Job Title		Date
Union Place, Worthing, Sussex		Aug 2025
Item	Job No.	Report No.
Technical Response Note	E8513	RE004

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Introduction

This Technical Response Note has been written in response to the comments made by the Flood Risk Management Team from West Sussex County Council on the information supplied to discharge the surface water planning condition for the development at Union Place, Worthing Sussex. The comments made on the 11th August 2025 are in relation to planning application reference: AWDM/1618/23, condition 17.

WSCC Comments

The comments from the Flood Risk Management Team have been copied below. The comments have been labelled 1-4 with SWP's response in the following section.

Comments:
(1) *Whilst we note the drawings are 'FOR APPROVAL', the LLFA deem that there is not sufficient information provided regarding the strategy. The drawings do not have any cover or invert levels on the manholes, no finished floor levels of properties and no confirmed volumes for SuDS structures.*

(2) *The outfall also has unknown cover and invert levels and is unclear on its connection point. At discharge of conditions stage, we would expect this level of detail to be provided.*

(3) *Additionally, the supporting calculations shows FLOOD status in the southeast corner simulation (PN 2.00) in the 1% AEP plus 45% climate change allowance event. While we appreciate that the flooded volume is minimal, it should noted that any flooding in any future model runs should be supported with justification on how this is going to be managed on site in order to protect vulnerable infrastructure.*

(4) *We would also request that the 3.33% AEP event has appropriate climate change allowance included on any future model runs.*

SWP Response

The following is SWP's response to the Flood Risk Managements Team from West Sussex County Council comments.

(1) The manhole schedules accompanying the layout plans were erroneously omitted from the submission for discharge of the condition. These show the cover and invert levels of manholes. They now accompany this note. SWP note that the information requested of the cover and invert levels of manholes was also within the calculations which WSCC state they have reviewed.

The finished floor levels are shown on the external levels plans. The reference for these drawings is 8513-SWP-XX-XX-DP-C-1110 and 8513-SWP-XX-XX-DP-C-1111. WSCC state to have reviewed these drawings and we request they review them again.

Whilst the total volume of the SuDS structures is not stated, the size and porosity of them are on the drainage layout drawings and within the calculations. For avoidance of doubt, the sizes, porosity and total volumes are tabled in appendix 1.

(2) The cover and invert levels of the outfalls are stated on the drainage layout drawings or the manhole schedule. As established, the manhole schedules were erroneously omitted, however the information requested by WSCC is also within the calculations. The manhole schedules now accompany this note.

(3) The drainage in the south-east corner has been designed to accommodate flows from a third-party roof. Currently rainwater down pipes from Chatsworth House to the west discharge unrestricted on to the land and flow overland into the public highway or discharge into the gullies on site which are believed to discharge unrestricted to the public sewer.

There are 2 sets of calculations for the drainage for the south-east corner. The first set only incorporates the rainfall on the development site. The calculations show that the proposed drainage system is able to accommodate all rainfall events up to and including the 1in100 year plus 45% climate change event, limiting the discharge rate to the surface water public sewer at 1.0l/s.

The second set of calculations includes the estimated area of third-party roof area discharging on to the site. These calculations are useful in helping to understand the impact that the third-party flows have on the proposed drainage system. The calculations show that there are no unfavourable effects until the 1in30 rainfall event which shows the 100mmØ high level pipe overflow within the flow control chamber being used. The calculations for the 1in100 plus 45% climate change rainfall event, as WSCC have highlighted, show a flood event of 0.002m³ or 2L. The flood volume of 2L would in practice be accommodated with the unmodelled drainage such as the pipe laterals, bottle gullies, and channel drains. Any exceedance events that would occur would flow into the public highway, as it is currently doing.

The control of the third-party flows is not expressly a requirement for the developer to incorporate within the proposed drainage system. However, SWP consider that WSCC would welcome the betterment being provided.

(4) Surface Water Calculations have been updated to include the 1in30 plus 40% climate change rainfall events as requested. There is no change on the overall results. The calculations can be found in appendix 2.

Summary

SWP consider that the information contained in this Technical Response Note, appendices and accompanying drawings, should be satisfactory to the Flood Risk Management Team from West Sussex County Council so that their recommendation is changed to discharge the condition.

Prepared By	Seen By	Date
Craig Searle Civil Engineer	Rick Potterton Director	14/08/2025

Appendix 1 – SuDS Volumes
Appendix 2 – Surface Water Calculations

Appendix 1 – SuDS Volumes

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Title	Union Place, Worthing	Job No:	E8513
Description :	SuDS Volumes	By:	CRS
		Date:	Aug-25
		Sheet No:	1

Reference	Length (m)	Width (m)	Depth (m)	Porosity	Total Volume (m^3)
ST1	12	6.5	0.8	95%	**59.28**
ST2	22	4	1.2	95%	**100.32**
ST3	27	4	1.2	95%	**123.12**
ST4	50	4	1.2	95%	**228.00**
ST5	25	4	1.2	95%	**114.00**
ST6	44	4	1.2	95%	**200.64**
ST7a	18	3	1.2	95%	**61.56**
ST7b	18	3	0.8	95%	**41.04**
ST7c	13	3.5	1.2	95%	**51.87**
ST7d	14	3.5	0.8	95%	**37.24**

1017.07 Total (m^3)

Appendix 2 – Surface Water Calculations

STEPHEN WILSON PARTNERSHIP LTD

Title	Union Place, Worthing	Job No:	E8513
Description :	Stage 5 Surface Water Calculations	By:	CRS
	8513-SWP-Z1-ZZ-CA-C-9007	Date:	Aug-25
		Sheet No:	1

Design Data

FEH Point Data = 514987, 102818

Design Criteria

Design Storm = 100Yr + 45% Climate Change

Design Discharge Rate = 2.0 l/s

Total Impermeable Area =9930m^2 or 0.993Ha

Volumetric Runoff Coefficient (Cv) = 1.00

Discharge Point = Public Sewer Reference 0752

Results

Please refer to attached sheets

Rainfall events included in results

50% AEP
10% AEP
3.33% AEP
1%AEP + 45%CC
3.33% + 40%CC

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

« - Indicates pipe capacity < flow

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	2.098	0.105	20.0	0.004	6.00	0.0	0.600	o	100	Pipe/Conduit	
1.001	8.090	0.405	20.0	0.001	0.00	0.0	0.600	o	100	Pipe/Conduit	
1.002	3.774	0.190	19.9	0.010	0.00	0.0	0.600	o	100	Pipe/Conduit	
1.003	9.251	0.235	39.4	0.002	0.00	0.0	0.600	o	100	Pipe/Conduit	
1.004	4.093	0.105	39.0	0.010	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.005	6.593	0.165	40.0	0.008	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.006	7.411	0.420	17.6	0.010	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.007	2.144	0.105	20.4	0.004	0.00	0.0	0.600	o	225	Pipe/Conduit	
2.000	3.078	0.080	38.5	0.000	6.00	0.0	0.600	o	225	Pipe/Conduit	
1.008	6.328	0.125	50.6	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
3.000	7.278	0.185	39.3	0.048	6.00	0.0	0.600	o	150	Pipe/Conduit	
1.009	12.903	0.090	143.4	0.012	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.010	7.226	0.050	144.5	0.019	0.00	0.0	0.600	o	225	Pipe/Conduit	
4.000	6.389	0.160	39.9	0.032	6.00	0.0	0.600	o	150	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	75.00	6.02	8.070	0.004	0.0	0.0	0.0	1.74	13.6	0.8
1.001	75.00	6.10	7.950	0.005	0.0	0.0	0.0	1.74	13.6	1.0
1.002	75.00	6.13	7.530	0.015	0.0	0.0	0.0	1.74	13.7	3.0
1.003	75.00	6.26	7.325	0.017	0.0	0.0	0.0	1.23	9.7	3.5
1.004	75.00	6.30	7.025	0.027	0.0	0.0	0.0	1.62	28.6	5.5
1.005	75.00	6.37	6.905	0.035	0.0	0.0	0.0	1.60	28.2	7.1
1.006	75.00	6.42	6.725	0.045	0.0	0.0	0.0	2.41	42.6	9.1
1.007	75.00	6.43	6.230	0.049	0.0	0.0	0.0	2.91	115.7	10.0
2.000	75.00	6.02	5.630	0.000	0.0	0.0	0.0	2.12	84.1	0.0
1.008	75.00	6.49	5.950	0.049	0.0	0.0	0.0	1.84	73.3	10.0
3.000	75.00	6.08	6.085	0.048	0.0	0.0	0.0	1.61	28.4	9.7
1.009	75.00	6.69	5.825	0.109	0.0	0.0	0.0	1.09	43.3	22.1
1.010	75.00	6.80	5.735	0.128	0.0	0.0	0.0	1.09	43.2	26.0
4.000	75.00	6.07	5.920	0.032	0.0	0.0	0.0	1.60	28.2	6.5

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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
1.011	4.972	0.035	142.1	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
5.000	8.469	0.215	39.4	0.000	6.00	0.0	0.600	o	150	Pipe/Conduit	
1.012	5.026	0.035	143.6	0.019	0.00	0.0	0.600	o	225	Pipe/Conduit	
6.000	5.067	0.095	53.3	0.030	6.00	0.0	0.600	o	225	Pipe/Conduit	
6.001	7.541	0.190	39.7	0.006	0.00	0.0	0.600	o	225	Pipe/Conduit	
6.002	10.896	0.275	39.6	0.033	0.00	0.0	0.600	o	225	Pipe/Conduit	
6.003	3.325	0.085	39.1	0.020	0.00	0.0	0.600	o	225	Pipe/Conduit	
7.000	2.050	0.035	58.6	0.000	6.00	0.0	0.600	o	225	Pipe/Conduit	
6.004	2.097	0.025	83.9	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.013	7.869	0.040	196.7	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
8.000	2.199	0.055	40.0	0.011	6.00	0.0	0.600	o	100	Pipe/Conduit	
8.001	4.108	0.105	39.1	0.000	0.00	0.0	0.600	o	100	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)
1.011	75.00	6.87	5.685	0.160	0.0	0.0	0.0	1.09	43.5	32.5
5.000	75.00	6.09	6.090	0.000	0.0	0.0	0.0	1.61	28.4	0.0
1.012	75.00	6.95	5.650	0.179	0.0	0.0	0.0	1.09	43.3	36.4
6.000	75.00	6.05	6.725	0.030	0.0	0.0	0.0	1.79	71.4	6.1
6.001	75.00	6.11	6.615	0.036	0.0	0.0	0.0	2.08	82.8	7.3
6.002	75.00	6.19	6.410	0.069	0.0	0.0	0.0	2.08	82.9	14.0
6.003	75.00	6.22	6.135	0.089	0.0	0.0	0.0	2.10	83.4	18.1
7.000	75.00	6.02	5.450	0.000	0.0	0.0	0.0	1.71	68.1	0.0
6.004	75.00	6.25	5.415	0.089	0.0	0.0	0.0	1.43	56.8	18.1
1.013	75.00	7.04	5.390	0.268	0.0	0.0	0.0	1.45	230.0	54.4
8.000	75.00	6.03	7.135	0.011	0.0	0.0	0.0	1.22	9.6	2.2
8.001	75.00	6.09	7.065	0.011	0.0	0.0	0.0	1.24	9.7	2.2

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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
8.002	6.472	0.370	17.5	0.011	0.00	0.0	0.600	o	150	Pipe/Conduit	
8.003	2.097	0.060	35.0	0.015	0.00	0.0	0.600	o	225	Pipe/Conduit	
9.000	6.095	0.305	20.0	0.001	6.00	0.0	0.600	o	100	Pipe/Conduit	
10.000	4.640	0.120	38.7	0.020	6.00	0.0	0.600	o	225	Pipe/Conduit	
11.000	4.671	0.875	5.3	0.008	6.00	0.0	0.600	o	100	Pipe/Conduit	
10.001	2.621	0.060	43.7	0.006	0.00	0.0	0.600	o	225	Pipe/Conduit	
8.004	2.101	0.065	32.3	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.014	17.129	0.085	201.5	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
12.000	4.928	0.250	19.7	0.009	6.00	0.0	0.600	o	150	Pipe/Conduit	
13.000	3.145	0.160	19.7	0.008	6.00	0.0	0.600	o	100	Pipe/Conduit	
12.001	6.968	0.120	58.1	0.009	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)
8.002	75.00	6.13	6.895	0.022	0.0	0.0	0.0	2.42	42.8	4.5
8.003	75.00	6.15	6.450	0.037	0.0	0.0	0.0	2.22	88.3	7.5
9.000	75.00	6.06	6.820	0.001	0.0	0.0	0.0	1.74	13.6	0.2
10.000	75.00	6.04	6.570	0.020	0.0	0.0	0.0	2.11	83.9	4.1
11.000	75.00	6.02	7.450	0.008	0.0	0.0	0.0	3.37	26.5	1.6
10.001	75.00	6.06	6.450	0.034	0.0	0.0	0.0	1.98	78.9	6.9
8.004	75.00	6.16	5.415	0.072	0.0	0.0	0.0	2.31	91.8	14.6
1.014	75.00	7.24	5.350	0.340	0.0	0.0	0.0	1.43	227.2	69.1
12.000	75.00	6.04	6.790	0.009	0.0	0.0	0.0	2.28	40.3	1.8
13.000	75.00	6.03	6.750	0.008	0.0	0.0	0.0	1.75	13.7	1.6
12.001	75.00	6.10	6.465	0.026	0.0	0.0	0.0	1.72	68.4	5.3

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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
14.000	6.929	0.350	19.8	0.016	6.00	0.0	0.600	o	150	Pipe/Conduit	
12.002	3.543	0.060	59.1	0.007	0.00	0.0	0.600	o	225	Pipe/Conduit	
15.000	1.000	0.990	1.0	0.003	6.00	0.0	0.600	o	100	Pipe/Conduit	
12.003	2.110	0.045	46.9	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.015	16.028	0.080	200.4	0.021	0.00	0.0	0.600	o	450	Pipe/Conduit	
16.000	1.426	0.035	40.7	0.015	6.00	0.0	0.600	o	150	Pipe/Conduit	
17.000	1.150	0.035	32.9	0.046	6.00	0.0	0.600	o	150	Pipe/Conduit	
16.001	1.917	0.040	47.9	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
16.002	1.302	0.040	32.6	0.024	0.00	0.0	0.600	o	225	Pipe/Conduit	
18.000	6.730	0.510	13.2	0.018	6.00	0.0	0.600	o	150	Pipe/Conduit	
18.001	6.416	0.165	38.9	0.006	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)
14.000	75.00	6.05	6.770	0.016	0.0	0.0	0.0	2.27	40.2	3.2
12.002	75.00	6.14	6.345	0.049	0.0	0.0	0.0	1.71	67.8	10.0
15.000	75.00	6.00	7.400	0.003	0.0	0.0	0.0	7.76	61.0	0.6
12.003	75.00	6.16	5.310	0.052	0.0	0.0	0.0	1.92	76.1	10.6
1.015	75.00	7.43	5.265	0.413	0.0	0.0	0.0	1.43	227.9	83.9
16.000	75.00	6.02	6.470	0.015	0.0	0.0	0.0	1.58	27.9	3.0
17.000	75.00	6.01	6.475	0.046	0.0	0.0	0.0	1.76	31.1	9.3
16.001	75.00	6.03	5.390	0.061	0.0	0.0	0.0	1.89	75.3	12.4
16.002	75.00	6.04	5.350	0.085	0.0	0.0	0.0	2.30	91.5	17.3
18.000	75.00	6.04	6.715	0.018	0.0	0.0	0.0	2.79	49.3	3.7
18.001	75.00	6.09	6.130	0.024	0.0	0.0	0.0	2.10	83.7	4.9

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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
19.000	1.932	0.100	19.3	0.010	6.00	0.0	0.600	o	100	Pipe/Conduit	
19.001	6.655	0.555	12.0	0.004	0.00	0.0	0.600	o	150	Pipe/Conduit	
18.002	5.247	0.135	38.9	0.006	0.00	0.0	0.600	o	225	Pipe/Conduit	
18.003	4.840	0.125	38.7	0.013	0.00	0.0	0.600	o	225	Pipe/Conduit	
20.000	1.867	0.055	33.9	0.039	6.00	0.0	0.600	o	150	Pipe/Conduit	
21.000	1.903	0.040	47.6	0.000	6.00	0.0	0.600	o	225	Pipe/Conduit	
22.000	1.000	0.990	1.0	0.005	6.00	0.0	0.600	o	100	Pipe/Conduit	
16.003	2.121	0.125	17.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.016	4.701	0.025	188.0	0.032	0.00	0.0	0.600	o	450	Pipe/Conduit	
23.000	3.612	0.060	60.2	0.010	6.00	0.0	0.600	o	225	Pipe/Conduit	
23.001	4.162	0.070	59.5	0.006	0.00	0.0	0.600	o	225	Pipe/Conduit	
23.002	5.712	0.095	60.1	0.001	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)
19.000	75.00	6.02	6.760	0.010	0.0	0.0	0.0	1.77	13.9	2.0
19.001	75.00	6.06	6.595	0.014	0.0	0.0	0.0	2.93	51.7	2.8
18.002	75.00	6.13	5.965	0.044	0.0	0.0	0.0	2.10	83.7	8.9
18.003	75.00	6.17	5.830	0.057	0.0	0.0	0.0	2.11	83.8	11.6
20.000	75.00	6.02	6.415	0.039	0.0	0.0	0.0	1.73	30.6	7.9
21.000	75.00	6.02	5.350	0.000	0.0	0.0	0.0	1.90	75.6	0.0
22.000	75.00	6.00	7.400	0.005	0.0	0.0	0.0	7.76	61.0	1.0
16.003	75.00	6.18	5.310	0.186	0.0	0.0	0.0	3.19	126.9	37.8
1.016	75.00	7.48	5.185	0.631	0.0	0.0	0.0	1.48	235.3	128.2
23.000	75.00	6.04	6.510	0.010	0.0	0.0	0.0	1.69	67.1	2.0
23.001	75.00	6.08	6.450	0.016	0.0	0.0	0.0	1.70	67.6	3.2
23.002	75.00	6.13	6.380	0.017	0.0	0.0	0.0	1.69	67.2	3.5

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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
24.000	6.441	0.645	10.0	0.010	6.00	0.0	0.600	o	150	Pipe/Conduit	
25.000	1.000	1.190	0.8	0.006	6.00	0.0	0.600	o	100	Pipe/Conduit	
26.000	4.739	0.060	79.0	0.031	6.00	0.0	0.600	o	100	Pipe/Conduit	
26.001	6.004	0.155	38.7	0.005	0.00	0.0	0.600	o	150	Pipe/Conduit	
26.002	6.725	0.170	39.6	0.020	0.00	0.0	0.600	o	150	Pipe/Conduit	
27.000	3.502	0.140	25.0	0.010	6.00	0.0	0.600	o	150	Pipe/Conduit	
27.001	7.235	0.185	39.1	0.003	0.00	0.0	0.600	o	150	Pipe/Conduit	
26.003	11.803	0.280	42.2	0.001	0.00	0.0	0.600	o	225	Pipe/Conduit	
28.000	9.362	0.235	39.8	0.009	6.00	0.0	0.600	o	100	Pipe/Conduit	
28.001	9.434	0.235	40.1	0.004	0.00	0.0	0.600	o	100	Pipe/Conduit	
28.002	1.406	0.025	56.2	0.007	0.00	0.0	0.600	o	150	Pipe/Conduit	
28.003	8.468	0.145	58.4	0.006	0.00	0.0	0.600	o	150	Pipe/Conduit	
28.004	3.152	0.055	57.3	0.006	0.00	0.0	0.600	o	150	Pipe/Conduit	
28.005	2.049	0.035	58.5	0.013	0.00	0.0	0.600	o	150	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	75.00	6.03	6.605	0.010	0.0	0.0	0.0	3.21	56.7	2.0
25.000	75.00	6.00	7.200	0.006	0.0	0.0	0.0	8.51	66.9	1.2
26.000	75.00	6.09	6.325	0.031	0.0	0.0	0.0	0.87	6.8	6.3
26.001	75.00	6.15	6.200	0.036	0.0	0.0	0.0	1.62	28.7	7.3
26.002	75.00	6.22	6.030	0.056	0.0	0.0	0.0	1.60	28.4	11.4
27.000	75.00	6.03	6.200	0.010	0.0	0.0	0.0	2.02	35.7	2.0
27.001	75.00	6.10	6.045	0.013	0.0	0.0	0.0	1.61	28.5	2.6
26.003	75.00	6.32	5.795	0.070	0.0	0.0	0.0	2.02	80.3	14.2
28.000	75.00	6.13	7.380	0.009	0.0	0.0	0.0	1.23	9.6	1.8
28.001	75.00	6.26	7.080	0.013	0.0	0.0	0.0	1.22	9.6	2.6
28.002	75.00	6.27	6.780	0.020	0.0	0.0	0.0	1.34	23.8	4.1
28.003	75.00	6.38	6.740	0.026	0.0	0.0	0.0	1.32	23.3	5.3
28.004	75.00	6.42	6.580	0.032	0.0	0.0	0.0	1.33	23.5	6.5
28.005	75.00	6.45	6.510	0.045	0.0	0.0	0.0	1.32	23.3	9.1

