

SURFACE WATER DRAINAGE CALCULATIONS
UPON
LAND OFF
CROSSGATE LANE, PINCHBECK
LINCOLNSHIRE
PROJECT No: SW 21-181
DOCUMENT REF: SW 21-181-CAL-01 rev A



EXECUTORS OF P.J.BORST (DECEASED)

Structural Calculations	Project: Crossgate Lane, Pinchbeck	Date: Sep 21	Designer: APW
Project No: SW21-181	Subject: Surface Water Calculations	Sheet No: 2	Rev: A

INTRODUCTION

The following set of calculations cover the design of the surface water drainage system for the proposed 16 plot development on the site of a current agricultural purpose field standing off Church Street and Crossgate Lane, Pinchbeck.

The system follows the principles of the SUDs hierarchy.

Infiltration has been considered, however our local knowledge of the site would suggest that ground water will be encountered approx.. 1 – 1.4m Below ground level during the winter months and as such any infiltration system is highly unlikely to be suitable.

The majority of the surface water will collect via the permeable surfaces provided to the driveways and private roads. This will provide a suitable treatment train.

The drainage system outfalls to a proposed culverted riparian drain located along the Northern boundary of the site, which runs Westwards and outfalls to the Welland and Deeping IDB system.

The proposed outfall is via a flow restriction device limiting flow to a practical minimum, with attenuation volume being provided within the permavoid crates and voided hardcore within the private road build up.

Contained in the following document are hydraulic modelling calculations and the greenfield run-off estimate.

Both FSR and FEH rainfall data has been used for modelling and simulating storm events, results from both sets of rainfall data are included in the following output.

Calculated by:	Garry Dunnett
Site name:	Crossgate Lane
Site location:	Pinchbeck

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	52.82022° N
Longitude:	0.15764° W
Reference:	1270016424
Date:	Sep 08 2021 14:03

Runoff estimation approach

IH124

Site characteristics

Total site area (ha):	1.478
-----------------------	-------

Methodology

Q _{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Soil characteristics

	Default	Edited
SOIL type:	2	2
HOST class:	N/A	N/A
SPR/SPRHOST:	0.3	0.3

Hydrological characteristics

	Default	Edited
SAAR (mm):	560	560
Hydrological region:	5	5
Growth curve factor 1 year:	0.87	0.87
Growth curve factor 30 years:	2.45	2.45
Growth curve factor 100 years:	3.56	3.56
Growth curve factor 200 years:	4.21	4.21

Notes

(1) Is $Q_{\text{BAR}} < 2.0$ l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is $\text{SPR/SPRHOST} \leq 0.3$?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited
Q _{BAR} (l/s):	2.07	2.07
1 in 1 year (l/s):	1.8	1.8
1 in 30 years (l/s):	5.08	5.08
1 in 100 year (l/s):	7.39	7.39
1 in 200 years (l/s):	8.73	8.73

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.750
Ratio-R	0.400	Preferred Cover Depth (m)	0.750
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Circular Link Type

Shape	Circular	Auto Increment (mm)	75
Barrels	1	Follow Ground	x

Available Diameters (mm)

150 | 225

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
AWSW01	0.022	5.00	3.901	1200	64.633	81.366	0.975
AWSW03	0.040	5.00	3.970	1200	70.931	63.773	1.306
AWSW02	0.015	5.00	3.815	1200	72.330	49.779	0.975
AWSW05			3.925	1200	113.870	72.799	1.859
AWSW06	0.022	5.00	3.311	1200	149.299	80.316	1.393
AWSW07			3.770	1350	151.198	89.813	2.042
Outfall			3.300		127.058	111.904	1.665
PSW08	0.026	5.00	3.900	450	59.175	86.090	0.750
PSW09	0.027	5.00	4.000	450	68.876	90.441	0.850
PSW07	0.030	5.00	4.000	450	64.451	62.033	0.750
PSW06	0.013	5.00	4.000	450	65.396	57.571	0.750
J1			3.900		71.357	59.143	1.191
PSW10	0.024	5.00	4.050	450	78.573	85.425	1.200
PSW12	0.016	5.00	4.100	450	91.553	84.803	1.454
AWSW04			3.760	1200	94.676	68.739	1.613
PSW05	0.024	5.00	3.900	450	85.419	44.720	0.800
PSW100	0.012	5.00	3.900	600	95.480	50.356	1.300
PSW101	0.016	5.00	3.900	600	92.955	63.687	1.550
PSW03	0.028	5.00	3.900	450	104.806	47.168	0.900
PSW14	0.023	5.00	3.950	450	103.314	75.523	0.900
PSW16	0.028	5.00	3.950	450	113.707	77.659	1.350
PSW02	0.020	5.00	3.950	450	143.827	49.779	1.350
PSW01	0.021	5.00	3.800	450	145.346	67.205	1.374

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.001	AWSW01	AWSW03	18.686	0.600	2.926	2.739	0.187	100.0	225	5.37	50.0
1.002	AWSW03	AWSW04	24.259	0.600	2.664	2.147	0.517	46.9	300	5.55	50.0
1.004	AWSW05	AWSW06	36.218	0.600	2.066	1.918	0.148	244.7	300	6.48	50.0
1.005	AWSW06	AWSW07	9.685	0.600	1.918	1.878	0.040	242.1	300	6.64	50.0
1.006	AWSW07	Outfall	32.722	0.600	1.728	1.635	0.093	351.9	450	7.15	50.0
2.000	PSW08	AWSW01	7.218	0.600	3.150	3.001	0.149	48.4	150	5.08	50.0
1.000	PSW09	AWSW01	10.018	0.600	3.150	3.001	0.149	67.2	150	5.14	50.0
5.000	PSW07	AWSW03	6.710	0.600	3.250	2.814	0.436	15.4	150	5.04	50.0
3.000	AWSW02	J1	9.414	0.600	2.840	2.784	0.056	168.1	225	5.16	50.0
8.000	PSW10	PSW12	12.995	0.600	2.850	2.721	0.129	100.7	150	5.22	50.0
8.001	PSW12	AWSW04	16.365	0.600	2.646	2.222	0.424	38.6	225	5.35	50.0
1.003	AWSW04	AWSW05	19.619	0.600	2.147	2.066	0.081	242.2	300	5.88	50.0
4.000	PSW06	J1	6.165	0.600	3.250	2.859	0.391	15.8	150	5.04	50.0
3.001	J1	AWSW03	4.650	0.600	2.709	2.664	0.045	103.3	300	5.21	50.0
6.000	PSW05	PSW100	11.532	0.600	3.100	2.600	0.500	23.1	150	5.09	50.0
6.001	PSW100	PSW101	13.568	0.600	2.600	2.350	0.250	54.3	150	5.26	50.0
6.002	PSW101	AWSW04	5.337	0.600	2.350	2.297	0.053	100.7	150	5.35	50.0
7.000	PSW03	PSW100	9.856	0.600	3.000	2.600	0.400	24.6	150	5.08	50.0
9.000	PSW14	AWSW05	10.902	0.600	3.050	2.216	0.834	13.1	150	5.06	50.0
10.000	PSW16	AWSW05	4.863	0.600	2.600	2.216	0.384	12.7	150	5.03	50.0
11.000	PSW02	PSW01	17.492	0.600	2.600	2.426	0.174	100.5	150	5.29	50.0
11.001	PSW01	AWSW06	13.694	0.600	2.426	2.068	0.358	38.3	150	5.43	50.0

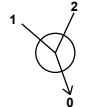
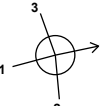
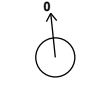
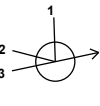
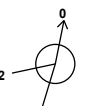
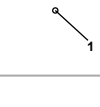
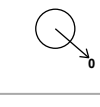
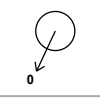
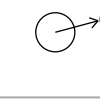
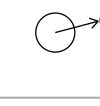
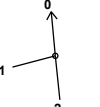
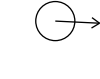
Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.001	1.307	52.0	10.1	0.750	1.006	0.075	0.0	67	1.019
1.002	2.301	162.6	23.3	1.006	1.313	0.172	0.0	76	1.651
1.004	1.000	70.7	46.4	1.559	1.093	0.342	0.0	178	1.066
1.005	1.006	71.1	54.9	1.093	1.592	0.405	0.0	198	1.106
1.006	1.078	171.4	54.9	1.592	1.215	0.405	0.0	174	0.963
2.000	1.449	25.6	3.5	0.600	0.750	0.026	0.0	37	1.015
1.000	1.228	21.7	3.6	0.700	0.750	0.027	0.0	41	0.912
5.000	2.581	45.6	4.1	0.600	1.006	0.030	0.0	30	1.602
3.000	1.005	40.0	2.0	0.750	0.891	0.015	0.0	34	0.524
8.000	1.001	17.7	3.3	1.050	1.229	0.024	0.0	44	0.766
8.001	2.112	84.0	5.5	1.229	1.313	0.040	0.0	38	1.192
1.003	1.006	71.1	39.6	1.313	1.559	0.292	0.0	160	1.032
4.000	2.549	45.0	1.7	0.600	0.891	0.013	0.0	20	1.236
3.001	1.546	109.3	3.7	0.891	1.006	0.028	0.0	38	0.729
6.000	2.106	37.2	3.2	0.650	1.150	0.024	0.0	30	1.291
6.001	1.368	24.2	8.6	1.150	1.400	0.064	0.0	62	1.255
6.002	1.001	17.7	10.8	1.400	1.313	0.080	0.0	85	1.050
7.000	2.037	36.0	3.8	0.750	1.150	0.028	0.0	33	1.320
9.000	2.801	49.5	3.1	0.750	1.559	0.023	0.0	25	1.570
10.000	2.846	50.3	3.7	1.200	1.559	0.028	0.0	28	1.683
11.000	1.002	17.7	2.7	1.200	1.224	0.020	0.0	40	0.725
11.001	1.632	28.8	5.6	1.224	1.093	0.041	0.0	45	1.269

