

Response to Objection to Outline planning permission for Extension of MIRA Technology Park

Technical Note

Date: 17/01/2023

Client Name: ERI MTP Limited

Document Reference: EED13833-118-TN-5-1-2

This document has been prepared and checked in accordance with
Waterman Group's IMS (BS EN ISO 9001: 2015, BS EN ISO 14001: 2015 and BS EN ISO 45001:2018)

Issue	Prepared by	Checked & Approved by
	Ameena Syed Principal Engineer	Harry Chetty Technical Director

Introduction

- 1.1. Waterman was commissioned by ERI MTP Limited to address objections raised to an outline planning application for the Extension of MIRA Technology Park to comprise employment use (Class B2); associated office and service uses (Class Eg); storage (Class B8); new spine road; car parking, landscaping, and enabling works - all matters reserved. The Site is located to the south of Watling Street, Caldecote, CV10 0TS.
- 1.2. The objection from Warwickshire County Council LLFA is included in Appendix A and the further information required to overcome the objection, as outlined by LLFA, is summarised below:

Given the proposals to revise the drainage strategy so that an adequate buffer alongside the onsite watercourse can be provided and limit the site discharge rate to 4.32l/s/ha, the LLFA requires evidence to illustrate that it is possible to provide a viable drainage scheme that meets these criteria. Supporting evidence should include:

- A revised Indicative Surface Water Drainage Strategy to illustrate the nature and layout of the proposed drainage features.
- Calculations to demonstrate that there is adequate attenuation to limit the site's discharge to the appropriate greenfield run off rate

Proposed Surface Water Drainage Strategy

- 1.1. This note provides the supporting evidence to confirm that the attenuation volume designed in the original FRA (EED13833-118-R-2-4-3-FRA) submitted as part of the outline planning application remains same even for the reduced discharge rate to 4.32l/s/ha. This has been achieved by using

hydrobrake to optimise the upstream hydraulics instead of the orifice as flow control device, as such, 16No. orifice flow control devices have been replaced with hydrobrakes.

- 1.2. The total Site area within the red line boundary is 59.5ha. As the watercourse bisects the Site, it will be necessary to provide two outfalls which serve the areas to the north and south of the watercourse, henceforth referred to as the 'northern catchment' and 'southern catchment' respectively. The outline drainage strategy layout in Appendix B shows the indicative location of these outfalls.
- 1.3. All areas which remain permeable (undeveloped) have been excluded from the drainage strategy on the basis that they will continue to discharge to the watercourse at greenfield rates. It is proposed to use SuDS to attenuate runoff from the developed parts of the Site to greenfield runoff rates (QBAR).
- 1.4. The greenfield runoff rate calculated for the Site in line with the loH124 method is 4.32l/s/ha. Based on the proposed impermeable area, the total rate of discharge from the Site should not exceed 172.8l/s.
- 1.5. To demonstrate whether there is sufficient space within the development to accommodate the appropriate SuDS, this rate has been pro-rated for the impermeable area of each catchment, see Table 1 and Appendix C for calculations.

Table 1: Impermeable area and limiting greenfield discharge rate from the Northern and Southern Catchments

	Impermeable Area (ha)	Greenfield runoff rate (l/s)
Northern Catchment	~13	56.2
Southern Catchment	~27	116.6
Total	~40	172.8

- 1.6. The required volume of attenuation has been established using Micro Drainage Network module based on a rainfall event of 1 in 100-year storm including a 40% allowance for climate change. The strategy has also been assessed for the 1 in 1 year and 1 in 30-year return period event. Refer to Table 3 below (and Appendix B & C) for details on the attenuation proposed.

Table 2: Attenuation Details

Catchment	Attenuation Volume Required (m³)
Northern	~12,588
Southern	~34,962
Total:	~47,550

- 1.7. From Table 2 and 3 above, it can be concluded that there is no increase in the net volume of attenuation required even when the limiting discharge reduced from 6.3 l/s/ha to 4.32 l/s/ha. The preliminary calculations indicate no above ground flooding under the 1 in 30-year event. There is circ. 10 m³ of total flooding under the 1 in 100-year event including a 40% allowance for climate change. This flooding is deemed acceptable as the shallow flooding occurs at non vulnerable locations such as carpark and highways which can be contained within the areas. Also, this shallow flood paths shall be addressed in the detailed design either by providing additional storage or designated areas within the car park or loading bays.

APPENDIX A

Your ref: PAP/2022/0423
Our ref: WCC002597 R1/FRM/GF/002
Your letter received: 02/12/2022



SENT BY EMAIL

Mr Jeff Brown
Head of Development Control
North Warwickshire Borough Council
The Council House
South Street
Atherstone CV9 1DE

Flood Risk Management
Warwickshire County Council
Shire Hall
Warwick
Warwickshire
CV34 4RL
Tel: 01926 412982

FRMPlanning@warwickshire.gov.uk
www.warwickshire.gov.uk

FAO Jeff Brown

16 December 2022

Dear Mr Brown

PROPOSAL: Outline planning permission for Extension of MIRA Technology Park to comprise employment use (Class B2); associated office and service uses (Class Eg); storage (Class B8); new spine road; car parking, landscaping and enabling works - All matters reserved

LOCATION: Land to the south of, Watling Street, Caldecote, CV10 0TS

Warwickshire County Council as the Lead Local Flood Authority (LLFA) has reviewed the additional information for this application which was received on the 2 December 2022. It is understood this is in response to the LLFA's prior response on 10 October 2022 where the following was considered outstanding.

1. The LLFA requires further information regarding the capacity and flood risk associated with the on site watercourse to demonstrate that proposals will not increase flood risk on site and elsewhere. Further evidence should include:
 - An evaluation of the on site channel capacity including surveyed cross sections demonstrating that there is sufficient capacity to accommodate contributing flows from the site. This is particularly pertinent given the proposals to remove storage capacity on site by infilling the southern ditch and increase the contributing catchment area to the watercourse.
 - Discussion around the potential risk of bank overtopping and anticipated flow routes and flood outlines.
 - Information on the condition of the downstream culvert passing under the A444 demonstrating that flow will not be constricted and pose an increase to flood risk.
2. Given the proposed catchment changes, indicative site levels and further discussion should be provided on the anticipated increase in cross catchment flows and flow routes demonstrating that flood risk will not be increased on site or elsewhere as a result. This should also provide clarification as to whether land raising is proposed as part of the strategy.



*Working for
Warwickshire*

3. Given the above requirements for further flood risk investigation in point 1, demonstrate that the proposed drainage features are outside the 8m watercourse easement and any anticipated flood outlines. This is to ensure their performance will not be compromised should the watercourse overtop, and that there will be adequate access for maintenance. This should include further details on the drainage layout plan 'Attenuation Summary' illustrating where the watercourse lies in relation to the drainage features and further detail on the outfall locations.
4. The proposed discharge rate of 6.2l/s/ha is higher than the usual average QBAR discharge rate for areas underlain with clay (Soil type 4). The LLFA requires further evidence demonstrating that calculations are correct and follow best practice methodology.
5. The LLFA notes the proposals for Permeable paving and multiple ponds to provide surface water attenuation and a treatment train, which is welcomed. However the current drainage strategy still relies on substantial storage volumes from underground tanks. The LLFA therefore requires further evidence that opportunities to maximise above ground SuDS within the strategy have been explored and further justification is provided for the chosen methodologies.

The LLFA welcomes the additional calculations that have been provided to give assurance that the on site watercourse and downstream culverts have sufficient capacity to receive additional flows following the proposed development without increasing flood risk. The LLFA also acknowledges the proposals to revise the drainage strategy to limit the discharge rate to the appropriate greenfield rate of 4.32l/s/ha and provide an adequate buffer from the on site watercourse. However, whilst this is an outline application, the LLFA still requires further information to demonstrate that adequate attenuation can be incorporated in the design which meets the outlined design criteria to demonstrate that it is possible to deliver a viable drainage scheme.

Based on the information submitted the LLFA currently **maintains our objection** to the development based on the following reasons.

Reason

The information submitted with this application does not comply with the requirements set out in the National Planning Policy Frameworkⁱ (NPPF) and supporting Flood Risk & Coastal Change guidanceⁱⁱ. Specifically:

- The details relating to the surface water drainage are insufficient.

The submitted information does not therefore allow a suitable assessment of the proposed development, considering flood risk and surface water drainage matters.

Overcoming our objection

You can overcome our objection by submitting further information which is detailed below. This information should provide details of the proposed surface water drainage considering the scale and nature of the development to ensure the site will not increase risk elsewhere and where possible reduces flood risk overall. If this cannot be achieved we are likely to maintain our objection to the application.

At the 'outline' planning stage a the Surface Water Drainage Strategy should be developed to inform the masterplan or indicative site layout. This should be based on SuDS principles and provide opportunity to attenuate surface water runoff, improve water quality and provide amenity and biodiversity. This should be supported by suitable high-level calculations demonstrating the performance of the attenuation and that adequate space is provided.

Given the above, the following comments are made and further information required is outlined. This forms the basis of our current objection:

1. Given the proposals to revise the drainage strategy so that an adequate buffer alongside the on site watercourse can be provided and limit the site discharge rate to 4.32l/s/ha, the LLFA

requires evidence to illustrate that it is possible to provide a viable drainage scheme that meets these criteria. Supporting evidence should include:

- a. A revised Indicative Surface Water Drainage Strategy to illustrate the nature and layout of the proposed drainage features.
- b. Calculations to demonstrate that there is adequate attenuation to limit the site's discharge to the appropriate greenfield run off rate.

We ask to be re-consulted with the results of any additional information. We will provide you with bespoke comments within 21 days of receiving formal reconsultation..

Informative

- a) Surface water run-off should be controlled as near to its source as possible through a sustainable drainage approach to surface water management. Sustainable Drainage Systems (SuDS) are an approach to managing surface water run-off which seeks to mimic natural drainage systems and retain water on-site as opposed to traditional drainage approaches which involve piping water off-site as quickly as possible.
- b) The LLFA does not consider oversized pipes or box culverts as sustainable drainage. Where such attenuation is considered necessary, this should be supplemented with suitable above ground features such as green roofs, rain-gardens and tree pits to provide water quality, amenity and bio-diversity benefits.
- c) Reference is made to the LLFA's *Flood Risk & Sustainable Drainage Local guidance for developers*ⁱⁱⁱ which provides further advice and guidance as to how surface water drainage proposals should be designed.

Yours sincerely



Georgina Flower
Flood Risk Management Engineer

Documents Reviewed:

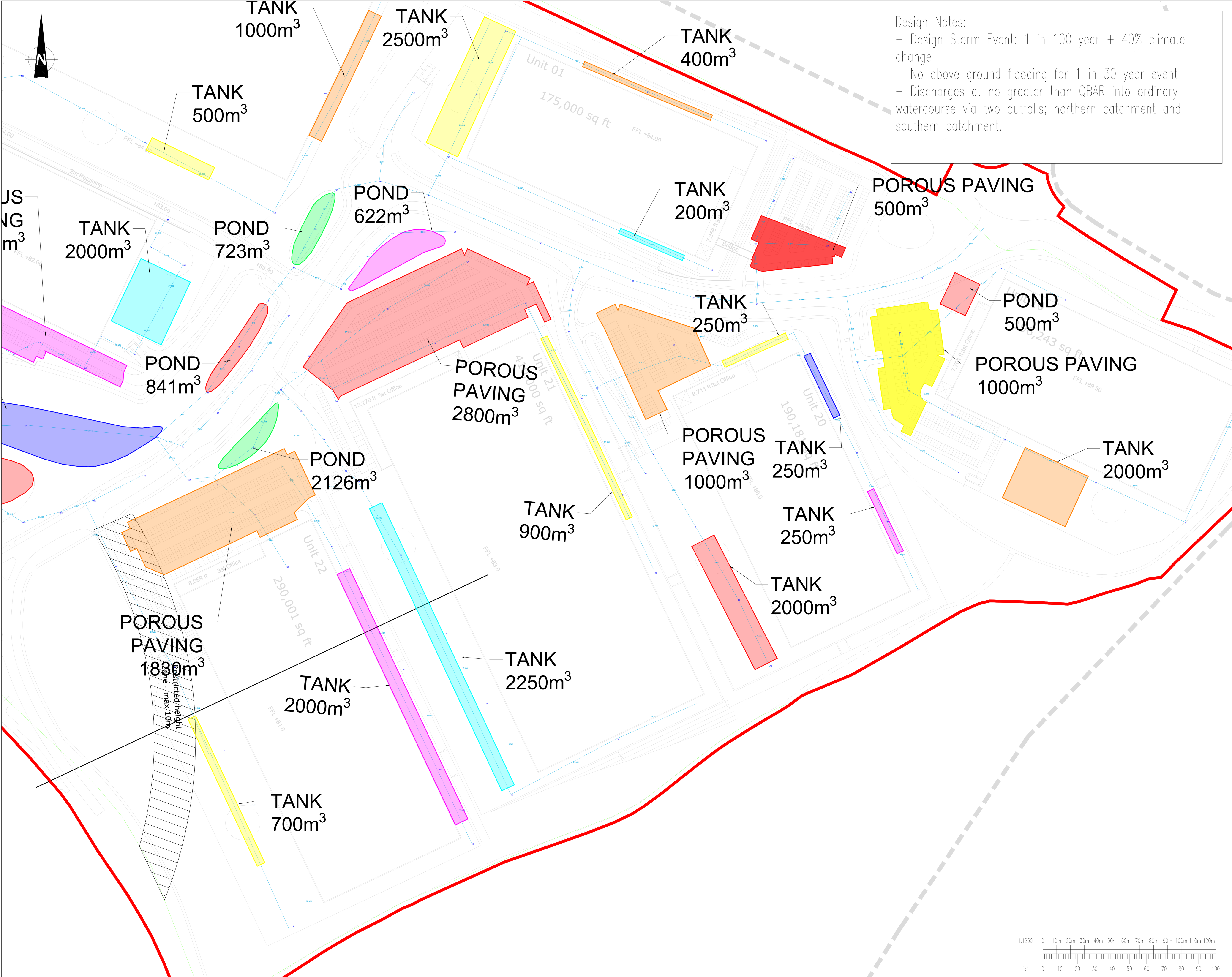
- Response to Objection to Outline planning permission for Extension of MIRA Technology Park_Land to the south of, Watling Street, Caldecote, CV10 0TS_EED13833-118-TN-3-1-3

ⁱ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf

ⁱⁱ <https://www.gov.uk/guidance/flood-risk-and-coastal-change>

ⁱⁱⁱ <https://api.warwickshire.gov.uk/documents/WCCC-1039-95>

APPENDIX B



Design Notes:

- Design Storm Event: 1 in 100 year + 40% climate change
- No above ground flooding for 1 in 30 year event
- Discharges at no greater than QBAR into ordinary watercourse via two outfalls; northern catchment and southern catchment.

