

Drainage Calculations

Project:	P25-105 Indurent Park, Newport - Units 19 - 21		
Subject:	Technical Note – Drainage Calculations		
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1 Surface Water Drainage

1.1 Outfall Restrictions and Attenuation

The development phase considered is part of a wider scheme and will have an unrestricted discharge to the as-constructed reën system adjacent to the phase boundary. This is in accordance with the approved “Llanwern Regeneration Site Drainage Strategy” (Halcrow, 2005) and the “Site Wide Surface water Drainage Strategy Addendum” (RLL, 2016). There is no requirement for additional surface water attenuation.

Three proposed surface water networks are designed to support the development. One network serves the building and parking area of unit 19, along with unit 21 and the access road within the site, as well as the service yard of unit 20. The second network provides drainage for unit 20 and the service yard of unit 19. The last network gathers runoff from the landscaped areas of unit 19 via a filter drain. All three networks are connected to the existing surface water drainage located in Queens Way road before discharging into the reën, following the sitewide strategy.

This technical note should be read in conjunction with Proposed Drainage Strategy Plan (25105-RLL-25-XX-DR-C-2004).

1.2 Design Events

The below ground systems have been assessed for rainfall events up to the 1 in 100 year return period (1% annual exceedance probability event (AEP)) with an additional 40% allowance for climate change. Network modelling indicates there is no surcharge of pipework for the 1 in 2 year return period (50% AEP events) and no flooding at the 1 in 30 year return period (3.3% AEP event) and the 1 in 100 year return period (1% AEP event).

A copy of the hydraulic network modelling results can be found in Appendix A.

1.3 Pollution Prevention

To minimise the risk of contamination from oil and silt in surface water run off from the developed site, enhanced silt removal (ESR) type class 1 separators are specified for the systems which serve service yard and car parking areas.

2 Foul Water Drainage

The proposed foul water drainage will be connected to the existing foul water network installed below Queens Way road, in accordance with the sitewide strategy.

Appendix A

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)	0.200
Ratio-R	0.300	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.008	5.00	7.465	1200	336786.237	186329.649	1.430
2	0.256	5.00	7.300	1500	336752.993	186332.386	1.462
3	0.023	5.00	7.224	1500	336746.021	186340.359	1.328
4		5.00	7.135	450	336738.482	186327.225	1.000
5	0.004	5.00	6.880	900	336740.649	186353.985	1.013
6			7.230		336747.098	186353.453	1.422
8			6.809	900	336744.512	186398.819	1.242
9			7.225	1500	336750.802	186398.300	1.716
10		5.00	7.311	450	336753.866	186512.272	1.357
11			6.902	450	336751.961	186488.639	1.185
13	0.007	5.00	6.747	900	336748.181	186443.670	1.480
14	0.100	5.00	7.228	1500	336754.506	186443.147	2.019
15	0.109	5.00	6.946	1350	336760.164	186511.652	2.196
17			7.458	600	336755.125	186533.400	1.646
18			7.458	450	336758.829	186578.248	1.946
19		5.00	6.486	600	336763.478	186634.539	0.867
20			6.712	900	336762.533	186623.095	1.170
21			7.330	900	336760.492	186598.384	2.003
23	0.079	5.00	6.652	1500	336772.765	186622.250	1.331
24	0.226	5.00	7.269	1500	336770.724	186597.539	2.113
25	0.024	5.00	7.190	1500	336794.217	186595.613	2.191
26		5.00	6.751	450	336821.509	186558.796	0.701
27	0.005	5.00	6.817	450	336798.999	186591.233	1.162
28	0.003	5.00	6.658	900	336781.959	186625.253	0.700
29			6.875	600	336796.913	186594.556	1.259
30			7.384		336794.966	186593.749	2.398
31			7.169	1500	336805.244	186568.389	2.365
32	0.174	5.00	6.790	1500	336817.410	186531.536	2.245
33			6.790	1500	336816.390	186519.200	2.328
34			6.574	1200	336815.390	186507.091	2.193
35		5.00	6.725	450	336823.690	186429.389	0.698
36	0.003	5.00	6.867	450	336824.575	186441.479	0.962
37	0.006	5.00	6.875	450	336830.856	186486.038	1.420
38	0.005	5.00	6.846	450	336829.100	186497.242	1.636
39	0.064	5.00	7.013	1200	336768.986	186495.676	1.590
40	0.181	5.00	6.752	1500	336819.175	186497.283	1.425
41			6.874	1200	336804.356	186498.508	1.646
42	0.015	5.00	7.004	1200	336803.883	186492.791	1.814
43			6.946	1200	336817.138	186491.695	1.845
44			6.606	1200	336829.469	186504.662	2.320
44_OUT			6.750	1200	336841.708	186503.510	2.700

Links (Results)

Name	US Node	DS Node	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)
1.000	1	2	1.002	39.8	1.0	1.205	1.237	0.008	0.0	25	0.431
1.001	2	3	1.543	193.9	35.7	0.933	0.928	0.263	0.0	115	1.185
1.002	3	6	1.538	193.3	38.7	0.928	1.022	0.286	0.0	121	1.211
2.000	4	5	0.769	6.0	0.0	0.900	0.913	0.000	0.0	0	0.000
2.001	5	6	0.950	16.8	0.6	0.863	1.271	0.004	0.0	19	0.440
1.003	6	9	1.538	193.3	39.3	1.021	1.316	0.290	0.0	121	1.215
3.000	5	8	0.818	14.5	0.0	0.863	1.092	0.000	0.0	0	0.000
3.001	8	9	0.963	17.0	0.0	1.092	1.566	0.000	0.0	0	0.000
1.004	9	14	1.538	193.3	39.3	1.316	1.619	0.290	0.0	121	1.215
4.000	10	11	1.004	17.7	0.0	1.207	1.035	0.000	0.0	0	0.000
4.001	11	13	1.003	17.7	0.0	1.035	1.330	0.000	0.0	0	0.000
5.000	8	13	0.818	14.5	0.0	1.092	1.330	0.000	0.0	0	0.000
4.002	13	14	0.960	17.0	1.0	1.330	1.869	0.007	0.0	24	0.519
1.005	14	15	1.540	193.5	53.8	1.619	1.796	0.397	0.0	143	1.324
1.006	15	34	1.538	193.2	67.8	1.796	1.793	0.506	0.0	163	1.406
6.000	10	17	0.818	14.5	0.0	1.207	1.495	0.000	0.0	0	0.000
6.001	17	18	0.818	14.5	0.0	1.496	1.796	0.000	0.0	0	0.000
6.002	18	21	0.818	14.5	0.0	1.796	1.803	0.000	0.0	0	0.000
7.000	19	20	0.820	14.5	0.0	0.717	1.020	0.000	0.0	0	0.000
7.001	20	21	0.817	14.4	0.0	1.020	1.803	0.000	0.0	0	0.000
6.003	21	24	1.300	23.0	0.0	1.853	1.963	0.000	0.0	0	0.000
8.000	20	23	1.480	26.1	0.0	1.020	1.181	0.000	0.0	0	0.000
8.001	23	24	1.825	395.0	10.8	0.806	1.588	0.079	0.0	59	0.811
6.004	24	25	1.825	395.2	41.4	1.588	1.666	0.306	0.0	114	1.201
6.005	25	30	1.826	395.3	44.7	1.666	1.873	0.330	0.0	118	1.229
9.000	26	27	0.769	6.0	0.0	0.601	1.062	0.000	0.0	0	0.000
9.001	27	29	0.766	6.0	0.7	1.062	1.159	0.005	0.0	23	0.509
10.000	28	29	1.005	17.8	0.5	0.550	1.109	0.003	0.0	17	0.427
9.002	29	30	8.652	611.6	1.2	0.959	2.098	0.009	0.0	10	1.680
6.006	30	31	1.824	394.9	45.9	1.873	1.840	0.338	0.0	120	1.236
6.007	31	32	1.827	395.6	45.9	1.840	1.720	0.338	0.0	120	1.239
6.008	32	33	1.832	396.5	69.4	1.720	1.803	0.512	0.0	147	1.391
6.009	33	34	1.538	193.3	69.2	1.928	1.793	0.512	0.0	165	1.416
1.007	34	44	1.536	193.1	135.2	1.793	1.920	1.019	0.0	247	1.657
11.000	35	36	0.769	6.0	0.0	0.598	0.861	0.000	0.0	0	0.000
11.001	36	37	0.769	6.0	0.4	0.862	1.320	0.003	0.0	18	0.432
11.002	37	38	1.092	8.6	1.2	1.320	1.536	0.009	0.0	25	0.756
11.003	38	44	3.575	63.2	1.8	1.486	2.170	0.013	0.0	17	1.571
12.000	39	42	1.064	42.3	8.6	1.365	1.589	0.064	0.0	69	0.841
13.000	40	41	1.281	90.6	24.6	1.125	1.346	0.181	0.0	106	1.094
13.001	41	42	1.281	90.6	24.6	1.346	1.514	0.181	0.0	106	1.094
12.001	42	43	1.281	90.6	35.2	1.514	1.545	0.260	0.0	130	1.204
12.002	43	44	3.369	238.2	35.2	1.545	2.020	0.260	0.0	78	2.440
1.008	44	44_OUT	2.620	329.2	170.7	1.920	2.300	1.292	0.0	204	2.642