Pipeline Schedule

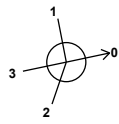
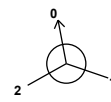
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.001	18.686	100.0	225	Circular	3.901	2.926	0.750	3.970	2.739	1.006
1.002	24.259	46.9	300	Circular	3.970	2.664	1.006	3.760	2.147	1.313
1.004	36.218	244.7	300	Circular	3.925	2.066	1.559	3.311	1.918	1.093
1.005	9.685	242.1	300	Circular	3.311	1.918	1.093	3.770	1.878	1.592
1.006	32.722	351.9	450	Circular	3.770	1.728	1.592	3.300	1.635	1.215
2.000	7.218	48.4	150	Circular	3.900	3.150	0.600	3.901	3.001	0.750
1.000	10.018	67.2	150	Circular	4.000	3.150	0.700	3.901	3.001	0.750
5.000	6.710	15.4	150	Circular	4.000	3.250	0.600	3.970	2.814	1.006
3.000	9.414	168.1	225	Circular	3.815	2.840	0.750	3.900	2.784	0.891
8.000	12.995	100.7	150	Circular	4.050	2.850	1.050	4.100	2.721	1.229
8.001	16.365	38.6	225	Circular	4.100	2.646	1.229	3.760	2.222	1.313
1.003	19.619	242.2	300	Circular	3.760	2.147	1.313	3.925	2.066	1.559
4.000	6.165	15.8	150	Circular	4.000	3.250	0.600	3.900	2.859	0.891
3.001	4.650	103.3	300	Circular	3.900	2.709	0.891	3.970	2.664	1.006
6.000	11.532	23.1	150	Circular	3.900	3.100	0.650	3.900	2.600	1.150
6.001	13.568	54.3	150	Circular	3.900	2.600	1.150	3.900	2.350	1.400
6.002	5.337	100.7	150	Circular	3.900	2.350	1.400	3.760	2.297	1.313
7.000	9.856	24.6	150	Circular	3.900	3.000	0.750	3.900	2.600	1.150
9.000	10.902	13.1	150	Circular	3.950	3.050	0.750	3.925	2.216	1.559
10.000	4.863	12.7	150	Circular	3.950	2.600	1.200	3.925	2.216	1.559
11.000	17.492	100.5	150	Circular	3.950	2.600	1.200	3.800	2.426	1.224
11.001	13.694	38.3	150	Circular	3.800	2.426	1.224	3.311	2.068	1.093

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.001	AWSW01	1200	Manhole	Adoptable	AWSW03	1200	Manhole	Adoptable
1.002	AWSW03	1200	Manhole	Adoptable	AWSW04	1200	Manhole	Adoptable
1.004	AWSW05	1200	Manhole	Adoptable	AWSW06	1200	Manhole	Adoptable
1.005	AWSW06	1200	Manhole	Adoptable	AWSW07	1350	Manhole	Adoptable
1.006	AWSW07	1350	Manhole	Adoptable	Outfall		Junction	
2.000	PSW08	450	Manhole	Adoptable	AWSW01	1200	Manhole	Adoptable
1.000	PSW09	450	Manhole	Adoptable	AWSW01	1200	Manhole	Adoptable
5.000	PSW07	450	Manhole	Adoptable	AWSW03	1200	Manhole	Adoptable
3.000	AWSW02	1200	Manhole	Adoptable	J1		Junction	
8.000	PSW10	450	Manhole	Adoptable	PSW12	450	Manhole	Adoptable
8.001	PSW12	450	Manhole	Adoptable	AWSW04	1200	Manhole	Adoptable
1.003	AWSW04	1200	Manhole	Adoptable	AWSW05	1200	Manhole	Adoptable
4.000	PSW06	450	Manhole	Adoptable	J1		Junction	
3.001	J1		Junction		AWSW03	1200	Manhole	Adoptable
6.000	PSW05	450	Manhole	Adoptable	PSW100	600	Manhole	Adoptable
6.001	PSW100	600	Manhole	Adoptable	PSW101	600	Manhole	Adoptable
6.002	PSW101	600	Manhole	Adoptable	AWSW04	1200	Manhole	Adoptable
7.000	PSW03	450	Manhole	Adoptable	PSW100	600	Manhole	Adoptable
9.000	PSW14	450	Manhole	Adoptable	AWSW05	1200	Manhole	Adoptable
10.000	PSW16	450	Manhole	Adoptable	AWSW05	1200	Manhole	Adoptable
11.000	PSW02	450	Manhole	Adoptable	PSW01	450	Manhole	Adoptable
11.001	PSW01	450	Manhole	Adoptable	AWSW06	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
AWSW01	64.633	81.366	3.901	0.975	1200		1	2.000	3.001	150
							2	1.000	3.001	150
							0	1.001	2.926	225
AWSW03	70.931	63.773	3.970	1.306	1200		1	5.000	2.814	150
							2	3.001	2.664	300
							3	1.001	2.739	225
							0	1.002	2.664	300
AWSW02	72.330	49.779	3.815	0.975	1200					
0	3.000	2.840	225							
AWSW05	113.870	72.799	3.925	1.859	1200		1	10.000	2.216	150
							2	9.000	2.216	150
							3	1.003	2.066	300
							0	1.004	2.066	300
AWSW06	149.299	80.316	3.311	1.393	1200		1	11.001	2.068	150
							2	1.004	1.918	300
							0	1.005	1.918	300
AWSW07	151.198	89.813	3.770	2.042	1350		1	1.005	1.878	300
							0	1.006	1.728	450
Outfall	127.058	111.904	3.300	1.665			1	1.006	1.635	450
PSW08	59.175	86.090	3.900	0.750	450					
					0		2.000	3.150	150	
PSW09	68.876	90.441	4.000	0.850	450					
					0		1.000	3.150	150	
PSW07	64.451	62.033	4.000	0.750	450					
					0		5.000	3.250	150	
PSW06	65.396	57.571	4.000	0.750	450					
					0		4.000	3.250	150	
J1	71.357	59.143	3.900	1.191			1	4.000	2.859	150
							2	3.000	2.784	225
							0	3.001	2.709	300
PSW10	78.573	85.425	4.050	1.200	450		0	8.000	2.850	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
PSW12	91.553	84.803	4.100	1.454	450		1	8.000	2.721	150
AWSW04	94.676	68.739	3.760	1.613	1200		1	8.001	2.646	225
							2	6.002	2.222	150
							3	1.002	2.297	300
							0	1.003	2.147	300
PSW05	85.419	44.720	3.900	0.800	450		0	6.000	3.100	150
PSW100	95.480	50.356	3.900	1.300	600		1	7.000	2.600	150
							2	6.000	2.600	150
							0	6.001	2.600	150
PSW101	92.955	63.687	3.900	1.550	600		1	6.001	2.350	150
PSW03	104.806	47.168	3.900	0.900	450		0	6.002	2.350	150
							0	7.000	3.000	150
PSW14	103.314	75.523	3.950	0.900	450		0	9.000	3.050	150
PSW16	113.707	77.659	3.950	1.350	450		0	10.000	2.600	150
PSW02	143.827	49.779	3.950	1.350	450		0	11.000	2.600	150
PSW01	145.346	67.205	3.800	1.374	450		1	11.000	2.426	150
							0	11.001	2.426	150

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	20.000	Drain Down Time (mins)	240
Ratio-R	0.400	Additional Storage (m³/ha)	0.0
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	------

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
10	0	0	0
30	0	0	0
100	40	10	0

Node AWSW06 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	1.918	Product Number	CTL-SHE-0064-2000-1200-2000
Design Depth (m)	1.200	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node AWSW04 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	2.147	Product Number	CTL-SHE-0103-5000-1200-5000
Design Depth (m)	1.200	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	5.0	Min Node Diameter (mm)	1200

Node PSW12 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	2.600
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	0

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	150.0	0.0	0.800	150.0	0.0	0.801	0.0	0.0

