Project Name	: Rascals Farm, Southwater
Job No	: 23-225
Note Title	: Drainage Strategy Technical Note Addendum 2
Author	: CR
Checked	: NM
Approved	: GG
Date	: July 2024

1.0 INTRODUCTION

1.1 Background

1.1.1 Odyssey has been commissioned by Catesby Strategic Land Ltd to undertake a surface water and foul drainage strategy to support a reserved matters application associated with the proposed residential development at Rascals Farm in Southwater.

1.1.2 A planning application was submitted to Horsham District Council in March 2020 (reference DC/20/0695 and APP/Z3825/W/20/3257700) along with a Flood Risk Assessment and Drainage Strategy completed by Odyssey (report reference 19-368-01A). Outline planning permission was granted in August 2021, subject to selected conditions. A Drainage Strategy Technical Note (report reference 23-225-03) was submitted in December 2023 as part of the reserved matters application (reference DC/24/0249) to address conditions 11 and 12 relating to surface water and foul drainage. Addendum 1 to the technical note was issued in June 2024 to outline updates to the proposed design.

1.1.3 Comments from West Sussex County Council Lead Local Flood Authority (LLFA) on Drainage Strategy Technical Note Addendum 1 were received in July 2024, these are included in **Appendix A** and the responses are below.

1.1.4 The following addendum, which should be read in conjunction with the Drainage Technical Note (report reference 23-225-03) and Drainage Technical Note Addendum 1 (reference 23-225-05),

addresses all points raised by the LLFA, and seeks to provide additional information to confirm that a robust assessment has been undertaken.

2.0 UPDATED SURFACE AND FOUL WATER DRAINAGE STRATEGY

2.1.1 The proposed surface water drainage strategy is shown in **Drawing 23-225-011C**, which has been updated in accordance with the comments from West Sussex County Council LLFA, which are included in **Appendix A**. The updated Micro Drainage calculations are presented in **Appendix B**.

3.0 RESPONSE TO WEST SUSSEX COUNTY COUNCIL COMMENTS

3.1.1 WSCC provided the following comments (***in bold italics***) in July 2024. Odyssey's response directly follows each comment.

3.1.2 ***There are several houses and key utility plants (sub-station and pumping station) in surface water flow paths"***

3.1.3 The surface water flooding at the site was reviewed and agreed as part of outline planning.

3.1.4 The Environment Agency's Risk of Flooding from Surface Water (RoFSW) mapping shows that in its current state, the majority of the site is at 'very low' risk of surface water flooding. There is an area in the south-east of the site that contains areas at 'low' and 'medium' risk, as well as some small areas at 'low' risk in the north and south-west of the site. However, these areas are generated by catchments on site, there are no flow routes crossing the middle of the site. Overland flows directly from the site shall be managed through the implementation of the surface water drainage strategy, which shall ensure that this risk is managed such as not to pose a threat to the proposed development, or to existing development in the area. Flows would be restricted to less than greenfield rates thereby providing betterment in terms of flood risk to all areas downstream.

All watercourses/ditches must be clearly shown on drawings."

3.1.5 Existing perimeter ditches added to drawing.

"3. 3m easement for maintenance access around the basins is required."

3.1.6 3m wide access for maintenance is available for most of the perimeter of the basins – where this is not the case, maintenance can be provided from the adjacent road and footpaths. All the

basins are part of the public open space and will be accessible all year round for maintenance purposes.

For the calculations, a Cv value of 1 and MADD factor of 0 is required. Both winter and summer storms must be included"

3.1.7 Previous Cv value was agreed at outline planning so acceptability of the design should be based on this. Nonetheless, calculations have been produced using a Cv value of 1 to demonstrate the effect of this. There is still sufficient volume within the basins to accommodate the increased volumes of runoff as a result of the increase in the volumetric runoff coefficient. The calculations are included in **Appendix A**.

Calculations to show 50% AEP rainfall event does not surcharge in the drainage network, 3.33 % rainfall event plus climate change does not flood outside of the network which is designed to hold water and 1% AEP rainfall event plus climate change does not leave any part of the application boundary or flood any part of a building or utility plant susceptible to water within the development boundary."

3.1.8 Calculations updated to include 50% and 3.33% AEP rainfall events.

It is noted the northern catchment is proposed to discharge to a foul sewer, which is not something we support. The PPG flood risk and coastal change paragraph 056 states surface water should be discharged according to drainage hierarchy"

3.1.9 The northern catchment discharges to a highway ditch as agreed at the outline planning stage. The highway authority agreed to this at the outline planning stage following the provision of a detailed justification.

Evidence that the ditch in the southern boundary is connected to the wider watercourse/drainage network."

3.1.10 Continuity of the southern ditch network was discussed and confirmed at the outline planning stage. The LLFA accepted that the ditch was continuous then and suggested that maintenance works be undertaken in a section further downstream of the site.

In the FRA the use of source control SuDS was discussed. The reserved matters drainage layout relies on underground tanks and end of pipe design. It would be more multi-functional

if open, source control SuDS such as rain gardens, bioretention areas, tree pits and swales are used"

3.1.11 Several demands such as key landscape requirements meant that SuDS were limited to the main basins with tanks used to supplement the additional storage. The proposed SuDS features still provide sufficient storage for the required design storm including an allowance for climate and urban creep.

At outline stage the greenfield runoff rate was calculated to be 5.1 l/s/ha. For the reserved matters application the total impermeable area is 1.988 ha, however the total discharge rate is 21.2 l/s, which exceeds the Qbar rate."

3.1.12 The agreed discharge rate at the outline planning application stage was based on total developable area hence the use of 21.2 l/s.

In the Landscape General Arrangement there is an area of wetland wildflower meadow outside no 30. It is unclear if this is linked to drainage"

3.1.13 This area does not provide any attenuation as part of the surface water drainage system. This will though provide additional attenuation not currently accounted for in the surface water drainage design thus providing additional betterment.

The drainage calculations must be shown to include a surcharged outfall to a watercourse or sewer. This surcharge level must be the 1% AEP flood event of the receiving watercourse if known or bank full if not already hydraulically modelled"

3.1.14 Surcharged sewer calculations provided in Appendix A.

DRAWINGS



REPRODUCED FROM ORDNANCE SURVEY ® BY THE PERMISSION OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE. © CROWN COPYRIGHT. ALL RIGHTS RESERVED. LICENCE NUMBER 100045322.

P:\23-225 - Rascals Farm, Southwater\Tech\Acad\Drawings\23-225-011 Preliminary Drainage Strategy.dwg

NOTES

1. DO NOT SCALE FROM THIS DRAWING.
2. THIS DRAWING IS FOR PLANNING PURPOSES ONLY AND IS TO BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS ISSUED BY THE ARCHITECT.
3. DRAWING IS BASED OFF SITE LAYOUT RECEIVED FROM COOPERBAILLIE. DATED. JUNE 2024. DRAWING NO. CB_08_353_001F
4. TOPOGRAPHICAL SURVEY WAS COMPLETED BY NJC SURVEYS LTD DRAWING REF. S1973/01, DATED MAY 2017

LEGEND:

- PROPOSED SITE BOUNDARY
- PROPOSED BASIN
- EXISTING FOUL WATER SEWER
- PROPOSED HEADWALL
- PROPOSED SURFACE WATER SEWER AND MANHOLE
- PROPOSED VORTEX FLOW CONTROL
- PROPOSED FOUL WATER SEWER AND MANHOLE
- PROPOSED ATTENUATION TANK
- PROPOSED FOUL RISING MAIN
- PROPOSED PROPRIETARY TREATMENT DEVICE
- PROPOSED SWALE
- PROPOSED SERVICE MARGIN

Rev	Amendments	Drn	Chk	App	Date
C	UPDATED AS PER WSCC LLFA COMMENTS	CR	NM	GG	24/07/24
B	MINOR AMENDMENT TO DRAINAGE LEVELS	CR	NM	GG	28/06/24
A	UPDATED AS PER NEW LAYOUT, SOUTHWEST OUTFALL REMOVED	CR	NM	GG	27/06/24

ODYSSEY
Tuscany House
White Hart Lane
Basingstoke
Hampshire RG21 4AF
Telephone: 01256 331144
Fax: 01256 331134
E: info@odysseycomsult.co.uk
W: www.odysseycomsult.co.uk

Job Title
RASCALS FARM, SOUTHWATER

Drawing Title
PRELIMINARY DRAINAGE STRATEGY

Client
CATESBY ESTATES

Scale	Date	Designed
1:500 @A0	DEC 23	CN
Drawn	**Checked**	**Approved**
CN	NM	GG
Job No	**Drawing No**	**Rev**
23-225	23-225-011	C

APPENDIX A

West Sussex County Council LLFA Comments

Ground Floor
Northleigh
County Hall
Chichester
West Sussex
PO19 1RH

Lead Local Flood Authority

Nicola Pettifer
Development Control
Horsham District Council
Parkside
Chart Way
Horsham
RH14 1RL

Date 22nd July 2024

Dear Nicola,

RE: **DC/24/0249 – Rascalls Farm, Shipley Road, Southwater, West Sussex, RH13 9GB**

Thank you for your consultation on the above site, received on 2nd July 2024. We have reviewed the application as submitted and wish to make the following comments.

This is a reserved matters application for the erection of 96 dwellings and ancillary parking and landscaping following approval of outline application DC/20/0695, relating to layout, scale, appearance and landscaping.

We **object** to this planning application in the absence of an acceptable Flood Risk Drainage Strategy relating to:

- The application is not in accordance with the NPPF, PPG Flood risk and coastal change or policies in the HDPF.

Reason
To prevent flooding in accordance with National Planning Policy Framework paragraph 173, 175 and 180 by ensuring the satisfactory management of local flood risk, surface water flow paths, storage and disposal of surface water from the site in a range of rainfall events and ensuring the SuDS proposed operates as designed for the lifetime of the development.

We will consider reviewing this objection if the issues highlighted below adequately addressed:

1. There are several houses and key utility plants (sub-station and pumping station) in surface water flow paths.
2. All watercourses/ditches must be clearly shown on drawings.
3. 3m easement for maintenance access around the basins is required.
4. For the calculations, a Cv value of 1 and MADD factor of 0 is required. Both winter and summer storms must be included.

5. Calculations to show 50% AEP rainfall event does not surcharge in the drainage network, 3.33 % rainfall event plus climate change does not flood outside of the network which is designed to hold water and 1% AEP rainfall event plus climate change does not leave any part of the application boundary or flood any part of a building or utility plant susceptible to water within the development boundary.
6. It is noted the northern catchment is proposed to discharge to a foul sewer, which is not something we support. The PPG flood risk and coastal change paragraph 056 states surface water should be discharged according to drainage hierarchy.
7. Evidence that the ditch in the southern boundary is connected to the wider watercourse/drainage network.
8. In the FRA the use of source control SuDS was discussed. The reserved matters drainage layout relies on underground tanks and end of pipe design. It would be more multi-functional if open, source control SuDS such as rain gardens, bioretention areas, tree pits and swales are used.
9. At outline stage the greenfield runoff rate was calculated to be 5.1 l/s/ha. For the reserved matters application the total impermeable area is 1.988 ha, however the total discharge rate is 21.2 l/s, which exceeds the Qbar rate.
10. In the Landscape General Arrangement there is an area of wetland wildflower meadow outside no 30. It is unclear if this is linked to drainage.
11. The drainage calculations must be shown to include a surcharged outfall to a watercourse or sewer. This surcharge level must be the 1% AEP flood event of the receiving watercourse if known or bank full if not already hydraulically modelled.