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)
1.000	33.356	169.3	225	Circular	7.465	6.035	1.205	7.300	5.838	1.237
1.001	10.591	149.2	400	Circular	7.300	5.967	0.933	7.224	5.896	0.928
1.002	13.138	150.0	400	Circular	7.224	5.896	0.928	7.230	5.808	1.022
2.000	26.848	100.0	100	Circular	7.135	6.135	0.900	6.880	5.867	0.913
2.001	6.471	111.6	150	Circular	6.880	5.867	0.863	7.230	5.809	1.271
1.003	45.000	150.0	400	Circular	7.230	5.809	1.021	7.225	5.509	1.316
3.000	45.000	150.0	150	Circular	6.880	5.867	0.863	6.809	5.567	1.092
3.001	6.311	108.8	150	Circular	6.809	5.567	1.092	7.225	5.509	1.566
1.004	45.000	150.0	400	Circular	7.225	5.509	1.316	7.228	5.209	1.619
4.000	23.727	100.1	150	Circular	7.311	5.954	1.207	6.902	5.717	1.035
4.001	45.128	100.3	150	Circular	6.902	5.717	1.035	6.747	5.267	1.330
5.000	45.001	150.0	150	Circular	6.809	5.567	1.092	6.747	5.267	1.330
4.002	6.347	109.4	150	Circular	6.747	5.267	1.330	7.228	5.209	1.869
1.005	68.738	149.8	400	Circular	7.228	5.209	1.619	6.946	4.750	1.796
1.006	55.414	150.2	400	Circular	6.946	4.750	1.796	6.574	4.381	1.793
6.000	21.165	150.0	150	Circular	7.311	5.954	1.207	7.458	5.813	1.495
6.001	45.001	150.0	150	Circular	7.458	5.812	1.496	7.458	5.512	1.796
6.002	20.205	150.0	150	Circular	7.458	5.512	1.796	7.330	5.377	1.803
7.000	11.483	149.1	150	Circular	6.486	5.619	0.717	6.712	5.542	1.020
7.001	24.795	150.3	150	Circular	6.712	5.542	1.020	7.330	5.377	1.803
6.003	10.267	60.0	150	Circular	7.330	5.327	1.853	7.269	5.156	1.963
8.000	10.267	46.5	150	Circular	6.712	5.542	1.020	6.652	5.321	1.181
8.001	24.795	150.3	525	Circular	6.652	5.321	0.806	7.269	5.156	1.588
6.004	23.572	150.1	525	Circular	7.269	5.156	1.588	7.190	4.999	1.666
6.005	2.009	150.0	525	Circular	7.190	4.999	1.666	7.384	4.986	1.873

Link	US Node	Dia (mm)	Node Type	DS Node	Dia (mm)	Node Type
1.000	1	1200	Manhole	2	1500	Manhole
1.001	2	1500	Manhole	3	1500	Manhole
1.002	3	1500	Manhole	6		Junction
2.000	4	450	Manhole	5	900	Manhole
2.001	5	900	Manhole	6		Junction
1.003	6		Junction	9	1500	Manhole
3.000	5	900	Manhole	8	900	Manhole
3.001	8	900	Manhole	9	1500	Manhole
1.004	9	1500	Manhole	14	1500	Manhole
4.000	10	450	Manhole	11	450	Manhole
4.001	11	450	Manhole	13	900	Manhole
5.000	8	900	Manhole	13	900	Manhole
4.002	13	900	Manhole	14	1500	Manhole
1.005	14	1500	Manhole	15	1350	Manhole
1.006	15	1350	Manhole	34	1200	Manhole
6.000	10	450	Manhole	17	600	Manhole
6.001	17	600	Manhole	18	450	Manhole
6.002	18	450	Manhole	21	900	Manhole
7.000	19	600	Manhole	20	900	Manhole
7.001	20	900	Manhole	21	900	Manhole
6.003	21	900	Manhole	24	1500	Manhole
8.000	20	900	Manhole	23	1500	Manhole
8.001	23	1500	Manhole	24	1500	Manhole
6.004	24	1500	Manhole	25	1500	Manhole
6.005	25	1500	Manhole	30		Junction

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)
9.000	39.512	100.0	100	Circular	6.751	6.050	0.601	6.817	5.655	1.062
9.001	3.923	100.6	100	Circular	6.817	5.655	1.062	6.875	5.616	1.159
10.000	34.184	100.0	150	Circular	6.658	5.958	0.550	6.875	5.616	1.109
9.002	2.108	3.3	300	Circular	6.875	5.616	0.959	7.384	4.986	2.098
6.006	27.364	150.3	525	Circular	7.384	4.986	1.873	7.169	4.804	1.840
6.007	38.809	149.8	525	Circular	7.169	4.804	1.840	6.790	4.545	1.720
6.008	12.378	149.1	525	Circular	6.790	4.545	1.720	6.790	4.462	1.803
6.009	12.150	150.0	400	Circular	6.790	4.462	1.928	6.574	4.381	1.793
1.007	14.287	150.4	400	Circular	6.574	4.381	1.793	6.606	4.286	1.920
11.000	12.122	100.0	100	Circular	6.725	6.027	0.598	6.867	5.906	0.861
11.001	45.042	100.0	100	Circular	6.867	5.905	0.862	6.875	5.455	1.320
11.002	12.258	50.0	100	Circular	6.875	5.455	1.320	6.846	5.210	1.536
11.003	7.429	8.0	150	Circular	6.846	5.210	1.486	6.606	4.286	2.170
12.000	35.016	150.3	225	Circular	7.013	5.423	1.365	7.004	5.190	1.589
13.000	14.870	150.0	300	Circular	6.752	5.327	1.125	6.874	5.228	1.346
13.001	5.737	150.0	300	Circular	6.874	5.228	1.346	7.004	5.190	1.514
12.001	13.300	150.0	300	Circular	7.004	5.190	1.514	6.946	5.101	1.545
12.002	17.894	22.0	300	Circular	6.946	5.101	1.545	6.606	4.286	2.020
1.008	12.293	52.1	400	Circular	6.606	4.286	1.920	6.750	4.050	2.300