This drawing should not be scaled. Dimensions to be verified on site. Any discrepancies should be referred to the Engineer prior to work being put in hand.

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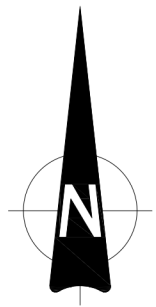
P04	02.08.22	UPDATED SITE LAYOUT	KS
P03	06.05.22	UPDATED LAYOUT	KS
P02	25.02.22	ATTENUATION AMENDMENTS	KT
P01	14.01.22	FIRST ISSUE	KT

Rev	Date	Description	By
Amendments			
Project			
MIRA Technology Park South Site			
Title			
MIRA Southern Manufacturing Sector Surface Water Attenuation Summary Southern Catchments			
Client			
ERI MTP Limited			

Pickfords Wharf Clink Street London SE1 9DG
t 020 7928 7888
mail@watermangroup.com www.watermangroup.com

Status				
PRELIMINARY				
Designed By	Checked By	Waterman Ref	EED13833	
KT	HC			
Drawn By	Date	Jan 2022	Scales @ A1	1:1250
KT				
Project - Originator - Volume - Level - Type - Role - Number				Revision
13833-WIE-ZZ-XX-DR-92003				P04

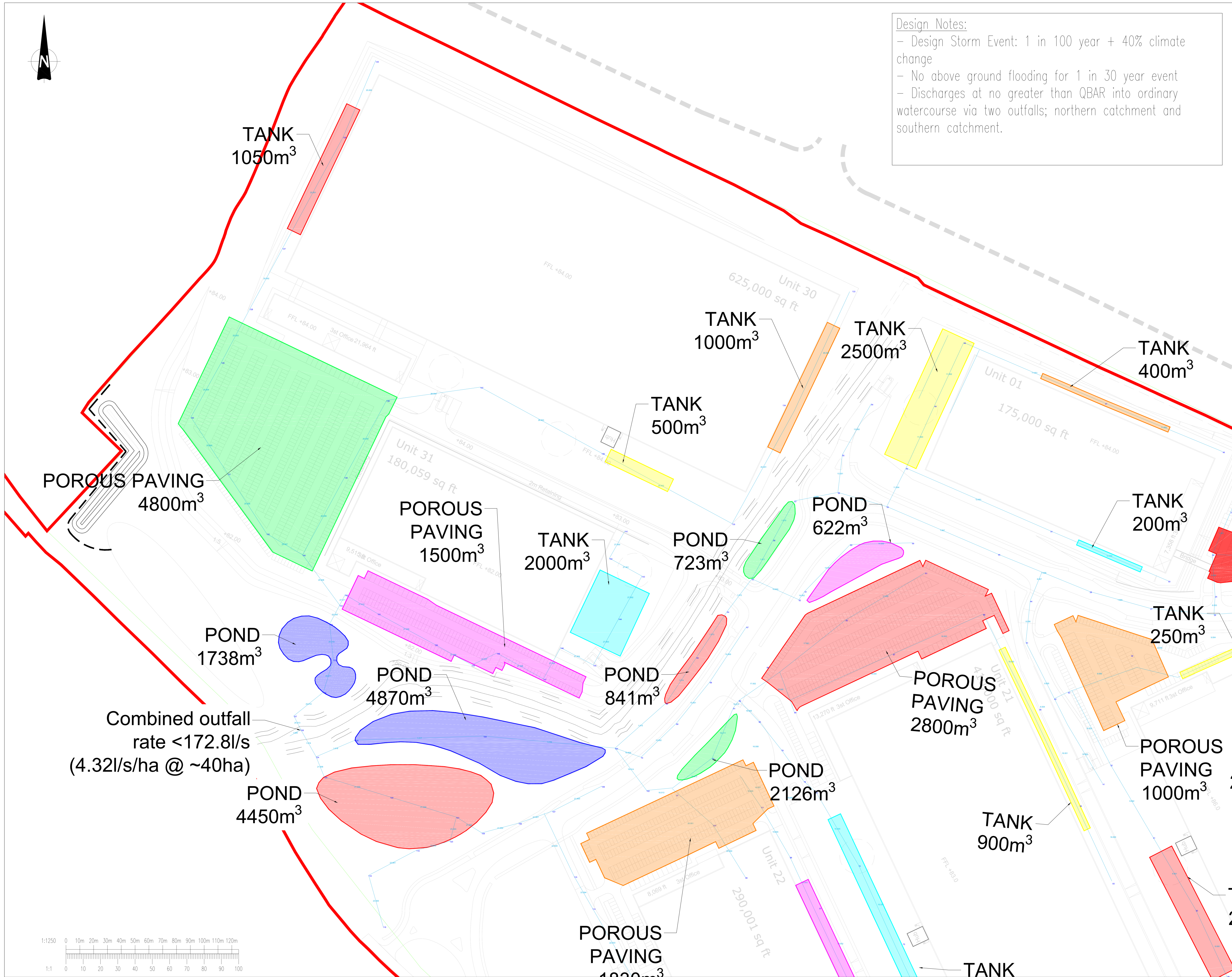
13833-WIE-ZZ-XX-M1-D-92003, 21-092-P005-Indic Mplan, A1-Wat-S



Design Notes:

- Design Storm Event: 1 in 100 year + 40% climate change
- No above ground flooding for 1 in 30 year event
- Discharges at no greater than QBAR into ordinary watercourse via two outfalls; northern catchment and southern catchment.

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APPENDIX C

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Date 05/01/2023				Designed by AS			
File Surface Water Drainage Schemati...				Checked by HC			
Innovyze				Network 2020.1.3			



STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	29.776	0.418	71.2	0.089	5.00	0.0	0.600	o	450	Pipe/Conduit	
1.001	28.167	0.169	166.7	0.051	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.002	56.167	1.304	43.1	0.085	0.00	0.0	0.600	o	450	Pipe/Conduit	
2.000	51.285	0.228	224.9	0.319	5.00	0.0	0.600	o	450	Pipe/Conduit	
2.001	52.741	0.234	225.4	0.242	0.00	0.0	0.600	o	450	Pipe/Conduit	
2.002	52.189	0.232	225.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
3.000	50.454	0.224	225.2	0.362	5.00	0.0	0.600	o	450	Pipe/Conduit	
3.001	50.454	0.224	225.2	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
3.002	71.034	0.316	224.8	0.655	0.00	0.0	0.600	o	450	Pipe/Conduit	
3.003	72.588	0.323	224.7	0.649	0.00	0.0	0.600	o	450	Pipe/Conduit	
3.004	42.415	0.189	224.4	0.649	0.00	0.0	0.600	o	450	Pipe/Conduit	
3.005	28.266	0.126	224.3	0.133	0.00	0.0	0.600	o	450	Pipe/Conduit	
3.006	24.843	0.216	115.0	0.098	0.00	0.0	0.600	o	450	Pipe/Conduit	
4.000	17.446	0.103	169.4	0.164	5.00	0.0	0.600	o	225	Pipe/Conduit	
2.003	33.644	0.150	224.3	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
5.000	58.583	0.450	130.2	0.095	5.00	0.0	0.600	o	225	Pipe/Conduit	
5.001	49.594	0.600	82.7	0.042	0.00	0.0	0.600	o	225	Pipe/Conduit	
2.004	47.603	0.212	224.5	0.301	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.003	65.344	3.035	21.5	0.142	0.00	0.0	0.600	o	450	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	0.00	5.21	88.400	0.089	0.0	0.0	0.0	2.41	383.5	0.0
1.001	0.00	5.50	87.982	0.140	0.0	0.0	0.0	1.57	250.0	0.0
1.002	0.00	5.81	87.813	0.225	0.0	0.0	0.0	3.10	493.8	0.0
2.000	0.00	5.63	87.276	0.319	0.0	0.0	0.0	1.35	214.9	0.0
2.001	0.00	6.28	87.048	0.561	0.0	0.0	0.0	1.35	214.7	0.0
2.002	0.00	6.93	86.814	0.561	0.0	0.0	0.0	1.35	214.9	0.0
3.000	0.00	5.62	87.700	0.362	0.0	0.0	0.0	1.35	214.8	0.0
3.001	0.00	6.25	87.476	0.362	0.0	0.0	0.0	1.35	214.8	0.0
3.002	0.00	7.12	87.252	1.017	0.0	0.0	0.0	1.35	215.0	0.0
3.003	0.00	8.02	86.936	1.666	0.0	0.0	0.0	1.35	215.0	0.0
3.004	0.00	8.54	86.613	2.315	0.0	0.0	0.0	1.35	215.2	0.0
3.005	0.00	8.89	86.424	2.448	0.0	0.0	0.0	1.35	215.2	0.0
3.006	0.00	9.11	86.298	2.546	0.0	0.0	0.0	1.89	301.4	0.0
4.000	0.00	5.29	87.925	0.164	0.0	0.0	0.0	1.00	39.8	0.0
2.003	0.00	9.52	86.082	3.271	0.0	0.0	0.0	1.35	215.2	0.0
5.000	0.00	5.85	88.525	0.095	0.0	0.0	0.0	1.14	45.5	0.0
5.001	0.00	6.43	88.075	0.137	0.0	0.0	0.0	1.44	57.2	0.0
2.004	0.00	10.11	85.932	3.709	0.0	0.0	0.0	1.35	215.1	0.0
1.003	0.00	10.35	85.720	4.076	0.0	0.0	0.0	4.40	699.3	0.0

Waterman Group		Page 2
Pickfords Wharf	MIRA	
Clink Street	LAND SOUTH OF A5	
London, SE1 9DG	EED13833	
Date 05/01/2023	Designed by AS	
File Surface Water Drainage Schemati...	Checked by HC	
Innovyze	Network 2020.1.3	

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
6.000	33.512	0.137	244.6	0.135	5.00	0.0	0.600	o	450	Pipe/Conduit	
6.001	33.683	0.398	84.6	0.099	0.00	0.0	0.600	o	450	Pipe/Conduit	
7.000	42.464	0.173	245.5	0.185	5.00	0.0	0.600	o	450	Pipe/Conduit	
7.001	51.923	0.362	143.4	0.079	0.00	0.0	0.600	o	450	Pipe/Conduit	
6.002	30.132	0.123	245.0	0.023	0.00	0.0	0.600	o	450	Pipe/Conduit	
6.003	13.278	0.054	245.9	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.004	46.235	0.600	77.1	0.121	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.005	45.485	0.900	50.5	0.125	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.006	71.671	1.100	65.2	0.199	0.00	0.0	0.600	o	450	Pipe/Conduit	
8.000	60.979	0.271	225.0	0.770	5.00	0.0	0.600	o	450	Pipe/Conduit	
8.001	60.979	0.271	225.0	0.672	0.00	0.0	0.600	o	450	Pipe/Conduit	
8.002	60.968	0.271	225.0	0.621	0.00	0.0	0.600	o	450	Pipe/Conduit	
8.003	60.968	0.271	225.0	0.119	0.00	0.0	0.600	o	450	Pipe/Conduit	
9.000	54.181	0.241	224.8	0.095	5.00	0.0	0.600	o	450	Pipe/Conduit	
9.001	54.181	0.241	224.8	0.368	0.00	0.0	0.600	o	450	Pipe/Conduit	
9.002	54.035	0.240	225.1	0.366	0.00	0.0	0.600	o	450	Pipe/Conduit	
9.003	54.035	0.240	225.1	0.352	0.00	0.0	0.600	o	450	Pipe/Conduit	
9.004	35.700	0.088	405.7	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
9.005	43.119	0.254	169.8	0.123	0.00	0.0	0.600	o	225	Pipe/Conduit	
9.006	52.876	0.355	148.9	0.372	0.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
6.000	0.00	5.43	86.500	0.135	0.0	0.0	0.0	1.30	206.0	0.0
6.001	0.00	5.69	86.363	0.234	0.0	0.0	0.0	2.21	351.7	0.0
7.000	0.00	5.55	86.500	0.185	0.0	0.0	0.0	1.29	205.7	0.0
7.001	0.00	6.06	86.327	0.264	0.0	0.0	0.0	1.70	269.7	0.0
6.002	0.00	6.45	85.965	0.521	0.0	0.0	0.0	1.29	205.9	0.0
6.003	0.00	6.67	85.842	0.521	0.0	0.0	0.0	1.00	70.6	0.0
1.004	0.00	10.69	82.685	4.718	0.0	0.0	0.0	2.32	368.6	0.0
1.005	0.00	10.95	82.085	4.843	0.0	0.0	0.0	2.87	455.7	0.0
1.006	0.00	11.42	81.185	5.042	0.0	0.0	0.0	2.52	401.1	0.0
8.000	0.00	5.75	84.200	0.770	0.0	0.0	0.0	1.35	214.9	0.0
8.001	0.00	6.50	83.929	1.442	0.0	0.0	0.0	1.35	214.9	0.0
8.002	0.00	7.26	83.658	2.063	0.0	0.0	0.0	1.35	214.9	0.0
8.003	0.00	8.01	83.387	2.182	0.0	0.0	0.0	1.35	214.9	0.0
9.000	0.00	5.67	84.550	0.095	0.0	0.0	0.0	1.35	215.0	0.0
9.001	0.00	6.34	84.309	0.463	0.0	0.0	0.0	1.35	215.0	0.0
9.002	0.00	7.00	84.068	0.829	0.0	0.0	0.0	1.35	214.8	0.0
9.003	0.00	7.67	83.828	1.181	0.0	0.0	0.0	1.35	214.8	0.0
9.004	0.00	8.26	83.588	1.181	0.0	0.0	0.0	1.00	159.5	0.0
9.005	0.00	8.98	83.500	1.304	0.0	0.0	0.0	1.00	39.8	0.0
9.006	0.00	9.81	83.246	1.676	0.0	0.0	0.0	1.07	42.5	0.0

