

APPENDIX E

SURFACE WATER DRAINAGE STRATEGY

JNP Group		Page 1
3rd Floor, Marlborough House 48 Holly Walk Leamington Spa CV32 4XP	Officers' Meadow, Shenfield Sustainable Drainage Strategy Greenfield Runoff Rates	
Date 17/08/2023 19:29 File C86054-JNP-XX-XX-CA-C-9001 GR...	Designed by JNP Group Checked by RM	
Micro Drainage		
Source Control 2020.1.3		

ICP SUDS Mean Annual Flood

Input

Return Period (years) 2 SAAR (mm) 594 Urban 0.000
Area (ha) 1.000 Soil 0.450 Region Number Region 6

Results 1/s

QBAR Rural 3.6
QBAR Urban 3.6

Q2 years 3.2

Q1 year 3.1
Q30 years 8.2
Q100 years 11.6

Greenfield Runoff Volume

FEH Data

Return Period (years)	2
Storm Duration (mins)	360
FEH Rainfall Version	2013
Site Location	GB 561730 195989 TQ 61730 95989
Data Type	Point
Areal Reduction Factor	1.00
Area (ha)	1.000
SAAR (mm)	594
CWI	85.680
SPR Host	57.503
URBEXT (1990)	0.0000

Results

Percentage Runoff (%)	47.67
Greenfield Runoff Volume (m³)	138.461

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3rd Floor, Marlborough House 48 Holly Walk Leamington Spa CV32 4XP	Officers' Meadow, Shenfield Sustainable Drainage Strategy Greenfield Runoff Volume	
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Micro Drainage	Source Control 2020.1.3	

Greenfield Runoff Volume

FEH Data

Return Period (years)	30
Storm Duration (mins)	360
FEH Rainfall Version	2013
Site Location	GB 561730 195989 TQ 61730 95989
Data Type	Point
Areal Reduction Factor	1.00
Area (ha)	1.000
SAAR (mm)	594
CWI	85.680
SPR Host	57.503
URBEXT (1990)	0.0000

Results

Percentage Runoff (%)	51.29
Greenfield Runoff Volume (m³)	305.926

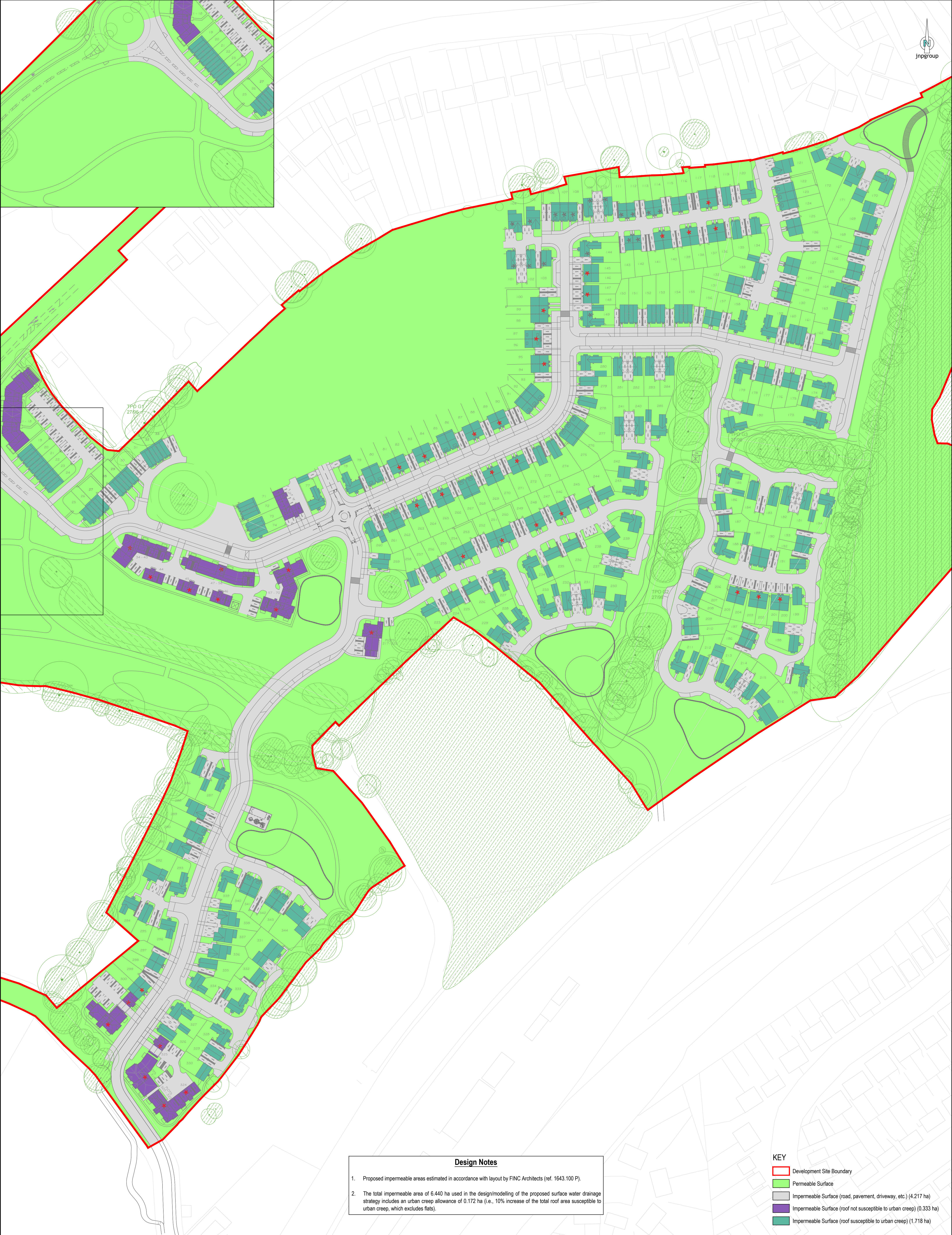
Greenfield Runoff Volume

FEH Data

Return Period (years)	100
Storm Duration (mins)	360
FEH Rainfall Version	2013
Site Location	GB 561730 195989 TQ 61730 95989
Data Type	Point
Areal Reduction Factor	1.00
Area (ha)	1.000
SAAR (mm)	594
CWI	85.680
SPR Host	57.503
URBEXT (1990)	0.0000

Results

Percentage Runoff (%)	53.89
Greenfield Runoff Volume (m³)	444.859



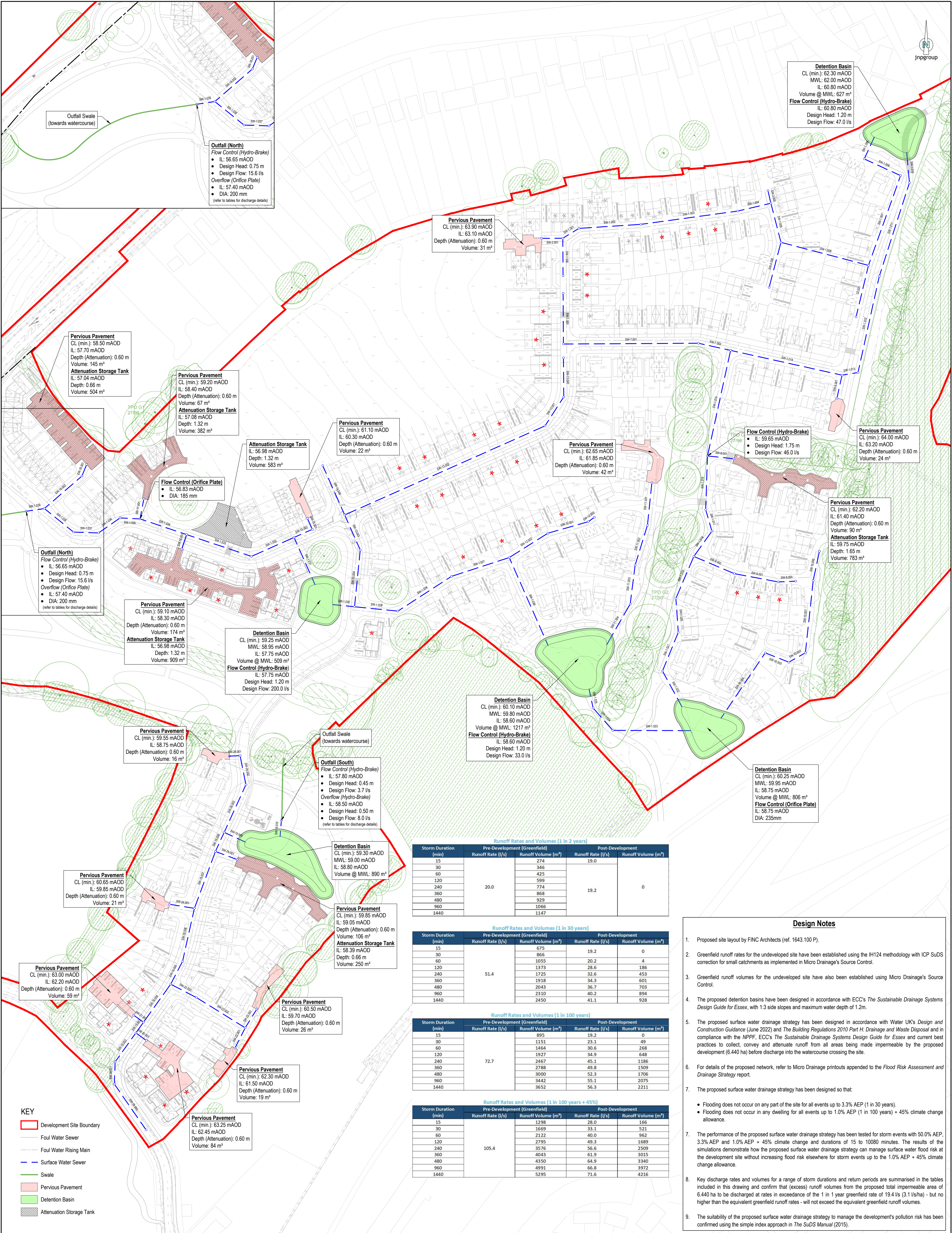
Design Notes

1. Proposed impermeable areas estimated in accordance with layout by FINC Architects (ref. 1643.100 P).

2. The total impermeable area of 6.440 ha used in the design/modelling of the proposed surface water drainage strategy includes an urban creep allowance of 0.172 ha (i.e., 10% increase of the total roof area susceptible to urban creep, which excludes flats).

KEY

- Development Site Boundary
- Permeable Surface
- Impermeable Surface (road, pavement, driveway, etc.) (4.217 ha)
- Impermeable Surface (roof not susceptible to urban creep) (0.333 ha)
- Impermeable Surface (roof susceptible to urban creep) (1.718 ha)



Runoff Rates and Volumes (1 in 2 years)				
Storm Duration (min)	Pre-Development (Greenfield)		Post-Development	
	Runoff Rate (l/s)	Runoff Volume (m³)	Runoff Rate (l/s)	Runoff Volume (m³)
15	20.0	274	19.0	0
30		346		
60		425		
120		599		
240		774		
360		868		
480		929		
960		1066		
1440		1147		
15	51.4	675	19.2	0
30		866		
60		1055		
120		1373		
240		1725		
360		1918		
480		2043		
960		2310		
1440		2450		

Runoff Rates and Volumes (1 in 30 years)				
Storm Duration (min)	Pre-Development (Greenfield)		Post-Development	
	Runoff Rate (l/s)	Runoff Volume (m³)	Runoff Rate (l/s)	Runoff Volume (m³)
15	51.4	675	19.2	0
30		866		
60		1055		
120		1373		
240		1725		
360		1918		
480		2043		
960		2310		
1440		2450		

Runoff Rates and Volumes (1 in 100 years)				
Storm Duration (min)	Pre-Development (Greenfield)		Post-Development	
	Runoff Rate (l/s)	Runoff Volume (m³)	Runoff Rate (l/s)	Runoff Volume (m³)
15	72.7	895	19.2	0
30		1151		
60		1464		
120		1927		
240		2467		
360		2788		
480		3000		
960		3442		
1440		3652		

Runoff Rates and Volumes (1 in 100 years + 45%)				
Storm Duration (min)	Pre-Development (Greenfield)		Post-Development	
	Runoff Rate (l/s)	Runoff Volume (m³)	Runoff Rate (l/s)	Runoff Volume (m³)
15	105.4	1298	28.0	166
30		1669		
60		2122		
120		2795		
240		3576		
360		4043		
480		4350		
960		4991		
1440		5295		

Design Notes

- Proposed site layout by FINC Architects (ref. 1643.100 P).
- Greenfield runoff rates for the undeveloped site have been established using the IH124 methodology with ICP SuDS correction for small catchments as implemented in Micro Drainage's Source Control.
- Greenfield runoff volumes for the undeveloped site have also been established using Micro Drainage's Source Control.
- The proposed detention basins have been designed in accordance with ECC's *The Sustainable Drainage Systems Design Guide* for Essex, with 1:3 side slopes and maximum water depth of 1.2m.
- The proposed surface water drainage strategy has been designed in accordance with Water UK's *Design and Construction Guidance* (June 2022) and *The Building Regulations 2010 Part H: Drainage and Waste Disposal* and in compliance with the NPPF, ECC's *The Sustainable Drainage Systems Design Guide* for Essex and current best practices to collect, convey and attenuate runoff from all areas being made impermeable by the proposed development (6.440 ha) before discharge into the watercourse crossing the site.
- For details of the proposed network, refer to Micro Drainage printouts appended to the *Flood Risk Assessment and Drainage Strategy* report.
- The proposed surface water drainage strategy has been designed so that:
 - Flooding does not occur on any part of the site for all events up to 3.3% AEP (1 in 30 years).
 - Flooding does not occur in any dwelling for all events up to 1.0% AEP (1 in 100 years) + 45% climate change allowance.
- The performance of the proposed surface water drainage strategy has been tested for storm events with 50.0% AEP, 3.3% AEP and 1.0% AEP + 45% climate change and durations of 15 to 10080 minutes. The results of the simulations demonstrate how the proposed surface water drainage strategy can manage surface water flood risk at the development site without increasing flood risk elsewhere for storm events up to the 1.0% AEP + 45% climate change allowance.
- Key discharge rates and volumes for a range of storm durations and return periods are summarised in the tables included in this drawing and confirm that (excess) runoff volumes from the proposed total impermeable area of 6.440 ha to be discharged at rates in excess of the 1 in 1 year greenfield rate of 19.4 l/s (3.1 l/s/ha) - but no higher than the equivalent greenfield runoff rates - will not exceed the equivalent greenfield runoff volumes.
- The suitability of the proposed surface water drainage strategy to manage the development's pollution risk has been confirmed using the simple index approach in *The SuDS Manual* (2015).

General Notes

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Client: Croudace Homes		 Amersham • Brighouse • Bristol • Glasgow Hartlepool • Sheffield • Warwick www.jnpgrp.co.uk
Job: Officers' Meadow, Shenfield		
Title: Sustainable Drainage Strategy Surface Water		
Revision: P02 05/09/2023 Updated site layout (Rev P)		Project - Originator - Volume/System - Level/Location - Type - Discipline - Number C86054 - JNP-XX-XX-DR-C-2002
Revision: P01 17/08/2023 First Issue		
Revision: P00 05/09/2023 First Issue		
Scale: 1:1000		Revision: P02
S2 - Suitable for Information		Document/Revision Number

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Micro Drainage	Network 2020.1.3	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Surface Water

Pipe Sizes Standard Manhole Sizes STANDARD

FEH Rainfall Model	
Return Period (years)	2
FEH Rainfall Version	2013
Site Location	GB 561730 195989 TQ 61730 95989
Data Type	Point
Maximum Rainfall (mm/hr)	550
Maximum Time of Concentration (mins)	500
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	1.000
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.000
Maximum Backdrop Height (m)	0.001
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Network Design Table for Surface Water

- Indicates pipe length does not match coordinates

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
SW-1.000	22.659	0.100	226.6	0.073	5.00	0.0	0.600	o	300	Pipe/Conduit	
SW-2.000	1.000	0.050	20.0	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit	
SW-2.001	12.761	0.700	18.2	0.094	0.00	0.0	0.600	o	150	Pipe/Conduit	
SW-1.001	11.381	0.100	113.8	0.030	0.00	0.0	0.600	o	375	Pipe/Conduit	
SW-1.002	37.567	0.100	375.7	0.090	0.00	0.0	0.600	o	450	Pipe/Conduit	
SW-1.003	59.035	0.250	236.1	0.182	0.00	0.0	0.600	o	525	Pipe/Conduit	
SW-1.004	20.636	0.250	82.5	0.028	0.00	0.0	0.600	o	525	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)
SW-1.000	65.02	5.36	62.350	0.073	0.0	0.0	0.0	1.04	73.5	17.1
SW-2.000	66.87	5.01	63.150	0.000	0.0	0.0	0.0	2.26	40.0	0.0
SW-2.001	66.45	5.09	63.100	0.000	5.0	0.0	0.0	2.37	41.9	5.0
SW-1.001	64.43	5.47	62.175	0.103	5.0	0.0	0.0	1.70	187.5	29.0
SW-1.002	61.41	6.08	62.000	0.193	5.0	0.0	0.0	1.04	165.9	47.8
SW-1.003	58.29	6.75	61.825	0.375	5.0	0.0	0.0	1.45	314.6	83.9
SW-1.004	57.68	6.89	61.575	0.403	5.0	0.0	0.0	2.47	534.0	88.9

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Micro Drainage	Network 2020.1.3	

Network Design Table for Surface Water

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
SW-3.000	7.803	0.100	78.0	0.060	5.00	0.0	0.600	o	300	Pipe/Conduit	
SW-1.005	24.402	0.148	164.9	0.042	0.00	0.0	0.600	o	600	Pipe/Conduit	
SW-4.000	28.133	0.548	51.3	0.101	5.00	0.0	0.600	o	300	Pipe/Conduit	
SW-1.006	54.700	0.109	500.0	0.014	0.00	0.0	0.600	o	600	Pipe/Conduit	
SW-5.000	32.023	0.604	53.0	0.143	5.00	0.0	0.600	o	300	Pipe/Conduit	
SW-1.007	57.614	0.115	500.0	0.105	0.00	0.0	0.600	o	600	Pipe/Conduit	
SW-1.008	24.134	0.048	500.0	0.048	0.00	0.0	0.600	o	600	Pipe/Conduit	
SW-1.009	14.485#	0.029	500.0	0.052	0.00	0.0	0.600	o	600	Pipe/Conduit	
SW-1.010	18.279	0.074	247.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
SW-1.011	59.329	0.245	242.1	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
SW-1.012	59.630	0.246	242.1	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
SW-1.013	9.781	0.040	242.1	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
SW-6.000	1.000	0.050	20.0	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit	
SW-6.001	14.244	2.856	5.0	0.078	0.00	0.0	0.600	o	150	Pipe/Conduit	
SW-1.014	68.998	0.215	321.0	0.176	0.00	0.0	0.600	o	375	Pipe/Conduit	
SW-7.000	30.632	0.150	204.2	0.123	5.00	0.0	0.600	o	375	Pipe/Conduit	
SW-7.001	81.599	0.500	163.2	0.231	0.00	0.0	0.600	o	450	Pipe/Conduit	
SW-7.002	19.911	1.771	11.2	0.045	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)
SW-3.000	66.54	5.07	61.650	0.060	0.0	0.0	0.0	1.78	125.9	14.4
SW-1.005	56.77	7.11	61.250	0.505	5.0	0.0	0.0	1.89	535.5	108.5
SW-4.000	65.81	5.21	61.950	0.101	0.0	0.0	0.0	2.20	155.5	24.0
SW-1.006	53.48	7.95	61.102	0.620	5.0	0.0	0.0	1.08	306.0	124.7
SW-5.000	65.63	5.25	62.050	0.143	0.0	0.0	0.0	2.16	153.0	33.9
SW-1.007	50.43	8.84	60.993	0.868	5.0	0.0	0.0	1.08	306.0	163.1
SW-1.008	49.27	9.21	60.877	0.916	5.0	0.0	0.0	1.08	306.0	168.0
SW-1.009	48.60	9.43	60.829	0.968	5.0	0.0	0.0	1.08	306.0	174.9
SW-1.010	65.32	5.31	60.800	0.000	47.0	0.0	0.0	1.00	70.4	47.0
SW-1.011	60.39	6.29	60.726	0.000	47.0	0.0	0.0	1.01	71.1	47.0
SW-1.012	56.07	7.28	60.481	0.000	47.0	0.0	0.0	1.01	71.1	47.0
SW-1.013	55.42	7.44	60.235	0.000	47.0	0.0	0.0	1.01	71.1	47.0
SW-6.000	66.87	5.01	63.250	0.000	0.0	0.0	0.0	2.26	40.0	0.0
SW-6.001	66.65	5.05	63.200	0.000	5.0	0.0	0.0	4.54	80.3	5.0
SW-1.014	51.27	8.58	60.119	0.176	52.0	0.0	0.0	1.01	111.1	84.6
SW-7.000	64.80	5.40	62.325	0.123	0.0	0.0	0.0	1.26	139.6	28.8
SW-7.001	60.53	6.26	62.100	0.354	0.0	0.0	0.0	1.59	252.7	77.4
SW-7.002	60.27	6.31	61.600	0.399	0.0	0.0	0.0	6.09	968.4	86.8