Yours sincerely,

Eleanor Read
Flood Risk Management Team
FRM@westsussex.gov.uk

Annex

The following documents have been reviewed, which have been submitted to support the application;

Drainage Technical Note by Odyssey, December 2023

APPENDIX B

Microdrainage Calculations

Tuscany House
White Hart Lane
Basingstoke RG21 4AF

Date 24/07/2024 15:02 | Designed by baspc1
File 2024-07-23 Revised Layout.MDX | Checked by
Innovyze | Network 2020.1

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	2	Volumetric Runoff Coeff.	0.750
		PIMP (%)	100
FEH Rainfall Version	2013	Add Flow / Climate Change (%)	0
Site Location	GB 515478 125205 TQ 15478 25205	Minimum Backdrop Height (m)	0.000
Data Type	Point	Maximum Backdrop Height (m)	0.000
Maximum Rainfall (mm/hr)	50	Min Design Depth for Optimisation (m)	1.000
Maximum Time of Concentration (mins)	30	Min Vel for Auto Design only (m/s)	0.50
Foul Sewage (l/s/ha)	0.000	Min Slope for Optimisation (1:X)	1000

Designed with Level Soffits

Network Design Table for Storm

- Indicates pipe length does not match coordinates

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
S1.000	11.635	0.037	313.0	0.046	5.00	0.0	0.600	o	450	Pipe/Conduit	
S1.001	32.888	0.105	313.0	0.030	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)
S1.000	50.00	5.17	52.971	0.046	0.0	0.0	0.0	1.14	181.9	6.2
S1.001	50.00	5.65	52.934	0.076	0.0	0.0	0.0	1.14	181.9	10.3

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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
S1.002	41.926	0.134	313.0	0.063	0.00	0.0	0.600	o	450	Pipe/Conduit	
S1.003	42.202	0.135	313.0	0.056	0.00	0.0	0.600	o	450	Pipe/Conduit	
S2.000	15.891	0.051	313.0	0.000	5.00	0.0	0.600	o	450	Pipe/Conduit	
S2.001	23.849	0.076	313.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S1.004	16.187	0.052	313.0	0.098	0.00	0.0	0.600	o	375	Pipe/Conduit	
S1.005	20.228	0.065	313.0	0.014	0.00	0.0	0.600	o	375	Pipe/Conduit	
S1.006	6.778	0.479	14.2	0.046	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.000	23.527	0.888	26.5	0.045	5.00	0.0	0.600	o	225	Pipe/Conduit	
S4.000	20.654	0.124	167.0	0.039	5.00	0.0	0.600	o	225	Pipe/Conduit	
S4.001	23.805	0.142	167.6	0.014	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)
S1.002	50.00	6.26	52.829	0.139	0.0	0.0	0.0	1.14	181.9	18.8
S1.003	50.00	6.87	52.695	0.195	0.0	0.0	0.0	1.14	181.9	26.4
S2.000	50.00	5.23	52.687	0.000	0.0	0.0	0.0	1.14	181.9	0.0
S2.001	50.00	5.58	52.636	0.000	0.0	0.0	0.0	1.14	181.9	0.0
S1.004	50.00	7.14	52.560	0.293	0.0	0.0	0.0	1.02	112.5	39.7
S1.005	50.00	7.47	52.508	0.307	0.0	0.0	0.0	1.02	112.5	41.6
S1.006	50.00	7.49	52.444	0.353	0.0	0.0	0.0	4.84	534.4	47.8
S3.000	50.00	5.15	54.047	0.045	0.0	0.0	0.0	2.55	101.5	6.1
S4.000	50.00	5.34	54.307	0.039	0.0	0.0	0.0	1.01	40.1	5.3
S4.001	50.00	5.74	54.183	0.053	0.0	0.0	0.0	1.01	40.0	7.2

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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
S4.002	25.930	0.574	45.2	0.034	0.00	0.0	0.600	o	225	Pipe/Conduit	
S4.003	23.550	0.099	238.0	0.031	0.00	0.0	0.600	o	300	Pipe/Conduit	
S4.004	20.755	0.087	238.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S4.005	23.722	0.076	313.0	0.026	0.00	0.0	0.600	o	375	Pipe/Conduit	
S4.006	14.408	0.046	313.0	0.025	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.001	23.977	0.077	313.0	0.038	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.002	12.896	0.041	313.0	0.049	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.003	22.379	0.071	313.0	0.050	0.00	0.0	0.600	o	375	Pipe/Conduit	
S5.000	10.120	0.061	167.0	0.000	5.00	0.0	0.600	o	225	Pipe/Conduit	
S6.000	23.559	0.205	114.9	0.052	5.00	0.0	0.600	o	225	Pipe/Conduit	
S6.001	11.996	0.050	238.0	0.052	0.00	0.0	0.600	o	300	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)
S4.002	50.00	5.96	54.041	0.087	0.0	0.0	0.0	1.95	77.6	11.8
S4.003	50.00	6.34	53.392	0.118	0.0	0.0	0.0	1.01	71.7	16.0
S4.004	50.00	6.68	53.293	0.118	0.0	0.0	0.0	1.01	71.7	16.0
S4.005	50.00	7.07	53.131	0.144	0.0	0.0	0.0	1.02	112.5	19.5
S4.006	50.00	7.31	53.055	0.169	0.0	0.0	0.0	1.02	112.5	22.9
S3.001	50.00	7.70	53.009	0.252	0.0	0.0	0.0	1.02	112.5	34.1
S3.002	50.00	7.91	52.932	0.301	0.0	0.0	0.0	1.02	112.5	40.8
S3.003	49.06	8.28	52.891	0.351	0.0	0.0	0.0	1.02	112.5	46.6
S5.000	50.00	5.17	53.489	0.000	0.0	0.0	0.0	1.01	40.1	0.0
S6.000	50.00	5.32	54.692	0.052	0.0	0.0	0.0	1.22	48.5	7.0
S6.001	50.00	5.52	54.412	0.104	0.0	0.0	0.0	1.01	71.7	14.1

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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
S6.002	12.429	1.009	12.3	0.021	0.00	0.0	0.600	o	300	Pipe/Conduit	
S5.001	27.070	0.114	238.0	0.095	0.00	0.0	0.600	o	300	Pipe/Conduit	
S5.002	31.859	0.134	238.0	0.101	0.00	0.0	0.600	o	300	Pipe/Conduit	
S5.003	12.543	0.040	313.0	0.083	0.00	0.0	0.600	o	375	Pipe/Conduit	
S5.004	23.771	0.062	385.0	0.036	0.00	0.0	0.600	o	450	Pipe/Conduit	
S5.005	24.723	0.064	385.0	0.043	0.00	0.0	0.600	o	450	Pipe/Conduit	
S5.006	17.239	0.044	391.8	0.047	0.00	0.0	0.600	o	450	Pipe/Conduit	
S3.004	15.000#	0.039	385.0	0.034	0.00	0.0	0.600	o	450	Pipe/Conduit	
S3.005	23.400#	0.098	238.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S3.006	25.027	0.353	70.9	0.047	0.00	0.0	0.600	o	300	Pipe/Conduit	
S3.007	17.107	0.072	238.0	0.039	0.00	0.0	0.600	o	300	Pipe/Conduit	
S3.008	21.654	0.091	238.0	0.024	0.00	0.0	0.600	o	300	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)
S6.002	50.00	5.57	54.362	0.125	0.0	0.0	0.0	4.50	318.3	16.9
S5.001	50.00	6.01	53.353	0.220	0.0	0.0	0.0	1.01	71.7	29.8
S5.002	50.00	6.53	53.239	0.321	0.0	0.0	0.0	1.01	71.7	43.5
S5.003	50.00	6.74	53.030	0.404	0.0	0.0	0.0	1.02	112.5	54.7
S5.004	50.00	7.12	52.915	0.440	0.0	0.0	0.0	1.03	163.8	59.6
S5.005	50.00	7.52	52.853	0.483	0.0	0.0	0.0	1.03	163.8	65.4
S5.006	50.00	7.80	52.789	0.530	0.0	0.0	0.0	1.02	162.4	71.8
S3.004	48.35	8.52	52.745	0.915	0.0	0.0	0.0	1.03	163.8	119.8
S3.005	50.00	5.38	52.700	0.000	20.0	0.0	0.0	1.01	71.7	20.0
S3.006	50.00	5.22	52.602	0.000	20.0	0.0	0.0	1.87	132.2	20.0
S3.007	50.00	5.50	52.249	0.039	20.0	0.0	0.0	1.01	71.7	25.3
S3.008	50.00	5.86	52.177	0.063	20.0	0.0	0.0	1.01	71.7	28.5

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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
S3.009	10.854	0.046	238.0	0.024	0.00	0.0	0.600	o	300	Pipe/Conduit	
S1.007	19.665	0.063	313.0	0.010	0.00	0.0	0.600	o	375	Pipe/Conduit	
S1.008	16.812	0.054	313.0	0.032	0.00	0.0	0.600	o	375	Pipe/Conduit	
S1.009	11.482	0.403	28.5	0.028	0.00	0.0	0.600	o	375	Pipe/Conduit	
S7.000	65.349	0.792	82.5	0.081	5.00	0.0	0.600	o	225	Pipe/Conduit	
S7.001	14.398	0.360	40.0	0.081	0.00	0.0	0.600	o	300	Pipe/Conduit	
S7.002	24.617	0.079	313.0	0.049	0.00	0.0	0.600	o	375	Pipe/Conduit	
S7.003	10.042	0.033	304.3	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S7.004	18.765	0.049	385.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S7.005	30.772	0.080	385.0	0.107	0.00	0.0	0.600	o	450	Pipe/Conduit	
S1.010	12.700#	0.086	147.7	0.049	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)
S3.009	50.00	6.04	52.086	0.087	20.0	0.0	0.0	1.01	71.7	31.8
S1.007	50.00	7.82	51.965	0.450	20.0	0.0	0.0	1.02	112.5	80.9
S1.008	49.63	8.09	51.902	0.482	20.0	0.0	0.0	1.02	112.5	84.8
S1.009	49.46	8.15	51.848	0.510	20.0	0.0	0.0	3.41	376.2	88.3
S7.000	50.00	5.76	52.988	0.081	0.0	0.0	0.0	1.44	57.3	11.0
S7.001	50.00	5.85	52.121	0.162	0.0	0.0	0.0	2.49	176.3	21.9
S7.002	50.00	6.25	51.686	0.211	0.0	0.0	0.0	1.02	112.5	28.6
S7.003	50.00	6.42	51.607	0.211	0.0	0.0	0.0	1.03	114.1	28.6
S7.004	50.00	6.72	51.499	0.211	0.0	0.0	0.0	1.03	163.8	28.6
S7.005	50.00	7.22	51.450	0.318	0.0	0.0	0.0	1.03	163.8	43.1
S1.010	49.08	8.27	51.370	0.877	20.0	0.0	0.0	1.67	265.7	136.6