Link	US Node	Dia (mm)	Node Type	DS Node	Dia (mm)	Node Type
9.000	26	450	Manhole	27	450	Manhole
9.001	27	450	Manhole	29	600	Manhole
10.000	28	900	Manhole	29	600	Manhole
9.002	29	600	Manhole	30		Junction
6.006	30		Junction	31	1500	Manhole
6.007	31	1500	Manhole	32	1500	Manhole
6.008	32	1500	Manhole	33	1500	Manhole
6.009	33	1500	Manhole	34	1200	Manhole
1.007	34	1200	Manhole	44	1200	Manhole
11.000	35	450	Manhole	36	450	Manhole
11.001	36	450	Manhole	37	450	Manhole
11.002	37	450	Manhole	38	450	Manhole
11.003	38	450	Manhole	44	1200	Manhole
12.000	39	1200	Manhole	42	1200	Manhole
13.000	40	1500	Manhole	41	1200	Manhole
13.001	41	1200	Manhole	42	1200	Manhole
12.001	42	1200	Manhole	43	1200	Manhole
12.002	43	1200	Manhole	44	1200	Manhole
1.008	44	1200	Manhole	44_OUT	1200	Manhole

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Detailed
Rainfall Events	Singular	Skip Steady State	x
FSR Region	England and Wales	Drain Down Time (mins)	240
M5-60 (mm)	20.000	Additional Storage (m³/ha)	0.0
Ratio-R	0.300	Starting Level (m)	
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Durations

15 | 30 | 60

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	40	0	0

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year 15 minute summer	128.797	36.445	30 year 30 minute winter	116.763	47.082
2 year 15 minute winter	90.384	36.445	30 year 60 minute summer	116.589	30.811
2 year 30 minute summer	87.307	24.705	30 year 60 minute winter	77.459	30.811
2 year 30 minute winter	61.268	24.705	100 year +40% CC 15 minute summer	441.486	124.925
2 year 60 minute summer	61.301	16.200	100 year +40% CC 15 minute winter	309.815	124.925
2 year 60 minute winter	40.727	16.200	100 year +40% CC 30 minute summer	304.460	86.152
30 year 15 minute summer	243.818	68.992	100 year +40% CC 30 minute winter	213.656	86.152
30 year 15 minute winter	171.101	68.992	100 year +40% CC 60 minute summer	214.603	56.713
30 year 30 minute summer	166.387	47.082	100 year +40% CC 60 minute winter	142.577	56.713

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.12%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	6.111	0.076	1.9	0.0862	0.0000	OK
15 minute winter	2	10	6.110	0.272	43.5	0.4805	0.0000	OK
15 minute winter	3	10	6.033	0.137	46.6	0.2429	0.0000	OK
15 minute summer	4	1	6.135	0.000	0.0	0.0000	0.0000	OK
15 minute winter	5	11	5.922	0.055	4.2	0.0349	0.0000	OK
15 minute winter	6	11	5.938	0.130	46.0	0.0000	0.0000	OK
15 minute winter	8	12	5.632	0.065	6.1	0.0411	0.0000	OK
15 minute winter	9	11	5.635	0.126	43.2	0.2225	0.0000	OK
15 minute summer	10	1	5.954	0.000	0.0	0.0000	0.0000	OK
15 minute summer	11	1	5.717	0.000	0.0	0.0000	0.0000	OK
15 minute winter	13	12	5.373	0.106	6.6	0.0674	0.0000	OK
15 minute winter	14	12	5.364	0.155	61.2	0.2742	0.0000	OK
15 minute winter	15	12	4.920	0.170	75.5	0.2436	0.0000	OK
15 minute summer	17	1	5.812	0.000	0.0	0.0000	0.0000	OK
15 minute summer	18	1	5.512	0.000	0.0	0.0000	0.0000	OK
15 minute summer	19	1	5.619	0.000	0.0	0.0000	0.0000	OK
15 minute summer	20	1	5.542	0.000	0.0	0.0000	0.0000	OK
15 minute summer	21	1	5.327	0.000	0.0	0.0000	0.0000	OK
15 minute winter	23	10	5.385	0.064	13.2	0.1134	0.0000	OK
15 minute winter	24	10	5.289	0.133	50.5	0.2343	0.0000	OK
15 minute winter	25	11	5.144	0.145	53.5	0.2555	0.0000	OK
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	1	1.000	2	2.2	0.082	0.055	0.8605	
15 minute winter	2	1.001	3	42.9	1.098	0.221	0.4142	
15 minute winter	3	1.002	6	46.0	1.262	0.238	0.4789	
15 minute summer	4	2.000	5	0.0	0.000	0.000	0.0564	
15 minute winter	5	2.001	6	-3.5	-0.313	-0.206	0.0709	
15 minute winter	5	3.000	8	4.2	0.655	0.288	0.2924	
15 minute winter	6	1.003	9	43.2	1.260	0.223	1.5410	
15 minute winter	8	3.001	9	-2.2	-0.217	-0.132	0.0724	
15 minute winter	8	5.000	13	5.6	0.555	0.388	0.4625	
15 minute winter	9	1.004	14	40.7	1.047	0.210	1.7524	
15 minute summer	10	4.000	11	0.0	0.000	0.000	0.0000	
15 minute summer	10	6.000	17	0.0	0.000	0.000	0.0000	
15 minute summer	11	4.001	13	0.0	0.000	0.000	0.2849	
15 minute winter	13	4.002	14	7.1	0.464	0.421	0.0981	
15 minute winter	14	1.005	15	61.3	1.282	0.317	3.2873	
15 minute winter	15	1.006	34	75.1	0.971	0.389	4.2364	
15 minute summer	17	6.001	18	0.0	0.000	0.000	0.0000	
15 minute summer	18	6.002	21	0.0	0.000	0.000	0.0000	
15 minute summer	19	7.000	20	0.0	0.000	0.000	0.0000	
15 minute summer	20	7.001	21	0.0	0.000	0.000	0.0000	
15 minute summer	20	8.000	23	0.0	0.000	0.000	0.0358	
15 minute summer	21	6.003	24	0.0	0.000	0.000	0.0828	
15 minute winter	23	8.001	24	13.0	0.464	0.033	0.7157	
15 minute winter	24	6.004	25	49.5	1.091	0.125	1.0708	
15 minute winter	25	6.005	30	53.2	1.165	0.135	0.0919	

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.12%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	26	1	6.050	0.000	0.0	0.0000	0.0000	OK
15 minute winter	27	11	5.683	0.028	0.9	0.0045	0.0000	OK
15 minute winter	28	11	5.978	0.020	0.6	0.0125	0.0000	OK
15 minute winter	29	11	5.627	0.011	1.4	0.0030	0.0000	OK
15 minute winter	30	11	5.120	0.134	54.6	0.0000	0.0000	OK
15 minute winter	31	11	4.934	0.130	55.1	0.2294	0.0000	OK
15 minute winter	32	11	4.742	0.197	82.3	0.3472	0.0000	OK
15 minute winter	33	12	4.706	0.244	81.3	0.4312	0.0000	OK
15 minute winter	34	12	4.685	0.304	153.2	0.3438	0.0000	OK
15 minute summer	35	1	6.027	0.000	0.0	0.0000	0.0000	OK
15 minute winter	36	11	5.924	0.019	0.5	0.0030	0.0000	OK
15 minute winter	37	11	5.484	0.029	1.4	0.0046	0.0000	OK
15 minute winter	38	11	5.229	0.019	2.1	0.0030	0.0000	OK
15 minute winter	39	10	5.498	0.075	10.5	0.0849	0.0000	OK
15 minute winter	40	10	5.458	0.131	30.1	0.2307	0.0000	OK
15 minute winter	41	10	5.374	0.146	29.8	0.1655	0.0000	OK
15 minute winter	42	11	5.341	0.151	42.1	0.1703	0.0000	OK
15 minute winter	43	11	5.186	0.085	42.0	0.0959	0.0000	OK
15 minute winter	44	12	4.551	0.265	194.1	0.3001	0.0000	OK
15 minute winter	44_OUT	12	4.268	0.218	194.5	0.0000	0.0000	OK