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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
28.006	5.076	0.085	59.7	0.001	0.00	0.0	0.600	o	150	Pipe/Conduit	
28.007	7.979	0.135	59.1	0.004	0.00	0.0	0.600	o	150	Pipe/Conduit	
28.008	2.421	0.040	60.5	0.007	0.00	0.0	0.600	o	150	Pipe/Conduit	
29.000	4.595	0.050	91.9	0.012	6.00	0.0	0.600	o	150	Pipe/Conduit	
29.001	6.413	0.065	98.7	0.011	0.00	0.0	0.600	o	150	Pipe/Conduit	
28.009	19.796	0.495	40.0	0.007	0.00	0.0	0.600	o	225	Pipe/Conduit	
28.010	8.201	0.085	96.5	0.014	0.00	0.0	0.600	o	225	Pipe/Conduit	
26.004	8.881	0.090	98.7	0.014	0.00	0.0	0.600	o	300	Pipe/Conduit	
26.005	1.958	0.040	49.0	0.020	0.00	0.0	0.600	o	300	Pipe/Conduit	
30.000	15.417	0.195	79.1	0.012	6.00	0.0	0.600	o	150	Pipe/Conduit	
30.001	7.089	0.070	101.3	0.019	0.00	0.0	0.600	o	150	Pipe/Conduit	
31.000	8.322	0.210	39.6	0.015	6.00	0.0	0.600	o	100	Pipe/Conduit	
30.002	4.312	0.045	95.8	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
30.003	3.133	0.080	39.2	0.037	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)
28.006	75.00	6.51	6.460	0.046	0.0	0.0	0.0	1.30	23.0	9.3
28.007	75.00	6.61	6.360	0.050	0.0	0.0	0.0	1.31	23.2	10.2
28.008	75.00	6.64	6.210	0.057	0.0	0.0	0.0	1.30	22.9	11.6
29.000	75.00	6.07	6.300	0.012	0.0	0.0	0.0	1.05	18.5	2.4
29.001	75.00	6.18	6.235	0.023	0.0	0.0	0.0	1.01	17.9	4.7
28.009	75.00	6.80	6.095	0.087	0.0	0.0	0.0	2.07	82.5	17.7
28.010	75.00	6.91	5.600	0.101	0.0	0.0	0.0	1.33	52.9	20.5
26.004	75.00	7.00	5.440	0.185	0.0	0.0	0.0	1.58	111.9	37.6
26.005	75.00	7.01	5.350	0.205	0.0	0.0	0.0	2.25	159.2	41.6
30.000	75.00	6.23	5.790	0.012	0.0	0.0	0.0	1.13	20.0	2.4
30.001	75.00	6.35	5.580	0.031	0.0	0.0	0.0	1.00	17.6	6.3
31.000	75.00	6.11	5.770	0.015	0.0	0.0	0.0	1.23	9.6	3.0
30.002	75.00	6.42	5.510	0.046	0.0	0.0	0.0	1.03	18.1	9.3
30.003	75.00	6.44	5.390	0.083	0.0	0.0	0.0	2.10	83.4	16.9

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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
23.003	2.131	0.050	42.6	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
23.004	13.161	0.065	202.5	0.018	0.00	0.0	0.600	o	450	Pipe/Conduit	
32.000	1.873	0.840	2.2	0.023	6.00	0.0	0.600	o	150	Pipe/Conduit	
23.005	6.648	0.035	189.9	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.017	5.739	0.060	95.7	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.018	4.200	0.045	93.3	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.019	20.821	0.210	99.1	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.020	16.181	0.235	68.9	0.000	0.00	0.0	0.600	o	150	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)
23.003	75.00	7.03	5.310	0.321	0.0	0.0	0.0	2.01	79.9	65.2
23.004	75.00	7.18	5.260	0.339	0.0	0.0	0.0	1.43	226.6	68.9
32.000	75.00	6.00	6.335	0.023	0.0	0.0	0.0	6.80	120.2	4.7
23.005	75.00	7.26	5.195	0.362	0.0	0.0	0.0	1.47	234.1	73.5
1.017	75.00	7.53	5.160	0.993	0.0	0.0	0.0	2.08	330.7	201.7
1.018	75.00	7.56	5.100	0.993	0.0	0.0	0.0	2.10	334.8	201.7
1.019	75.00	7.90	5.055	0.993	0.0	0.0	0.0	1.01	17.8«	201.7
1.020	75.00	8.13	4.770	0.993	0.0	0.0	0.0	1.21	21.4«	201.7

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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)
S01	8.670	0.600	Open Manhole	250	1.000	8.070	100				
S02	8.560	0.610	Open Manhole	450	1.001	7.950	100	1.000	7.965	100	15
S03	8.360	0.830	Open Manhole	450	1.002	7.530	100	1.001	7.545	100	15
S04	8.400	1.075	Open Manhole	450	1.003	7.325	100	1.002	7.340	100	15
S05	8.300	1.275	Open Manhole	450	1.004	7.025	150	1.003	7.090	100	15
S06	8.160	1.255	Open Manhole	450	1.005	6.905	150	1.004	6.920	150	15
S07	8.000	1.275	Open Manhole	450	1.006	6.725	150	1.005	6.740	150	15
S08	7.800	1.570	Open Manhole	1200	1.007	6.230	225	1.006	6.305	150	
S09	7.520	1.890	Open Manhole	1800	2.000	5.630	225				
ST1	7.600	2.050	Junction		1.008	5.950	225	1.007	6.125	225	175
								2.000	5.550	225	
S10	7.450	1.365	Open Manhole	1200	3.000	6.085	150				
S11	7.700	1.875	Open Manhole	1200	1.009	5.825	225	1.008	5.825	225	
								3.000	5.900	150	
S12	7.750	2.015	Open Manhole	1200	1.010	5.735	225	1.009	5.735	225	
S13	7.520	1.600	Open Manhole	1200	4.000	5.920	150				
S14	7.600	1.915	Open Manhole	1200	1.011	5.685	225	1.010	5.685	225	
								4.000	5.760	150	

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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)
S15	7.680	1.590	Open Manhole	1800	5.000	6.090	150				
S16	7.750	2.100	Open Manhole	1200	1.012	5.650	225	1.011	5.650	225	
								5.000	5.875	150	150
S17	8.480	1.755	Open Manhole	1200 x 900	6.000	6.725	225				
S18	8.430	1.815	Open Manhole	600	6.001	6.615	225	6.000	6.630	225	15
S19	8.220	1.810	Open Manhole	600	6.002	6.410	225	6.001	6.425	225	15
S20	8.050	1.915	Open Manhole	1200	6.003	6.135	225	6.002	6.135	225	
S21	8.250	2.800	Open Manhole	1200	7.000	5.450	225				
ST2	7.770	2.355	Junction		6.004	5.415	225	6.003	6.050	225	635
								7.000	5.415	225	
S22	7.770	2.380	Open Manhole	1350	1.013	5.390	450	1.012	5.615	225	
								6.004	5.390	225	
S24	8.250	1.115	Open Manhole	450	8.000	7.135	100				
S25	8.160	1.095	Open Manhole	450	8.001	7.065	100	8.000	7.080	100	15
S26	8.160	1.265	Open Manhole	450	8.002	6.895	150	8.001	6.960	100	15
S27	8.200	1.750	Open Manhole	1200	8.003	6.450	225	8.002	6.525	150	
S23	8.500	1.680	Open Manhole	450	9.000	6.820	100				
S28	7.900	1.330	Open Manhole	1200	10.000	6.570	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)
S29	8.050	0.600	Open Manhole	250	11.000	7.450	100				
S30	7.980	1.530	Open Manhole	1200	10.001	6.450	225	10.000	6.450	225	
								11.000	6.575	100	
ST3	7.900	2.485	Junction		8.004	5.415	225	8.003	6.390	225	975
								9.000	6.515	100	975
								10.001	6.390	225	975
S31	7.900	2.550	Open Manhole	1350	1.014	5.350	450	1.013	5.350	450	
								8.004	5.350	225	
S33	8.650	1.860	Open Manhole	450	12.000	6.790	150				
S34	8.530	1.780	Open Manhole	450	13.000	6.750	100				
S35	8.490	2.025	Open Manhole	1200	12.001	6.465	225	12.000	6.540	150	
								13.000	6.590	100	
S32	8.330	1.560	Open Manhole	1200 x 900	14.000	6.770	150				
S36	8.380	2.035	Open Manhole	1200	12.002	6.345	225	12.001	6.345	225	
								14.000	6.420	150	
S37	8.000	0.600	Open Manhole	250	15.000	7.400	100				
ST4	7.750	2.440	Junction		12.003	5.310	225	12.002	6.285	225	975
								15.000	6.410	100	975

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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)
S38	7.750	2.485	Open Manhole	1350	1.015	5.265	450	1.014	5.265	450	
								12.003	5.265	225	
S39	8.350	1.880	Open Manhole	1200	16.000	6.470	150				
S40	8.280	1.805	Open Manhole	1200	17.000	6.475	150				
ST5	8.050	2.660	Junction		16.001	5.390	225	16.000	6.435	150	970
								17.000	6.440	150	975
S41	8.050	2.700	Open Manhole	1200	16.002	5.350	225	16.001	5.350	225	
S43	8.300	1.585	Open Manhole	450	18.000	6.715	150				
S44	8.530	2.400	Open Manhole	1200	18.001	6.130	225	18.000	6.205	150	
S45	8.330	1.570	Open Manhole	450	19.000	6.760	100				
S46	8.340	1.745	Open Manhole	450	19.001	6.595	150	19.000	6.660	100	15
S47	8.390	2.425	Open Manhole	1200	18.002	5.965	225	18.001	5.965	225	
								19.001	6.040	150	
S48	8.390	2.560	Open Manhole	1200	18.003	5.830	225	18.002	5.830	225	
S42	7.800	1.385	Open Manhole	1200 x 900	20.000	6.415	150				
S49	8.050	2.700	Open Manhole	1200	21.000	5.350	225				
S50	8.000	0.600	Open Manhole	250	22.000	7.400	100				
ST6	7.600	2.290	Junction		16.003	5.310	225	16.002	5.310	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)
								18.003	5.705	225	395
								20.000	6.360	150	975
								21.000	5.310	225	
								22.000	6.410	100	975
S51	7.580	2.395	Open Manhole	1350	1.016	5.185	450	1.015	5.185	450	
								16.003	5.185	225	
S52	8.200	1.690	Open Manhole	1200	23.000	6.510	225				
S53	8.290	1.840	Open Manhole	1200	23.001	6.450	225	23.000	6.450	225	
S54	8.340	1.960	Open Manhole	1200	23.002	6.380	225	23.001	6.380	225	
S55	7.850	1.245	Open Manhole	1200	24.000	6.605	150				
S56	7.800	0.600	Open Manhole	250	25.000	7.200	100				
S57	8.330	2.005	Open Manhole	450	26.000	6.325	100				
S58	8.300	2.100	Open Manhole	450	26.001	6.200	150	26.000	6.265	100	15
S59	8.100	2.070	Open Manhole	450	26.002	6.030	150	26.001	6.045	150	15
S60	8.240	2.040	Open Manhole	450	27.000	6.200	150				
S61	8.150	2.105	Open Manhole	450	27.001	6.045	150	27.000	6.060	150	15
S62	8.050	2.255	Open Manhole	1200	26.003	5.795	225	26.002	5.860	150	
								27.001	5.860	150	

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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)
S68	8.080	0.700	Open Manhole	450	28.000	7.380	100				
S69	8.200	1.120	Open Manhole	450	28.001	7.080	100	28.000	7.145	100	65
S70	7.820	1.040	Open Manhole	450	28.002	6.780	150	28.001	6.845	100	15
S71	7.800	1.060	Open Manhole	450	28.003	6.740	150	28.002	6.755	150	15
S72	7.510	0.930	Open Manhole	450	28.004	6.580	150	28.003	6.595	150	15
S73	7.423	0.913	Open Manhole	450	28.005	6.510	150	28.004	6.525	150	15
S74	7.330	0.870	Open Manhole	450	28.006	6.460	150	28.005	6.475	150	15
S75	7.330	0.970	Open Manhole	450	28.007	6.360	150	28.006	6.375	150	15
S76	7.330	1.120	Open Manhole	450	28.008	6.210	150	28.007	6.225	150	15
S77	7.030	0.730	Open Manhole	450	29.000	6.300	150				
S78	7.030	0.795	Open Manhole	450	29.001	6.235	150	29.000	6.250	150	15
S79	7.250	1.155	Open Manhole	1200 x 900	28.009	6.095	225	28.008	6.170	150	
								29.001	6.170	150	
S80	7.550	1.950	Open Manhole	1200	28.010	5.600	225	28.009	5.600	225	
S81	7.750	2.310	Open Manhole	1200	26.004	5.440	300	26.003	5.515	225	
								28.010	5.515	225	
S82	7.850	2.500	Open Manhole	1200	26.005	5.350	300	26.004	5.350	300	
S83	7.000	1.210	Open Manhole	450	30.000	5.790	150				

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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)
S84	6.950	1.370	Open Manhole	450	30.001	5.580	150	30.000	5.595	150	15
S85	7.290	1.520	Open Manhole	450	31.000	5.770	100				
Junction	7.180	1.670	Junction		30.002	5.510	150	30.001	5.510	150	
								31.000	5.560	100	
S86	8.300	2.910	Open Manhole	1200	30.003	5.390	225	30.002	5.465	150	
ST7	7.200	1.890	Junction		23.003	5.310	225	23.002	6.285	225	975
								24.000	5.960	150	575
								25.000	6.010	100	575
								26.005	5.310	300	
								30.003	5.310	225	
S87	7.150	1.890	Open Manhole	1350	23.004	5.260	450	23.003	5.260	225	
S88	7.500	1.165	Open Manhole	450	32.000	6.335	150				
Junction	7.450	2.255	Junction		23.005	5.195	450	23.004	5.195	450	
								32.000	5.495	150	
S89	7.500	2.340	Open Manhole	1350	1.017	5.160	450	1.016	5.160	450	
								23.005	5.160	450	
S90	7.450	2.350	Open Manhole	1800	1.018	5.100	450	1.017	5.100	450	
S91	7.330	2.275	Open Manhole	1350	1.019	5.055	150	1.018	5.055	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)
S92	7.250	2.480	Open Manhole	1200	1.020	4.770	150	1.019	4.845	150	75
0752	6.860	2.325	Open Manhole	1200		OUTFALL		1.020	4.535	150	

No coordinates have been specified, layout information cannot be produced.

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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)
1.000	o	100	S01	8.670	8.070	0.500	Open Manhole	250
1.001	o	100	S02	8.560	7.950	0.510	Open Manhole	450
1.002	o	100	S03	8.360	7.530	0.730	Open Manhole	450
1.003	o	100	S04	8.400	7.325	0.975	Open Manhole	450
1.004	o	150	S05	8.300	7.025	1.125	Open Manhole	450
1.005	o	150	S06	8.160	6.905	1.105	Open Manhole	450
1.006	o	150	S07	8.000	6.725	1.125	Open Manhole	450
1.007	o	225	S08	7.800	6.230	1.345	Open Manhole	1200
2.000	o	225	S09	7.520	5.630	1.665	Open Manhole	1800
1.008	o	225	ST1	7.600	5.950	1.425	Junction	
3.000	o	150	S10	7.450	6.085	1.215	Open Manhole	1200
1.009	o	225	S11	7.700	5.825	1.650	Open Manhole	1200
1.010	o	225	S12	7.750	5.735	1.790	Open Manhole	1200
4.000	o	150	S13	7.520	5.920	1.450	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)
1.000	2.098	20.0	S02	8.560	7.965	0.495	Open Manhole	450
1.001	8.090	20.0	S03	8.360	7.545	0.715	Open Manhole	450
1.002	3.774	19.9	S04	8.400	7.340	0.960	Open Manhole	450
1.003	9.251	39.4	S05	8.300	7.090	1.110	Open Manhole	450
1.004	4.093	39.0	S06	8.160	6.920	1.090	Open Manhole	450
1.005	6.593	40.0	S07	8.000	6.740	1.110	Open Manhole	450
1.006	7.411	17.6	S08	7.800	6.305	1.345	Open Manhole	1200
1.007	2.144	20.4	ST1	7.600	6.125	1.250	Junction	
2.000	3.078	38.5	ST1	7.600	5.550	1.825	Junction	
1.008	6.328	50.6	S11	7.700	5.825	1.650	Open Manhole	1200
3.000	7.278	39.3	S11	7.700	5.900	1.650	Open Manhole	1200
1.009	12.903	143.4	S12	7.750	5.735	1.790	Open Manhole	1200
1.010	7.226	144.5	S14	7.600	5.685	1.690	Open Manhole	1200
4.000	6.389	39.9	S14	7.600	5.760	1.690	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)
1.011	o	225	S14	7.600	5.685	1.690	Open Manhole	1200
5.000	o	150	S15	7.680	6.090	1.440	Open Manhole	1800
1.012	o	225	S16	7.750	5.650	1.875	Open Manhole	1200
6.000	o	225	S17	8.480	6.725	1.530	Open Manhole	1200 x 900
6.001	o	225	S18	8.430	6.615	1.590	Open Manhole	600
6.002	o	225	S19	8.220	6.410	1.585	Open Manhole	600
6.003	o	225	S20	8.050	6.135	1.690	Open Manhole	1200
7.000	o	225	S21	8.250	5.450	2.575	Open Manhole	1200
6.004	o	225	ST2	7.770	5.415	2.130	Junction	
1.013	o	450	S22	7.770	5.390	1.930	Open Manhole	1350
8.000	o	100	S24	8.250	7.135	1.015	Open Manhole	450
8.001	o	100	S25	8.160	7.065	0.995	Open Manhole	450
8.002	o	150	S26	8.160	6.895	1.115	Open Manhole	450

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)
1.011	4.972	142.1	S16	7.750	5.650	1.875	Open Manhole	1200
5.000	8.469	39.4	S16	7.750	5.875	1.725	Open Manhole	1200
1.012	5.026	143.6	S22	7.770	5.615	1.930	Open Manhole	1350
6.000	5.067	53.3	S18	8.430	6.630	1.575	Open Manhole	600
6.001	7.541	39.7	S19	8.220	6.425	1.570	Open Manhole	600
6.002	10.896	39.6	S20	8.050	6.135	1.690	Open Manhole	1200
6.003	3.325	39.1	ST2	7.770	6.050	1.495	Junction	
7.000	2.050	58.6	ST2	7.770	5.415	2.130	Junction	
6.004	2.097	83.9	S22	7.770	5.390	2.155	Open Manhole	1350
1.013	7.869	196.7	S31	7.900	5.350	2.100	Open Manhole	1350
8.000	2.199	40.0	S25	8.160	7.080	0.980	Open Manhole	450
8.001	4.108	39.1	S26	8.160	6.960	1.100	Open Manhole	450
8.002	6.472	17.5	S27	8.200	6.525	1.525	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)
8.003	o	225	S27	8.200	6.450	1.525	Open Manhole	1200
9.000	o	100	S23	8.500	6.820	1.580	Open Manhole	450
10.000	o	225	S28	7.900	6.570	1.105	Open Manhole	1200
11.000	o	100	S29	8.050	7.450	0.500	Open Manhole	250
10.001	o	225	S30	7.980	6.450	1.305	Open Manhole	1200
8.004	o	225	ST3	7.900	5.415	2.260	Junction	
1.014	o	450	S31	7.900	5.350	2.100	Open Manhole	1350
12.000	o	150	S33	8.650	6.790	1.710	Open Manhole	450
13.000	o	100	S34	8.530	6.750	1.680	Open Manhole	450
12.001	o	225	S35	8.490	6.465	1.800	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)
8.003	2.097	35.0	ST3	7.900	6.390	1.285	Junction	
9.000	6.095	20.0	ST3	7.900	6.515	1.285	Junction	
10.000	4.640	38.7	S30	7.980	6.450	1.305	Open Manhole	1200
11.000	4.671	5.3	S30	7.980	6.575	1.305	Open Manhole	1200
10.001	2.621	43.7	ST3	7.900	6.390	1.285	Junction	
8.004	2.101	32.3	S31	7.900	5.350	2.325	Open Manhole	1350
1.014	17.129	201.5	S38	7.750	5.265	2.035	Open Manhole	1350
12.000	4.928	19.7	S35	8.490	6.540	1.800	Open Manhole	1200
13.000	3.145	19.7	S35	8.490	6.590	1.800	Open Manhole	1200
12.001	6.968	58.1	S36	8.380	6.345	1.810	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)
14.000	o	150	S32	8.330	6.770	1.410	Open Manhole	1200 x 900
12.002	o	225	S36	8.380	6.345	1.810	Open Manhole	1200
15.000	o	100	S37	8.000	7.400	0.500	Open Manhole	250
12.003	o	225	ST4	7.750	5.310	2.215	Junction	
1.015	o	450	S38	7.750	5.265	2.035	Open Manhole	1350
16.000	o	150	S39	8.350	6.470	1.730	Open Manhole	1200
17.000	o	150	S40	8.280	6.475	1.655	Open Manhole	1200
16.001	o	225	ST5	8.050	5.390	2.435	Junction	
16.002	o	225	S41	8.050	5.350	2.475	Open Manhole	1200
18.000	o	150	S43	8.300	6.715	1.435	Open Manhole	450
18.001	o	225	S44	8.530	6.130	2.175	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)
14.000	6.929	19.8	S36	8.380	6.420	1.810	Open Manhole	1200
12.002	3.543	59.1	ST4	7.750	6.285	1.240	Junction	
15.000	1.000	1.0	ST4	7.750	6.410	1.240	Junction	
12.003	2.110	46.9	S38	7.750	5.265	2.260	Open Manhole	1350
1.015	16.028	200.4	S51	7.580	5.185	1.945	Open Manhole	1350
16.000	1.426	40.7	ST5	8.050	6.435	1.465	Junction	
17.000	1.150	32.9	ST5	8.050	6.440	1.460	Junction	
16.001	1.917	47.9	S41	8.050	5.350	2.475	Open Manhole	1200
16.002	1.302	32.6	ST6	7.600	5.310	2.065	Junction	
18.000	6.730	13.2	S44	8.530	6.205	2.175	Open Manhole	1200
18.001	6.416	38.9	S47	8.390	5.965	2.200	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)
19.000	o	100	S45	8.330	6.760	1.470	Open Manhole	450
19.001	o	150	S46	8.340	6.595	1.595	Open Manhole	450
18.002	o	225	S47	8.390	5.965	2.200	Open Manhole	1200
18.003	o	225	S48	8.390	5.830	2.335	Open Manhole	1200
20.000	o	150	S42	7.800	6.415	1.235	Open Manhole	1200 x 900
21.000	o	225	S49	8.050	5.350	2.475	Open Manhole	1200
22.000	o	100	S50	8.000	7.400	0.500	Open Manhole	250
16.003	o	225	ST6	7.600	5.310	2.065	Junction	
1.016	o	450	S51	7.580	5.185	1.945	Open Manhole	1350
23.000	o	225	S52	8.200	6.510	1.465	Open Manhole	1200
23.001	o	225	S53	8.290	6.450	1.615	Open Manhole	1200
23.002	o	225	S54	8.340	6.380	1.735	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)
19.000	1.932	19.3	S46	8.340	6.660	1.580	Open Manhole	450
19.001	6.655	12.0	S47	8.390	6.040	2.200	Open Manhole	1200
18.002	5.247	38.9	S48	8.390	5.830	2.335	Open Manhole	1200
18.003	4.840	38.7	ST6	7.600	5.705	1.670	Junction	
20.000	1.867	33.9	ST6	7.600	6.360	1.090	Junction	
21.000	1.903	47.6	ST6	7.600	5.310	2.065	Junction	
22.000	1.000	1.0	ST6	7.600	6.410	1.090	Junction	
16.003	2.121	17.0	S51	7.580	5.185	2.170	Open Manhole	1350
1.016	4.701	188.0	S89	7.500	5.160	1.890	Open Manhole	1350
23.000	3.612	60.2	S53	8.290	6.450	1.615	Open Manhole	1200
23.001	4.162	59.5	S54	8.340	6.380	1.735	Open Manhole	1200
23.002	5.712	60.1	ST7	7.200	6.285	0.690	Junction	

