	30Yr+40% 1440Min Summer	4.039	0.00	-0.05
1Yr 1440Min Winter	1.083	0.00	0.00	30Yr+40% 1440Min Winter	4.039	0.00	-0.04
10Yr+40% 15Min Summer	87.997	0.00	2.93	100Yr+45% 15Min Summer	147.195	0.00	4.54
10Yr+40% 15Min Winter	87.997	0.00	2.90	100Yr+45% 15Min Winter	147.195	0.00	4.50
10Yr+40% 30Min Summer	57.561	0.00	3.59	100Yr+45% 30Min Summer	98.984	0.00	5.50
10Yr+40% 30Min Winter	57.561	0.00	3.62	100Yr+45% 30Min Winter	98.984	0.00	5.52
10Yr+40% 60Min Summer	36.582	0.00	3.98	100Yr+45% 60Min Summer	63.544	0.00	6.04
10Yr+40% 60Min Winter	36.582	0.00	4.01	100Yr+45% 60Min Winter	63.544	0.00	6.04
10Yr+40% 120Min Winter	22.971	0.00	3.77	100Yr+45% 120Min Summer	38.005	0.00	5.65
10Yr+40% 120Min Summer	22.971	0.00	3.76	100Yr+45% 120Min Winter	38.005	0.00	5.49
10Yr+40% 180Min Summer	17.247	0.00	3.33	100Yr+45% 180Min Summer	27.852	0.00	5.34
10Yr+40% 180Min Winter	17.247	0.00	3.33	100Yr+45% 180Min Winter	27.852	0.00	5.25
10Yr+40% 240Min Summer	13.876	0.00	2.79	100Yr+45% 240Min Summer	22.385	0.00	4.58
10Yr+40% 240Min Winter	13.876	0.00	2.82	100Yr+45% 240Min Winter	22.385	0.00	4.35
10Yr+40% 360Min Summer	10.144	0.00	1.83	100Yr+45% 360Min Summer	16.261	0.00	2.83
10Yr+40% 360Min Winter	10.144	0.00	1.76	100Yr+45% 360Min Winter	16.261	0.00	3.02
10Yr+40% 480Min Summer	8.084	0.00	1.07	100Yr+45% 480Min Summer	12.907	0.00	2.08
10Yr+40% 480Min Winter	8.084	0.00	1.00	100Yr+45% 480Min Winter	12.907	0.00	2.13
10Yr+40% 600Min Winter	6.745	0.00	0.55	100Yr+45% 600Min Summer	10.771	0.00	1.03
10Yr+40% 600Min Summer	6.745	0.00	0.61	100Yr+45% 600Min Winter	10.771	0.00	1.01
10Yr+40% 720Min Summer	5.800	0.00	0.34	100Yr+45% 720Min Summer	9.274	0.00	0.73
10Yr+40% 720Min Winter	5.800	0.00	0.25	100Yr+45% 720Min Winter	9.274	0.00	0.34
10Yr+40% 960Min Summer	4.577	0.00	0.20	100Yr+45% 960Min Summer	7.309	0.00	-0.79
10Yr+40% 960Min Winter	4.577	0.00	0.13	100Yr+45% 960Min Winter	7.309	0.00	-0.52
10Yr+40% 1440Min Summer	3.293	0.00	0.18	100Yr+45% 1440Min Winter	5.220	0.00	-1.17
10Yr+40% 1440Min Winter	3.293	0.00	0.19	100Yr+45% 1440Min Summer	5.220	0.00	-1.36

Simulation Results

Return Period (yrs) + Climate Change (%):