Waterman Group		Page 3
Pickfords Wharf	MIRA	
Clink Street	LAND SOUTH OF A5	
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STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
8.004	42.514	0.764	55.6	0.200	0.00	0.0	0.600	o	450	Pipe/Conduit	
10.000	49.536	0.291	170.2	0.119	5.00	0.0	0.600	o	225	Pipe/Conduit	
8.005	67.003	0.298	224.8	0.118	0.00	0.0	0.600	o	450	Pipe/Conduit	
8.006	30.085	0.134	224.5	0.074	0.00	0.0	0.600	o	450	Pipe/Conduit	
8.007	34.082	0.151	225.7	0.021	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.007	87.646	0.219	400.2	0.182	0.00	0.0	0.600	o	450	Pipe/Conduit	
11.000	92.007	0.409	225.0	0.550	5.00	0.0	0.600	o	450	Pipe/Conduit	
11.001	111.365	0.495	225.0	0.507	0.00	0.0	0.600	o	450	Pipe/Conduit	
11.002	50.443	0.224	225.2	0.351	0.00	0.0	0.600	o	450	Pipe/Conduit	
11.003	49.563	0.220	225.3	0.255	0.00	0.0	0.600	o	450	Pipe/Conduit	
12.000	92.570	0.411	225.2	0.573	5.00	0.0	0.600	o	450	Pipe/Conduit	
12.001	114.081	0.507	225.0	0.507	0.00	0.0	0.600	o	450	Pipe/Conduit	
11.004	31.092	0.138	225.3	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.008	36.823	0.164	224.5	0.048	0.00	0.0	0.600	o	450	Pipe/Conduit	
13.000	42.323	0.249	170.0	0.070	5.00	0.0	0.600	o	225	Pipe/Conduit	
13.001	27.380	0.161	170.1	0.084	0.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
8.004	0.00	10.06	82.666	4.058	0.0	0.0	0.0	2.73	434.2	0.0
10.000	0.00	5.83	83.075	0.119	0.0	0.0	0.0	1.00	39.7	0.0
8.005	0.00	10.89	81.902	4.295	0.0	0.0	0.0	1.35	215.0	0.0
8.006	0.00	11.26	81.604	4.369	0.0	0.0	0.0	1.35	215.1	0.0
8.007	0.00	11.68	81.470	4.390	0.0	0.0	0.0	1.35	214.6	0.0
1.007	0.00	13.13	80.085	9.614	0.0	0.0	0.0	1.01	160.6	0.0
11.000	0.00	6.13	82.275	0.550	0.0	0.0	0.0	1.35	214.9	0.0
11.001	0.00	7.51	81.866	1.057	0.0	0.0	0.0	1.35	214.9	0.0
11.002	0.00	8.13	81.371	1.408	0.0	0.0	0.0	1.35	214.8	0.0
11.003	0.00	8.74	81.147	1.663	0.0	0.0	0.0	1.35	214.8	0.0
12.000	0.00	6.14	82.350	0.573	0.0	0.0	0.0	1.35	214.8	0.0
12.001	0.00	7.55	81.939	1.080	0.0	0.0	0.0	1.35	214.9	0.0
11.004	0.00	9.13	80.927	2.743	0.0	0.0	0.0	1.35	214.8	0.0
1.008	0.00	13.58	79.866	12.405	0.0	0.0	0.0	1.35	215.1	0.0
13.000	0.00	5.71	81.575	0.070	0.0	0.0	0.0	1.00	39.8	0.0
13.001	0.00	6.16	81.326	0.154	0.0	0.0	0.0	1.00	39.7	0.0

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Pickfords Wharf	MIRA	
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STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.009	32.029	0.080	400.4	0.050	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.010	32.092	0.080	401.2	0.072	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.011	32.186	0.080	400.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
14.000	44.759	0.500	89.5	0.116	5.00	0.0	0.600	o	225	Pipe/Conduit	
14.001	47.142	1.000	47.1	0.062	0.00	0.0	0.600	o	225	Pipe/Conduit	
14.002	7.536	0.044	170.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
14.003	37.226	0.344	108.2	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.012	29.639	0.074	400.5	0.041	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.013	39.855	0.100	398.6	0.084	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.014	39.878	0.100	398.8	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.015	49.110	1.186	41.4	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
15.000	47.887	0.500	95.8	0.225	5.00	0.0	0.600	o	600	Pipe/Conduit	
15.001	38.722	0.300	129.1	0.110	0.00	0.0	0.600	o	600	Pipe/Conduit	
15.002	35.243	0.300	117.5	0.108	0.00	0.0	0.600	o	600	Pipe/Conduit	
15.003	19.928	0.112	177.9	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
16.000	62.845	0.157	400.3	0.645	5.00	0.0	0.600	o	450	Pipe/Conduit	
16.001	68.166	0.170	400.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
16.002	69.406	0.174	400.0	0.812	0.00	0.0	0.600	o	450	Pipe/Conduit	
16.003	58.712	0.147	400.0	0.667	0.00	0.0	0.600	o	450	Pipe/Conduit	
16.004	65.055	0.163	400.0	0.711	0.00	0.0	0.600	o	450	Pipe/Conduit	
16.005	61.206	0.153	400.0	0.943	0.00	0.0	0.600	o	450	Pipe/Conduit	
16.006	38.979	0.097	400.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.009	0.00	14.11	79.702	12.609	0.0	0.0	0.0	1.01	160.6	0.0
1.010	0.00	14.64	79.622	12.681	0.0	0.0	0.0	1.01	160.5	0.0
1.011	0.00	15.17	79.542	12.681	0.0	0.0	0.0	1.01	160.7	0.0
14.000	0.00	5.54	82.075	0.116	0.0	0.0	0.0	1.38	55.0	0.0
14.001	0.00	5.95	81.575	0.178	0.0	0.0	0.0	1.91	75.9	0.0
14.002	0.00	6.08	80.575	0.178	0.0	0.0	0.0	1.00	39.8	0.0
14.003	0.00	6.57	80.531	0.178	0.0	0.0	0.0	1.26	49.9	0.0
1.012	0.00	15.66	79.462	12.900	0.0	0.0	0.0	1.01	160.6	0.0
1.013	0.00	16.32	79.388	12.984	0.0	0.0	0.0	1.01	161.0	0.0
1.014	0.00	16.97	79.288	12.984	0.0	0.0	0.0	1.01	160.9	0.0
1.015	0.00	17.23	79.188	12.984	0.0	0.0	0.0	3.17	503.6	0.0
15.000	0.00	5.32	80.600	0.225	0.0	0.0	0.0	2.49	703.7	0.0
15.001	0.00	5.62	80.100	0.335	0.0	0.0	0.0	2.14	605.7	0.0
15.002	0.00	5.88	79.800	0.443	0.0	0.0	0.0	2.25	635.0	0.0
15.003	0.00	6.07	79.500	0.443	0.0	0.0	0.0	1.82	515.3	0.0
16.000	0.00	6.04	80.341	0.645	0.0	0.0	0.0	1.01	160.6	0.0
16.001	0.00	7.16	80.184	0.645	0.0	0.0	0.0	1.01	160.7	0.0
16.002	0.00	8.31	80.014	1.457	0.0	0.0	0.0	1.01	160.7	0.0
16.003	0.00	9.28	79.840	2.124	0.0	0.0	0.0	1.01	160.7	0.0
16.004	0.00	10.35	79.693	2.835	0.0	0.0	0.0	1.01	160.7	0.0
16.005	0.00	11.36	79.531	3.778	0.0	0.0	0.0	1.01	160.7	0.0
16.006	0.00	12.00	79.378	3.778	0.0	0.0	0.0	1.01	160.7	0.0

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STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
16.007	24.009	0.060	400.0	0.248	0.00	0.0	0.600	o	450	Pipe/Conduit	
16.008	36.804	0.092	400.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
16.009	20.805	0.052	400.1	0.050	0.00	0.0	0.600	o	450	Pipe/Conduit	
17.000	66.842	0.500	133.7	0.166	5.00	0.0	0.600	o	450	Pipe/Conduit	
17.001	66.625	2.464	27.0	0.224	0.00	0.0	0.600	o	450	Pipe/Conduit	
18.000	66.408	0.166	400.0	0.448	5.00	0.0	0.600	o	450	Pipe/Conduit	
18.001	73.759	0.184	400.9	0.504	0.00	0.0	0.600	o	450	Pipe/Conduit	
18.002	79.779	0.199	400.9	0.443	0.00	0.0	0.600	o	450	Pipe/Conduit	
18.003	65.094	0.163	399.3	0.431	0.00	0.0	0.600	o	450	Pipe/Conduit	
18.004	50.512	0.126	400.9	0.232	0.00	0.0	0.600	o	450	Pipe/Conduit	
18.005	38.188	0.246	155.3	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
17.002	31.460	0.185	170.1	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
16.010	6.892	0.017	405.4	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
16.011	39.332	0.098	401.3	0.213	0.00	0.0	0.600	o	450	Pipe/Conduit	
16.012	37.215	0.093	400.2	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
16.013	21.674	0.096	225.8	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
19.000	65.385	0.163	401.1	0.779	5.00	0.0	0.600	o	450	Pipe/Conduit	
19.001	77.624	0.194	400.1	0.833	0.00	0.0	0.600	o	450	Pipe/Conduit	
19.002	60.097	0.150	400.6	0.610	0.00	0.0	0.600	o	450	Pipe/Conduit	
19.003	42.558	0.106	401.5	0.362	0.00	0.0	0.600	o	450	Pipe/Conduit	
19.004	41.896	0.105	399.0	0.171	0.00	0.0	0.600	o	450	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
16.007	0.00	12.40	79.280	4.026	0.0	0.0	0.0	1.01	160.7	0.0
16.008	0.00	13.00	79.220	4.026	0.0	0.0	0.0	1.01	160.7	0.0
16.009	0.00	13.35	79.128	4.076	0.0	0.0	0.0	1.01	160.7	0.0
17.000	0.00	5.63	82.075	0.166	0.0	0.0	0.0	1.76	279.4	0.0
17.001	0.00	5.92	81.575	0.390	0.0	0.0	0.0	3.92	623.7	0.0
18.000	0.00	6.10	80.195	0.448	0.0	0.0	0.0	1.01	160.7	0.0
18.001	0.00	7.31	80.029	0.952	0.0	0.0	0.0	1.01	160.5	0.0
18.002	0.00	8.63	79.845	1.395	0.0	0.0	0.0	1.01	160.5	0.0
18.003	0.00	9.70	79.646	1.826	0.0	0.0	0.0	1.01	160.8	0.0
18.004	0.00	10.54	79.483	2.058	0.0	0.0	0.0	1.01	160.5	0.0
18.005	0.00	10.93	79.357	2.058	0.0	0.0	0.0	1.63	259.1	0.0
17.002	0.00	11.27	79.111	2.448	0.0	0.0	0.0	1.56	247.5	0.0
16.010	0.00	13.46	78.926	6.524	0.0	0.0	0.0	1.00	159.6	0.0
16.011	0.00	14.11	78.909	6.737	0.0	0.0	0.0	1.01	160.4	0.0
16.012	0.00	14.73	78.811	6.737	0.0	0.0	0.0	1.01	160.7	0.0
16.013	0.00	15.07	78.718	6.737	0.0	0.0	0.0	1.04	73.7	0.0
19.000	0.00	6.08	79.200	0.779	0.0	0.0	0.0	1.01	160.5	0.0
19.001	0.00	7.36	79.037	1.612	0.0	0.0	0.0	1.01	160.7	0.0
19.002	0.00	8.35	78.843	2.222	0.0	0.0	0.0	1.01	160.6	0.0
19.003	0.00	9.06	78.693	2.584	0.0	0.0	0.0	1.01	160.4	0.0
19.004	0.00	9.75	78.587	2.755	0.0	0.0	0.0	1.01	160.9	0.0

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STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
20.000	44.506	0.262	169.9	0.168	5.00	0.0	0.600	o	225	Pipe/Conduit	
20.001	32.865	0.193	170.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
19.005	27.421	0.069	397.4	0.084	0.00	0.0	0.600	o	450	Pipe/Conduit	
16.014	38.201	0.170	224.7	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.016	95.464	0.095	1004.9	0.486	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.017	92.883	0.093	998.7	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.018	30.920	0.137	225.7	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
21.000	40.030	0.350	114.4	0.205	5.00	0.0	0.600	o	450	Pipe/Conduit	
21.001	25.914	0.154	168.3	0.067	0.00	0.0	0.600	o	450	Pipe/Conduit	
21.002	27.638	0.123	224.7	0.064	0.00	0.0	0.600	o	450	Pipe/Conduit	
21.003	21.650	0.652	33.2	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
22.000	70.021	0.175	400.1	0.507	5.00	0.0	0.600	o	450	Pipe/Conduit	
22.001	91.226	0.228	400.1	0.628	0.00	0.0	0.600	o	450	Pipe/Conduit	
22.002	69.611	0.174	400.1	0.490	0.00	0.0	0.600	o	450	Pipe/Conduit	
22.003	57.350	0.143	401.0	0.550	0.00	0.0	0.600	o	450	Pipe/Conduit	
22.004	26.674	0.067	398.1	0.367	0.00	0.0	0.600	o	450	Pipe/Conduit	
22.005	52.489	0.131	400.7	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
23.000	38.457	0.096	400.6	0.444	5.00	0.0	0.600	o	600	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
20.000	0.00	5.74	79.425	0.168	0.0	0.0	0.0	1.00	39.8	0.0
20.001	0.00	6.29	79.163	0.168	0.0	0.0	0.0	1.00	39.8	0.0
19.005	0.00	10.20	78.482	3.007	0.0	0.0	0.0	1.01	161.2	0.0
16.014	0.00	15.68	78.172	9.744	0.0	0.0	0.0	1.04	73.8	0.0
1.016	0.00	20.49	78.002	23.657	0.0	0.0	0.0	0.49	34.5	0.0
1.017	0.00	23.66	77.907	23.657	0.0	0.0	0.0	0.49	34.6	0.0
1.018	0.00	24.15	77.814	23.657	0.0	0.0	0.0	1.04	73.7	0.0
21.000	0.00	5.35	79.350	0.205	0.0	0.0	0.0	1.90	302.2	0.0
21.001	0.00	5.63	79.000	0.272	0.0	0.0	0.0	1.56	248.8	0.0
21.002	0.00	5.97	78.846	0.336	0.0	0.0	0.0	1.35	215.0	0.0
21.003	0.00	6.07	78.723	0.336	0.0	0.0	0.0	3.54	562.7	0.0
22.000	0.00	6.16	79.275	0.507	0.0	0.0	0.0	1.01	160.7	0.0
22.001	0.00	7.66	79.100	1.135	0.0	0.0	0.0	1.01	160.7	0.0
22.002	0.00	8.81	78.872	1.625	0.0	0.0	0.0	1.01	160.7	0.0
22.003	0.00	9.76	78.698	2.175	0.0	0.0	0.0	1.01	160.5	0.0
22.004	0.00	10.20	78.555	2.542	0.0	0.0	0.0	1.01	161.1	0.0
22.005	0.00	11.06	78.488	2.542	0.0	0.0	0.0	1.01	160.5	0.0
23.000	0.00	5.53	79.234	0.444	0.0	0.0	0.0	1.21	342.3	0.0