Node PSW101 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	2.350
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

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	330.0	0.0	0.800	330.0	0.0	0.801	0.0	0.0

Node PSW01 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	2.300
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	218

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	100.0	0.0	0.800	100.0	0.0	0.801	0.0	0.0

Node PSW12 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	3.370
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	0

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	120.0	0.0	0.450	120.0	0.0	0.451	0.0	0.0

Node PSW101 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	3.370
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	0

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	150.0	0.0	0.450	150.0	0.0	0.451	0.0	0.0

Other (defaults)

Entry Loss (manhole)	0.250	Entry Loss (junction)	0.000	Apply Recommended Losses	x
Exit Loss (manhole)	0.250	Exit Loss (junction)	0.000	Flood Risk (m)	0.300

Approval Settings

Node Size	✓	Minimum Full Bore Velocity (m/s)	
Node Losses	✓	Maximum Full Bore Velocity (m/s)	3.000
Link Size	✓	Proportional Velocity	✓
Minimum Diameter (mm)	150	Return Period (years)	
Link Length	✓	Minimum Proportional Velocity (m/s)	0.750
Maximum Length (m)	100.000	Maximum Proportional Velocity (m/s)	3.000
Coordinates	✓	Surcharged Depth	✓
Accuracy (m)	1.000	Return Period (years)	
Crossings	✓	Maximum Surcharged Depth (m)	0.100
Cover Depth	✓	Flooding	✓
Minimum Cover Depth (m)		Return Period (years)	30
Maximum Cover Depth (m)	3.000	Time to Half Empty	x
Backdrops	✓	Discharge Rates	✓
Minimum Backdrop Height (m)		Discharge Volume	✓
Maximum Backdrop Height (m)	1.500	100 year 360 minute (m ³)	
Full Bore Velocity	✓		

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
10 year 15 minute summer	211.819	59.937
10 year 15 minute winter	148.645	59.937
10 year 30 minute summer	136.831	38.718
10 year 30 minute winter	96.022	38.718
10 year 60 minute summer	90.826	24.003
10 year 60 minute winter	60.342	24.003
10 year 120 minute summer	54.899	14.508
10 year 120 minute winter	36.474	14.508
10 year 180 minute summer	41.666	10.722
10 year 180 minute winter	27.084	10.722
10 year 240 minute summer	32.645	8.627
10 year 240 minute winter	21.689	8.627
10 year 360 minute summer	24.632	6.339
10 year 360 minute winter	16.012	6.339
10 year 480 minute summer	19.260	5.090

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
10 year 480 minute winter	12.796	5.090
10 year 600 minute summer	15.690	4.291
10 year 600 minute winter	10.720	4.291
10 year 720 minute summer	13.925	3.732
10 year 720 minute winter	9.358	3.732
10 year 960 minute summer	11.365	2.993
10 year 960 minute winter	7.528	2.993
10 year 1440 minute summer	8.174	2.191
10 year 1440 minute winter	5.493	2.191
30 year 15 minute summer	268.706	76.035
30 year 15 minute winter	188.566	76.035
30 year 30 minute summer	174.929	49.499
30 year 30 minute winter	122.757	49.499
30 year 60 minute summer	116.589	30.811
30 year 60 minute winter	77.459	30.811
30 year 120 minute summer	70.438	18.615
30 year 120 minute winter	46.797	18.615
30 year 180 minute summer	53.298	13.715
30 year 180 minute winter	34.645	13.715
30 year 240 minute summer	41.604	10.995
30 year 240 minute winter	27.641	10.995
30 year 360 minute summer	31.221	8.034
30 year 360 minute winter	20.295	8.034
30 year 480 minute summer	24.324	6.428
30 year 480 minute winter	16.160	6.428
30 year 600 minute summer	19.756	5.404
30 year 600 minute winter	13.498	5.404
30 year 720 minute summer	17.490	4.687
30 year 720 minute winter	11.754	4.687
30 year 960 minute summer	14.215	3.743
30 year 960 minute winter	9.416	3.743
30 year 1440 minute summer	10.161	2.723
30 year 1440 minute winter	6.829	2.723
100 year +40% CC +10% A 15 minute summer	488.233	138.153
100 year +40% CC +10% A 15 minute winter	342.620	138.153
100 year +40% CC +10% A 30 minute summer	320.551	90.705
100 year +40% CC +10% A 30 minute winter	224.948	90.705
100 year +40% CC +10% A 60 minute summer	214.603	56.713
100 year +40% CC +10% A 60 minute winter	142.577	56.713
100 year +40% CC +10% A 120 minute summer	129.587	34.246
100 year +40% CC +10% A 120 minute winter	86.094	34.246
100 year +40% CC +10% A 180 minute summer	97.729	25.149
100 year +40% CC +10% A 180 minute winter	63.526	25.149
100 year +40% CC +10% A 240 minute summer	75.977	20.078
100 year +40% CC +10% A 240 minute winter	50.477	20.078
100 year +40% CC +10% A 360 minute summer	56.677	14.585
100 year +40% CC +10% A 360 minute winter	36.841	14.585
100 year +40% CC +10% A 480 minute summer	43.979	11.622
100 year +40% CC +10% A 480 minute winter	29.219	11.622
100 year +40% CC +10% A 600 minute summer	35.604	9.738
100 year +40% CC +10% A 600 minute winter	24.327	9.738
100 year +40% CC +10% A 720 minute summer	31.433	8.424

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +40% CC +10% A 720 minute winter	21.125	8.424
100 year +40% CC +10% A 960 minute summer	25.432	6.697
100 year +40% CC +10% A 960 minute winter	16.847	6.697
100 year +40% CC +10% A 1440 minute summer	18.055	4.839
100 year +40% CC +10% A 1440 minute winter	12.134	4.839

Results for 10 year Critical Storm Duration. Lowest mass balance: 98.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	AWSW01	10	3.028	0.102	20.1	0.1152	0.0000	OK
15 minute winter	AWSW03	11	2.849	0.185	47.1	0.2097	0.0000	OK
15 minute winter	AWSW02	10	2.889	0.049	4.1	0.0557	0.0000	OK
15 minute winter	AWSW05	11	2.719	0.653	17.7	0.7383	0.0000	SURCHARGED
15 minute winter	AWSW06	11	2.707	0.789	20.7	0.8919	0.0000	SURCHARGED
960 minute winter	AWSW07	330	1.761	0.033	1.8	0.0477	0.0000	OK
960 minute winter	Outfall	330	1.662	0.027	1.8	0.0000	0.0000	OK
15 minute winter	PSW08	10	3.207	0.057	7.0	0.0091	0.0000	OK
15 minute winter	PSW09	10	3.213	0.063	7.3	0.0101	0.0000	OK
15 minute winter	PSW07	10	3.296	0.046	8.2	0.0073	0.0000	OK
15 minute winter	PSW06	10	3.279	0.029	3.5	0.0046	0.0000	OK
15 minute winter	J1	11	2.839	0.130	7.5	0.0000	0.0000	OK
15 minute winter	PSW10	10	2.916	0.066	6.6	0.0105	0.0000	OK
15 minute winter	PSW12	14	2.713	0.067	31.3	10.0158	0.0000	OK
15 minute winter	AWSW04	11	2.813	0.666	46.1	0.7534	0.0000	SURCHARGED
15 minute winter	PSW05	10	3.142	0.042	6.5	0.0067	0.0000	OK
15 minute winter	PSW100	9	2.905	0.305	17.3	0.0862	0.0000	SURCHARGED
360 minute winter	PSW101	352	2.587	0.237	10.8	78.1835	0.0000	SURCHARGED
15 minute winter	PSW03	10	3.047	0.047	7.6	0.0074	0.0000	OK
15 minute winter	PSW14	10	3.086	0.036	6.2	0.0057	0.0000	OK
15 minute winter	PSW16	11	2.728	0.128	7.5	0.0204	0.0000	OK
15 minute winter	PSW02	10	2.658	0.058	5.4	0.0092	0.0000	OK
60 minute winter	PSW01	49	2.583	0.157	15.6	15.6677	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	AWSW01	1.001	AWSW03	19.9	1.148	0.383	0.3388	
15 minute winter	AWSW03	1.002	AWSW04	46.1	0.812	0.283	1.4088	
15 minute winter	AWSW02	3.000	J1	4.0	0.640	0.101	0.0640	
15 minute winter	AWSW05	1.004	AWSW06	15.1	0.461	0.214	2.5504	
15 minute winter	AWSW06	Hydro-Brake®	AWSW07	1.8				
960 minute winter	AWSW07	1.006	Outfall	1.8	0.396	0.010	0.1482	99.1
15 minute winter	PSW08	2.000	AWSW01	6.9	1.175	0.270	0.0425	
15 minute winter	PSW09	1.000	AWSW01	7.2	1.065	0.333	0.0679	
15 minute winter	PSW07	5.000	AWSW03	8.2	1.867	0.179	0.0293	
15 minute winter	PSW06	4.000	J1	3.5	1.491	0.077	0.0144	
15 minute winter	J1	3.001	AWSW03	9.4	0.507	0.086	0.1746	
15 minute winter	PSW10	8.000	PSW12	6.5	0.900	0.367	0.0937	
15 minute winter	PSW12	8.001	AWSW04	-20.9	-0.681	-0.248	0.4219	
15 minute winter	AWSW04	Hydro-Brake®	AWSW05	5.0				
15 minute winter	PSW05	6.000	PSW100	6.5	0.627	0.174	0.1250	
15 minute winter	PSW100	6.001	PSW101	19.8	1.952	0.817	0.1336	
360 minute winter	PSW101	6.002	AWSW04	-7.9	-0.494	-0.445	0.0940	
15 minute winter	PSW03	7.000	PSW100	7.6	0.700	0.210	0.1098	
15 minute winter	PSW14	9.000	AWSW05	6.2	1.570	0.125	0.1135	
15 minute winter	PSW16	10.000	AWSW05	7.0	1.654	0.140	0.0818	
15 minute winter	PSW02	11.000	PSW01	5.3	0.860	0.299	0.1344	
60 minute winter	PSW01	11.001	AWSW06	-10.0	-0.658	-0.346	0.2411	