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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
S1.011	19.450#	0.324	60.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S8.000	16.426	0.329	50.0	0.042	5.00	0.0	0.600	o	225	Pipe/Conduit	
S8.001	22.326	0.429	52.0	0.030	0.00	0.0	0.600	o	225	Pipe/Conduit	
S8.002	11.102	0.067	166.9	0.055	0.00	0.0	0.600	o	225	Pipe/Conduit	
S8.003	12.745	0.076	167.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S8.004	13.324	0.114	116.9	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S8.005	9.244	0.153	60.4	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S8.006	18.275	0.153	119.4	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S8.007	5.755	0.038	150.1	0.000	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)
S1.011	50.00	5.12	51.284	0.000	20.0	0.0	0.0	2.63	417.9	20.0
S8.000	50.00	5.15	52.485	0.042	0.0	0.0	0.0	1.85	73.7	5.7
S8.001	50.00	5.35	52.156	0.072	0.0	0.0	0.0	1.82	72.3	9.7
S8.002	50.00	5.54	51.727	0.127	0.0	0.0	0.0	1.01	40.1	17.2
S8.003	50.00	5.75	51.661	0.127	0.0	0.0	0.0	1.01	40.1	17.2
S8.004	50.00	5.93	51.584	0.127	0.0	0.0	0.0	1.21	48.0	17.2
S8.005	50.00	6.02	51.470	0.127	0.0	0.0	0.0	1.69	67.0	17.2
S8.006	50.00	6.28	51.317	0.127	0.0	0.0	0.0	1.20	47.5	17.2
S8.007	50.00	6.37	51.164	0.127	0.0	0.0	0.0	1.06	42.3	17.2

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
S1	54.346	1.375	Open Manhole	1350	S1.000	52.971	450				
S2	54.563	1.629	Open Manhole	1350	S1.001	52.934	450	S1.000	52.934	450	
S3	55.551	2.723	Open Manhole	1350	S1.002	52.829	450	S1.001	52.829	450	
S4	55.623	2.928	Open Manhole	1350	S1.003	52.695	450	S1.002	52.695	450	
STANK 1	55.250	2.563	Open Manhole	1350	S2.000	52.687	450				
S6	54.986	2.349	Open Manhole	1350	S2.001	52.636	450	S2.000	52.636	450	
SFC TANK 1	54.672	2.112	Open Manhole	1350	S1.004	52.560	375	S1.003	52.560	450	
								S2.001	52.560	450	
S8	54.341	1.833	Open Manhole	1350	S1.005	52.508	375	S1.004	52.508	375	
S9	53.873	1.429	Open Manhole	1350	S1.006	52.444	375	S1.005	52.444	375	
S22	55.272	1.225	Open Manhole	1200	S3.000	54.047	225				
S23	55.532	1.225	Open Manhole	1200	S4.000	54.307	225				
S24	55.852	1.669	Open Manhole	1200	S4.001	54.183	225	S4.000	54.183	225	
S25	55.667	1.626	Open Manhole	1200	S4.002	54.041	225	S4.001	54.041	225	
S26	54.592	1.200	Open Manhole	1200	S4.003	53.392	300	S4.002	53.467	225	
S27	54.493	1.200	Open Manhole	1200	S4.004	53.293	300	S4.003	53.293	300	
S28	54.500	1.369	Open Manhole	1350	S4.005	53.131	375	S4.004	53.206	300	
S29	54.553	1.498	Open Manhole	1350	S4.006	53.055	375	S4.005	53.055	375	
S30	54.688	1.679	Open Manhole	1350	S3.001	53.009	375	S3.000	53.159	225	
								S4.006	53.009	375	
S31	54.413	1.480	Open Manhole	1350	S3.002	52.932	375	S3.001	52.932	375	
S32	54.349	1.458	Open Manhole	1350	S3.003	52.891	375	S3.002	52.891	375	
STANK 2	55.893	2.404	Open Manhole	1200	S5.000	53.489	225				
S33	55.917	1.225	Open Manhole	1200	S6.000	54.692	225				
S34	55.712	1.300	Open Manhole	1200	S6.001	54.412	300	S6.000	54.487	225	

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
S35	55.836	1.475	Open Manhole	1200	S6.002	54.362	300	S6.001	54.362	300	
SFC TANK 2	55.810	2.458	Open Manhole	1200	S5.001	53.353	300	S5.000	53.428	225	1
								S6.002	53.353	300	
S37	55.276	2.038	Open Manhole	1200	S5.002	53.239	300	S5.001	53.239	300	
S38	54.627	1.597	Open Manhole	1350	S5.003	53.030	375	S5.002	53.105	300	
S39	54.368	1.453	Open Manhole	1350	S5.004	52.915	450	S5.003	52.990	375	
S40	54.304	1.451	Open Manhole	1350	S5.005	52.853	450	S5.004	52.853	450	
S41	54.400	1.611	Open Manhole	1350	S5.006	52.789	450	S5.005	52.789	450	
S42	54.250	1.505	Open Manhole	1350	S3.004	52.745	450	S3.003	52.820	375	
								S5.006	52.745	450	
SBASIN 1	53.449	0.749	Open Manhole	1350	S3.005	52.700	300	S3.004	52.706	450	156
S44	54.120	1.518	Open Manhole	1200	S3.006	52.602	300	S3.005	52.602	300	
S45	53.750	1.501	Open Manhole	1200	S3.007	52.249	300	S3.006	52.249	300	
S46	53.700	1.523	Open Manhole	1200	S3.008	52.177	300	S3.007	52.177	300	
S47	53.730	1.644	Open Manhole	1200	S3.009	52.086	300	S3.008	52.086	300	
S11	53.687	1.722	Open Manhole	1200	S1.007	51.965	375	S1.006	51.965	375	
								S3.009	52.040	300	
S12	53.364	1.462	Open Manhole	1350	S1.008	51.902	375	S1.007	51.902	375	
S13	53.187	1.339	Open Manhole	1350	S1.009	51.848	375	S1.008	51.848	375	
S14	54.570	1.582	Open Manhole	1200	S7.000	52.988	225				
S15	53.421	1.300	Open Manhole	1200	S7.001	52.121	300	S7.000	52.196	225	
S16	53.061	1.375	Open Manhole	1350	S7.002	51.686	375	S7.001	51.761	300	
S17	52.800	1.193	Open Manhole	1350	S7.003	51.607	375	S7.002	51.607	375	
S18	53.200	1.701	Open Manhole	1350	S7.004	51.499	450	S7.003	51.574	375	
S19	52.803	1.353	Open Manhole	1350	S7.005	51.450	450	S7.004	51.450	450	

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
S20	53.085	1.715	Open Manhole	1350	S1.010	51.370	450	S1.009	51.445	375	
								S7.005	51.370	450	
SBASIN 2	52.110	0.826	Open Manhole	1350	S1.011	51.284	450	S1.010	51.284	450	
S	53.000	2.040	Open Manhole	0		OUTFALL		S1.011	50.960	450	
S48	53.910	1.425	Open Manhole	1200	S8.000	52.485	225				
S49	53.574	1.418	Open Manhole	1200	S8.001	52.156	225	S8.000	52.156	225	
S50	53.148	1.421	Open Manhole	1200	S8.002	51.727	225	S8.001	51.727	225	
STANK 3	53.285	1.625	Open Manhole	1200	S8.003	51.661	225	S8.002	51.661	225	
S50a	53.052	1.468	Open Manhole	1200	S8.004	51.584	225	S8.003	51.584	225	
S51	53.057	1.587	Open Manhole	1200	S8.005	51.470	225	S8.004	51.470	225	
S52	52.672	1.355	Open Manhole	1200	S8.006	51.317	225	S8.005	51.317	225	
S53	52.289	1.125	Open Manhole	1200	S8.007	51.164	225	S8.006	51.164	225	
S	52.250	1.125	Open Manhole	0		OUTFALL		S8.007	51.125	225	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S1	515533.184	125264.552	515533.184	125264.552	Required	
S2	515527.101	125254.633	515527.101	125254.633	Required	

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Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S3	515499.965	125236.052	515499.965	125236.052	Required	
S4	515465.599	125212.037	515465.599	125212.037	Required	
STANK 1	515508.447	125209.370	515508.447	125209.370	Required	
S6	515496.236	125199.200	515496.236	125199.200	Required	
SFC TANK 1	515488.552	125176.623	515488.552	125176.623	Required	
S8	515487.490	125160.471	515487.490	125160.471	Required	
S9	515480.812	125141.377	515480.812	125141.377	Required	
S22	515390.329	125245.770	515390.329	125245.770	Required	
S23	515465.953	125272.607	515465.953	125272.607	Required	
S24	515448.932	125284.308	515448.932	125284.308	Required	

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Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S25	515427.508	125294.686	515427.508	125294.686	Required	
S26	515404.884	125307.356	515404.884	125307.356	Required	
S27	515382.660	125299.567	515382.660	125299.567	Required	
S28	515369.355	125283.637	515369.355	125283.637	Required	
S29	515366.964	125260.035	515366.964	125260.035	Required	
S30	515366.802	125245.628	515366.802	125245.628	Required	
S31	515366.755	125221.650	515366.755	125221.650	Required	
S32	515367.431	125208.772	515367.431	125208.772	Required	
STANK 2	515440.534	125231.422	515440.534	125231.422	Required	
S33	515426.211	125264.464	515426.211	125264.464	Required	

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Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S34	515415.388	125243.538	515415.388	125243.538	Required	
S35	515424.905	125236.237	515424.905	125236.237	Required	
SFC TANK 2	515431.979	125226.016	515431.979	125226.016	Required	
S37	515447.025	125203.513	515447.025	125203.513	Required	
S38	515421.040	125185.082	515421.040	125185.082	Required	
S39	515413.100	125175.371	515413.100	125175.371	Required	
S40	515399.436	125155.920	515399.436	125155.920	Required	
S41	515380.027	125171.234	515380.027	125171.234	Required	
S42	515373.919	125187.355	515373.919	125187.355	Required	
SBASIN 1	515374.227	125155.023	515374.227	125155.023	Required	

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Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S44	515410.156	125145.025	515410.156	125145.025	Required	
S45	515432.913	125134.611	515432.913	125134.611	Required	
S46	515449.969	125133.293	515449.969	125133.293	Required	
S47	515471.482	125130.819	515471.482	125130.819	Required	
S11	515481.637	125134.650	515481.637	125134.650	Required	
S12	515500.113	125127.913	515500.113	125127.913	Required	
S13	515516.812	125125.965	515516.812	125125.965	Required	
S14	515502.766	125177.981	515502.766	125177.981	Required	
S15	515565.443	125196.476	515565.443	125196.476	Required	
S16	515569.643	125182.705	515569.643	125182.705	Required	