Waterman Group		Page 7
Pickfords Wharf	MIRA	
Clink Street	LAND SOUTH OF A5	
London, SE1 9DG	EED13833	
Date 05/01/2023	Designed by AS	
File Surface Water Drainage Schemati...	Checked by HC	
Innovyze	Network 2020.1.3	

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
24.000	24.712	0.062	398.6	0.166	5.00	0.0	0.600	o	600	Pipe/Conduit	
23.001	39.158	0.098	399.6	0.140	0.00	0.0	0.600	o	600	Pipe/Conduit	
23.002	25.124	0.063	398.8	0.064	0.00	0.0	0.600	o	600	Pipe/Conduit	
23.003	17.903	0.045	397.8	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
21.004	49.967	0.125	399.7	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
21.005	49.981	0.125	399.8	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
21.006	15.761	0.070	225.2	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.019	22.477	0.056	401.4	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
25.000	77.088	0.751	102.6	1.671	5.00	0.0	0.600	o	450	Pipe/Conduit	
25.001	91.717	0.894	102.6	1.509	0.00	0.0	0.600	o	450	Pipe/Conduit	
25.002	49.797	0.485	102.7	0.291	0.00	0.0	0.600	o	450	Pipe/Conduit	
25.003	43.931	0.428	102.6	0.380	0.00	0.0	0.600	o	450	Pipe/Conduit	
25.004	45.404	0.442	102.7	0.246	0.00	0.0	0.600	o	450	Pipe/Conduit	
25.005	48.846	0.122	400.4	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
25.006	51.699	0.129	400.8	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
25.007	30.176	0.075	402.3	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
26.000	94.637	0.237	399.3	1.669	5.00	0.0	0.600	o	450	Pipe/Conduit	
26.001	93.663	0.234	400.3	1.510	0.00	0.0	0.600	o	450	Pipe/Conduit	
26.002	97.803	0.245	399.2	0.521	0.00	0.0	0.600	o	450	Pipe/Conduit	
26.003	100.000	0.250	400.0	0.597	0.00	0.0	0.600	o	450	Pipe/Conduit	
26.004	68.495	0.171	400.6	0.374	0.00	0.0	0.600	o	600	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
24.000	0.00	5.34	79.200	0.166	0.0	0.0	0.0	1.21	343.1	0.0
23.001	0.00	6.07	79.138	0.750	0.0	0.0	0.0	1.21	342.7	0.0
23.002	0.00	6.41	79.040	0.814	0.0	0.0	0.0	1.21	343.0	0.0
23.003	0.00	6.66	78.977	0.814	0.0	0.0	0.0	1.21	343.4	0.0
21.004	0.00	11.89	78.071	3.692	0.0	0.0	0.0	1.01	160.7	0.0
21.005	0.00	12.71	77.946	3.692	0.0	0.0	0.0	1.01	160.7	0.0
21.006	0.00	12.96	77.806	3.692	0.0	0.0	0.0	1.04	73.8	0.0
1.019	0.00	24.52	77.670	27.349	0.0	0.0	0.0	1.01	160.4	0.0
25.000	0.00	5.64	83.200	1.671	0.0	0.0	0.0	2.01	319.2	0.0
25.001	0.00	6.40	82.449	3.180	0.0	0.0	0.0	2.01	319.2	0.0
25.002	0.00	6.82	81.555	3.471	0.0	0.0	0.0	2.01	319.1	0.0
25.003	0.00	7.18	81.070	3.851	0.0	0.0	0.0	2.01	319.2	0.0
25.004	0.00	7.56	80.642	4.097	0.0	0.0	0.0	2.01	319.0	0.0
25.005	0.00	8.36	80.200	4.097	0.0	0.0	0.0	1.01	160.6	0.0
25.006	0.00	9.22	80.078	4.097	0.0	0.0	0.0	1.01	160.5	0.0
25.007	0.00	9.72	79.949	4.097	0.0	0.0	0.0	1.01	160.2	0.0
26.000	0.00	6.56	83.200	1.669	0.0	0.0	0.0	1.01	160.8	0.0
26.001	0.00	8.11	82.963	3.179	0.0	0.0	0.0	1.01	160.6	0.0
26.002	0.00	9.72	82.729	3.700	0.0	0.0	0.0	1.01	160.8	0.0
26.003	0.00	11.37	82.484	4.297	0.0	0.0	0.0	1.01	160.7	0.0
26.004	0.00	12.31	82.084	4.671	0.0	0.0	0.0	1.21	342.3	0.0

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Pickfords Wharf	MIRA	
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File Surface Water Drainage Schemati...	Checked by HC	
Innovyze	Network 2020.1.3	

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
26.005	63.429	0.759	83.6	1.255	0.00	0.0	0.600	o	600	Pipe/Conduit	
26.006	63.826	1.129	56.5	0.436	0.00	0.0	0.600	o	600	Pipe/Conduit	
25.008	45.298	1.818	24.9	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
27.000	22.854	0.057	400.9	0.679	5.00	0.0	0.600	o	450	Pipe/Conduit	
27.001	26.875	0.067	401.1	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
27.002	35.077	0.088	398.6	0.483	0.00	0.0	0.600	o	450	Pipe/Conduit	
27.003	38.260	0.096	398.5	0.280	0.00	0.0	0.600	o	450	Pipe/Conduit	
27.004	26.766	0.067	399.5	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
27.005	25.827	1.051	24.6	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
27.006	38.476	0.096	400.8	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
27.007	20.122	0.050	402.4	0.085	0.00	0.0	0.600	o	450	Pipe/Conduit	
27.008	30.535	0.076	401.8	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
27.009	46.912	0.117	401.0	0.189	0.00	0.0	0.600	o	450	Pipe/Conduit	
27.010	27.436	1.084	25.3	0.132	0.00	0.0	0.600	o	450	Pipe/Conduit	
27.011	8.510	0.022	386.8	0.150	0.00	0.0	0.600	o	450	Pipe/Conduit	
25.009	15.362	0.038	400.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
25.010	25.956	0.065	399.3	0.174	0.00	0.0	0.600	o	450	Pipe/Conduit	
25.011	24.650	0.062	397.6	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
25.012	27.341	0.122	224.1	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
25.013	11.199	0.050	224.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.020	9.176	0.023	399.0	0.000	0.00	0.0	0.600	\	-2	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
26.005	0.00	12.71	81.913	5.926	0.0	0.0	0.0	2.67	753.6	0.0
26.006	0.00	13.03	81.154	6.362	0.0	0.0	0.0	3.24	917.0	0.0
25.008	0.00	13.22	79.873	10.459	0.0	0.0	0.0	4.09	649.9	0.0
27.000	0.00	5.38	82.200	0.679	0.0	0.0	0.0	1.01	160.5	0.0
27.001	0.00	5.82	82.143	0.679	0.0	0.0	0.0	1.01	160.5	0.0
27.002	0.00	6.40	82.076	1.162	0.0	0.0	0.0	1.01	161.0	0.0
27.003	0.00	7.03	81.988	1.442	0.0	0.0	0.0	1.01	161.0	0.0
27.004	0.00	7.47	81.892	1.442	0.0	0.0	0.0	1.01	160.8	0.0
27.005	0.00	7.57	81.825	1.442	0.0	0.0	0.0	4.11	654.4	0.0
27.006	0.00	8.21	80.774	1.442	0.0	0.0	0.0	1.01	160.5	0.0
27.007	0.00	8.54	80.678	1.527	0.0	0.0	0.0	1.01	160.2	0.0
27.008	0.00	9.05	80.628	1.527	0.0	0.0	0.0	1.01	160.3	0.0
27.009	0.00	9.82	80.552	1.716	0.0	0.0	0.0	1.01	160.5	0.0
27.010	0.00	9.94	80.435	1.848	0.0	0.0	0.0	4.05	644.8	0.0
27.011	0.00	10.07	79.351	1.998	0.0	0.0	0.0	1.03	163.4	0.0
25.009	0.00	13.47	78.055	12.457	0.0	0.0	0.0	1.01	160.7	0.0
25.010	0.00	13.90	78.017	12.631	0.0	0.0	0.0	1.01	160.8	0.0
25.011	0.00	14.31	77.952	12.631	0.0	0.0	0.0	1.01	161.2	0.0
25.012	0.00	14.74	77.890	12.631	0.0	0.0	0.0	1.05	73.9	0.0
25.013	0.00	14.92	77.768	12.631	0.0	0.0	0.0	1.05	74.0	0.0
1.020	0.00	24.59	77.600	39.980	0.0	0.0	0.0	2.40	3594.3	0.0

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Pickfords Wharf Clink Street London, SE1 9DG	MIRA LAND SOUTH OF A5 EED13833	
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Innovyze	Network 2020.1.3	

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.089	0.089	0.089
1.001	-	-	100	0.051	0.051	0.051
1.002	-	-	100	0.085	0.085	0.085
2.000	-	-	100	0.319	0.319	0.319
2.001	-	-	100	0.242	0.242	0.242
2.002	-	-	100	0.000	0.000	0.000
3.000	-	-	100	0.362	0.362	0.362
3.001	-	-	100	0.000	0.000	0.000
3.002	-	-	100	0.655	0.655	0.655
3.003	-	-	100	0.649	0.649	0.649
3.004	-	-	100	0.649	0.649	0.649
3.005	-	-	100	0.133	0.133	0.133
3.006	-	-	100	0.098	0.098	0.098
4.000	-	-	100	0.164	0.164	0.164
2.003	-	-	100	0.000	0.000	0.000
5.000	-	-	100	0.095	0.095	0.095
5.001	-	-	100	0.042	0.042	0.042
2.004	-	-	100	0.301	0.301	0.301
1.003	-	-	100	0.142	0.142	0.142
6.000	-	-	100	0.135	0.135	0.135
6.001	-	-	100	0.099	0.099	0.099
7.000	-	-	100	0.185	0.185	0.185
7.001	-	-	100	0.079	0.079	0.079
6.002	-	-	100	0.023	0.023	0.023
6.003	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.121	0.121	0.121
1.005	-	-	100	0.125	0.125	0.125
1.006	-	-	100	0.199	0.199	0.199
8.000	-	-	100	0.770	0.770	0.770
8.001	-	-	100	0.672	0.672	0.672
8.002	-	-	100	0.621	0.621	0.621
8.003	-	-	100	0.119	0.119	0.119
9.000	-	-	100	0.095	0.095	0.095
9.001	-	-	100	0.368	0.368	0.368
9.002	-	-	100	0.366	0.366	0.366
9.003	-	-	100	0.352	0.352	0.352
9.004	-	-	100	0.000	0.000	0.000
9.005	-	-	100	0.123	0.123	0.123
9.006	-	-	100	0.372	0.372	0.372
8.004	-	-	100	0.200	0.200	0.200
10.000	-	-	100	0.119	0.119	0.119
8.005	-	-	100	0.118	0.118	0.118
8.006	-	-	100	0.074	0.074	0.074
8.007	-	-	100	0.021	0.021	0.021
1.007	-	-	100	0.182	0.182	0.182
11.000	-	-	100	0.550	0.550	0.550
11.001	-	-	100	0.507	0.507	0.507
11.002	-	-	100	0.351	0.351	0.351
11.003	-	-	100	0.255	0.255	0.255
12.000	-	-	100	0.573	0.573	0.573
12.001	-	-	100	0.507	0.507	0.507
11.004	-	-	100	0.000	0.000	0.000
1.008	-	-	100	0.048	0.048	0.048
13.000	-	-	100	0.070	0.070	0.070
13.001	-	-	100	0.084	0.084	0.084
1.009	-	-	100	0.050	0.050	0.050
1.010	-	-	100	0.072	0.072	0.072
1.011	-	-	100	0.000	0.000	0.000
14.000	-	-	100	0.116	0.116	0.116
14.001	-	-	100	0.062	0.062	0.062
14.002	-	-	100	0.000	0.000	0.000
14.003	-	-	100	0.000	0.000	0.000

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Pickfords Wharf Clink Street London, SE1 9DG	MIRA LAND SOUTH OF A5 EED13833	
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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.012	-	-	100	0.041	0.041	0.041
1.013	-	-	100	0.084	0.084	0.084
1.014	-	-	100	0.000	0.000	0.000
1.015	-	-	100	0.000	0.000	0.000
15.000	-	-	100	0.225	0.225	0.225
15.001	-	-	100	0.110	0.110	0.110
15.002	-	-	100	0.108	0.108	0.108
15.003	-	-	100	0.000	0.000	0.000
16.000	-	-	100	0.645	0.645	0.645
16.001	-	-	100	0.000	0.000	0.000
16.002	-	-	100	0.812	0.812	0.812
16.003	-	-	100	0.667	0.667	0.667
16.004	-	-	100	0.711	0.711	0.711
16.005	-	-	100	0.943	0.943	0.943
16.006	-	-	100	0.000	0.000	0.000
16.007	-	-	100	0.248	0.248	0.248
16.008	-	-	100	0.000	0.000	0.000
16.009	-	-	100	0.050	0.050	0.050
17.000	-	-	100	0.166	0.166	0.166
17.001	-	-	100	0.224	0.224	0.224
18.000	-	-	100	0.448	0.448	0.448
18.001	-	-	100	0.504	0.504	0.504
18.002	-	-	100	0.443	0.443	0.443
18.003	-	-	100	0.431	0.431	0.431
18.004	-	-	100	0.232	0.232	0.232
18.005	-	-	100	0.000	0.000	0.000
17.002	-	-	100	0.000	0.000	0.000
16.010	-	-	100	0.000	0.000	0.000
16.011	-	-	100	0.213	0.213	0.213
16.012	-	-	100	0.000	0.000	0.000
16.013	-	-	100	0.000	0.000	0.000
19.000	-	-	100	0.779	0.779	0.779
19.001	-	-	100	0.833	0.833	0.833
19.002	-	-	100	0.610	0.610	0.610
19.003	-	-	100	0.362	0.362	0.362
19.004	-	-	100	0.171	0.171	0.171
20.000	-	-	100	0.168	0.168	0.168
20.001	-	-	100	0.000	0.000	0.000
19.005	-	-	100	0.084	0.084	0.084
16.014	-	-	100	0.000	0.000	0.000
1.016	-	-	100	0.486	0.486	0.486
1.017	-	-	100	0.000	0.000	0.000
1.018	-	-	100	0.000	0.000	0.000
21.000	-	-	100	0.205	0.205	0.205
21.001	-	-	100	0.067	0.067	0.067
21.002	-	-	100	0.064	0.064	0.064
21.003	-	-	100	0.000	0.000	0.000
22.000	-	-	100	0.507	0.507	0.507
22.001	-	-	100	0.628	0.628	0.628
22.002	-	-	100	0.490	0.490	0.490
22.003	-	-	100	0.550	0.550	0.550
22.004	-	-	100	0.367	0.367	0.367
22.005	-	-	100	0.000	0.000	0.000
23.000	-	-	100	0.444	0.444	0.444
24.000	-	-	100	0.166	0.166	0.166
23.001	-	-	100	0.140	0.140	0.140
23.002	-	-	100	0.064	0.064	0.064
23.003	-	-	100	0.000	0.000	0.000
21.004	-	-	100	0.000	0.000	0.000
21.005	-	-	100	0.000	0.000	0.000
21.006	-	-	100	0.000	0.000	0.000
1.019	-	-	100	0.000	0.000	0.000