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Micro Drainage		Network 2020.1.3	

Network Design Table for Surface Water

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
SW-1.015	65.299	0.180	361.8	0.077	0.00	0.0	0.600	o	450	Pipe/Conduit	
SW-8.000	1.000	0.050	20.0	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit	
SW-8.001	16.025	1.451	11.0	0.125	0.00	0.0	0.600	o	150	Pipe/Conduit	
SW-1.016	32.478	0.090	361.8	0.051	0.00	0.0	0.600	o	450	Pipe/Conduit	
SW-1.017	13.517	0.109	123.9	0.021	0.00	0.0	0.600	o	450	Pipe/Conduit	
SW-1.018	18.773	0.250	75.1	0.029	0.00	0.0	0.600	o	450	Pipe/Conduit	
SW-9.000	10.531	0.250	42.1	0.036	5.00	0.0	0.600	o	225	Pipe/Conduit	
SW-9.001	27.022	0.200	135.1	0.087	0.00	0.0	0.600	o	300	Pipe/Conduit	
SW-9.002	26.570	0.200	132.9	0.027	0.00	0.0	0.600	o	300	Pipe/Conduit	
SW-1.019	27.596	0.069	402.0	0.038	0.00	0.0	0.600	o	450	Pipe/Conduit	
SW-1.020	20.536	0.051	402.0	0.037	0.00	0.0	0.600	o	450	Pipe/Conduit	
SW-1.021	25.267	0.063	402.0	0.022	0.00	0.0	0.600	o	450	Pipe/Conduit	
SW-1.022	24.515#	0.068	361.8	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
SW-10.000	17.969	0.150	119.8	0.038	5.00	0.0	0.600	o	225	Pipe/Conduit	
SW-10.001	43.972	0.178	247.0	0.053	0.00	0.0	0.600	o	300	Pipe/Conduit	
SW-10.002	11.507	0.048	242.1	0.019	0.00	0.0	0.600	o	300	Pipe/Conduit	
SW-10.003	15.311	0.063	242.1	0.011	0.00	0.0	0.600	o	300	Pipe/Conduit	
SW-10.004	47.638#	1.061	44.9	0.028	0.00	0.0	0.600	o	300	Pipe/Conduit	
SW-1.023	47.190	0.092	512.9	0.137	0.00	0.0	0.600	o	375	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)
SW-1.015	48.09	9.61	59.829	0.652	52.0	0.0	0.0	1.06	169.0	165.2
SW-8.000	66.87	5.01	61.450	0.000	0.0	0.0	0.0	2.26	40.0	0.0
SW-8.001	66.46	5.09	61.400	0.000	5.0	0.0	0.0	3.05	53.9	5.0
SW-1.016	64.25	5.51	59.649	0.000	46.0	0.0	0.0	1.06	169.0	46.0
SW-1.017	63.62	5.63	59.559	0.021	46.0	0.0	0.0	1.83	290.3	50.8
SW-1.018	62.94	5.77	59.450	0.050	46.0	0.0	0.0	2.35	373.5	57.4
SW-9.000	66.47	5.09	60.075	0.036	0.0	0.0	0.0	2.02	80.4	8.6
SW-9.001	64.72	5.42	59.750	0.123	0.0	0.0	0.0	1.35	95.5	28.7
SW-9.002	63.04	5.75	59.550	0.150	0.0	0.0	0.0	1.36	96.3	34.1
SW-1.019	60.71	6.22	59.200	0.238	46.0	0.0	0.0	1.01	160.3	98.2
SW-1.020	59.13	6.56	59.131	0.275	46.0	0.0	0.0	1.01	160.3	104.7
SW-1.021	57.30	6.98	59.080	0.297	46.0	0.0	0.0	1.01	160.3	107.5
SW-1.022	55.72	7.36	59.017	0.297	46.0	0.0	0.0	1.06	169.1	107.5
SW-10.000	65.61	5.25	60.325	0.038	0.0	0.0	0.0	1.19	47.5	9.0
SW-10.001	61.84	5.99	60.100	0.091	0.0	0.0	0.0	1.00	70.4	20.3
SW-10.002	60.92	6.18	59.922	0.110	0.0	0.0	0.0	1.01	71.1	24.2
SW-10.003	59.73	6.43	59.874	0.121	0.0	0.0	0.0	1.01	71.1	26.1
SW-10.004	58.21	6.77	59.811	0.149	0.0	0.0	0.0	2.35	166.3	31.3
SW-1.023	61.82	5.99	58.750	0.000	54.0	0.0	0.0	0.79	87.6	54.0

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Micro Drainage	Network 2020.1.3	

Network Design Table for Surface Water

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
SW-1.024	18.014	0.035	514.7	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
SW-1.025	11.669#	0.023	507.3	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
SW-11.000	1.000	0.050	20.0	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit	
SW-11.001	25.810	1.050	24.6	0.113	0.00	0.0	0.600	o	150	Pipe/Conduit	
SW-11.002	25.209	0.650	38.8	0.022	0.00	0.0	0.600	o	150	Pipe/Conduit	
SW-11.003	23.666	0.500	47.3	0.023	0.00	0.0	0.600	o	225	Pipe/Conduit	
SW-11.004	28.322#	0.975	29.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
SW-1.026	57.986	0.234	247.8	0.178	0.00	0.0	0.600	o	300	Pipe/Conduit	
SW-12.000	4.556	0.050	91.1	0.064	5.00	0.0	0.600	o	225	Pipe/Conduit	
SW-12.001	25.350	0.250	101.4	0.063	0.00	0.0	0.600	o	300	Pipe/Conduit	
SW-12.002	27.598	2.184	12.6	0.066	0.00	0.0	0.600	o	300	Pipe/Conduit	
SW-1.027	36.672	0.114	321.0	0.104	0.00	0.0	0.600	o	375	Pipe/Conduit	
SW-1.028	38.649	0.094	412.2	0.080	0.00	0.0	0.600	o	450	Pipe/Conduit	
SW-1.029	26.315	0.065	404.0	0.044	0.00	0.0	0.600	o	450	Pipe/Conduit	
SW-13.000	23.644	0.300	78.8	0.107	5.00	0.0	0.600	o	300	Pipe/Conduit	
SW-13.001	20.798	0.200	104.0	0.081	0.00	0.0	0.600	o	300	Pipe/Conduit	
SW-13.002	132.504	2.090	63.4	0.452	0.00	0.0	0.600	o	525	Pipe/Conduit	
SW-14.000	32.620	0.190	171.6	0.042	5.00	0.0	0.600	o	225	Pipe/Conduit	
SW-13.003	23.145	0.260	89.1	0.033	0.00	0.0	0.600	o	525	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)
SW-1.024	60.01	6.37	58.658	0.000	54.0	0.0	0.0	0.79	87.5	54.0
SW-1.025	58.90	6.61	58.623	0.000	54.0	0.0	0.0	0.80	88.1	54.0
SW-11.000	66.87	5.01	61.900	0.000	5.0	0.0	0.0	2.26	40.0	5.0
SW-11.001	65.82	5.21	61.850	0.000	5.0	0.0	0.0	2.04	36.0	5.0
SW-11.002	64.46	5.47	60.800	0.022	5.0	0.0	0.0	1.62	28.6	10.1
SW-11.003	63.39	5.68	60.075	0.045	5.0	0.0	0.0	1.91	75.8	15.3
SW-11.004	62.42	5.87	59.575	0.045	5.0	0.0	0.0	2.44	96.9	15.3
SW-1.026	61.91	5.97	58.600	0.000	33.0	0.0	0.0	0.99	70.3	33.0
SW-12.000	66.63	5.06	60.925	0.064	0.0	0.0	0.0	1.37	54.5	15.4
SW-12.001	65.21	5.33	60.800	0.127	0.0	0.0	0.0	1.56	110.4	29.9
SW-12.002	64.67	5.43	60.550	0.193	0.0	0.0	0.0	4.45	314.3	45.1
SW-1.027	59.05	6.58	58.291	0.297	33.0	0.0	0.0	1.01	111.1	96.3
SW-1.028	56.27	7.23	58.102	0.377	33.0	0.0	0.0	1.00	158.3	109.6
SW-1.029	54.55	7.66	58.008	0.421	33.0	0.0	0.0	1.01	159.9	115.9
SW-13.000	65.76	5.22	62.150	0.107	0.0	0.0	0.0	1.77	125.3	25.4
SW-13.001	64.58	5.45	61.850	0.188	0.0	0.0	0.0	1.54	109.0	43.8
SW-13.002	60.66	6.23	61.425	0.640	0.0	0.0	0.0	2.82	609.7	140.2
SW-14.000	64.06	5.55	59.825	0.042	0.0	0.0	0.0	1.00	39.6	9.7
SW-13.003	59.90	6.39	59.335	0.715	0.0	0.0	0.0	2.37	514.0	154.7

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Network Design Table for Surface Water

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
SW-13.004	34.508	1.207	28.6	0.060	0.00	0.0	0.600	o	525	Pipe/Conduit	
SW-1.030	13.264#	0.043	309.6	0.095	0.00	0.0	0.600	o	600	Pipe/Conduit	
SW-1.031	31.157	0.062	502.5	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit	
SW-15.000	1.000	0.050	20.0	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit	
SW-15.001	7.250	0.750	9.7	0.034	0.00	0.0	0.600	o	150	Pipe/Conduit	
SW-15.002	12.069	1.487	8.1	0.064	0.00	0.0	0.600	o	150	Pipe/Conduit	
SW-1.032	28.179	0.057	492.5	0.073	0.00	0.0	0.600	o	525	Pipe/Conduit	
SW-1.033	41.321	0.731	56.5	0.104	0.00	0.0	0.600	o	525	Pipe/Conduit	
SW-16.000	1.000	0.050	20.0	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit	
SW-16.001	9.250	1.100	8.4	0.243	0.00	0.0	0.600	o	150	Pipe/Conduit	
SW-1.034	29.683	0.072	412.2	0.034	0.00	0.0	0.600	o	450	Pipe/Conduit	
SW-17.000	1.000	0.050	20.0	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit	
SW-17.001	12.346	1.272	9.7	0.086	0.00	0.0	0.600	o	150	Pipe/Conduit	
SW-1.035	12.143	0.030	404.0	0.028	0.00	0.0	0.600	o	450	Pipe/Conduit	
SW-1.036	15.832	0.039	404.0	0.037	0.00	0.0	0.600	o	450	Pipe/Conduit	
SW-1.037	15.093	0.037	404.0	0.016	0.00	0.0	0.600	o	450	Pipe/Conduit	
SW-1.038	22.682	0.071	318.8	0.023	0.00	0.0	0.600	o	450	Pipe/Conduit	
SW-18.000	1.000	0.050	20.0	0.000	5.00	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)
SW-13.004	59.27	6.53	59.075	0.775	0.0	0.0	0.0	4.20	909.4	165.9
SW-1.030	53.94	7.82	57.793	1.291	33.0	0.0	0.0	1.38	389.8	284.5
SW-1.031	64.18	5.52	57.750	0.000	165.0	0.0	0.0	0.99	214.8	165.0
SW-15.000	66.87	5.01	60.350	0.000	0.0	0.0	0.0	2.26	40.0	0.0
SW-15.001	66.72	5.04	60.300	0.000	5.0	0.0	0.0	3.26	57.6	5.0
SW-15.002	66.43	5.09	59.550	0.064	5.0	0.0	0.0	3.56	62.9	20.4
SW-1.032	61.82	5.99	57.688	0.137	170.0	0.0	0.0	1.00	217.0	200.6
SW-1.033	60.70	6.22	57.631	0.241	170.0	0.0	0.0	2.98	645.9	222.8
SW-16.000	66.87	5.01	58.350	0.000	0.0	0.0	0.0	2.26	40.0	0.0
SW-16.001	66.69	5.04	58.300	0.000	5.0	0.0	0.0	3.50	61.8	5.0
SW-1.034	64.32	5.50	56.900	0.000	100.0	0.0	0.0	1.00	158.3	100.0
SW-17.000	66.87	5.01	58.450	0.000	0.0	0.0	0.0	2.26	40.0	0.0
SW-17.001	66.59	5.06	58.400	0.000	5.0	0.0	0.0	3.25	57.5	5.0
SW-1.035	63.28	5.70	56.828	0.028	105.0	0.0	0.0	1.01	159.9	111.4
SW-1.036	61.97	5.96	56.798	0.065	105.0	0.0	0.0	1.01	159.9	119.5
SW-1.037	60.76	6.21	56.759	0.081	105.0	0.0	0.0	1.01	159.9	122.8
SW-1.038	59.21	6.54	56.721	0.104	105.0	0.0	0.0	1.13	180.2	127.2
SW-18.000	66.87	5.01	57.750	0.000	0.0	0.0	0.0	2.26	40.0	0.0

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Micro Drainage	Network 2020.1.3	

Network Design Table for Surface Water

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
SW-18.001	7.621	0.076	99.7	0.180	0.00	0.0	0.600	o	150	Pipe/Conduit	
SW-18.002	29.977	0.824	36.4	0.010	0.00	0.0	0.600	o	150	Pipe/Conduit	
SW-1.039	16.093	0.065	247.4	0.109	0.00	0.0	0.600	o	300	Pipe/Conduit	
SW-19.000	33.685	0.400	84.2	0.032	5.00	0.0	0.600	o	150	Pipe/Conduit	
SW-19.001	13.374	0.200	66.9	0.009	0.00	0.0	0.600	o	225	Pipe/Conduit	
SW-19.002	21.488	0.550	39.1	0.031	0.00	0.0	0.600	o	225	Pipe/Conduit	
SW-20.000	1.000	0.050	20.0	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit	
SW-20.001	7.750	0.700	11.1	0.116	0.00	0.0	0.600	o	150	Pipe/Conduit	
SW-19.003	7.996	0.300	26.7	0.014	0.00	0.0	0.600	o	225	Pipe/Conduit	
SW-21.000	1.000	0.050	20.0	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit	
SW-21.001	7.250	0.750	9.7	0.067	0.00	0.0	0.600	o	150	Pipe/Conduit	
SW-19.004	28.246	2.160	13.1	0.089	0.00	0.0	0.600	o	225	Pipe/Conduit	
SW-22.000	1.000	0.050	20.0	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit	
SW-22.001	13.750	1.933	7.1	0.053	0.00	0.0	0.600	o	150	Pipe/Conduit	
SW-23.000	1.000	0.050	20.0	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit	
SW-23.001	13.301	0.133	99.7	0.056	0.00	0.0	0.600	o	150	Pipe/Conduit	
SW-22.002	34.600	0.205	168.4	0.045	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)
SW-18.001	66.26	5.13	57.700	0.000	5.0	0.0	0.0	1.01	17.8	5.0
SW-18.002	64.69	5.42	57.624	0.010	5.0	0.0	0.0	1.67	29.6	7.3
SW-1.039	65.51	5.27	56.650	0.000	58.4	0.0	0.0	1.00	70.3	58.4
SW-19.000	64.24	5.51	62.900	0.032	0.0	0.0	0.0	1.10	19.4	7.4
SW-19.001	63.52	5.65	62.425	0.041	0.0	0.0	0.0	1.60	63.7	9.4
SW-19.002	62.66	5.82	62.225	0.072	0.0	0.0	0.0	2.10	83.5	16.3
SW-20.000	66.87	5.01	62.500	0.000	0.0	0.0	0.0	2.26	40.0	0.0
SW-20.001	66.70	5.04	62.450	0.000	5.0	0.0	0.0	3.05	53.8	5.0
SW-19.003	62.40	5.87	61.675	0.086	5.0	0.0	0.0	2.54	101.2	24.4
SW-21.000	66.87	5.01	62.250	0.000	0.0	0.0	0.0	2.26	40.0	0.0
SW-21.001	66.72	5.04	62.200	0.000	5.0	0.0	0.0	3.26	57.6	5.0
SW-19.004	61.76	6.00	61.375	0.175	10.0	0.0	0.0	3.64	144.7	49.0
SW-22.000	66.87	5.01	61.550	0.000	0.0	0.0	0.0	2.26	40.0	0.0
SW-22.001	66.61	5.06	61.500	0.000	5.0	0.0	0.0	3.80	67.2	5.0
SW-23.000	66.87	5.01	59.750	0.000	0.0	0.0	0.0	2.26	40.0	0.0
SW-23.001	65.77	5.22	59.700	0.000	5.0	0.0	0.0	1.01	17.8	5.0
SW-22.002	62.80	5.79	59.492	0.045	10.0	0.0	0.0	1.00	39.9	20.2

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Network Design Table for Surface Water

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
SW-22.003	17.618	0.071	247.4	0.013	0.00	0.0	0.600	o	300	Pipe/Conduit	
SW-19.005	15.536	0.038	412.2	0.048	0.00	0.0	0.600	o	450	Pipe/Conduit	
SW-19.006	32.847	0.081	404.0	0.103	0.00	0.0	0.600	o	450	Pipe/Conduit	
SW-24.000	1.000	0.050	20.0	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit	
SW-24.001	15.243	0.679	22.4	0.092	0.00	0.0	0.600	o	150	Pipe/Conduit	
SW-19.007	36.658	0.721	50.8	0.078	0.00	0.0	0.600	o	450	Pipe/Conduit	
SW-25.000	1.000	0.050	20.0	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit	
SW-25.001	14.061	0.600	23.4	0.141	0.00	0.0	0.600	o	150	Pipe/Conduit	
SW-19.008	12.669	0.246	51.5	0.027	0.00	0.0	0.600	o	525	Pipe/Conduit	
SW-26.000	1.000	0.050	20.0	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit	
SW-26.001	6.506	0.065	99.7	0.036	0.00	0.0	0.600	o	150	Pipe/Conduit	
SW-26.002	17.876	0.385	46.5	0.095	0.00	0.0	0.600	o	225	Pipe/Conduit	
SW-26.003	31.647	0.096	329.7	0.077	0.00	0.0	0.600	o	375	Pipe/Conduit	
SW-19.009	14.014#	0.029	491.3	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit	
SW-19.010	9.699	0.057	170.2	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
SW-22.003	61.34	6.09	59.211	0.058	10.0	0.0	0.0	1.00	70.3	22.8
SW-19.005	60.11	6.35	58.990	0.281	20.0	0.0	0.0	1.00	158.3	81.0
SW-19.006	57.67	6.89	58.952	0.384	20.0	0.0	0.0	1.01	159.9	100.0
SW-24.000	66.87	5.01	59.900	0.000	0.0	0.0	0.0	2.26	40.0	0.0
SW-24.001	66.30	5.12	59.850	0.000	5.0	0.0	0.0	2.13	37.7	5.0
SW-19.007	56.77	7.11	58.871	0.462	25.0	0.0	0.0	2.86	454.3	119.7
SW-25.000	66.87	5.01	59.100	0.000	0.0	0.0	0.0	2.26	40.0	0.0
SW-25.001	66.34	5.11	59.050	0.000	5.0	0.0	0.0	2.09	36.9	5.0
SW-19.008	56.49	7.18	58.075	0.489	30.0	0.0	0.0	3.13	676.8	129.7
SW-26.000	66.87	5.01	58.800	0.000	0.0	0.0	0.0	2.26	40.0	0.0
SW-26.001	66.36	5.11	58.750	0.000	5.0	0.0	0.0	1.01	17.8	5.0
SW-26.002	65.54	5.26	58.610	0.095	5.0	0.0	0.0	1.92	76.5	27.5
SW-26.003	62.80	5.79	58.075	0.172	5.0	0.0	0.0	0.99	109.6	44.0
SW-19.009	55.54	7.41	57.829	0.661	35.0	0.0	0.0	1.00	217.3	167.6
SW-19.010	66.08	5.16	57.800	0.000	15.0	0.0	0.0	1.00	39.7	15.0