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Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S17	515560.903	125159.692	515560.903	125159.692	Required	
S18	515551.382	125156.500	515551.382	125156.500	Required	
S19	515557.116	125138.632	515557.116	125138.632	Required	
S20	515527.855	125129.107	515527.855	125129.107	Required	
SBASIN 2	515536.642	125109.168	515536.642	125109.168	Required	
S	515574.243	125085.694			No Entry	
S48	515537.612	125300.543	515537.612	125300.543	Required	
S49	515546.758	125314.187	515546.758	125314.187	Required	
S50	515563.472	125328.989	515563.472	125328.989	Required	
STANK 3	515555.291	125336.494	515555.291	125336.494	Required	

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Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S50a	515567.138	125331.795	515567.138	125331.795	Required	
S51	515576.704	125341.069	515576.704	125341.069	Required	
S52	515585.721	125343.106	515585.721	125343.106	Required	
S53	515603.557	125339.120	515603.557	125339.120	Required	
S	515609.157	125340.446			No Entry	

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PIPELINE SCHEDULES for Storm

Upstream Manhole

- Indicates pipe length does not match coordinates

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	o	450	S1	54.346	52.971	0.925	Open Manhole	1350
S1.001	o	450	S2	54.563	52.934	1.179	Open Manhole	1350
S1.002	o	450	S3	55.551	52.829	2.273	Open Manhole	1350
S1.003	o	450	S4	55.623	52.695	2.478	Open Manhole	1350
S2.000	o	450	STANK 1	55.250	52.687	2.113	Open Manhole	1350
S2.001	o	450	S6	54.986	52.636	1.899	Open Manhole	1350
S1.004	o	375	SFC TANK 1	54.672	52.560	1.737	Open Manhole	1350
S1.005	o	375	S8	54.341	52.508	1.458	Open Manhole	1350
S1.006	o	375	S9	53.873	52.444	1.054	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	11.635	313.0	S2	54.563	52.934	1.179	Open Manhole	1350
S1.001	32.888	313.0	S3	55.551	52.829	2.273	Open Manhole	1350
S1.002	41.926	313.0	S4	55.623	52.695	2.478	Open Manhole	1350
S1.003	42.202	313.0	SFC TANK 1	54.672	52.560	1.662	Open Manhole	1350
S2.000	15.891	313.0	S6	54.986	52.636	1.899	Open Manhole	1350
S2.001	23.849	313.0	SFC TANK 1	54.672	52.560	1.662	Open Manhole	1350
S1.004	16.187	313.0	S8	54.341	52.508	1.458	Open Manhole	1350
S1.005	20.228	313.0	S9	53.873	52.444	1.054	Open Manhole	1350
S1.006	6.778	14.2	S11	53.687	51.965	1.347	Open Manhole	1200

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S3.000	o	225	S22	55.272	54.047	1.000	Open Manhole	1200
S4.000	o	225	S23	55.532	54.307	1.000	Open Manhole	1200
S4.001	o	225	S24	55.852	54.183	1.444	Open Manhole	1200
S4.002	o	225	S25	55.667	54.041	1.401	Open Manhole	1200
S4.003	o	300	S26	54.592	53.392	0.900	Open Manhole	1200
S4.004	o	300	S27	54.493	53.293	0.900	Open Manhole	1200
S4.005	o	375	S28	54.500	53.131	0.994	Open Manhole	1350
S4.006	o	375	S29	54.553	53.055	1.123	Open Manhole	1350
S3.001	o	375	S30	54.688	53.009	1.304	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S3.000	23.527	26.5	S30	54.688	53.159	1.304	Open Manhole	1350
S4.000	20.654	167.0	S24	55.852	54.183	1.444	Open Manhole	1200
S4.001	23.805	167.6	S25	55.667	54.041	1.401	Open Manhole	1200
S4.002	25.930	45.2	S26	54.592	53.467	0.900	Open Manhole	1200
S4.003	23.550	238.0	S27	54.493	53.293	0.900	Open Manhole	1200
S4.004	20.755	238.0	S28	54.500	53.206	0.994	Open Manhole	1350
S4.005	23.722	313.0	S29	54.553	53.055	1.123	Open Manhole	1350
S4.006	14.408	313.0	S30	54.688	53.009	1.304	Open Manhole	1350
S3.001	23.977	313.0	S31	54.413	52.932	1.105	Open Manhole	1350

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S3.002	o	375	S31	54.413	52.932	1.105	Open Manhole	1350
S3.003	o	375	S32	54.349	52.891	1.083	Open Manhole	1350
S5.000	o	225	STANK 2	55.893	53.489	2.179	Open Manhole	1200
S6.000	o	225	S33	55.917	54.692	1.000	Open Manhole	1200
S6.001	o	300	S34	55.712	54.412	1.000	Open Manhole	1200
S6.002	o	300	S35	55.836	54.362	1.175	Open Manhole	1200
S5.001	o	300	SFC TANK 2	55.810	53.353	2.158	Open Manhole	1200
S5.002	o	300	S37	55.276	53.239	1.738	Open Manhole	1200
S5.003	o	375	S38	54.627	53.030	1.222	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S3.002	12.896	313.0	S32	54.349	52.891	1.083	Open Manhole	1350
S3.003	22.379	313.0	S42	54.250	52.820	1.055	Open Manhole	1350
S5.000	10.120	167.0	SFC TANK 2	55.810	53.428	2.157	Open Manhole	1200
S6.000	23.559	114.9	S34	55.712	54.487	1.000	Open Manhole	1200
S6.001	11.996	238.0	S35	55.836	54.362	1.175	Open Manhole	1200
S6.002	12.429	12.3	SFC TANK 2	55.810	53.353	2.158	Open Manhole	1200
S5.001	27.070	238.0	S37	55.276	53.239	1.738	Open Manhole	1200
S5.002	31.859	238.0	S38	54.627	53.105	1.222	Open Manhole	1350
S5.003	12.543	313.0	S39	54.368	52.990	1.003	Open Manhole	1350

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S5.004	o	450	S39	54.368	52.915	1.003	Open Manhole	1350
S5.005	o	450	S40	54.304	52.853	1.001	Open Manhole	1350
S5.006	o	450	S41	54.400	52.789	1.161	Open Manhole	1350
S3.004	o	450	S42	54.250	52.745	1.055	Open Manhole	1350
S3.005	o	300	SBASIN 1	53.449	52.700	0.449	Open Manhole	1350
S3.006	o	300	S44	54.120	52.602	1.218	Open Manhole	1200
S3.007	o	300	S45	53.750	52.249	1.201	Open Manhole	1200
S3.008	o	300	S46	53.700	52.177	1.223	Open Manhole	1200
S3.009	o	300	S47	53.730	52.086	1.344	Open Manhole	1200
S1.007	o	375	S11	53.687	51.965	1.347	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S5.004	23.771	385.0	S40	54.304	52.853	1.001	Open Manhole	1350
S5.005	24.723	385.0	S41	54.400	52.789	1.161	Open Manhole	1350
S5.006	17.239	391.8	S42	54.250	52.745	1.055	Open Manhole	1350
S3.004	15.000#	385.0	SBASIN 1	53.449	52.706	0.293	Open Manhole	1350
S3.005	23.400#	238.0	S44	54.120	52.602	1.218	Open Manhole	1200
S3.006	25.027	70.9	S45	53.750	52.249	1.201	Open Manhole	1200
S3.007	17.107	238.0	S46	53.700	52.177	1.223	Open Manhole	1200
S3.008	21.654	238.0	S47	53.730	52.086	1.344	Open Manhole	1200
S3.009	10.854	238.0	S11	53.687	52.040	1.347	Open Manhole	1200
S1.007	19.665	313.0	S12	53.364	51.902	1.087	Open Manhole	1350

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.008	o	375	S12	53.364	51.902	1.087	Open Manhole	1350
S1.009	o	375	S13	53.187	51.848	0.964	Open Manhole	1350
S7.000	o	225	S14	54.570	52.988	1.357	Open Manhole	1200
S7.001	o	300	S15	53.421	52.121	1.000	Open Manhole	1200
S7.002	o	375	S16	53.061	51.686	1.000	Open Manhole	1350
S7.003	o	375	S17	52.800	51.607	0.818	Open Manhole	1350
S7.004	o	450	S18	53.200	51.499	1.251	Open Manhole	1350
S7.005	o	450	S19	52.803	51.450	0.903	Open Manhole	1350
S1.010	o	450	S20	53.085	51.370	1.265	Open Manhole	1350
S1.011	o	450	SBASIN 2	52.110	51.284	0.376	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.008	16.812	313.0	S13	53.187	51.848	0.964	Open Manhole	1350
S1.009	11.482	28.5	S20	53.085	51.445	1.265	Open Manhole	1350
S7.000	65.349	82.5	S15	53.421	52.196	1.000	Open Manhole	1200
S7.001	14.398	40.0	S16	53.061	51.761	1.000	Open Manhole	1350
S7.002	24.617	313.0	S17	52.800	51.607	0.818	Open Manhole	1350
S7.003	10.042	304.3	S18	53.200	51.574	1.251	Open Manhole	1350
S7.004	18.765	385.0	S19	52.803	51.450	0.903	Open Manhole	1350
S7.005	30.772	385.0	S20	53.085	51.370	1.265	Open Manhole	1350
S1.010	12.700#	147.7	SBASIN 2	52.110	51.284	0.376	Open Manhole	1350
S1.011	19.450#	60.0	S	53.000	50.960	1.590	Open Manhole	0

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S8.000	o	225	S48	53.910	52.485	1.200	Open Manhole	1200
S8.001	o	225	S49	53.574	52.156	1.193	Open Manhole	1200
S8.002	o	225	S50	53.148	51.727	1.196	Open Manhole	1200
S8.003	o	225	STANK 3	53.285	51.661	1.400	Open Manhole	1200
S8.004	o	225	S50a	53.052	51.584	1.243	Open Manhole	1200
S8.005	o	225	S51	53.057	51.470	1.362	Open Manhole	1200
S8.006	o	225	S52	52.672	51.317	1.130	Open Manhole	1200
S8.007	o	225	S53	52.289	51.164	0.900	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S8.000	16.426	50.0	S49	53.574	52.156	1.193	Open Manhole	1200
S8.001	22.326	52.0	S50	53.148	51.727	1.196	Open Manhole	1200
S8.002	11.102	166.9	STANK 3	53.285	51.661	1.400	Open Manhole	1200
S8.003	12.745	167.0	S50a	53.052	51.584	1.243	Open Manhole	1200
S8.004	13.324	116.9	S51	53.057	51.470	1.362	Open Manhole	1200
S8.005	9.244	60.4	S52	52.672	51.317	1.130	Open Manhole	1200
S8.006	18.275	119.4	S53	52.289	51.164	0.900	Open Manhole	1200
S8.007	5.755	150.1	S	52.250	51.125	0.900	Open Manhole	0