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 summer	26	9.000	27	0.0	0.000	0.000	0.0343	
15 minute winter	27	9.001	29	0.8	0.787	0.139	0.0044	
15 minute winter	28	10.000	29	0.5	0.583	0.030	0.0324	
15 minute winter	29	9.002	30	1.4	0.106	0.002	0.0328	
15 minute winter	30	6.006	31	55.1	1.303	0.140	1.1584	
15 minute winter	31	6.007	32	55.1	0.964	0.139	2.2347	
15 minute winter	32	6.008	33	81.3	1.001	0.205	1.0508	
15 minute winter	33	6.009	34	79.3	0.939	0.410	1.1066	
15 minute winter	34	1.007	44	153.8	1.629	0.796	1.3596	
15 minute summer	35	11.000	36	0.0	0.000	0.000	0.0058	
15 minute winter	36	11.001	37	0.5	0.332	0.079	0.0659	
15 minute winter	37	11.002	38	1.3	0.942	0.156	0.0177	
15 minute winter	38	11.003	44	2.0	0.814	0.032	0.0700	
15 minute winter	39	12.000	42	10.3	0.518	0.243	0.6962	
15 minute winter	40	13.000	41	29.8	0.937	0.329	0.4724	
15 minute winter	41	13.001	42	29.3	0.845	0.324	0.1992	
15 minute winter	42	12.001	43	42.0	1.639	0.464	0.3440	
15 minute winter	43	12.002	44	42.2	1.203	0.177	0.7266	
15 minute winter	44	1.008	44_OUT	194.5	2.462	0.591	0.9698	98.1

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.12%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	6.178	0.143	2.5	0.1612	0.0000	OK
15 minute winter	2	10	6.177	0.339	82.3	0.5983	0.0000	OK
15 minute winter	3	10	6.093	0.197	88.7	0.3482	0.0000	OK
15 minute summer	4	1	6.135	0.000	0.0	0.0000	0.0000	OK
15 minute winter	5	11	5.958	0.091	10.0	0.0578	0.0000	OK
15 minute winter	6	10	5.989	0.181	87.9	0.0000	0.0000	OK
15 minute winter	8	11	5.686	0.119	14.3	0.0756	0.0000	OK
15 minute winter	9	11	5.687	0.178	79.2	0.3148	0.0000	OK
15 minute summer	10	1	5.954	0.000	0.0	0.0000	0.0000	OK
15 minute summer	11	1	5.717	0.000	0.0	0.0000	0.0000	OK
15 minute winter	13	11	5.497	0.230	14.6	0.1461	0.0000	SURCHARGED
15 minute winter	14	11	5.439	0.230	119.2	0.4060	0.0000	OK
15 minute winter	15	12	5.243	0.493	152.8	0.7049	0.0000	SURCHARGED
15 minute summer	17	1	5.812	0.000	0.0	0.0000	0.0000	OK
15 minute summer	18	1	5.512	0.000	0.0	0.0000	0.0000	OK
15 minute summer	19	1	5.619	0.000	0.0	0.0000	0.0000	OK
15 minute summer	20	1	5.542	0.000	0.0	0.0000	0.0000	OK
15 minute winter	21	10	5.347	0.020	0.6	0.0124	0.0000	OK
15 minute winter	23	10	5.408	0.087	24.9	0.1542	0.0000	OK
15 minute winter	24	10	5.347	0.191	95.7	0.3378	0.0000	OK
15 minute winter	25	10	5.203	0.204	101.5	0.3605	0.0000	OK

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	1	1.000	2	3.8	0.119	0.096	1.1056	
15 minute winter	2	1.001	3	81.6	1.277	0.421	0.6770	
15 minute winter	3	1.002	6	87.9	1.511	0.455	0.7645	
15 minute summer	4	2.000	5	0.0	0.000	0.000	0.0978	
15 minute winter	5	2.001	6	-8.7	-0.547	-0.517	0.0931	
15 minute winter	5	3.000	8	10.0	0.788	0.689	0.5882	
15 minute winter	6	1.003	9	79.2	1.471	0.410	2.4341	
15 minute winter	8	3.001	9	-4.8	-0.313	-0.281	0.1028	
15 minute winter	8	5.000	13	12.4	0.738	0.855	0.7330	
15 minute winter	9	1.004	14	75.8	1.200	0.392	2.8877	
15 minute summer	10	4.000	11	0.0	0.000	0.000	0.0000	
15 minute summer	10	6.000	17	0.0	0.000	0.000	0.0000	
15 minute summer	11	4.001	13	0.0	0.000	0.000	0.3972	
15 minute winter	13	4.002	14	14.6	0.831	0.863	0.1117	
15 minute winter	14	1.005	15	120.5	1.417	0.623	6.7273	
15 minute winter	15	1.006	34	136.4	1.090	0.706	6.9373	
15 minute summer	17	6.001	18	0.0	0.000	0.000	0.0000	
15 minute summer	18	6.002	21	0.0	0.000	0.000	0.0000	
15 minute summer	19	7.000	20	0.0	0.000	0.000	0.0000	
15 minute summer	20	7.001	21	0.0	0.000	0.000	0.0000	
15 minute summer	20	8.000	23	0.0	0.000	0.000	0.0530	
15 minute winter	21	6.003	24	-0.6	-0.055	-0.025	0.0973	
15 minute winter	23	8.001	24	24.6	0.537	0.062	1.1714	
15 minute winter	24	6.004	25	93.9	1.265	0.238	1.7507	
15 minute winter	25	6.005	30	100.4	1.371	0.254	0.1472	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.12%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	26	1	6.050	0.000	0.0	0.0000	0.0000	OK
15 minute winter	27	11	5.695	0.040	1.7	0.0063	0.0000	OK
15 minute winter	28	11	5.985	0.027	1.1	0.0172	0.0000	OK
15 minute winter	29	11	5.630	0.014	2.7	0.0041	0.0000	OK
15 minute winter	30	11	5.173	0.187	103.0	0.0000	0.0000	OK
15 minute winter	31	13	5.110	0.306	103.6	0.5412	0.0000	OK
15 minute winter	32	12	5.105	0.560	153.6	0.9891	0.0000	SURCHARGED
15 minute winter	33	12	5.089	0.627	125.6	1.1081	0.0000	SURCHARGED
15 minute winter	34	12	5.032	0.651	252.6	0.7361	0.0000	SURCHARGED
15 minute summer	35	1	6.027	0.000	0.0	0.0000	0.0000	OK
15 minute winter	36	11	5.931	0.026	0.9	0.0041	0.0000	OK
15 minute winter	37	11	5.495	0.040	2.5	0.0064	0.0000	OK
15 minute winter	38	11	5.235	0.025	3.9	0.0040	0.0000	OK
15 minute winter	39	10	5.530	0.107	19.9	0.1206	0.0000	OK
15 minute winter	40	10	5.529	0.202	56.9	0.3570	0.0000	OK
15 minute winter	41	10	5.455	0.227	56.3	0.2562	0.0000	OK
15 minute winter	42	10	5.411	0.221	79.9	0.2504	0.0000	OK
15 minute winter	43	11	5.219	0.118	79.1	0.1337	0.0000	OK
15 minute winter	44	12	4.769	0.483	320.1	0.5463	0.0000	SURCHARGED
15 minute winter	44_OUT	12	4.356	0.306	315.3	0.0000	0.0000	OK

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 summer	26	9.000	27	0.0	0.000	0.000	0.0548	
15 minute winter	27	9.001	29	1.6	0.956	0.272	0.0071	
15 minute winter	28	10.000	29	1.0	0.712	0.059	0.0513	
15 minute winter	29	9.002	30	2.7	0.129	0.004	0.0500	
15 minute winter	30	6.006	31	103.6	1.545	0.262	2.4963	
15 minute winter	31	6.007	32	99.0	1.024	0.250	6.7288	
15 minute winter	32	6.008	33	125.6	1.041	0.317	2.6741	
15 minute winter	33	6.009	34	126.3	1.009	0.653	1.5211	
15 minute winter	34	1.007	44	252.4	2.016	1.307	1.7886	
15 minute summer	35	11.000	36	0.0	0.000	0.000	0.0091	
15 minute winter	36	11.001	37	0.9	0.390	0.146	0.1025	
15 minute winter	37	11.002	38	2.5	1.113	0.290	0.0276	
15 minute winter	38	11.003	44	3.9	0.549	0.062	0.0727	
15 minute winter	39	12.000	42	19.6	0.632	0.464	1.0176	
15 minute winter	40	13.000	41	56.3	1.045	0.621	0.7995	
15 minute winter	41	13.001	42	55.6	0.985	0.614	0.3236	
15 minute winter	42	12.001	43	79.1	1.932	0.873	0.5409	
15 minute winter	43	12.002	44	79.4	1.406	0.333	0.8608	
15 minute winter	44	1.008	44_OUT	315.3	2.625	0.958	1.4009	185.8