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Pickfords Wharf	MIRA	
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Innovyze	Network 2020.1.3	

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
25.000	-	-	100	1.671	1.671	1.671
25.001	-	-	100	1.509	1.509	1.509
25.002	-	-	100	0.291	0.291	0.291
25.003	-	-	100	0.380	0.380	0.380
25.004	-	-	100	0.246	0.246	0.246
25.005	-	-	100	0.000	0.000	0.000
25.006	-	-	100	0.000	0.000	0.000
25.007	-	-	100	0.000	0.000	0.000
26.000	-	-	100	1.669	1.669	1.669
26.001	-	-	100	1.510	1.510	1.510
26.002	-	-	100	0.521	0.521	0.521
26.003	-	-	100	0.597	0.597	0.597
26.004	-	-	100	0.374	0.374	0.374
26.005	-	-	100	1.255	1.255	1.255
26.006	-	-	100	0.436	0.436	0.436
25.008	-	-	100	0.000	0.000	0.000
27.000	-	-	100	0.679	0.679	0.679
27.001	-	-	100	0.000	0.000	0.000
27.002	-	-	100	0.483	0.483	0.483
27.003	-	-	100	0.280	0.280	0.280
27.004	-	-	100	0.000	0.000	0.000
27.005	-	-	100	0.000	0.000	0.000
27.006	-	-	100	0.000	0.000	0.000
27.007	-	-	100	0.085	0.085	0.085
27.008	-	-	100	0.000	0.000	0.000
27.009	-	-	100	0.189	0.189	0.189
27.010	-	-	100	0.132	0.132	0.132
27.011	-	-	100	0.150	0.150	0.150
25.009	-	-	100	0.000	0.000	0.000
25.010	-	-	100	0.174	0.174	0.174
25.011	-	-	100	0.000	0.000	0.000
25.012	-	-	100	0.000	0.000	0.000
25.013	-	-	100	0.000	0.000	0.000
1.020	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				39.980	39.980	39.980

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.020		78.680	77.577	0.000	0	0

Online Controls for Storm

Hydro-Brake® Optimum Manhole: 11, DS/PN: 3.004, Volume (m³): 16.1

Unit Reference	MD-SHE-0108-8000-2737-8000
Design Head (m)	2.737
Design Flow (l/s)	8.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	108
Invert Level (m)	86.613
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.737	8.0	Kick-Flo®	0.966	4.9
Flush-Flo™	0.472	6.2	Mean Flow over Head Range	-	6.1

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.7	0.800	5.7	2.000	6.9	4.000	9.6	7.000	12.5
0.200	5.5	1.000	5.0	2.200	7.2	4.500	10.1	7.500	12.9
0.300	6.0	1.200	5.4	2.400	7.5	5.000	10.6	8.000	13.3
0.400	6.2	1.400	5.8	2.600	7.8	5.500	11.1	8.500	13.7
0.500	6.2	1.600	6.2	3.000	8.3	6.000	11.6	9.000	14.1
0.600	6.1	1.800	6.6	3.500	9.0	6.500	12.0	9.500	14.4

Hydro-Brake® Optimum Manhole: 18, DS/PN: 2.004, Volume (m³): 12.3

Unit Reference	MD-SHE-0141-1400-2968-1400
Design Head (m)	2.968
Design Flow (l/s)	14.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	141
Invert Level (m)	85.932
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1500

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.968	14.0	Kick-Flo®	1.259	9.3
Flush-Flo™	0.613	11.8	Mean Flow over Head Range	-	11.1

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.1	0.800	11.7	2.000	11.6	4.000	16.1	7.000	21.1
0.200	9.7	1.000	11.1	2.200	12.1	4.500	17.0	7.500	21.8
0.300	10.9	1.200	9.9	2.400	12.6	5.000	17.9	8.000	22.5
0.400	11.5	1.400	9.8	2.600	13.1	5.500	18.8	8.500	23.1
0.500	11.7	1.600	10.4	3.000	14.1	6.000	19.6	9.000	23.8
0.600	11.8	1.800	11.0	3.500	15.1	6.500	20.3	9.500	24.4

Hydro-Brake® Optimum Manhole: 25, DS/PN: 6.003, Volume (m³): 7.8

Unit Reference MD-SHE-0062-2300-1858-2300	
Design Head (m)	1.858
Design Flow (l/s)	2.3
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	62
Invert Level (m)	85.842
Minimum Outlet Pipe Diameter (mm)	75
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.858	2.3	Kick-Flo®	0.555	1.3
Flush-Flo™	0.270	1.6	Mean Flow over Head Range	-	1.7

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	1.4	0.800	1.6	2.000	2.4	4.000	3.3	7.000	4.3
0.200	1.6	1.000	1.7	2.200	2.5	4.500	3.5	7.500	4.4
0.300	1.6	1.200	1.9	2.400	2.6	5.000	3.6	8.000	4.5
0.400	1.6	1.400	2.0	2.600	2.7	5.500	3.8	8.500	4.7
0.500	1.5	1.600	2.1	3.000	2.9	6.000	4.0	9.000	4.8
0.600	1.4	1.800	2.3	3.500	3.1	6.500	4.1	9.500	4.9

Hydro-Brake® Optimum Manhole: 31, DS/PN: 8.002, Volume (m³): 13.3

Unit Reference MD-SHE-0121-8900-2192-8900	
Design Head (m)	2.192
Design Flow (l/s)	8.9
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	121
Invert Level (m)	83.658
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.192	8.9	Kick-Flo®	1.081	6.4
Flush-Flo™	0.531	8.0	Mean Flow over Head Range	-	7.3

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	4.3	0.800	7.7	2.000	8.5	4.000	11.8	7.000	15.4
0.200	6.9	1.000	7.0	2.200	8.9	4.500	12.5	7.500	16.0
0.300	7.6	1.200	6.7	2.400	9.3	5.000	13.2	8.000	16.5
0.400	7.9	1.400	7.2	2.600	9.6	5.500	13.8	8.500	17.0
0.500	8.0	1.600	7.7	3.000	10.3	6.000	14.4	9.000	17.4
0.600	8.0	1.800	8.1	3.500	11.1	6.500	14.9	9.500	17.9

Orifice Manhole: 39, DS/PN: 9.006, Volume (m³): 6.3

Diameter (m) 0.150 Discharge Coefficient 0.600 Invert Level (m) 83.246

Hydro-Brake® Optimum Manhole: 42, DS/PN: 8.005, Volume (m³): 13.0

Unit Reference	MD-SHE-0169-1860-2598-1860
Design Head (m)	2.598
Design Flow (l/s)	18.6
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	169
Invert Level (m)	81.902
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1800

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.598	18.6	Kick-Flo®	1.508	14.4
Flush-Flo™	0.736	18.3	Mean Flow over Head Range	-	16.1

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	6.0	0.800	18.2	2.000	16.4	4.000	22.8	7.000	29.9
0.200	14.1	1.000	17.9	2.200	17.2	4.500	24.2	7.500	30.9
0.300	16.0	1.200	17.2	2.400	17.9	5.000	25.4	8.000	31.9
0.400	17.1	1.400	15.7	2.600	18.6	5.500	26.6	8.500	32.8
0.500	17.8	1.600	14.8	3.000	19.9	6.000	27.8	9.000	33.8
0.600	18.1	1.800	15.6	3.500	21.4	6.500	28.9	9.500	34.6

Hydro-Brake® Optimum Manhole: 52, DS/PN: 11.004, Volume (m³): 30.7

Unit Reference	MD-SHE-0130-1180-2923-1180
Design Head (m)	2.923
Design Flow (l/s)	11.8
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	130
Invert Level (m)	80.927
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1500

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.923	11.8	Kick-Flo®	1.163	7.6
Flush-Flo™	0.564	9.7	Mean Flow over Head Range	-	9.3

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	4.7	0.600	9.7	1.600	8.9	2.600	11.2	5.000	15.2
0.200	8.2	0.800	9.5	1.800	9.4	3.000	11.9	5.500	15.9
0.300	9.1	1.000	8.8	2.000	9.9	3.500	12.9	6.000	16.6
0.400	9.5	1.200	7.8	2.200	10.3	4.000	13.7	6.500	17.3
0.500	9.7	1.400	8.3	2.400	10.7	4.500	14.5	7.000	17.9

Hydro-Brake® Optimum Manhole: 52, DS/PN: 11.004, Volume (m³): 30.7

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
7.500	18.5	8.000	19.1	8.500	19.6	9.000	20.2	9.500	20.7

Hydro-Brake® Optimum Manhole: 62, DS/PN: 14.003, Volume (m³): 1.9

Unit Reference	MD-SHE-0038-8000-1469-8000
Design Head (m)	1.469
Design Flow (l/s)	0.8
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	38
Invert Level (m)	80.531
Minimum Outlet Pipe Diameter (mm)	75
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.469	0.8	Kick-Flo®	0.336	0.4
Flush-Flo™	0.166	0.5	Mean Flow over Head Range	-	0.6

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	0.5	0.800	0.6	2.000	0.9	4.000	1.3	7.000	1.6
0.200	0.5	1.000	0.7	2.200	1.0	4.500	1.3	7.500	1.7
0.300	0.5	1.200	0.7	2.400	1.0	5.000	1.4	8.000	1.7
0.400	0.5	1.400	0.8	2.600	1.0	5.500	1.4	8.500	1.8
0.500	0.5	1.600	0.8	3.000	1.1	6.000	1.5	9.000	1.8
0.600	0.5	1.800	0.9	3.500	1.2	6.500	1.6	9.500	1.9

Hydro-Brake® Optimum Manhole: 63, DS/PN: 1.012, Volume (m³): 10.1

Unit Reference	MD-SHE-0287-5570-2538-5570
Design Head (m)	2.538
Design Flow (l/s)	55.7
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	287
Invert Level (m)	79.462
Minimum Outlet Pipe Diameter (mm)	300
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.538	55.7	Kick-Flo®	1.614	44.8
Flush-Flo™	0.749	55.7	Mean Flow over Head Range	-	48.3

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	8.9	0.400	52.1	0.800	55.7	1.400	50.8	2.000	49.7
0.200	29.6	0.500	54.2	1.000	54.9	1.600	45.4	2.200	52.0
0.300	48.7	0.600	55.2	1.200	53.5	1.800	47.2	2.400	54.2

Hydro-Brake® Optimum Manhole: 63, DS/PN: 1.012, Volume (m³): 10.1

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
2.600	56.4	4.000	69.4	5.500	81.0	7.000	91.1	8.500	100.1
3.000	60.4	4.500	73.5	6.000	84.5	7.500	94.2	9.000	103.0
3.500	65.1	5.000	77.3	6.500	87.9	8.000	97.2	9.500	105.7

Hydro-Brake® Optimum Manhole: 66, DS/PN: 1.015, Volume (m³): 6.2

Unit Reference	MD-SHE-0288-5610-2562-5610
Design Head (m)	2.562
Design Flow (l/s)	56.1
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	288
Invert Level (m)	79.188
Minimum Outlet Pipe Diameter (mm)	300
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.562	56.0	Kick-Flo®	1.616	44.9
Flush-Flo™	0.744	56.1	Mean Flow over Head Range	-	48.6

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	8.9	0.800	56.0	2.000	49.7	4.000	69.5	7.000	91.2
0.200	29.6	1.000	55.2	2.200	52.1	4.500	73.6	7.500	94.3
0.300	49.1	1.200	53.8	2.400	54.3	5.000	77.5	8.000	97.4
0.400	52.5	1.400	51.0	2.600	56.4	5.500	81.1	8.500	100.3
0.500	54.6	1.600	45.6	3.000	60.5	6.000	84.6	9.000	103.1
0.600	55.6	1.800	47.3	3.500	65.2	6.500	88.0	9.500	105.9

Hydro-Brake® Optimum Manhole: 77, DS/PN: 16.006, Volume (m³): 14.5

Unit Reference	MD-SHE-0227-3800-3400-3800
Design Head (m)	3.400
Design Flow (l/s)	38.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	227
Invert Level (m)	79.378
Minimum Outlet Pipe Diameter (mm)	300
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	3.400	37.9	Kick-Flo®	2.027	29.6
Flush-Flo™	0.981	37.9	Mean Flow over Head Range	-	33.2

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	7.6	0.200	22.7	0.300	30.5	0.400	33.2	0.500	35.1

Hydro-Brake® Optimum Manhole: 77, DS/PN: 16.006, Volume (m³): 14.5

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.600	36.3	1.600	35.6	2.600	33.3	5.000	45.6	7.500	55.5
0.800	37.6	1.800	33.6	3.000	35.7	5.500	47.8	8.000	57.3
1.000	37.9	2.000	30.2	3.500	38.4	6.000	49.8	8.500	59.0
1.200	37.6	2.200	30.7	4.000	41.0	6.500	51.8	9.000	60.7
1.400	36.9	2.400	32.1	4.500	43.4	7.000	53.7	9.500	62.3