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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.046	0.046	0.046
1.001	-	-	100	0.030	0.030	0.030
1.002	-	-	100	0.063	0.063	0.063
1.003	-	-	100	0.056	0.056	0.056
2.000	-	-	100	0.000	0.000	0.000
2.001	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.098	0.098	0.098
1.005	-	-	100	0.014	0.014	0.014
1.006	-	-	100	0.046	0.046	0.046
3.000	-	-	100	0.045	0.045	0.045
4.000	-	-	100	0.039	0.039	0.039
4.001	-	-	100	0.014	0.014	0.014
4.002	-	-	100	0.034	0.034	0.034
4.003	-	-	100	0.031	0.031	0.031
4.004	-	-	100	0.000	0.000	0.000
4.005	-	-	100	0.026	0.026	0.026
4.006	-	-	100	0.025	0.025	0.025
3.001	-	-	100	0.038	0.038	0.038
3.002	-	-	100	0.049	0.049	0.049
3.003	-	-	100	0.050	0.050	0.050
5.000	-	-	100	0.000	0.000	0.000
6.000	-	-	100	0.052	0.052	0.052
6.001	-	-	100	0.052	0.052	0.052
6.002	-	-	100	0.021	0.021	0.021
5.001	-	-	100	0.095	0.095	0.095
5.002	-	-	100	0.101	0.101	0.101
5.003	-	-	100	0.083	0.083	0.083
5.004	-	-	100	0.036	0.036	0.036
5.005	-	-	100	0.043	0.043	0.043
5.006	-	-	100	0.047	0.047	0.047
3.004	-	-	100	0.034	0.034	0.034
3.005	-	-	100	0.000	0.000	0.000
3.006	-	-	100	0.047	0.047	0.047
3.007	-	-	100	0.039	0.039	0.039

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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
3.008	-	-	100	0.024	0.024	0.024
3.009	-	-	100	0.024	0.024	0.024
1.007	-	-	100	0.010	0.010	0.010
1.008	-	-	100	0.032	0.032	0.032
1.009	-	-	100	0.028	0.028	0.028
7.000	-	-	100	0.081	0.081	0.081
7.001	-	-	100	0.081	0.081	0.081
7.002	-	-	100	0.049	0.049	0.049
7.003	-	-	100	0.000	0.000	0.000
7.004	-	-	100	0.000	0.000	0.000
7.005	-	-	100	0.107	0.107	0.107
1.010	-	-	100	0.049	0.049	0.049
1.011	-	-	100	0.000	0.000	0.000
8.000	-	-	100	0.042	0.042	0.042
8.001	-	-	100	0.030	0.030	0.030
8.002	-	-	100	0.055	0.055	0.055
8.003	-	-	100	0.000	0.000	0.000
8.004	-	-	100	0.000	0.000	0.000
8.005	-	-	100	0.000	0.000	0.000
8.006	-	-	100	0.000	0.000	0.000
8.007	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				1.966	1.966	1.966

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)
S1.011	S	53.000	50.960	50.960	0	0

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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)
S8.007	S	52.250	51.125	0.000	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Manhole Headloss Coeff (Global)	0.500	Inlet Coeffiecient	0.800
Areal Reduction Factor	1.000	Foul Sewage per hectare (l/s)	0.000	Flow per Person per Day (l/per/day)	0.000
Hot Start (mins)	0	Additional Flow - % of Total Flow	0.000	Run Time (mins)	60
Hot Start Level (mm)	0	MADD Factor * 10m³/ha Storage	0.000	Output Interval (mins)	1

Number of Input Hydrographs 0	Number of Offline Controls 0	Number of Time/Area Diagrams 0
Number of Online Controls 5	Number of Storage Structures 5	Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FEH	Summer Storms	Yes
Return Period (years)	100	Winter Storms	No
FEH Rainfall Version	2013	Cv (Summer)	0.750
Site Location	GB 515478 125205 TQ 15478 25205	Cv (Winter)	0.840
Data Type	Point	Storm Duration (mins)	30

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Online Controls for Storm

Hydro-Brake® Optimum Manhole: SFC TANK 1, DS/PN: S1.004, Volume (m³): 13.1

Unit Reference	MD-SHE-0102-6200-2000-6200	Sump Available	Yes
Design Head (m)	2.000	Diameter (mm)	102
Design Flow (l/s)	6.2	Invert Level (m)	52.560
Flush-Flo™	Calculated	Minimum Outlet Pipe Diameter (mm)	150
Objective	Minimise upstream storage	Suggested Manhole Diameter (mm)	1200
Application	Surface		

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.000	6.2	Kick-Flo®	0.912	4.3
Flush-Flo™	0.448	5.4	Mean Flow over Head Range	-	5.0

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)	Depth (m)	Flow (l/s)
0.100	3.4	0.600	5.3	1.600	5.6	2.600	7.0	5.000	9.5	7.500	11.6
0.200	4.9	0.800	4.9	1.800	5.9	3.000	7.5	5.500	10.0	8.000	11.9
0.300	5.2	1.000	4.5	2.000	6.2	3.500	8.1	6.000	10.4	8.500	12.3
0.400	5.4	1.200	4.9	2.200	6.5	4.000	8.6	6.500	10.8	9.000	12.6
0.500	5.4	1.400	5.2	2.400	6.7	4.500	9.1	7.000	11.2	9.500	13.0

Hydro-Brake® Optimum Manhole: SFC TANK 2, DS/PN: S5.001, Volume (m³): 3.9

Unit Reference	MD-SHE-0075-3200-1800-3200	Sump Available	Yes
Design Head (m)	1.800	Diameter (mm)	75
Design Flow (l/s)	3.2	Invert Level (m)	53.353
Flush-Flo™	Calculated	Minimum Outlet Pipe Diameter (mm)	100
Objective	Minimise upstream storage	Suggested Manhole Diameter (mm)	1200
Application	Surface		

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Hydro-Brake® Optimum Manhole: SFC TANK 2, DS/PN: S5.001, Volume (m³): 3.9

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.800	3.2	Kick-Flo®	0.664	2.0
Flush-Flo™	0.327	2.5	Mean Flow over Head Range	-	2.5

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)	Depth (m)	Flow (l/s)
0.100	2.0	0.600	2.2	1.600	3.0	2.600	3.8	5.000	5.2	7.500	6.2
0.200	2.4	0.800	2.2	1.800	3.2	3.000	4.1	5.500	5.4	8.000	6.4
0.300	2.5	1.000	2.4	2.000	3.4	3.500	4.4	6.000	5.6	8.500	6.6
0.400	2.5	1.200	2.7	2.200	3.5	4.000	4.6	6.500	5.8	9.000	6.8
0.500	2.4	1.400	2.8	2.400	3.7	4.500	4.9	7.000	6.0	9.500	7.0

Hydro-Brake® Optimum Manhole: SBASIN 1, DS/PN: S3.005, Volume (m³): 3.2

Unit Reference	MD-SHE-0151-9800-0449-9800	Sump Available	Yes
Design Head (m)	0.449	Diameter (mm)	151
Design Flow (l/s)	9.8	Invert Level (m)	52.700
Flush-Flo™	Calculated	Minimum Outlet Pipe Diameter (mm)	225
Objective	Minimise upstream storage	Suggested Manhole Diameter (mm)	1200
Application	Surface		

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.449	9.8	Kick-Flo®	0.365	8.9
Flush-Flo™	0.219	9.8	Mean Flow over Head Range	-	7.6

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)	Depth (m)	Flow (l/s)
0.100	5.4	0.200	9.8	0.300	9.5	0.400	9.3	0.500	10.3	0.600	11.2

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Hydro-Brake® Optimum Manhole: SBASIN 1, DS/PN: S3.005, Volume (m³): 3.2

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)	Depth (m)	Flow (l/s)
0.800	12.9	1.600	17.9	2.400	21.7	4.000	27.8	6.000	33.7	8.000	39.0
1.000	14.3	1.800	18.9	2.600	22.6	4.500	29.2	6.500	35.1	8.500	40.2
1.200	15.6	2.000	19.9	3.000	24.2	5.000	30.8	7.000	36.5	9.000	41.4
1.400	16.8	2.200	20.8	3.500	26.0	5.500	32.3	7.500	37.8	9.500	42.5

Hydro-Brake® Optimum Manhole: SBASIN 2, DS/PN: S1.011, Volume (m³): 3.0

Unit Reference	MD-SHE-0202-1950-0526-1950	Sump Available	Yes
Design Head (m)	0.526	Diameter (mm)	202
Design Flow (l/s)	19.5	Invert Level (m)	51.284
Flush-Flo™	Calculated	Minimum Outlet Pipe Diameter (mm)	225
Objective	Minimise upstream storage	Suggested Manhole Diameter (mm)	1200
Application	Surface		

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.526	19.5	Kick-Flo®	0.444	18.0
Flush-Flo™	0.285	19.5	Mean Flow over Head Range	-	14.8

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)	Depth (m)	Flow (l/s)
0.100	6.9	0.600	20.7	1.600	33.2	2.600	41.9	5.000	57.6	7.500	70.0
0.200	18.9	0.800	23.8	1.800	35.1	3.000	44.9	5.500	59.8	8.000	72.3
0.300	19.5	1.000	26.5	2.000	36.9	3.500	48.4	6.000	62.5	8.500	74.6
0.400	18.7	1.200	28.9	2.200	38.7	4.000	51.7	6.500	65.1	9.000	76.8
0.500	19.0	1.400	31.1	2.400	40.3	4.500	54.7	7.000	67.6	9.500	78.9

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Hydro-Brake® Optimum Manhole: STANK 3, DS/PN: S8.003, Volume (m³): 2.2

Unit Reference	MD-SHE-0059-1700-1200-1700	Sump Available	Yes
Design Head (m)	1.200	Diameter (mm)	59
Design Flow (l/s)	1.7	Invert Level (m)	51.661
Flush-Flo™	Calculated	Minimum Outlet Pipe Diameter (mm)	75
Objective	Minimise upstream storage	Suggested Manhole Diameter (mm)	1200
Application	Surface		

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.200	1.7	Kick-Flo®	0.527	1.2
Flush-Flo™	0.261	1.4	Mean Flow over Head Range	-	1.4

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)	Depth (m)	Flow (l/s)
0.100	1.2	0.600	1.2	1.600	1.9	2.600	2.4	5.000	3.3	7.500	4.0
0.200	1.4	0.800	1.4	1.800	2.0	3.000	2.6	5.500	3.4	8.000	4.1
0.300	1.4	1.000	1.6	2.000	2.1	3.500	2.8	6.000	3.6	8.500	4.2
0.400	1.4	1.200	1.7	2.200	2.2	4.000	2.9	6.500	3.7	9.000	4.3
0.500	1.2	1.400	1.8	2.400	2.3	4.500	3.1	7.000	3.8	9.500	4.4

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Storage Structures for Storm

Cellular Storage Manhole: STANK 1, DS/PN: S2.000

Invert Level (m) 52.687 Infiltration Coefficient Side (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Base (m/hr) 0.00000 Safety Factor 2.0

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	130.0	0.0	1.200	130.0	0.0	1.201	0.0	0.0

Cellular Storage Manhole: STANK 2, DS/PN: S5.000

Invert Level (m) 53.489 Infiltration Coefficient Side (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Base (m/hr) 0.00000 Safety Factor 2.0

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	140.0	120.0	1.000	140.0	163.8	1.001	0.0	163.8

Tank or Pond Manhole: SBASIN 1, DS/PN: S3.005

Invert Level (m) 52.700

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	871.0	0.749	1182.0

Tank or Pond Manhole: SBASIN 2, DS/PN: S1.011

Invert Level (m) 51.284

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	718.0	0.826	1134.0

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Cellular Storage Manhole: STANK 3, DS/PN: S8.003

Invert Level (m) 51.661 Infiltration Coefficient Side (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Base (m/hr) 0.00000 Safety Factor 2.0

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	120.0	120.0	0.800	120.0	163.8	0.801	0.0	163.8

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

Simulation Criteria

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

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 5 Number of Storage Structures 5 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 1.000
Site Location GB 515478 125205 TQ 15478 25205 Cv (Winter) 1.000

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

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 100
Climate Change (%) 40

WARNING: Half Drain Time has not been calculated as the structure is too full.