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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)
24.000	o	150	S55	7.850	6.605	1.095	Open Manhole	1200
25.000	o	100	S56	7.800	7.200	0.500	Open Manhole	250
26.000	o	100	S57	8.330	6.325	1.905	Open Manhole	450
26.001	o	150	S58	8.300	6.200	1.950	Open Manhole	450
26.002	o	150	S59	8.100	6.030	1.920	Open Manhole	450
27.000	o	150	S60	8.240	6.200	1.890	Open Manhole	450
27.001	o	150	S61	8.150	6.045	1.955	Open Manhole	450
26.003	o	225	S62	8.050	5.795	2.030	Open Manhole	1200
28.000	o	100	S68	8.080	7.380	0.600	Open Manhole	450
28.001	o	100	S69	8.200	7.080	1.020	Open Manhole	450
28.002	o	150	S70	7.820	6.780	0.890	Open Manhole	450
28.003	o	150	S71	7.800	6.740	0.910	Open Manhole	450
28.004	o	150	S72	7.510	6.580	0.780	Open Manhole	450
28.005	o	150	S73	7.423	6.510	0.763	Open Manhole	450
28.006	o	150	S74	7.330	6.460	0.720	Open Manhole	450

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)
24.000	6.441	10.0	ST7	7.200	5.960	1.090	Junction	
25.000	1.000	0.8	ST7	7.200	6.010	1.090	Junction	
26.000	4.739	79.0	S58	8.300	6.265	1.935	Open Manhole	450
26.001	6.004	38.7	S59	8.100	6.045	1.905	Open Manhole	450
26.002	6.725	39.6	S62	8.050	5.860	2.040	Open Manhole	1200
27.000	3.502	25.0	S61	8.150	6.060	1.940	Open Manhole	450
27.001	7.235	39.1	S62	8.050	5.860	2.040	Open Manhole	1200
26.003	11.803	42.2	S81	7.750	5.515	2.010	Open Manhole	1200
28.000	9.362	39.8	S69	8.200	7.145	0.955	Open Manhole	450
28.001	9.434	40.1	S70	7.820	6.845	0.875	Open Manhole	450
28.002	1.406	56.2	S71	7.800	6.755	0.895	Open Manhole	450
28.003	8.468	58.4	S72	7.510	6.595	0.765	Open Manhole	450
28.004	3.152	57.3	S73	7.423	6.525	0.748	Open Manhole	450
28.005	2.049	58.5	S74	7.330	6.475	0.705	Open Manhole	450
28.006	5.076	59.7	S75	7.330	6.375	0.805	Open Manhole	450

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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)
28.007	o	150	S75	7.330	6.360	0.820	Open Manhole	450
28.008	o	150	S76	7.330	6.210	0.970	Open Manhole	450
29.000	o	150	S77	7.030	6.300	0.580	Open Manhole	450
29.001	o	150	S78	7.030	6.235	0.645	Open Manhole	450
28.009	o	225	S79	7.250	6.095	0.930	Open Manhole	1200 x 900
28.010	o	225	S80	7.550	5.600	1.725	Open Manhole	1200
26.004	o	300	S81	7.750	5.440	2.010	Open Manhole	1200
26.005	o	300	S82	7.850	5.350	2.200	Open Manhole	1200
30.000	o	150	S83	7.000	5.790	1.060	Open Manhole	450
30.001	o	150	S84	6.950	5.580	1.220	Open Manhole	450
31.000	o	100	S85	7.290	5.770	1.420	Open Manhole	450
30.002	o	150	Junction	7.180	5.510	1.520	Junction	
30.003	o	225	S86	8.300	5.390	2.685	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)
28.007	7.979	59.1	S76	7.330	6.225	0.955	Open Manhole	450
28.008	2.421	60.5	S79	7.250	6.170	0.930	Open Manhole	1200 x 900
29.000	4.595	91.9	S78	7.030	6.250	0.630	Open Manhole	450
29.001	6.413	98.7	S79	7.250	6.170	0.930	Open Manhole	1200 x 900
28.009	19.796	40.0	S80	7.550	5.600	1.725	Open Manhole	1200
28.010	8.201	96.5	S81	7.750	5.515	2.010	Open Manhole	1200
26.004	8.881	98.7	S82	7.850	5.350	2.200	Open Manhole	1200
26.005	1.958	49.0	ST7	7.200	5.310	1.590	Junction	
30.000	15.417	79.1	S84	6.950	5.595	1.205	Open Manhole	450
30.001	7.089	101.3	Junction	7.180	5.510	1.520	Junction	
31.000	8.322	39.6	Junction	7.180	5.560	1.520	Junction	
30.002	4.312	95.8	S86	8.300	5.465	2.685	Open Manhole	1200
30.003	3.133	39.2	ST7	7.200	5.310	1.665	Junction	

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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)
23.003	o	225	ST7	7.200	5.310	1.665	Junction	
23.004	o	450	S87	7.150	5.260	1.440	Open Manhole	1350
32.000	o	150	S88	7.500	6.335	1.015	Open Manhole	450
23.005	o	450	Junction	7.450	5.195	1.805	Junction	
1.017	o	450	S89	7.500	5.160	1.890	Open Manhole	1350
1.018	o	450	S90	7.450	5.100	1.900	Open Manhole	1800
1.019	o	150	S91	7.330	5.055	2.125	Open Manhole	1350
1.020	o	150	S92	7.250	4.770	2.330	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)
23.003	2.131	42.6	S87	7.150	5.260	1.665	Open Manhole	1350
23.004	13.161	202.5	Junction	7.450	5.195	1.805	Junction	
32.000	1.873	2.2	Junction	7.450	5.495	1.805	Junction	
23.005	6.648	189.9	S89	7.500	5.160	1.890	Open Manhole	1350
1.017	5.739	95.7	S90	7.450	5.100	1.900	Open Manhole	1800
1.018	4.200	93.3	S91	7.330	5.055	1.825	Open Manhole	1350
1.019	20.821	99.1	S92	7.250	4.845	2.255	Open Manhole	1200
1.020	16.181	68.9	0752	6.860	4.535	2.175	Open Manhole	1200

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	0752	6.860	4.535	4.530	1200	0

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Online Controls for Storm

Hydro-Brake® Optimum Manhole: S91, DS/PN: 1.019, Volume (m³): 3.7

Unit Reference	MD-SHE-0060-2000-1600-2000
Design Head (m)	1.600
Design Flow (l/s)	2.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	60
Invert Level (m)	5.055
Minimum Outlet Pipe Diameter (mm)	75
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.600	2.0
Flush-Flo™	0.263	1.5
Kick-Flo®	0.536	1.2
Mean Flow over Head Range	-	1.5

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)
0.100	1.3	1.200	1.8	3.000	2.7	7.000	4.0
0.200	1.5	1.400	1.9	3.500	2.9	7.500	4.1
0.300	1.5	1.600	2.0	4.000	3.0	8.000	4.2
0.400	1.5	1.800	2.1	4.500	3.2	8.500	4.3
0.500	1.3	2.000	2.2	5.000	3.4	9.000	4.4
0.600	1.3	2.200	2.3	5.500	3.5	9.500	4.6
0.800	1.5	2.400	2.4	6.000	3.7		
1.000	1.6	2.600	2.5	6.500	3.8		

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Offline Controls for Storm

Pipe Manhole: S21, DS/PN: 7.000, Loop to PN: 8.004

Diameter (m)	0.225	Roughness k (mm)	0.600
Section Type	Pipe/Conduit	Entry Loss Coefficient	0.500
Slope (1:X)	33.9	Coefficient of Contraction	0.600
Length (m)	1.188	Upstream Invert Level (m)	5.450

Pipe Manhole: S49, DS/PN: 21.000, Loop to PN: 23.003

Diameter (m)	0.225	Roughness k (mm)	0.600
Section Type	Pipe/Conduit	Entry Loss Coefficient	0.500
Slope (1:X)	40.0	Coefficient of Contraction	0.600
Length (m)	1.600	Upstream Invert Level (m)	5.350

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Storage Structures for Storm

Cellular Storage Manhole: ST1, DS/PN: 1.008

Invert Level (m) 5.550 Safety Factor 1.5
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00720

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	78.0	78.0	0.801	0.0	107.6
0.800	78.0	107.6			

Cellular Storage Manhole: ST2, DS/PN: 6.004

Invert Level (m) 5.415 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	88.0	88.0	1.201	0.0	150.4
1.200	88.0	150.4			

Cellular Storage Manhole: ST3, DS/PN: 8.004

Invert Level (m) 5.415 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	108.0	108.0	1.201	0.0	182.4
1.200	108.0	182.4			

Cellular Storage Manhole: ST4, DS/PN: 12.003

Invert Level (m) 5.310 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	200.0	200.0	1.201	0.0	329.6
1.200	200.0	329.6			

Cellular Storage Manhole: ST5, DS/PN: 16.001

Invert Level (m) 5.390 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

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Cellular Storage Manhole: ST5, DS/PN: 16.001

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	100.0	100.0	1.201	0.0	169.6
1.200	100.0	169.6			

Cellular Storage Manhole: ST6, DS/PN: 16.003

Invert Level (m) 5.310 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	176.0	176.0	1.201	0.0	291.2
1.200	176.0	291.2			

Cellular Storage Manhole: S73, DS/PN: 28.005

Invert Level (m) 6.510 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.25
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	14.0	0.0	0.801	0.0	0.0
0.800	14.0	0.0			

Cellular Storage Manhole: ST7, DS/PN: 23.003

Invert Level (m) 5.310 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	202.5	0.0	1.200	99.5	0.0
0.800	202.5	0.0	1.201	0.0	0.0
0.801	99.5	0.0			

Time Area Diagram for Green Roof at Pipe Number 1.010 (Storm)

Area (m³) 190 Evaporation (mm/day) 1
Depression Storage (mm) 20 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.003453	12	16	0.001895	24	28	0.001040	36	40	0.000571
4	8	0.002827	16	20	0.001551	28	32	0.000851	40	44	0.000467
8	12	0.002314	20	24	0.001270	32	36	0.000697	44	48	0.000383

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Time Area Diagram for Green Roof at Pipe Number 1.010 (Storm)

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
48	52	0.000313	68	72	0.000115	88	92	0.000042	108	112	0.000016
52	56	0.000256	72	76	0.000094	92	96	0.000035	112	116	0.000013
56	60	0.000210	76	80	0.000077	96	100	0.000028	116	120	0.000010
60	64	0.000172	80	84	0.000063	100	104	0.000023			
64	68	0.000141	84	88	0.000052	104	108	0.000019			

Time Area Diagram for Green Roof at Pipe Number 1.012 (Storm)

Area (m³) 190 Evaporation (mm/day) 1
Depression Storage (mm) 20 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.003453	32	36	0.000697	64	68	0.000141	96	100	0.000028
4	8	0.002827	36	40	0.000571	68	72	0.000115	100	104	0.000023
8	12	0.002314	40	44	0.000467	72	76	0.000094	104	108	0.000019
12	16	0.001895	44	48	0.000383	76	80	0.000077	108	112	0.000016
16	20	0.001551	48	52	0.000313	80	84	0.000063	112	116	0.000013
20	24	0.001270	52	56	0.000256	84	88	0.000052	116	120	0.000010
24	28	0.001040	56	60	0.000210	88	92	0.000042			
28	32	0.000851	60	64	0.000172	92	96	0.000035			

Time Area Diagram for Green Roof at Pipe Number 6.000 (Storm)

Area (m³) 300 Evaporation (mm/day) 1
Depression Storage (mm) 5 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.005452	32	36	0.001101	64	68	0.000222	96	100	0.000045
4	8	0.004463	36	40	0.000901	68	72	0.000182	100	104	0.000037
8	12	0.003654	40	44	0.000738	72	76	0.000149	104	108	0.000030
12	16	0.002992	44	48	0.000604	76	80	0.000122	108	112	0.000025
16	20	0.002450	48	52	0.000495	80	84	0.000100	112	116	0.000020
20	24	0.002006	52	56	0.000405	84	88	0.000082	116	120	0.000017
24	28	0.001642	56	60	0.000332	88	92	0.000067			
28	32	0.001344	60	64	0.000271	92	96	0.000055			

Time Area Diagram for Green Roof at Pipe Number 6.001 (Storm)

Area (m³) 60 Evaporation (mm/day) 1
Depression Storage (mm) 20 Decay Coefficient 0.050

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Time Area Diagram for Green Roof at Pipe Number 6.001 (Storm)

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.001090	32	36	0.000220	64	68	0.000044	96	100	0.000009
4	8	0.000893	36	40	0.000180	68	72	0.000036	100	104	0.000007
8	12	0.000731	40	44	0.000148	72	76	0.000030	104	108	0.000006
12	16	0.000598	44	48	0.000121	76	80	0.000024	108	112	0.000005
16	20	0.000490	48	52	0.000099	80	84	0.000020	112	116	0.000004
20	24	0.000401	52	56	0.000081	84	88	0.000016	116	120	0.000003
24	28	0.000328	56	60	0.000066	88	92	0.000013			
28	32	0.000269	60	64	0.000054	92	96	0.000011			

Time Area Diagram for Green Roof at Pipe Number 6.002 (Storm)

Area (m³) 330 Evaporation (mm/day) 1
Depression Storage (mm) 20 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.005997	32	36	0.001211	64	68	0.000244	96	100	0.000049
4	8	0.004910	36	40	0.000991	68	72	0.000200	100	104	0.000040
8	12	0.004020	40	44	0.000812	72	76	0.000164	104	108	0.000033
12	16	0.003291	44	48	0.000664	76	80	0.000134	108	112	0.000027
16	20	0.002695	48	52	0.000544	80	84	0.000110	112	116	0.000022
20	24	0.002206	52	56	0.000445	84	88	0.000090	116	120	0.000018
24	28	0.001806	56	60	0.000365	88	92	0.000074			
28	32	0.001479	60	64	0.000299	92	96	0.000060			

Time Area Diagram for Green Roof at Pipe Number 6.003 (Storm)

Area (m³) 200 Evaporation (mm/day) 1
Depression Storage (mm) 20 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.003634	32	36	0.000734	64	68	0.000148	96	100	0.000030
4	8	0.002976	36	40	0.000601	68	72	0.000121	100	104	0.000024
8	12	0.002436	40	44	0.000492	72	76	0.000099	104	108	0.000020
12	16	0.001995	44	48	0.000403	76	80	0.000081	108	112	0.000016
16	20	0.001633	48	52	0.000330	80	84	0.000067	112	116	0.000013
20	24	0.001337	52	56	0.000270	84	88	0.000054	116	120	0.000011
24	28	0.001095	56	60	0.000221	88	92	0.000045			
28	32	0.000896	60	64	0.000181	92	96	0.000037			

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Time Area Diagram for Green Roof at Pipe Number 13.000 (Storm)

Area (m³) 70 Evaporation (mm/day) 1
Depression Storage (mm) 5 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.001272	32	36	0.000257	64	68	0.000052	96	100	0.000010
4	8	0.001041	36	40	0.000210	68	72	0.000042	100	104	0.000009
8	12	0.000853	40	44	0.000172	72	76	0.000035	104	108	0.000007
12	16	0.000698	44	48	0.000141	76	80	0.000028	108	112	0.000006
16	20	0.000572	48	52	0.000115	80	84	0.000023	112	116	0.000005
20	24	0.000468	52	56	0.000094	84	88	0.000019	116	120	0.000004
24	28	0.000383	56	60	0.000077	88	92	0.000016			
28	32	0.000314	60	64	0.000063	92	96	0.000013			

Time Area Diagram for Green Roof at Pipe Number 12.002 (Storm)

Area (m³) 7 Evaporation (mm/day) 1
Depression Storage (mm) 5 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000127	32	36	0.000026	64	68	0.000005	96	100	0.000001
4	8	0.000104	36	40	0.000021	68	72	0.000004	100	104	0.000001
8	12	0.000085	40	44	0.000017	72	76	0.000003	104	108	0.000001
12	16	0.000070	44	48	0.000014	76	80	0.000003	108	112	0.000001
16	20	0.000057	48	52	0.000012	80	84	0.000002	112	116	0.000000
20	24	0.000047	52	56	0.000009	84	88	0.000002	116	120	0.000000
24	28	0.000038	56	60	0.000008	88	92	0.000002			
28	32	0.000031	60	64	0.000006	92	96	0.000001			

Time Area Diagram for Green Roof at Pipe Number 16.000 (Storm)

Area (m³) 150 Evaporation (mm/day) 1
Depression Storage (mm) 5 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.002726	32	36	0.000550	64	68	0.000111	96	100	0.000022
4	8	0.002232	36	40	0.000451	68	72	0.000091	100	104	0.000018
8	12	0.001827	40	44	0.000369	72	76	0.000074	104	108	0.000015
12	16	0.001496	44	48	0.000302	76	80	0.000061	108	112	0.000012
16	20	0.001225	48	52	0.000247	80	84	0.000050	112	116	0.000010
20	24	0.001003	52	56	0.000202	84	88	0.000041	116	120	0.000008
24	28	0.000821	56	60	0.000166	88	92	0.000033			
28	32	0.000672	60	64	0.000136	92	96	0.000027			

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Time Area Diagram for Green Roof at Pipe Number 17.000 (Storm)

Area (m³) 460 Evaporation (mm/day) 1
Depression Storage (mm) 20 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.008359	32	36	0.001688	64	68	0.000341	96	100	0.000069
4	8	0.006844	36	40	0.001382	68	72	0.000279	100	104	0.000056
8	12	0.005603	40	44	0.001131	72	76	0.000228	104	108	0.000046
12	16	0.004588	44	48	0.000926	76	80	0.000187	108	112	0.000038
16	20	0.003756	48	52	0.000758	80	84	0.000153	112	116	0.000031
20	24	0.003075	52	56	0.000621	84	88	0.000125	116	120	0.000025
24	28	0.002518	56	60	0.000508	88	92	0.000103			
28	32	0.002061	60	64	0.000416	92	96	0.000084			

Time Area Diagram for Green Roof at Pipe Number 16.002 (Storm)

Area (m³) 240 Evaporation (mm/day) 1
Depression Storage (mm) 20 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.004361	32	36	0.000881	64	68	0.000178	96	100	0.000036
4	8	0.003571	36	40	0.000721	68	72	0.000146	100	104	0.000029
8	12	0.002923	40	44	0.000590	72	76	0.000119	104	108	0.000024
12	16	0.002394	44	48	0.000483	76	80	0.000098	108	112	0.000020
16	20	0.001960	48	52	0.000396	80	84	0.000080	112	116	0.000016
20	24	0.001604	52	56	0.000324	84	88	0.000065	116	120	0.000013
24	28	0.001314	56	60	0.000265	88	92	0.000054			
28	32	0.001075	60	64	0.000217	92	96	0.000044			

Time Area Diagram for Green Roof at Pipe Number 18.001 (Storm)

Area (m³) 60 Evaporation (mm/day) 1
Depression Storage (mm) 5 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.001090	32	36	0.000220	64	68	0.000044	96	100	0.000009
4	8	0.000893	36	40	0.000180	68	72	0.000036	100	104	0.000007
8	12	0.000731	40	44	0.000148	72	76	0.000030	104	108	0.000006
12	16	0.000598	44	48	0.000121	76	80	0.000024	108	112	0.000005
16	20	0.000490	48	52	0.000099	80	84	0.000020	112	116	0.000004
20	24	0.000401	52	56	0.000081	84	88	0.000016	116	120	0.000003
24	28	0.000328	56	60	0.000066	88	92	0.000013			
28	32	0.000269	60	64	0.000054	92	96	0.000011			

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Time Area Diagram for Green Roof at Pipe Number 19.001 (Storm)

Area (m³) 40 Evaporation (mm/day) 1
Depression Storage (mm) 20 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000727	32	36	0.000147	64	68	0.000030	96	100	0.000006
4	8	0.000595	36	40	0.000120	68	72	0.000024	100	104	0.000005
8	12	0.000487	40	44	0.000098	72	76	0.000020	104	108	0.000004
12	16	0.000399	44	48	0.000081	76	80	0.000016	108	112	0.000003
16	20	0.000327	48	52	0.000066	80	84	0.000013	112	116	0.000003
20	24	0.000267	52	56	0.000054	84	88	0.000011	116	120	0.000002
24	28	0.000219	56	60	0.000044	88	92	0.000009			
28	32	0.000179	60	64	0.000036	92	96	0.000007			

Time Area Diagram for Green Roof at Pipe Number 18.002 (Storm)

Area (m³) 60 Evaporation (mm/day) 1
Depression Storage (mm) 5 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.001090	32	36	0.000220	64	68	0.000044	96	100	0.000009
4	8	0.000893	36	40	0.000180	68	72	0.000036	100	104	0.000007
8	12	0.000731	40	44	0.000148	72	76	0.000030	104	108	0.000006
12	16	0.000598	44	48	0.000121	76	80	0.000024	108	112	0.000005
16	20	0.000490	48	52	0.000099	80	84	0.000020	112	116	0.000004
20	24	0.000401	52	56	0.000081	84	88	0.000016	116	120	0.000003
24	28	0.000328	56	60	0.000066	88	92	0.000013			
28	32	0.000269	60	64	0.000054	92	96	0.000011			

Time Area Diagram for Green Roof at Pipe Number 18.003 (Storm)

Area (m³) 130 Evaporation (mm/day) 1
Depression Storage (mm) 5 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.002362	32	36	0.000477	64	68	0.000096	96	100	0.000019
4	8	0.001934	36	40	0.000390	68	72	0.000079	100	104	0.000016
8	12	0.001584	40	44	0.000320	72	76	0.000065	104	108	0.000013
12	16	0.001296	44	48	0.000262	76	80	0.000053	108	112	0.000011
16	20	0.001061	48	52	0.000214	80	84	0.000043	112	116	0.000009
20	24	0.000869	52	56	0.000175	84	88	0.000035	116	120	0.000007
24	28	0.000712	56	60	0.000144	88	92	0.000029			
28	32	0.000583	60	64	0.000118	92	96	0.000024			

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Time Area Diagram for Green Roof at Pipe Number 20.000 (Storm)