Results for 30 year Critical Storm Duration. Lowest mass balance: 98.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	AWSW01	10	3.041	0.115	25.6	0.1306	0.0000	OK
15 minute winter	AWSW03	11	2.933	0.269	59.4	0.3040	0.0000	OK
15 minute winter	AWSW02	11	2.927	0.087	5.1	0.0986	0.0000	OK
15 minute winter	AWSW05	11	2.798	0.732	19.3	0.8274	0.0000	SURCHARGED
15 minute winter	AWSW06	11	2.786	0.868	25.2	0.9820	0.0000	SURCHARGED
480 minute winter	AWSW07	128	1.761	0.033	1.8	0.0477	0.0000	OK
480 minute winter	Outfall	128	1.662	0.027	1.8	0.0000	0.0000	OK
15 minute winter	PSW08	10	3.216	0.066	8.8	0.0104	0.0000	OK
15 minute winter	PSW09	10	3.223	0.073	9.3	0.0116	0.0000	OK
15 minute winter	PSW07	9	3.300	0.050	10.4	0.0080	0.0000	OK
15 minute winter	PSW06	10	3.282	0.032	4.4	0.0050	0.0000	OK
15 minute winter	J1	11	2.925	0.216	9.2	0.0000	0.0000	OK
15 minute winter	PSW10	10	2.926	0.076	8.4	0.0121	0.0000	OK
15 minute winter	PSW12	14	2.742	0.096	41.5	14.3855	0.0000	OK
15 minute winter	AWSW04	11	2.860	0.713	56.5	0.8061	0.0000	SURCHARGED
15 minute winter	PSW05	10	3.148	0.048	8.3	0.0076	0.0000	OK
15 minute winter	PSW100	9	2.983	0.383	21.9	0.1083	0.0000	SURCHARGED
480 minute winter	PSW101	472	2.663	0.313	10.8	103.4092	0.0000	SURCHARGED
15 minute winter	PSW03	10	3.053	0.053	9.6	0.0084	0.0000	OK
15 minute winter	PSW14	10	3.090	0.040	7.8	0.0064	0.0000	OK
15 minute winter	PSW16	11	2.817	0.217	9.5	0.0345	0.0000	SURCHARGED
15 minute winter	PSW02	10	2.666	0.066	6.8	0.0105	0.0000	OK
60 minute winter	PSW01	51	2.643	0.217	19.6	21.6501	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	AWSW01	1.001	AWSW03	25.6	1.145	0.493	0.5160	
15 minute winter	AWSW03	1.002	AWSW04	56.5	0.866	0.348	1.6616	
15 minute winter	AWSW02	3.000	J1	5.5	0.620	0.138	0.1896	
15 minute winter	AWSW05	1.004	AWSW06	17.8	0.476	0.252	2.5504	
15 minute winter	AWSW06	Hydro-Brake®	AWSW07	1.8				
480 minute winter	AWSW07	1.006	Outfall	1.8	0.396	0.010	0.1482	65.1
15 minute winter	PSW08	2.000	AWSW01	8.7	1.244	0.341	0.0506	
15 minute winter	PSW09	1.000	AWSW01	9.2	1.130	0.423	0.0814	
15 minute winter	PSW07	5.000	AWSW03	10.4	1.941	0.227	0.0661	
15 minute winter	PSW06	4.000	J1	4.4	1.564	0.097	0.0309	
15 minute winter	J1	3.001	AWSW03	13.8	0.432	0.126	0.2808	
15 minute winter	PSW10	8.000	PSW12	8.3	0.955	0.467	0.1125	
15 minute winter	PSW12	8.001	AWSW04	-28.3	-0.886	-0.337	0.4581	
15 minute winter	AWSW04	Hydro-Brake®	AWSW05	5.0				
15 minute winter	PSW05	6.000	PSW100	8.3	0.652	0.222	0.1296	
15 minute winter	PSW100	6.001	PSW101	23.8	1.959	0.982	0.1483	
480 minute winter	PSW101	6.002	AWSW04	-7.8	-0.444	-0.442	0.0940	
15 minute winter	PSW03	7.000	PSW100	9.6	0.722	0.265	0.1140	
15 minute winter	PSW14	9.000	AWSW05	7.8	1.687	0.157	0.1167	
15 minute winter	PSW16	10.000	AWSW05	8.8	1.766	0.176	0.0856	
15 minute winter	PSW02	11.000	PSW01	6.7	0.913	0.376	0.1691	
60 minute winter	PSW01	11.001	AWSW06	-12.3	-0.751	-0.427	0.2411	

Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 98.82%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	AWSW01	11	3.616	0.690	46.9	0.7807	0.0000	FLOOD RISK
15 minute winter	AWSW03	11	3.427	0.763	107.6	0.8626	0.0000	SURCHARGED
15 minute winter	AWSW02	11	3.433	0.593	10.3	0.6703	0.0000	SURCHARGED
15 minute winter	AWSW05	12	3.301	1.235	30.9	1.3966	0.0000	SURCHARGED
15 minute winter	AWSW06	12	3.279	1.361	39.4	1.5398	0.0000	FLOOD RISK
15 minute winter	AWSW07	12	1.764	0.036	2.1	0.0516	0.0000	OK
15 minute winter	Outfall	12	1.664	0.029	2.1	0.0000	0.0000	OK
15 minute winter	PSW08	11	3.699	0.549	17.6	0.0872	0.0000	FLOOD RISK
15 minute winter	PSW09	11	3.735	0.585	18.6	0.0930	0.0000	FLOOD RISK
15 minute winter	PSW07	11	3.539	0.289	20.7	0.0459	0.0000	SURCHARGED
15 minute winter	PSW06	11	3.444	0.194	8.8	0.0309	0.0000	SURCHARGED
15 minute winter	J1	11	3.429	0.720	17.8	0.0000	0.0000	SURCHARGED
15 minute winter	PSW10	10	2.975	0.125	16.7	0.0199	0.0000	OK
960 minute winter	PSW12	930	2.954	0.308	4.3	46.2300	0.0000	SURCHARGED
15 minute winter	AWSW04	11	3.131	0.984	111.5	1.1125	0.0000	SURCHARGED
15 minute winter	PSW05	11	3.661	0.561	16.5	0.0892	0.0000	FLOOD RISK
15 minute winter	PSW100	11	3.552	0.952	40.5	0.2695	0.0000	SURCHARGED
960 minute winter	PSW101	930	2.954	0.604	11.0	199.6208	0.0000	SURCHARGED
15 minute winter	PSW03	11	3.682	0.682	19.2	0.1085	0.0000	FLOOD RISK
15 minute winter	PSW14	11	3.380	0.330	15.6	0.0524	0.0000	SURCHARGED
15 minute winter	PSW16	11	3.365	0.765	19.0	0.1216	0.0000	SURCHARGED
120 minute winter	PSW02	98	2.919	0.319	4.3	0.0508	0.0000	SURCHARGED
120 minute winter	PSW01	98	2.919	0.493	21.2	49.2962	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	AWSW01	1.001	AWSW03	46.1	1.159	0.887	0.7432	
15 minute winter	AWSW03	1.002	AWSW04	106.9	1.519	0.658	1.7083	
15 minute winter	AWSW02	3.000	J1	9.5	0.620	0.238	0.3744	
15 minute winter	AWSW05	1.004	AWSW06	25.3	0.487	0.358	2.5504	
15 minute winter	AWSW06	Hydro-Brake®	AWSW07	2.1				
15 minute winter	AWSW07	1.006	Outfall	2.1	0.414	0.012	0.1676	23.8
15 minute winter	PSW08	2.000	AWSW01	15.8	1.266	0.617	0.1271	
15 minute winter	PSW09	1.000	AWSW01	16.7	1.207	0.769	0.1764	
15 minute winter	PSW07	5.000	AWSW03	19.0	1.848	0.416	0.1181	
15 minute winter	PSW06	4.000	J1	8.3	1.642	0.183	0.1085	
15 minute winter	J1	3.001	AWSW03	19.6	0.428	0.180	0.3274	
15 minute winter	PSW10	8.000	PSW12	16.4	1.093	0.925	0.1949	
960 minute winter	PSW12	8.001	AWSW04	-2.6	0.438	-0.030	0.6509	
15 minute winter	AWSW04	Hydro-Brake®	AWSW05	5.0				
15 minute winter	PSW05	6.000	PSW100	15.1	0.855	0.405	0.2030	
15 minute winter	PSW100	6.001	PSW101	40.9	2.787	1.690	0.2272	
960 minute winter	PSW101	6.002	AWSW04	-7.7	-0.440	-0.438	0.0940	
15 minute winter	PSW03	7.000	PSW100	17.6	1.000	0.489	0.1735	
15 minute winter	PSW14	9.000	AWSW05	13.8	1.650	0.279	0.1919	
15 minute winter	PSW16	10.000	AWSW05	17.0	1.729	0.339	0.0856	
120 minute winter	PSW02	11.000	PSW01	4.1	0.506	0.229	0.3079	
120 minute winter	PSW01	11.001	AWSW06	-12.7	-0.720	-0.439	0.2411	