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)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
S1.000	S1	30 Summer	100	+40%	100/15 Summer	100/30 Summer			54.347	0.926	0.172	0.28			35.9
S1.001	S2	60 Summer	100	+40%	100/15 Summer				54.206	0.822	0.000	0.27			42.0
S1.002	S3	60 Summer	100	+40%	100/15 Summer				54.166	0.887	0.000	0.46			74.7
S1.003	S4	60 Winter	100	+40%	100/15 Summer				54.063	0.918	0.000	0.49			79.1

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

PN	US/MH Name	Status	Level Exceeded
S1.000	S1	FLOOD	1
S1.001	S2	SURCHARGED	
S1.002	S3	SURCHARGED	
S1.003	S4	SURCHARGED	

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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)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
S2.000	STANK 1	240 Winter	100	+40%	100/15 Summer				53.841	0.704	0.000	0.17			23.4
S2.001	S6	180 Winter	100	+40%	100/15 Summer				53.909	0.823	0.000	0.08			12.0
S1.004	SFC TANK 1	30 Summer	100	+40%	100/15 Summer				53.998	1.063	0.000	0.06			5.4
S1.005	S8	15 Summer	100	+40%					52.801	-0.083	0.000	0.25			23.7
S1.006	S9	15 Summer	100	+40%					52.799	-0.020	0.000	0.22			59.4
S3.000	S22	15 Summer	100	+40%	100/15 Summer				54.564	0.292	0.000	0.37			34.8
S4.000	S23	15 Summer	100	+40%	100/15 Summer				55.191	0.659	0.000	0.76			27.7
S4.001	S24	15 Summer	100	+40%	100/15 Summer				55.111	0.703	0.000	0.97			35.6
S4.002	S25	15 Summer	100	+40%	100/15 Summer				54.978	0.712	0.000	0.75			53.9
S4.003	S26	15 Summer	100	+40%	100/15 Summer	100/15 Summer			54.593	0.901	1.006	1.03			65.6
S4.004	S27	15 Summer	100	+40%	100/15 Summer	100/15 Summer			54.497	0.904	4.396	1.73			108.8
S4.005	S28	15 Summer	100	+40%	100/15 Summer	100/15 Summer			54.500	0.994	0.008	1.15			111.5
S4.006	S29	15 Summer	100	+40%	100/15 Summer				54.485	1.055	0.000	1.26			110.0
S3.001	S30	15 Summer	100	+40%	100/15 Summer				54.449	1.065	0.000	1.37			132.9
S3.002	S31	15 Summer	100	+40%	100/15 Summer				54.296	0.989	0.000	1.90			163.2
S3.003	S32	15 Summer	100	+40%	100/15 Summer				54.104	0.838	0.000	2.03			194.6
S5.000	STANK 2	240 Winter	100	+40%	100/15 Summer				55.713	1.999	0.000	0.08			2.5
S6.000	S33	15 Summer	100	+40%	100/15 Summer				55.828	0.911	0.000	0.97			43.1
S6.001	S34	240 Winter	100	+40%	100/15 Summer	100/240 Winter			55.714	1.002	1.354	0.26			15.3
S6.002	S35	240 Winter	100	+40%	100/15 Summer				55.713	1.051	0.000	0.07			18.4
S5.001	SFC TANK 2	240 Winter	100	+40%	100/15 Summer				55.712	2.059	0.000	0.06			3.6
S5.002	S37	15 Summer	100	+40%	100/15 Summer				54.506	0.968	0.000	1.27			83.0
S5.003	S38	15 Summer	100	+40%	100/15 Summer				54.312	0.907	0.000	1.72			146.5
S5.004	S39	15 Summer	100	+40%	100/15 Summer				54.186	0.821	0.000	1.27			172.5
S5.005	S40	15 Summer	100	+40%	100/15 Summer				54.094	0.791	0.000	1.45			198.9
S5.006	S41	15 Summer	100	+40%	100/15 Summer				53.957	0.718	0.000	1.89			226.3
S3.004	S42	15 Summer	100	+40%	100/15 Summer				53.783	0.588	0.000	4.00			442.6
S3.005	SBASIN 1	480 Winter	100	+40%	100/30 Summer				53.234	0.234	0.000	0.17			10.6
S3.006	S44	15 Summer	100	+40%	100/15 Summer				53.192	0.290	0.000	0.27			31.4
S3.007	S45	15 Summer	100	+40%	100/15 Summer				53.098	0.549	0.000	0.92			56.5
S3.008	S46	15 Summer	100	+40%	100/15 Summer				53.014	0.538	0.000	1.12			70.6
S3.009	S47	15 Summer	100	+40%	100/15 Summer				52.901	0.515	0.000	1.52			86.6

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Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Manhole Headloss Coeff (Global)	0.500	Inlet Coeffiecient	0.800
Areal Reduction Factor	1.000	Foul Sewage per hectare (l/s)	0.000	Flow per Person per Day (l/per/day)	0.000
Hot Start (mins)	0	Additional Flow - % of Total Flow	0.000	Run Time (mins)	60
Hot Start Level (mm)	0	MADD Factor * 10m³/ha Storage	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	5	Number of Storage Structures	5	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Summer Storms	Yes
Return Period (years)	100	Winter Storms	No
FEH Rainfall Version	2013	Cv (Summer)	0.750
Site Location	GB 515478 125205 TQ 15478 25205	Cv (Winter)	0.840
Data Type	Point	Storm Duration (mins)	30

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

Simulation Criteria

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

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 5 Number of Storage Structures 5 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 1.000
Site Location GB 515478 125205 TQ 15478 25205 Cv (Winter) 1.000

Margin for Flood Risk Warning (mm) 300.0 DTS Status OFF Inertia Status ON
Analysis Timestep Fine DVD Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 2, 30
Climate Change (%) 0, 0

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)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
S1.000	S1	15 Summer	2	+0%	30/15 Summer				53.058	-0.363	0.000	0.07			9.3
S1.001	S2	15 Summer	2	+0%	30/15 Summer				53.029	-0.355	0.000	0.09			14.1
S1.002	S3	30 Summer	2	+0%	30/15 Summer				53.008	-0.270	0.000	0.12			19.4
S1.003	S4	30 Summer	2	+0%	30/15 Summer				53.002	-0.143	0.000	0.11			18.4
S2.000	STANK 1	180 Summer	2	+0%	30/120 Summer				52.861	-0.276	0.000	0.03		90	3.6
S2.001	S6	30 Summer	2	+0%	30/15 Summer				52.899	-0.187	0.000	0.03			3.9
S1.004	SFC TANK 1	30 Summer	2	+0%	2/15 Summer				52.979	0.044	0.000	0.06			5.4
S1.005	S8	30 Summer	2	+0%					52.578	-0.305	0.000	0.08			7.4

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

PN	US/MH Name	Status	Level Exceeded
S1.000	S1	OK	
S1.001	S2	OK	
S1.002	S3	OK	
S1.003	S4	OK	
S2.000	STANK 1	OK	
S2.001	S6	OK	
S1.004	SFC TANK 1	SURCHARGED	
S1.005	S8	OK	

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2 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)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
S1.006	S9	15 Summer	2	+0%					52.501	-0.318	0.000	0.06			15.0
S3.000	S22	15 Summer	2	+0%					54.094	-0.178	0.000	0.10			9.1
S4.000	S23	15 Summer	2	+0%					54.378	-0.154	0.000	0.21			7.8
S4.001	S24	15 Summer	2	+0%					54.264	-0.144	0.000	0.28			10.2
S4.002	S25	15 Summer	2	+0%					54.113	-0.153	0.000	0.22			15.8
S4.003	S26	15 Summer	2	+0%	30/15 Summer				53.511	-0.181	0.000	0.33			20.8
S4.004	S27	15 Summer	2	+0%	30/15 Summer				53.411	-0.182	0.000	0.33			20.6
S4.005	S28	15 Summer	2	+0%	30/15 Summer				53.272	-0.234	0.000	0.25			23.8
S4.006	S29	15 Summer	2	+0%	30/15 Summer				53.221	-0.209	0.000	0.31			27.0
S3.001	S30	15 Summer	2	+0%	30/15 Summer				53.194	-0.190	0.000	0.39			38.1
S3.002	S31	15 Summer	2	+0%	30/15 Summer				53.142	-0.166	0.000	0.51			43.8
S3.003	S32	15 Summer	2	+0%	30/15 Summer				53.112	-0.154	0.000	0.51			49.4
S5.000	STANK 2	240 Summer	2	+0%	30/15 Summer				53.688	-0.026	0.000	0.07		144	2.4
S6.000	S33	15 Summer	2	+0%					54.766	-0.151	0.000	0.23			10.4
S6.001	S34	15 Summer	2	+0%					54.532	-0.180	0.000	0.33			19.2
S6.002	S35	15 Summer	2	+0%					54.423	-0.239	0.000	0.09			22.7
S5.001	SFC TANK 2	15 Summer	2	+0%	2/15 Summer				53.800	0.147	0.000	0.04			2.5
S5.002	S37	15 Summer	2	+0%	30/15 Summer				53.352	-0.187	0.000	0.30			19.4
S5.003	S38	15 Summer	2	+0%	30/15 Summer				53.193	-0.212	0.000	0.39			33.2
S5.004	S39	15 Summer	2	+0%	30/15 Summer				53.146	-0.219	0.000	0.28			37.8
S5.005	S40	15 Summer	2	+0%	30/15 Summer				53.120	-0.184	0.000	0.29			39.6
S5.006	S41	15 Summer	2	+0%	30/15 Summer				53.088	-0.150	0.000	0.35			41.6
S3.004	S42	15 Summer	2	+0%	30/15 Summer				53.065	-0.130	0.000	0.85			94.4
S3.005	SBASIN 1	600 Summer	2	+0%					52.869	-0.131	0.000	0.15			9.6
S3.006	S44	360 Summer	2	+0%					52.662	-0.239	0.000	0.09			10.6
S3.007	S45	15 Summer	2	+0%	30/15 Summer				52.349	-0.200	0.000	0.24			14.6
S3.008	S46	15 Summer	2	+0%	30/15 Summer				52.288	-0.188	0.000	0.30			18.6
S3.009	S47	15 Summer	2	+0%	30/15 Summer				52.217	-0.169	0.000	0.39			22.3
S1.007	S11	15 Summer	2	+0%	30/15 Summer				52.140	-0.200	0.000	0.41			38.3
S1.008	S12	15 Summer	2	+0%	30/15 Summer				52.083	-0.194	0.000	0.47			43.1
S1.009	S13	15 Summer	2	+0%					51.958	-0.265	0.000	0.19			46.9
S7.000	S14	15 Summer	2	+0%					53.072	-0.141	0.000	0.30			16.5