Area (m³) 390 Evaporation (mm/day) 1
Depression Storage (mm) 20 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.007087	32	36	0.001431	64	68	0.000289	96	100	0.000058
4	8	0.005802	36	40	0.001171	68	72	0.000237	100	104	0.000048
8	12	0.004751	40	44	0.000959	72	76	0.000194	104	108	0.000039
12	16	0.003889	44	48	0.000785	76	80	0.000159	108	112	0.000032
16	20	0.003184	48	52	0.000643	80	84	0.000130	112	116	0.000026
20	24	0.002607	52	56	0.000526	84	88	0.000106	116	120	0.000021
24	28	0.002135	56	60	0.000431	88	92	0.000087			
28	32	0.001748	60	64	0.000353	92	96	0.000071			

Time Area Diagram for Green Roof at Pipe Number 26.000 (Storm)

Area (m³) 310 Evaporation (mm/day) 1
Depression Storage (mm) 5 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.005633	32	36	0.001137	64	68	0.000230	96	100	0.000046
4	8	0.004612	36	40	0.000931	68	72	0.000188	100	104	0.000038
8	12	0.003776	40	44	0.000762	72	76	0.000154	104	108	0.000031
12	16	0.003092	44	48	0.000624	76	80	0.000126	108	112	0.000025
16	20	0.002531	48	52	0.000511	80	84	0.000103	112	116	0.000021
20	24	0.002072	52	56	0.000418	84	88	0.000084	116	120	0.000017
24	28	0.001697	56	60	0.000343	88	92	0.000069			
28	32	0.001389	60	64	0.000280	92	96	0.000057			

Time Area Diagram for Green Roof at Pipe Number 26.002 (Storm)

Area (m³) 200 Evaporation (mm/day) 1
Depression Storage (mm) 20 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.003634	32	36	0.000734	64	68	0.000148	96	100	0.000030
4	8	0.002976	36	40	0.000601	68	72	0.000121	100	104	0.000024
8	12	0.002436	40	44	0.000492	72	76	0.000099	104	108	0.000020
12	16	0.001995	44	48	0.000403	76	80	0.000081	108	112	0.000016
16	20	0.001633	48	52	0.000330	80	84	0.000067	112	116	0.000013
20	24	0.001337	52	56	0.000270	84	88	0.000054	116	120	0.000011
24	28	0.001095	56	60	0.000221	88	92	0.000045			
28	32	0.000896	60	64	0.000181	92	96	0.000037			

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Time Area Diagram for Green Roof at Pipe Number 28.001 (Storm)

Area (m³) 40 Evaporation (mm/day) 1
Depression Storage (mm) 5 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.000727	32	36	0.000147	64	68	0.000030	96	100	0.000006
4	8	0.000595	36	40	0.000120	68	72	0.000024	100	104	0.000005
8	12	0.000487	40	44	0.000098	72	76	0.000020	104	108	0.000004
12	16	0.000399	44	48	0.000081	76	80	0.000016	108	112	0.000003
16	20	0.000327	48	52	0.000066	80	84	0.000013	112	116	0.000003
20	24	0.000267	52	56	0.000054	84	88	0.000011	116	120	0.000002
24	28	0.000219	56	60	0.000044	88	92	0.000009			
28	32	0.000179	60	64	0.000036	92	96	0.000007			

Time Area Diagram for Green Roof at Pipe Number 26.005 (Storm)

Area (m³) 200 Evaporation (mm/day) 1
Depression Storage (mm) 20 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.003634	32	36	0.000734	64	68	0.000148	96	100	0.000030
4	8	0.002976	36	40	0.000601	68	72	0.000121	100	104	0.000024
8	12	0.002436	40	44	0.000492	72	76	0.000099	104	108	0.000020
12	16	0.001995	44	48	0.000403	76	80	0.000081	108	112	0.000016
16	20	0.001633	48	52	0.000330	80	84	0.000067	112	116	0.000013
20	24	0.001337	52	56	0.000270	84	88	0.000054	116	120	0.000011
24	28	0.001095	56	60	0.000221	88	92	0.000045			
28	32	0.000896	60	64	0.000181	92	96	0.000037			

Time Area Diagram for Green Roof at Pipe Number 30.003 (Storm)

Area (m³) 370 Evaporation (mm/day) 1
Depression Storage (mm) 20 Decay Coefficient 0.050

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.006724	32	36	0.001357	64	68	0.000274	96	100	0.000055
4	8	0.005505	36	40	0.001111	68	72	0.000224	100	104	0.000045
8	12	0.004507	40	44	0.000910	72	76	0.000184	104	108	0.000037
12	16	0.003690	44	48	0.000745	76	80	0.000150	108	112	0.000030
16	20	0.003021	48	52	0.000610	80	84	0.000123	112	116	0.000025
20	24	0.002473	52	56	0.000499	84	88	0.000101	116	120	0.000020
24	28	0.002025	56	60	0.000409	88	92	0.000083			
28	32	0.001658	60	64	0.000335	92	96	0.000068			

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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	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	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 Storage Structures	8
Number of Online Controls	1	Number of Time/Area Diagrams	21
Number of Offline Controls	2	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 514987 102818 TQ 14987 02818
Data Type	Point
Cv (Summer)	1.000
Cv (Winter)	1.000

Margin for Flood Risk Warning (mm)	50.0
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, 240, 360, 480, 960, 1440
Return Period(s) (years)	2, 10, 30, 100
Climate Change (%)	0, 0, 0, 45

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.
1.000	S01	15 Summer	2	+0%	100/15 Summer			
1.001	S02	15 Summer	2	+0%	100/15 Summer			
1.002	S03	15 Summer	2	+0%	100/15 Summer			
1.003	S04	15 Summer	2	+0%	100/15 Summer			
1.004	S05	15 Summer	2	+0%	100/15 Summer			
1.005	S06	15 Summer	2	+0%	100/15 Summer			
1.006	S07	15 Summer	2	+0%	100/15 Summer			
1.007	S08	15 Summer	2	+0%	100/960 Summer			
2.000	S09	1440 Summer	2	+0%	10/480 Summer			
1.008	ST1	1440 Summer	2	+0%	100/240 Summer			
3.000	S10	15 Summer	2	+0%	100/15 Summer			
1.009	S11	15 Summer	2	+0%	30/15 Summer			

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	S01	8.090	-0.080	0.000	0.09			0.8	OK	
1.001	S02	7.968	-0.082	0.000	0.08			0.9	OK	
1.002	S03	7.563	-0.067	0.000	0.24			2.7	OK	
1.003	S04	7.366	-0.059	0.000	0.34			3.1	OK	
1.004	S05	7.075	-0.100	0.000	0.24			4.9	OK	
1.005	S06	6.958	-0.097	0.000	0.26			6.3	OK	
1.006	S07	6.773	-0.102	0.000	0.22			8.1	OK	
1.007	S08	6.297	-0.158	0.000	0.19			8.8	OK	
2.000	S09	5.811	-0.044	0.000	0.00			0.0	OK	
1.008	ST1	5.811	-0.364	0.000	0.00			0.0	OK*	
3.000	S10	6.149	-0.086	0.000	0.38			9.2	OK	
1.009	S11	5.910	-0.140	0.000	0.30			11.4	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.
1.010	S12	15 Summer	2	+0%	30/15 Summer			
4.000	S13	15 Summer	2	+0%	100/15 Summer			
1.011	S14	15 Summer	2	+0%	30/15 Summer			
5.000	S15	15 Summer	2	+0%	100/240 Summer			
1.012	S16	15 Summer	2	+0%	30/15 Summer			
6.000	S17	60 Summer	2	+0%				
6.001	S18	120 Summer	2	+0%				
6.002	S19	360 Summer	2	+0%	100/1440 Summer			
6.003	S20	360 Summer	2	+0%	100/480 Summer			
7.000	S21	1440 Winter	2	+0%	10/240 Summer		2/480 Winter	27
6.004	ST2	1440 Winter	2	+0%	10/240 Summer			
1.013	S22	1440 Winter	2	+0%	30/360 Summer			
8.000	S24	15 Summer	2	+0%	100/15 Summer			
8.001	S25	15 Summer	2	+0%	100/15 Summer			
8.002	S26	15 Summer	2	+0%				
8.003	S27	15 Summer	2	+0%	100/1440 Winter			
9.000	S23	15 Summer	2	+0%				
10.000	S28	15 Summer	2	+0%				
11.000	S29	15 Summer	2	+0%				
10.001	S30	15 Summer	2	+0%	100/1440 Winter			
8.004	ST3	1440 Winter	2	+0%	10/240 Summer			
1.014	S31	1440 Winter	2	+0%	30/240 Summer			
12.000	S33	15 Summer	2	+0%				
13.000	S34	30 Summer	2	+0%				
12.001	S35	15 Summer	2	+0%	100/1440 Winter			
14.000	S32	15 Summer	2	+0%				
12.002	S36	15 Summer	2	+0%	100/1440 Summer			
15.000	S37	15 Summer	2	+0%				
12.003	ST4	1440 Winter	2	+0%	2/240 Summer			
1.015	S38	1440 Winter	2	+0%	10/360 Summer			
16.000	S39	120 Summer	2	+0%	100/1440 Summer			
17.000	S40	360 Summer	2	+0%	100/60 Summer			
16.001	ST5	1440 Winter	2	+0%	10/120 Summer			
16.002	S41	1440 Winter	2	+0%	2/480 Winter			
18.000	S43	15 Summer	2	+0%				
18.001	S44	15 Summer	2	+0%	100/480 Summer			
19.000	S45	15 Summer	2	+0%				
19.001	S46	15 Summer	2	+0%				
18.002	S47	15 Summer	2	+0%	100/240 Summer			
18.003	S48	15 Summer	2	+0%	100/120 Summer			
20.000	S42	360 Summer	2	+0%	100/1440 Summer			
21.000	S49	1440 Winter	2	+0%	2/480 Winter			0
22.000	S50	15 Summer	2	+0%				
16.003	ST6	1440 Winter	2	+0%	2/240 Summer			
1.016	S51	1440 Winter	2	+0%	10/240 Summer			
23.000	S52	15 Summer	2	+0%				
23.001	S53	15 Summer	2	+0%	100/1440 Winter			

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.010	S12	5.831	-0.129	0.000	0.36			11.4	OK
4.000	S13	5.972	-0.098	0.000	0.26			6.2	OK
1.011	S14	5.809	-0.101	0.000	0.58			17.4	OK
5.000	S15	6.090	-0.150	0.000	0.00			0.0	OK
1.012	S16	5.774	-0.101	0.000	0.58			17.5	OK
6.000	S17	6.756	-0.194	0.000	0.04			1.8	OK
6.001	S18	6.641	-0.199	0.000	0.03			1.9	OK
6.002	S19	6.436	-0.199	0.000	0.03			2.2	OK
6.003	S20	6.175	-0.185	0.000	0.07			2.9	OK
7.000	S21	5.602	-0.073	0.000	-0.01	0.2		-0.2	OK
6.004	ST2	5.602	-0.038	0.000	0.04		1258	1.1	OK*
1.013	S22	5.604	-0.236	0.000	0.02			2.3	OK
8.000	S24	7.174	-0.061	0.000	0.32			2.1	OK
8.001	S25	7.099	-0.066	0.000	0.26			2.1	OK
8.002	S26	6.929	-0.116	0.000	0.11			4.1	OK
8.003	S27	6.518	-0.157	0.000	0.19			6.7	OK
9.000	S23	6.827	-0.093	0.000	0.02			0.2	OK
10.000	S28	6.612	-0.183	0.000	0.08			3.9	OK
11.000	S29	7.467	-0.083	0.000	0.07			1.5	OK
10.001	S30	6.516	-0.159	0.000	0.19			6.5	OK
8.004	ST3	5.602	-0.038	0.000	0.04		1265	1.5	OK*
1.014	S31	5.605	-0.195	0.000	0.02			3.0	OK
12.000	S33	6.813	-0.127	0.000	0.06			1.7	OK
13.000	S34	6.764	-0.086	0.000	0.03			0.4	OK
12.001	S35	6.504	-0.186	0.000	0.07			3.3	OK
14.000	S32	6.800	-0.120	0.000	0.09			3.1	OK
12.002	S36	6.411	-0.159	0.000	0.19			6.4	OK
15.000	S37	7.410	-0.090	0.000	0.02			0.6	OK
12.003	ST4	5.602	0.067	0.000	-0.11			-3.2	SURCHARGED*
1.015	S38	5.607	-0.108	0.000	0.01			2.5	OK
16.000	S39	6.498	-0.122	0.000	0.08			0.9	OK
17.000	S40	6.510	-0.115	0.000	0.13			1.5	OK
16.001	ST5	5.601	-0.014	0.000	-0.03		1426	-1.0	OK*
16.002	S41	5.602	0.027	0.000	-0.02			-0.7	SURCHARGED
18.000	S43	6.744	-0.121	0.000	0.08			3.5	OK
18.001	S44	6.166	-0.189	0.000	0.06			3.5	OK
19.000	S45	6.792	-0.068	0.000	0.22			1.9	OK
19.001	S46	6.615	-0.130	0.000	0.04			1.9	OK
18.002	S47	6.013	-0.177	0.000	0.10			5.4	OK
18.003	S48	5.879	-0.176	0.000	0.11			5.4	OK
20.000	S42	6.444	-0.121	0.000	0.08			1.2	OK
21.000	S49	5.602	0.027	0.000	0.05	-1.1		1.6	SURCHARGED
22.000	S50	7.412	-0.088	0.000	0.03			1.0	OK
16.003	ST6	5.602	0.067	0.000	-0.08			-3.8	SURCHARGED*
1.016	S51	5.610	-0.025	0.000	-0.03			-4.4	OK
23.000	S52	6.544	-0.191	0.000	0.06			1.9	OK

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
23.001	S53	6.493	-0.182	0.000	0.08			3.0	OK

PN	US/MH Name	Level Exceeded
1.010	S12	
4.000	S13	
1.011	S14	
5.000	S15	
1.012	S16	
6.000	S17	
6.001	S18	
6.002	S19	
6.003	S20	
7.000	S21	
6.004	ST2	
1.013	S22	
8.000	S24	
8.001	S25	
8.002	S26	
8.003	S27	
9.000	S23	
10.000	S28	
11.000	S29	
10.001	S30	
8.004	ST3	
1.014	S31	
12.000	S33	
13.000	S34	
12.001	S35	
14.000	S32	
12.002	S36	
15.000	S37	
12.003	ST4	
1.015	S38	
16.000	S39	
17.000	S40	
16.001	ST5	
16.002	S41	
18.000	S43	
18.001	S44	
19.000	S45	
19.001	S46	
18.002	S47	
18.003	S48	

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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
20.000	S42	
21.000	S49	
22.000	S50	
16.003	ST6	
1.016	S51	
23.000	S52	
23.001	S53	

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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.
23.002	S54	15 Summer	2	+0%	100/1440 Summer			
24.000	S55	15 Summer	2	+0%				
25.000	S56	15 Summer	2	+0%				
26.000	S57	60 Summer	2	+0%	100/15 Summer			
26.001	S58	60 Summer	2	+0%	100/360 Summer			
26.002	S59	120 Summer	2	+0%	100/240 Summer			
27.000	S60	15 Summer	2	+0%	100/360 Summer			
27.001	S61	15 Summer	2	+0%	100/240 Summer			
26.003	S62	120 Summer	2	+0%	100/60 Summer			
28.000	S68	15 Summer	2	+0%	100/15 Summer			
28.001	S69	15 Summer	2	+0%	100/15 Summer			
28.002	S70	15 Summer	2	+0%	100/15 Summer			
28.003	S71	15 Summer	2	+0%	100/15 Summer			
28.004	S72	15 Summer	2	+0%	30/15 Summer			
28.005	S73	15 Summer	2	+0%	10/15 Summer			
28.006	S74	15 Summer	2	+0%	30/15 Summer			
28.007	S75	15 Summer	2	+0%	10/15 Summer			
28.008	S76	15 Summer	2	+0%	10/15 Summer			
29.000	S77	15 Summer	2	+0%	100/15 Summer			
29.001	S78	15 Summer	2	+0%	100/15 Summer			
28.009	S79	15 Summer	2	+0%	100/15 Summer			
28.010	S80	15 Summer	2	+0%	30/15 Summer			
26.004	S81	1440 Winter	2	+0%	10/480 Summer			
26.005	S82	1440 Winter	2	+0%	10/240 Summer			
30.000	S83	15 Summer	2	+0%	100/15 Summer			
30.001	S84	15 Summer	2	+0%	10/480 Summer			
31.000	S85	15 Summer	2	+0%	30/480 Summer			
30.002	Junction	1440 Winter	2	+0%				
30.003	S86	1440 Winter	2	+0%	10/120 Summer			
23.003	ST7	1440 Winter	2	+0%	2/240 Summer			
23.004	S87	1440 Winter	2	+0%	10/240 Summer			
32.000	S88	15 Summer	2	+0%	100/960 Summer			
23.005	Junction	1440 Winter	2	+0%				
1.017	S89	1440 Winter	2	+0%	2/1440 Summer			
1.018	S90	1440 Winter	2	+0%	2/240 Summer			
1.019	S91	1440 Winter	2	+0%	2/15 Summer			
1.020	S92	960 Summer	2	+0%				

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
23.002	S54	6.420	-0.185	0.000	0.07			3.2	OK
24.000	S55	6.624	-0.131	0.000	0.04			1.9	OK
25.000	S56	7.213	-0.087	0.000	0.04			1.2	OK
26.000	S57	6.367	-0.058	0.000	0.33			2.0	OK

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
26.001	S58	6.234	-0.116	0.000	0.10			2.3	OK
26.002	S59	6.062	-0.118	0.000	0.10			2.4	OK
27.000	S60	6.229	-0.121	0.000	0.08			1.9	OK
27.001	S61	6.077	-0.118	0.000	0.10			2.4	OK
26.003	S62	5.829	-0.191	0.000	0.06			3.8	OK
28.000	S68	7.410	-0.070	0.000	0.19			1.7	OK
28.001	S69	7.110	-0.070	0.000	0.20			1.7	OK
28.002	S70	6.834	-0.096	0.000	0.27			3.0	OK
28.003	S71	6.786	-0.104	0.000	0.20			4.0	OK
28.004	S72	6.642	-0.088	0.000	0.35			5.1	OK
28.005	S73	6.597	-0.063	0.000	0.63		8	7.4	OK
28.006	S74	6.527	-0.083	0.000	0.41			7.6	OK
28.007	S75	6.427	-0.083	0.000	0.41			8.2	OK
28.008	S76	6.308	-0.052	0.000	0.75			9.4	OK
29.000	S77	6.341	-0.109	0.000	0.17			2.3	OK
29.001	S78	6.290	-0.095	0.000	0.28			4.3	OK
28.009	S79	6.163	-0.157	0.000	0.20			14.8	OK
28.010	S80	5.701	-0.124	0.000	0.42			17.1	OK
26.004	S81	5.602	-0.138	0.000	0.03			2.3	OK
26.005	S82	5.602	-0.048	0.000	0.04			2.5	OK
30.000	S83	5.825	-0.115	0.000	0.12			2.3	OK
30.001	S84	5.644	-0.086	0.000	0.38			5.7	OK
31.000	S85	5.809	-0.061	0.000	0.33			2.9	OK
30.002	Junction	5.602	-0.058	0.000	0.04			0.6	OK*
30.003	S86	5.602	-0.013	0.000	0.03			1.0	OK
23.003	ST7	5.602	0.067	0.000	0.13			4.1	SURCHARGED*
23.004	S87	5.609	-0.101	0.000	0.03			4.4	OK
32.000	S88	6.362	-0.123	0.000	0.08			4.4	OK
23.005	Junction	5.613	-0.032	0.000	0.02			2.8	OK*
1.017	S89	5.614	0.004	0.000	0.03			4.7	SURCHARGED
1.018	S90	5.618	0.068	0.000	0.02			2.7	SURCHARGED
1.019	S91	5.619	0.414	0.000	0.09			1.5	SURCHARGED
1.020	S92	4.797	-0.123	0.000	0.07			1.5	OK

PN	US/MH Name	Level Exceeded
23.002	S54	
24.000	S55	
25.000	S56	
26.000	S57	
26.001	S58	
26.002	S59	
27.000	S60	
27.001	S61	

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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
26.003	S62	
28.000	S68	
28.001	S69	
28.002	S70	
28.003	S71	
28.004	S72	
28.005	S73	
28.006	S74	
28.007	S75	
28.008	S76	
29.000	S77	
29.001	S78	
28.009	S79	
28.010	S80	
26.004	S81	
26.005	S82	
30.000	S83	
30.001	S84	
31.000	S85	
30.002	Junction	
30.003	S86	
23.003	ST7	
23.004	S87	
32.000	S88	
23.005	Junction	
1.017	S89	
1.018	S90	
1.019	S91	
1.020	S92	

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10 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 Coeffiecient	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 Storage Structures	8
Number of Online Controls	1	Number of Time/Area Diagrams	21
Number of Offline Controls	2	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 514987 102818 TQ 14987 02818
Data Type	Point
Cv (Summer)	1.000
Cv (Winter)	1.000

Margin for Flood Risk Warning (mm)	50.0
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, 240, 360, 480, 960, 1440
Return Period(s) (years)	2, 10, 30, 100
Climate Change (%)	0, 0, 0, 45

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.
1.000	S01	15 Summer	10	+0%	100/15 Summer			
1.001	S02	15 Summer	10	+0%	100/15 Summer			
1.002	S03	15 Summer	10	+0%	100/15 Summer			
1.003	S04	15 Summer	10	+0%	100/15 Summer			
1.004	S05	15 Summer	10	+0%	100/15 Summer			
1.005	S06	15 Summer	10	+0%	100/15 Summer			
1.006	S07	15 Summer	10	+0%	100/15 Summer			
1.007	S08	15 Summer	10	+0%	100/960 Summer			
2.000	S09	1440 Summer	10	+0%	10/480 Summer			
1.008	ST1	1440 Summer	10	+0%	100/240 Summer			
3.000	S10	15 Summer	10	+0%	100/15 Summer			
1.009	S11	15 Summer	10	+0%	30/15 Summer			

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S01	8.096	-0.074	0.000	0.15			1.3	OK
1.001	S02	7.975	-0.075	0.000	0.14			1.7	OK
1.002	S03	7.581	-0.049	0.000	0.51			5.9	OK
1.003	S04	7.391	-0.034	0.000	0.75			6.8	OK
1.004	S05	7.104	-0.071	0.000	0.54			10.9	OK
1.005	S06	6.989	-0.066	0.000	0.60			14.3	OK
1.006	S07	6.801	-0.074	0.000	0.50			18.4	OK
1.007	S08	6.335	-0.120	0.000	0.44			20.0	OK
2.000	S09	5.918	0.063	0.000	0.00			0.0	SURCHARGED
1.008	ST1	5.918	-0.257	0.000	0.00			0.0	OK*
3.000	S10	6.174	-0.061	0.000	0.66			16.1	OK
1.009	S11	5.947	-0.103	0.000	0.55			20.7	OK