1yr+0%

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
RWHT6	15 min Summer	9	9.431	0.031	0.445		OK
PS14	15 min Summer	10	9.368	0.018	0.427		OK
RWHT7	15 min Summer	9	9.420	0.020	0.227		OK
D2	180 min Summer	102	9.356	0.006	0.115		OK
PS8	15 min Summer	10	9.231	0.021	0.644		OK
RWHT5	15 min Summer	9	9.320	0.020	0.229		OK
PS7	600 min Summer	417	9.173	0.058	0.061		OK
RWHT4	15 min Summer	9	9.331	0.031	0.443		OK
PS16	15 min Summer	10	9.267	0.017	0.425		OK
D3	240 min Summer	138	9.259	0.009	0.183		OK
PS6	600 min Summer	420	9.173	0.078	0.122		OK
D4	600 min Summer	420	9.173	0.093	0.101		OK
PS5	600 min Summer	421	9.173	0.138	0.226		OK
PS11	15 min Summer	8	9.354	0.014	0.412		OK
RWHT3	15 min Summer	9	9.428	0.028	0.403		OK
PS10	600 min Summer	420	9.173	0.123	0.035		Surcharged
PS12	15 min Summer	8	9.352	0.012	0.306		OK
RWHT2	15 min Summer	9	9.416	0.016	0.181		OK
PS4	600 min Summer	421	9.173	0.193	0.279		Surcharged
D1	180 min Summer	106	9.306	0.006	0.170		OK
PS9	600 min Summer	421	9.173	0.073	0.037		OK
RWHT1	15 min Summer	9	9.427	0.032	0.463		OK
PS13	15 min Summer	10	9.351	0.011	0.444		OK
PS3	600 min Summer	421	9.173	0.263	0.336		Surcharged
PS2	600 min Summer	422	8.851	0.016	0.336		OK
PS1	600 min Summer	423	8.476	0.016	0.336		OK
PS0_out	600 min Summer	423	8.419	0.015	0.336		Outfall

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.000	15 min Summer	10	RWHT6	PS14	0.015	0.604	0.430	0.032	OK
1.001	15 min Summer	10	PS14	PS8	0.018	0.464	0.431	0.069	OK
2.000	15 min Summer	10	RWHT7	PS8	0.008	0.698	0.212	0.014	OK
3.000	180 min Summer	102	D2	PS8	0.006	0.536	0.115	0.010	OK
1.002	600 min Summer	412	PS8	PS7	0.032	0.296	0.243	0.016	OK
4.000	15 min Summer	10	RWHT5	PS7	0.007	0.874	0.216	0.011	OK
1.003	600 min Summer	420	PS7	PS6	0.068	0.250	0.291	0.019	OK
5.000	15 min Summer	10	RWHT4	PS16	0.014	0.630	0.428	0.034	OK
5.001	15 min Summer	10	PS16	PS6	0.016	0.508	0.429	0.061	OK
6.000	600 min Summer	409	D3	PS6	0.016	0.525	0.147	0.013	OK
1.004	600 min Summer	420	PS6	PS5	0.108	0.285	0.527	0.036	OK
7.000	600 min Summer	663	D4	PS5	0.115	0.238	0.276	0.019	OK
1.005	600 min Summer	421	PS5	PS4	0.144	0.215	0.309	0.021	OK
8.000	360 min Summer	206	PS11	PS10	0.053	0.244	0.140	0.015	OK
9.000	360 min Summer	206	RWHT3	PS10	0.051	0.358	0.142	0.003	OK
8.001	240 min Summer	152	PS10	PS4	0.100	0.339	0.318	0.052	Surcharged
10.000	120 min Summer	61	PS12	PS4	0.055	0.326	0.182	0.020	OK
11.000	30 min Summer	20	RWHT2	PS4	0.052	0.760	0.155	0.006	OK
1.006	30 min Summer	20	PS4	PS3	0.150	0.303	0.999	0.068	Surcharged
12.000	600 min Summer	411	D1	PS9	0.038	0.397	0.132	0.007	OK
12.001	600 min Summer	421	PS9	PS3	0.086	0.021	0.123	0.016	OK
13.000	15 min Summer	9	RWHT1	PS13	0.011	0.975	0.452	0.024	OK
13.001	15 min Summer	10	PS13	PS3	0.056	0.639	0.449	0.028	OK
1.007	600 min Summer	421	PS3	PS2	0.016	0.345	0.336	0.023	OK
1.008	600 min Summer	423	PS2	PS1	0.016	0.345	0.336	0.023	OK
1.009	600 min Summer	423	PS1	PS0_out	0.015	0.351	0.336	0.023	OK

Permeable Paving Storage

Permeable Paving	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Surface Runoff (m3)	Status
PP2	180 min Summer	102	9.448	0.008	0.114			OK
PP3	240 min Summer	137	9.349	0.012	0.185			OK
PP4	600 min Summer	420	9.173	0.076	0.102			OK
PP1	180 min Summer	106	9.329	0.011	0.171			OK

Return Period (yrs) + Climate Change (%):