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Manhole Schedules for Surface Water

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
SW-1	63.850	1.500	Open Manhole	1200	SW-1.000	62.350	300				
SW-2	63.900	0.750	Open Manhole	1200	SW-2.000	63.150	150				
SW-3	63.900	0.800	Open Manhole	1200	SW-2.001	63.100	150	SW-2.000	63.100	150	
SW-4	63.750	1.575	Open Manhole	1500	SW-1.001	62.175	375	SW-1.000	62.250	300	
								SW-2.001	62.400	150	
SW-5	63.650	1.650	Open Manhole	1500	SW-1.002	62.000	450	SW-1.001	62.075	375	
SW-6	63.900	2.075	Open Manhole	1500	SW-1.003	61.825	525	SW-1.002	61.900	450	
SW-7	63.300	1.725	Open Manhole	1500	SW-1.004	61.575	525	SW-1.003	61.575	525	
SW-8	63.150	1.500	Open Manhole	1200	SW-3.000	61.650	300				
SW-9	63.150	1.900	Open Manhole	1500	SW-1.005	61.250	600	SW-1.004	61.325	525	
								SW-3.000	61.550	300	
SW-10	63.450	1.500	Open Manhole	1200	SW-4.000	61.950	300				
SW-11	63.300	2.198	Open Manhole	1500	SW-1.006	61.102	600	SW-1.005	61.102	600	
								SW-4.000	61.402	300	
SW-12	63.550	1.500	Open Manhole	1200	SW-5.000	62.050	300				
SW-13	63.650	2.657	Open Manhole	1500	SW-1.007	60.993	600	SW-1.006	60.993	600	
								SW-5.000	61.446	300	153
SW-14	63.050	2.173	Open Manhole	1500	SW-1.008	60.877	600	SW-1.007	60.877	600	
SW-15	62.850	2.021	Open Manhole	1500	SW-1.009	60.829	600	SW-1.008	60.829	600	
SW-16	62.300	1.500	Open Manhole	1500	SW-1.010	60.800	300	SW-1.009	60.800	600	
SW-17	63.200	2.474	Open Manhole	1200	SW-1.011	60.726	300	SW-1.010	60.726	300	
SW-18	63.750	3.269	Open Manhole	1200	SW-1.012	60.481	300	SW-1.011	60.481	300	
SW-19	63.850	3.615	Open Manhole	1200	SW-1.013	60.235	300	SW-1.012	60.235	300	
SW-20	64.000	0.750	Open Manhole	1200	SW-6.000	63.250	150				
SW-21	64.000	0.800	Open Manhole	1200	SW-6.001	63.200	150	SW-6.000	63.200	150	
SW-22	63.850	3.731	Open Manhole	1500	SW-1.014	60.119	375	SW-1.013	60.194	300	
								SW-6.001	60.344	150	
SW-23	63.900	1.575	Open Manhole	1500	SW-7.000	62.325	375				
SW-24	63.750	1.650	Open Manhole	1500	SW-7.001	62.100	450	SW-7.000	62.175	375	
SW-25	63.250	1.650	Open Manhole	1500	SW-7.002	61.600	450	SW-7.001	61.600	450	
SW-26	63.100	3.271	Open Manhole	1500	SW-1.015	59.829	450	SW-1.014	59.904	375	
								SW-7.002	59.829	450	
SW-27	62.200	0.750	Open Manhole	1200	SW-8.000	61.450	150				
SW-28	62.200	0.800	Open Manhole	1200	SW-8.001	61.400	150	SW-8.000	61.400	150	
SW-29	63.050	3.401	Open Manhole	1500	SW-1.016	59.649	450	SW-1.015	59.649	450	
								SW-8.001	59.949	150	
SW-30	61.600	2.041	Open Manhole	1500	SW-1.017	59.559	450	SW-1.016	59.559	450	
SW-31	61.100	1.650	Open Manhole	1500	SW-1.018	59.450	450	SW-1.017	59.450	450	
SW-32	61.500	1.425	Open Manhole	1200	SW-9.000	60.075	225				
SW-33	61.250	1.500	Open Manhole	1200	SW-9.001	59.750	300	SW-9.000	59.825	225	
SW-34	61.050	1.500	Open Manhole	1200	SW-9.002	59.550	300	SW-9.001	59.550	300	
SW-35	60.850	1.650	Open Manhole	1500	SW-1.019	59.200	450	SW-1.018	59.200	450	
								SW-9.002	59.350	300	
SW-36	61.000	1.869	Open Manhole	1500	SW-1.020	59.131	450	SW-1.019	59.131	450	

JNP Group

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Micro Drainage

Officers' Meadow, Shenfield
Sustainable Drainage Strategy
Surface Water

Designed by JNP Group
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Manhole Schedules for Surface Water

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
SW-37	60.900	1.820	Open Manhole	1500	SW-1.021	59.080	450	SW-1.020	59.080	450	274
SW-38	60.950	1.933	Open Manhole	1500	SW-1.022	59.017	450	SW-1.021	59.017	450	
SW-39	61.750	1.425	Open Manhole	1200	SW-10.000	60.325	225				
SW-40	61.600	1.500	Open Manhole	1200	SW-10.001	60.100	300	SW-10.000	60.175	225	
SW-41	61.950	2.028	Open Manhole	1200	SW-10.002	59.922	300	SW-10.001	59.922	300	
SW-42	61.950	2.076	Open Manhole	1200	SW-10.003	59.874	300	SW-10.002	59.874	300	
SW-43	61.750	1.939	Open Manhole	1200	SW-10.004	59.811	300	SW-10.003	59.811	300	
SW-44	60.250	1.500	Open Manhole	1500	SW-1.023	58.750	375	SW-1.022	58.950	450	
								SW-10.004	58.750	300	
SW-45	60.200	1.542	Open Manhole	1500	SW-1.024	58.658	375	SW-1.023	58.658	375	
SW-46	60.150	1.527	Open Manhole	1500	SW-1.025	58.623	375	SW-1.024	58.623	375	
SW-47	62.650	0.750	Open Manhole	1200	SW-11.000	61.900	150				
SW-48	62.650	0.800	Open Manhole	1200	SW-11.001	61.850	150	SW-11.000	61.850	150	
SW-49	62.150	1.350	Open Manhole	1200	SW-11.002	60.800	150	SW-11.001	60.800	150	
SW-50	61.500	1.425	Open Manhole	1200	SW-11.003	60.075	225	SW-11.002	60.150	150	
SW-51	61.000	1.425	Open Manhole	1200	SW-11.004	59.575	225	SW-11.003	59.575	225	
SW-52	60.100	1.500	Open Manhole	1500	SW-1.026	58.600	300	SW-1.025	58.600	375	
								SW-11.004	58.600	225	
SW-53	62.350	1.425	Open Manhole	1200	SW-12.000	60.925	225				
SW-54	62.300	1.500	Open Manhole	1200	SW-12.001	60.800	300	SW-12.000	60.875	225	
SW-55	62.050	1.500	Open Manhole	1200	SW-12.002	60.550	300	SW-12.001	60.550	300	
SW-56	61.750	3.459	Open Manhole	1500	SW-1.027	58.291	375	SW-1.026	58.366	300	
								SW-12.002	58.366	300	
SW-57	61.200	3.098	Open Manhole	1500	SW-1.028	58.102	450	SW-1.027	58.177	375	
SW-58	60.400	2.392	Open Manhole	1500	SW-1.029	58.008	450	SW-1.028	58.008	450	
SW-59	63.650	1.500	Open Manhole	1200	SW-13.000	62.150	300				
SW-60	63.350	1.500	Open Manhole	1200	SW-13.001	61.850	300	SW-13.000	61.850	300	
SW-61	63.150	1.725	Open Manhole	1500	SW-13.002	61.425	525	SW-13.001	61.650	300	
SW-62	61.250	1.425	Open Manhole	1200	SW-14.000	59.825	225				
SW-63	61.250	1.915	Open Manhole	1500	SW-13.003	59.335	525	SW-13.002	59.335	525	
								SW-14.000	59.635	225	
SW-64	60.800	1.725	Open Manhole	1500	SW-13.004	59.075	525	SW-13.003	59.075	525	
SW-65	59.850	2.057	Open Manhole	1500	SW-1.030	57.793	600	SW-1.029	57.943	450	
								SW-13.004	57.868	525	
SW-66	59.250	1.500	Open Manhole	1500	SW-1.031	57.750	525	SW-1.030	57.750	600	
SW-67	61.100	0.750	Open Manhole	1200	SW-15.000	60.350	150				
SW-68	61.100	0.800	Open Manhole	1200	SW-15.001	60.300	150	SW-15.000	60.300	150	
SW-69	60.900	1.350	Open Manhole	1200	SW-15.002	59.550	150	SW-15.001	59.550	150	
SW-70	60.650	2.962	Open Manhole	1500	SW-1.032	57.688	525	SW-1.031	57.688	525	
								SW-15.002	58.063	150	
SW-71	60.000	2.369	Open Manhole	1500	SW-1.033	57.631	525	SW-1.032	57.631	525	
SW-72	59.100	0.750	Open Manhole	1200	SW-16.000	58.350	150				
SW-73	59.100	0.800	Open Manhole	1200	SW-16.001	58.300	150	SW-16.000	58.300	150	
SW-74	60.000	3.100	Open Manhole	1500	SW-1.034	56.900	450	SW-1.033	56.900	525	

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Manhole Schedules for Surface Water

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
SW-109	59.550	0.750	Open Manhole	1200	SW-26.000	58.800	150				
SW-110	59.550	0.800	Open Manhole	1200	SW-26.001	58.750	150	SW-26.000	58.750	150	
SW-111	60.050	1.440	Open Manhole	1200	SW-26.002	58.610	225	SW-26.001	58.685	150	
SW-112	59.650	1.575	Open Manhole	1500	SW-26.003	58.075	375	SW-26.002	58.225	225	
SW-113	59.550	1.721	Open Manhole	1500	SW-19.009	57.829	525	SW-19.008	57.829	525	
								SW-26.003	57.979	375	
SW-114	59.300	1.500	Open Manhole	1500	SW-19.010	57.800	225	SW-19.009	57.800	525	
SW-115	59.200	1.457	Open Manhole	0		OUTFALL		SW-19.010	57.743	225	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SW-1	561927.782	196290.792	561927.782	196290.792	Required	
SW-2	561913.890	196313.371	561913.890	196313.371	Required	
SW-3	561914.890	196313.377	561914.890	196313.377	Required	
SW-4	561927.651	196313.451	561927.651	196313.451	Required	
SW-5	561937.350	196319.405	561937.350	196319.405	Required	
SW-6	561974.837	196321.857	561974.837	196321.857	Required	
SW-7	562033.326	196329.865	562033.326	196329.865	Required	
SW-8	562051.620	196342.197	562051.620	196342.197	Required	
SW-9	562053.411	196334.602	562053.411	196334.602	Required	
SW-10	562052.348	196283.752	562052.348	196283.752	Required	
SW-11	562059.479	196310.967	562059.479	196310.967	Required	
SW-12	562104.871	196265.924	562104.871	196265.924	Required	
SW-13	562112.380	196297.054	562112.380	196297.054	Required	

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Manhole Schedules for Surface Water

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SW-14	562131.774	196351.306	562131.774	196351.306	Required	
SW-15	562109.842	196361.377	562109.842	196361.377	Required	
SW-16	562135.463	196365.218	562135.463	196365.218	Required	
SW-17	562137.117	196347.014	562137.117	196347.014	Required	
SW-18	562118.917	196290.545	562118.917	196290.545	Required	
SW-19	562106.049	196232.321	562106.049	196232.321	Required	
SW-20	562093.092	196215.815	562093.092	196215.815	Required	
SW-21	562093.309	196216.791	562093.309	196216.791	Required	
SW-22	562096.404	196230.695	562096.404	196230.695	Required	
SW-23	561927.844	196280.168	561927.844	196280.168	Required	
SW-24	561928.021	196249.537	561928.021	196249.537	Required	
SW-25	562009.618	196250.010	562009.618	196250.010	Required	
SW-26	562029.053	196245.684	562029.053	196245.684	Required	
SW-27	562031.989	196179.921	562031.989	196179.921	Required	
SW-28	562031.024	196180.183	562031.024	196180.183	Required	
SW-29	562015.091	196181.896	562015.091	196181.896	Required	
SW-30	562013.981	196149.437	562013.981	196149.437	Required	
SW-31	562017.744	196136.455	562017.744	196136.455	Required	
SW-32	562068.395	196106.216	562068.395	196106.216	Required	

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Manhole Schedules for Surface Water

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SW-33	562057.868	196105.902	562057.868	196105.902	Required	
SW-34	562031.290	196110.778	562031.290	196110.778	Required	
SW-35	562006.838	196121.174	562006.838	196121.174	Required	
SW-36	561995.982	196095.804	561995.982	196095.804	Required	
SW-37	561997.453	196075.320	561997.453	196075.320	Required	
SW-38	561987.894	196051.931	561987.894	196051.931	Required	
SW-39	562082.719	196124.233	562082.719	196124.233	Required	
SW-40	562078.984	196106.656	562078.984	196106.656	Required	
SW-41	562074.260	196062.939	562074.260	196062.939	Required	
SW-42	562064.236	196057.287	562064.236	196057.287	Required	
SW-43	562049.994	196062.906	562049.994	196062.906	Required	
SW-44	562005.031	196015.918	562005.031	196015.918	Required	
SW-45	561957.841	196016.061	561957.841	196016.061	Required	
SW-46	561945.955	196029.597	561945.955	196029.597	Required	
SW-47	561981.599	196166.679	561981.599	196166.679	Required	
SW-48	561981.494	196165.684	561981.494	196165.684	Required	
SW-49	561978.797	196140.016	561978.797	196140.016	Required	
SW-50	561971.378	196115.924	561971.378	196115.924	Required	
SW-51	561968.374	196092.450	561968.374	196092.450	Required	

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Manhole Schedules for Surface Water

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SW-52	561918.699	196067.449	561918.699	196067.449	Required	
SW-53	561946.711	196144.830	561946.711	196144.830	Required	
SW-54	561943.022	196142.155	561943.022	196142.155	Required	
SW-55	561918.643	196135.208	561918.643	196135.208	Required	
SW-56	561895.290	196120.500	561895.290	196120.500	Required	
SW-57	561860.419	196109.147	561860.419	196109.147	Required	
SW-58	561827.982	196088.133	561827.982	196088.133	Required	
SW-59	561928.069	196241.195	561928.069	196241.195	Required	
SW-60	561928.206	196217.552	561928.206	196217.552	Required	
SW-61	561916.931	196200.075	561916.931	196200.075	Required	
SW-62	561782.601	196176.059	561782.601	196176.059	Required	
SW-63	561795.851	196146.252	561795.851	196146.252	Required	
SW-64	561805.253	196125.102	561805.253	196125.102	Required	
SW-65	561801.800	196090.767	561801.800	196090.767	Required	
SW-66	561777.909	196104.179	561777.909	196104.179	Required	
SW-67	561772.931	196145.091	561772.931	196145.091	Required	
SW-68	561773.337	196144.177	561773.337	196144.177	Required	
SW-69	561776.282	196137.552	561776.282	196137.552	Required	
SW-70	561765.253	196132.650	561765.253	196132.650	Required	

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Manhole Schedules for Surface Water

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SW-71	561739.503	196121.203	561739.503	196121.203	Required	
SW-72	561697.071	196124.661	561697.071	196124.661	Required	
SW-73	561697.389	196125.609	561697.389	196125.609	Required	
SW-74	561700.338	196134.376	561700.338	196134.376	Required	
SW-75	561674.643	196156.960	561674.643	196156.960	Required	
SW-76	561674.460	196155.977	561674.460	196155.977	Required	
SW-77	561672.204	196143.839	561672.204	196143.839	Required	
SW-78	561660.077	196144.455	561660.077	196144.455	Required	
SW-79	561647.110	196135.371	561647.110	196135.371	Required	
SW-80	561632.025	196135.874	561632.025	196135.874	Required	
SW-81	561640.698	196177.399	561640.698	196177.399	Required	
SW-82	561639.942	196176.745	561639.942	196176.745	Required	
SW-83	561637.031	196169.702	561637.031	196169.702	Required	
SW-84	561614.356	196150.096	561614.356	196150.096	Required	
SW-85	561598.441	196147.710			No Entry	
SW-86	561675.813	195774.677	561675.813	195774.677	Required	
SW-87	561656.631	195802.366	561656.631	195802.366	Required	
SW-88	561657.136	195815.730	561657.136	195815.730	Required	
SW-89	561676.748	195828.127	561676.748	195828.127	Required	

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Manhole Schedules for Surface Water

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SW-90	561675.934	195828.708	561675.934	195828.708	Required	
SW-91	561669.629	195833.214	561669.629	195833.214	Required	
SW-92	561667.565	195844.516	561667.565	195844.516	Required	
SW-93	561668.378	195843.934	561668.378	195843.934	Required	
SW-94	561674.277	195839.719	561674.277	195839.719	Required	
SW-95	561729.081	195823.171	561729.081	195823.171	Required	
SW-96	561729.532	195824.063	561729.532	195824.063	Required	
SW-97	561743.193	195848.532	561743.193	195848.532	Required	
SW-98	561742.742	195847.639	561742.742	195847.639	Required	
SW-99	561735.733	195836.335	561735.733	195836.335	Required	
SW-100	561706.327	195854.570	561706.327	195854.570	Required	
SW-101	561690.698	195862.701	561690.698	195862.701	Required	
SW-102	561697.869	195876.483	561697.869	195876.483	Required	
SW-103	561689.017	195911.222	561689.017	195911.222	Required	
SW-104	561689.991	195910.994	561689.991	195910.994	Required	
SW-105	561705.034	195908.539	561705.034	195908.539	Required	
SW-106	561731.836	195937.604	561731.836	195937.604	Required	
SW-107	561730.900	195937.957	561730.900	195937.957	Required	
SW-108	561717.745	195942.923	561717.745	195942.923	Required	