PN	US/MH Name	Level Exceeded
1.000	S01	
1.001	S02	
1.002	S03	
1.003	S04	
1.004	S05	
1.005	S06	
1.006	S07	
1.007	S08	
2.000	S09	
1.008	ST1	
3.000	S10	
1.009	S11	

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10 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.
1.010	S12	15 Summer	10	+0%	30/15 Summer			
4.000	S13	15 Summer	10	+0%	100/15 Summer			
1.011	S14	15 Summer	10	+0%	30/15 Summer			
5.000	S15	15 Summer	10	+0%	100/240 Summer			
1.012	S16	15 Summer	10	+0%	30/15 Summer			
6.000	S17	30 Summer	10	+0%				
6.001	S18	30 Summer	10	+0%				
6.002	S19	120 Summer	10	+0%	100/1440 Summer			
6.003	S20	120 Summer	10	+0%	100/480 Summer			
7.000	S21	1440 Winter	10	+0%	10/240 Summer		2/480 Winter	27
6.004	ST2	1440 Winter	10	+0%	10/240 Summer			
1.013	S22	1440 Winter	10	+0%	30/360 Summer			
8.000	S24	15 Summer	10	+0%	100/15 Summer			
8.001	S25	15 Summer	10	+0%	100/15 Summer			
8.002	S26	15 Summer	10	+0%				
8.003	S27	15 Summer	10	+0%	100/1440 Winter			
9.000	S23	15 Summer	10	+0%				
10.000	S28	15 Summer	10	+0%				
11.000	S29	15 Summer	10	+0%				
10.001	S30	15 Summer	10	+0%	100/1440 Winter			
8.004	ST3	1440 Winter	10	+0%	10/240 Summer			
1.014	S31	1440 Winter	10	+0%	30/240 Summer			
12.000	S33	15 Summer	10	+0%				
13.000	S34	30 Summer	10	+0%				
12.001	S35	15 Summer	10	+0%	100/1440 Winter			
14.000	S32	15 Summer	10	+0%				
12.002	S36	15 Summer	10	+0%	100/1440 Summer			
15.000	S37	15 Summer	10	+0%				
12.003	ST4	1440 Winter	10	+0%	2/240 Summer			
1.015	S38	1440 Winter	10	+0%	10/360 Summer			
16.000	S39	30 Summer	10	+0%	100/1440 Summer			
17.000	S40	240 Summer	10	+0%	100/60 Summer			
16.001	ST5	1440 Winter	10	+0%	10/120 Summer			
16.002	S41	1440 Winter	10	+0%	2/480 Winter			
18.000	S43	15 Summer	10	+0%				
18.001	S44	15 Summer	10	+0%	100/480 Summer			
19.000	S45	15 Summer	10	+0%				
19.001	S46	15 Summer	10	+0%				
18.002	S47	15 Summer	10	+0%	100/240 Summer			
18.003	S48	30 Summer	10	+0%	100/120 Summer			
20.000	S42	240 Summer	10	+0%	100/1440 Summer			
21.000	S49	1440 Winter	10	+0%	2/480 Winter			0
22.000	S50	15 Summer	10	+0%				
16.003	ST6	1440 Winter	10	+0%	2/240 Summer			
1.016	S51	1440 Winter	10	+0%	10/240 Summer			
23.000	S52	15 Summer	10	+0%				
23.001	S53	15 Summer	10	+0%	100/1440 Winter			

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.010	S12	5.908	-0.052	0.000	0.62			19.7	OK
4.000	S13	5.991	-0.079	0.000	0.45			10.7	OK
1.011	S14	5.888	-0.022	0.000	1.00			29.9	OK
5.000	S15	6.090	-0.150	0.000	0.00			0.0	OK
1.012	S16	5.830	-0.045	0.000	1.00			29.9	OK
6.000	S17	6.766	-0.184	0.000	0.08			3.3	OK
6.001	S18	6.649	-0.191	0.000	0.05			3.3	OK
6.002	S19	6.452	-0.183	0.000	0.08			5.5	OK
6.003	S20	6.201	-0.159	0.000	0.17			7.1	OK
7.000	S21	5.772	0.097	0.000	-0.01	0.3		-0.3	SURCHARGED
6.004	ST2	5.772	0.132	0.000	0.12			3.5	SURCHARGED*
1.013	S22	5.785	-0.055	0.000	0.03			4.2	OK
8.000	S24	7.189	-0.046	0.000	0.57			3.7	OK
8.001	S25	7.112	-0.053	0.000	0.45			3.7	OK
8.002	S26	6.944	-0.101	0.000	0.23			8.2	OK
8.003	S27	6.552	-0.123	0.000	0.42			14.5	OK
9.000	S23	6.831	-0.089	0.000	0.03			0.3	OK
10.000	S28	6.625	-0.170	0.000	0.14			6.7	OK
11.000	S29	7.473	-0.077	0.000	0.12			2.7	OK
10.001	S30	6.541	-0.134	0.000	0.34			11.7	OK
8.004	ST3	5.772	0.132	0.000	-0.12			-4.4	SURCHARGED*
1.014	S31	5.790	-0.010	0.000	0.04			6.5	OK
12.000	S33	6.821	-0.119	0.000	0.10			3.0	OK
13.000	S34	6.771	-0.079	0.000	0.07			0.8	OK
12.001	S35	6.521	-0.169	0.000	0.14			6.7	OK
14.000	S32	6.809	-0.111	0.000	0.16			5.4	OK
12.002	S36	6.437	-0.133	0.000	0.35			11.9	OK
15.000	S37	7.412	-0.088	0.000	0.04			1.0	OK
12.003	ST4	5.776	0.241	0.000	0.31			9.4	SURCHARGED*
1.015	S38	5.803	0.088	0.000	0.06			10.7	SURCHARGED
16.000	S39	6.508	-0.112	0.000	0.14			1.7	OK
17.000	S40	6.533	-0.092	0.000	0.31			3.6	OK
16.001	ST5	5.776	0.161	0.000	-0.04			-1.3	SURCHARGED*
16.002	S41	5.777	0.202	0.000	-0.03			-1.0	SURCHARGED
18.000	S43	6.753	-0.112	0.000	0.14			6.0	OK
18.001	S44	6.179	-0.176	0.000	0.11			6.0	OK
19.000	S45	6.803	-0.057	0.000	0.38			3.4	OK
19.001	S46	6.622	-0.123	0.000	0.08			3.4	OK
18.002	S47	6.030	-0.160	0.000	0.18			9.4	OK
18.003	S48	5.897	-0.158	0.000	0.20			9.9	OK
20.000	S42	6.462	-0.103	0.000	0.21			3.0	OK
21.000	S49	5.777	0.202	0.000	0.05	-1.6		1.5	SURCHARGED
22.000	S50	7.416	-0.084	0.000	0.06			1.7	OK
16.003	ST6	5.778	0.243	0.000	0.27			13.5	SURCHARGED*
1.016	S51	5.823	0.188	0.000	0.14			18.8	SURCHARGED
23.000	S52	6.557	-0.178	0.000	0.10			3.4	OK

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
23.001	S53	6.509	-0.166	0.000	0.16			5.8	OK

PN	US/MH Name	Level Exceeded
1.010	S12	
4.000	S13	
1.011	S14	
5.000	S15	
1.012	S16	
6.000	S17	
6.001	S18	
6.002	S19	
6.003	S20	
7.000	S21	
6.004	ST2	
1.013	S22	
8.000	S24	
8.001	S25	
8.002	S26	
8.003	S27	
9.000	S23	
10.000	S28	
11.000	S29	
10.001	S30	
8.004	ST3	
1.014	S31	
12.000	S33	
13.000	S34	
12.001	S35	
14.000	S32	
12.002	S36	
15.000	S37	
12.003	ST4	
1.015	S38	
16.000	S39	
17.000	S40	
16.001	ST5	
16.002	S41	
18.000	S43	
18.001	S44	
19.000	S45	
19.001	S46	
18.002	S47	
18.003	S48	

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

PN	US/MH Name	Level Exceeded
20.000	S42	
21.000	S49	
22.000	S50	
16.003	ST6	
1.016	S51	
23.000	S52	
23.001	S53	

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10 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.
23.002	S54	15 Summer	10	+0%	100/1440 Summer			
24.000	S55	15 Summer	10	+0%				
25.000	S56	15 Summer	10	+0%				
26.000	S57	30 Summer	10	+0%	100/15 Summer			
26.001	S58	60 Summer	10	+0%	100/360 Summer			
26.002	S59	60 Summer	10	+0%	100/240 Summer			
27.000	S60	15 Summer	10	+0%	100/360 Summer			
27.001	S61	15 Summer	10	+0%	100/240 Summer			
26.003	S62	60 Summer	10	+0%	100/60 Summer			
28.000	S68	15 Summer	10	+0%	100/15 Summer			
28.001	S69	30 Summer	10	+0%	100/15 Summer			
28.002	S70	15 Summer	10	+0%	100/15 Summer			
28.003	S71	15 Summer	10	+0%	100/15 Summer			
28.004	S72	15 Summer	10	+0%	30/15 Summer			
28.005	S73	15 Summer	10	+0%	10/15 Summer			
28.006	S74	15 Summer	10	+0%	30/15 Summer			
28.007	S75	15 Summer	10	+0%	10/15 Summer			
28.008	S76	15 Summer	10	+0%	10/15 Summer			
29.000	S77	15 Summer	10	+0%	100/15 Summer			
29.001	S78	15 Summer	10	+0%	100/15 Summer			
28.009	S79	15 Summer	10	+0%	100/15 Summer			
28.010	S80	1440 Winter	10	+0%	30/15 Summer			
26.004	S81	1440 Winter	10	+0%	10/480 Summer			
26.005	S82	1440 Winter	10	+0%	10/240 Summer			
30.000	S83	15 Summer	10	+0%	100/15 Summer			
30.001	S84	1440 Winter	10	+0%	10/480 Summer			
31.000	S85	15 Summer	10	+0%	30/480 Summer			
30.002	Junction	15 Summer	10	+0%				
30.003	S86	1440 Winter	10	+0%	10/120 Summer			
23.003	ST7	1440 Winter	10	+0%	2/240 Summer			
23.004	S87	1440 Winter	10	+0%	10/240 Summer			
32.000	S88	15 Summer	10	+0%	100/960 Summer			
23.005	Junction	1440 Summer	10	+0%				
1.017	S89	1440 Winter	10	+0%	2/1440 Summer			
1.018	S90	1440 Winter	10	+0%	2/240 Summer			
1.019	S91	1440 Winter	10	+0%	2/15 Summer			
1.020	S92	1440 Summer	10	+0%				

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
23.002	S54	6.437	-0.168	0.000	0.14			6.1	OK
24.000	S55	6.631	-0.124	0.000	0.07			3.4	OK
25.000	S56	7.217	-0.083	0.000	0.07			2.0	OK
26.000	S57	6.385	-0.040	0.000	0.57			3.4	OK

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
26.001	S58	6.246	-0.104	0.000	0.19			4.5	OK
26.002	S59	6.074	-0.106	0.000	0.19			4.5	OK
27.000	S60	6.238	-0.112	0.000	0.14			3.4	OK
27.001	S61	6.089	-0.106	0.000	0.19			4.6	OK
26.003	S62	5.846	-0.174	0.000	0.12			7.9	OK
28.000	S68	7.420	-0.060	0.000	0.34			3.0	OK
28.001	S69	7.121	-0.059	0.000	0.32			2.9	OK
28.002	S70	6.860	-0.070	0.000	0.54			5.9	OK
28.003	S71	6.807	-0.083	0.000	0.41			8.4	OK
28.004	S72	6.708	-0.022	0.000	0.71			10.5	OK
28.005	S73	6.684	0.024	0.000	1.35		5	15.8	SURCHARGED
28.006	S74	6.580	-0.030	0.000	0.88			16.1	OK
28.007	S75	6.518	0.008	0.000	0.86			17.3	SURCHARGED
28.008	S76	6.415	0.055	0.000	1.55			19.5	SURCHARGED
29.000	S77	6.355	-0.095	0.000	0.29			4.0	OK
29.001	S78	6.317	-0.068	0.000	0.57			8.6	OK
28.009	S79	6.195	-0.125	0.000	0.40			29.9	OK
28.010	S80	5.777	-0.048	0.000	0.04			1.8	OK
26.004	S81	5.776	0.036	0.000	0.04			3.2	SURCHARGED
26.005	S82	5.776	0.126	0.000	0.06			3.5	SURCHARGED
30.000	S83	5.837	-0.103	0.000	0.22			4.0	OK
30.001	S84	5.776	0.046	0.000	0.04			0.5	SURCHARGED
31.000	S85	5.824	-0.046	0.000	0.57			5.0	OK
30.002	Junction	5.660	0.000	0.000	1.26			16.7	SURCHARGED*
30.003	S86	5.776	0.161	0.000	0.04			1.4	SURCHARGED
23.003	ST7	5.776	0.241	0.000	0.41			13.0	SURCHARGED*
23.004	S87	5.818	0.108	0.000	0.06			9.9	SURCHARGED
32.000	S88	6.371	-0.114	0.000	0.13			7.7	OK
23.005	Junction	5.645	0.000	0.000	0.03			5.8	SURCHARGED*
1.017	S89	5.843	0.233	0.000	0.11			17.8	SURCHARGED
1.018	S90	5.862	0.312	0.000	0.04			7.5	SURCHARGED
1.019	S91	5.867	0.662	0.000	0.09			1.5	SURCHARGED
1.020	S92	4.797	-0.123	0.000	0.07			1.5	OK

PN	US/MH Name	Level Exceeded
23.002	S54	
24.000	S55	
25.000	S56	
26.000	S57	
26.001	S58	
26.002	S59	
27.000	S60	
27.001	S61	

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

PN	US/MH Name	Level Exceeded
26.003	S62	
28.000	S68	
28.001	S69	
28.002	S70	
28.003	S71	
28.004	S72	
28.005	S73	
28.006	S74	
28.007	S75	
28.008	S76	
29.000	S77	
29.001	S78	
28.009	S79	
28.010	S80	
26.004	S81	
26.005	S82	
30.000	S83	
30.001	S84	
31.000	S85	
30.002	Junction	
30.003	S86	
23.003	ST7	
23.004	S87	
32.000	S88	
23.005	Junction	
1.017	S89	
1.018	S90	
1.019	S91	
1.020	S92	

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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	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	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 Storage Structures	8
Number of Online Controls	1	Number of Time/Area Diagrams	21
Number of Offline Controls	2	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 514987 102818 TQ 14987 02818
Data Type	Point
Cv (Summer)	1.000
Cv (Winter)	1.000

Margin for Flood Risk Warning (mm)	50.0
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, 240, 360, 480, 960, 1440
Return Period(s) (years)	2, 10, 30, 100
Climate Change (%)	0, 0, 0, 45

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)
1.000	S01	15 Summer	30	+0%	100/15 Summer				8.100
1.001	S02	15 Summer	30	+0%	100/15 Summer				7.979
1.002	S03	15 Summer	30	+0%	100/15 Summer				7.591
1.003	S04	15 Summer	30	+0%	100/15 Summer				7.406
1.004	S05	15 Summer	30	+0%	100/15 Summer				7.119
1.005	S06	15 Summer	30	+0%	100/15 Summer				7.006
1.006	S07	15 Summer	30	+0%	100/15 Summer				6.815
1.007	S08	15 Summer	30	+0%	100/960 Summer				6.353
2.000	S09	960 Winter	30	+0%	10/480 Summer				5.955
1.008	ST1	960 Winter	30	+0%	100/240 Summer				5.955
3.000	S10	15 Summer	30	+0%	100/15 Summer				6.220
1.009	S11	15 Summer	30	+0%	30/15 Summer				6.085

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

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	S01	-0.070	0.000	0.20			1.8	OK	
1.001	S02	-0.071	0.000	0.18			2.3	OK	
1.002	S03	-0.039	0.000	0.68			7.8	OK	
1.003	S04	-0.019	0.000	0.99			8.9	OK	
1.004	S05	-0.056	0.000	0.71			14.4	OK	
1.005	S06	-0.049	0.000	0.79			18.8	OK	
1.006	S07	-0.060	0.000	0.66			24.2	OK	
1.007	S08	-0.102	0.000	0.58			26.3	OK	
2.000	S09	0.100	0.000	0.00			0.0	SURCHARGED	
1.008	ST1	-0.220	0.000	0.00			0.2	OK*	
3.000	S10	-0.015	0.000	0.85			20.8	OK	
1.009	S11	0.035	0.000	0.64			23.9	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.
1.010	S12	15 Summer	30	+0%	30/15 Summer			
4.000	S13	15 Summer	30	+0%	100/15 Summer			
1.011	S14	15 Summer	30	+0%	30/15 Summer			
5.000	S15	15 Summer	30	+0%	100/240 Summer			
1.012	S16	1440 Winter	30	+0%	30/15 Summer			
6.000	S17	60 Summer	30	+0%				
6.001	S18	30 Summer	30	+0%				
6.002	S19	60 Summer	30	+0%	100/1440 Summer			
6.003	S20	120 Summer	30	+0%	100/480 Summer			
7.000	S21	1440 Winter	30	+0%	10/240 Summer		2/480 Winter	27
6.004	ST2	1440 Winter	30	+0%	10/240 Summer			
1.013	S22	1440 Winter	30	+0%	30/360 Summer			
8.000	S24	15 Summer	30	+0%	100/15 Summer			
8.001	S25	15 Summer	30	+0%	100/15 Summer			
8.002	S26	15 Summer	30	+0%				
8.003	S27	15 Summer	30	+0%	100/1440 Winter			
9.000	S23	15 Summer	30	+0%				
10.000	S28	15 Summer	30	+0%				
11.000	S29	15 Summer	30	+0%				
10.001	S30	15 Summer	30	+0%	100/1440 Winter			
8.004	ST3	1440 Winter	30	+0%	10/240 Summer			
1.014	S31	1440 Winter	30	+0%	30/240 Summer			
12.000	S33	15 Summer	30	+0%				
13.000	S34	30 Winter	30	+0%				
12.001	S35	15 Summer	30	+0%	100/1440 Winter			
14.000	S32	15 Summer	30	+0%				
12.002	S36	15 Summer	30	+0%	100/1440 Summer			
15.000	S37	15 Summer	30	+0%				
12.003	ST4	1440 Winter	30	+0%	2/240 Summer			
1.015	S38	1440 Winter	30	+0%	10/360 Summer			
16.000	S39	30 Summer	30	+0%	100/1440 Summer			
17.000	S40	120 Summer	30	+0%	100/60 Summer			
16.001	ST5	1440 Winter	30	+0%	10/120 Summer			
16.002	S41	1440 Winter	30	+0%	2/480 Winter			
18.000	S43	15 Summer	30	+0%				
18.001	S44	30 Summer	30	+0%	100/480 Summer			
19.000	S45	15 Summer	30	+0%				
19.001	S46	15 Summer	30	+0%				
18.002	S47	30 Summer	30	+0%	100/240 Summer			
18.003	S48	1440 Winter	30	+0%	100/120 Summer			
20.000	S42	120 Summer	30	+0%	100/1440 Summer			
21.000	S49	1440 Winter	30	+0%	2/480 Winter			0
22.000	S50	15 Summer	30	+0%				
16.003	ST6	1440 Winter	30	+0%	2/240 Summer			
1.016	S51	1440 Winter	30	+0%	10/240 Summer			
23.000	S52	15 Summer	30	+0%				
23.001	S53	15 Summer	30	+0%	100/1440 Winter			

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.010	S12	6.018	0.058	0.000	0.66			20.9	SURCHARGED
4.000	S13	6.021	-0.049	0.000	0.59			13.9	OK
1.011	S14	5.963	0.053	0.000	1.16			34.7	SURCHARGED
5.000	S15	6.090	-0.150	0.000	0.00			0.0	OK
1.012	S16	5.928	0.053	0.000	0.09			2.8	SURCHARGED
6.000	S17	6.773	-0.177	0.000	0.10			4.5	OK
6.001	S18	6.656	-0.184	0.000	0.07			4.5	OK
6.002	S19	6.463	-0.172	0.000	0.11			7.8	OK
6.003	S20	6.214	-0.146	0.000	0.27			11.1	OK
7.000	S21	5.918	0.243	0.000	-0.01	0.4		-0.4	SURCHARGED
6.004	ST2	5.918	0.278	0.000	-0.11			-3.4	SURCHARGED*
1.013	S22	5.934	0.094	0.000	0.03			5.2	SURCHARGED
8.000	S24	7.200	-0.035	0.000	0.74			4.9	OK
8.001	S25	7.120	-0.045	0.000	0.59			4.9	OK
8.002	S26	6.951	-0.094	0.000	0.30			10.8	OK
8.003	S27	6.570	-0.105	0.000	0.55			19.0	OK
9.000	S23	6.832	-0.088	0.000	0.04			0.4	OK
10.000	S28	6.634	-0.161	0.000	0.18			8.8	OK
11.000	S29	7.476	-0.074	0.000	0.15			3.5	OK
10.001	S30	6.556	-0.119	0.000	0.45			15.4	OK
8.004	ST3	5.918	0.278	0.000	-0.13			-4.6	SURCHARGED*
1.014	S31	5.938	0.138	0.000	0.04			7.5	SURCHARGED
12.000	S33	6.825	-0.115	0.000	0.13			4.0	OK
13.000	S34	6.772	-0.078	0.000	0.09			1.0	OK
12.001	S35	6.530	-0.160	0.000	0.18			8.9	OK
14.000	S32	6.816	-0.104	0.000	0.21			7.1	OK
12.002	S36	6.453	-0.117	0.000	0.45			15.7	OK
15.000	S37	7.414	-0.086	0.000	0.05			1.3	OK
12.003	ST4	5.920	0.385	0.000	-0.36			-10.8	SURCHARGED*
1.015	S38	5.948	0.233	0.000	-0.06			-9.9	SURCHARGED
16.000	S39	6.515	-0.105	0.000	0.19			2.2	OK
17.000	S40	6.551	-0.074	0.000	0.49			5.8	OK
16.001	ST5	5.921	0.306	0.000	-0.05			-1.4	SURCHARGED*
16.002	S41	5.921	0.346	0.000	-0.03			-1.0	SURCHARGED
18.000	S43	6.759	-0.106	0.000	0.19			8.0	OK
18.001	S44	6.188	-0.167	0.000	0.15			8.4	OK
19.000	S45	6.810	-0.050	0.000	0.50			4.4	OK
19.001	S46	6.627	-0.118	0.000	0.10			4.4	OK
18.002	S47	6.042	-0.148	0.000	0.26			13.3	OK
18.003	S48	5.922	-0.133	0.000	0.02			1.2	OK
20.000	S42	6.475	-0.090	0.000	0.33			4.9	OK
21.000	S49	5.921	0.346	0.000	0.06	-1.8		1.8	SURCHARGED
22.000	S50	7.419	-0.081	0.000	0.08			2.2	OK
16.003	ST6	5.922	0.387	0.000	0.25			12.4	SURCHARGED*
1.016	S51	5.961	0.326	0.000	0.13			17.5	SURCHARGED
23.000	S52	6.563	-0.172	0.000	0.13			4.4	OK