10yr+40%

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
RWHT6	15 min Summer	9	9.533	0.133	2.512		Surcharged
PS14	480 min Winter	455	9.446	0.096	0.032		OK
RWHT7	15 min Summer	8	9.460	0.060	1.340		OK
D2	480 min Winter	462	9.446	0.096	0.018		OK
PS8	480 min Winter	455	9.446	0.236	0.043		Surcharged
RWHT5	480 min Winter	464	9.446	0.146	0.012		Surcharged
PS7	480 min Winter	462	9.447	0.332	0.118		Surcharged
RWHT4	480 min Winter	456	9.446	0.146	0.033		Surcharged
PS16	480 min Winter	456	9.446	0.196	0.020		Surcharged
D3	480 min Winter	457	9.446	0.196	0.037		Surcharged
PS6	480 min Winter	456	9.447	0.352	0.037		Surcharged
D4	480 min Winter	459	9.446	0.366	0.180		Surcharged
PS5	480 min Winter	462	9.446	0.411	0.362		Surcharged
PS11	480 min Winter	456	9.446	0.106	0.030		Surcharged
RWHT3	15 min Summer	9	9.516	0.116	2.275		Surcharged
PS10	480 min Winter	452	9.446	0.396	0.029		Surcharged
PS12	480 min Winter	463	9.447	0.107	0.018		Surcharged
RWHT2	15 min Summer	9	9.453	0.053	1.020		OK
PS4	480 min Winter	464	9.446	0.466	0.311		Surcharged
D1	480 min Winter	458	9.446	0.146	0.056		Surcharged
PS9	480 min Winter	449	9.446	0.346	0.064		Surcharged
RWHT1	15 min Summer	9	9.535	0.140	2.614		Surcharged
PS13	480 min Winter	466	9.446	0.106	0.059		Surcharged
PS3	480 min Winter	462	9.446	0.536	0.473		Surcharged
PS2	480 min Winter	460	8.854	0.019	0.487		OK
PS1	480 min Winter	462	8.479	0.019	0.487		OK
PS0_out	480 min Winter	462	8.422	0.018	0.487		Outfall

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.000	480 min Winter	455	RWHT6	PS14	0.071	0.535	0.855	0.065	OK
1.001	480 min Winter	455	PS14	PS8	0.098	0.402	0.470	0.075	OK
2.000	480 min Winter	458	RWHT7	PS8	0.073	0.606	0.144	0.010	OK
3.000	480 min Winter	462	D2	PS8	0.098	0.618	0.448	0.037	OK
1.002	30 min Summer	19	PS8	PS7	0.150	0.416	3.271	0.221	Surcharged
4.000	120 min Summer	118	RWHT5	PS7	0.100	0.881	0.632	0.033	Surcharged
1.003	30 min Summer	18	PS7	PS6	0.150	0.404	3.427	0.225	Surcharged
5.000	120 min Summer	118	RWHT4	PS16	0.100	0.790	2.661	0.214	Surcharged
5.001	15 min Winter	12	PS16	PS6	0.100	0.705	2.039	0.288	Surcharged
6.000	15 min Winter	16	D3	PS6	0.100	0.220	1.662	0.150	Surcharged
1.004	30 min Summer	20	PS6	PS5	0.150	0.494	4.883	0.335	Surcharged
7.000	960 min Winter	2009	D4	PS5	0.150	0.238	0.551	0.038	Surcharged
1.005	30 min Summer	13	PS5	PS4	0.150	0.198	1.089	0.075	Surcharged
8.000	480 min Winter	380	PS11	PS10	0.100	0.210	0.428	0.046	Surcharged
9.000	480 min Winter	458	RWHT3	PS10	0.073	0.445	2.325	0.052	OK
8.001	30 min Summer	17	PS10	PS4	0.100	0.524	3.372	0.553	Surcharged
10.000	480 min Summer	405	PS12	PS4	0.100	0.262	0.292	0.032	Surcharged
11.000	480 min Winter	458	RWHT2	PS4	0.073	0.247	1.140	0.047	OK
1.006	15 min Winter	6	PS4	PS3	0.150	0.459	1.759	0.120	Surcharged
12.000	240 min Summer	158	D1	PS9	0.100	0.394	2.155	0.117	Surcharged
12.001	15 min Winter	16	PS9	PS3	0.100	0.192	1.511	0.200	Surcharged
13.000	480 min Winter	454	RWHT1	PS13	0.076	0.864	1.769	0.093	OK
13.001	480 min Summer	406	PS13	PS3	0.100	0.437	0.728	0.046	Surcharged
1.007	480 min Winter	461	PS3	PS2	0.019	0.385	0.487	0.034	OK
1.008	480 min Winter	461	PS2	PS1	0.019	0.385	0.487	0.034	OK
1.009	480 min Winter	462	PS1	PS0_out	0.018	0.391	0.487	0.034	OK