Manhole Schedules for Surface Water

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SW-109	561725.149	196000.508	561725.149	196000.508	Required	
SW-110	561726.148	196000.527	561726.148	196000.527	Required	
SW-111	561732.650	196000.756	561732.650	196000.756	Required	
SW-112	561736.166	195983.229	561736.166	195983.229	Required	
SW-113	561723.012	195954.445	561723.012	195954.445	Required	
SW-114	561756.830	195951.928	561756.830	195951.928	Required	
SW-115	561757.568	195961.599			No Entry	

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PIPELINE SCHEDULES for Surface Water

Upstream Manhole

- Indicates pipe length does not match coordinates

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
SW-1.000	o	300	SW-1	63.850	62.350	1.200	Open Manhole	1200
SW-2.000	o	150	SW-2	63.900	63.150	0.600	Open Manhole	1200
SW-2.001	o	150	SW-3	63.900	63.100	0.650	Open Manhole	1200
SW-1.001	o	375	SW-4	63.750	62.175	1.200	Open Manhole	1500
SW-1.002	o	450	SW-5	63.650	62.000	1.200	Open Manhole	1500
SW-1.003	o	525	SW-6	63.900	61.825	1.550	Open Manhole	1500
SW-1.004	o	525	SW-7	63.300	61.575	1.200	Open Manhole	1500
SW-3.000	o	300	SW-8	63.150	61.650	1.200	Open Manhole	1200
SW-1.005	o	600	SW-9	63.150	61.250	1.300	Open Manhole	1500
SW-4.000	o	300	SW-10	63.450	61.950	1.200	Open Manhole	1200
SW-1.006	o	600	SW-11	63.300	61.102	1.598	Open Manhole	1500
SW-5.000	o	300	SW-12	63.550	62.050	1.200	Open Manhole	1200
SW-1.007	o	600	SW-13	63.650	60.993	2.057	Open Manhole	1500
SW-1.008	o	600	SW-14	63.050	60.877	1.573	Open Manhole	1500
SW-1.009	o	600	SW-15	62.850	60.829	1.421	Open Manhole	1500

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)
SW-1.000	22.659	226.6	SW-4	63.750	62.250	1.200	Open Manhole	1500
SW-2.000	1.000	20.0	SW-3	63.900	63.100	0.650	Open Manhole	1200
SW-2.001	12.761	18.2	SW-4	63.750	62.400	1.200	Open Manhole	1500
SW-1.001	11.381	113.8	SW-5	63.650	62.075	1.200	Open Manhole	1500
SW-1.002	37.567	375.7	SW-6	63.900	61.900	1.550	Open Manhole	1500
SW-1.003	59.035	236.1	SW-7	63.300	61.575	1.200	Open Manhole	1500
SW-1.004	20.636	82.5	SW-9	63.150	61.325	1.300	Open Manhole	1500
SW-3.000	7.803	78.0	SW-9	63.150	61.550	1.300	Open Manhole	1500
SW-1.005	24.402	164.9	SW-11	63.300	61.102	1.598	Open Manhole	1500
SW-4.000	28.133	51.3	SW-11	63.300	61.402	1.598	Open Manhole	1500
SW-1.006	54.700	500.0	SW-13	63.650	60.993	2.057	Open Manhole	1500
SW-5.000	32.023	53.0	SW-13	63.650	61.446	1.904	Open Manhole	1500
SW-1.007	57.614	500.0	SW-14	63.050	60.877	1.573	Open Manhole	1500
SW-1.008	24.134	500.0	SW-15	62.850	60.829	1.421	Open Manhole	1500
SW-1.009	14.485#	500.0	SW-16	62.300	60.800	0.900	Open Manhole	1500

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PIPELINE SCHEDULES for Surface Water

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)
SW-1.010	o	300	SW-16	62.300	60.800	1.200	Open Manhole	1500
SW-1.011	o	300	SW-17	63.200	60.726	2.174	Open Manhole	1200
SW-1.012	o	300	SW-18	63.750	60.481	2.969	Open Manhole	1200
SW-1.013	o	300	SW-19	63.850	60.235	3.315	Open Manhole	1200
SW-6.000	o	150	SW-20	64.000	63.250	0.600	Open Manhole	1200
SW-6.001	o	150	SW-21	64.000	63.200	0.650	Open Manhole	1200
SW-1.014	o	375	SW-22	63.850	60.119	3.356	Open Manhole	1500
SW-7.000	o	375	SW-23	63.900	62.325	1.200	Open Manhole	1500
SW-7.001	o	450	SW-24	63.750	62.100	1.200	Open Manhole	1500
SW-7.002	o	450	SW-25	63.250	61.600	1.200	Open Manhole	1500
SW-1.015	o	450	SW-26	63.100	59.829	2.821	Open Manhole	1500
SW-8.000	o	150	SW-27	62.200	61.450	0.600	Open Manhole	1200
SW-8.001	o	150	SW-28	62.200	61.400	0.650	Open Manhole	1200
SW-1.016	o	450	SW-29	63.050	59.649	2.951	Open Manhole	1500
SW-1.017	o	450	SW-30	61.600	59.559	1.591	Open Manhole	1500
SW-1.018	o	450	SW-31	61.100	59.450	1.200	Open Manhole	1500
SW-9.000	o	225	SW-32	61.500	60.075	1.200	Open Manhole	1200
SW-9.001	o	300	SW-33	61.250	59.750	1.200	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)
SW-1.010	18.279	247.0	SW-17	63.200	60.726	2.174	Open Manhole	1200
SW-1.011	59.329	242.1	SW-18	63.750	60.481	2.969	Open Manhole	1200
SW-1.012	59.630	242.1	SW-19	63.850	60.235	3.315	Open Manhole	1200
SW-1.013	9.781	242.1	SW-22	63.850	60.194	3.356	Open Manhole	1500
SW-6.000	1.000	20.0	SW-21	64.000	63.200	0.650	Open Manhole	1200
SW-6.001	14.244	5.0	SW-22	63.850	60.344	3.356	Open Manhole	1500
SW-1.014	68.998	321.0	SW-26	63.100	59.904	2.821	Open Manhole	1500
SW-7.000	30.632	204.2	SW-24	63.750	62.175	1.200	Open Manhole	1500
SW-7.001	81.599	163.2	SW-25	63.250	61.600	1.200	Open Manhole	1500
SW-7.002	19.911	11.2	SW-26	63.100	59.829	2.821	Open Manhole	1500
SW-1.015	65.299	361.8	SW-29	63.050	59.649	2.951	Open Manhole	1500
SW-8.000	1.000	20.0	SW-28	62.200	61.400	0.650	Open Manhole	1200
SW-8.001	16.025	11.0	SW-29	63.050	59.949	2.951	Open Manhole	1500
SW-1.016	32.478	361.8	SW-30	61.600	59.559	1.591	Open Manhole	1500
SW-1.017	13.517	123.9	SW-31	61.100	59.450	1.200	Open Manhole	1500
SW-1.018	18.773	75.1	SW-35	60.850	59.200	1.200	Open Manhole	1500
SW-9.000	10.531	42.1	SW-33	61.250	59.825	1.200	Open Manhole	1200
SW-9.001	27.022	135.1	SW-34	61.050	59.550	1.200	Open Manhole	1200

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PIPELINE SCHEDULES for Surface Water

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)
SW-9.002	o	300	SW-34	61.050	59.550	1.200	Open Manhole	1200
SW-1.019	o	450	SW-35	60.850	59.200	1.200	Open Manhole	1500
SW-1.020	o	450	SW-36	61.000	59.131	1.419	Open Manhole	1500
SW-1.021	o	450	SW-37	60.900	59.080	1.370	Open Manhole	1500
SW-1.022	o	450	SW-38	60.950	59.017	1.483	Open Manhole	1500
SW-10.000	o	225	SW-39	61.750	60.325	1.200	Open Manhole	1200
SW-10.001	o	300	SW-40	61.600	60.100	1.200	Open Manhole	1200
SW-10.002	o	300	SW-41	61.950	59.922	1.728	Open Manhole	1200
SW-10.003	o	300	SW-42	61.950	59.874	1.776	Open Manhole	1200
SW-10.004	o	300	SW-43	61.750	59.811	1.639	Open Manhole	1200
SW-1.023	o	375	SW-44	60.250	58.750	1.125	Open Manhole	1500
SW-1.024	o	375	SW-45	60.200	58.658	1.167	Open Manhole	1500
SW-1.025	o	375	SW-46	60.150	58.623	1.152	Open Manhole	1500
SW-11.000	o	150	SW-47	62.650	61.900	0.600	Open Manhole	1200
SW-11.001	o	150	SW-48	62.650	61.850	0.650	Open Manhole	1200
SW-11.002	o	150	SW-49	62.150	60.800	1.200	Open Manhole	1200
SW-11.003	o	225	SW-50	61.500	60.075	1.200	Open Manhole	1200
SW-11.004	o	225	SW-51	61.000	59.575	1.200	Open Manhole	1200
SW-1.026	o	300	SW-52	60.100	58.600	1.200	Open Manhole	1500

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)
SW-9.002	26.570	132.9	SW-35	60.850	59.350	1.200	Open Manhole	1500
SW-1.019	27.596	402.0	SW-36	61.000	59.131	1.419	Open Manhole	1500
SW-1.020	20.536	402.0	SW-37	60.900	59.080	1.370	Open Manhole	1500
SW-1.021	25.267	402.0	SW-38	60.950	59.017	1.483	Open Manhole	1500
SW-1.022	24.515#	361.8	SW-44	60.250	58.950	0.850	Open Manhole	1500
SW-10.000	17.969	119.8	SW-40	61.600	60.175	1.200	Open Manhole	1200
SW-10.001	43.972	247.0	SW-41	61.950	59.922	1.728	Open Manhole	1200
SW-10.002	11.507	242.1	SW-42	61.950	59.874	1.776	Open Manhole	1200
SW-10.003	15.311	242.1	SW-43	61.750	59.811	1.639	Open Manhole	1200
SW-10.004	47.638#	44.9	SW-44	60.250	58.750	1.200	Open Manhole	1500
SW-1.023	47.190	512.9	SW-45	60.200	58.658	1.167	Open Manhole	1500
SW-1.024	18.014	514.7	SW-46	60.150	58.623	1.152	Open Manhole	1500
SW-1.025	11.669#	507.3	SW-52	60.100	58.600	1.125	Open Manhole	1500
SW-11.000	1.000	20.0	SW-48	62.650	61.850	0.650	Open Manhole	1200
SW-11.001	25.810	24.6	SW-49	62.150	60.800	1.200	Open Manhole	1200
SW-11.002	25.209	38.8	SW-50	61.500	60.150	1.200	Open Manhole	1200
SW-11.003	23.666	47.3	SW-51	61.000	59.575	1.200	Open Manhole	1200
SW-11.004	28.322#	29.0	SW-52	60.100	58.600	1.275	Open Manhole	1500
SW-1.026	57.986	247.8	SW-56	61.750	58.366	3.084	Open Manhole	1500

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PIPELINE SCHEDULES for Surface Water

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)
SW-12.000	o	225	SW-53	62.350	60.925	1.200	Open Manhole	1200
SW-12.001	o	300	SW-54	62.300	60.800	1.200	Open Manhole	1200
SW-12.002	o	300	SW-55	62.050	60.550	1.200	Open Manhole	1200
SW-1.027	o	375	SW-56	61.750	58.291	3.084	Open Manhole	1500
SW-1.028	o	450	SW-57	61.200	58.102	2.648	Open Manhole	1500
SW-1.029	o	450	SW-58	60.400	58.008	1.942	Open Manhole	1500
SW-13.000	o	300	SW-59	63.650	62.150	1.200	Open Manhole	1200
SW-13.001	o	300	SW-60	63.350	61.850	1.200	Open Manhole	1200
SW-13.002	o	525	SW-61	63.150	61.425	1.200	Open Manhole	1500
SW-14.000	o	225	SW-62	61.250	59.825	1.200	Open Manhole	1200
SW-13.003	o	525	SW-63	61.250	59.335	1.390	Open Manhole	1500
SW-13.004	o	525	SW-64	60.800	59.075	1.200	Open Manhole	1500
SW-1.030	o	600	SW-65	59.850	57.793	1.457	Open Manhole	1500
SW-1.031	o	525	SW-66	59.250	57.750	0.975	Open Manhole	1500
SW-15.000	o	150	SW-67	61.100	60.350	0.600	Open Manhole	1200
SW-15.001	o	150	SW-68	61.100	60.300	0.650	Open Manhole	1200
SW-15.002	o	150	SW-69	60.900	59.550	1.200	Open Manhole	1200
SW-1.032	o	525	SW-70	60.650	57.688	2.437	Open Manhole	1500

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)
SW-12.000	4.556	91.1	SW-54	62.300	60.875	1.200	Open Manhole	1200
SW-12.001	25.350	101.4	SW-55	62.050	60.550	1.200	Open Manhole	1200
SW-12.002	27.598	12.6	SW-56	61.750	58.366	3.084	Open Manhole	1500
SW-1.027	36.672	321.0	SW-57	61.200	58.177	2.648	Open Manhole	1500
SW-1.028	38.649	412.2	SW-58	60.400	58.008	1.942	Open Manhole	1500
SW-1.029	26.315	404.0	SW-65	59.850	57.943	1.457	Open Manhole	1500
SW-13.000	23.644	78.8	SW-60	63.350	61.850	1.200	Open Manhole	1200
SW-13.001	20.798	104.0	SW-61	63.150	61.650	1.200	Open Manhole	1500
SW-13.002	132.504	63.4	SW-63	61.250	59.335	1.390	Open Manhole	1500
SW-14.000	32.620	171.6	SW-63	61.250	59.635	1.390	Open Manhole	1500
SW-13.003	23.145	89.1	SW-64	60.800	59.075	1.200	Open Manhole	1500
SW-13.004	34.508	28.6	SW-65	59.850	57.868	1.457	Open Manhole	1500
SW-1.030	13.264#	309.6	SW-66	59.250	57.750	0.900	Open Manhole	1500
SW-1.031	31.157	502.5	SW-70	60.650	57.688	2.437	Open Manhole	1500
SW-15.000	1.000	20.0	SW-68	61.100	60.300	0.650	Open Manhole	1200
SW-15.001	7.250	9.7	SW-69	60.900	59.550	1.200	Open Manhole	1200
SW-15.002	12.069	8.1	SW-70	60.650	58.063	2.437	Open Manhole	1500
SW-1.032	28.179	492.5	SW-71	60.000	57.631	1.844	Open Manhole	1500

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PIPELINE SCHEDULES for Surface Water

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)
SW-1.033	o	525	SW-71	60.000	57.631	1.844	Open Manhole	1500
SW-16.000	o	150	SW-72	59.100	58.350	0.600	Open Manhole	1200
SW-16.001	o	150	SW-73	59.100	58.300	0.650	Open Manhole	1200
SW-1.034	o	450	SW-74	60.000	56.900	2.650	Open Manhole	1500
SW-17.000	o	150	SW-75	59.200	58.450	0.600	Open Manhole	1200
SW-17.001	o	150	SW-76	59.200	58.400	0.650	Open Manhole	1200
SW-1.035	o	450	SW-77	60.050	56.828	2.772	Open Manhole	1500
SW-1.036	o	450	SW-78	59.900	56.798	2.652	Open Manhole	1500
SW-1.037	o	450	SW-79	59.600	56.759	2.391	Open Manhole	1500
SW-1.038	o	450	SW-80	58.950	56.721	1.779	Open Manhole	1500
SW-18.000	o	150	SW-81	58.500	57.750	0.600	Open Manhole	1200
SW-18.001	o	150	SW-82	58.500	57.700	0.650	Open Manhole	1200
SW-18.002	o	150	SW-83	59.000	57.624	1.226	Open Manhole	1200
SW-1.039	o	300	SW-84	58.000	56.650	1.050	Open Manhole	1500
SW-19.000	o	150	SW-86	64.250	62.900	1.200	Open Manhole	1200
SW-19.001	o	225	SW-87	63.850	62.425	1.200	Open Manhole	1200
SW-19.002	o	225	SW-88	63.650	62.225	1.200	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)
SW-1.033	41.321	56.5	SW-74	60.000	56.900	2.575	Open Manhole	1500
SW-16.000	1.000	20.0	SW-73	59.100	58.300	0.650	Open Manhole	1200
SW-16.001	9.250	8.4	SW-74	60.000	57.200	2.650	Open Manhole	1500
SW-1.034	29.683	412.2	SW-77	60.050	56.828	2.772	Open Manhole	1500
SW-17.000	1.000	20.0	SW-76	59.200	58.400	0.650	Open Manhole	1200
SW-17.001	12.346	9.7	SW-77	60.050	57.128	2.772	Open Manhole	1500
SW-1.035	12.143	404.0	SW-78	59.900	56.798	2.652	Open Manhole	1500
SW-1.036	15.832	404.0	SW-79	59.600	56.759	2.391	Open Manhole	1500
SW-1.037	15.093	404.0	SW-80	58.950	56.721	1.779	Open Manhole	1500
SW-1.038	22.682	318.8	SW-84	58.000	56.650	0.900	Open Manhole	1500
SW-18.000	1.000	20.0	SW-82	58.500	57.700	0.650	Open Manhole	1200
SW-18.001	7.621	99.7	SW-83	59.000	57.624	1.226	Open Manhole	1200
SW-18.002	29.977	36.4	SW-84	58.000	56.800	1.050	Open Manhole	1500
SW-1.039	16.093	247.4	SW-85	57.750	56.585	0.865	Open Manhole	0
SW-19.000	33.685	84.2	SW-87	63.850	62.500	1.200	Open Manhole	1200
SW-19.001	13.374	66.9	SW-88	63.650	62.225	1.200	Open Manhole	1200
SW-19.002	21.488	39.1	SW-91	63.100	61.675	1.200	Open Manhole	1200

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PIPELINE SCHEDULES for Surface Water

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)
SW-20.000	o	150	SW-89	63.250	62.500	0.600	Open Manhole	1200
SW-20.001	o	150	SW-90	63.250	62.450	0.650	Open Manhole	1200
SW-19.003	o	225	SW-91	63.100	61.675	1.200	Open Manhole	1200
SW-21.000	o	150	SW-92	63.000	62.250	0.600	Open Manhole	1200
SW-21.001	o	150	SW-93	63.000	62.200	0.650	Open Manhole	1200
SW-19.004	o	225	SW-94	62.800	61.375	1.200	Open Manhole	1200
SW-22.000	o	150	SW-95	62.300	61.550	0.600	Open Manhole	1200
SW-22.001	o	150	SW-96	62.300	61.500	0.650	Open Manhole	1200
SW-23.000	o	150	SW-97	60.500	59.750	0.600	Open Manhole	1200
SW-23.001	o	150	SW-98	60.500	59.700	0.650	Open Manhole	1200
SW-22.002	o	225	SW-99	62.000	59.492	2.283	Open Manhole	1200
SW-22.003	o	300	SW-100	62.200	59.211	2.689	Open Manhole	1200
SW-19.005	o	450	SW-101	61.900	58.990	2.460	Open Manhole	1500
SW-19.006	o	450	SW-102	61.550	58.952	2.148	Open Manhole	1500
SW-24.000	o	150	SW-103	60.650	59.900	0.600	Open Manhole	1200
SW-24.001	o	150	SW-104	60.650	59.850	0.650	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)
SW-20.000	1.000	20.0	SW-90	63.250	62.450	0.650	Open Manhole	1200
SW-20.001	7.750	11.1	SW-91	63.100	61.750	1.200	Open Manhole	1200
SW-19.003	7.996	26.7	SW-94	62.800	61.375	1.200	Open Manhole	1200
SW-21.000	1.000	20.0	SW-93	63.000	62.200	0.650	Open Manhole	1200
SW-21.001	7.250	9.7	SW-94	62.800	61.450	1.200	Open Manhole	1200
SW-19.004	28.246	13.1	SW-101	61.900	59.215	2.460	Open Manhole	1500
SW-22.000	1.000	20.0	SW-96	62.300	61.500	0.650	Open Manhole	1200
SW-22.001	13.750	7.1	SW-99	62.000	59.567	2.283	Open Manhole	1200
SW-23.000	1.000	20.0	SW-98	60.500	59.700	0.650	Open Manhole	1200
SW-23.001	13.301	99.7	SW-99	62.000	59.567	2.283	Open Manhole	1200
SW-22.002	34.600	168.4	SW-100	62.200	59.286	2.689	Open Manhole	1200
SW-22.003	17.618	247.4	SW-101	61.900	59.140	2.460	Open Manhole	1500
SW-19.005	15.536	412.2	SW-102	61.550	58.952	2.148	Open Manhole	1500
SW-19.006	32.847	404.0	SW-105	60.700	58.871	1.379	Open Manhole	1500
SW-24.000	1.000	20.0	SW-104	60.650	59.850	0.650	Open Manhole	1200
SW-24.001	15.243	22.4	SW-105	60.700	59.171	1.379	Open Manhole	1500