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

PN	US/MH Name	Status	Level Exceeded
S1.006	S9	OK	
S3.000	S22	OK	
S4.000	S23	OK	
S4.001	S24	OK	
S4.002	S25	OK	
S4.003	S26	OK	
S4.004	S27	OK	
S4.005	S28	OK	
S4.006	S29	OK	
S3.001	S30	OK	
S3.002	S31	OK	
S3.003	S32	OK	
S5.000	STANK 2	OK	
S6.000	S33	OK	
S6.001	S34	OK	
S6.002	S35	OK	
S5.001	SFC TANK 2	SURCHARGED	
S5.002	S37	OK	
S5.003	S38	OK	
S5.004	S39	OK	
S5.005	S40	OK	
S5.006	S41	OK	
S3.004	S42	OK	
S3.005	SBASIN 1	OK	
S3.006	S44	OK	
S3.007	S45	OK	
S3.008	S46	OK	
S3.009	S47	OK	
S1.007	S11	OK	
S1.008	S12	OK	
S1.009	S13	OK	

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

PN	US/MH Name	Status	Level Exceeded
S7.000	S14	OK	

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2 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)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S7.001	S15	15 Summer	2	+0%					52.214	-0.207	0.000	0.20			29.9	OK
S7.002	S16	15 Summer	2	+0%	30/15 Summer				51.853	-0.208	0.000	0.39			37.8	OK
S7.003	S17	15 Summer	2	+0%	30/15 Summer				51.784	-0.198	0.000	0.45			37.3	OK
S7.004	S18	15 Summer	2	+0%	30/15 Summer				51.703	-0.246	0.000	0.29			37.2	OK
S7.005	S19	15 Summer	2	+0%	30/15 Summer				51.676	-0.224	0.000	0.36			50.7	OK
S1.010	S20	15 Summer	2	+0%	30/15 Summer				51.626	-0.194	0.000	0.61			103.9	OK
S1.011	SBASIN 2	720 Summer	2	+0%					51.499	-0.235	0.000	0.06			19.1	OK
S8.000	S48	15 Summer	2	+0%					52.539	-0.171	0.000	0.13			8.5	OK
S8.001	S49	15 Summer	2	+0%					52.226	-0.156	0.000	0.21			13.6	OK
S8.002	S50	15 Summer	2	+0%	30/15 Summer				51.865	-0.087	0.000	0.67			22.8	OK
S8.003	STANK 3	360 Summer	2	+0%	30/30 Summer				51.845	-0.040	0.000	0.04		216	1.4	OK
S8.004	S50a	360 Summer	2	+0%					51.611	-0.198	0.000	0.03			1.4	OK
S8.005	S51	360 Summer	2	+0%					51.494	-0.201	0.000	0.03			1.4	OK
S8.006	S52	360 Summer	2	+0%					51.343	-0.199	0.000	0.03			1.4	OK
S8.007	S53	360 Summer	2	+0%					51.195	-0.194	0.000	0.05			1.4	OK

PN	US/MH Name	Level Exceeded
S7.001	S15	
S7.002	S16	
S7.003	S17	
S7.004	S18	
S7.005	S19	
S1.010	S20	
S1.011	SBASIN 2	
S8.000	S48	
S8.001	S49	
S8.002	S50	
S8.003	STANK 3	

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

PN	US/MH Name	Level Exceeded
S8.004	S50a	
S8.005	S51	
S8.006	S52	
S8.007	S53	

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

Simulation Criteria

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

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 5 Number of Storage Structures 5 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
FEH Rainfall Version 2013 Cv (Summer) 1.000
Site Location GB 515478 125205 TQ 15478 25205 Cv (Winter) 1.000

Margin for Flood Risk Warning (mm) 300.0 DTS Status OFF Inertia Status ON
Analysis Timestep Fine DVD Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	2, 30
Climate Change (%)	0, 0

WARNING: Half Drain Time has not been calculated as the structure is too full.

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)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1	30 Summer	30	+0%	30/15 Summer				53.604	0.183	0.000	0.13			16.4	SURCHARGED
S1.001	S2	30 Summer	30	+0%	30/15 Summer				53.562	0.178	0.000	0.17			26.8	SURCHARGED
S1.002	S3	30 Summer	30	+0%	30/15 Summer				53.540	0.261	0.000	0.28			45.4	SURCHARGED
S1.003	S4	30 Summer	30	+0%	30/15 Summer				53.374	0.229	0.000	0.36			59.0	SURCHARGED
S2.000	STANK 1	120 Winter	30	+0%	30/120 Summer				53.163	0.026	0.000	0.05			6.8	SURCHARGED

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

PN	US/MH Name	Level Exceeded
S1.000	S1	
S1.001	S2	
S1.002	S3	
S1.003	S4	
S2.000	STANK 1	

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30 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)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
S2.001	S6	120 Summer	30	+0%	30/15 Summer				53.284	0.198	0.000	0.03			4.8
S1.004	SFC TANK 1	15 Summer	30	+0%	2/15 Summer				53.319	0.384	0.000	0.06			5.4
S1.005	S8	15 Summer	30	+0%					52.599	-0.284	0.000	0.13			12.5
S1.006	S9	15 Summer	30	+0%					52.534	-0.285	0.000	0.13			36.0
S3.000	S22	15 Summer	30	+0%					54.119	-0.153	0.000	0.22			20.5
S4.000	S23	15 Summer	30	+0%					54.419	-0.113	0.000	0.48			17.5
S4.001	S24	15 Summer	30	+0%					54.319	-0.089	0.000	0.66			24.2
S4.002	S25	15 Summer	30	+0%					54.164	-0.102	0.000	0.56			39.9
S4.003	S26	15 Summer	30	+0%	30/15 Summer				53.899	0.207	0.000	0.79			50.4
S4.004	S27	15 Summer	30	+0%	30/15 Summer				53.825	0.232	0.000	0.70			44.1
S4.005	S28	15 Summer	30	+0%	30/15 Summer				53.743	0.238	0.000	0.52			50.1
S4.006	S29	15 Summer	30	+0%	30/15 Summer				53.663	0.233	0.000	0.64			56.0
S3.001	S30	15 Summer	30	+0%	30/15 Summer				53.591	0.207	0.000	0.86			83.0
S3.002	S31	15 Summer	30	+0%	30/15 Summer				53.507	0.199	0.000	1.13			96.5
S3.003	S32	15 Summer	30	+0%	30/15 Summer				53.432	0.165	0.000	1.15			110.3
S5.000	STANK 2	180 Winter	30	+0%	30/15 Summer				54.028	0.314	0.000	0.11			3.6
S6.000	S33	15 Summer	30	+0%					54.810	-0.107	0.000	0.53			23.5
S6.001	S34	15 Summer	30	+0%					54.629	-0.083	0.000	0.86			49.6
S6.002	S35	15 Summer	30	+0%					54.461	-0.200	0.000	0.24			60.0
S5.001	SFC TANK 2	1440 Summer	30	+0%	2/15 Summer				54.648	0.996	0.000	0.04			2.5
S5.002	S37	15 Summer	30	+0%	30/15 Summer				53.574	0.035	0.000	0.70			45.7
S5.003	S38	15 Summer	30	+0%	30/15 Summer				53.493	0.088	0.000	0.95			80.8
S5.004	S39	15 Summer	30	+0%	30/15 Summer				53.456	0.091	0.000	0.69			93.9
S5.005	S40	15 Summer	30	+0%	30/15 Summer				53.420	0.116	0.000	0.76			104.3
S5.006	S41	15 Summer	30	+0%	30/15 Summer				53.374	0.135	0.000	1.01			120.9
S3.004	S42	15 Summer	30	+0%	30/15 Summer				53.327	0.132	0.000	2.18			241.7
S3.005	SBASIN 1	480 Summer	30	+0%					53.000	0.000	0.000	0.15			9.8
S3.006	S44	15 Summer	30	+0%					52.694	-0.208	0.000	0.21			24.4
S3.007	S45	15 Summer	30	+0%	30/15 Summer				52.612	0.064	0.000	0.68			41.7
S3.008	S46	15 Summer	30	+0%	30/15 Summer				52.532	0.056	0.000	0.78			49.3
S3.009	S47	15 Summer	30	+0%	30/15 Summer				52.442	0.056	0.000	0.95			53.9
S1.007	S11	15 Summer	30	+0%	30/15 Summer				52.365	0.025	0.000	0.93			87.2

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

PN	US/MH Name	Status	Level Exceeded
S2.001	S6	SURCHARGED	
S1.004	SFC TANK 1	SURCHARGED	
S1.005	S8	OK	
S1.006	S9	OK	
S3.000	S22	OK	
S4.000	S23	OK	
S4.001	S24	OK	
S4.002	S25	OK	
S4.003	S26	SURCHARGED	
S4.004	S27	SURCHARGED	
S4.005	S28	SURCHARGED	
S4.006	S29	SURCHARGED	
S3.001	S30	SURCHARGED	
S3.002	S31	SURCHARGED	
S3.003	S32	SURCHARGED	
S5.000	STANK 2	SURCHARGED	
S6.000	S33	OK	
S6.001	S34	OK	
S6.002	S35	OK	
S5.001	SFC TANK 2	SURCHARGED	
S5.002	S37	SURCHARGED	
S5.003	S38	SURCHARGED	
S5.004	S39	SURCHARGED	
S5.005	S40	SURCHARGED	
S5.006	S41	SURCHARGED	
S3.004	S42	SURCHARGED	
S3.005	SBASIN 1	OK	
S3.006	S44	OK	
S3.007	S45	SURCHARGED	
S3.008	S46	SURCHARGED	
S3.009	S47	SURCHARGED	

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

PN	US/MH Name	Status	Level Exceeded
S1.007	S11	SURCHARGED	

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30 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)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.008	S12	15 Summer	30	+0%	30/15 Summer				52.287	0.010	0.000	1.09			100.0	SURCHARGED
S1.009	S13	15 Summer	30	+0%					52.023	-0.200	0.000	0.45			111.2	OK
S7.000	S14	15 Summer	30	+0%					53.123	-0.090	0.000	0.65			36.0	OK
S7.001	S15	15 Summer	30	+0%					52.280	-0.141	0.000	0.51			75.4	OK
S7.002	S16	15 Summer	30	+0%	30/15 Summer				52.188	0.127	0.000	0.95			92.5	SURCHARGED
S7.003	S17	15 Summer	30	+0%	30/15 Summer				52.092	0.110	0.000	1.10			91.9	SURCHARGED
S7.004	S18	15 Summer	30	+0%	30/15 Summer				52.038	0.089	0.000	0.72			92.9	SURCHARGED
S7.005	S19	15 Summer	30	+0%	30/15 Summer				52.003	0.103	0.000	0.89			125.5	SURCHARGED
S1.010	S20	15 Summer	30	+0%	30/15 Summer				51.929	0.109	0.000	1.47			248.5	SURCHARGED
S1.011	SBASIN 2	600 Summer	30	+0%					51.650	-0.084	0.000	0.06			19.5	OK
S8.000	S48	15 Summer	30	+0%					52.568	-0.142	0.000	0.29			19.2	OK
S8.001	S49	15 Summer	30	+0%					52.272	-0.109	0.000	0.52			34.3	OK
S8.002	S50	15 Summer	30	+0%	30/15 Summer				52.103	0.151	0.000	1.83			62.2	SURCHARGED
S8.003	STANK 3	240 Winter	30	+0%	30/30 Summer				52.052	0.166	0.000	0.04			1.4	SURCHARGED
S8.004	S50a	720 Summer	30	+0%					51.611	-0.198	0.000	0.03			1.4	OK
S8.005	S51	720 Summer	30	+0%					51.494	-0.201	0.000	0.03			1.4	OK
S8.006	S52	60 Summer	30	+0%					51.343	-0.198	0.000	0.03			1.4	OK
S8.007	S53	600 Winter	30	+0%					51.195	-0.194	0.000	0.05			1.4	OK