Design Settings

Rainfall Methodology	FEH-13	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.750
CV	0.750	Preferred Cover Depth (m)	0.750
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Circular Link Type

Shape	Circular	Auto Increment (mm)	75
Barrels	1	Follow Ground	x

Available Diameters (mm)

150 | 225

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
AWSW01	0.022	5.00	3.901	1200	64.633	81.366	0.975
AWSW03	0.040	5.00	3.970	1200	70.931	63.773	1.306
AWSW02	0.015	5.00	3.815	1200	72.330	49.779	0.975
AWSW05			3.925	1200	113.870	72.799	1.859
AWSW06	0.022	5.00	3.311	1200	149.299	80.316	1.393
AWSW07			3.770	1350	151.198	89.813	2.042
Outfall			3.300		127.058	111.904	1.665
PSW08	0.026	5.00	3.900	450	59.175	86.090	0.750
PSW09	0.027	5.00	4.000	450	68.876	90.441	0.850
PSW07	0.030	5.00	4.000	450	64.451	62.033	0.750
PSW06	0.013	5.00	4.000	450	65.396	57.571	0.750
J1			3.900		71.357	59.143	1.191
PSW10	0.024	5.00	4.050	450	78.573	85.425	1.200
PSW12	0.016	5.00	4.100	450	91.553	84.803	1.454
AWSW04			3.760	1200	94.676	68.739	1.613
PSW05	0.024	5.00	3.900	450	85.419	44.720	0.800
PSW100	0.012	5.00	3.900	600	95.480	50.356	1.300
PSW101	0.016	5.00	3.900	600	92.955	63.687	1.550
PSW03	0.028	5.00	3.900	450	104.806	47.168	0.900
PSW14	0.023	5.00	3.950	450	103.314	75.523	0.900
PSW16	0.028	5.00	3.950	450	113.707	77.659	1.350
PSW02	0.020	5.00	3.950	450	143.827	49.779	1.350
PSW01	0.021	5.00	3.800	450	145.346	67.205	1.374

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.001	AWSW01	AWSW03	18.686	0.600	2.926	2.739	0.187	100.0	225	5.37	50.0
1.002	AWSW03	AWSW04	24.259	0.600	2.664	2.147	0.517	46.9	300	5.55	50.0
1.004	AWSW05	AWSW06	36.218	0.600	2.066	1.918	0.148	244.7	300	6.48	49.9
1.005	AWSW06	AWSW07	9.685	0.600	1.918	1.878	0.040	242.1	300	6.64	49.2
1.006	AWSW07	Outfall	32.722	0.600	1.728	1.635	0.093	351.9	450	7.15	47.4
2.000	PSW08	AWSW01	7.218	0.600	3.150	3.001	0.149	48.4	150	5.08	50.0
1.000	PSW09	AWSW01	10.018	0.600	3.150	3.001	0.149	67.2	150	5.14	50.0
5.000	PSW07	AWSW03	6.710	0.600	3.250	2.814	0.436	15.4	150	5.04	50.0
3.000	AWSW02	J1	9.414	0.600	2.840	2.784	0.056	168.1	225	5.16	50.0
8.000	PSW10	PSW12	12.995	0.600	2.850	2.721	0.129	100.7	150	5.22	50.0
8.001	PSW12	AWSW04	16.365	0.600	2.646	2.222	0.424	38.6	225	5.35	50.0
1.003	AWSW04	AWSW05	19.619	0.600	2.147	2.066	0.081	242.2	300	5.88	50.0
4.000	PSW06	J1	6.165	0.600	3.250	2.859	0.391	15.8	150	5.04	50.0
3.001	J1	AWSW03	4.650	0.600	2.709	2.664	0.045	103.3	300	5.21	50.0
6.000	PSW05	PSW100	11.532	0.600	3.100	2.600	0.500	23.1	150	5.09	50.0
6.001	PSW100	PSW101	13.568	0.600	2.600	2.350	0.250	54.3	150	5.26	50.0
6.002	PSW101	AWSW04	5.337	0.600	2.350	2.297	0.053	100.7	150	5.35	50.0
7.000	PSW03	PSW100	9.856	0.600	3.000	2.600	0.400	24.6	150	5.08	50.0
9.000	PSW14	AWSW05	10.902	0.600	3.050	2.216	0.834	13.1	150	5.06	50.0
10.000	PSW16	AWSW05	4.863	0.600	2.600	2.216	0.384	12.7	150	5.03	50.0
11.000	PSW02	PSW01	17.492	0.600	2.600	2.426	0.174	100.5	150	5.29	50.0
11.001	PSW01	AWSW06	13.694	0.600	2.426	2.068	0.358	38.3	150	5.43	50.0

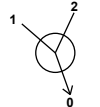
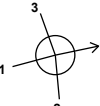
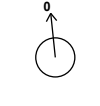
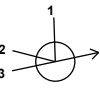
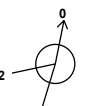
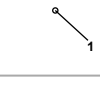
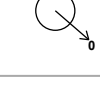
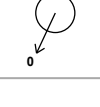
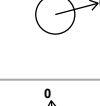
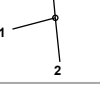
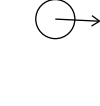
Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.001	1.307	52.0	10.1	0.750	1.006	0.075	0.0	67	1.019
1.002	2.301	162.6	23.3	1.006	1.313	0.172	0.0	76	1.651
1.004	1.000	70.7	46.3	1.559	1.093	0.342	0.0	177	1.064
1.005	1.006	71.1	54.1	1.093	1.592	0.405	0.0	197	1.104
1.006	1.078	171.4	52.1	1.592	1.215	0.405	0.0	169	0.949
2.000	1.449	25.6	3.5	0.600	0.750	0.026	0.0	37	1.015
1.000	1.228	21.7	3.6	0.700	0.750	0.027	0.0	41	0.912
5.000	2.581	45.6	4.1	0.600	1.006	0.030	0.0	30	1.602
3.000	1.005	40.0	2.0	0.750	0.891	0.015	0.0	34	0.524
8.000	1.001	17.7	3.3	1.050	1.229	0.024	0.0	44	0.766
8.001	2.112	84.0	5.5	1.229	1.313	0.040	0.0	38	1.192
1.003	1.006	71.1	39.6	1.313	1.559	0.292	0.0	160	1.032
4.000	2.549	45.0	1.7	0.600	0.891	0.013	0.0	20	1.236
3.001	1.546	109.3	3.7	0.891	1.006	0.028	0.0	38	0.729
6.000	2.106	37.2	3.2	0.650	1.150	0.024	0.0	30	1.291
6.001	1.368	24.2	8.6	1.150	1.400	0.064	0.0	62	1.255
6.002	1.001	17.7	10.8	1.400	1.313	0.080	0.0	85	1.050
7.000	2.037	36.0	3.8	0.750	1.150	0.028	0.0	33	1.320
9.000	2.801	49.5	3.1	0.750	1.559	0.023	0.0	25	1.570
10.000	2.846	50.3	3.7	1.200	1.559	0.028	0.0	28	1.683
11.000	1.002	17.7	2.7	1.200	1.224	0.020	0.0	40	0.725
11.001	1.632	28.8	5.6	1.224	1.093	0.041	0.0	45	1.269