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PIPELINE SCHEDULES for Surface Water

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)
SW-19.007	o	450	SW-105	60.700	58.871	1.379	Open Manhole	1500
SW-25.000	o	150	SW-106	59.850	59.100	0.600	Open Manhole	1200
SW-25.001	o	150	SW-107	59.850	59.050	0.650	Open Manhole	1200
SW-19.008	o	525	SW-108	59.800	58.075	1.200	Open Manhole	1500
SW-26.000	o	150	SW-109	59.550	58.800	0.600	Open Manhole	1200
SW-26.001	o	150	SW-110	59.550	58.750	0.650	Open Manhole	1200
SW-26.002	o	225	SW-111	60.050	58.610	1.215	Open Manhole	1200
SW-26.003	o	375	SW-112	59.650	58.075	1.200	Open Manhole	1500
SW-19.009	o	525	SW-113	59.550	57.829	1.196	Open Manhole	1500
SW-19.010	o	225	SW-114	59.300	57.800	1.275	Open Manhole	1500

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)
SW-19.007	36.658	50.8	SW-108	59.800	58.150	1.200	Open Manhole	1500
SW-25.000	1.000	20.0	SW-107	59.850	59.050	0.650	Open Manhole	1200
SW-25.001	14.061	23.4	SW-108	59.800	58.450	1.200	Open Manhole	1500
SW-19.008	12.669	51.5	SW-113	59.550	57.829	1.196	Open Manhole	1500
SW-26.000	1.000	20.0	SW-110	59.550	58.750	0.650	Open Manhole	1200
SW-26.001	6.506	99.7	SW-111	60.050	58.685	1.215	Open Manhole	1200
SW-26.002	17.876	46.5	SW-112	59.650	58.225	1.200	Open Manhole	1500
SW-26.003	31.647	329.7	SW-113	59.550	57.979	1.196	Open Manhole	1500
SW-19.009	14.014#	491.3	SW-114	59.300	57.800	0.975	Open Manhole	1500
SW-19.010	9.699	170.2	SW-115	59.200	57.743	1.232	Open Manhole	0

Free Flowing Outfall Details for Surface Water

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
SW-1.039	SW-85	57.750	56.585	0.000	0	0

Free Flowing Outfall Details for Surface Water

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
SW-19.010	SW-115	59.200	57.743	0.000	0	0

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Simulation Criteria for Surface Water

Volumetric Runoff Coeff	1.000	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start (mins)	0	Inlet Coefficient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs 0 Number of Offline Controls 2 Number of Time/Area Diagrams 0
 Number of Online Controls 21 Number of Storage Structures 25 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FEH	Summer Storms	Yes
Return Period (years)	2	Winter Storms	Yes
FEH Rainfall Version	2013	Cv (Summer)	1.000
Site Location	GB 561730 195989 TQ 61730 95989	Cv (Winter)	0.840
Data Type	Point Storm Duration (mins)		30

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Online Controls for Surface Water

Orifice Manhole: SW-3, DS/PN: SW-2.001, Volume (m³): 0.9

Diameter (m) 0.140 Discharge Coefficient 0.600 Invert Level (m) 63.100

Hydro-Brake® Optimum Manhole: SW-16, DS/PN: SW-1.010, Volume (m³): 6.3

Unit Reference	MD-SHE-0284-4700-1200-4700
Design Head (m)	1.200
Design Flow (l/s)	47.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	284
Invert Level (m)	60.800
Minimum Outlet Pipe Diameter (mm)	300
Suggested Manhole Diameter (mm)	1800

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.200	47.0	Kick-Flo®	0.894	40.8
Flush-Flo™	0.456	47.0	Mean Flow over Head Range	-	38.9

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	8.9	0.800	43.8	2.000	60.1	4.000	84.2	7.000	110.6
0.200	29.3	1.000	43.1	2.200	63.0	4.500	89.1	7.500	114.3
0.300	45.5	1.200	47.0	2.400	65.7	5.000	93.8	8.000	118.0
0.400	46.8	1.400	50.6	2.600	68.3	5.500	98.3	8.500	121.6
0.500	46.9	1.600	54.0	3.000	73.2	6.000	102.5	9.000	125.0
0.600	46.4	1.800	57.1	3.500	78.9	6.500	106.6	9.500	128.4

Orifice Manhole: SW-21, DS/PN: SW-6.001, Volume (m³): 0.9

Diameter (m) 0.112 Discharge Coefficient 0.600 Invert Level (m) 63.200

Orifice Manhole: SW-28, DS/PN: SW-8.001, Volume (m³): 0.9

Diameter (m) 0.056 Discharge Coefficient 0.600 Invert Level (m) 61.400

Hydro-Brake® Optimum Manhole: SW-29, DS/PN: SW-1.016, Volume (m³): 16.4

Unit Reference	MD-SHE-0275-4600-1750-4600
Design Head (m)	1.750
Design Flow (l/s)	46.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	275
Invert Level (m)	59.649
Minimum Outlet Pipe Diameter (mm)	300
Suggested Manhole Diameter (mm)	2100

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Hydro-Brake® Optimum Manhole: SW-29, DS/PN: SW-1.016, Volume (m³): 16.4

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.750	45.9	Kick-Flo®	1.191	38.2
Flush-Flo™	0.548	45.8	Mean Flow over Head Range	-	39.3

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	8.7	0.800	44.8	2.000	49.0	4.000	68.5	7.000	89.9
0.200	28.3	1.000	42.9	2.200	51.3	4.500	72.5	7.500	93.0
0.300	43.1	1.200	38.3	2.400	53.5	5.000	76.3	8.000	96.0
0.400	45.0	1.400	41.3	2.600	55.6	5.500	80.0	8.500	98.8
0.500	45.7	1.600	44.0	3.000	59.6	6.000	83.4	9.000	101.6
0.600	45.7	1.800	46.6	3.500	64.2	6.500	86.7	9.500	104.4

Orifice Manhole: SW-44, DS/PN: SW-1.023, Volume (m³): 9.6

Diameter (m) 0.235 Discharge Coefficient 0.600 Invert Level (m) 58.750

Orifice Manhole: SW-48, DS/PN: SW-11.001, Volume (m³): 0.9

Diameter (m) 0.109 Discharge Coefficient 0.600 Invert Level (m) 61.850

Hydro-Brake® Optimum Manhole: SW-52, DS/PN: SW-1.026, Volume (m³): 4.8

Unit Reference	MD-SHE-0244-3300-1200-3300
Design Head (m)	1.200
Design Flow (l/s)	33.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	244
Invert Level (m)	58.600
Minimum Outlet Pipe Diameter (mm)	300
Suggested Manhole Diameter (mm)	1800

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.200	32.9	Kick-Flo®	0.870	28.2
Flush-Flo™	0.419	32.9	Mean Flow over Head Range	-	27.7

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	8.0	0.800	30.1	2.000	42.1	4.000	58.9	7.000	77.2
0.200	24.9	1.000	30.2	2.200	44.1	4.500	62.3	7.500	79.9
0.300	32.3	1.200	32.9	2.400	46.0	5.000	65.6	8.000	82.4
0.400	32.9	1.400	35.5	2.600	47.8	5.500	68.7	8.500	84.9
0.500	32.8	1.600	37.8	3.000	51.2	6.000	71.7	9.000	87.3
0.600	32.3	1.800	40.0	3.500	55.2	6.500	74.5	9.500	89.6

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Hydro-Brake® Optimum Manhole: SW-66, DS/PN: SW-1.031, Volume (m³): 6.0

Unit Reference	MD-SHE-0524-2000-1200-2000
Design Head (m)	1.200
Design Flow (l/s)	200.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	524
Invert Level (m)	57.750
Minimum Outlet Pipe Diameter (mm)	Site Specific Design (Contact Hydro International)
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.200	200.0	Kick-Flo®	1.039	186.4
Flush-Flo™	0.708	199.1	Mean Flow over Head Range	-	148.1

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	12.9	0.800	198.1	2.000	256.7	4.000	360.7	7.000	475.0
0.200	47.9	1.000	189.3	2.200	269.0	4.500	382.2	7.500	491.4
0.300	97.8	1.200	200.0	2.400	280.7	5.000	402.5	8.000	507.3
0.400	153.8	1.400	215.6	2.600	291.9	5.500	421.8	8.500	522.7
0.500	192.8	1.600	230.1	3.000	313.1	6.000	440.3	9.000	537.6
0.600	197.5	1.800	243.8	3.500	337.8	6.500	458.0	9.500	552.2

Orifice Manhole: SW-68, DS/PN: SW-15.001, Volume (m³): 0.9

Diameter (m) 0.030 Discharge Coefficient 0.600 Invert Level (m) 60.300

Orifice Manhole: SW-73, DS/PN: SW-16.001, Volume (m³): 0.9

Diameter (m) 0.082 Discharge Coefficient 0.600 Invert Level (m) 58.300

Orifice Manhole: SW-76, DS/PN: SW-17.001, Volume (m³): 0.9

Diameter (m) 0.040 Discharge Coefficient 0.600 Invert Level (m) 58.400

Orifice Manhole: SW-77, DS/PN: SW-1.035, Volume (m³): 10.4

Diameter (m) 0.185 Discharge Coefficient 0.600 Invert Level (m) 56.828

Orifice Manhole: SW-82, DS/PN: SW-18.001, Volume (m³): 0.9

Diameter (m) 0.057 Discharge Coefficient 0.600 Invert Level (m) 57.700

Hydro-Brake® Optimum Manhole: SW-84, DS/PN: SW-1.039, Volume (m³): 6.3

Unit Reference	MD-SHE-0181-1560-0750-1560
Design Head (m)	0.750
Design Flow (l/s)	15.6
Flush-Flo™	Calculated
Objective	Minimise upstream storage

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Hydro-Brake® Optimum Manhole: SW-84, DS/PN: SW-1.039, Volume (m³): 6.3

Application Surface
Sump Available Yes
Diameter (mm) 181
Invert Level (m) 56.650
Minimum Outlet Pipe Diameter (mm) 225
Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.750	15.6	Kick-Flo®	0.562	13.6
Flush-Flo™	0.288	15.5	Mean Flow over Head Range	-	12.8

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	6.4	0.800	16.1	2.000	24.9	4.000	34.7	7.000	45.5
0.200	15.2	1.000	17.9	2.200	26.0	4.500	36.8	7.500	47.1
0.300	15.5	1.200	19.5	2.400	27.2	5.000	38.7	8.000	48.4
0.400	15.2	1.400	21.0	2.600	28.2	5.500	40.5	8.500	49.9
0.500	14.6	1.600	22.4	3.000	30.2	6.000	42.3	9.000	51.3
0.600	14.0	1.800	23.7	3.500	32.6	6.500	43.9	9.500	52.7

Orifice Manhole: SW-90, DS/PN: SW-20.001, Volume (m³): 0.9

Diameter (m) 0.053 Discharge Coefficient 0.600 Invert Level (m) 62.450

Orifice Manhole: SW-93, DS/PN: SW-21.001, Volume (m³): 0.9

Diameter (m) 0.029 Discharge Coefficient 0.600 Invert Level (m) 62.200

Orifice Manhole: SW-96, DS/PN: SW-22.001, Volume (m³): 0.9

Diameter (m) 0.071 Discharge Coefficient 0.600 Invert Level (m) 61.500

Orifice Manhole: SW-98, DS/PN: SW-23.001, Volume (m³): 0.9

Diameter (m) 0.060 Discharge Coefficient 0.600 Invert Level (m) 59.700

Orifice Manhole: SW-107, DS/PN: SW-25.001, Volume (m³): 0.9

Diameter (m) 0.056 Discharge Coefficient 0.600 Invert Level (m) 59.050

Hydro-Brake® Optimum Manhole: SW-114, DS/PN: SW-19.010, Volume (m³): 5.4

Unit Reference MD-SHE-0099-3700-0450-3700
Design Head (m) 0.450
Design Flow (l/s) 3.7
Flush-Flo™ Calculated
Objective Minimise upstream storage
Application Surface
Sump Available Yes
Diameter (mm) 99
Invert Level (m) 57.800
Minimum Outlet Pipe Diameter (mm) 150

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Hydro-Brake® Optimum Manhole: SW-114, DS/PN: SW-19.010, Volume (m³): 5.4

Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.450	3.7	Kick-Flo®	0.332	3.2
Flush-Flo™	0.156	3.7	Mean Flow over Head Range	-	3.1

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.3	0.800	4.8	2.000	7.4	4.000	10.3	7.000	13.5
0.200	3.7	1.000	5.4	2.200	7.7	4.500	10.9	7.500	14.0
0.300	3.4	1.200	5.8	2.400	8.1	5.000	11.4	8.000	14.5
0.400	3.5	1.400	6.3	2.600	8.4	5.500	12.0	8.500	14.9
0.500	3.9	1.600	6.7	3.000	9.0	6.000	12.5	9.000	15.3
0.600	4.2	1.800	7.0	3.500	9.7	6.500	13.0	9.500	15.8

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Offline Controls for Surface Water

Complex Manhole: SW-84, DS/PN: SW-1.039, Loop to PN: None

Depth/Flow Relationship

Invert Level (m) 56.650

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.001	0.0000	1.350	0.0000

Orifice

Diameter (m) 0.200 Discharge Coefficient 0.600 Invert Level (m) 57.400

Complex Manhole: SW-114, DS/PN: SW-19.010, Loop to PN: None

Depth/Flow Relationship

Invert Level (m) 57.800

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.001	0.0000	1.500	0.0000

Hydro-Brake® Optimum

Unit Reference	MD-SHE-0138-8000-0500-8000
Design Head (m)	0.500
Design Flow (l/s)	8.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	138
Invert Level (m)	58.500
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.500	8.0	Kick-Flo®	0.388	7.1
Flush-Flo™	0.209	8.0	Mean Flow over Head Range	-	6.4

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.0	0.800	10.0	2.000	15.4	4.000	21.4	7.000	28.1
0.200	8.0	1.000	11.1	2.200	16.1	4.500	22.7	7.500	29.1
0.300	7.8	1.200	12.1	2.400	16.8	5.000	23.9	8.000	30.1
0.400	7.2	1.400	13.0	2.600	17.4	5.500	24.9	8.500	31.0
0.500	8.0	1.600	13.8	3.000	18.7	6.000	26.0	9.000	31.9
0.600	8.7	1.800	14.6	3.500	20.1	6.500	27.1	9.500	32.8

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Storage Structures for Surface Water

Porous Car Park Manhole: SW-3, DS/PN: SW-2.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.1
Membrane Percolation (mm/hr)	1000	Length (m)	42.4
Max Percolation (l/s)	48.3	Slope (1:X)	100000.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	63.100	Cap Volume Depth (m)	0.600

Tank or Pond Manhole: SW-16, DS/PN: SW-1.010

Invert Level (m) 60.800

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	367.4	1.200	695.1	1.500	789.8

Porous Car Park Manhole: SW-21, DS/PN: SW-6.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.1
Membrane Percolation (mm/hr)	1000	Length (m)	32.7
Max Percolation (l/s)	37.2	Slope (1:X)	100000.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	63.200	Cap Volume Depth (m)	0.600

Porous Car Park Manhole: SW-28, DS/PN: SW-8.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	6.0
Membrane Percolation (mm/hr)	1000	Length (m)	83.8
Max Percolation (l/s)	139.7	Slope (1:X)	100000.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	61.400	Cap Volume Depth (m)	0.600

Cellular Storage Manhole: SW-29, DS/PN: SW-1.016

Invert Level (m)	59.750	Safety Factor	2.0
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95
Infiltration Coefficient Side (m/hr)	0.00000		

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	500.0	500.0	1.650	500.0	647.6	1.651	0.0	647.6

Tank or Pond Manhole: SW-44, DS/PN: SW-1.023

Invert Level (m) 58.750

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	492.6	1.200	868.5	1.500	975.2