Hydro-Brake® Optimum Manhole: 86, DS/PN: 18.003, Volume (m³): 20.6

Unit Reference	MD-SHE-0359-9500-3000-9500
Design Head (m)	3.000
Design Flow (l/s)	95.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	359
Invert Level (m)	79.646
Minimum Outlet Pipe Diameter (mm)	375
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	3.000	94.9	Kick-Flo®	1.918	76.4
Flush-Flo™	0.883	95.0	Mean Flow over Head Range	-	82.1

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	10.3	0.800	94.8	2.000	77.9	4.000	109.1	7.000	143.3
0.200	36.1	1.000	94.7	2.200	81.6	4.500	115.6	7.500	148.3
0.300	67.3	1.200	93.5	2.400	85.1	5.000	121.6	8.000	153.0
0.400	85.7	1.400	91.4	2.600	88.5	5.500	127.4	8.500	157.6
0.500	89.9	1.600	88.1	3.000	94.9	6.000	132.9	9.000	162.1
0.600	92.5	1.800	82.0	3.500	102.3	6.500	138.2	9.500	166.4

Hydro-Brake® Optimum Manhole: 89, DS/PN: 17.002, Volume (m³): 22.6

Unit Reference	MD-SHE-0117-1060-3639-1060
Design Head (m)	3.639
Design Flow (l/s)	10.6
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	117
Invert Level (m)	79.111
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	3.639	10.6	Kick-Flo®	1.045	5.9
Flush-Flo™	0.509	7.4	Mean Flow over Head Range	-	7.9

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

Hydro-Brake® Optimum Manhole: 89, DS/PN: 17.002, Volume (m³): 22.6

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	4.1	0.800	7.1	2.000	8.0	4.000	11.1	7.000	14.5
0.200	6.5	1.000	6.2	2.200	8.3	4.500	11.7	7.500	14.9
0.300	7.1	1.200	6.3	2.400	8.7	5.000	12.3	8.000	15.4
0.400	7.4	1.400	6.8	2.600	9.0	5.500	12.9	8.500	15.9
0.500	7.4	1.600	7.2	3.000	9.7	6.000	13.4	9.000	16.3
0.600	7.4	1.800	7.6	3.500	10.4	6.500	14.0	9.500	16.7

Orifice Manhole: 93, DS/PN: 16.013, Volume (m³): 10.6

Diameter (m) 0.201 Discharge Coefficient 0.600 Invert Level (m) 78.718

Orifice Manhole: 101, DS/PN: 19.005, Volume (m³): 11.1

Diameter (m) 0.140 Discharge Coefficient 0.600 Invert Level (m) 78.482

Hydro-Brake® Optimum Manhole: 105, DS/PN: 1.018, Volume (m³): 6.6

Unit Reference	MD-SHE-0264-4200-1700-4200
Design Head (m)	1.700
Design Flow (l/s)	42.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	264
Invert Level (m)	77.814
Minimum Outlet Pipe Diameter (mm)	300
Suggested Manhole Diameter (mm)	2100

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.700	42.0	Kick-Flo®	1.154	34.9
Flush-Flo™	0.526	42.0	Mean Flow over Head Range	-	35.9

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	8.4	0.800	40.9	2.000	45.4	4.000	63.5	7.000	83.3
0.200	27.2	1.000	38.8	2.200	47.5	4.500	67.2	7.500	86.1
0.300	39.8	1.200	35.5	2.400	49.6	5.000	70.7	8.000	88.9
0.400	41.4	1.400	38.2	2.600	51.5	5.500	74.1	8.500	91.6
0.500	41.9	1.600	40.8	3.000	55.2	6.000	77.3	9.000	94.2
0.600	41.8	1.800	43.2	3.500	59.5	6.500	80.3	9.500	96.7

Hydro-Brake® Optimum Manhole: 115, DS/PN: 22.005, Volume (m³): 9.3

Unit Reference	MD-SHE-0126-1130-3012-1130
Design Head (m)	3.012
Design Flow (l/s)	11.3
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	126
Invert Level (m)	78.488
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1500

Hydro-Brake® Optimum Manhole: 115, DS/PN: 22.005, Volume (m³): 9.3

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	3.012	11.3	Kick-Flo®	1.129	7.1
Flush-Flo™	0.552	9.0	Mean Flow over Head Range	-	8.8

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	4.5	0.800	8.7	2.000	9.3	4.000	12.9	7.000	16.9
0.200	7.6	1.000	8.0	2.200	9.7	4.500	13.7	7.500	17.5
0.300	8.4	1.200	7.3	2.400	10.1	5.000	14.4	8.000	18.0
0.400	8.8	1.400	7.9	2.600	10.5	5.500	15.0	8.500	18.5
0.500	9.0	1.600	8.4	3.000	11.3	6.000	15.7	9.000	19.0
0.600	9.0	1.800	8.9	3.500	12.1	6.500	16.3	9.500	19.5

Hydro-Brake® Optimum Manhole: 123, DS/PN: 21.006, Volume (m³): 7.9

Unit Reference	MD-SHE-0041-1000-1694-1000
Design Head (m)	1.694
Design Flow (l/s)	1.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	41
Invert Level (m)	77.806
Minimum Outlet Pipe Diameter (mm)	75
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.694	1.0	Kick-Flo®	0.369	0.5
Flush-Flo™	0.183	0.6	Mean Flow over Head Range	-	0.7

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	0.6	0.800	0.7	2.000	1.1	4.000	1.5	7.000	1.9
0.200	0.6	1.000	0.8	2.200	1.1	4.500	1.6	7.500	2.0
0.300	0.6	1.200	0.9	2.400	1.2	5.000	1.6	8.000	2.0
0.400	0.5	1.400	0.9	2.600	1.2	5.500	1.7	8.500	2.1
0.500	0.6	1.600	1.0	3.000	1.3	6.000	1.8	9.000	2.1
0.600	0.6	1.800	1.0	3.500	1.4	6.500	1.8	9.500	2.2

Orifice Manhole: 140, DS/PN: 25.008, Volume (m³): 27.5

Diameter (m) 0.280 Discharge Coefficient 0.600 Invert Level (m) 79.873

Hydro-Brake® Optimum Manhole: 145, DS/PN: 27.004, Volume (m³): 9.3

Unit Reference	MD-SHE-0040-1000-1958-1000
Design Head (m)	1.958
Design Flow (l/s)	1.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes

Hydro-Brake® Optimum Manhole: 145, DS/PN: 27.004, Volume (m³): 9.3

Diameter (mm) 40
Invert Level (m) 81.892
Minimum Outlet Pipe Diameter (mm) 75
Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.958	1.0	Kick-Flo®	0.355	0.5
Flush-Flo™	0.176	0.6	Mean Flow over Head Range	-	0.7

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	0.5	0.800	0.7	2.000	1.0	4.000	1.4	7.000	1.8
0.200	0.6	1.000	0.7	2.200	1.1	4.500	1.5	7.500	1.8
0.300	0.5	1.200	0.8	2.400	1.1	5.000	1.5	8.000	1.9
0.400	0.5	1.400	0.9	2.600	1.1	5.500	1.6	8.500	2.0
0.500	0.5	1.600	0.9	3.000	1.2	6.000	1.7	9.000	2.0
0.600	0.6	1.800	1.0	3.500	1.3	6.500	1.7	9.500	2.1

Orifice Manhole: 152, DS/PN: 27.011, Volume (m³): 7.0

Diameter (m) 0.297 Discharge Coefficient 0.600 Invert Level (m) 79.351

Orifice Manhole: 156, DS/PN: 25.012, Volume (m³): 3.9

Diameter (m) 0.230 Discharge Coefficient 0.600 Invert Level (m) 77.890

Storage Structures for Storm

Tank or Pond Manhole: 6, DS/PN: 2.002

Invert Level (m) 86.814

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	500.0	1.000	500.0	1.001	0.0

Tank or Pond Manhole: 10, DS/PN: 3.003

Invert Level (m) 86.936

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	1000.0	1.000	1000.0	1.001	0.0

Tank or Pond Manhole: 11, DS/PN: 3.004

Invert Level (m) 86.613

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	1000.0	1.000	1000.0	1.001	0.0

Tank or Pond Manhole: 15, DS/PN: 2.003

Invert Level (m) 86.582

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	1000.0	1.000	1000.0	1.001	0.0

Tank or Pond Manhole: 25, DS/PN: 6.003

Invert Level (m) 85.842

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	500.0	1.000	500.0	1.001	0.0

Tank or Pond Manhole: 29, DS/PN: 8.000

Invert Level (m) 84.200

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	1000.0	1.000	1000.0	1.001	0.0

Tank or Pond Manhole: 31, DS/PN: 8.002

Invert Level (m) 83.658

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	1000.0	1.000	1000.0	1.001	0.0

Tank or Pond Manhole: 35, DS/PN: 9.002

Invert Level (m) 84.068

Tank or Pond Manhole: 35, DS/PN: 9.002

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	250.0	1.000	250.0	1.001	0.0

Tank or Pond Manhole: 37, DS/PN: 9.004

Invert Level (m) 83.588

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	250.0	1.000	250.0	1.050	0.0

Tank or Pond Manhole: 39, DS/PN: 9.006

Invert Level (m) 83.247

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	250.0	1.000	250.0	1.001	0.0

Tank or Pond Manhole: 42, DS/PN: 8.005

Invert Level (m) 82.352

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	1000.0	1.000	1000.0	1.001	0.0

Tank or Pond Manhole: 47, DS/PN: 11.001

Invert Level (m) 81.866

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	200.0	1.000	200.0	1.001	0.0

Tank or Pond Manhole: 48, DS/PN: 11.002

Invert Level (m) 81.371

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	200.0	1.000	200.0	1.001	0.0

Tank or Pond Manhole: 51, DS/PN: 12.001

Invert Level (m) 81.939

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	200.0	1.000	200.0	1.001	0.0

Tank or Pond Manhole: 52, DS/PN: 11.004

Invert Level (m) 80.927

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	2500.0	1.000	2500.0	1.001	0.0

Tank or Pond Manhole: 61, DS/PN: 14.002

Invert Level (m) 80.575

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	622.0	0.500	622.0	0.501	0.0

Tank or Pond Manhole: 63, DS/PN: 1.012

Invert Level (m) 79.462

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	723.0	1.500	723.0	1.501	0.0

Tank or Pond Manhole: 66, DS/PN: 1.015

Invert Level (m) 79.188

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	841.0	1.500	841.0	1.501	0.0

Tank or Pond Manhole: 73, DS/PN: 16.002

Invert Level (m) 80.014

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	750.0	1.000	750.0	1.001	0.0

Tank or Pond Manhole: 75, DS/PN: 16.004

Invert Level (m) 79.693

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	750.0	1.000	750.0	1.001	0.0

Tank or Pond Manhole: 77, DS/PN: 16.006

Invert Level (m) 79.378

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	750.0	1.000	750.0	1.001	0.0

Tank or Pond Manhole: 84, DS/PN: 18.001

Invert Level (m) 80.029

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	200.0	1.000	200.0	1.001	0.0

Tank or Pond Manhole: 85, DS/PN: 18.002

Invert Level (m) 79.845

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	200.0	1.000	200.0	1.001	0.0

Tank or Pond Manhole: 86, DS/PN: 18.003

Invert Level (m) 79.646

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	200.0	1.000	200.0	1.001	0.0

Tank or Pond Manhole: 88, DS/PN: 18.005

Invert Level (m) 79.357

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	1400.0	1.000	1400.0	1.001	0.0

Tank or Pond Manhole: 89, DS/PN: 17.002

Invert Level (m) 79.111

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	1400.0	1.000	1400.0	1.001	0.0

Tank or Pond Manhole: 93, DS/PN: 16.013

Invert Level (m) 78.718

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	2126.0	1.000	2126.0	1.001	0.0

Tank or Pond Manhole: 95, DS/PN: 19.001

Invert Level (m) 79.037

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	500.0	1.000	500.0	1.001	0.0

Tank or Pond Manhole: 97, DS/PN: 19.003

Invert Level (m) 78.693

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	500.0	1.000	500.0	1.101	0.0

Tank or Pond Manhole: 101, DS/PN: 19.005

Invert Level (m) 78.482

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	1500.0	1.000	1500.0	1.001	0.0

Tank or Pond Manhole: 105, DS/PN: 1.018

Invert Level (m) 77.814

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	4870.0	1.000	4870.0	1.001	0.0

Tank or Pond Manhole: 111, DS/PN: 22.001 Invert Level (m) 79.100 <table> <tr> <th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th></tr> <tr> <td>0.000</td><td>350.0</td><td>1.000</td><td>350.0</td><td>1.001</td><td>0.0</td></tr> </table>						Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	0.000	350.0	1.000	350.0	1.001	0.0
Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)												
0.000	350.0	1.000	350.0	1.001	0.0												
Tank or Pond Manhole: 113, DS/PN: 22.003 Invert Level (m) 78.698 <table> <tr> <th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th></tr> <tr> <td>0.000</td><td>350.0</td><td>1.000</td><td>350.0</td><td>1.001</td><td>0.0</td></tr> </table>						Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	0.000	350.0	1.000	350.0	1.001	0.0
Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)												
0.000	350.0	1.000	350.0	1.001	0.0												
Tank or Pond Manhole: 115, DS/PN: 22.005 Invert Level (m) 78.488 <table> <tr> <th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th></tr> <tr> <td>0.000</td><td>1830.0</td><td>1.000</td><td>1830.0</td><td>1.001</td><td>0.0</td></tr> </table>						Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	0.000	1830.0	1.000	1830.0	1.001	0.0
Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)												
0.000	1830.0	1.000	1830.0	1.001	0.0												
Tank or Pond Manhole: 123, DS/PN: 21.006 Invert Level (m) 77.806 <table> <tr> <th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th></tr> <tr> <td>0.000</td><td>4450.0</td><td>1.000</td><td>4450.0</td><td>1.001</td><td>0.0</td></tr> </table>						Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	0.000	4450.0	1.000	4450.0	1.001	0.0
Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)												
0.000	4450.0	1.000	4450.0	1.001	0.0												
Tank or Pond Manhole: 125, DS/PN: 25.000 Invert Level (m) 83.200 <table> <tr> <th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th></tr> <tr> <td>0.000</td><td>350.0</td><td>1.000</td><td>350.0</td><td>1.001</td><td>0.0</td></tr> </table>						Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	0.000	350.0	1.000	350.0	1.001	0.0
Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)												
0.000	350.0	1.000	350.0	1.001	0.0												
Tank or Pond Manhole: 126, DS/PN: 25.001 Invert Level (m) 82.449 <table> <tr> <th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th></tr> <tr> <td>0.000</td><td>350.0</td><td>1.000</td><td>350.0</td><td>1.001</td><td>0.0</td></tr> </table>						Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	0.000	350.0	1.000	350.0	1.001	0.0
Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)												
0.000	350.0	1.000	350.0	1.001	0.0												
Tank or Pond Manhole: 127, DS/PN: 25.002 Invert Level (m) 81.555 <table> <tr> <th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th></tr> <tr> <td>0.000</td><td>350.0</td><td>1.000</td><td>350.0</td><td>1.001</td><td>0.0</td></tr> </table>						Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	0.000	350.0	1.000	350.0	1.001	0.0
Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)												
0.000	350.0	1.000	350.0	1.001	0.0												
Tank or Pond Manhole: 130, DS/PN: 25.005 Invert Level (m) 80.200 <table> <tr> <th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th></tr> <tr> <td>0.000</td><td>2000.0</td><td>1.200</td><td>2000.0</td><td>1.201</td><td>0.0</td></tr> </table>						Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	0.000	2000.0	1.200	2000.0	1.201	0.0
Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)												
0.000	2000.0	1.200	2000.0	1.201	0.0												