Pipeline Schedule

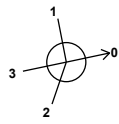
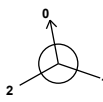
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.001	18.686	100.0	225	Circular	3.901	2.926	0.750	3.970	2.739	1.006
1.002	24.259	46.9	300	Circular	3.970	2.664	1.006	3.760	2.147	1.313
1.004	36.218	244.7	300	Circular	3.925	2.066	1.559	3.311	1.918	1.093
1.005	9.685	242.1	300	Circular	3.311	1.918	1.093	3.770	1.878	1.592
1.006	32.722	351.9	450	Circular	3.770	1.728	1.592	3.300	1.635	1.215
2.000	7.218	48.4	150	Circular	3.900	3.150	0.600	3.901	3.001	0.750
1.000	10.018	67.2	150	Circular	4.000	3.150	0.700	3.901	3.001	0.750
5.000	6.710	15.4	150	Circular	4.000	3.250	0.600	3.970	2.814	1.006
3.000	9.414	168.1	225	Circular	3.815	2.840	0.750	3.900	2.784	0.891
8.000	12.995	100.7	150	Circular	4.050	2.850	1.050	4.100	2.721	1.229
8.001	16.365	38.6	225	Circular	4.100	2.646	1.229	3.760	2.222	1.313
1.003	19.619	242.2	300	Circular	3.760	2.147	1.313	3.925	2.066	1.559
4.000	6.165	15.8	150	Circular	4.000	3.250	0.600	3.900	2.859	0.891
3.001	4.650	103.3	300	Circular	3.900	2.709	0.891	3.970	2.664	1.006
6.000	11.532	23.1	150	Circular	3.900	3.100	0.650	3.900	2.600	1.150
6.001	13.568	54.3	150	Circular	3.900	2.600	1.150	3.900	2.350	1.400
6.002	5.337	100.7	150	Circular	3.900	2.350	1.400	3.760	2.297	1.313
7.000	9.856	24.6	150	Circular	3.900	3.000	0.750	3.900	2.600	1.150
9.000	10.902	13.1	150	Circular	3.950	3.050	0.750	3.925	2.216	1.559
10.000	4.863	12.7	150	Circular	3.950	2.600	1.200	3.925	2.216	1.559
11.000	17.492	100.5	150	Circular	3.950	2.600	1.200	3.800	2.426	1.224
11.001	13.694	38.3	150	Circular	3.800	2.426	1.224	3.311	2.068	1.093

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.001	AWSW01	1200	Manhole	Adoptable	AWSW03	1200	Manhole	Adoptable
1.002	AWSW03	1200	Manhole	Adoptable	AWSW04	1200	Manhole	Adoptable
1.004	AWSW05	1200	Manhole	Adoptable	AWSW06	1200	Manhole	Adoptable
1.005	AWSW06	1200	Manhole	Adoptable	AWSW07	1350	Manhole	Adoptable
1.006	AWSW07	1350	Manhole	Adoptable	Outfall		Junction	
2.000	PSW08	450	Manhole	Adoptable	AWSW01	1200	Manhole	Adoptable
1.000	PSW09	450	Manhole	Adoptable	AWSW01	1200	Manhole	Adoptable
5.000	PSW07	450	Manhole	Adoptable	AWSW03	1200	Manhole	Adoptable
3.000	AWSW02	1200	Manhole	Adoptable	J1		Junction	
8.000	PSW10	450	Manhole	Adoptable	PSW12	450	Manhole	Adoptable
8.001	PSW12	450	Manhole	Adoptable	AWSW04	1200	Manhole	Adoptable
1.003	AWSW04	1200	Manhole	Adoptable	AWSW05	1200	Manhole	Adoptable
4.000	PSW06	450	Manhole	Adoptable	J1		Junction	
3.001	J1		Junction		AWSW03	1200	Manhole	Adoptable
6.000	PSW05	450	Manhole	Adoptable	PSW100	600	Manhole	Adoptable
6.001	PSW100	600	Manhole	Adoptable	PSW101	600	Manhole	Adoptable
6.002	PSW101	600	Manhole	Adoptable	AWSW04	1200	Manhole	Adoptable
7.000	PSW03	450	Manhole	Adoptable	PSW100	600	Manhole	Adoptable
9.000	PSW14	450	Manhole	Adoptable	AWSW05	1200	Manhole	Adoptable
10.000	PSW16	450	Manhole	Adoptable	AWSW05	1200	Manhole	Adoptable
11.000	PSW02	450	Manhole	Adoptable	PSW01	450	Manhole	Adoptable
11.001	PSW01	450	Manhole	Adoptable	AWSW06	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
AWSW01	64.633	81.366	3.901	0.975	1200		1	2.000	3.001	150
							2	1.000	3.001	150
							0	1.001	2.926	225
AWSW03	70.931	63.773	3.970	1.306	1200		1	5.000	2.814	150
							2	3.001	2.664	300
							3	1.001	2.739	225
							0	1.002	2.664	300
AWSW02	72.330	49.779	3.815	0.975	1200		0	3.000	2.840	225
AWSW05	113.870	72.799	3.925	1.859	1200		1	10.000	2.216	150
							2	9.000	2.216	150
							3	1.003	2.066	300
							0	1.004	2.066	300
AWSW06	149.299	80.316	3.311	1.393	1200		1	11.001	2.068	150
							2	1.004	1.918	300
							0	1.005	1.918	300
AWSW07	151.198	89.813	3.770	2.042	1350		1	1.005	1.878	300
							0	1.006	1.728	450
Outfall	127.058	111.904	3.300	1.665			1	1.006	1.635	450
PSW08	59.175	86.090	3.900	0.750	450		0	2.000	3.150	150
PSW09	68.876	90.441	4.000	0.850	450		0	1.000	3.150	150
PSW07	64.451	62.033	4.000	0.750	450		0	5.000	3.250	150
PSW06	65.396	57.571	4.000	0.750	450		0	4.000	3.250	150
J1	71.357	59.143	3.900	1.191			1	4.000	2.859	150
							2	3.000	2.784	225
							0	3.001	2.709	300
PSW10	78.573	85.425	4.050	1.200	450		0	8.000	2.850	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
PSW12	91.553	84.803	4.100	1.454	450		1	8.000	2.721	150
AWSW04	94.676	68.739	3.760	1.613	1200		0	8.001	2.646	225
							1	8.001	2.222	225
							2	6.002	2.297	150
							3	1.002	2.147	300
PSW05	85.419	44.720	3.900	0.800	450		0	1.003	2.147	300
PSW100	95.480	50.356	3.900	1.300	600		0	6.000	3.100	150
							1	7.000	2.600	150
							2	6.000	2.600	150
PSW101	92.955	63.687	3.900	1.550	600		0	6.001	2.600	150
PSW03	104.806	47.168	3.900	0.900	450		1	6.001	2.350	150
							0	6.002	2.350	150
PSW14	103.314	75.523	3.950	0.900	450		0	7.000	3.000	150
							0	9.000	3.050	150
PSW16	113.707	77.659	3.950	1.350	450		0	10.000	2.600	150
PSW02	143.827	49.779	3.950	1.350	450		0	11.000	2.600	150
							0	11.000	2.600	150
PSW01	145.346	67.205	3.800	1.374	450		1	11.000	2.426	150
							0	11.001	2.426	150

Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Normal	Additional Storage (m ³ /ha)	0.0
Summer CV	0.750	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	0.840	Drain Down Time (mins)	240	Check Discharge Volume	x

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
10	0	0	0
30	0	0	0
100	40	10	0

Node AWSW06 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	1.918	Product Number	CTL-SHE-0064-2000-1200-2000
Design Depth (m)	1.200	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node AWSW04 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	2.147	Product Number	CTL-SHE-0103-5000-1200-5000
Design Depth (m)	1.200	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	5.0	Min Node Diameter (mm)	1200

Node PSW12 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	2.600
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

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	150.0	0.0	0.800	150.0	0.0	0.801	0.0	0.0

Node PSW101 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	2.350
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

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	330.0	0.0	0.800	330.0	0.0	0.801	0.0	0.0

Node PSW01 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	2.300
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

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	100.0	0.0	0.800	100.0	0.0	0.801	0.0	0.0

Node PSW12 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	3.370
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	0

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	120.0	0.0	0.450	120.0	0.0	0.451	0.0	0.0

Node PSW101 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	3.370
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	0

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	150.0	0.0	0.450	150.0	0.0	0.451	0.0	0.0

Other (defaults)

Entry Loss (manhole)	0.250	Entry Loss (junction)	0.000	Apply Recommended Losses	x
Exit Loss (manhole)	0.250	Exit Loss (junction)	0.000	Flood Risk (m)	0.300

Approval Settings

Node Size	✓	Minimum Full Bore Velocity (m/s)	
Node Losses	✓	Maximum Full Bore Velocity (m/s)	3.000
Link Size	✓	Proportional Velocity	✓
Minimum Diameter (mm)	150	Return Period (years)	
Link Length	✓	Minimum Proportional Velocity (m/s)	0.750
Maximum Length (m)	100.000	Maximum Proportional Velocity (m/s)	3.000
Coordinates	✓	Surcharged Depth	✓
Accuracy (m)	1.000	Return Period (years)	
Crossings	✓	Maximum Surcharged Depth (m)	0.100
Cover Depth	✓	Flooding	✓
Minimum Cover Depth (m)		Return Period (years)	30
Maximum Cover Depth (m)	3.000	Time to Half Empty	x
Backdrops	✓	Discharge Rates	✓
Minimum Backdrop Height (m)		Discharge Volume	✓
Maximum Backdrop Height (m)	1.500	100 year 360 minute (m ³)	
Full Bore Velocity	✓		