JNP Group			Page 33																																																																																																																																								
3rd Floor, Marlborough House 48 Holly Walk Leamington Spa CV32 4XP		Officers' Meadow, Shenfield Sustainable Drainage Strategy Surface Water																																																																																																																																									
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<u>Porous Car Park Manhole: SW-48, DS/PN: SW-11.001</u> <table><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.00000</td><td>Width (m)</td><td>4.1</td></tr><tr><td>Membrane Percolation (mm/hr)</td><td>1000</td><td>Length (m)</td><td>58.2</td></tr><tr><td>Max Percolation (l/s)</td><td>66.3</td><td>Slope (1:X)</td><td>100000.0</td></tr><tr><td>Safety Factor</td><td>2.0</td><td>Depression Storage (mm)</td><td>5</td></tr><tr><td>Porosity</td><td>0.30</td><td>Evaporation (mm/day)</td><td>3</td></tr><tr><td>Invert Level (m)</td><td>61.850</td><td>Cap Volume Depth (m)</td><td>0.600</td></tr></table> <u>Tank or Pond Manhole: SW-52, DS/PN: SW-1.026</u> Invert Level (m) 58.600 <table><tr><td>Depth (m)</td><td>Area (m²)</td><td>Depth (m)</td><td>Area (m²)</td><td>Depth (m)</td><td>Area (m²)</td></tr><tr><td>0.000</td><td>799.6</td><td>1.200</td><td>1246.0</td><td>1.500</td><td>1370.3</td></tr></table> <u>Tank or Pond Manhole: SW-66, DS/PN: SW-1.031</u> Invert Level (m) 57.750 <table><tr><td>Depth (m)</td><td>Area (m²)</td><td>Depth (m)</td><td>Area (m²)</td><td>Depth (m)</td><td>Area (m²)</td></tr><tr><td>0.000</td><td>295.0</td><td>1.200</td><td>569.2</td><td>1.500</td><td>650.5</td></tr></table> <u>Porous Car Park Manhole: SW-68, DS/PN: SW-15.001</u> <table><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.00000</td><td>Width (m)</td><td>4.0</td></tr><tr><td>Membrane Percolation (mm/hr)</td><td>1000</td><td>Length (m)</td><td>31.6</td></tr><tr><td>Max Percolation (l/s)</td><td>35.1</td><td>Slope (1:X)</td><td>100000.0</td></tr><tr><td>Safety Factor</td><td>2.0</td><td>Depression Storage (mm)</td><td>5</td></tr><tr><td>Porosity</td><td>0.30</td><td>Evaporation (mm/day)</td><td>3</td></tr><tr><td>Invert Level (m)</td><td>60.300</td><td>Cap Volume Depth (m)</td><td>0.600</td></tr></table> <u>Porous Car Park Manhole: SW-73, DS/PN: SW-16.001</u> <table><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.00000</td><td>Width (m)</td><td>6.0</td></tr><tr><td>Membrane Percolation (mm/hr)</td><td>1000</td><td>Length (m)</td><td>161.2</td></tr><tr><td>Max Percolation (l/s)</td><td>268.7</td><td>Slope (1:X)</td><td>100000.0</td></tr><tr><td>Safety Factor</td><td>2.0</td><td>Depression Storage (mm)</td><td>5</td></tr><tr><td>Porosity</td><td>0.30</td><td>Evaporation (mm/day)</td><td>3</td></tr><tr><td>Invert Level (m)</td><td>58.300</td><td>Cap Volume Depth (m)</td><td>0.600</td></tr></table> <u>Cellular Storage Manhole: SW-74, DS/PN: SW-1.034</u> Invert Level (m) 56.980 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><tr><td>Depth (m)</td><td>Area (m²)</td><td>Inf. Area (m²)</td><td>Depth (m)</td><td>Area (m²)</td><td>Inf. Area (m²)</td><td>Depth (m)</td><td>Area (m²)</td><td>Inf. Area (m²)</td></tr><tr><td>0.000</td><td>1190.0</td><td>1190.0</td><td>1.320</td><td>1190.0</td><td>1372.1</td><td>1.321</td><td>0.0</td><td>1372.2</td></tr></table> <u>Porous Car Park Manhole: SW-76, DS/PN: SW-17.001</u> <table><tr><td>Infiltration Coefficient Base (m/hr)</td><td>0.00000</td><td>Invert Level (m)</td><td>58.400</td></tr><tr><td>Membrane Percolation (mm/hr)</td><td>1000</td><td>Width (m)</td><td>4.1</td></tr><tr><td>Max Percolation (l/s)</td><td>104.3</td><td>Length (m)</td><td>91.6</td></tr><tr><td>Safety Factor</td><td>2.0</td><td>Slope (1:X)</td><td>100000.0</td></tr><tr><td>Porosity</td><td>0.30</td><td>Depression Storage (mm)</td><td>5</td></tr></table>						Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.1	Membrane Percolation (mm/hr)	1000	Length (m)	58.2	Max Percolation (l/s)	66.3	Slope (1:X)	100000.0	Safety Factor	2.0	Depression Storage (mm)	5	Porosity	0.30	Evaporation (mm/day)	3	Invert Level (m)	61.850	Cap Volume Depth (m)	0.600	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	0.000	799.6	1.200	1246.0	1.500	1370.3	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	0.000	295.0	1.200	569.2	1.500	650.5	Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.0	Membrane Percolation (mm/hr)	1000	Length (m)	31.6	Max Percolation (l/s)	35.1	Slope (1:X)	100000.0	Safety Factor	2.0	Depression Storage (mm)	5	Porosity	0.30	Evaporation (mm/day)	3	Invert Level (m)	60.300	Cap Volume Depth (m)	0.600	Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	6.0	Membrane Percolation (mm/hr)	1000	Length (m)	161.2	Max Percolation (l/s)	268.7	Slope (1:X)	100000.0	Safety Factor	2.0	Depression Storage (mm)	5	Porosity	0.30	Evaporation (mm/day)	3	Invert Level (m)	58.300	Cap Volume Depth (m)	0.600	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	1190.0	1190.0	1.320	1190.0	1372.1	1.321	0.0	1372.2	Infiltration Coefficient Base (m/hr)	0.00000	Invert Level (m)	58.400	Membrane Percolation (mm/hr)	1000	Width (m)	4.1	Max Percolation (l/s)	104.3	Length (m)	91.6	Safety Factor	2.0	Slope (1:X)	100000.0	Porosity	0.30	Depression Storage (mm)	5
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Max Percolation (l/s)	268.7	Slope (1:X)	100000.0																																																																																																																																								
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Porosity	0.30	Evaporation (mm/day)	3																																																																																																																																								
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0.000	1190.0	1190.0	1.320	1190.0	1372.1	1.321	0.0	1372.2																																																																																																																																			
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Micro Drainage	Network 2020.1.3	

Porous Car Park Manhole: SW-76, DS/PN: SW-17.001

Evaporation (mm/day) 3 Cap Volume Depth (m) 0.600

Cellular Storage Manhole: SW-77, DS/PN: SW-1.035

Invert Level (m) 57.080 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	305.0	305.0	1.320	305.0	397.2	1.321	0.0	397.2

Porous Car Park Manhole: SW-82, DS/PN: SW-18.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	16.0
Membrane Percolation (mm/hr)	1000	Length (m)	50.6
Max Percolation (l/s)	224.9	Slope (1:X)	100000.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	57.700	Cap Volume Depth (m)	0.600

Cellular Storage Manhole: SW-84, DS/PN: SW-1.039

Invert Level (m) 57.040 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	805.0	805.0	0.660	805.0	879.9	0.661	0.0	880.0

Porous Car Park Manhole: SW-90, DS/PN: SW-20.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.0
Membrane Percolation (mm/hr)	1000	Length (m)	117.1
Max Percolation (l/s)	130.1	Slope (1:X)	100000.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	62.450	Cap Volume Depth (m)	0.600

Porous Car Park Manhole: SW-93, DS/PN: SW-21.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	16.0
Membrane Percolation (mm/hr)	1000	Length (m)	20.5
Max Percolation (l/s)	91.1	Slope (1:X)	100000.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	62.200	Cap Volume Depth (m)	0.600

Porous Car Park Manhole: SW-96, DS/PN: SW-22.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.0
Membrane Percolation (mm/hr)	1000	Length (m)	27.5
Max Percolation (l/s)	30.6	Slope (1:X)	100000.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	61.500	Cap Volume Depth (m)	0.600

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Porous Car Park Manhole: SW-98, DS/PN: SW-23.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.1
Membrane Percolation (mm/hr)	1000	Length (m)	35.9
Max Percolation (l/s)	40.9	Slope (1:X)	100000.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	59.700	Cap Volume Depth (m)	0.600

Porous Car Park Manhole: SW-104, DS/PN: SW-24.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	6.0
Membrane Percolation (mm/hr)	1000	Length (m)	20.2
Max Percolation (l/s)	33.7	Slope (1:X)	100000.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	59.850	Cap Volume Depth (m)	0.600

Porous Car Park Manhole: SW-107, DS/PN: SW-25.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	6.0
Membrane Percolation (mm/hr)	1000	Length (m)	98.6
Max Percolation (l/s)	164.3	Slope (1:X)	100000.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	59.050	Cap Volume Depth (m)	0.600

Cellular Storage Manhole: SW-108, DS/PN: SW-19.008

Invert Level (m)	58.390	Safety Factor	2.0
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95
Infiltration Coefficient Side (m/hr)	0.00000		

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	400.0	450.0	0.660	400.0	506.0	0.661	0.0	506.0

Porous Car Park Manhole: SW-110, DS/PN: SW-26.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.1
Membrane Percolation (mm/hr)	1000	Length (m)	22.0
Max Percolation (l/s)	25.1	Slope (1:X)	100000.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	58.750	Cap Volume Depth (m)	0.600

Tank or Pond Manhole: SW-114, DS/PN: SW-19.010

Invert Level (m) 57.800

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	505.8	1.200	1006.7	1.500	1144.8

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Micro Drainage	Network 2020.1.3	

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

Simulation Criteria

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

Number of Input Hydrographs 0 Number of Offline Controls 2 Number of Time/Area Diagrams 0
 Number of Online Controls 21 Number of Storage Structures 25 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
 FEH Rainfall Version 2013 Cv (Summer) 1.000
 Site Location GB 561730 195989 TQ 61730 95989 Cv (Winter) 1.000

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

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960,
 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
 Return Period(s) (years) 2, 30, 100, 101
 Climate Change (%) 0, 0, 45, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
SW-1.000	SW-1	15 Summer	2	+0%	100/15 Summer				62.449	-0.201
SW-2.000	SW-2	120 Summer	2	+0%	30/15 Summer				63.216	-0.084
SW-2.001	SW-3	120 Summer	2	+0%	30/15 Summer				63.217	-0.033
SW-1.001	SW-4	15 Summer	2	+0%	100/15 Summer				62.282	-0.268
SW-1.002	SW-5	15 Summer	2	+0%	100/15 Summer				62.154	-0.296
SW-1.003	SW-6	15 Summer	2	+0%	100/15 Summer				61.997	-0.353
SW-1.004	SW-7	15 Summer	2	+0%	100/15 Summer				61.726	-0.374
SW-3.000	SW-8	15 Summer	2	+0%	30/15 Summer	100/15 Summer			61.730	-0.220
SW-1.005	SW-9	15 Summer	2	+0%	30/15 Summer				61.455	-0.395
SW-4.000	SW-10	15 Summer	2	+0%	100/15 Summer				62.028	-0.222
SW-1.006	SW-11	15 Summer	2	+0%	30/15 Summer				61.395	-0.307
SW-5.000	SW-12	15 Summer	2	+0%	100/15 Summer				62.144	-0.206
SW-1.007	SW-13	15 Summer	2	+0%	30/15 Summer				61.320	-0.272
SW-1.008	SW-14	15 Summer	2	+0%	30/15 Summer				61.254	-0.224
SW-1.009	SW-15	15 Summer	2	+0%	30/15 Summer				61.216	-0.214
SW-1.010	SW-16	180 Summer	2	+0%	30/15 Summer				61.094	-0.006
SW-1.011	SW-17	180 Summer	2	+0%	100/15 Summer				60.869	-0.157
SW-1.012	SW-18	180 Summer	2	+0%	30/180 Summer				60.624	-0.157
SW-1.013	SW-19	180 Summer	2	+0%	30/15 Summer				60.396	-0.138
SW-6.000	SW-20	120 Summer	2	+0%	30/15 Summer				63.319	-0.081
SW-6.001	SW-21	120 Summer	2	+0%	30/15 Summer				63.319	-0.031
SW-1.014	SW-22	180 Summer	2	+0%	30/15 Summer				60.279	-0.215
SW-7.000	SW-23	15 Summer	2	+0%	100/15 Summer				62.441	-0.259
SW-7.001	SW-24	15 Summer	2	+0%	100/15 Summer				62.262	-0.288
SW-7.002	SW-25	15 Summer	2	+0%	100/15 Summer				61.693	-0.357
SW-1.015	SW-26	15 Summer	2	+0%	30/15 Summer				60.112	-0.167
SW-8.000	SW-27	360 Summer	2	+0%	30/60 Summer				61.523	-0.077
SW-8.001	SW-28	360 Summer	2	+0%	30/15 Summer				61.523	-0.027
SW-1.016	SW-29	240 Summer	2	+0%	30/30 Summer				59.980	-0.119

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

PN	US/MH Name	Flooded		Half Drain		Pipe	Status	Level Exceeded
		Volume (m³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Flow (l/s)		
SW-1.000	SW-1	0.000	0.23			15.1	OK	
SW-2.000	SW-2	0.000	0.00			0.0	OK	
SW-2.001	SW-3	0.000	0.16	40	6.3		OK	
SW-1.001	SW-4	0.000	0.18			22.1	OK	
SW-1.002	SW-5	0.000	0.25			36.6	OK	
SW-1.003	SW-6	0.000	0.23			65.2	OK	
SW-1.004	SW-7	0.000	0.18			69.8	OK	
SW-3.000	SW-8	0.000	0.16			12.5	OK	1
SW-1.005	SW-9	0.000	0.22			86.4	OK	
SW-4.000	SW-10	0.000	0.15			21.1	OK	
SW-1.006	SW-11	0.000	0.37			100.1	OK	
SW-5.000	SW-12	0.000	0.21			29.9	OK	
SW-1.007	SW-13	0.000	0.45			123.3	OK	
SW-1.008	SW-14	0.000	0.50			118.5	OK	
SW-1.009	SW-15	0.000	0.74			121.9	OK	
SW-1.010	SW-16	0.000	0.52			31.4	OK	
SW-1.011	SW-17	0.000	0.46			31.3	OK	
SW-1.012	SW-18	0.000	0.46			31.4	OK	
SW-1.013	SW-19	0.000	0.57			31.3	OK	
SW-6.000	SW-20	0.000	0.00			0.0	OK	
SW-6.001	SW-21	0.000	0.07	36	5.3		OK	
SW-1.014	SW-22	0.000	0.38			39.4	OK	
SW-7.000	SW-23	0.000	0.21			25.4	OK	
SW-7.001	SW-24	0.000	0.27			63.4	OK	
SW-7.002	SW-25	0.000	0.09			70.7	OK	
SW-1.015	SW-26	0.000	0.69			107.6	OK	
SW-8.000	SW-27	0.000	0.00			0.0	OK	
SW-8.001	SW-28	0.000	0.04	174	2.0		OK	
SW-1.016	SW-29	0.000	0.27	104	39.9		OK	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
SW-1.017	SW-30	240 Summer	2	+0%	100/15 Summer				59.700
SW-1.018	SW-31	240 Summer	2	+0%	100/15 Summer				59.563
SW-9.000	SW-32	15 Summer	2	+0%	100/15 Summer				60.125
SW-9.001	SW-33	15 Summer	2	+0%	100/15 Summer				59.856
SW-9.002	SW-34	15 Summer	2	+0%	100/15 Summer				59.666
SW-1.019	SW-35	15 Summer	2	+0%	30/15 Summer				59.414
SW-1.020	SW-36	15 Summer	2	+0%	100/15 Summer				59.351
SW-1.021	SW-37	15 Summer	2	+0%	100/15 Summer				59.295
SW-1.022	SW-38	15 Summer	2	+0%	100/15 Summer				59.219
SW-10.000	SW-39	15 Summer	2	+0%	100/15 Summer				60.391
SW-10.001	SW-40	15 Summer	2	+0%	100/15 Summer				60.205
SW-10.002	SW-41	15 Summer	2	+0%	100/15 Summer				60.044
SW-10.003	SW-42	15 Summer	2	+0%	100/15 Summer				59.999
SW-10.004	SW-43	15 Summer	2	+0%					59.893
SW-1.023	SW-44	360 Summer	2	+0%	2/120 Summer				59.156
SW-1.024	SW-45	480 Summer	2	+0%	30/120 Summer				58.933
SW-1.025	SW-46	360 Winter	2	+0%	30/120 Summer				58.903
SW-11.000	SW-47	120 Summer	2	+0%	30/15 Summer				61.980
SW-11.001	SW-48	120 Summer	2	+0%	30/15 Summer				61.980
SW-11.002	SW-49	120 Summer	2	+0%	100/15 Summer				60.854
SW-11.003	SW-50	30 Summer	2	+0%					60.130
SW-11.004	SW-51	120 Summer	2	+0%					59.623
SW-1.026	SW-52	480 Summer	2	+0%	30/60 Summer				58.880
SW-12.000	SW-53	15 Summer	2	+0%	100/15 Summer				61.028
SW-12.001	SW-54	15 Summer	2	+0%	100/15 Summer				60.902
SW-12.002	SW-55	15 Summer	2	+0%	100/15 Summer				60.621
SW-1.027	SW-56	15 Summer	2	+0%	30/15 Summer				58.489
SW-1.028	SW-57	15 Summer	2	+0%	30/15 Summer				58.333
SW-1.029	SW-58	15 Summer	2	+0%	30/15 Summer				58.263
SW-13.000	SW-59	15 Summer	2	+0%	100/15 Summer				62.241
SW-13.001	SW-60	15 Summer	2	+0%	30/15 Summer	100/15 Summer			61.980
SW-13.002	SW-61	15 Summer	2	+0%	100/15 Summer				61.585
SW-14.000	SW-62	15 Summer	2	+0%	100/15 Summer				59.899
SW-13.003	SW-63	15 Summer	2	+0%	100/15 Summer				59.540
SW-13.004	SW-64	15 Summer	2	+0%	100/15 Summer				59.223
SW-1.030	SW-65	15 Summer	2	+0%	30/15 Summer				58.203
SW-1.031	SW-66	120 Summer	2	+0%	30/15 Summer				58.130
SW-15.000	SW-67	240 Summer	2	+0%	30/30 Summer				60.418
SW-15.001	SW-68	240 Summer	2	+0%	30/15 Summer				60.418
SW-15.002	SW-69	15 Summer	2	+0%	100/15 Summer				59.596
SW-1.032	SW-70	120 Summer	2	+0%	100/15 Winter				57.906
SW-1.033	SW-71	120 Summer	2	+0%	100/240 Summer				57.753
SW-16.000	SW-72	360 Summer	2	+0%	30/30 Summer				58.428
SW-16.001	SW-73	360 Summer	2	+0%	30/15 Summer				58.428
SW-1.034	SW-74	960 Summer	2	+0%	2/240 Summer				57.447
SW-17.000	SW-75	360 Summer	2	+0%	30/60 Summer				58.522
SW-17.001	SW-76	360 Summer	2	+0%	30/30 Summer				58.522
SW-1.035	SW-77	960 Summer	2	+0%	2/180 Summer				57.440
SW-1.036	SW-78	960 Summer	2	+0%	2/360 Summer				57.370
SW-1.037	SW-79	960 Summer	2	+0%	2/360 Summer				57.364
SW-1.038	SW-80	960 Summer	2	+0%	2/240 Summer				57.359
SW-18.000	SW-81	360 Summer	2	+0%	30/60 Summer				57.824
SW-18.001	SW-82	360 Summer	2	+0%	30/30 Summer				57.824
SW-18.002	SW-83	240 Summer	2	+0%					57.652
SW-1.039	SW-84	960 Summer	2	+0%	2/15 Summer		30/60 Summer	107	57.353

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

PN	US/MH Name	Surcharged Flooded		Flow / Overflow		Half Drain	Pipe	Status	Level Exceeded
		Depth (m)	Volume (m³)	Cap.	(l/s)	Time (mins)	Flow (l/s)		
SW-1.017	SW-30	-0.309	0.000	0.22			40.2	OK	
SW-1.018	SW-31	-0.337	0.000	0.14			40.5	OK	
SW-9.000	SW-32	-0.175	0.000	0.11			7.5	OK	
SW-9.001	SW-33	-0.194	0.000	0.26			22.7	OK	
SW-9.002	SW-34	-0.184	0.000	0.32			27.4	OK	
SW-1.019	SW-35	-0.236	0.000	0.39			52.7	OK	
SW-1.020	SW-36	-0.230	0.000	0.43			56.6	OK	
SW-1.021	SW-37	-0.235	0.000	0.44			59.0	OK	
SW-1.022	SW-38	-0.248	0.000	0.42			58.9	OK	
SW-10.000	SW-39	-0.159	0.000	0.19			7.9	OK	
SW-10.001	SW-40	-0.195	0.000	0.26			16.8	OK	
SW-10.002	SW-41	-0.178	0.000	0.34			19.6	OK	
SW-10.003	SW-42	-0.175	0.000	0.36			21.5	OK	
SW-10.004	SW-43	-0.218	0.000	0.16			25.6	OK	
SW-1.023	SW-44	0.031	0.000	0.52			42.1	SURCHARGED	
SW-1.024	SW-45	-0.101	0.000	0.69			41.9	OK	
SW-1.025	SW-46	-0.095	0.000	0.81			42.0	OK	
SW-11.000	SW-47	-0.070	0.000	0.00			0.0	OK	
SW-11.001	SW-48	-0.020	0.000	0.17		52	6.0	OK	
SW-11.002	SW-49	-0.096	0.000	0.27			7.3	OK	
SW-11.003	SW-50	-0.170	0.000	0.13			9.2	OK	
SW-11.004	SW-51	-0.177	0.000	0.10			9.1	OK	
SW-1.026	SW-52	-0.020	0.000	0.48			32.0	OK	
SW-12.000	SW-53	-0.122	0.000	0.42			13.4	OK	
SW-12.001	SW-54	-0.198	0.000	0.25			24.2	OK	
SW-12.002	SW-55	-0.229	0.000	0.13			35.7	OK	
SW-1.027	SW-56	-0.177	0.000	0.53			53.1	OK	
SW-1.028	SW-57	-0.219	0.000	0.45			62.6	OK	
SW-1.029	SW-58	-0.195	0.000	0.51			68.7	OK	
SW-13.000	SW-59	-0.209	0.000	0.20			22.4	OK	
SW-13.001	SW-60	-0.170	0.000	0.38			36.5	OK	1
SW-13.002	SW-61	-0.365	0.000	0.19			113.0	OK	
SW-14.000	SW-62	-0.151	0.000	0.24			8.8	OK	
SW-13.003	SW-63	-0.320	0.000	0.33			127.2	OK	
SW-13.004	SW-64	-0.377	0.000	0.18			136.6	OK	
SW-1.030	SW-65	-0.190	0.000	0.80			209.7	OK	
SW-1.031	SW-66	-0.145	0.000	0.33			59.0	OK	
SW-15.000	SW-67	-0.082	0.000	0.00			0.0	OK	
SW-15.001	SW-68	-0.032	0.000	0.01		132	0.6	OK	
SW-15.002	SW-69	-0.104	0.000	0.20			11.4	OK	
SW-1.032	SW-70	-0.307	0.000	0.36			64.4	OK	
SW-1.033	SW-71	-0.403	0.000	0.12			68.9	OK	
SW-16.000	SW-72	-0.072	0.000	0.00			0.0	OK	
SW-16.001	SW-73	-0.022	0.000	0.08		192	4.1	OK	
SW-1.034	SW-74	0.098	0.000	0.24		1040	32.9	SURCHARGED	
SW-17.000	SW-75	-0.078	0.000	0.00			0.0	OK	
SW-17.001	SW-76	-0.028	0.000	0.02		216	1.1	OK	
SW-1.035	SW-77	0.162	0.000	0.28		928	28.1	SURCHARGED	
SW-1.036	SW-78	0.122	0.000	0.26			28.0	SURCHARGED	
SW-1.037	SW-79	0.156	0.000	0.26			28.0	SURCHARGED	
SW-1.038	SW-80	0.188	0.000	0.19			27.9	SURCHARGED	
SW-18.000	SW-81	-0.076	0.000	0.00			0.0	OK	
SW-18.001	SW-82	-0.026	0.000	0.14		240	2.1	OK	
SW-18.002	SW-83	-0.122	0.000	0.08			2.3	OK	