Permeable Paving Storage

Permeable Paving	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Surface Runoff (m3)	Status
PP2	30 min Summer	23	9.473	0.033	0.917			OK
PP3	480 min Winter	461	9.446	0.109	0.045			OK
PP4	480 min Winter	459	9.446	0.350	0.178			OK
PP1	480 min Winter	459	9.446	0.128	0.046			OK

Return Period (yrs) + Climate Change (%):

30yr+40%

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
RWHT6	15 min Summer	9	9.591	0.191	3.230		Surcharged
PS14	600 min Winter	574	9.516	0.166	0.028		Surcharged
RWHT7	600 min Winter	570	9.516	0.116	0.018		Surcharged
D2	600 min Winter	573	9.517	0.167	0.001		Surcharged
PS8	480 min Winter	457	9.516	0.306	0.093		Surcharged
RWHT5	480 min Winter	469	9.517	0.217	0.010		Surcharged
PS7	480 min Winter	452	9.517	0.402	0.038		Surcharged
RWHT4	600 min Winter	570	9.516	0.216	0.035		Surcharged
PS16	480 min Winter	469	9.516	0.266	0.041		Surcharged
D3	480 min Winter	452	9.516	0.266	0.026		Surcharged
PS6	600 min Winter	586	9.516	0.421	0.016		Surcharged
D4	600 min Winter	569	9.516	0.436	0.004		Surcharged
PS5	600 min Winter	566	9.517	0.482	0.358		Surcharged
PS11	600 min Winter	578	9.517	0.177	0.023		Surcharged
RWHT3	15 min Summer	9	9.563	0.163	2.925		Surcharged
PS10	480 min Summer	470	9.518	0.468	0.029		Surcharged
PS12	480 min Summer	474	9.517	0.177	0.030		Surcharged
RWHT2	480 min Winter	461	9.516	0.116	0.032		Surcharged
PS4	600 min Winter	566	9.517	0.537	0.365		Surcharged
D1	600 min Winter	573	9.516	0.216	0.001		Surcharged
PS9	480 min Winter	460	9.516	0.416	0.065		Surcharged
RWHT1	15 min Summer	9	9.594	0.199	3.361		Surcharged
PS13	600 min Winter	575	9.516	0.176	0.031		Surcharged
PS3	600 min Winter	573	9.516	0.606	0.461		Surcharged
PS2	600 min Winter	576	8.854	0.019	0.518		OK
PS1	600 min Winter	577	8.479	0.019	0.518		OK
PS0_out	600 min Winter	577	8.423	0.019	0.518		Outfall