Tank or Pond Manhole: 133, DS/PN: 26.000 Invert Level (m) 83.200 <table> <tr> <th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th></tr> <tr> <td>0.000</td><td>500.0</td><td>1.000</td><td>500.0</td><td>1.001</td><td>0.0</td></tr> </table>						Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	0.000	500.0	1.000	500.0	1.001	0.0
Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)												
0.000	500.0	1.000	500.0	1.001	0.0												
Tank or Pond Manhole: 134, DS/PN: 26.001 Invert Level (m) 82.963 <table> <tr> <th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th></tr> <tr> <td>0.000</td><td>500.0</td><td>1.000</td><td>500.0</td><td>1.001</td><td>0.0</td></tr> </table>						Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	0.000	500.0	1.000	500.0	1.001	0.0
Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)												
0.000	500.0	1.000	500.0	1.001	0.0												
Tank or Pond Manhole: 135, DS/PN: 26.002 Invert Level (m) 82.729 <table> <tr> <th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th></tr> <tr> <td>0.000</td><td>500.0</td><td>1.000</td><td>500.0</td><td>1.001</td><td>0.0</td></tr> </table>						Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	0.000	500.0	1.000	500.0	1.001	0.0
Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)												
0.000	500.0	1.000	500.0	1.001	0.0												
Tank or Pond Manhole: 140, DS/PN: 25.008 Invert Level (m) 79.873 <table> <tr> <th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th></tr> <tr> <td>0.000</td><td>2000.0</td><td>1.200</td><td>2000.0</td><td>1.201</td><td>0.0</td></tr> </table>						Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	0.000	2000.0	1.200	2000.0	1.201	0.0
Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)												
0.000	2000.0	1.200	2000.0	1.201	0.0												
Tank or Pond Manhole: 143, DS/PN: 27.002 Invert Level (m) 82.076 <table> <tr> <th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th></tr> <tr> <td>0.000</td><td>1000.0</td><td>1.000</td><td>1000.0</td><td>1.001</td><td>0.0</td></tr> </table>						Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	0.000	1000.0	1.000	1000.0	1.001	0.0
Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)												
0.000	1000.0	1.000	1000.0	1.001	0.0												
Tank or Pond Manhole: 145, DS/PN: 27.004 Invert Level (m) 81.892 <table> <tr> <th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th></tr> <tr> <td>0.000</td><td>1000.0</td><td>1.000</td><td>1000.0</td><td>1.001</td><td>0.0</td></tr> </table>						Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	0.000	1000.0	1.000	1000.0	1.001	0.0
Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)												
0.000	1000.0	1.000	1000.0	1.001	0.0												
Tank or Pond Manhole: 152, DS/PN: 27.011 Invert Level (m) 79.351 <table> <tr> <th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th></tr> <tr> <td>0.000</td><td>1500.0</td><td>1.000</td><td>1500.0</td><td>1.001</td><td>0.0</td></tr> </table>						Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	0.000	1500.0	1.000	1500.0	1.001	0.0
Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)												
0.000	1500.0	1.000	1500.0	1.001	0.0												
Tank or Pond Manhole: 156, DS/PN: 25.012 Invert Level (m) 77.890 <table> <tr> <th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th></tr> <tr> <td>0.000</td><td>1738.0</td><td>1.000</td><td>1738.0</td><td>1.001</td><td>0.0</td></tr> </table>						Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	0.000	1738.0	1.000	1738.0	1.001	0.0
Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)												
0.000	1738.0	1.000	1738.0	1.001	0.0												

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

Simulation Criteria

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

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 22 Number of Storage Structures 47 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 20.000 Cv (Summer) 0.750
Region England and Wales Ratio R 0.400 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status ON
Inertia Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years) 100
Climate Change (%) 40

									Water	Surcharged	Flooded	
PN	US/MH			Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Level	Depth	Volume
	Name	Storm		Period	Change	Surcharge	Flood	Overflow	Act.	(m)	(m)	(m³)
1.000	1	15 Winter		100	+40%					88.524	-0.326	0.000
1.001	2	15 Winter		100	+40%					88.185	-0.247	0.000
1.002	3	15 Winter		100	+40%					87.988	-0.275	0.000
2.000	4	15 Winter		100	+40%	100/15 Summer				88.145	0.419	0.000
2.001	5	15 Winter		100	+40%	100/15 Summer				87.928	0.430	0.000
2.002	6	960 Winter		100	+40%	100/960 Winter				87.272	0.008	0.000
3.000	7	15 Winter		100	+40%	100/15 Summer	100/15 Winter			89.354	1.204	3.859
3.001	8	15 Winter		100	+40%	100/15 Summer				89.251	1.325	0.000
3.002	9	15 Winter		100	+40%	100/15 Summer				89.100	1.398	0.000
3.003	10	1440 Winter		100	+40%	100/60 Winter				87.730	0.344	0.000
3.004	11	1440 Winter		100	+40%	100/15 Winter				87.733	0.670	0.000
3.005	12	960 Winter		100	+40%	100/15 Summer				87.277	0.403	0.000
3.006	13	960 Winter		100	+40%	100/15 Summer				87.274	0.526	0.000
4.000	14	15 Winter		100	+40%	100/15 Summer				88.820	0.670	0.000
2.003	15	960 Winter		100	+40%	100/15 Summer				87.272	0.740	0.000
5.000	16	15 Winter		100	+40%	100/15 Summer				89.232	0.482	0.000
5.001	17	15 Winter		100	+40%	100/15 Summer				88.606	0.306	0.000
2.004	18	60 Winter		100	+40%	100/15 Summer				87.408	1.026	0.000
1.003	19	15 Winter		100	+40%					85.913	-0.257	0.000
6.000	20	15 Winter		100	+40%					86.725	-0.225	0.000
6.001	21	15 Winter		100	+40%					86.652	-0.161	0.000
7.000	22	15 Winter		100	+40%					86.778	-0.172	0.000
7.001	23	15 Winter		100	+40%					86.708	-0.069	0.000
6.002	24	1440 Winter		100	+40%	100/15 Summer				86.596	0.181	0.000
6.003	25	1440 Winter		100	+40%	100/30 Summer				86.595	0.453	0.000
1.004	26	15 Winter		100	+40%	100/15 Summer				85.540	2.405	0.000
1.005	27	15 Winter		100	+40%	100/15 Summer				85.300	2.765	0.000
1.006	28	15 Winter		100	+40%	100/15 Summer				84.921	3.286	0.000
8.000	29	960 Winter		100	+40%	100/600 Winter				84.673	0.023	0.000
8.001	30	15 Winter		100	+40%	100/15 Summer				84.692	0.313	0.000
8.002	31	960 Winter		100	+40%	100/15 Winter				84.674	0.566	0.000
8.003	32	720 Winter		100	+40%	100/360 Winter				84.116	0.279	0.000
9.000	33	15 Winter		100	+40%	100/15 Summer				85.117	0.117	0.000

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Pickfords Wharf	MIRA	
Clink Street	LAND SOUTH OF A5	
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File Surface Water Drainage Schemati...	Checked by HC	
Innovyze	Network 2020.1.3	

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

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.17			55.3	OK	
1.001	2	0.41			87.5	OK	
1.002	3	0.31			141.5	OK	
2.000	4	0.96			187.3	SURCHARGED	
2.001	5	1.63			318.8	SURCHARGED	
2.002	6	0.09			17.0	SURCHARGED	
3.000	7	0.88			172.2	FLOOD	1
3.001	8	0.87			169.0	FLOOD RISK	
3.002	9	2.28			457.6	FLOOD RISK	
3.003	10	0.17			34.0	SURCHARGED	
3.004	11	0.03			6.2	SURCHARGED	
3.005	12	0.06			10.9	SURCHARGED	
3.006	13	0.06			14.7	SURCHARGED	
4.000	14	2.75			97.8	SURCHARGED	
2.003	15	0.08			15.3	SURCHARGED	
5.000	16	1.17			51.2	SURCHARGED	
5.001	17	1.23			67.6	SURCHARGED	
2.004	18	0.06			11.8	SURCHARGED	
1.003	19	0.38			244.5	OK	
6.000	20	0.45			81.4	OK	
6.001	21	0.43			133.1	OK	
7.000	22	0.60			111.0	OK	
7.001	23	0.59			144.1	OK	
6.002	24	0.08			14.3	SURCHARGED	
6.003	25	0.03			1.6	SURCHARGED	
1.004	26	0.78			260.7	SURCHARGED	
1.005	27	0.69			281.0	SURCHARGED	
1.006	28	0.93			349.8	SURCHARGED	
8.000	29	0.12			22.9	SURCHARGED	
8.001	30	1.43			283.1	SURCHARGED	
8.002	31	0.04			8.0	SURCHARGED	
8.003	32	0.07			13.9	SURCHARGED	
9.000	33	0.28			54.2	SURCHARGED	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
9.001	34	15 Winter	100	+40%	100/15 Summer				85.008	0.249
9.002	35	120 Winter	100	+40%	100/15 Summer				84.863	0.345
9.003	36	120 Winter	100	+40%	100/15 Summer				84.855	0.577
9.004	37	180 Winter	100	+40%	100/15 Summer				84.788	0.750
9.005	38	180 Winter	100	+40%	100/15 Summer				84.776	1.051
9.006	39	180 Winter	100	+40%	100/15 Summer				84.615	1.144
8.004	40	720 Winter	100	+40%	100/180 Summer				84.111	0.995
10.000	41	720 Winter	100	+40%	100/15 Summer				84.106	0.806
8.005	42	720 Winter	100	+40%	100/15 Summer				84.103	1.751
8.006	43	15 Winter	100	+40%	100/15 Summer				84.046	1.992
8.007	44	15 Winter	100	+40%	100/15 Summer				84.044	2.124
1.007	45	15 Winter	100	+40%	100/15 Summer				84.039	3.504
11.000	46	15 Winter	100	+40%	100/15 Summer				83.372	0.647
11.001	47	30 Winter	100	+40%	100/15 Summer				82.640	0.324
11.002	48	60 Winter	100	+40%	100/15 Summer				82.066	0.245
11.003	49	60 Winter	100	+40%	100/15 Summer				81.760	0.163
12.000	50	15 Winter	100	+40%	100/15 Summer				83.530	0.730
12.001	51	30 Winter	100	+40%	100/15 Summer				82.697	0.308
11.004	52	1440 Winter	100	+40%	100/60 Winter				81.718	0.341
1.008	53	15 Winter	100	+40%	100/15 Summer				82.643	2.327
13.000	54	15 Winter	100	+40%	100/15 Summer				82.537	0.737
13.001	55	15 Winter	100	+40%	100/15 Summer				82.370	0.819
1.009	56	15 Winter	100	+40%	100/15 Summer				81.983	1.831
1.010	57	15 Summer	100	+40%					80.072	0.000
1.011	58	15 Summer	100	+40%					79.992	0.000
14.000	59	15 Summer	100	+40%					82.300	0.000
14.001	60	15 Summer	100	+40%					81.800	0.000
14.002	61	1440 Winter	100	+40%					80.796	-0.004
14.003	62	1440 Winter	100	+40%	100/240 Winter				80.796	0.040
1.012	63	360 Winter	100	+40%	100/15 Summer				80.667	0.755
1.013	64	1440 Summer	100	+40%					79.838	0.000
1.014	65	1440 Winter	100	+40%	100/720 Winter				79.912	0.174
1.015	66	1440 Winter	100	+40%	100/480 Winter				79.890	0.252
15.000	67	15 Winter	100	+40%	100/15 Summer				81.882	0.682
15.001	68	15 Winter	100	+40%	100/15 Summer				81.670	0.970
15.002	69	15 Winter	100	+40%	100/15 Summer				81.488	1.088
15.003	70	15 Winter	100	+40%	100/15 Summer	100/15 Winter			81.300	1.200
16.000	71	15 Winter	100	+40%	100/15 Summer				82.316	1.525
16.001	72	15 Winter	100	+40%	100/15 Summer				81.364	0.730
16.002	73	360 Winter	100	+40%	100/15 Summer				80.861	0.397
16.003	74	360 Winter	100	+40%	100/15 Summer				80.886	0.596
16.004	75	240 Winter	100	+40%	100/15 Summer				80.913	0.769
16.005	76	180 Winter	100	+40%	100/15 Summer				81.157	1.177
16.006	77	180 Winter	100	+40%	100/15 Summer				81.199	1.372
16.007	78	1440 Winter	100	+40%	100/15 Summer				79.948	0.217
16.008	79	1440 Winter	100	+40%	100/15 Summer				79.935	0.265
16.009	80	1440 Winter	100	+40%	100/15 Summer				79.920	0.341
17.000	81	15 Winter	100	+40%					82.273	-0.252
17.001	82	15 Winter	100	+40%					81.781	-0.244
18.000	83	60 Winter	100	+40%	100/15 Summer				81.071	0.426
18.001	84	60 Winter	100	+40%	100/15 Summer				81.056	0.577
18.002	85	60 Winter	100	+40%	100/15 Summer				81.019	0.724
18.003	86	60 Winter	100	+40%	100/15 Summer				80.995	0.899
18.004	87	1440 Winter	100	+40%					79.933	0.000
18.005	88	1440 Winter	100	+40%	100/480 Winter				79.920	0.113
17.002	89	1440 Winter	100	+40%	100/120 Summer				79.918	0.357
16.010	90	1440 Winter	100	+40%	100/15 Summer				79.907	0.531
16.011	91	1440 Winter	100	+40%	100/15 Summer				79.901	0.542
16.012	92	1440 Winter	100	+40%	100/15 Summer				79.885	0.624
16.013	93	1440 Winter	100	+40%	100/120 Summer				79.870	0.852