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.12%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	13	6.687	0.652	15.4	0.7369	0.0000	SURCHARGED
15 minute winter	2	12	6.694	0.856	149.1	1.5132	0.0000	SURCHARGED
15 minute winter	3	13	6.658	0.762	161.0	1.3461	0.0000	SURCHARGED
15 minute winter	4	13	6.598	0.463	5.5	0.0736	0.0000	SURCHARGED
15 minute winter	5	13	6.626	0.759	16.7	0.4830	0.0000	FLOOD RISK
15 minute winter	6	13	6.628	0.820	159.8	0.0000	0.0000	SURCHARGED
15 minute winter	8	13	6.551	0.984	17.7	0.6258	0.0000	FLOOD RISK
15 minute winter	9	13	6.545	1.036	151.8	1.8308	0.0000	SURCHARGED
15 minute winter	10	14	6.193	0.239	13.0	0.0380	0.0000	SURCHARGED
15 minute winter	11	14	6.249	0.532	15.2	0.0847	0.0000	SURCHARGED
15 minute winter	13	13	6.440	1.173	18.4	0.7462	0.0000	SURCHARGED
15 minute winter	14	13	6.437	1.228	176.4	2.1694	0.0000	SURCHARGED
15 minute winter	15	12	6.182	1.432	196.2	2.0485	0.0000	SURCHARGED
15 minute winter	17	14	6.150	0.338	17.5	0.0957	0.0000	SURCHARGED
15 minute winter	18	14	6.038	0.526	15.9	0.0836	0.0000	SURCHARGED
15 minute winter	19	13	6.053	0.434	3.5	0.1229	0.0000	SURCHARGED
15 minute winter	20	13	6.054	0.512	22.7	0.3256	0.0000	SURCHARGED
15 minute winter	21	13	6.037	0.710	21.2	0.4512	0.0000	SURCHARGED
15 minute winter	23	12	6.056	0.735	45.2	1.2984	0.0000	SURCHARGED
15 minute winter	24	13	6.047	0.891	184.3	1.5746	0.0000	SURCHARGED
15 minute winter	25	13	6.022	1.023	165.4	1.8075	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	1	1.000	2	-11.4	0.320	-0.285	1.3266	
15 minute winter	2	1.001	3	148.2	1.432	0.765	1.3259	
15 minute winter	3	1.002	6	159.8	1.705	0.827	1.6447	
15 minute winter	4	2.000	5	-5.5	-0.697	-0.904	0.2101	
15 minute winter	5	2.001	6	-14.4	-0.818	-0.857	0.1139	
15 minute winter	5	3.000	8	13.8	0.832	0.957	0.7922	
15 minute winter	6	1.003	9	150.3	1.593	0.777	5.6335	
15 minute winter	8	3.001	9	9.3	0.649	0.547	0.1111	
15 minute winter	8	5.000	13	12.7	0.750	0.879	0.7922	
15 minute winter	9	1.004	14	109.7	1.280	0.567	5.6335	
15 minute winter	10	4.000	11	-13.0	-0.787	-0.734	0.4177	
15 minute winter	10	6.000	17	10.5	0.767	0.724	0.3726	
15 minute winter	11	4.001	13	-15.2	-0.902	-0.857	0.7945	
15 minute winter	13	4.002	14	19.3	1.094	1.135	0.1117	
15 minute winter	14	1.005	15	137.8	1.395	0.712	8.6053	
15 minute winter	15	1.006	34	174.2	1.392	0.902	6.9373	
15 minute winter	17	6.001	18	10.7	0.616	0.740	0.7922	
15 minute winter	18	6.002	21	-15.9	-0.904	-1.101	0.3557	
15 minute winter	19	7.000	20	-3.5	0.291	-0.239	0.2022	
15 minute winter	20	7.001	21	5.8	0.329	0.401	0.4365	
15 minute winter	20	8.000	23	-18.3	-1.037	-0.698	0.1807	
15 minute winter	21	6.003	24	-21.2	-1.205	-0.923	0.1807	
15 minute winter	23	8.001	24	46.1	0.600	0.117	5.3565	
15 minute winter	24	6.004	25	152.5	1.391	0.386	5.0923	
15 minute winter	25	6.005	30	162.5	1.526	0.411	0.4340	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.12%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	26	13	6.050	0.000	0.0	0.0000	0.0000	OK
15 minute winter	27	13	6.040	0.385	9.5	0.0612	0.0000	SURCHARGED
15 minute winter	28	13	6.041	0.083	3.2	0.0527	0.0000	OK
15 minute winter	29	13	6.014	0.398	36.9	0.1127	0.0000	SURCHARGED
15 minute winter	30	13	6.017	1.031	166.6	0.0000	0.0000	SURCHARGED
15 minute winter	31	13	6.003	1.199	164.9	2.1180	0.0000	SURCHARGED
15 minute winter	32	12	5.967	1.422	191.6	2.5130	0.0000	SURCHARGED
15 minute winter	33	13	5.933	1.471	177.2	2.5995	0.0000	SURCHARGED
15 minute winter	34	13	5.813	1.432	350.9	1.6200	0.0000	SURCHARGED
15 minute summer	35	1	6.027	0.000	0.0	0.0000	0.0000	OK
15 minute winter	36	11	5.940	0.035	1.7	0.0056	0.0000	OK
15 minute winter	37	11	5.513	0.058	4.7	0.0093	0.0000	OK
15 minute winter	38	12	5.319	0.109	7.2	0.0174	0.0000	OK
15 minute winter	39	11	5.996	0.573	36.1	0.6478	0.0000	SURCHARGED
15 minute winter	40	11	6.080	0.753	103.1	1.3310	0.0000	SURCHARGED
15 minute winter	41	12	5.926	0.698	98.6	0.7894	0.0000	SURCHARGED
15 minute winter	42	12	5.855	0.665	138.2	0.7522	0.0000	SURCHARGED
15 minute winter	43	12	5.611	0.510	135.7	0.5770	0.0000	SURCHARGED
15 minute winter	44	12	5.303	1.017	475.4	1.1504	0.0000	SURCHARGED
15 minute winter	44_OUT	9	4.455	0.405	474.8	0.0000	0.0000	OK

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	26	9.000	27	0.0	0.001	0.000	0.1546	
15 minute winter	27	9.001	29	6.7	1.076	1.117	0.0307	
15 minute winter	28	10.000	29	3.7	0.815	0.207	0.4715	
15 minute winter	29	9.002	30	-34.9	-0.507	-0.057	0.1484	
15 minute winter	30	6.006	31	164.9	1.633	0.418	5.9115	
15 minute winter	31	6.007	32	138.9	1.005	0.351	8.3840	
15 minute winter	32	6.008	33	177.2	1.051	0.447	2.6741	
15 minute winter	33	6.009	34	176.7	1.412	0.914	1.5211	
15 minute winter	34	1.007	44	352.9	2.820	1.828	1.7886	
15 minute summer	35	11.000	36	0.0	0.000	0.000	0.0138	
15 minute winter	36	11.001	37	1.6	0.463	0.269	0.1626	
15 minute winter	37	11.002	38	4.6	1.311	0.541	0.0729	
15 minute winter	38	11.003	44	7.2	1.076	0.113	0.1166	
15 minute winter	39	12.000	42	33.8	0.849	0.798	1.3926	
15 minute winter	40	13.000	41	98.6	1.401	1.089	1.0471	
15 minute winter	41	13.001	42	96.0	1.363	1.060	0.4040	
15 minute winter	42	12.001	43	135.7	1.955	1.498	0.9366	
15 minute winter	43	12.002	44	130.7	1.857	0.549	1.2601	
15 minute winter	44	1.008	44_OUT	474.8	3.793	1.442	1.5390	333.4