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
10 year 15 minute summer	229.267	64.875
10 year 15 minute winter	160.889	64.875
10 year 30 minute summer	147.278	41.675
10 year 30 minute winter	103.353	41.675
10 year 60 minute summer	98.006	25.900
10 year 60 minute winter	65.113	25.900
10 year 120 minute summer	61.934	16.367
10 year 120 minute winter	41.147	16.367
10 year 180 minute summer	47.953	12.340
10 year 180 minute winter	31.171	12.340
10 year 240 minute summer	37.910	10.019
10 year 240 minute winter	25.187	10.019
10 year 360 minute summer	28.626	7.366
10 year 360 minute winter	18.607	7.366
10 year 480 minute summer	22.194	5.865

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
10 year 480 minute winter	14.745	5.865
10 year 600 minute summer	17.888	4.893
10 year 600 minute winter	12.222	4.893
10 year 720 minute summer	15.703	4.209
10 year 720 minute winter	10.554	4.209
10 year 960 minute summer	12.547	3.304
10 year 960 minute winter	8.311	3.304
10 year 1440 minute summer	8.730	2.340
10 year 1440 minute winter	5.867	2.340
30 year 15 minute summer	311.548	88.157
30 year 15 minute winter	218.630	88.157
30 year 30 minute summer	203.179	57.493
30 year 30 minute winter	142.582	57.493
30 year 60 minute summer	135.176	35.723
30 year 60 minute winter	89.807	35.723
30 year 120 minute summer	84.876	22.430
30 year 120 minute winter	56.390	22.430
30 year 180 minute summer	66.040	16.994
30 year 180 minute winter	42.928	16.994
30 year 240 minute summer	52.516	13.878
30 year 240 minute winter	34.890	13.878
30 year 360 minute summer	40.031	10.301
30 year 360 minute winter	26.021	10.301
30 year 480 minute summer	31.243	8.257
30 year 480 minute winter	20.757	8.257
30 year 600 minute summer	25.274	6.913
30 year 600 minute winter	17.269	6.913
30 year 720 minute summer	22.230	5.958
30 year 720 minute winter	14.940	5.958
30 year 960 minute summer	17.768	4.679
30 year 960 minute winter	11.770	4.679
30 year 1440 minute summer	12.300	3.296
30 year 1440 minute winter	8.266	3.296
100 year +40% CC +10% A 15 minute summer	588.060	166.401
100 year +40% CC +10% A 15 minute winter	412.673	166.401
100 year +40% CC +10% A 30 minute summer	386.055	109.240
100 year +40% CC +10% A 30 minute winter	270.916	109.240
100 year +40% CC +10% A 60 minute summer	259.362	68.542
100 year +40% CC +10% A 60 minute winter	172.314	68.542
100 year +40% CC +10% A 120 minute summer	165.594	43.762
100 year +40% CC +10% A 120 minute winter	110.017	43.762
100 year +40% CC +10% A 180 minute summer	130.171	33.497
100 year +40% CC +10% A 180 minute winter	84.615	33.497
100 year +40% CC +10% A 240 minute summer	104.103	27.511
100 year +40% CC +10% A 240 minute winter	69.164	27.511
100 year +40% CC +10% A 360 minute summer	79.651	20.497
100 year +40% CC +10% A 360 minute winter	51.775	20.497
100 year +40% CC +10% A 480 minute summer	62.115	16.415
100 year +40% CC +10% A 480 minute winter	41.268	16.415
100 year +40% CC +10% A 600 minute summer	50.156	13.719
100 year +40% CC +10% A 600 minute winter	34.269	13.719
100 year +40% CC +10% A 720 minute summer	44.025	11.799

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +40% CC +10% A 720 minute winter	29.588	11.799
100 year +40% CC +10% A 960 minute summer	35.065	9.233
100 year +40% CC +10% A 960 minute winter	23.228	9.233
100 year +40% CC +10% A 1440 minute summer	24.119	6.464
100 year +40% CC +10% A 1440 minute winter	16.209	6.464

Results for 10 year Critical Storm Duration. Lowest mass balance: 98.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	AWSW01	10	3.033	0.107	21.8	0.1205	0.0000	OK
15 minute winter	AWSW03	11	2.868	0.204	50.8	0.2309	0.0000	OK
15 minute winter	AWSW02	10	2.890	0.050	4.4	0.0565	0.0000	OK
15 minute winter	AWSW05	11	2.742	0.676	18.6	0.7648	0.0000	SURCHARGED
15 minute winter	AWSW06	11	2.731	0.813	22.7	0.9197	0.0000	SURCHARGED
720 minute summer	AWSW07	270	1.761	0.033	1.8	0.0477	0.0000	OK
720 minute summer	Outfall	270	1.662	0.027	1.8	0.0000	0.0000	OK
15 minute winter	PSW08	10	3.210	0.060	7.5	0.0095	0.0000	OK
15 minute winter	PSW09	10	3.216	0.066	7.9	0.0105	0.0000	OK
15 minute winter	PSW07	10	3.298	0.048	8.8	0.0076	0.0000	OK
15 minute winter	PSW06	10	3.280	0.030	3.8	0.0048	0.0000	OK
15 minute winter	J1	11	2.875	0.166	8.2	0.0000	0.0000	OK
15 minute winter	PSW10	10	2.919	0.069	7.1	0.0109	0.0000	OK
15 minute winter	PSW12	14	2.722	0.076	34.6	11.3553	0.0000	OK
15 minute winter	AWSW04	11	2.829	0.682	48.9	0.7713	0.0000	SURCHARGED
15 minute winter	PSW05	10	3.144	0.044	7.1	0.0070	0.0000	OK
15 minute winter	PSW100	9	2.931	0.331	18.7	0.0936	0.0000	SURCHARGED
360 minute winter	PSW101	360	2.632	0.282	12.4	93.1670	0.0000	SURCHARGED
15 minute winter	PSW03	10	3.049	0.049	8.2	0.0077	0.0000	OK
15 minute winter	PSW14	10	3.087	0.037	6.7	0.0059	0.0000	OK
15 minute winter	PSW16	11	2.757	0.157	8.1	0.0249	0.0000	SURCHARGED
15 minute winter	PSW02	10	2.661	0.061	5.8	0.0096	0.0000	OK
180 minute winter	PSW01	140	2.608	0.182	6.3	18.1811	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	AWSW01	1.001	AWSW03	21.6	1.173	0.415	0.3892	
15 minute winter	AWSW03	1.002	AWSW04	48.9	0.822	0.301	1.4736	
15 minute winter	AWSW02	3.000	J1	4.4	0.626	0.110	0.1004	
15 minute winter	AWSW05	1.004	AWSW06	16.7	0.472	0.237	2.5504	
15 minute winter	AWSW06	Hydro-Brake®	AWSW07	1.8				
720 minute summer	AWSW07	1.006	Outfall	1.8	0.396	0.010	0.1482	80.8
15 minute winter	PSW08	2.000	AWSW01	7.4	1.197	0.290	0.0449	
15 minute winter	PSW09	1.000	AWSW01	7.8	1.087	0.360	0.0721	
15 minute winter	PSW07	5.000	AWSW03	8.7	1.901	0.192	0.0339	
15 minute winter	PSW06	4.000	J1	3.8	1.527	0.084	0.0153	
15 minute winter	J1	3.001	AWSW03	11.2	0.439	0.102	0.2117	
15 minute winter	PSW10	8.000	PSW12	7.0	0.917	0.395	0.0991	
15 minute winter	PSW12	8.001	AWSW04	-23.3	-0.750	-0.277	0.4298	
15 minute winter	AWSW04	Hydro-Brake®	AWSW05	5.0				
15 minute winter	PSW05	6.000	PSW100	7.1	0.639	0.190	0.1266	
15 minute winter	PSW100	6.001	PSW101	21.0	1.972	0.868	0.1353	
360 minute winter	PSW101	6.002	AWSW04	-9.0	-0.521	-0.511	0.0940	
15 minute winter	PSW03	7.000	PSW100	8.2	0.719	0.227	0.1111	
15 minute winter	PSW14	9.000	AWSW05	6.7	1.608	0.135	0.1145	
15 minute winter	PSW16	10.000	AWSW05	7.6	1.693	0.151	0.0856	
15 minute winter	PSW02	11.000	PSW01	5.7	0.877	0.321	0.1471	
180 minute winter	PSW01	11.001	AWSW06	-3.4	-0.214	-0.119	0.2411	