PN	US/MH Name	Level Exceeded
S1.008	S12	
S1.009	S13	
S7.000	S14	
S7.001	S15	
S7.002	S16	
S7.003	S17	
S7.004	S18	
S7.005	S19	

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

PN	US/MH Name	Level Exceeded
S1.010	S20	
S1.011	SBASIN 2	
S8.000	S48	
S8.001	S49	
S8.002	S50	
S8.003	STANK 3	
S8.004	S50a	
S8.005	S51	
S8.006	S52	
S8.007	S53	

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Surcharged Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.011	S	53.000	50.960	50.960	0	0

Datum (m) 50.600 Offset (mins) 0

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
5000	0.810	10000	0.810	15000	0.810

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)
S8.007	S	52.250	51.125	0.000	0	0

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

Simulation Criteria

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

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	5	Number of Storage Structures	5	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model		FEH Data Type	Point
FEH Rainfall Version		2013 Cv (Summer)	1.000
Site Location	GB 515478 125205 TQ 15478 25205	Cv (Winter)	1.000

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

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	100
Climate Change (%)	40

WARNING: Half Drain Time has not been calculated as the structure is too full.

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)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
S1.000	S1	30 Summer	100	+40%	100/15 Summer	100/30 Summer			54.347	0.926	0.172	0.28			35.9
S1.001	S2	60 Summer	100	+40%	100/15 Summer				54.206	0.822	0.000	0.27			42.0
S1.002	S3	60 Summer	100	+40%	100/15 Summer				54.166	0.887	0.000	0.46			74.7
S1.003	S4	60 Winter	100	+40%	100/15 Summer				54.063	0.918	0.000	0.49			79.1

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

PN	US/MH Name	Status	Level Exceeded
S1.000	S1	FLOOD	1
S1.001	S2	SURCHARGED	
S1.002	S3	SURCHARGED	
S1.003	S4	SURCHARGED	

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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)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
S2.000	STANK 1	240 Winter	100	+40%	100/15 Summer				53.841	0.704	0.000	0.17			23.4
S2.001	S6	180 Winter	100	+40%	100/15 Summer				53.909	0.823	0.000	0.08			12.0
S1.004	SFC TANK 1	30 Summer	100	+40%	100/15 Summer				53.998	1.063	0.000	0.06			5.4
S1.005	S8	15 Summer	100	+40%					52.801	-0.083	0.000	0.25			23.7
S1.006	S9	15 Summer	100	+40%					52.799	-0.020	0.000	0.22			59.4
S3.000	S22	15 Summer	100	+40%	100/15 Summer				54.564	0.292	0.000	0.37			34.8
S4.000	S23	15 Summer	100	+40%	100/15 Summer				55.191	0.659	0.000	0.76			27.7
S4.001	S24	15 Summer	100	+40%	100/15 Summer				55.111	0.703	0.000	0.97			35.6
S4.002	S25	15 Summer	100	+40%	100/15 Summer				54.978	0.712	0.000	0.75			53.9
S4.003	S26	15 Summer	100	+40%	100/15 Summer	100/15 Summer			54.593	0.901	1.006	1.03			65.6
S4.004	S27	15 Summer	100	+40%	100/15 Summer	100/15 Summer			54.497	0.904	4.396	1.73			108.8
S4.005	S28	15 Summer	100	+40%	100/15 Summer	100/15 Summer			54.500	0.994	0.008	1.15			111.5
S4.006	S29	15 Summer	100	+40%	100/15 Summer				54.485	1.055	0.000	1.26			110.0
S3.001	S30	15 Summer	100	+40%	100/15 Summer				54.449	1.065	0.000	1.37			132.9
S3.002	S31	15 Summer	100	+40%	100/15 Summer				54.296	0.989	0.000	1.90			163.2
S3.003	S32	15 Summer	100	+40%	100/15 Summer				54.104	0.838	0.000	2.03			194.6
S5.000	STANK 2	240 Winter	100	+40%	100/15 Summer				55.713	1.999	0.000	0.08			2.5
S6.000	S33	15 Summer	100	+40%	100/15 Summer				55.828	0.911	0.000	0.97			43.1
S6.001	S34	240 Winter	100	+40%	100/15 Summer	100/240 Winter			55.714	1.002	1.354	0.26			15.3
S6.002	S35	240 Winter	100	+40%	100/15 Summer				55.713	1.051	0.000	0.07			18.4
S5.001	SFC TANK 2	240 Winter	100	+40%	100/15 Summer				55.712	2.059	0.000	0.06			3.6
S5.002	S37	15 Summer	100	+40%	100/15 Summer				54.506	0.968	0.000	1.27			83.0
S5.003	S38	15 Summer	100	+40%	100/15 Summer				54.312	0.907	0.000	1.72			146.5
S5.004	S39	15 Summer	100	+40%	100/15 Summer				54.186	0.821	0.000	1.27			172.5
S5.005	S40	15 Summer	100	+40%	100/15 Summer				54.094	0.791	0.000	1.45			198.9
S5.006	S41	15 Summer	100	+40%	100/15 Summer				53.957	0.718	0.000	1.89			226.3
S3.004	S42	15 Summer	100	+40%	100/15 Summer				53.783	0.588	0.000	4.00			442.6
S3.005	SBASIN 1	480 Winter	100	+40%	100/30 Summer				53.234	0.234	0.000	0.17			10.6
S3.006	S44	15 Summer	100	+40%	100/15 Summer				53.192	0.290	0.000	0.27			31.4
S3.007	S45	15 Summer	100	+40%	100/15 Summer				53.098	0.549	0.000	0.92			56.5
S3.008	S46	15 Summer	100	+40%	100/15 Summer				53.014	0.538	0.000	1.12			70.6
S3.009	S47	15 Summer	100	+40%	100/15 Summer				52.901	0.515	0.000	1.52			86.6

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

PN	US/MH Name	Status	Level Exceeded
S2.000	STANK 1	SURCHARGED	
S2.001	S6	SURCHARGED	
S1.004	SFC TANK 1	SURCHARGED	
S1.005	S8	OK	
S1.006	S9	OK	
S3.000	S22	SURCHARGED	
S4.000	S23	SURCHARGED	
S4.001	S24	SURCHARGED	
S4.002	S25	SURCHARGED	
S4.003	S26	FLOOD	3
S4.004	S27	FLOOD	3
S4.005	S28	FLOOD	1
S4.006	S29	FLOOD RISK	
S3.001	S30	FLOOD RISK	
S3.002	S31	FLOOD RISK	
S3.003	S32	FLOOD RISK	
S5.000	STANK 2	FLOOD RISK	
S6.000	S33	FLOOD RISK	
S6.001	S34	FLOOD	2
S6.002	S35	FLOOD RISK	
S5.001	SFC TANK 2	FLOOD RISK	
S5.002	S37	SURCHARGED	
S5.003	S38	SURCHARGED	
S5.004	S39	FLOOD RISK	
S5.005	S40	FLOOD RISK	
S5.006	S41	SURCHARGED	
S3.004	S42	SURCHARGED	
S3.005	SBASIN 1	FLOOD RISK	
S3.006	S44	SURCHARGED	
S3.007	S45	SURCHARGED	
S3.008	S46	SURCHARGED	

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

PN	US/MH Name	Status	Level Exceeded
S3.009	S47	SURCHARGED	

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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)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
S1.007	S11	15 Summer	100	+40%	100/15 Summer				52.769	0.429	0.000	1.40			132.1
S1.008	S12	15 Summer	100	+40%	100/15 Summer				52.650	0.373	0.000	1.64			150.4
S1.009	S13	15 Summer	100	+40%	100/15 Summer				52.497	0.274	0.000	0.67			166.7
S7.000	S14	15 Summer	100	+40%	100/15 Summer				54.061	0.848	0.000	1.07			59.6
S7.001	S15	15 Summer	100	+40%	100/15 Summer				53.088	0.667	0.000	0.79			115.6
S7.002	S16	15 Summer	100	+40%	100/15 Summer				52.872	0.811	0.000	1.51			146.9
S7.003	S17	15 Summer	100	+40%	100/15 Summer				52.682	0.700	0.000	1.79			149.8
S7.004	S18	15 Summer	100	+40%	100/15 Summer				52.534	0.585	0.000	1.17			151.4
S7.005	S19	15 Summer	100	+40%	100/15 Summer				52.473	0.573	0.000	1.49			210.4
S1.010	S20	15 Summer	100	+40%	100/15 Summer				52.276	0.456	0.000	2.43			411.2
S1.011	SBASIN 2	720 Winter	100	+40%	100/120 Summer				51.903	0.169	0.000	0.07			21.1
S8.000	S48	15 Summer	100	+40%	100/15 Summer				52.952	0.242	0.000	0.52			34.3
S8.001	S49	15 Summer	100	+40%	100/15 Summer				52.862	0.481	0.000	0.89			58.5
S8.002	S50	15 Summer	100	+40%	100/15 Summer				52.527	0.574	0.000	3.00			102.0
S8.003	STANK 3	360 Winter	100	+40%	100/15 Summer				52.444	0.559	0.000	0.04			1.4
S8.004	S50a	5760 Summer	100	+40%					51.611	-0.198	0.000	0.03			1.4
S8.005	S51	4320 Summer	100	+40%					51.494	-0.201	0.000	0.03			1.4
S8.006	S52	5760 Summer	100	+40%					51.343	-0.198	0.000	0.03			1.4
S8.007	S53	5760 Summer	100	+40%					51.195	-0.194	0.000	0.05			1.4

PN	US/MH Name	Status	Level Exceeded
S1.007	S11	SURCHARGED	
S1.008	S12	SURCHARGED	
S1.009	S13	SURCHARGED	
S7.000	S14	SURCHARGED	
S7.001	S15	SURCHARGED	
S7.002	S16	FLOOD RISK	
S7.003	S17	FLOOD RISK	

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

PN	US/MH Name	Status	Level Exceeded
S7.004	S18	SURCHARGED	
S7.005	S19	SURCHARGED	
S1.010	S20	SURCHARGED	
S1.011	SBASIN 2	FLOOD RISK	
S8.000	S48	SURCHARGED	
S8.001	S49	SURCHARGED	
S8.002	S50	SURCHARGED	
S8.003	STANK 3	SURCHARGED	
S8.004	S50a	OK	
S8.005	S51	OK	
S8.006	S52	OK	
S8.007	S53	OK	

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