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.008	5.00	7.465	1200	336786.237	186329.649	1.430
2	0.256	5.00	7.300	1500	336752.993	186332.386	1.462
3	0.023	5.00	7.224	1500	336746.021	186340.359	1.328
4		5.00	7.135	450	336738.482	186327.225	1.000
5	0.004	5.00	6.880	900	336740.649	186353.985	1.013
6			7.230		336747.098	186353.453	1.422
8			6.809	900	336744.512	186398.819	1.242
9			7.225	1500	336750.802	186398.300	1.716
10		5.00	7.311	450	336753.866	186512.272	1.357
11			6.902	450	336751.961	186488.639	1.185
13	0.007	5.00	6.747	900	336748.181	186443.670	1.480
14	0.100	5.00	7.228	1500	336754.506	186443.147	2.019
15	0.109	5.00	6.946	1350	336760.164	186511.652	2.196
17			7.458	600	336755.125	186533.400	1.646
18			7.458	450	336758.829	186578.248	1.946
19		5.00	6.486	600	336763.478	186634.539	0.867
20			6.712	900	336762.533	186623.095	1.170
21			7.330	900	336760.492	186598.384	2.003
23	0.079	5.00	6.652	1500	336772.765	186622.250	1.331
24	0.226	5.00	7.269	1500	336770.724	186597.539	2.113
25	0.024	5.00	7.190	1500	336794.217	186595.613	2.191
26		5.00	6.751	450	336821.509	186558.796	0.701
27	0.005	5.00	6.817	450	336798.999	186591.233	1.162
28	0.003	5.00	6.658	900	336781.959	186625.253	0.700
29			6.875	600	336796.913	186594.556	1.259
30			7.384		336794.966	186593.749	2.398
31			7.169	1500	336805.244	186568.389	2.365
32	0.174	5.00	6.790	1500	336817.410	186531.536	2.245
33			6.790	1500	336816.390	186519.200	2.328
34			6.574	1200	336815.390	186507.091	2.193
35		5.00	6.725	450	336823.690	186429.389	0.698
36	0.003	5.00	6.867	450	336824.575	186441.479	0.962
37	0.006	5.00	6.875	450	336830.856	186486.038	1.420
38	0.005	5.00	6.846	450	336829.100	186497.242	1.636
39	0.064	5.00	7.013	1200	336768.986	186495.676	1.590
40	0.181	5.00	6.752	1500	336819.175	186497.283	1.425
41			6.874	1200	336804.356	186498.508	1.646
42	0.015	5.00	7.004	1200	336803.883	186492.791	1.814
43			6.946	1200	336817.138	186491.695	1.845
44			6.606	1200	336829.469	186504.662	2.320
44_OUT			6.750	1200	336841.708	186503.510	2.700

Links (Results)

Name	US Node	DS Node	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)
1.000	1	2	1.002	39.8	0.9	1.205	1.237	0.008	0.0	23	0.411
1.001	2	3	1.543	193.9	30.9	0.933	0.928	0.263	0.0	107	1.141
1.002	3	6	1.538	193.3	33.1	0.928	1.022	0.286	0.0	111	1.160
2.000	4	5	0.769	6.0	0.0	0.900	0.913	0.000	0.0	0	0.000
2.001	5	6	0.950	16.8	0.5	0.863	1.271	0.004	0.0	18	0.422
1.003	6	9	1.538	193.3	32.4	1.021	1.316	0.290	0.0	110	1.151
3.000	5	8	0.818	14.5	0.0	0.863	1.092	0.000	0.0	0	0.000
3.001	8	9	0.963	17.0	0.0	1.092	1.566	0.000	0.0	0	0.000
1.004	9	14	1.538	193.3	31.3	1.316	1.619	0.290	0.0	108	1.142
4.000	10	11	1.004	17.7	0.0	1.207	1.035	0.000	0.0	0	0.000
4.001	11	13	1.003	17.7	0.0	1.035	1.330	0.000	0.0	0	0.000
5.000	8	13	0.818	14.5	0.0	1.092	1.330	0.000	0.0	0	0.000
4.002	13	14	0.960	17.0	0.8	1.330	1.869	0.007	0.0	22	0.487
1.005	14	15	1.540	193.5	40.9	1.619	1.796	0.397	0.0	124	1.229
1.006	15	34	1.538	193.2	50.2	1.796	1.793	0.506	0.0	139	1.300
6.000	10	17	0.818	14.5	0.0	1.207	1.495	0.000	0.0	0	0.000
6.001	17	18	0.818	14.5	0.0	1.496	1.796	0.000	0.0	0	0.000
6.002	18	21	0.818	14.5	0.0	1.796	1.803	0.000	0.0	0	0.000
7.000	19	20	0.820	14.5	0.0	0.717	1.020	0.000	0.0	0	0.000
7.001	20	21	0.817	14.4	0.0	1.020	1.803	0.000	0.0	0	0.000
6.003	21	24	1.300	23.0	0.0	1.853	1.963	0.000	0.0	0	0.000
8.000	20	23	1.480	26.1	0.0	1.020	1.181	0.000	0.0	0	0.000
8.001	23	24	1.825	395.0	9.6	0.806	1.588	0.079	0.0	56	0.784
6.004	24	25	1.825	395.2	32.3	1.588	1.666	0.306	0.0	100	1.118
6.005	25	30	1.826	395.3	34.8	1.666	1.873	0.330	0.0	104	1.145
9.000	26	27	0.769	6.0	0.0	0.601	1.062	0.000	0.0	0	0.000
9.001	27	29	0.766	6.0	0.6	1.062	1.159	0.005	0.0	21	0.488
10.000	28	29	1.005	17.8	0.4	0.550	1.109	0.003	0.0	16	0.407
9.002	29	30	8.652	611.6	1.0	0.959	2.098	0.009	0.0	9	1.609
6.006	30	31	1.824	394.9	35.2	1.873	1.840	0.338	0.0	105	1.147
6.007	31	32	1.827	395.6	34.4	1.840	1.720	0.338	0.0	103	1.139
6.008	32	33	1.832	396.5	51.7	1.720	1.803	0.512	0.0	127	1.282
6.009	33	34	1.538	193.3	51.2	1.928	1.793	0.512	0.0	140	1.308
1.007	34	44	1.536	193.1	100.0	1.793	1.920	1.019	0.0	204	1.550
11.000	35	36	0.769	6.0	0.0	0.598	0.861	0.000	0.0	0	0.000
11.001	36	37	0.769	6.0	0.3	0.862	1.320	0.003	0.0	16	0.407
11.002	37	38	1.092	8.6	0.9	1.320	1.536	0.009	0.0	22	0.713
11.003	38	44	3.575	63.2	1.5	1.486	2.170	0.013	0.0	16	1.466
12.000	39	42	1.064	42.3	7.5	1.365	1.589	0.064	0.0	64	0.805
13.000	40	41	1.281	90.6	22.1	1.125	1.346	0.181	0.0	100	1.063
13.001	41	42	1.281	90.6	22.0	1.346	1.514	0.181	0.0	100	1.063
12.001	42	43	1.281	90.6	30.4	1.514	1.545	0.260	0.0	119	1.157
12.002	43	44	3.369	238.2	30.2	1.545	2.020	0.260	0.0	72	2.336
1.008	44	44_OUT	2.620	329.2	126.3	1.920	2.300	1.292	0.0	171	2.453