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

PN	US/MH Name	Surcharged Flooded		Flow / Overflow		Half Drain	Pipe	Status	Level Exceeded
		Depth (m)	Volume (m³)	Cap.	(l/s)	Time (mins)	Flow (l/s)		
SW-1.039	SW-84	0.403	0.000	0.26	0.0	672	15.5	SURCHARGED	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
SW-19.000	SW-86	15 Summer	2	+0%	100/15 Summer				62.962	-0.088
SW-19.001	SW-87	15 Summer	2	+0%	100/15 Summer				62.483	-0.167
SW-19.002	SW-88	15 Summer	2	+0%	100/15 Summer				62.289	-0.161
SW-20.000	SW-89	360 Summer	2	+0%	30/60 Summer				62.573	-0.077
SW-20.001	SW-90	360 Summer	2	+0%	30/15 Summer				62.573	-0.027
SW-19.003	SW-91	15 Summer	2	+0%	100/15 Summer				61.745	-0.155
SW-21.000	SW-92	480 Summer	2	+0%	30/60 Summer				62.320	-0.080
SW-21.001	SW-93	480 Summer	2	+0%	30/30 Summer				62.320	-0.030
SW-19.004	SW-94	15 Summer	2	+0%	100/15 Summer				61.449	-0.151
SW-22.000	SW-95	120 Summer	2	+0%	30/15 Summer				61.615	-0.085
SW-22.001	SW-96	120 Summer	2	+0%	30/15 Summer				61.615	-0.035
SW-23.000	SW-97	120 Summer	2	+0%	30/15 Summer				59.816	-0.084
SW-23.001	SW-98	120 Summer	2	+0%	30/15 Summer				59.816	-0.034
SW-22.002	SW-99	30 Summer	2	+0%	30/15 Summer				59.569	-0.148
SW-22.003	SW-100	30 Summer	2	+0%	30/15 Summer				59.298	-0.213
SW-19.005	SW-101	15 Summer	2	+0%	30/15 Summer				59.218	-0.222
SW-19.006	SW-102	15 Summer	2	+0%	30/15 Summer				59.173	-0.229
SW-24.000	SW-103	30 Summer	2	+0%	100/15 Summer				59.904	-0.146
SW-24.001	SW-104	30 Summer	2	+0%	30/15 Summer				59.914	-0.086
SW-19.007	SW-105	15 Summer	2	+0%	100/15 Summer				59.016	-0.305
SW-25.000	SW-106	360 Summer	2	+0%	30/60 Summer				59.174	-0.076
SW-25.001	SW-107	360 Summer	2	+0%	30/15 Summer				59.174	-0.026
SW-19.008	SW-108	15 Summer	2	+0%	100/15 Summer				58.272	-0.328
SW-26.000	SW-109	30 Summer	2	+0%	100/15 Summer				58.800	-0.150
SW-26.001	SW-110	30 Summer	2	+0%	100/15 Summer				58.803	-0.097
SW-26.002	SW-111	15 Summer	2	+0%	30/15 Summer				58.689	-0.146
SW-26.003	SW-112	15 Summer	2	+0%	30/15 Summer				58.276	-0.174
SW-19.009	SW-113	720 Summer	2	+0%	30/15 Summer				58.250	-0.104
SW-19.010	SW-114	720 Summer	2	+0%	2/120 Summer		30/240 Summer	80	58.249	0.224

PN	US/MH Name	Flooded Volume (m³)	Flow / Overflow Cap.	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
SW-19.000	SW-86	0.000	0.36		6.7	OK	
SW-19.001	SW-87	0.000	0.15		8.3	OK	
SW-19.002	SW-88	0.000	0.18		13.6	OK	
SW-20.000	SW-89	0.000	0.00		0.0	OK	
SW-20.001	SW-90	0.000	0.04	180	1.8	OK	
SW-19.003	SW-91	0.000	0.21		16.1	OK	
SW-21.000	SW-92	0.000	0.00		0.0	OK	
SW-21.001	SW-93	0.000	0.01	328	0.6	OK	
SW-19.004	SW-94	0.000	0.23		31.4	OK	
SW-22.000	SW-95	0.000	0.00		0.0	OK	
SW-22.001	SW-96	0.000	0.05	40	3.0	OK	
SW-23.000	SW-97	0.000	0.00		0.0	OK	
SW-23.001	SW-98	0.000	0.13	56	2.2	OK	
SW-22.002	SW-99	0.000	0.25		9.4	OK	
SW-22.003	SW-100	0.000	0.19		11.2	OK	
SW-19.005	SW-101	0.000	0.47		50.1	OK	
SW-19.006	SW-102	0.000	0.47		66.0	OK	
SW-24.000	SW-103	0.000	0.00		0.0	OK	
SW-24.001	SW-104	0.000	0.38	12	13.1	OK	
SW-19.007	SW-105	0.000	0.23		90.9	OK	
SW-25.000	SW-106	0.000	0.00		0.0	OK	

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

PN	US/MH Name	Flooded		Half Drain		Pipe	Status	Level Exceeded
		Volume (m ³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)		
SW-25.001	SW-107	0.000	0.06		192	2.0	OK	
SW-19.008	SW-108	0.000	0.25		6	94.4	OK	
SW-26.000	SW-109	0.000	0.00			0.0	OK	
SW-26.001	SW-110	0.000	0.27		14	4.0	OK	
SW-26.002	SW-111	0.000	0.26			18.1	OK	
SW-26.003	SW-112	0.000	0.31			30.1	OK	
SW-19.009	SW-113	0.000	0.24			29.1	OK	
SW-19.010	SW-114	0.000	0.11	0.0		3.7	SURCHARGED	

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

Simulation Criteria

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

Number of Input Hydrographs 0 Number of Offline Controls 2 Number of Time/Area Diagrams 0
 Number of Online Controls 21 Number of Storage Structures 25 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
 FEH Rainfall Version 2013 Cv (Summer) 1.000
 Site Location GB 561730 195989 TQ 61730 95989 Cv (Winter) 1.000

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

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960,
 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
 Return Period(s) (years) 2, 30, 100, 101
 Climate Change (%) 0, 0, 45, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
SW-1.000	SW-1	15 Summer	30	+0%	100/15 Summer				62.515	-0.135
SW-2.000	SW-2	30 Summer	30	+0%	30/15 Summer				63.364	0.064
SW-2.001	SW-3	30 Summer	30	+0%	30/15 Summer				63.364	0.114
SW-1.001	SW-4	15 Summer	30	+0%	100/15 Summer				62.375	-0.175
SW-1.002	SW-5	15 Summer	30	+0%	100/15 Summer				62.308	-0.142
SW-1.003	SW-6	15 Summer	30	+0%	100/15 Summer				62.163	-0.187
SW-1.004	SW-7	15 Summer	30	+0%	100/15 Summer				61.971	-0.129
SW-3.000	SW-8	15 Summer	30	+0%	30/15 Summer	100/15 Summer			61.980	0.030
SW-1.005	SW-9	15 Summer	30	+0%	30/15 Summer				61.910	0.060
SW-4.000	SW-10	15 Summer	30	+0%	100/15 Summer				62.077	-0.173
SW-1.006	SW-11	15 Summer	30	+0%	30/15 Summer				61.785	0.083
SW-5.000	SW-12	15 Summer	30	+0%	100/15 Summer				62.206	-0.144
SW-1.007	SW-13	15 Summer	30	+0%	30/15 Summer				61.695	0.102
SW-1.008	SW-14	15 Summer	30	+0%	30/15 Summer				61.529	0.052
SW-1.009	SW-15	15 Summer	30	+0%	30/15 Summer				61.439	0.010
SW-1.010	SW-16	120 Summer	30	+0%	30/15 Summer				61.366	0.266
SW-1.011	SW-17	240 Summer	30	+0%	100/15 Summer				60.926	-0.100
SW-1.012	SW-18	240 Summer	30	+0%	30/180 Summer				60.845	0.064
SW-1.013	SW-19	15 Summer	30	+0%	30/15 Summer				60.878	0.343
SW-6.000	SW-20	30 Summer	30	+0%	30/15 Summer				63.491	0.091
SW-6.001	SW-21	30 Summer	30	+0%	30/15 Summer				63.491	0.141
SW-1.014	SW-22	15 Summer	30	+0%	30/15 Summer				60.877	0.383
SW-7.000	SW-23	15 Summer	30	+0%	100/15 Summer				62.517	-0.183
SW-7.001	SW-24	15 Summer	30	+0%	100/15 Summer				62.413	-0.137
SW-7.002	SW-25	15 Summer	30	+0%	100/15 Summer				61.762	-0.288
SW-1.015	SW-26	15 Summer	30	+0%	30/15 Summer				60.763	0.483
SW-8.000	SW-27	240 Summer	30	+0%	30/60 Summer				61.678	0.078
SW-8.001	SW-28	240 Summer	30	+0%	30/15 Summer				61.678	0.128
SW-1.016	SW-29	240 Summer	30	+0%	30/30 Summer				60.494	0.396

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

PN	US/MH Name	Flooded		Half Drain		Pipe		Status	Level Exceeded
		Volume (m³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Flow (l/s)			
SW-1.000	SW-1	0.000	0.57			37.1		OK	
SW-2.000	SW-2	0.000	0.01			0.2		SURCHARGED	
SW-2.001	SW-3	0.000	0.47		16	18.0		SURCHARGED	
SW-1.001	SW-4	0.000	0.54			67.1		OK	
SW-1.002	SW-5	0.000	0.77			112.4		OK	
SW-1.003	SW-6	0.000	0.70			199.8		OK	
SW-1.004	SW-7	0.000	0.48			185.2		OK	
SW-3.000	SW-8	0.000	0.39			31.0		SURCHARGED	1
SW-1.005	SW-9	0.000	0.55			211.4		SURCHARGED	
SW-4.000	SW-10	0.000	0.37			52.2		OK	
SW-1.006	SW-11	0.000	0.90			242.4		SURCHARGED	
SW-5.000	SW-12	0.000	0.53			73.8		OK	
SW-1.007	SW-13	0.000	1.15			312.6		SURCHARGED	
SW-1.008	SW-14	0.000	1.36			319.5		SURCHARGED	
SW-1.009	SW-15	0.000	1.97			325.7		SURCHARGED	
SW-1.010	SW-16	0.000	0.77			46.6		SURCHARGED	
SW-1.011	SW-17	0.000	0.69			46.6		OK	
SW-1.012	SW-18	0.000	0.69			46.6		SURCHARGED	
SW-1.013	SW-19	0.000	0.80			44.1		SURCHARGED	
SW-6.000	SW-20	0.000	0.02			0.2		SURCHARGED	
SW-6.001	SW-21	0.000	0.17		18	12.7		SURCHARGED	
SW-1.014	SW-22	0.000	0.65			68.7		SURCHARGED	
SW-7.000	SW-23	0.000	0.51			62.5		OK	
SW-7.001	SW-24	0.000	0.77			184.2		OK	
SW-7.002	SW-25	0.000	0.28			207.0		OK	
SW-1.015	SW-26	0.000	1.82			284.9		SURCHARGED	
SW-8.000	SW-27	0.000	0.00			0.0		SURCHARGED	
SW-8.001	SW-28	0.000	0.07		184	3.3		SURCHARGED	
SW-1.016	SW-29	0.000	0.31		144	45.7		SURCHARGED	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) SurchARGE	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
SW-1.017	SW-30	480 Winter	30	+0%	100/15 Summer				59.724
SW-1.018	SW-31	480 Winter	30	+0%	100/15 Summer				59.692
SW-9.000	SW-32	15 Summer	30	+0%	100/15 Summer				60.155
SW-9.001	SW-33	15 Summer	30	+0%	100/15 Summer				59.955
SW-9.002	SW-34	15 Summer	30	+0%	100/15 Summer				59.792
SW-1.019	SW-35	15 Summer	30	+0%	30/15 Summer				59.654
SW-1.020	SW-36	480 Summer	30	+0%	100/15 Summer				59.581
SW-1.021	SW-37	600 Summer	30	+0%	100/15 Summer				59.530
SW-1.022	SW-38	480 Summer	30	+0%	100/15 Summer				59.467
SW-10.000	SW-39	15 Summer	30	+0%	100/15 Summer				60.433
SW-10.001	SW-40	15 Summer	30	+0%	100/15 Summer				60.298
SW-10.002	SW-41	15 Summer	30	+0%	100/15 Summer				60.168
SW-10.003	SW-42	15 Summer	30	+0%	100/15 Summer				60.127
SW-10.004	SW-43	15 Summer	30	+0%					59.956
SW-1.023	SW-44	600 Winter	30	+0%	2/120 Summer				59.421
SW-1.024	SW-45	720 Summer	30	+0%	30/120 Summer				59.286
SW-1.025	SW-46	720 Summer	30	+0%	30/120 Summer				59.267
SW-11.000	SW-47	60 Summer	30	+0%	30/15 Summer				62.141
SW-11.001	SW-48	60 Summer	30	+0%	30/15 Summer				62.141
SW-11.002	SW-49	15 Summer	30	+0%	100/15 Summer				60.901
SW-11.003	SW-50	15 Summer	30	+0%					60.187
SW-11.004	SW-51	15 Summer	30	+0%					59.671
SW-1.026	SW-52	720 Summer	30	+0%	30/60 Summer				59.253
SW-12.000	SW-53	15 Summer	30	+0%	100/15 Summer				61.150
SW-12.001	SW-54	15 Summer	30	+0%	100/15 Summer				60.987
SW-12.002	SW-55	15 Summer	30	+0%	100/15 Summer				60.677
SW-1.027	SW-56	15 Summer	30	+0%	30/15 Summer				59.153
SW-1.028	SW-57	15 Summer	30	+0%	30/15 Summer				58.963
SW-1.029	SW-58	15 Summer	30	+0%	30/15 Summer				58.839
SW-13.000	SW-59	15 Summer	30	+0%	100/15 Summer				62.300
SW-13.001	SW-60	15 Summer	30	+0%	30/15 Summer	100/15 Summer			62.166
SW-13.002	SW-61	15 Summer	30	+0%	100/15 Summer				61.724
SW-14.000	SW-62	15 Summer	30	+0%	100/15 Summer				59.949
SW-13.003	SW-63	15 Summer	30	+0%	100/15 Summer				59.751
SW-13.004	SW-64	15 Summer	30	+0%	100/15 Summer				59.349
SW-1.030	SW-65	15 Summer	30	+0%	30/15 Summer				58.719
SW-1.031	SW-66	60 Summer	30	+0%	30/15 Summer				58.450
SW-15.000	SW-67	240 Summer	30	+0%	30/30 Summer				60.575
SW-15.001	SW-68	240 Summer	30	+0%	30/15 Summer				60.575
SW-15.002	SW-69	15 Summer	30	+0%	100/15 Summer				59.639
SW-1.032	SW-70	120 Summer	30	+0%	100/15 Winter				58.059
SW-1.033	SW-71	1440 Winter	30	+0%	100/240 Summer				57.964
SW-16.000	SW-72	240 Summer	30	+0%	30/30 Summer				58.581
SW-16.001	SW-73	240 Summer	30	+0%	30/15 Summer				58.581
SW-1.034	SW-74	1440 Winter	30	+0%	2/240 Summer				57.933
SW-17.000	SW-75	240 Summer	30	+0%	30/60 Summer				58.674
SW-17.001	SW-76	240 Summer	30	+0%	30/30 Summer				58.674
SW-1.035	SW-77	1440 Winter	30	+0%	2/180 Summer				57.918
SW-1.036	SW-78	1440 Winter	30	+0%	2/360 Summer				57.693
SW-1.037	SW-79	1440 Winter	30	+0%	2/360 Summer				57.681
SW-1.038	SW-80	1440 Winter	30	+0%	2/240 Summer				57.669
SW-18.000	SW-81	360 Summer	30	+0%	30/60 Summer				57.976
SW-18.001	SW-82	360 Summer	30	+0%	30/30 Summer				57.976
SW-18.002	SW-83	15 Summer	30	+0%					57.675
SW-1.039	SW-84	1440 Winter	30	+0%	2/15 Summer		30/60 Summer	107	57.578