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Pickfords Wharf Clink Street London, SE1 9DG	MIRA LAND SOUTH OF A5 EED13833	
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Innovyze	Network 2020.1.3	

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

PN	US/MH Name	Flooded Volume (m ³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
9.001	34	0.000	1.37			268.6	SURCHARGED	
9.002	35	0.000	0.58			114.4	SURCHARGED	
9.003	36	0.000	0.83			163.1	SURCHARGED	
9.004	37	0.000	0.30			41.4	SURCHARGED	
9.005	38	0.000	1.22			46.3	SURCHARGED	
9.006	39	0.000	1.18			48.3	SURCHARGED	
8.004	40	0.000	0.16			61.2	SURCHARGED	
10.000	41	0.000	0.16			5.9	SURCHARGED	
8.005	42	0.000	0.09			18.2	SURCHARGED	
8.006	43	0.000	0.50			92.9	SURCHARGED	
8.007	44	0.000	0.45			84.2	SURCHARGED	
1.007	45	0.000	2.49			378.1	SURCHARGED	
11.000	46	0.000	1.50			305.7	SURCHARGED	
11.001	47	0.000	1.11			229.0	SURCHARGED	
11.002	48	0.000	1.20			235.1	SURCHARGED	
11.003	49	0.000	1.35			263.4	SURCHARGED	
12.000	50	0.000	1.55			315.9	SURCHARGED	
12.001	51	0.000	1.28			264.0	SURCHARGED	
11.004	52	0.000	0.05			9.7	SURCHARGED	
1.008	53	0.000	1.99			377.1	SURCHARGED	
13.000	54	0.000	0.97			36.9	SURCHARGED	
13.001	55	0.000	2.25			83.2	SURCHARGED	
1.009	56	0.000	3.16			439.6	SURCHARGED	
1.010	57	0.000	2.62			420.3	SURCHARGED*	
1.011	58	0.000	2.61			419.2	SURCHARGED*	
14.000	59	0.000	1.11			60.9	SURCHARGED*	
14.001	60	0.000	1.16			88.2	SURCHARGED*	
14.002	61	0.000	0.02			0.6	OK*	
14.003	62	0.000	0.01			0.5	SURCHARGED	
1.012	63	0.000	0.40			55.6	SURCHARGED	
1.013	64	0.000	0.36			58.3	SURCHARGED*	
1.014	65	0.000	0.40			57.4	SURCHARGED	
1.015	66	0.000	0.10			51.2	SURCHARGED*	
15.000	67	0.000	0.20			123.2	SURCHARGED	
15.001	68	0.000	0.27			138.2	FLOOD RISK	
15.002	69	0.000	0.34			180.1	FLOOD RISK	
15.003	70	0.274	0.60			208.9	FLOOD	1
16.000	71	0.000	2.35			349.5	SURCHARGED	
16.001	72	0.000	2.23			333.3	SURCHARGED	
16.002	73	0.000	0.49			73.4	SURCHARGED	
16.003	74	0.000	0.81			120.2	SURCHARGED	
16.004	75	0.000	0.58			85.9	SURCHARGED	
16.005	76	0.000	1.43			212.5	SURCHARGED	
16.006	77	0.000	0.27			37.9	SURCHARGED	
16.007	78	0.000	0.33			43.8	SURCHARGED	
16.008	79	0.000	0.31			43.8	SURCHARGED	
16.009	80	0.000	0.35			45.1	SURCHARGED	
17.000	81	0.000	0.39			100.6	OK	
17.001	82	0.000	0.42			242.8	OK	
18.000	83	0.000	0.93			139.2	SURCHARGED	
18.001	84	0.000	0.95			142.6	SURCHARGED	
18.002	85	0.000	0.78			117.1	SURCHARGED	
18.003	86	0.000	0.64			94.9	SURCHARGED	
18.004	87	0.000	0.38			56.1	OK	
18.005	88	0.000	0.15			34.4	SURCHARGED	
17.002	89	0.000	0.03			7.1	SURCHARGED	
16.010	90	0.000	0.51			51.9	SURCHARGED	
16.011	91	0.000	0.40			57.6	SURCHARGED	
16.012	92	0.000	0.41			57.6	SURCHARGED	

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

PN	US/MH Name	Flooded		Half Drain		Pipe	Status	Level Exceeded
		Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)		
16.013	93	0.000	0.52			33.9	SURCHARGED	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
19.000	94	15 Winter	100	+40%	100/15 Summer	100/15 Summer			80.853	1.203
19.001	95	60 Winter	100	+40%	100/15 Summer				79.984	0.497
19.002	96	1440 Winter	100	+40%	100/15 Summer				79.773	0.480
19.003	97	1440 Winter	100	+40%	100/30 Summer				79.770	0.627
19.004	98	1440 Winter	100	+40%	100/30 Summer				79.766	0.729
20.000	99	15 Winter	100	+40%	100/15 Summer	100/15 Summer			80.853	1.203
20.001	100	15 Summer	100	+40%	100/15 Summer				79.910	0.522
19.005	101	1440 Winter	100	+40%	100/60 Summer				79.763	0.831
16.014	102	15 Winter	100	+40%	100/15 Summer				80.354	1.882
1.016	103	15 Summer	100	+40%	100/15 Summer				79.988	1.686
1.017	104	15 Summer	100	+40%					78.207	0.000
1.018	105	1440 Summer	100	+40%	100/240 Winter				78.815	0.701
21.000	106	15 Winter	100	+40%	100/15 Summer				80.797	0.997
21.001	107	15 Winter	100	+40%	100/15 Summer				80.635	1.185
21.002	108	15 Winter	100	+40%	100/15 Summer	100/15 Winter			80.500	1.204
21.003	109	15 Winter	100	+40%	100/15 Summer				80.383	1.210
22.000	110	15 Winter	100	+40%	100/15 Summer				80.279	0.554
22.001	111	60 Winter	100	+40%	100/15 Summer				79.960	0.410
22.002	112	60 Winter	100	+40%	100/15 Summer				79.787	0.465
22.003	113	60 Winter	100	+40%	100/15 Summer				79.526	0.378
22.004	114	1440 Winter	100	+40%	100/15 Summer				79.345	0.340
22.005	115	1440 Winter	100	+40%	100/60 Summer				79.341	0.403
23.000	116	15 Winter	100	+40%	100/15 Summer				80.516	0.682
24.000	117	15 Winter	100	+40%	100/15 Summer				80.483	0.683
23.001	118	15 Winter	100	+40%	100/15 Summer				80.472	0.734
23.002	119	15 Winter	100	+40%	100/15 Summer				80.348	0.708
23.003	120	15 Winter	100	+40%	100/15 Summer				80.225	0.648
21.004	121	15 Summer	100	+40%	100/15 Summer				79.532	1.011
21.005	122	15 Summer	100	+40%					78.396	0.000
21.006	123	1440 Winter	100	+40%	100/600 Winter				78.331	0.225
1.019	124	1440 Winter	100	+40%					77.857	-0.263
25.000	125	30 Winter	100	+40%	100/15 Summer				84.353	0.703
25.001	126	30 Winter	100	+40%	100/15 Summer				84.240	1.341
25.002	127	60 Winter	100	+40%	100/15 Summer				82.535	0.530
25.003	128	60 Winter	100	+40%	100/15 Summer				81.946	0.426
25.004	129	480 Winter	100	+40%	100/15 Summer				81.680	0.589
25.005	130	480 Winter	100	+40%	100/60 Summer				81.573	0.923
25.006	131	480 Winter	100	+40%	100/30 Summer				81.553	1.026
25.007	132	480 Winter	100	+40%	100/15 Winter				81.533	1.135
26.000	133	60 Winter	100	+40%	100/15 Summer				84.145	0.495
26.001	134	60 Winter	100	+40%	100/15 Summer				84.099	0.686
26.002	135	120 Winter	100	+40%	100/15 Summer				83.627	0.448
26.003	136	15 Winter	100	+40%	100/15 Summer				83.870	0.936
26.004	137	15 Winter	100	+40%	100/15 Summer				83.787	1.103
26.005	138	15 Winter	100	+40%	100/15 Summer				83.654	1.141
26.006	139	15 Winter	100	+40%	100/15 Summer				82.392	0.638
25.008	140	480 Winter	100	+40%	100/15 Summer				81.517	1.194
27.000	141	15 Winter	100	+40%	100/15 Summer				83.590	0.940
27.001	142	15 Winter	100	+40%	100/15 Summer				83.075	0.482
27.002	143	1440 Winter	100	+40%	100/480 Winter				82.650	0.124
27.003	144	1440 Winter	100	+40%	100/240 Winter				82.650	0.212
27.004	145	1440 Winter	100	+40%	100/120 Summer				82.650	0.308
27.005	146	1440 Winter	100	+40%					81.828	-0.447
27.006	147	15 Winter	100	+40%					81.025	-0.199
27.007	148	15 Winter	100	+40%					81.025	-0.103
27.008	149	15 Winter	100	+40%					80.986	-0.092
27.009	150	15 Winter	100	+40%					80.940	-0.062
27.010	151	15 Winter	100	+40%					80.636	-0.249
27.011	152	960 Winter	100	+40%	100/360 Winter				80.062	0.261
25.009	153	960 Winter	100	+40%	100/120 Summer				80.247	1.742

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

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
19.000	94	3.206	2.80			416.5	FLOOD	2
19.001	95	0.000	1.17			176.3	SURCHARGED	
19.002	96	0.000	0.38			56.8	SURCHARGED	
19.003	97	0.000	0.43			62.3	SURCHARGED	
19.004	98	0.000	0.46			66.6	SURCHARGED	
20.000	99	3.200	1.91			72.5	FLOOD	3
20.001	100	0.000	1.93			72.2	SURCHARGED	
19.005	101	0.000	0.11			14.7	SURCHARGED	
16.014	102	0.000	0.38			26.3	SURCHARGED	
1.016	103	0.000	3.73			129.0	SURCHARGED*	
1.017	104	0.000	3.73			129.2	SURCHARGED*	
1.018	105	0.000	0.58			42.7	SURCHARGED*	
21.000	106	0.000	0.47			125.3	FLOOD RISK	
21.001	107	0.000	0.72			151.8	FLOOD RISK	
21.002	108	0.013	0.96			176.3	FLOOD	1
21.003	109	0.000	0.32			143.9	SURCHARGED	
22.000	110	0.000	1.90			284.5	SURCHARGED	
22.001	111	0.000	0.90			137.6	SURCHARGED	
22.002	112	0.000	1.40			209.1	SURCHARGED	
22.003	113	0.000	1.59			235.1	SURCHARGED	
22.004	114	0.000	0.52			70.9	SURCHARGED	
22.005	115	0.000	0.06			9.0	SURCHARGED	
23.000	116	0.000	0.87			251.1	SURCHARGED	
24.000	117	0.000	0.32			87.6	SURCHARGED	
23.001	118	0.000	1.38			400.5	SURCHARGED	
23.002	119	0.000	1.51			407.8	SURCHARGED	
23.003	120	0.000	1.61			384.9	SURCHARGED	
21.004	121	0.000	2.53			406.0	SURCHARGED*	
21.005	122	0.000	2.54			408.0	SURCHARGED*	
21.006	123	0.000	0.01			0.6	SURCHARGED*	
1.019	124	0.000	0.34			44.4	OK	
25.000	125	0.000	0.96			287.4	SURCHARGED	
25.001	126	0.000	1.47			445.5	SURCHARGED	
25.002	127	0.000	1.16			336.8	SURCHARGED	
25.003	128	0.000	1.20			344.3	SURCHARGED	
25.004	129	0.000	0.94			269.9	SURCHARGED	
25.005	130	0.000	0.55			80.5	SURCHARGED	
25.006	131	0.000	0.55			80.4	SURCHARGED	
25.007	132	0.000	0.58			80.3	SURCHARGED	
26.000	133	0.000	0.95			145.6	SURCHARGED	
26.001	134	0.000	1.57			239.1	SURCHARGED	
26.002	135	0.000	1.34			204.2	SURCHARGED	
26.003	136	0.000	1.11			169.6	SURCHARGED	
26.004	137	0.000	1.02			315.6	SURCHARGED	
26.005	138	0.000	1.28			869.2	FLOOD RISK	
26.006	139	0.000	1.25			1028.5	SURCHARGED	
25.008	140	0.000	0.34			198.4	SURCHARGED	
27.000	141	0.000	2.98			394.8	FLOOD RISK	
27.001	142	0.000	2.88			391.2	SURCHARGED	
27.002	143	0.000	0.14			19.2	SURCHARGED	
27.003	144	0.000	0.17			23.7	SURCHARGED	
27.004	145	0.000	0.00			0.7	SURCHARGED	
27.005	146	0.000	0.00			0.7	OK	
27.006	147	0.000	0.02			2.9	OK	
27.007	148	0.000	0.35			45.2	OK	
27.008	149	0.000	0.38			52.9	OK	
27.009	150	0.000	0.98			141.8	OK	
27.010	151	0.000	0.40			219.3	OK	
27.011	152	0.000	0.82			78.3	SURCHARGED	

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

PN	US/MH Name	Flooded		Flow / Cap.	Overflow (1/s)	Half Drain Time (mins)	Pipe Flow (1/s)	Status	Level Exceeded
		Volume (m³)	Flow						
25.009	153	0.000	1.81				195.8	SURCHARGED	

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

										Water	Surcharged	Flooded
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Level (m)	Depth (m)	Volume (m³)	
25.010	154	1440 Summer	100	+40%					78.467	0.000	0.000	
25.011	155	1440 Summer	100	+40%					78.402	0.000	0.000	
25.012	156	1440 Summer	100	+40%	100/60 Summer				78.891	0.701	0.000	
25.013	157	960 Winter	100	+40%	100/120 Summer				78.293	0.225	0.000	
1.020	158	960 Winter	100	+40%					77.800	-0.800	0.000	

				Half Drain	Pipe		
	US/MH	Flow /	Overflow	Time	Flow		Level
PN	Name	Cap.	(l/s)	(mins)	(l/s)	Status	Exceeded
25.010	154	1.07			171.9	SURCHARGED*	
25.011	155	1.07			171.9	SURCHARGED*	
25.012	156	1.67			123.8	SURCHARGED*	
25.013	157	2.23			131.5	SURCHARGED	
1.020	158	0.06			172.1	OK	