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)
1.000	33.356	169.3	225	Circular	7.465	6.035	1.205	7.300	5.838	1.237
1.001	10.591	149.2	400	Circular	7.300	5.967	0.933	7.224	5.896	0.928
1.002	13.138	150.0	400	Circular	7.224	5.896	0.928	7.230	5.808	1.022
2.000	26.848	100.0	100	Circular	7.135	6.135	0.900	6.880	5.867	0.913
2.001	6.471	111.6	150	Circular	6.880	5.867	0.863	7.230	5.809	1.271
1.003	45.000	150.0	400	Circular	7.230	5.809	1.021	7.225	5.509	1.316
3.000	45.000	150.0	150	Circular	6.880	5.867	0.863	6.809	5.567	1.092
3.001	6.311	108.8	150	Circular	6.809	5.567	1.092	7.225	5.509	1.566
1.004	45.000	150.0	400	Circular	7.225	5.509	1.316	7.228	5.209	1.619
4.000	23.727	100.1	150	Circular	7.311	5.954	1.207	6.902	5.717	1.035
4.001	45.128	100.3	150	Circular	6.902	5.717	1.035	6.747	5.267	1.330
5.000	45.001	150.0	150	Circular	6.809	5.567	1.092	6.747	5.267	1.330
4.002	6.347	109.4	150	Circular	6.747	5.267	1.330	7.228	5.209	1.869
1.005	68.738	149.8	400	Circular	7.228	5.209	1.619	6.946	4.750	1.796
1.006	55.414	150.2	400	Circular	6.946	4.750	1.796	6.574	4.381	1.793
6.000	21.165	150.0	150	Circular	7.311	5.954	1.207	7.458	5.813	1.495
6.001	45.001	150.0	150	Circular	7.458	5.812	1.496	7.458	5.512	1.796
6.002	20.205	150.0	150	Circular	7.458	5.512	1.796	7.330	5.377	1.803
7.000	11.483	149.1	150	Circular	6.486	5.619	0.717	6.712	5.542	1.020
7.001	24.795	150.3	150	Circular	6.712	5.542	1.020	7.330	5.377	1.803
6.003	10.267	60.0	150	Circular	7.330	5.327	1.853	7.269	5.156	1.963
8.000	10.267	46.5	150	Circular	6.712	5.542	1.020	6.652	5.321	1.181
8.001	24.795	150.3	525	Circular	6.652	5.321	0.806	7.269	5.156	1.588
6.004	23.572	150.1	525	Circular	7.269	5.156	1.588	7.190	4.999	1.666
6.005	2.009	150.0	525	Circular	7.190	4.999	1.666	7.384	4.986	1.873

Link	US Node	Dia (mm)	Node Type	DS Node	Dia (mm)	Node Type
1.000	1	1200	Manhole	2	1500	Manhole
1.001	2	1500	Manhole	3	1500	Manhole
1.002	3	1500	Manhole	6		Junction
2.000	4	450	Manhole	5	900	Manhole
2.001	5	900	Manhole	6		Junction
1.003	6		Junction	9	1500	Manhole
3.000	5	900	Manhole	8	900	Manhole
3.001	8	900	Manhole	9	1500	Manhole
1.004	9	1500	Manhole	14	1500	Manhole
4.000	10	450	Manhole	11	450	Manhole
4.001	11	450	Manhole	13	900	Manhole
5.000	8	900	Manhole	13	900	Manhole
4.002	13	900	Manhole	14	1500	Manhole
1.005	14	1500	Manhole	15	1350	Manhole
1.006	15	1350	Manhole	34	1200	Manhole
6.000	10	450	Manhole	17	600	Manhole
6.001	17	600	Manhole	18	450	Manhole
6.002	18	450	Manhole	21	900	Manhole
7.000	19	600	Manhole	20	900	Manhole
7.001	20	900	Manhole	21	900	Manhole
6.003	21	900	Manhole	24	1500	Manhole
8.000	20	900	Manhole	23	1500	Manhole
8.001	23	1500	Manhole	24	1500	Manhole
6.004	24	1500	Manhole	25	1500	Manhole
6.005	25	1500	Manhole	30		Junction

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)
9.000	39.512	100.0	100	Circular	6.751	6.050	0.601	6.817	5.655	1.062
9.001	3.923	100.6	100	Circular	6.817	5.655	1.062	6.875	5.616	1.159
10.000	34.184	100.0	150	Circular	6.658	5.958	0.550	6.875	5.616	1.109
9.002	2.108	3.3	300	Circular	6.875	5.616	0.959	7.384	4.986	2.098
6.006	27.364	150.3	525	Circular	7.384	4.986	1.873	7.169	4.804	1.840
6.007	38.809	149.8	525	Circular	7.169	4.804	1.840	6.790	4.545	1.720
6.008	12.378	149.1	525	Circular	6.790	4.545	1.720	6.790	4.462	1.803
6.009	12.150	150.0	400	Circular	6.790	4.462	1.928	6.574	4.381	1.793
1.007	14.287	150.4	400	Circular	6.574	4.381	1.793	6.606	4.286	1.920
11.000	12.122	100.0	100	Circular	6.725	6.027	0.598	6.867	5.906	0.861
11.001	45.042	100.0	100	Circular	6.867	5.905	0.862	6.875	5.455	1.320
11.002	12.258	50.0	100	Circular	6.875	5.455	1.320	6.846	5.210	1.536
11.003	7.429	8.0	150	Circular	6.846	5.210	1.486	6.606	4.286	2.170
12.000	35.016	150.3	225	Circular	7.013	5.423	1.365	7.004	5.190	1.589
13.000	14.870	150.0	300	Circular	6.752	5.327	1.125	6.874	5.228	1.346
13.001	5.737	150.0	300	Circular	6.874	5.228	1.346	7.004	5.190	1.514
12.001	13.300	150.0	300	Circular	7.004	5.190	1.514	6.946	5.101	1.545
12.002	17.894	22.0	300	Circular	6.946	5.101	1.545	6.606	4.286	2.020
1.008	12.293	52.1	400	Circular	6.606	4.286	1.920	6.750	4.050	2.300

Link	US Node	Dia (mm)	Node Type	DS Node	Dia (mm)	Node Type
9.000	26	450	Manhole	27	450	Manhole
9.001	27	450	Manhole	29	600	Manhole
10.000	28	900	Manhole	29	600	Manhole
9.002	29	600	Manhole	30		Junction
6.006	30		Junction	31	1500	Manhole
6.007	31	1500	Manhole	32	1500	Manhole
6.008	32	1500	Manhole	33	1500	Manhole
6.009	33	1500	Manhole	34	1200	Manhole
1.007	34	1200	Manhole	44	1200	Manhole
11.000	35	450	Manhole	36	450	Manhole
11.001	36	450	Manhole	37	450	Manhole
11.002	37	450	Manhole	38	450	Manhole
11.003	38	450	Manhole	44	1200	Manhole
12.000	39	1200	Manhole	42	1200	Manhole
13.000	40	1500	Manhole	41	1200	Manhole
13.001	41	1200	Manhole	42	1200	Manhole
12.001	42	1200	Manhole	43	1200	Manhole
12.002	43	1200	Manhole	44	1200	Manhole
1.008	44	1200	Manhole	44_OUT	1200	Manhole