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

PN	US/MH Name	Surcharged Flooded		Flow / Overflow		Half Drain	Pipe	Status	Level Exceeded
		Depth (m)	Volume (m³)	Cap.	(l/s)	Time (mins)	Flow (l/s)		
SW-1.017	SW-30	-0.285	0.000	0.25			46.6	OK	
SW-1.018	SW-31	-0.208	0.000	0.17			47.8	OK	
SW-9.000	SW-32	-0.145	0.000	0.28			18.6	OK	
SW-9.001	SW-33	-0.095	0.000	0.80			68.5	OK	
SW-9.002	SW-34	-0.058	0.000	0.93			80.6	OK	
SW-1.019	SW-35	0.004	0.000	0.89			121.5	SURCHARGED	
SW-1.020	SW-36	0.000	0.000	0.51			66.1	OK	
SW-1.021	SW-37	0.000	0.000	0.47			63.6	OK	
SW-1.022	SW-38	0.000	0.000	0.47			67.0	OK	
SW-10.000	SW-39	-0.117	0.000	0.46			19.5	OK	
SW-10.001	SW-40	-0.102	0.000	0.72			47.6	OK	
SW-10.002	SW-41	-0.054	0.000	0.97			55.3	OK	
SW-10.003	SW-42	-0.048	0.000	0.99			59.4	OK	
SW-10.004	SW-43	-0.156	0.000	0.46			72.0	OK	
SW-1.023	SW-44	0.296	0.000	0.68			54.5	SURCHARGED	
SW-1.024	SW-45	0.253	0.000	0.90			54.4	SURCHARGED	
SW-1.025	SW-46	0.269	0.000	1.05			54.2	SURCHARGED	
SW-11.000	SW-47	0.091	0.000	0.01			0.1	SURCHARGED	
SW-11.001	SW-48	0.141	0.000	0.35		32	12.0	SURCHARGED	
SW-11.002	SW-49	-0.049	0.000	0.74			20.1	OK	
SW-11.003	SW-50	-0.113	0.000	0.47			32.6	OK	
SW-11.004	SW-51	-0.129	0.000	0.36			32.3	OK	
SW-1.026	SW-52	0.353	0.000	0.49			32.9	SURCHARGED	
SW-12.000	SW-53	0.000	0.000	1.02			32.1	OK	
SW-12.001	SW-54	-0.113	0.000	0.69			67.8	OK	
SW-12.002	SW-55	-0.173	0.000	0.37			105.7	OK	
SW-1.027	SW-56	0.487	0.000	1.29			128.9	SURCHARGED	
SW-1.028	SW-57	0.411	0.000	1.12			157.5	SURCHARGED	
SW-1.029	SW-58	0.381	0.000	1.30			176.2	SURCHARGED	
SW-13.000	SW-59	-0.150	0.000	0.50			55.2	OK	
SW-13.001	SW-60	0.016	0.000	1.03			98.0	SURCHARGED	1
SW-13.002	SW-61	-0.226	0.000	0.58			337.4	OK	
SW-14.000	SW-62	-0.101	0.000	0.57			21.3	OK	
SW-13.003	SW-63	-0.109	0.000	0.97			381.2	OK	
SW-13.004	SW-64	-0.251	0.000	0.53			411.9	OK	
SW-1.030	SW-65	0.326	0.000	2.34			612.9	SURCHARGED	
SW-1.031	SW-66	0.175	0.000	0.76			138.3	SURCHARGED	
SW-15.000	SW-67	0.075	0.000	0.00			0.0	SURCHARGED	
SW-15.001	SW-68	0.125	0.000	0.02		168	1.0	SURCHARGED	
SW-15.002	SW-69	-0.061	0.000	0.66			37.6	OK	
SW-1.032	SW-70	-0.154	0.000	0.84			150.7	OK	
SW-1.033	SW-71	-0.192	0.000	0.11			64.6	OK	
SW-16.000	SW-72	0.081	0.000	0.00			0.0	SURCHARGED	
SW-16.001	SW-73	0.131	0.000	0.13		176	6.9	SURCHARGED	
SW-1.034	SW-74	0.583	0.000	0.28		960	37.9	SURCHARGED	
SW-17.000	SW-75	0.074	0.000	0.00			0.0	SURCHARGED	
SW-17.001	SW-76	0.124	0.000	0.03		244	1.7	SURCHARGED	
SW-1.035	SW-77	0.641	0.000	0.34		864	33.8	SURCHARGED	
SW-1.036	SW-78	0.445	0.000	0.31			33.8	SURCHARGED	
SW-1.037	SW-79	0.472	0.000	0.32			33.8	SURCHARGED	
SW-1.038	SW-80	0.497	0.000	0.23			33.8	SURCHARGED	
SW-18.000	SW-81	0.076	0.000	0.00			0.0	SURCHARGED	
SW-18.001	SW-82	0.126	0.000	0.22		282	3.4	SURCHARGED	
SW-18.002	SW-83	-0.098	0.000	0.24			6.8	OK	

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

		Surcharged		Flooded		Half Drain		Pipe		
PN	US/MH Name	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)	Status	Level Exceeded	
SW-1.039	SW-84	0.628	0.000	0.29	17.6	1176	17.3	SURCHARGED		

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) SurchARGE	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
SW-19.000	SW-86	15 Summer	30	+0%	100/15 Summer				63.010	-0.040
SW-19.001	SW-87	15 Summer	30	+0%	100/15 Summer				62.523	-0.127
SW-19.002	SW-88	15 Summer	30	+0%	100/15 Summer				62.340	-0.110
SW-20.000	SW-89	240 Summer	30	+0%	30/60 Summer				62.729	0.079
SW-20.001	SW-90	240 Summer	30	+0%	30/15 Summer				62.729	0.129
SW-19.003	SW-91	15 Summer	30	+0%	100/15 Summer				61.805	-0.095
SW-21.000	SW-92	360 Summer	30	+0%	30/60 Summer				62.471	0.071
SW-21.001	SW-93	360 Summer	30	+0%	30/30 Summer				62.471	0.121
SW-19.004	SW-94	15 Summer	30	+0%	100/15 Summer				61.521	-0.079
SW-22.000	SW-95	60 Summer	30	+0%	30/15 Summer				61.786	0.086
SW-22.001	SW-96	60 Summer	30	+0%	30/15 Summer				61.786	0.136
SW-23.000	SW-97	120 Summer	30	+0%	30/15 Summer				59.981	0.081
SW-23.001	SW-98	120 Summer	30	+0%	30/15 Summer				59.981	0.131
SW-22.002	SW-99	15 Summer	30	+0%	30/15 Summer				59.744	0.027
SW-22.003	SW-100	15 Summer	30	+0%	30/15 Summer				59.627	0.116
SW-19.005	SW-101	15 Summer	30	+0%	30/15 Summer				59.551	0.111
SW-19.006	SW-102	15 Summer	30	+0%	30/15 Summer				59.488	0.086
SW-24.000	SW-103	15 Summer	30	+0%	100/15 Summer				60.021	-0.029
SW-24.001	SW-104	15 Summer	30	+0%	30/15 Summer				60.022	0.022
SW-19.007	SW-105	15 Summer	30	+0%	100/15 Summer				59.145	-0.176
SW-25.000	SW-106	240 Summer	30	+0%	30/60 Summer				59.327	0.077
SW-25.001	SW-107	240 Summer	30	+0%	30/15 Summer				59.327	0.127
SW-19.008	SW-108	720 Winter	30	+0%	100/15 Summer				58.579	-0.021
SW-26.000	SW-109	15 Summer	30	+0%	100/15 Summer				58.863	-0.087
SW-26.001	SW-110	15 Summer	30	+0%	100/15 Summer				58.872	-0.028
SW-26.002	SW-111	15 Summer	30	+0%	30/15 Summer				58.837	0.002
SW-26.003	SW-112	720 Winter	30	+0%	30/15 Summer				58.573	0.123
SW-19.009	SW-113	720 Winter	30	+0%	30/15 Summer				58.572	0.218
SW-19.010	SW-114	720 Winter	30	+0%	2/120 Summer		30/240 Summer	80	58.571	0.545

PN	US/MH Name	Flooded Volume (m³)	Flow / Overflow Cap.	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
SW-19.000	SW-86	0.000	0.87		16.3	OK	
SW-19.001	SW-87	0.000	0.38		21.0	OK	
SW-19.002	SW-88	0.000	0.51		38.6	OK	
SW-20.000	SW-89	0.000	0.00		0.0	SURCHARGED	
SW-20.001	SW-90	0.000	0.06	192	2.9	SURCHARGED	
SW-19.003	SW-91	0.000	0.62		47.7	OK	
SW-21.000	SW-92	0.000	0.00		0.0	SURCHARGED	
SW-21.001	SW-93	0.000	0.02	384	0.9	SURCHARGED	
SW-19.004	SW-94	0.000	0.74		99.2	OK	
SW-22.000	SW-95	0.000	0.01		0.1	SURCHARGED	
SW-22.001	SW-96	0.000	0.09	34	5.3	SURCHARGED	
SW-23.000	SW-97	0.000	0.00		0.1	SURCHARGED	
SW-23.001	SW-98	0.000	0.23	64	3.8	SURCHARGED	
SW-22.002	SW-99	0.000	0.75		28.4	SURCHARGED	
SW-22.003	SW-100	0.000	0.61		37.1	SURCHARGED	
SW-19.005	SW-101	0.000	1.44		152.3	SURCHARGED	
SW-19.006	SW-102	0.000	1.44		200.7	SURCHARGED	
SW-24.000	SW-103	0.000	0.04		0.6	OK	
SW-24.001	SW-104	0.000	1.02	5	35.5	SURCHARGED	
SW-19.007	SW-105	0.000	0.68		272.2	OK	
SW-25.000	SW-106	0.000	0.00		0.0	SURCHARGED	

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

PN	US/MH Name	Flooded		Half Drain		Pipe		Status	Level Exceeded
		Volume (m ³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (l/s)			
SW-25.001	SW-107	0.000	0.10		208	3.3		SURCHARGED	
SW-19.008	SW-108	0.000	0.08		516	31.6		OK	
SW-26.000	SW-109	0.000	0.02			0.2		OK	
SW-26.001	SW-110	0.000	0.98		7	14.7		OK	
SW-26.002	SW-111	0.000	0.92			63.3		SURCHARGED	
SW-26.003	SW-112	0.000	0.08			7.9		SURCHARGED	
SW-19.009	SW-113	0.000	0.31			38.6		SURCHARGED	
SW-19.010	SW-114	0.000	0.14	2.8		4.7		SURCHARGED	

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

Simulation Criteria

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

Number of Input Hydrographs 0 Number of Offline Controls 2 Number of Time/Area Diagrams 0
 Number of Online Controls 21 Number of Storage Structures 25 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Data Type Point
 FEH Rainfall Version 2013 Cv (Summer) 1.000
 Site Location GB 561730 195989 TQ 61730 95989 Cv (Winter) 1.000

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

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
 Return Period(s) (years) 2, 30, 100, 101
 Climate Change (%) 0, 0, 45, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
SW-1.000	SW-1	15 Summer	100	+45%	100/15 Summer				63.754	1.104
SW-2.000	SW-2	30 Summer	100	+45%	30/15 Summer				63.694	0.394
SW-2.001	SW-3	30 Summer	100	+45%	30/15 Summer				63.694	0.444
SW-1.001	SW-4	15 Summer	100	+45%	100/15 Summer				63.672	1.122
SW-1.002	SW-5	15 Summer	100	+45%	100/15 Summer				63.621	1.171
SW-1.003	SW-6	15 Summer	100	+45%	100/15 Summer				63.528	1.178
SW-1.004	SW-7	15 Summer	100	+45%	100/15 Summer				63.257	1.157
SW-3.000	SW-8	15 Summer	100	+45%	30/15 Summer	100/15 Summer			63.151	1.201
SW-1.005	SW-9	15 Summer	100	+45%	30/15 Summer				63.092	1.242
SW-4.000	SW-10	15 Summer	100	+45%	100/15 Summer				63.145	0.895
SW-1.006	SW-11	15 Summer	100	+45%	30/15 Summer				62.965	1.263
SW-5.000	SW-12	15 Summer	100	+45%	100/15 Summer				63.043	0.693
SW-1.007	SW-13	15 Summer	100	+45%	30/15 Summer				62.688	1.095
SW-1.008	SW-14	15 Summer	100	+45%	30/15 Summer				62.114	0.637
SW-1.009	SW-15	240 Summer	100	+45%	30/15 Summer				62.009	0.580
SW-1.010	SW-16	240 Summer	100	+45%	30/15 Summer				62.001	0.901
SW-1.011	SW-17	15 Summer	100	+45%	100/15 Summer				61.827	0.801
SW-1.012	SW-18	15 Summer	100	+45%	30/180 Summer				61.986	1.205
SW-1.013	SW-19	15 Summer	100	+45%	30/15 Summer				62.125	1.591
SW-6.000	SW-20	30 Summer	100	+45%	30/15 Summer				63.796	0.396
SW-6.001	SW-21	30 Summer	100	+45%	30/15 Summer				63.797	0.447
SW-1.014	SW-22	15 Summer	100	+45%	30/15 Summer				62.194	1.700
SW-7.000	SW-23	15 Summer	100	+45%	100/15 Summer				63.311	0.611
SW-7.001	SW-24	15 Summer	100	+45%	100/15 Summer				63.179	0.629
SW-7.002	SW-25	15 Summer	100	+45%	100/15 Summer				62.261	0.211
SW-1.015	SW-26	15 Summer	100	+45%	30/15 Summer				61.869	1.589
SW-8.000	SW-27	360 Summer	100	+45%	30/60 Summer				61.997	0.397
SW-8.001	SW-28	360 Summer	100	+45%	30/15 Summer				61.997	0.447
SW-1.016	SW-29	360 Winter	100	+45%	30/30 Summer				61.379	1.280

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

PN	US/MH Name	Flooded		Half Drain		Pipe		Status	Level Exceeded
		Volume (m³)	Flow / Overflow Cap. (l/s)	Time (mins)	Flow (l/s)	Flow (l/s)			
SW-1.000	SW-1	0.000	0.94			60.8	FLOOD RISK		
SW-2.000	SW-2	0.000	0.03			0.5	FLOOD RISK		
SW-2.001	SW-3	0.000	0.76		18	29.0	FLOOD RISK		
SW-1.001	SW-4	0.000	0.67			83.2	FLOOD RISK		
SW-1.002	SW-5	0.000	1.01			148.6	FLOOD RISK		
SW-1.003	SW-6	0.000	1.05			300.6	SURCHARGED		
SW-1.004	SW-7	0.000	0.82			314.5	FLOOD RISK		
SW-3.000	SW-8	0.619	0.56			44.2	FLOOD		1
SW-1.005	SW-9	0.000	0.99			379.9	FLOOD RISK		
SW-4.000	SW-10	0.000	0.63			88.5	SURCHARGED		
SW-1.006	SW-11	0.000	1.61			435.6	SURCHARGED		
SW-5.000	SW-12	0.000	0.89			124.4	SURCHARGED		
SW-1.007	SW-13	0.000	2.14			582.1	SURCHARGED		
SW-1.008	SW-14	0.000	2.53			595.5	SURCHARGED		
SW-1.009	SW-15	0.000	1.62			267.5	SURCHARGED		
SW-1.010	SW-16	0.000	0.77			46.6	FLOOD RISK		
SW-1.011	SW-17	0.000	0.69			46.9	SURCHARGED		
SW-1.012	SW-18	0.000	0.76			51.4	SURCHARGED		
SW-1.013	SW-19	0.000	0.98			54.0	SURCHARGED		
SW-6.000	SW-20	0.000	0.03			0.4	FLOOD RISK		
SW-6.001	SW-21	0.000	0.26		21	19.2	FLOOD RISK		
SW-1.014	SW-22	0.000	1.22			127.5	SURCHARGED		
SW-7.000	SW-23	0.000	0.97			119.3	SURCHARGED		
SW-7.001	SW-24	0.000	1.40			333.8	SURCHARGED		
SW-7.002	SW-25	0.000	0.44			330.7	SURCHARGED		
SW-1.015	SW-26	0.000	3.02			473.7	SURCHARGED		
SW-8.000	SW-27	0.000	0.00			0.0	FLOOD RISK		
SW-8.001	SW-28	0.000	0.10		270	4.9	FLOOD RISK		
SW-1.016	SW-29	0.000	0.31		432	45.7	SURCHARGED		

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) SurchARGE	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
SW-1.017	SW-30	960 Winter	100	+45%	100/15 Summer				60.262
SW-1.018	SW-31	960 Winter	100	+45%	100/15 Summer				60.150
SW-9.000	SW-32	15 Summer	100	+45%	100/15 Summer				60.935
SW-9.001	SW-33	15 Summer	100	+45%	100/15 Summer				60.851
SW-9.002	SW-34	15 Summer	100	+45%	100/15 Summer				60.516
SW-1.019	SW-35	15 Summer	100	+45%	30/15 Summer				60.031
SW-1.020	SW-36	960 Winter	100	+45%	100/15 Summer				59.987
SW-1.021	SW-37	960 Winter	100	+45%	100/15 Summer				59.971
SW-1.022	SW-38	960 Winter	100	+45%	100/15 Summer				59.955
SW-10.000	SW-39	15 Summer	100	+45%	100/15 Summer				60.916
SW-10.001	SW-40	15 Summer	100	+45%	100/15 Summer				60.815
SW-10.002	SW-41	15 Summer	100	+45%	100/15 Summer				60.491
SW-10.003	SW-42	15 Summer	100	+45%	100/15 Summer				60.319
SW-10.004	SW-43	15 Summer	100	+45%					60.029
SW-1.023	SW-44	960 Winter	100	+45%	2/120 Summer				59.939
SW-1.024	SW-45	1440 Winter	100	+45%	30/120 Summer				59.826
SW-1.025	SW-46	1440 Winter	100	+45%	30/120 Summer				59.808
SW-11.000	SW-47	60 Summer	100	+45%	30/15 Summer				62.450
SW-11.001	SW-48	60 Summer	100	+45%	30/15 Summer				62.450
SW-11.002	SW-49	15 Summer	100	+45%	100/15 Summer				61.314
SW-11.003	SW-50	15 Summer	100	+45%					60.234
SW-11.004	SW-51	1440 Winter	100	+45%					59.795
SW-1.026	SW-52	1440 Winter	100	+45%	30/60 Summer				59.794
SW-12.000	SW-53	15 Summer	100	+45%	100/15 Summer				61.914
SW-12.001	SW-54	15 Summer	100	+45%	100/15 Summer				61.748
SW-12.002	SW-55	15 Summer	100	+45%	100/15 Summer				61.431
SW-1.027	SW-56	15 Summer	100	+45%	30/15 Summer				60.680
SW-1.028	SW-57	15 Summer	100	+45%	30/15 Summer				60.156
SW-1.029	SW-58	15 Summer	100	+45%	30/15 Summer				59.767
SW-13.000	SW-59	15 Summer	100	+45%	100/15 Summer				63.616
SW-13.001	SW-60	15 Summer	100	+45%	30/15 Summer	100/15 Summer			63.350
SW-13.002	SW-61	15 Summer	100	+45%	100/15 Summer				62.759
SW-14.000	SW-62	15 Summer	100	+45%	100/15 Summer				60.983
SW-13.003	SW-63	15 Summer	100	+45%	100/15 Summer				60.822
SW-13.004	SW-64	15 Summer	100	+45%	100/15 Summer				60.241
SW-1.030	SW-65	30 Summer	100	+45%	30/15 Summer				59.460
SW-1.031	SW-66	60 Summer	100	+45%	30/15 Summer				58.945
SW-15.000	SW-67	240 Summer	100	+45%	30/30 Summer				60.895
SW-15.001	SW-68	240 Summer	100	+45%	30/15 Summer				60.895
SW-15.002	SW-69	15 Summer	100	+45%	100/15 Summer				60.229
SW-1.032	SW-70	1440 Winter	100	+45%	100/15 Winter				58.575
SW-1.033	SW-71	1440 Winter	100	+45%	100/240 Summer				58.563
SW-16.000	SW-72	360 Summer	100	+45%	30/30 Summer				58.896
SW-16.001	SW-73	360 Summer	100	+45%	30/15 Summer				58.896
SW-1.034	SW-74	1440 Winter	100	+45%	2/240 Summer				58.429
SW-17.000	SW-75	360 Summer	100	+45%	30/60 Summer				58.999
SW-17.001	SW-76	360 Summer	100	+45%	30/30 Summer				58.999
SW-1.035	SW-77	1440 Winter	100	+45%	2/180 Summer				58.395
SW-1.036	SW-78	960 Winter	100	+45%	2/360 Summer				57.852
SW-1.037	SW-79	960 Winter	100	+45%	2/360 Summer				57.833
SW-1.038	SW-80	960 Winter	100	+45%	2/240 Summer				57.815
SW-18.000	SW-81	360 Summer	100	+45%	30/60 Summer				58.298
SW-18.001	SW-82	360 Summer	100	+45%	30/30 Summer				58.298
SW-18.002	SW-83	960 Winter	100	+45%					57.752
SW-1.039	SW-84	960 Winter	100	+45%	2/15 Summer		30/60 Summer	107	57.727