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.000	720 min Winter	524	RWHT6	PS14	0.100	0.515	1.789	0.135	Surcharged
1.001	180 min Summer	123	PS14	PS8	0.100	0.554	1.203	0.192	Surcharged
2.000	960 min Winter	705	RWHT7	PS8	0.100	0.528	0.319	0.022	Surcharged
3.000	180 min Summer	123	D2	PS8	0.100	0.760	2.293	0.189	Surcharged
1.002	30 min Summer	19	PS8	PS7	0.150	0.405	3.850	0.261	Surcharged
4.000	30 min Winter	20	RWHT5	PS7	0.100	1.103	1.085	0.056	Surcharged
1.003	30 min Summer	20	PS7	PS6	0.150	0.407	4.413	0.290	Surcharged
5.000	60 min Summer	34	RWHT4	PS16	0.100	0.870	3.348	0.269	Surcharged
5.001	15 min Winter	10	PS16	PS6	0.100	0.734	2.139	0.302	Surcharged
6.000	15 min Winter	18	D3	PS6	0.100	0.261	2.049	0.185	Surcharged
1.004	15 min Winter	14	PS6	PS5	0.150	0.614	5.500	0.378	Surcharged
7.000	60 min Summer	67	D4	PS5	0.150	0.023	0.408	0.028	Surcharged
1.005	30 min Summer	12	PS5	PS4	0.150	0.193	0.981	0.067	Surcharged
8.000	180 min Summer	113	PS11	PS10	0.100	0.401	0.998	0.107	Surcharged
9.000	360 min Winter	287	RWHT3	PS10	0.100	0.505	2.884	0.065	Surcharged
8.001	15 min Winter	9	PS10	PS4	0.100	0.685	4.372	0.716	Surcharged
10.000	180 min Summer	115	PS12	PS4	0.100	0.347	0.741	0.082	Surcharged
11.000	960 min Summer	712	RWHT2	PS4	0.100	0.163	0.869	0.036	Surcharged
1.006	15 min Winter	6	PS4	PS3	0.150	0.516	1.867	0.128	Surcharged
12.000	120 min Winter	71	D1	PS9	0.100	0.431	2.285	0.124	Surcharged
12.001	15 min Winter	19	PS9	PS3	0.100	0.255	2.000	0.265	Surcharged
13.000	240 min Winter	219	RWHT1	PS13	0.100	1.058	2.705	0.142	Surcharged
13.001	180 min Summer	112	PS13	PS3	0.100	0.576	1.138	0.071	Surcharged
1.007	480 min Winter	463	PS3	PS2	0.019	0.392	0.518	0.036	OK
1.008	600 min Winter	577	PS2	PS1	0.019	0.392	0.518	0.036	OK
1.009	600 min Winter	577	PS1	PS0_out	0.019	0.398	0.518	0.036	OK

Permeable Paving Storage

Permeable Paving	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Surface Runoff (m3)	Status
PP2	600 min Winter	574	9.516	0.076	0.024			OK
PP3	600 min Winter	570	9.516	0.179	0.054			OK
PP4	600 min Winter	573	9.516	0.420	0.179			OK
PP1	480 min Winter	464	9.516	0.198	0.053			OK

Return Period (yrs) + Climate Change (%):

100yr+45%

Manholes

Manhole	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Status
RWHT6	15 min Summer	10	9.689	0.289	3.490		Surcharged
PS14	600 min Winter	579	9.675	0.325	0.025		Surcharged
RWHT7	600 min Winter	573	9.675	0.275	0.021		Surcharged
D2	600 min Winter	580	9.675	0.325	0.046		Surcharged
PS8	600 min Winter	576	9.675	0.465	0.092		Surcharged
RWHT5	600 min Winter	575	9.675	0.375	0.042		Surcharged
PS7	600 min Winter	586	9.675	0.560	0.212		Flood Risk
RWHT4	600 min Winter	576	9.675	0.375	0.037		Surcharged
PS16	600 min Winter	574	9.675	0.425	0.028		Flood Risk
D3	600 min Winter	579	9.675	0.425	0.057		Flood Risk
PS6	600 min Winter	578	9.675	0.580	0.038		Flood Risk
D4	600 min Winter	577	9.675	0.595	0.005		Flood Risk
PS5	600 min Winter	572	9.676	0.641	0.434		Flood Risk
PS11	600 min Winter	583	9.675	0.335	0.023		Surcharged
RWHT3	600 min Winter	578	9.675	0.275	0.054		Surcharged
PS10	600 min Winter	575	9.676	0.626	0.021		Surcharged
PS12	600 min Winter	582	9.675	0.335	0.018		Surcharged
RWHT2	600 min Winter	573	9.675	0.275	0.017		Surcharged
PS4	600 min Winter	576	9.675	0.695	0.675		Surcharged
D1	600 min Winter	575	9.675	0.375	0.011		Flood Risk
PS9	600 min Winter	582	9.675	0.575	0.127		Flood Risk
RWHT1	15 min Summer	10	9.698	0.303	3.631		Surcharged
PS13	600 min Winter	578	9.675	0.335	0.020		Surcharged
PS3	600 min Winter	578	9.675	0.765	0.507		Flood Risk
PS2	600 min Winter	579	8.855	0.020	0.583		OK
PS1	600 min Winter	579	8.480	0.020	0.584		OK
PS0_out	600 min Winter	579	8.424	0.020	0.584		Outfall