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
23.001	S53	6.519	-0.156	0.000	0.20			7.6	OK

PN	US/MH Name	Level Exceeded
1.010	S12	
4.000	S13	
1.011	S14	
5.000	S15	
1.012	S16	
6.000	S17	
6.001	S18	
6.002	S19	
6.003	S20	
7.000	S21	
6.004	ST2	
1.013	S22	
8.000	S24	
8.001	S25	
8.002	S26	
8.003	S27	
9.000	S23	
10.000	S28	
11.000	S29	
10.001	S30	
8.004	ST3	
1.014	S31	
12.000	S33	
13.000	S34	
12.001	S35	
14.000	S32	
12.002	S36	
15.000	S37	
12.003	ST4	
1.015	S38	
16.000	S39	
17.000	S40	
16.001	ST5	
16.002	S41	
18.000	S43	
18.001	S44	
19.000	S45	
19.001	S46	
18.002	S47	
18.003	S48	

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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
20.000	S42	
21.000	S49	
22.000	S50	
16.003	ST6	
1.016	S51	
23.000	S52	
23.001	S53	

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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.
23.002	S54	15 Summer	30	+0%	100/1440 Summer			
24.000	S55	15 Summer	30	+0%				
25.000	S56	15 Summer	30	+0%				
26.000	S57	15 Winter	30	+0%	100/15 Summer			
26.001	S58	30 Summer	30	+0%	100/360 Summer			
26.002	S59	120 Summer	30	+0%	100/240 Summer			
27.000	S60	15 Summer	30	+0%	100/360 Summer			
27.001	S61	15 Summer	30	+0%	100/240 Summer			
26.003	S62	1440 Winter	30	+0%	100/60 Summer			
28.000	S68	15 Summer	30	+0%	100/15 Summer			
28.001	S69	30 Summer	30	+0%	100/15 Summer			
28.002	S70	15 Summer	30	+0%	100/15 Summer			
28.003	S71	15 Summer	30	+0%	100/15 Summer			
28.004	S72	15 Summer	30	+0%	30/15 Summer			
28.005	S73	15 Summer	30	+0%	10/15 Summer			
28.006	S74	15 Summer	30	+0%	30/15 Summer			
28.007	S75	15 Summer	30	+0%	10/15 Summer			
28.008	S76	15 Summer	30	+0%	10/15 Summer			
29.000	S77	15 Summer	30	+0%	100/15 Summer			
29.001	S78	15 Summer	30	+0%	100/15 Summer			
28.009	S79	15 Summer	30	+0%	100/15 Summer			
28.010	S80	1440 Winter	30	+0%	30/15 Summer			
26.004	S81	1440 Winter	30	+0%	10/480 Summer			
26.005	S82	1440 Winter	30	+0%	10/240 Summer			
30.000	S83	1440 Winter	30	+0%	100/15 Summer			
30.001	S84	1440 Winter	30	+0%	10/480 Summer			
31.000	S85	1440 Winter	30	+0%	30/480 Summer			
30.002	Junction	15 Summer	30	+0%				
30.003	S86	1440 Winter	30	+0%	10/120 Summer			
23.003	ST7	1440 Winter	30	+0%	2/240 Summer			
23.004	S87	1440 Winter	30	+0%	10/240 Summer			
32.000	S88	15 Summer	30	+0%	100/960 Summer			
23.005	Junction	1440 Summer	30	+0%				
1.017	S89	1440 Winter	30	+0%	2/1440 Summer			
1.018	S90	1440 Winter	30	+0%	2/240 Summer			
1.019	S91	1440 Winter	30	+0%	2/15 Summer			
1.020	S92	1440 Winter	30	+0%				

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
23.002	S54	6.446	-0.159	0.000	0.19			8.1	OK
24.000	S55	6.636	-0.119	0.000	0.09			4.4	OK
25.000	S56	7.220	-0.080	0.000	0.09			2.7	OK
26.000	S57	6.393	-0.032	0.000	0.68			4.0	OK

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
26.001	S58	6.253	-0.097	0.000	0.25			6.0	OK
26.002	S59	6.087	-0.093	0.000	0.29			6.9	OK
27.000	S60	6.244	-0.106	0.000	0.19			4.4	OK
27.001	S61	6.095	-0.100	0.000	0.25			6.0	OK
26.003	S62	5.920	-0.100	0.000	0.02			1.5	OK
28.000	S68	7.427	-0.053	0.000	0.45			4.0	OK
28.001	S69	7.131	-0.049	0.000	0.49			4.3	OK
28.002	S70	6.875	-0.055	0.000	0.71			7.7	OK
28.003	S71	6.849	-0.041	0.000	0.53			10.9	OK
28.004	S72	6.811	0.081	0.000	0.91			13.4	SURCHARGED
28.005	S73	6.772	0.112	0.000	1.57		4	18.4	SURCHARGED
28.006	S74	6.688	0.078	0.000	1.04			18.9	SURCHARGED
28.007	S75	6.599	0.089	0.000	1.01			20.3	SURCHARGED
28.008	S76	6.458	0.098	0.000	1.87			23.4	SURCHARGED
29.000	S77	6.364	-0.086	0.000	0.38			5.3	OK
29.001	S78	6.333	-0.052	0.000	0.75			11.3	OK
28.009	S79	6.211	-0.109	0.000	0.50			37.5	OK
28.010	S80	5.920	0.095	0.000	0.05			2.2	SURCHARGED
26.004	S81	5.920	0.180	0.000	0.05			3.9	SURCHARGED
26.005	S82	5.920	0.270	0.000	0.07			4.3	SURCHARGED
30.000	S83	5.920	-0.020	0.000	0.01			0.3	OK
30.001	S84	5.920	0.190	0.000	0.04			0.7	SURCHARGED
31.000	S85	5.920	0.050	0.000	0.04			0.3	SURCHARGED
30.002	Junction	5.660	0.000	0.000	1.64			21.8	SURCHARGED*
30.003	S86	5.920	0.305	0.000	0.04			1.7	SURCHARGED
23.003	ST7	5.920	0.385	0.000	0.40			12.7	SURCHARGED*
23.004	S87	5.955	0.245	0.000	0.06			9.8	SURCHARGED
32.000	S88	6.377	-0.108	0.000	0.18			10.2	OK
23.005	Junction	5.645	0.000	0.000	0.04			6.6	SURCHARGED*
1.017	S89	5.974	0.364	0.000	0.10			17.3	SURCHARGED
1.018	S90	5.989	0.439	0.000	0.04			7.3	SURCHARGED
1.019	S91	5.992	0.787	0.000	0.09			1.5	SURCHARGED
1.020	S92	4.798	-0.122	0.000	0.08			1.5	OK

PN	US/MH Name	Level Exceeded
23.002	S54	
24.000	S55	
25.000	S56	
26.000	S57	
26.001	S58	
26.002	S59	
27.000	S60	
27.001	S61	

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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
26.003	S62	
28.000	S68	
28.001	S69	
28.002	S70	
28.003	S71	
28.004	S72	
28.005	S73	
28.006	S74	
28.007	S75	
28.008	S76	
29.000	S77	
29.001	S78	
28.009	S79	
28.010	S80	
26.004	S81	
26.005	S82	
30.000	S83	
30.001	S84	
31.000	S85	
30.002	Junction	
30.003	S86	
23.003	ST7	
23.004	S87	
32.000	S88	
23.005	Junction	
1.017	S89	
1.018	S90	
1.019	S91	
1.020	S92	

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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	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	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 Storage Structures	8
Number of Online Controls	1	Number of Time/Area Diagrams	21
Number of Offline Controls	2	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 514987 102818 TQ 14987 02818
Data Type	Point
Cv (Summer)	1.000
Cv (Winter)	1.000

Margin for Flood Risk Warning (mm)	50.0
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, 240, 360, 480, 960, 1440
Return Period(s) (years)	2, 10, 30, 100
Climate Change (%)	0, 0, 0, 45

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.
1.000	S01	15 Summer	100	+45%	100/15 Summer			
1.001	S02	15 Summer	100	+45%	100/15 Summer			
1.002	S03	15 Summer	100	+45%	100/15 Summer			
1.003	S04	15 Summer	100	+45%	100/15 Summer			
1.004	S05	15 Summer	100	+45%	100/15 Summer			
1.005	S06	15 Summer	100	+45%	100/15 Summer			
1.006	S07	15 Summer	100	+45%	100/15 Summer			
1.007	S08	1440 Winter	100	+45%	100/960 Summer			
2.000	S09	1440 Winter	100	+45%	10/480 Summer			
1.008	ST1	1440 Summer	100	+45%	100/240 Summer			
3.000	S10	1440 Winter	100	+45%	100/15 Summer			
1.009	S11	1440 Winter	100	+45%	30/15 Summer			

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S01	8.209	0.039	0.000	0.38			3.4	SURCHARGED
1.001	S02	8.201	0.151	0.000	0.40			4.9	SURCHARGED
1.002	S03	8.174	0.544	0.000	1.08			12.4	SURCHARGED
1.003	S04	7.956	0.531	0.000	1.59			14.3	SURCHARGED
1.004	S05	7.386	0.211	0.000	1.15			23.2	SURCHARGED
1.005	S06	7.245	0.190	0.000	1.28			30.5	SURCHARGED
1.006	S07	6.964	0.089	0.000	1.08			39.7	SURCHARGED
1.007	S08	6.706	0.251	0.000	0.04			1.9	SURCHARGED
2.000	S09	6.706	0.851	0.000	-0.01			-0.4	SURCHARGED
1.008	ST1	6.351	0.176	0.000	0.04			2.1	SURCHARGED*
3.000	S10	6.707	0.472	0.000	0.08			1.9	SURCHARGED
1.009	S11	6.707	0.657	0.000	0.10			3.8	SURCHARGED

PN	US/MH Name	Level Exceeded
1.000	S01	
1.001	S02	
1.002	S03	
1.003	S04	
1.004	S05	
1.005	S06	
1.006	S07	
1.007	S08	
2.000	S09	
1.008	ST1	
3.000	S10	
1.009	S11	

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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.
1.010	S12	1440 Winter	100	+45%	30/15 Summer			
4.000	S13	1440 Winter	100	+45%	100/15 Summer			
1.011	S14	1440 Winter	100	+45%	30/15 Summer			
5.000	S15	1440 Winter	100	+45%	100/240 Summer			
1.012	S16	1440 Winter	100	+45%	30/15 Summer			
6.000	S17	60 Summer	100	+45%				
6.001	S18	1440 Winter	100	+45%				
6.002	S19	1440 Winter	100	+45%	100/1440 Summer			
6.003	S20	1440 Winter	100	+45%	100/480 Summer			
7.000	S21	1440 Winter	100	+45%	10/240 Summer		2/480 Winter	27
6.004	ST2	1440 Summer	100	+45%	10/240 Summer			
1.013	S22	1440 Winter	100	+45%	30/360 Summer			
8.000	S24	15 Summer	100	+45%	100/15 Summer			
8.001	S25	15 Summer	100	+45%	100/15 Summer			
8.002	S26	15 Summer	100	+45%				
8.003	S27	1440 Winter	100	+45%	100/1440 Winter			
9.000	S23	15 Summer	100	+45%				
10.000	S28	1440 Winter	100	+45%				
11.000	S29	15 Summer	100	+45%				
10.001	S30	1440 Winter	100	+45%	100/1440 Winter			
8.004	ST3	1440 Summer	100	+45%	10/240 Summer			
1.014	S31	1440 Winter	100	+45%	30/240 Summer			
12.000	S33	15 Summer	100	+45%				
13.000	S34	60 Summer	100	+45%				
12.001	S35	1440 Winter	100	+45%	100/1440 Winter			
14.000	S32	15 Summer	100	+45%				
12.002	S36	1440 Winter	100	+45%	100/1440 Summer			
15.000	S37	15 Summer	100	+45%				
12.003	ST4	1440 Summer	100	+45%	2/240 Summer			
1.015	S38	1440 Winter	100	+45%	10/360 Summer			
16.000	S39	1440 Winter	100	+45%	100/1440 Summer			
17.000	S40	1440 Winter	100	+45%	100/60 Summer			
16.001	ST5	1440 Summer	100	+45%	10/120 Summer			
16.002	S41	1440 Winter	100	+45%	2/480 Winter			
18.000	S43	15 Summer	100	+45%				
18.001	S44	1440 Winter	100	+45%	100/480 Summer			
19.000	S45	15 Summer	100	+45%				
19.001	S46	1440 Winter	100	+45%				
18.002	S47	1440 Winter	100	+45%	100/240 Summer			
18.003	S48	1440 Winter	100	+45%	100/120 Summer			
20.000	S42	1440 Winter	100	+45%	100/1440 Summer			
21.000	S49	1440 Winter	100	+45%	2/480 Winter			0
22.000	S50	15 Summer	100	+45%				
16.003	ST6	1440 Summer	100	+45%	2/240 Summer			
1.016	S51	1440 Winter	100	+45%	10/240 Summer			
23.000	S52	1440 Winter	100	+45%				
23.001	S53	1440 Winter	100	+45%	100/1440 Winter			

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.010	S12	6.709	0.749	0.000	0.14			4.6	SURCHARGED
4.000	S13	6.710	0.640	0.000	0.06			1.4	SURCHARGED
1.011	S14	6.710	0.800	0.000	0.19			5.8	SURCHARGED
5.000	S15	6.709	0.469	0.000	-0.02			-0.6	SURCHARGED
1.012	S16	6.711	0.836	0.000	0.21			6.4	SURCHARGED
6.000	S17	6.792	-0.158	0.000	0.19			8.4	OK
6.001	S18	6.713	-0.127	0.000	0.02			1.4	OK
6.002	S19	6.712	0.077	0.000	0.04			2.7	SURCHARGED
6.003	S20	6.712	0.352	0.000	0.08			3.4	SURCHARGED
7.000	S21	6.714	1.039	0.000	-0.04	1.2		-1.2	SURCHARGED
6.004	ST2	6.616	0.976	0.000	-0.15			-4.4	SURCHARGED*
1.013	S22	6.715	0.875	0.000	0.05			6.9	SURCHARGED
8.000	S24	7.282	0.047	0.000	1.37			8.9	SURCHARGED
8.001	S25	7.178	0.013	0.000	1.08			8.9	SURCHARGED
8.002	S26	6.975	-0.070	0.000	0.55			19.7	OK
8.003	S27	6.715	0.040	0.000	0.04			1.4	SURCHARGED
9.000	S23	6.837	-0.083	0.000	0.07			0.8	OK
10.000	S28	6.712	-0.083	0.000	0.02			0.8	OK
11.000	S29	7.486	-0.064	0.000	0.28			6.5	OK
10.001	S30	6.714	0.039	0.000	0.04			1.3	SURCHARGED
8.004	ST3	6.616	0.976	0.000	0.17			6.0	SURCHARGED*
1.014	S31	6.717	0.917	0.000	0.05			9.2	SURCHARGED
12.000	S33	6.839	-0.101	0.000	0.23			7.3	OK
13.000	S34	6.778	-0.072	0.000	0.18			2.0	OK
12.001	S35	6.719	0.029	0.000	0.02			1.1	SURCHARGED
14.000	S32	6.834	-0.086	0.000	0.38			13.0	OK
12.002	S36	6.718	0.148	0.000	0.08			2.6	SURCHARGED
15.000	S37	7.420	-0.080	0.000	0.09			2.4	OK
12.003	ST4	6.511	0.976	0.000	-0.50			-14.9	SURCHARGED*
1.015	S38	6.723	1.008	0.000	-0.07			-11.1	SURCHARGED
16.000	S39	6.714	0.094	0.000	0.08			0.9	SURCHARGED
17.000	S40	6.714	0.089	0.000	0.15			1.8	SURCHARGED
16.001	ST5	6.591	0.976	0.000	0.20			5.9	SURCHARGED*
16.002	S41	6.715	1.140	0.000	0.17			5.1	SURCHARGED
18.000	S43	6.776	-0.089	0.000	0.35			14.6	OK
18.001	S44	6.715	0.360	0.000	0.02			1.2	SURCHARGED
19.000	S45	6.835	-0.025	0.000	0.92			8.1	OK
19.001	S46	6.715	-0.030	0.000	0.01			0.5	OK
18.002	S47	6.715	0.525	0.000	0.04			2.2	SURCHARGED
18.003	S48	6.716	0.661	0.000	0.05			2.7	SURCHARGED
20.000	S42	6.721	0.156	0.000	0.14			2.1	SURCHARGED
21.000	S49	6.721	1.146	0.000	0.11	-3.3		3.3	SURCHARGED
22.000	S50	7.425	-0.075	0.000	0.15			4.0	OK
16.003	ST6	6.511	0.976	0.000	-0.25			-12.4	SURCHARGED*
1.016	S51	6.730	1.095	0.000	-0.13			-17.1	SURCHARGED
23.000	S52	6.715	-0.020	0.000	-0.02			-0.6	OK

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
23.001	S53	6.716	0.041	0.000	0.03			1.3	SURCHARGED

PN	US/MH Name	Level Exceeded
1.010	S12	
4.000	S13	
1.011	S14	
5.000	S15	
1.012	S16	
6.000	S17	
6.001	S18	
6.002	S19	
6.003	S20	
7.000	S21	
6.004	ST2	
1.013	S22	
8.000	S24	
8.001	S25	
8.002	S26	
8.003	S27	
9.000	S23	
10.000	S28	
11.000	S29	
10.001	S30	
8.004	ST3	
1.014	S31	
12.000	S33	
13.000	S34	
12.001	S35	
14.000	S32	
12.002	S36	
15.000	S37	
12.003	ST4	
1.015	S38	
16.000	S39	
17.000	S40	
16.001	ST5	
16.002	S41	
18.000	S43	
18.001	S44	
19.000	S45	
19.001	S46	
18.002	S47	
18.003	S48	

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

PN	US/MH Name	Level Exceeded
20.000	S42	
21.000	S49	
22.000	S50	
16.003	ST6	
1.016	S51	
23.000	S52	
23.001	S53	

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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.
23.002	S54	1440 Winter	100	+45%	100/1440 Summer			
24.000	S55	1440 Winter	100	+45%				
25.000	S56	15 Summer	100	+45%				
26.000	S57	1440 Winter	100	+45%	100/15 Summer			
26.001	S58	1440 Winter	100	+45%	100/360 Summer			
26.002	S59	1440 Winter	100	+45%	100/240 Summer			
27.000	S60	1440 Winter	100	+45%	100/360 Summer			
27.001	S61	1440 Winter	100	+45%	100/240 Summer			
26.003	S62	1440 Winter	100	+45%	100/60 Summer			
28.000	S68	15 Summer	100	+45%	100/15 Summer			
28.001	S69	15 Summer	100	+45%	100/15 Summer			
28.002	S70	15 Summer	100	+45%	100/15 Summer			
28.003	S71	15 Summer	100	+45%	100/15 Summer			
28.004	S72	15 Summer	100	+45%	30/15 Summer			
28.005	S73	15 Summer	100	+45%	10/15 Summer			
28.006	S74	15 Summer	100	+45%	30/15 Summer			
28.007	S75	15 Summer	100	+45%	10/15 Summer			
28.008	S76	15 Summer	100	+45%	10/15 Summer			
29.000	S77	1440 Winter	100	+45%	100/15 Summer			
29.001	S78	1440 Winter	100	+45%	100/15 Summer			
28.009	S79	1440 Winter	100	+45%	100/15 Summer			
28.010	S80	1440 Winter	100	+45%	30/15 Summer			
26.004	S81	1440 Winter	100	+45%	10/480 Summer			
26.005	S82	1440 Winter	100	+45%	10/240 Summer			
30.000	S83	1440 Winter	100	+45%	100/15 Summer			
30.001	S84	1440 Winter	100	+45%	10/480 Summer			
31.000	S85	1440 Winter	100	+45%	30/480 Summer			
30.002	Junction	15 Summer	100	+45%				
30.003	S86	1440 Winter	100	+45%	10/120 Summer			
23.003	ST7	1440 Summer	100	+45%	2/240 Summer			
23.004	S87	1440 Winter	100	+45%	10/240 Summer			
32.000	S88	1440 Winter	100	+45%	100/960 Summer			
23.005	Junction	15 Summer	100	+45%				
1.017	S89	1440 Winter	100	+45%	2/1440 Summer			
1.018	S90	1440 Winter	100	+45%	2/240 Summer			
1.019	S91	1440 Winter	100	+45%	2/15 Summer			
1.020	S92	1440 Winter	100	+45%				

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
23.002	S54	6.717	0.112	0.000	0.05			2.0	SURCHARGED
24.000	S55	6.704	-0.051	0.000	0.01			0.4	OK
25.000	S56	7.227	-0.073	0.000	0.16			4.9	OK
26.000	S57	6.713	0.288	0.000	0.20			1.2	SURCHARGED