Results for 30 year Critical Storm Duration. Lowest mass balance: 98.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	AWSW01	11	3.058	0.132	29.7	0.1493	0.0000	OK
15 minute winter	AWSW03	11	3.015	0.351	62.5	0.3968	0.0000	SURCHARGED
15 minute winter	AWSW02	11	3.015	0.175	6.0	0.1980	0.0000	OK
15 minute winter	AWSW05	11	2.860	0.794	20.5	0.8975	0.0000	SURCHARGED
15 minute winter	AWSW06	11	2.846	0.928	27.7	1.0497	0.0000	SURCHARGED
15 minute winter	AWSW07	12	1.761	0.033	1.8	0.0478	0.0000	OK
15 minute winter	Outfall	12	1.662	0.027	1.8	0.0000	0.0000	OK
15 minute winter	PSW08	10	3.222	0.072	10.2	0.0114	0.0000	OK
15 minute winter	PSW09	10	3.230	0.080	10.8	0.0127	0.0000	OK
15 minute winter	PSW07	10	3.302	0.052	12.0	0.0083	0.0000	OK
15 minute winter	PSW06	10	3.284	0.034	5.1	0.0054	0.0000	OK
15 minute winter	J1	11	3.006	0.297	11.5	0.0000	0.0000	OK
15 minute winter	PSW10	10	2.933	0.083	9.7	0.0132	0.0000	OK
15 minute winter	PSW12	15	2.766	0.120	51.2	17.8787	0.0000	OK
15 minute winter	AWSW04	11	2.900	0.753	65.4	0.8516	0.0000	SURCHARGED
15 minute winter	PSW05	10	3.152	0.052	9.6	0.0083	0.0000	OK
15 minute winter	PSW100	10	3.052	0.452	25.3	0.1279	0.0000	SURCHARGED
600 minute winter	PSW101	585	2.743	0.393	11.5	129.8487	0.0000	SURCHARGED
15 minute winter	PSW03	10	3.087	0.087	11.1	0.0139	0.0000	OK
15 minute winter	PSW14	10	3.094	0.044	9.1	0.0069	0.0000	OK
15 minute winter	PSW16	11	2.886	0.286	11.0	0.0455	0.0000	SURCHARGED
240 minute winter	PSW02	188	2.716	0.116	1.6	0.0184	0.0000	OK
240 minute winter	PSW01	188	2.716	0.290	7.3	28.9805	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	AWSW01	1.001	AWSW03	29.3	1.176	0.563	0.5977	
15 minute winter	AWSW03	1.002	AWSW04	65.4	0.928	0.402	1.7083	
15 minute winter	AWSW02	3.000	J1	6.9	0.650	0.173	0.3427	
15 minute winter	AWSW05	1.004	AWSW06	19.5	0.477	0.276	2.5504	
15 minute winter	AWSW06	Hydro-Brake®	AWSW07	1.8				
15 minute winter	AWSW07	1.006	Outfall	1.8	0.396	0.010	0.1484	23.0
15 minute winter	PSW08	2.000	AWSW01	10.1	1.289	0.395	0.0566	
15 minute winter	PSW09	1.000	AWSW01	10.7	1.170	0.491	0.0913	
15 minute winter	PSW07	5.000	AWSW03	12.0	1.918	0.262	0.0775	
15 minute winter	PSW06	4.000	J1	5.1	1.535	0.113	0.0629	
15 minute winter	J1	3.001	AWSW03	14.7	0.453	0.134	0.3272	
15 minute winter	PSW10	8.000	PSW12	9.5	0.987	0.539	0.1256	
15 minute winter	PSW12	8.001	AWSW04	-35.8	-1.082	-0.427	0.5007	
15 minute winter	AWSW04	Hydro-Brake®	AWSW05	5.0				
15 minute winter	PSW05	6.000	PSW100	9.6	0.700	0.257	0.1327	
15 minute winter	PSW100	6.001	PSW101	26.8	2.118	1.107	0.1638	
600 minute winter	PSW101	6.002	AWSW04	-8.2	-0.464	-0.461	0.0940	
15 minute winter	PSW03	7.000	PSW100	11.2	0.749	0.312	0.1390	
15 minute winter	PSW14	9.000	AWSW05	9.1	1.634	0.183	0.1191	
15 minute winter	PSW16	10.000	AWSW05	10.3	1.791	0.205	0.0856	
240 minute winter	PSW02	11.000	PSW01	1.6	0.439	0.090	0.2817	
240 minute winter	PSW01	11.001	AWSW06	-4.0	-0.228	-0.139	0.2411	

Results for 100 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 98.72%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	AWSW01	11	3.850	0.924	54.0	1.0448	0.0000	FLOOD RISK
15 minute winter	AWSW03	11	3.641	0.977	124.5	1.1052	0.0000	SURCHARGED
15 minute winter	AWSW02	11	3.651	0.811	12.4	0.9170	0.0000	FLOOD RISK
15 minute winter	AWSW05	10	3.371	1.305	40.2	1.4758	0.0000	SURCHARGED
15 minute winter	AWSW06	10	3.311	1.393	53.4	1.5755	2.1079	FLOOD
15 minute winter	AWSW07	12	1.764	0.036	2.1	0.0519	0.0000	OK
15 minute winter	Outfall	12	1.665	0.030	2.1	0.0000	0.0000	OK
15 minute winter	PSW08	11	3.900	0.750	21.3	0.1193	0.5415	FLOOD
15 minute winter	PSW09	11	4.000	0.850	22.4	0.1352	0.1281	FLOOD
15 minute winter	PSW07	11	3.809	0.559	24.9	0.0889	0.0000	FLOOD RISK
15 minute winter	PSW06	11	3.669	0.419	10.7	0.0667	0.0000	SURCHARGED
15 minute winter	J1	11	3.644	0.935	21.4	0.0000	0.0000	FLOOD RISK
720 minute winter	PSW10	720	3.310	0.460	1.8	0.0732	0.0000	SURCHARGED
720 minute winter	PSW12	720	3.310	0.664	7.4	99.6760	0.0000	SURCHARGED
720 minute winter	AWSW04	720	3.310	1.163	13.0	1.3155	0.0000	SURCHARGED
15 minute winter	PSW05	11	3.900	0.800	19.9	0.1272	0.1095	FLOOD
15 minute winter	PSW100	11	3.764	1.164	46.0	0.3293	0.0000	FLOOD RISK
720 minute winter	PSW101	720	3.310	0.960	15.7	264.4368	0.0000	SURCHARGED
15 minute winter	PSW03	11	3.900	0.900	23.1	0.1431	0.2220	FLOOD
15 minute winter	PSW14	10	3.506	0.456	18.8	0.0724	0.0000	SURCHARGED
15 minute winter	PSW16	10	3.488	0.888	22.9	0.1412	0.0000	SURCHARGED
720 minute winter	PSW02	705	3.260	0.660	1.5	0.1049	0.0000	SURCHARGED
720 minute winter	PSW01	705	3.260	0.834	6.1	67.5327	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	AWSW01	1.001	AWSW03	49.9	1.255	0.960	0.7432	
15 minute winter	AWSW03	1.002	AWSW04	124.4	1.766	0.765	1.7083	
15 minute winter	AWSW02	3.000	J1	11.5	0.586	0.289	0.3744	
15 minute winter	AWSW05	1.004	AWSW06	36.4	0.521	0.515	2.5504	
15 minute winter	AWSW06	Hydro-Brake®	AWSW07	2.1				
15 minute winter	AWSW07	1.006	Outfall	2.1	0.415	0.013	0.1690	24.5
15 minute winter	PSW08	2.000	AWSW01	17.3	1.324	0.676	0.1271	
15 minute winter	PSW09	1.000	AWSW01	19.0	1.193	0.877	0.1764	
15 minute winter	PSW07	5.000	AWSW03	23.2	1.940	0.509	0.1181	
15 minute winter	PSW06	4.000	J1	9.8	1.555	0.218	0.1085	
15 minute winter	J1	3.001	AWSW03	21.9	0.452	0.200	0.3274	
720 minute winter	PSW10	8.000	PSW12	1.8	0.627	0.102	0.2288	
720 minute winter	PSW12	8.001	AWSW04	-4.4	0.256	-0.052	0.6509	
720 minute winter	AWSW04	Hydro-Brake®	AWSW05	2.0				
15 minute winter	PSW05	6.000	PSW100	17.1	0.969	0.458	0.2030	
15 minute winter	PSW100	6.001	PSW101	45.9	3.025	1.899	0.2381	
720 minute winter	PSW101	6.002	AWSW04	-11.1	-0.629	-0.626	0.0940	
15 minute winter	PSW03	7.000	PSW100	19.6	1.112	0.544	0.1735	
15 minute winter	PSW14	9.000	AWSW05	18.2	1.744	0.367	0.1919	
15 minute winter	PSW16	10.000	AWSW05	22.0	1.821	0.437	0.0856	
720 minute winter	PSW02	11.000	PSW01	1.4	0.378	0.082	0.3079	
720 minute winter	PSW01	11.001	AWSW06	-3.1	-0.178	-0.109	0.2411	