Conduits

Pipe No.	Critical Storm	Peak (mins)	US Manhole	DS Manhole	Flow Depth (m)	Max Velocity (m/s)	Max Flow (l/s)	Flow / Capacity	Status
1.000	120 min Summer	76	RWHT6	PS14	0.100	0.827	3.562	0.269	Surcharged
1.001	15 min Winter	11	PS14	PS8	0.100	0.759	3.122	0.499	Surcharged
2.000	60 min Winter	50	RWHT7	PS8	0.100	0.973	1.362	0.093	Surcharged
3.000	120 min Winter	69	D2	PS8	0.100	0.800	2.223	0.183	Surcharged
1.002	15 min Winter	13	PS8	PS7	0.150	0.521	4.348	0.294	Surcharged
4.000	15 min Winter	10	RWHT5	PS7	0.100	1.292	1.626	0.084	Surcharged
1.003	30 min Summer	19	PS7	PS6	0.150	0.428	5.200	0.341	Surcharged
5.000	60 min Summer	31	RWHT4	PS16	0.100	0.874	3.297	0.265	Surcharged
5.001	30 min Summer	18	PS16	PS6	0.100	0.593	2.612	0.369	Surcharged
6.000	15 min Winter	19	D3	PS6	0.100	0.331	2.596	0.234	Surcharged
1.004	15 min Winter	15	PS6	PS5	0.150	0.568	5.840	0.401	Surcharged
7.000	240 min Winter	171	D4	PS5	0.150	0.119	2.107	0.144	Surcharged
1.005	600 min Summer	360	PS5	PS4	0.150	0.214	1.288	0.089	Surcharged
8.000	15 min Winter	10	PS11	PS10	0.100	0.616	3.319	0.356	Surcharged
9.000	360 min Summer	204	RWHT3	PS10	0.100	0.546	3.206	0.072	Surcharged
8.001	30 min Summer	17	PS10	PS4	0.100	0.679	5.337	0.874	Surcharged
10.000	15 min Winter	11	PS12	PS4	0.100	0.656	2.478	0.274	Surcharged
11.000	960 min Winter	542	RWHT2	PS4	0.100	0.198	0.949	0.039	Surcharged
1.006	15 min Winter	5	PS4	PS3	0.150	0.511	1.839	0.126	Surcharged
12.000	240 min Summer	120	D1	PS9	0.100	0.378	2.036	0.110	Surcharged
12.001	15 min Winter	19	PS9	PS3	0.100	0.254	1.997	0.265	Surcharged
13.000	60 min Winter	47	RWHT1	PS13	0.100	1.381	4.173	0.220	Surcharged
13.001	15 min Winter	11	PS13	PS3	0.100	0.674	3.034	0.190	Surcharged
1.007	600 min Winter	578	PS3	PS2	0.020	0.406	0.584	0.040	OK
1.008	600 min Winter	579	PS2	PS1	0.020	0.407	0.584	0.040	OK
1.009	600 min Winter	579	PS1	PS0_out	0.020	0.412	0.584	0.040	OK

Permeable Paving Storage

Permeable Paving	Critical Storm	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Flood (m3)	Surface Runoff (m3)	Status
PP2	600 min Winter	580	9.675	0.235	0.030			OK
PP3	600 min Winter	579	9.675	0.338	0.224			OK
PP4	600 min Winter	575	9.676	0.580	0.215			Flood Risk
PP1	600 min Winter	582	9.675	0.357	0.070			Surcharged