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
26.001	S58	6.713	0.363	0.000	0.06			1.4	SURCHARGED
26.002	S59	6.713	0.533	0.000	0.09			2.2	SURCHARGED
27.000	S60	6.715	0.365	0.000	0.02			0.4	SURCHARGED
27.001	S61	6.714	0.519	0.000	0.02			0.5	SURCHARGED
26.003	S62	6.715	0.695	0.000	0.04			2.7	SURCHARGED
28.000	S68	7.800	0.320	0.000	0.76			6.8	SURCHARGED
28.001	S69	7.664	0.484	0.000	0.93			8.2	SURCHARGED
28.002	S70	7.530	0.600	0.000	1.04			11.3	SURCHARGED
28.003	S71	7.494	0.604	0.000	0.79			16.1	SURCHARGED
28.004	S72	7.403	0.673	0.000	1.43			21.1	SURCHARGED
28.005	S73	7.297	0.637	0.000	2.31		6	27.1	SURCHARGED
28.006	S74	7.142	0.532	0.000	1.51			27.6	SURCHARGED
28.007	S75	6.980	0.470	0.000	1.46			29.3	SURCHARGED
28.008	S76	6.714	0.354	0.000	2.60			32.5	SURCHARGED
29.000	S77	6.712	0.262	0.000	0.03			0.5	SURCHARGED
29.001	S78	6.712	0.327	0.000	0.06			0.9	SURCHARGED
28.009	S79	6.713	0.393	0.000	0.05			3.4	SURCHARGED
28.010	S80	6.716	0.891	0.000	0.10			3.9	SURCHARGED
26.004	S81	6.717	0.977	0.000	0.09			7.1	SURCHARGED
26.005	S82	6.719	1.069	0.000	0.13			7.8	SURCHARGED
30.000	S83	6.715	0.775	0.000	0.03			0.5	SURCHARGED
30.001	S84	6.714	0.984	0.000	0.08			1.2	SURCHARGED
31.000	S85	6.716	0.846	0.000	0.07			0.6	SURCHARGED
30.002	Junction	5.660	0.000	0.000	2.94			39.0	SURCHARGED*
30.003	S86	6.719	1.104	0.000	0.08			3.1	SURCHARGED
23.003	ST7	6.511	0.976	0.000	0.40			12.5	SURCHARGED*
23.004	S87	6.730	1.020	0.000	0.06			10.2	SURCHARGED
32.000	S88	6.736	0.251	0.000	0.02			1.4	SURCHARGED
23.005	Junction	5.645	0.000	0.000	0.12			20.3	SURCHARGED*
1.017	S89	6.736	1.126	0.000	0.10			16.9	SURCHARGED
1.018	S90	6.742	1.192	0.000	0.04			7.2	SURCHARGED
1.019	S91	6.743	1.538	0.000	0.12			2.0	SURCHARGED
1.020	S92	4.802	-0.118	0.000	0.10			2.0	OK

PN	US/MH Name	Level Exceeded
23.002	S54	
24.000	S55	
25.000	S56	
26.000	S57	
26.001	S58	
26.002	S59	
27.000	S60	
27.001	S61	

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

PN	US/MH Name	Level Exceeded
26.003	S62	
28.000	S68	
28.001	S69	
28.002	S70	
28.003	S71	
28.004	S72	
28.005	S73	
28.006	S74	
28.007	S75	
28.008	S76	
29.000	S77	
29.001	S78	
28.009	S79	
28.010	S80	
26.004	S81	
26.005	S82	
30.000	S83	
30.001	S84	
31.000	S85	
30.002	Junction	
30.003	S86	
23.003	ST7	
23.004	S87	
32.000	S88	
23.005	Junction	
1.017	S89	
1.018	S90	
1.019	S91	
1.020	S92	

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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	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	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 Storage Structures	8
Number of Online Controls	1	Number of Time/Area Diagrams	21
Number of Offline Controls	2	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 514987 102818 TQ 14987 02818
Data Type	Point
Cv (Summer)	1.000
Cv (Winter)	1.000

Margin for Flood Risk Warning (mm)	50.0
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, 240, 360, 480, 960, 1440
Return Period(s) (years)	30
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)
1.000	S01	15 Summer	30	+40%					8.105
1.001	S02	15 Summer	30	+40%					7.984
1.002	S03	15 Summer	30	+40%	30/15 Summer				7.771
1.003	S04	15 Summer	30	+40%	30/15 Summer				7.608
1.004	S05	15 Summer	30	+40%					7.170
1.005	S06	15 Summer	30	+40%	30/15 Summer				7.072
1.006	S07	15 Summer	30	+40%					6.836
1.007	S08	15 Summer	30	+40%					6.381
2.000	S09	1440 Winter	30	+40%	30/60 Summer				6.224
1.008	ST1	1440 Winter	30	+40%	30/960 Summer				6.224
3.000	S10	15 Summer	30	+40%	30/15 Summer				6.452
1.009	S11	1440 Winter	30	+40%	30/15 Summer				6.227

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

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	S01	-0.065	0.000	0.27			2.5	OK	
1.001	S02	-0.066	0.000	0.26			3.2	OK	
1.002	S03	0.141	0.000	0.89			10.3	SURCHARGED	
1.003	S04	0.183	0.000	1.32			11.8	SURCHARGED	
1.004	S05	-0.005	0.000	0.93			18.9	OK	
1.005	S06	0.017	0.000	1.04			24.7	SURCHARGED	
1.006	S07	-0.039	0.000	0.88			32.2	OK	
1.007	S08	-0.074	0.000	0.77			35.1	OK	
2.000	S09	0.369	0.000	0.00			-0.1	SURCHARGED	
1.008	ST1	0.049	0.000	0.02			1.0	SURCHARGED*	
3.000	S10	0.217	0.000	1.20			29.2	SURCHARGED	
1.009	S11	0.177	0.000	0.07			2.6	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.
1.010	S12	1440 Winter	30	+40%	30/15 Summer			
4.000	S13	1440 Winter	30	+40%	30/15 Summer			
1.011	S14	1440 Winter	30	+40%	30/15 Summer			
5.000	S15	1440 Winter	30	+40%				
1.012	S16	1440 Winter	30	+40%	30/15 Summer			
6.000	S17	60 Summer	30	+40%				
6.001	S18	60 Summer	30	+40%				
6.002	S19	60 Winter	30	+40%				
6.003	S20	60 Summer	30	+40%				
7.000	S21	1440 Winter	30	+40%	30/30 Summer		30/240 Summer	10
6.004	ST2	1440 Winter	30	+40%	30/30 Summer			
1.013	S22	1440 Winter	30	+40%	30/120 Summer			
8.000	S24	15 Summer	30	+40%	30/15 Summer			
8.001	S25	15 Summer	30	+40%				
8.002	S26	15 Summer	30	+40%				
8.003	S27	15 Summer	30	+40%				
9.000	S23	15 Summer	30	+40%				
10.000	S28	15 Summer	30	+40%				
11.000	S29	15 Summer	30	+40%				
10.001	S30	15 Summer	30	+40%				
8.004	ST3	1440 Winter	30	+40%	30/30 Summer			
1.014	S31	1440 Winter	30	+40%	30/60 Summer			
12.000	S33	15 Summer	30	+40%				
13.000	S34	15 Winter	30	+40%				
12.001	S35	30 Summer	30	+40%				
14.000	S32	15 Summer	30	+40%				
12.002	S36	15 Summer	30	+40%				
15.000	S37	15 Summer	30	+40%				
12.003	ST4	1440 Winter	30	+40%	30/15 Summer			
1.015	S38	1440 Winter	30	+40%	30/60 Summer			
16.000	S39	60 Summer	30	+40%				
17.000	S40	60 Summer	30	+40%				
16.001	ST5	1440 Winter	30	+40%	30/30 Summer			
16.002	S41	1440 Winter	30	+40%	30/15 Winter			
18.000	S43	15 Summer	30	+40%				
18.001	S44	1440 Winter	30	+40%				
19.000	S45	15 Summer	30	+40%				
19.001	S46	15 Summer	30	+40%				
18.002	S47	1440 Winter	30	+40%	30/960 Summer			
18.003	S48	1440 Winter	30	+40%	30/360 Summer			
20.000	S42	60 Summer	30	+40%				
21.000	S49	1440 Winter	30	+40%	30/15 Winter			0
22.000	S50	15 Summer	30	+40%				
16.003	ST6	1440 Winter	30	+40%	30/15 Summer			
1.016	S51	1440 Winter	30	+40%	30/30 Summer			
23.000	S52	15 Summer	30	+40%				
23.001	S53	15 Summer	30	+40%				

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.010	S12	6.230	0.270	0.000	0.10			3.2	SURCHARGED
4.000	S13	6.228	0.158	0.000	0.04			1.0	SURCHARGED
1.011	S14	6.232	0.322	0.000	0.13			4.0	SURCHARGED
5.000	S15	6.223	-0.017	0.000	-0.01			-0.2	OK
1.012	S16	6.235	0.360	0.000	0.15			4.5	SURCHARGED
6.000	S17	6.782	-0.168	0.000	0.14			6.3	OK
6.001	S18	6.665	-0.175	0.000	0.11			7.0	OK
6.002	S19	6.477	-0.158	0.000	0.19			13.2	OK
6.003	S20	6.241	-0.119	0.000	0.42			17.4	OK
7.000	S21	6.224	0.549	0.000	-0.03	0.9		-1.0	SURCHARGED
6.004	ST2	6.224	0.584	0.000	-0.13			-3.8	SURCHARGED*
1.013	S22	6.240	0.400	0.000	0.04			6.5	SURCHARGED
8.000	S24	7.236	0.001	0.000	1.04			6.8	SURCHARGED
8.001	S25	7.135	-0.030	0.000	0.82			6.8	OK
8.002	S26	6.963	-0.082	0.000	0.42			15.0	OK
8.003	S27	6.599	-0.076	0.000	0.77			26.6	OK
9.000	S23	6.834	-0.086	0.000	0.05			0.6	OK
10.000	S28	6.646	-0.149	0.000	0.25			12.4	OK
11.000	S29	7.481	-0.069	0.000	0.22			4.9	OK
10.001	S30	6.581	-0.094	0.000	0.62			21.5	OK
8.004	ST3	6.224	0.584	0.000	-0.13			-4.8	SURCHARGED*
1.014	S31	6.244	0.444	0.000	0.05			8.1	SURCHARGED
12.000	S33	6.832	-0.108	0.000	0.18			5.6	OK
13.000	S34	6.775	-0.075	0.000	0.12			1.3	OK
12.001	S35	6.543	-0.147	0.000	0.26			12.6	OK
14.000	S32	6.825	-0.095	0.000	0.29			9.9	OK
12.002	S36	6.478	-0.092	0.000	0.64			22.0	OK
15.000	S37	7.417	-0.083	0.000	0.07			1.9	OK
12.003	ST4	6.226	0.691	0.000	-0.42			-12.5	SURCHARGED*
1.015	S38	6.253	0.538	0.000	-0.06			-10.6	SURCHARGED
16.000	S39	6.523	-0.097	0.000	0.27			3.1	OK
17.000	S40	6.579	-0.046	0.000	0.77			9.0	OK
16.001	ST5	6.227	0.612	0.000	-0.05			-1.6	SURCHARGED*
16.002	S41	6.228	0.653	0.000	-0.04			-1.1	SURCHARGED
18.000	S43	6.767	-0.098	0.000	0.27			11.1	OK
18.001	S44	6.229	-0.126	0.000	0.01			0.7	OK
19.000	S45	6.822	-0.038	0.000	0.70			6.2	OK
19.001	S46	6.632	-0.113	0.000	0.14			6.2	OK
18.002	S47	6.229	0.039	0.000	0.03			1.3	SURCHARGED
18.003	S48	6.229	0.174	0.000	0.03			1.7	SURCHARGED
20.000	S42	6.496	-0.069	0.000	0.52			7.6	OK
21.000	S49	6.229	0.654	0.000	0.09	-2.6		2.6	SURCHARGED
22.000	S50	7.422	-0.078	0.000	0.11			3.1	OK
16.003	ST6	6.229	0.694	0.000	-0.25			-12.3	SURCHARGED*
1.016	S51	6.266	0.631	0.000	-0.13			-17.0	SURCHARGED
23.000	S52	6.574	-0.161	0.000	0.18			6.2	OK

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
23.001	S53	6.533	-0.142	0.000	0.29			10.7	OK

PN	US/MH Name	Level Exceeded
1.010	S12	
4.000	S13	
1.011	S14	
5.000	S15	
1.012	S16	
6.000	S17	
6.001	S18	
6.002	S19	
6.003	S20	
7.000	S21	
6.004	ST2	
1.013	S22	
8.000	S24	
8.001	S25	
8.002	S26	
8.003	S27	
9.000	S23	
10.000	S28	
11.000	S29	
10.001	S30	
8.004	ST3	
1.014	S31	
12.000	S33	
13.000	S34	
12.001	S35	
14.000	S32	
12.002	S36	
15.000	S37	
12.003	ST4	
1.015	S38	
16.000	S39	
17.000	S40	
16.001	ST5	
16.002	S41	
18.000	S43	
18.001	S44	
19.000	S45	
19.001	S46	
18.002	S47	
18.003	S48	

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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
20.000	S42	
21.000	S49	
22.000	S50	
16.003	ST6	
1.016	S51	
23.000	S52	
23.001	S53	

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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.
23.002	S54	15 Summer	30	+40%				
24.000	S55	15 Summer	30	+40%				
25.000	S56	15 Summer	30	+40%				
26.000	S57	30 Summer	30	+40%	30/15 Summer			
26.001	S58	30 Summer	30	+40%				
26.002	S59	1440 Winter	30	+40%	30/960 Summer			
27.000	S60	15 Summer	30	+40%				
27.001	S61	1440 Winter	30	+40%	30/960 Summer			
26.003	S62	1440 Winter	30	+40%	30/240 Summer			
28.000	S68	15 Summer	30	+40%				
28.001	S69	15 Summer	30	+40%	30/15 Summer			
28.002	S70	15 Summer	30	+40%	30/15 Summer			
28.003	S71	15 Summer	30	+40%	30/15 Summer			
28.004	S72	15 Summer	30	+40%	30/15 Summer			
28.005	S73	15 Summer	30	+40%	30/15 Summer			
28.006	S74	15 Summer	30	+40%	30/15 Summer			
28.007	S75	15 Summer	30	+40%	30/15 Summer			
28.008	S76	15 Summer	30	+40%	30/15 Summer			
29.000	S77	15 Summer	30	+40%				
29.001	S78	15 Summer	30	+40%	30/15 Summer			
28.009	S79	15 Summer	30	+40%				
28.010	S80	1440 Winter	30	+40%	30/15 Summer			
26.004	S81	1440 Winter	30	+40%	30/15 Summer			
26.005	S82	1440 Winter	30	+40%	30/15 Summer			
30.000	S83	1440 Winter	30	+40%	30/15 Summer			
30.001	S84	1440 Winter	30	+40%	30/15 Summer			
31.000	S85	1440 Winter	30	+40%	30/15 Summer			
30.002	Junction	15 Summer	30	+40%				
30.003	S86	1440 Winter	30	+40%	30/30 Summer			
23.003	ST7	1440 Winter	30	+40%	30/15 Summer			
23.004	S87	1440 Winter	30	+40%	30/60 Summer			
32.000	S88	15 Summer	30	+40%				
23.005	Junction	1440 Summer	30	+40%				
1.017	S89	1440 Winter	30	+40%	30/30 Summer			
1.018	S90	1440 Winter	30	+40%	30/15 Summer			
1.019	S91	1440 Winter	30	+40%	30/15 Summer			
1.020	S92	1440 Winter	30	+40%				

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
23.002	S54	6.459	-0.146	0.000	0.26			11.4	OK
24.000	S55	6.641	-0.114	0.000	0.13			6.2	OK
25.000	S56	7.223	-0.077	0.000	0.12			3.7	OK
26.000	S57	6.436	0.011	0.000	1.09			6.4	SURCHARGED

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
26.001	S58	6.268	-0.082	0.000	0.40			9.6	OK
26.002	S59	6.228	0.048	0.000	0.07			1.7	SURCHARGED
27.000	S60	6.252	-0.098	0.000	0.26			6.2	OK
27.001	S61	6.228	0.033	0.000	0.02			0.4	SURCHARGED
26.003	S62	6.228	0.208	0.000	0.03			2.1	SURCHARGED
28.000	S68	7.437	-0.043	0.000	0.62			5.6	OK
28.001	S69	7.244	0.064	0.000	0.71			6.3	SURCHARGED
28.002	S70	7.145	0.215	0.000	0.88			9.5	SURCHARGED
28.003	S71	7.132	0.242	0.000	0.66			13.4	SURCHARGED
28.004	S72	7.073	0.343	0.000	1.18			17.3	SURCHARGED
28.005	S73	7.003	0.343	0.000	1.94		5	22.8	SURCHARGED
28.006	S74	6.878	0.268	0.000	1.27			23.2	SURCHARGED
28.007	S75	6.747	0.237	0.000	1.24			24.9	SURCHARGED
28.008	S76	6.535	0.175	0.000	2.27			28.5	SURCHARGED
29.000	S77	6.401	-0.049	0.000	0.55			7.6	OK
29.001	S78	6.387	0.002	0.000	1.02			15.4	SURCHARGED
28.009	S79	6.230	-0.090	0.000	0.65			48.5	OK
28.010	S80	6.228	0.403	0.000	0.08			3.1	SURCHARGED
26.004	S81	6.228	0.488	0.000	0.08			5.7	SURCHARGED
26.005	S82	6.228	0.578	0.000	0.10			6.2	SURCHARGED
30.000	S83	6.229	0.289	0.000	0.02			0.4	SURCHARGED
30.001	S84	6.228	0.498	0.000	0.07			1.0	SURCHARGED
31.000	S85	6.228	0.358	0.000	0.05			0.5	SURCHARGED
30.002	Junction	5.660	0.000	0.000	2.27			30.1	SURCHARGED*
30.003	S86	6.228	0.613	0.000	0.06			2.5	SURCHARGED
23.003	ST7	6.228	0.693	0.000	0.39			12.3	SURCHARGED*
23.004	S87	6.260	0.550	0.000	0.06			10.1	SURCHARGED
32.000	S88	6.385	-0.100	0.000	0.25			14.2	OK
23.005	Junction	5.645	0.000	0.000	0.05			7.8	SURCHARGED*
1.017	S89	6.279	0.669	0.000	0.10			17.3	SURCHARGED
1.018	S90	6.293	0.743	0.000	0.04			7.2	SURCHARGED
1.019	S91	6.296	1.091	0.000	0.10			1.7	SURCHARGED
1.020	S92	4.800	-0.120	0.000	0.09			1.7	OK

PN	US/MH Name	Level Exceeded
23.002	S54	
24.000	S55	
25.000	S56	
26.000	S57	
26.001	S58	
26.002	S59	
27.000	S60	
27.001	S61	

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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
26.003	S62	
28.000	S68	
28.001	S69	
28.002	S70	
28.003	S71	
28.004	S72	
28.005	S73	
28.006	S74	
28.007	S75	
28.008	S76	
29.000	S77	
29.001	S78	
28.009	S79	
28.010	S80	
26.004	S81	
26.005	S82	
30.000	S83	
30.001	S84	
31.000	S85	
30.002	Junction	
30.003	S86	
23.003	ST7	
23.004	S87	
32.000	S88	
23.005	Junction	
1.017	S89	
1.018	S90	
1.019	S91	
1.020	S92	

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STEPHEN WILSON PARTNERSHIP LTD

Title	Union Place, Worthing	Job No:	E8513
Description :	Stage 5 Surface Water Calculations	By:	CRS
	South-East Corner	Date:	Aug-25
	8513-SWP-Z1-ZZ-CA-C-9008	Sheet No:	1

Design Data

FEH Point Data = 514987, 102818

Design Criteria

Design Storm = 100Yr + 45% Climate Change

Design Discharge Rate = 1.0 l/s

Total Site Impermeable Area = 280m^2 or 0.028Ha
Plus third party land impermeable area totaling = 620m^2 or 0.062Ha

Volumetric Runoff Coefficient (Cv) = 1.00

Discharge Point = Highway Drain before discharge into Public Sewer (0755)

Results

Please refer to attached sheets

Rainfall events included in results
50% AEP
10% AEP
3.33% AEP
1%AEP + 45%CC
3.33% + 40%CC

Plus additional flows from third party land
50% AEP
10% AEP
3.33% AEP
1%AEP + 45%CC
3.33% + 40%CC

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	6.310	0.065	97.1	0.009	6.00	0.0	0.600	o	150	Pipe/Conduit	
2.000	5.898	0.075	78.6	0.007	6.00	0.0	0.600	o	100	Pipe/Conduit	
1.001	4.698	0.060	78.3	0.005	0.00	0.0	0.600	o	150	Pipe/Conduit	
3.000	5.944	0.075	79.3	0.002	6.00	0.0	0.600	o	100	Pipe/Conduit	
1.002	2.160	0.020	108.0	0.005	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.003	20.246	0.230	88.0	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)
1.000	50.00	6.10	4.845	0.009	0.0	0.0	0.0	1.02	18.0	1.2
2.000	50.00	6.11	4.910	0.007	0.0	0.0	0.0	0.87	6.8	0.9
1.001	50.00	6.18	4.780	0.021	0.0	0.0	0.0	1.14	20.1	2.8
3.000	50.00	6.11	4.845	0.002	0.0	0.0	0.0	0.87	6.8	0.3
1.002	50.00	6.22	4.720	0.028	0.0	0.0	0.0	0.97	17.1	3.8
1.003	50.00	6.37	4.400	0.028	0.0	0.0	0.0	2.17	344.8	3.8

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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)
S95	6.950	2.105	Open Manhole	450	1.000	4.845	150				
S96	6.610	1.700	Open Manhole	450	2.000	4.910	100				
S97	6.750	1.970	Open Manhole	450	1.001	4.780	150	1.000	4.780	150	
								2.000	4.835	100	5
S98	6.650	1.805	Open Manhole	450	3.000	4.845	100				
S99	6.650	1.930	Open Manhole	1200	1.002	4.720	150	1.001	4.720	150	
								3.000	4.770	100	
H04	6.620	2.220	Open Manhole	1350	1.003	4.400	450	1.002	4.700	150	
0755	6.200	2.030	Open Manhole	1200		OUTFALL		1.003	4.170	450	

No coordinates have been specified, layout information cannot be produced.

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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)
1.000	o	150	S95	6.950	4.845	1.955	Open Manhole	450
2.000	o	100	S96	6.610	4.910	1.600	Open Manhole	450
1.001	o	150	S97	6.750	4.780	1.820	Open Manhole	450
3.000	o	100	S98	6.650	4.845	1.705	Open Manhole	450
1.002	o	150	S99	6.650	4.720	1.780	Open Manhole	1200
1.003	o	450	H04	6.620	4.400	1.770	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)
1.000	6.310	97.1	S97	6.750	4.780	1.820	Open Manhole	450
2.000	5.898	78.6	S97	6.750	4.835	1.815	Open Manhole	450
1.001	4.698	78.3	S99	6.650	4.720	1.780	Open Manhole	1200
3.000	5.944	79.3	S99	6.650	4.770	1.780	Open Manhole	1200
1.002	2.160	108.0	H04	6.620	4.700	1.770	Open Manhole	1350
1.003	20.246	88.0	0755	6.200	4.170	1.580	Open Manhole	1200

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Online Controls for Storm

Complex Manhole: S99, DS/PN: 1.002, Volume (m³): 2.3

Hydro-Brake® Optimum

Unit Reference	MD-SHE-0044-1000-1300-1000
Design Head (m)	1.300
Design Flow (l/s)	1.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	44
Invert Level (m)	4.720
Minimum Outlet Pipe Diameter (mm)	75
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.300	1.0
Flush-Flo™	0.195	0.7
Kick-Flo®	0.391	0.6
Mean Flow over Head Range	-	0.8

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)
0.100	0.7	1.200	1.0	3.000	1.5	7.000	2.1
0.200	0.7	1.400	1.0	3.500	1.6	7.500	2.2
0.300	0.7	1.600	1.1	4.000	1.7	8.000	2.3
0.400	0.6	1.800	1.2	4.500	1.8	8.500	2.4
0.500	0.7	2.000	1.2	5.000	1.8	9.000	2.4
0.600	0.7	2.200	1.3	5.500	1.9	9.500	2.5
0.800	0.8	2.400	1.3	6.000	2.0		
1.000	0.9	2.600	1.4	6.500	2.1		

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Offline Controls for Storm

Pipe Manhole: S99, DS/PN: 1.002, Loop to PN: 1.003

Diameter (m)	0.100	Roughness k (mm)	0.600
Section Type	Pipe/Conduit	Entry Loss Coefficient	0.500
Slope (1:X)	40.0	Coefficient of Contraction	0.600
Length (m)	2.000	Upstream Invert Level (m)	6.000

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Storage Structures for Storm

Bio-Retention Area Manhole: S95, DS/PN: 1.000

Invert Level (m) 4.845 Infiltration Coefficient Side (m/hr) 0.00000
Porosity 0.30 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000

Depth (m)	Area (m²)	Perimeter (m)	Depth (m)	Area (m²)	Perimeter (m)
0.000	7.5	11.000	1.401	0.0	11.000
1.400	7.5	11.000			

Bio-Retention Area Manhole: S96, DS/PN: 2.000

Invert Level (m) 4.910 Infiltration Coefficient Side (m/hr) 0.00000
Porosity 0.30 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000

Depth (m)	Area (m²)	Perimeter (m)	Depth (m)	Area (m²)	Perimeter (m)
0.000	23.5	31.000	1.401	0.0	31.000
1.400	23.5	31.000			

Bio-Retention Area Manhole: S97, DS/PN: 1.001

Invert Level (m) 4.900 Infiltration Coefficient Side (m/hr) 0.00000
Porosity 0.30 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000

Depth (m)	Area (m²)	Perimeter (m)	Depth (m)	Area (m²)	Perimeter (m)
0.000	7.5	11.000	1.401	0.0	11.000
1.400	7.5	11.000			

Bio-Retention Area Manhole: S99, DS/PN: 1.002

Invert Level (m) 4.900 Infiltration Coefficient Side (m/hr) 0.00000
Porosity 0.30 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000

Depth (m)	Area (m²)	Perimeter (m)	Depth (m)	Area (m²)	Perimeter (m)
0.000	7.5	11.000	1.401	0.0	11.000
1.400	7.5	11.000			

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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	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	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 Storage Structures	4
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	1	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 514987 102818 TQ 14987 02818
Data Type	Point
Cv (Summer)	1.000
Cv (Winter)	1.000

Margin for Flood Risk Warning (mm)	50.0
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, 240, 360, 480, 960, 1440
Return Period(s) (years)	2, 10, 30, 100
Climate Change (%)	0, 0, 0, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	S95	120 Summer	2	+0%	2/15 Summer				5.034
2.000	S96	120 Summer	2	+0%	2/30 Summer				5.035
1.001	S97	120 Summer	2	+0%	2/15 Summer				5.034
3.000	S98	120 Summer	2	+0%	2/15 Summer				5.033
1.002	S99	120 Summer	2	+0%	2/15 Summer			0	5.033
1.003	H04	240 Summer	2	+0%					4.406

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	S95	0.039	0.000	0.04		61	0.6	SURCHARGED	
2.000	S96	0.025	0.000	-0.07		48	-0.4	SURCHARGED	
1.001	S97	0.104	0.000	0.05		58	0.8	SURCHARGED	

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

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
3.000	S98	0.088	0.000	0.03			0.2	SURCHARGED	
1.002	S99	0.163	0.000	0.07	0.0	67	0.7	SURCHARGED	
1.003	H04	-0.444	0.000	0.00			0.7	OK	

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10 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 Coeffiecient	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 Storage Structures	4
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	1	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 514987 102818 TQ 14987 02818
Data Type	Point
Cv (Summer)	1.000
Cv (Winter)	1.000

Margin for Flood Risk Warning (mm)	50.0
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, 240, 360, 480, 960, 1440
Return Period(s) (years)	2, 10, 30, 100
Climate Change (%)	0, 0, 0, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	S95	120 Summer	10	+0%	2/15 Summer				5.218
2.000	S96	120 Summer	10	+0%	2/30 Summer				5.218
1.001	S97	120 Summer	10	+0%	2/15 Summer				5.217
3.000	S98	120 Summer	10	+0%	2/15 Summer				5.216
1.002	S99	120 Summer	10	+0%	2/15 Summer			0	5.216
1.003	H04	360 Winter	10	+0%					4.406

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	S95	0.223	0.000	0.07		102	1.0	SURCHARGED	
2.000	S96	0.208	0.000	-0.20		89	-1.2	SURCHARGED	
1.001	S97	0.287	0.000	0.05		104	0.7	SURCHARGED	

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

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
3.000	S98	0.271	0.000	0.05			0.3	SURCHARGED	
1.002	S99	0.346	0.000	0.06	0.0	108	0.7	SURCHARGED	
1.003	H04	-0.444	0.000	0.00			0.7	OK	

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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	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	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 Storage Structures	4
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	1	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 514987 102818 TQ 14987 02818
Data Type	Point
Cv (Summer)	1.000
Cv (Winter)	1.000

Margin for Flood Risk Warning (mm)	50.0
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, 240, 360, 480, 960, 1440
Return Period(s) (years)	2, 10, 30, 100
Climate Change (%)	0, 0, 0, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	S95	120 Winter	30	+0%	2/15 Summer				5.369
2.000	S96	120 Winter	30	+0%	2/30 Summer				5.370
1.001	S97	120 Winter	30	+0%	2/15 Summer				5.369
3.000	S98	120 Winter	30	+0%	2/15 Summer				5.368
1.002	S99	120 Winter	30	+0%	2/15 Summer			0	5.368
1.003	H04	120 Winter	30	+0%					4.406

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	S95	0.374	0.000	0.05		113	0.8	SURCHARGED	
2.000	S96	0.360	0.000	-0.14		99	-0.9	SURCHARGED	
1.001	S97	0.439	0.000	0.04		116	0.7	SURCHARGED	

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

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
3.000	S98	0.423	0.000	0.04			0.3	SURCHARGED	
1.002	S99	0.498	0.000	0.07	0.0	121	0.7	SURCHARGED	
1.003	H04	-0.444	0.000	0.00			0.7	OK	

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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	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	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 Storage Structures	4
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	1	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 514987 102818 TQ 14987 02818
Data Type	Point
Cv (Summer)	1.000
Cv (Winter)	1.000

Margin for Flood Risk Warning (mm)	50.0
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, 240, 360, 480, 960, 1440
Return Period(s) (years)	2, 10, 30, 100
Climate Change (%)	0, 0, 0, 45

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)
1.000	S95	120 Winter	100	+45%	2/15 Summer				5.963
2.000	S96	120 Winter	100	+45%	2/30 Summer				5.964
1.001	S97	120 Winter	100	+45%	2/15 Summer				5.962
3.000	S98	120 Winter	100	+45%	2/15 Summer				5.961
1.002	S99	120 Winter	100	+45%	2/15 Summer			0	5.961
1.003	H04	120 Winter	100	+45%					4.408

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

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	S95	0.968	0.000	0.09			1.4	SURCHARGED	
2.000	S96	0.954	0.000	-0.22			-1.3	SURCHARGED	
1.001	S97	1.032	0.000	0.05			0.8	SURCHARGED	
3.000	S98	1.016	0.000	0.08			0.5	SURCHARGED	
1.002	S99	1.091	0.000	0.09	0.0		1.0	SURCHARGED	
1.003	H04	-0.442	0.000	0.00			1.0	OK	

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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	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	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 Storage Structures	4
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	1	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 514987 102818 TQ 14987 02818
Data Type	Point
Cv (Summer)	1.000
Cv (Winter)	1.000

Margin for Flood Risk Warning (mm)	50.0
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, 240, 360, 480, 960, 1440
Return Period(s) (years)	30
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)
1.000	S95	120 Winter	30	+40%	30/15 Summer				5.651
2.000	S96	120 Winter	30	+40%	30/15 Summer				5.652
1.001	S97	120 Winter	30	+40%	30/15 Summer				5.650
3.000	S98	120 Winter	30	+40%	30/15 Summer				5.650
1.002	S99	120 Winter	30	+40%	30/15 Summer			0	5.649
1.003	H04	120 Winter	30	+40%					4.407

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

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	S95	0.656	0.000	0.07			1.1	SURCHARGED	
2.000	S96	0.642	0.000	-0.16			-1.0	SURCHARGED	
1.001	S97	0.720	0.000	0.04			0.7	SURCHARGED	
3.000	S98	0.705	0.000	0.06			0.4	SURCHARGED	
1.002	S99	0.779	0.000	0.08	0.0		0.9	SURCHARGED	
1.003	H04	-0.443	0.000	0.00			0.9	OK	

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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
1.000	6.310	0.065	97.1	0.019	6.00	0.0	0.600	o	150	Pipe/Conduit	
2.000	5.898	0.075	78.6	0.007	6.00	0.0	0.600	o	100	Pipe/Conduit	
1.001	4.698	0.060	78.3	0.017	0.00	0.0	0.600	o	150	Pipe/Conduit	
3.000	5.944	0.075	79.3	0.002	6.00	0.0	0.600	o	100	Pipe/Conduit	
1.002	2.160	0.020	108.0	0.017	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.003	20.246	0.230	88.0	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)
1.000	50.00	6.10	4.845	0.019	0.0	0.0	0.0	1.02	18.0	2.6
2.000	50.00	6.11	4.910	0.007	0.0	0.0	0.0	0.87	6.8	0.9
1.001	50.00	6.18	4.780	0.043	0.0	0.0	0.0	1.14	20.1	5.8
3.000	50.00	6.11	4.845	0.002	0.0	0.0	0.0	0.87	6.8	0.3
1.002	50.00	6.22	4.720	0.062	0.0	0.0	0.0	0.97	17.1	8.4
1.003	50.00	6.37	4.400	0.062	0.0	0.0	0.0	2.17	344.8	8.4

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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)
S95	6.950	2.105	Open Manhole	450	1.000	4.845	150				
S96	6.610	1.700	Open Manhole	450	2.000	4.910	100				
S97	6.750	1.970	Open Manhole	450	1.001	4.780	150	1.000	4.780	150	
								2.000	4.835	100	5
S98	6.650	1.805	Open Manhole	450	3.000	4.845	100				
S99	6.650	1.930	Open Manhole	1200	1.002	4.720	150	1.001	4.720	150	
								3.000	4.770	100	
H04	6.620	2.220	Open Manhole	1350	1.003	4.400	450	1.002	4.700	150	
0755	6.200	2.030	Open Manhole	1200		OUTFALL		1.003	4.170	450	

No coordinates have been specified, layout information cannot be produced.

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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)
1.000	o	150	S95	6.950	4.845	1.955	Open Manhole	450
2.000	o	100	S96	6.610	4.910	1.600	Open Manhole	450
1.001	o	150	S97	6.750	4.780	1.820	Open Manhole	450
3.000	o	100	S98	6.650	4.845	1.705	Open Manhole	450
1.002	o	150	S99	6.650	4.720	1.780	Open Manhole	1200
1.003	o	450	H04	6.620	4.400	1.770	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)
1.000	6.310	97.1	S97	6.750	4.780	1.820	Open Manhole	450
2.000	5.898	78.6	S97	6.750	4.835	1.815	Open Manhole	450
1.001	4.698	78.3	S99	6.650	4.720	1.780	Open Manhole	1200
3.000	5.944	79.3	S99	6.650	4.770	1.780	Open Manhole	1200
1.002	2.160	108.0	H04	6.620	4.700	1.770	Open Manhole	1350
1.003	20.246	88.0	0755	6.200	4.170	1.580	Open Manhole	1200

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Online Controls for Storm

Complex Manhole: S99, DS/PN: 1.002, Volume (m³): 2.3

Hydro-Brake® Optimum

Unit Reference	MD-SHE-0044-1000-1300-1000
Design Head (m)	1.300
Design Flow (l/s)	1.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	44
Invert Level (m)	4.720
Minimum Outlet Pipe Diameter (mm)	75
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.300	1.0
Flush-Flo™	0.195	0.7
Kick-Flo®	0.391	0.6
Mean Flow over Head Range	-	0.8

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)
0.100	0.7	1.200	1.0	3.000	1.5	7.000	2.1
0.200	0.7	1.400	1.0	3.500	1.6	7.500	2.2
0.300	0.7	1.600	1.1	4.000	1.7	8.000	2.3
0.400	0.6	1.800	1.2	4.500	1.8	8.500	2.4
0.500	0.7	2.000	1.2	5.000	1.8	9.000	2.4
0.600	0.7	2.200	1.3	5.500	1.9	9.500	2.5
0.800	0.8	2.400	1.3	6.000	2.0		
1.000	0.9	2.600	1.4	6.500	2.1		

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Offline Controls for Storm

Pipe Manhole: S99, DS/PN: 1.002, Loop to PN: 1.003

Diameter (m)	0.100	Roughness k (mm)	0.600
Section Type	Pipe/Conduit	Entry Loss Coefficient	0.500
Slope (1:X)	40.0	Coefficient of Contraction	0.600
Length (m)	2.000	Upstream Invert Level (m)	6.000

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Storage Structures for Storm

Bio-Retention Area Manhole: S95, DS/PN: 1.000

Invert Level (m) 4.845 Infiltration Coefficient Side (m/hr) 0.00000
Porosity 0.30 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000

Depth (m)	Area (m²)	Perimeter (m)	Depth (m)	Area (m²)	Perimeter (m)
0.000	7.5	11.000	1.401	0.0	11.000
1.400	7.5	11.000			

Bio-Retention Area Manhole: S96, DS/PN: 2.000

Invert Level (m) 4.910 Infiltration Coefficient Side (m/hr) 0.00000
Porosity 0.30 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000

Depth (m)	Area (m²)	Perimeter (m)	Depth (m)	Area (m²)	Perimeter (m)
0.000	23.5	31.000	1.401	0.0	31.000
1.400	23.5	31.000			

Bio-Retention Area Manhole: S97, DS/PN: 1.001

Invert Level (m) 4.900 Infiltration Coefficient Side (m/hr) 0.00000
Porosity 0.30 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000

Depth (m)	Area (m²)	Perimeter (m)	Depth (m)	Area (m²)	Perimeter (m)
0.000	7.5	11.000	1.401	0.0	11.000
1.400	7.5	11.000			

Bio-Retention Area Manhole: S99, DS/PN: 1.002

Invert Level (m) 4.900 Infiltration Coefficient Side (m/hr) 0.00000
Porosity 0.30 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000

Depth (m)	Area (m²)	Perimeter (m)	Depth (m)	Area (m²)	Perimeter (m)
0.000	7.5	11.000	1.401	0.0	11.000
1.400	7.5	11.000			

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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	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	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 Storage Structures	4
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	1	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 514987 102818 TQ 14987 02818
Data Type	Point
Cv (Summer)	1.000
Cv (Winter)	1.000

Margin for Flood Risk Warning (mm)	50.0
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, 240, 360, 480, 960, 1440
Return Period(s) (years)	2, 10, 30, 100
Climate Change (%)	0, 0, 0, 45

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	S95	240 Summer	2	+0%	2/15 Summer			
2.000	S96	240 Summer	2	+0%	2/15 Summer	100/60 Summer		
1.001	S97	240 Summer	2	+0%	2/15 Summer			
3.000	S98	240 Summer	2	+0%	2/15 Summer			
1.002	S99	240 Summer	2	+0%	2/15 Summer		30/60 Summer	28
1.003	H04	240 Summer	2	+0%				

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S95	5.406	0.411	0.000	0.05		163	0.8	SURCHARGED
2.000	S96	5.406	0.396	0.000	-0.25		148	-1.5	SURCHARGED
1.001	S97	5.405	0.475	0.000	0.04		165	0.6	SURCHARGED

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
3.000	S98	5.404	0.459	0.000	0.02			0.1	SURCHARGED
1.002	S99	5.404	0.534	0.000	0.07	0.0	170	0.8	SURCHARGED
1.003	H04	4.406	-0.444	0.000	0.00			0.8	OK

PN	US/MH Name	Level Exceeded
1.000	S95	
2.000	S96	1
1.001	S97	
3.000	S98	
1.002	S99	
1.003	H04	

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10 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 Coeffiecient	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 Storage Structures	4
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	1	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 514987 102818 TQ 14987 02818
Data Type	Point
Cv (Summer)	1.000
Cv (Winter)	1.000

Margin for Flood Risk Warning (mm)	50.0
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, 240, 360, 480, 960, 1440
Return Period(s) (years)	2, 10, 30, 100
Climate Change (%)	0, 0, 0, 45

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.
1.000	S95	120 Winter	10	+0%	2/15 Summer			
2.000	S96	120 Winter	10	+0%	2/15 Summer	100/60 Summer		
1.001	S97	120 Winter	10	+0%	2/15 Summer			
3.000	S98	120 Winter	10	+0%	2/15 Summer			
1.002	S99	120 Winter	10	+0%	2/15 Summer		30/60 Summer	28
1.003	H04	120 Winter	10	+0%				

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S95	5.847	0.852	0.000	0.08			1.2	SURCHARGED
2.000	S96	5.847	0.837	0.000	-0.36			-2.2	SURCHARGED
1.001	S97	5.846	0.916	0.000	0.05			0.7	SURCHARGED
3.000	S98	5.845	0.900	0.000	0.03			0.2	SURCHARGED
1.002	S99	5.845	0.975	0.000	0.09	0.0		0.9	SURCHARGED
1.003	H04	4.407	-0.443	0.000	0.00			0.9	OK

PN	US/MH Name	Level Exceeded
1.000	S95	
2.000	S96	1
1.001	S97	
3.000	S98	
1.002	S99	
1.003	H04	

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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	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	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 Storage Structures	4
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	1	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 514987 102818 TQ 14987 02818
Data Type	Point
Cv (Summer)	1.000
Cv (Winter)	1.000

Margin for Flood Risk Warning (mm)	50.0
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, 240, 360, 480, 960, 1440
Return Period(s) (years)	2, 10, 30, 100
Climate Change (%)	0, 0, 0, 45

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.
1.000	S95	120 Winter	30	+0%	2/15 Summer			
2.000	S96	120 Winter	30	+0%	2/15 Summer	100/60 Summer		
1.001	S97	120 Winter	30	+0%	2/15 Summer			
3.000	S98	120 Winter	30	+0%	2/15 Summer			
1.002	S99	120 Winter	30	+0%	2/15 Summer		30/60 Summer	28
1.003	H04	120 Winter	30	+0%				

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S95	6.050	1.055	0.000	0.10			1.5	SURCHARGED
2.000	S96	6.050	1.040	0.000	-0.47			-2.9	SURCHARGED
1.001	S97	6.048	1.118	0.000	0.15			2.4	SURCHARGED
3.000	S98	6.044	1.099	0.000	0.03			0.2	SURCHARGED
1.002	S99	6.043	1.173	0.000	0.09	2.4		1.0	SURCHARGED
1.003	H04	4.427	-0.423	0.000	0.01			3.4	OK

PN	US/MH Name	Level Exceeded
1.000	S95	
2.000	S96	1
1.001	S97	
3.000	S98	
1.002	S99	
1.003	H04	

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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	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	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 Storage Structures	4
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	1	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 514987 102818 TQ 14987 02818
Data Type	Point
Cv (Summer)	1.000
Cv (Winter)	1.000

Margin for Flood Risk Warning (mm)	50.0
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, 240, 360, 480, 960, 1440
Return Period(s) (years)	2, 10, 30, 100
Climate Change (%)	0, 0, 0, 45

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.
1.000	S95	60 Summer	100	+45%	2/15 Summer			
2.000	S96	60 Summer	100	+45%	2/15 Summer	100/60 Summer		
1.001	S97	60 Summer	100	+45%	2/15 Summer			
3.000	S98	60 Summer	100	+45%	2/15 Summer			
1.002	S99	60 Summer	100	+45%	2/15 Summer		30/60 Summer	28
1.003	H04	60 Summer	100	+45%				

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S95	6.615	1.620	0.000	0.72			10.9	SURCHARGED
2.000	S96	6.610	1.600	0.002	-1.71			-10.4	FLOOD
1.001	S97	6.596	1.666	0.000	1.07			16.4	SURCHARGED
3.000	S98	6.533	1.588	0.000	0.17			1.0	SURCHARGED
1.002	S99	6.529	1.659	0.000	0.11	20.3		1.2	SURCHARGED
1.003	H04	4.484	-0.366	0.000	0.08			21.4	OK

PN	US/MH Name	Level Exceeded
1.000	S95	
2.000	S96	1
1.001	S97	
3.000	S98	
1.002	S99	
1.003	H04	

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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	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	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 Storage Structures	4
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	1	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 514987 102818 TQ 14987 02818
Data Type	Point
Cv (Summer)	1.000
Cv (Winter)	1.000

Margin for Flood Risk Warning (mm)	50.0
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, 240, 360, 480, 960, 1440
Return Period(s) (years)	30
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.
1.000	S95	120 Summer	30	+40%	30/15 Summer			
2.000	S96	120 Summer	30	+40%	30/15 Summer			
1.001	S97	120 Summer	30	+40%	30/15 Summer			
3.000	S98	120 Summer	30	+40%	30/15 Summer			
1.002	S99	120 Summer	30	+40%	30/15 Summer		30/30 Summer	15
1.003	H04	120 Summer	30	+40%				

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

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S95	6.158	1.163	0.000	0.31			4.7	SURCHARGED
2.000	S96	6.157	1.147	0.000	-1.02			-6.2	SURCHARGED
1.001	S97	6.149	1.219	0.000	0.51			7.8	SURCHARGED
3.000	S98	6.136	1.191	0.000	0.09			0.5	SURCHARGED
1.002	S99	6.134	1.264	0.000	0.10	10.2		1.0	SURCHARGED
1.003	H04	4.459	-0.391	0.000	0.04			11.2	OK

PN	US/MH Name	Level Exceeded
1.000	S95	
2.000	S96	
1.001	S97	
3.000	S98	
1.002	S99	
1.003	H04	

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