Appendix H

Sudsstore Controflow Universal Flow Control Detail

Description

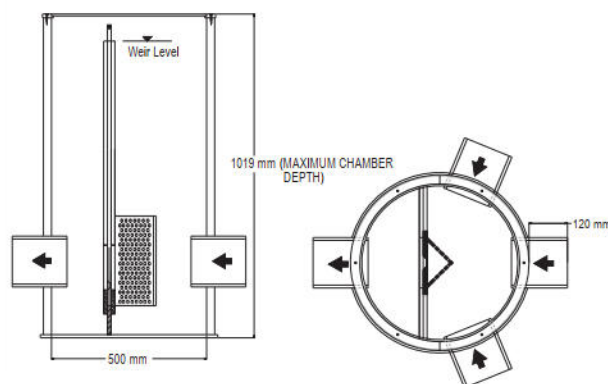
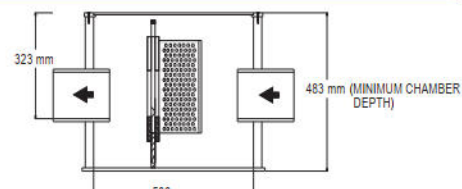
A flexible universal flow control chamber, with level inverts, suitable for any SuDS technique. The slide-out centre plate acts as an overflow weir and contains a circular orifice (to specified diameter), protected by an upstream filter guard. The slide-out centre plate can be temporarily removed to gain access to rod the connections, during regular maintenance services. The Controflow 500 Series Universal Level Invert is available with either 160mm or 110mm diameter connection stubs which offer a flexible layout and is available in depths ranging from 483mm to 925mm. An optional foul air trap is available when connected to the combined sewer. Chambers are supplied with a temporary protective site cover (permanent cover and frame available upon request).



Packaging Details

Element	Value	Unit
Packaging unit dimension	773 x 773 x 1032 (LxWxD)	mm
Packaging unit weight	TBC	kg
Number of units per pallet	8	nr
Pallet dimensions	1200 x 1200 x 150 (LxWxD)	mm
Pallet weight	TBC	kg

*packaging dimensions based on maximum chamber depth



Specification

Element	Value	Unit
Maximum depth of chamber	1019	mm
Minimum depth of chamber	483	mm
Overall width	753	mm
Spigot O.D. ∅	160 or 110	mm
Orifice type	Fixed plate	
Unit weight	TBC	kg
Material	HDPE	

Information Check List

(required prior to order being processed)

Element	Value	Unit
Cover level		m (A.O.D)
Pipe invert level		m (A.O.D)
Weir Level		m (A.O.D)
Orifice diameter		mm
Depth of cover and frame to be used		mm
Spigot Diameter		mm
Number of inlet spigots		nr.

A.O.D - Above Ordinance Datum



Appendix I

GreenBlue SuDSPod Detail



NEW FEATURE

New cladding style

SuDSPod now comes with vertical cladding, available in a range of stained and painted finishes.

NEW FEATURE

Water storage for reuse

SuDSPod's unique patented internal chamber is now capable of storing water for reuse.



Enhances biodiversity



Filters the water



All water attenuated in 98% of storms



Pressure on the network significantly reduced



Customisable flow control

NEW FEATURE

In built levelling system

SuDSPod's comes with an in built levelling system that allows for fast installation and adaptability to suit all sites.

How SuDSPod works

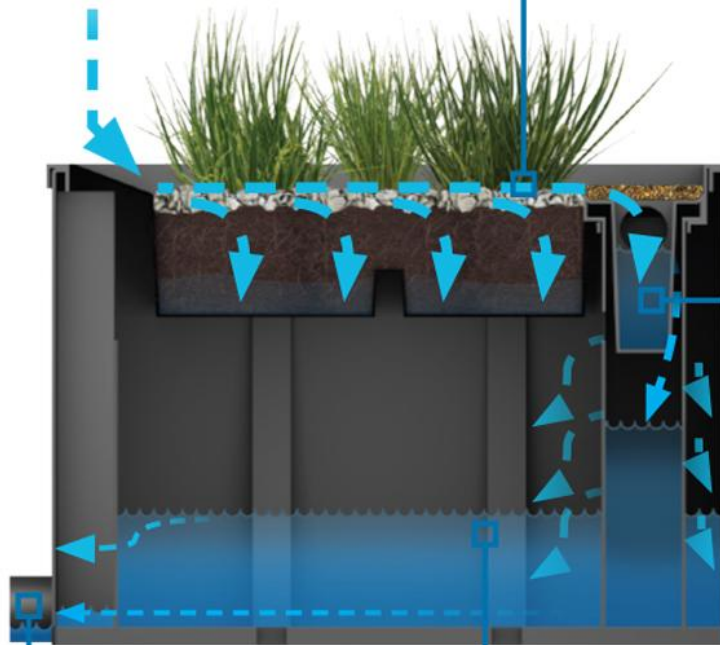
Water inflows from the downpipe.

Water percolates across soil and stone mulch layer, trapping silt and debris on the surface.

Any residual silt and debris caught by silt trap.

Water discharges slowly into drain.

Patented internal flow control system provides optimal attenuation performance.





Appendix J

Maintenance Schedule