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m³/ha)	0.0		

Storm Durations

120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	40	0	0

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year 120 minute summer	32.350	8.549	30 year 480 minute winter	18.746	7.457
2 year 120 minute winter	21.493	8.549	30 year 600 minute summer	22.967	6.282
2 year 180 minute summer	27.339	7.035	30 year 600 minute winter	15.693	6.282
2 year 180 minute winter	17.771	7.035	30 year 720 minute summer	20.341	5.452
2 year 240 minute summer	22.762	6.015	30 year 720 minute winter	13.671	5.452
2 year 240 minute winter	15.122	6.015	30 year 960 minute summer	16.513	4.348
2 year 360 minute summer	18.229	4.691	30 year 960 minute winter	10.938	4.348
2 year 360 minute winter	11.849	4.691	30 year 1440 minute summer	11.796	3.161
2 year 480 minute summer	14.688	3.882	30 year 1440 minute winter	7.928	3.161
2 year 480 minute winter	9.758	3.882	100 year +40% CC 120 minute summer	130.437	34.471
2 year 600 minute summer	12.177	3.331	100 year +40% CC 120 minute winter	86.660	34.471
2 year 600 minute winter	8.320	3.331	100 year +40% CC 180 minute summer	100.766	25.930
2 year 720 minute summer	10.928	2.929	100 year +40% CC 180 minute winter	65.500	25.930
2 year 720 minute winter	7.345	2.929	100 year +40% CC 240 minute summer	79.783	21.084
2 year 960 minute summer	9.021	2.376	100 year +40% CC 240 minute winter	53.006	21.084
2 year 960 minute winter	5.976	2.376	100 year +40% CC 360 minute summer	60.738	15.630
2 year 1440 minute summer	6.605	1.770	100 year +40% CC 360 minute winter	39.481	15.630
2 year 1440 minute winter	4.439	1.770	100 year +40% CC 480 minute summer	47.563	12.570
30 year 120 minute summer	75.400	19.926	100 year +40% CC 480 minute winter	31.600	12.570
30 year 120 minute winter	50.094	19.926	100 year +40% CC 600 minute summer	38.720	10.591
30 year 180 minute summer	59.020	15.188	100 year +40% CC 600 minute winter	26.456	10.591
30 year 180 minute winter	38.365	15.188	100 year +40% CC 720 minute summer	34.314	9.197
30 year 240 minute summer	47.046	12.433	100 year +40% CC 720 minute winter	23.061	9.197
30 year 240 minute winter	31.256	12.433	100 year +40% CC 960 minute summer	27.907	7.349
30 year 360 minute summer	35.993	9.262	100 year +40% CC 960 minute winter	18.486	7.349
30 year 360 minute winter	23.397	9.262	100 year +40% CC 1440 minute summer	19.977	5.354
30 year 480 minute summer	28.217	7.457	100 year +40% CC 1440 minute winter	13.426	5.354

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.98%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute summer	1	64	6.053	0.018	0.5	0.0200	0.0000	OK
120 minute summer	2	64	6.052	0.214	17.0	0.3788	0.0000	OK
120 minute summer	3	64	5.981	0.085	18.5	0.1504	0.0000	OK
120 minute summer	4	2	6.135	0.000	0.0	0.0000	0.0000	OK
120 minute summer	5	64	5.890	0.023	0.7	0.0145	0.0000	OK
120 minute summer	6	64	5.891	0.083	18.5	0.0000	0.0000	OK
120 minute summer	8	64	5.590	0.023	0.8	0.0148	0.0000	OK
120 minute summer	9	64	5.590	0.081	18.1	0.1434	0.0000	OK
120 minute summer	10	2	5.954	0.000	0.0	0.0000	0.0000	OK
120 minute summer	11	2	5.717	0.000	0.0	0.0000	0.0000	OK
120 minute summer	13	64	5.305	0.038	1.3	0.0241	0.0000	OK
120 minute summer	14	66	5.305	0.096	25.2	0.1699	0.0000	OK
120 minute summer	15	66	4.858	0.108	31.9	0.1549	0.0000	OK
120 minute summer	17	2	5.812	0.000	0.0	0.0000	0.0000	OK
120 minute summer	18	2	5.512	0.000	0.0	0.0000	0.0000	OK
120 minute summer	19	2	5.619	0.000	0.0	0.0000	0.0000	OK
120 minute summer	20	2	5.542	0.000	0.0	0.0000	0.0000	OK
120 minute summer	21	2	5.327	0.000	0.0	0.0000	0.0000	OK
120 minute summer	23	64	5.362	0.041	5.1	0.0731	0.0000	OK
120 minute summer	24	64	5.237	0.081	19.7	0.1429	0.0000	OK
120 minute summer	25	64	5.089	0.090	21.3	0.1588	0.0000	OK
Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute summer	1	1.000	2	0.5	0.024	0.013	0.6755	
120 minute summer	2	1.001	3	17.0	0.873	0.088	0.2063	
120 minute summer	3	1.002	6	18.5	0.965	0.096	0.2519	
120 minute summer	4	2.000	5	0.0	0.000	0.000	0.0180	
120 minute summer	5	2.001	6	-0.4	-0.078	-0.025	0.0375	
120 minute summer	5	3.000	8	0.7	0.423	0.050	0.0768	
120 minute summer	6	1.003	9	18.1	0.983	0.093	0.8266	
120 minute summer	8	3.001	9	-0.2	0.043	-0.010	0.0361	
120 minute summer	8	5.000	13	0.8	0.293	0.052	0.1176	
120 minute summer	9	1.004	14	17.8	0.868	0.092	0.9261	
120 minute summer	10	4.000	11	0.0	0.000	0.000	0.0000	
120 minute summer	10	6.000	17	0.0	0.000	0.000	0.0000	
120 minute summer	11	4.001	13	0.0	0.000	0.000	0.0789	
120 minute summer	13	4.002	14	1.2	0.165	0.068	0.0488	
120 minute summer	14	1.005	15	25.2	1.000	0.130	1.7326	
120 minute summer	15	1.006	34	31.8	0.813	0.165	2.1865	
120 minute summer	17	6.001	18	0.0	0.000	0.000	0.0000	
120 minute summer	18	6.002	21	0.0	0.000	0.000	0.0000	
120 minute summer	19	7.000	20	0.0	0.000	0.000	0.0000	
120 minute summer	20	7.001	21	0.0	0.000	0.000	0.0000	
120 minute summer	20	8.000	23	0.0	0.000	0.000	0.0202	
120 minute summer	21	6.003	24	0.0	0.000	0.000	0.0497	
120 minute summer	23	8.001	24	5.1	0.365	0.013	0.3576	
120 minute summer	24	6.004	25	19.7	0.866	0.050	0.5362	
120 minute summer	25	6.005	30	21.3	0.913	0.054	0.0469	

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.98%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute summer	26	2	6.050	0.000	0.0	0.0000	0.0000	OK
120 minute summer	27	68	5.672	0.017	0.3	0.0027	0.0000	OK
180 minute summer	28	100	5.970	0.012	0.2	0.0079	0.0000	OK
120 minute summer	29	68	5.623	0.007	0.5	0.0019	0.0000	OK
120 minute summer	30	64	5.070	0.084	21.8	0.0000	0.0000	OK
120 minute summer	31	64	4.886	0.082	21.8	0.1452	0.0000	OK
120 minute summer	32	64	4.657	0.112	32.9	0.1987	0.0000	OK
120 minute summer	33	64	4.587	0.125	32.8	0.2206	0.0000	OK
120 minute summer	34	66	4.553	0.172	63.9	0.1949	0.0000	OK
120 minute summer	35	2	6.027	0.000	0.0	0.0000	0.0000	OK
120 minute summer	36	68	5.917	0.012	0.2	0.0020	0.0000	OK
120 minute summer	37	64	5.474	0.019	0.6	0.0031	0.0000	OK
120 minute summer	38	64	5.223	0.013	0.9	0.0020	0.0000	OK
120 minute summer	39	64	5.470	0.047	4.1	0.0532	0.0000	OK
120 minute summer	40	64	5.403	0.076	11.7	0.1345	0.0000	OK
120 minute summer	41	64	5.312	0.084	11.7	0.0949	0.0000	OK
120 minute summer	42	64	5.283	0.093	16.8	0.1049	0.0000	OK
120 minute summer	43	64	5.155	0.054	16.8	0.0607	0.0000	OK
120 minute summer	44	66	4.438	0.152	81.2	0.1720	0.0000	OK
120 minute summer	44_OUT	66	4.184	0.134	81.4	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute summer	26	9.000	27	0.0	0.000	0.000	0.0173	
120 minute summer	27	9.001	29	0.3	0.575	0.050	0.0022	
180 minute summer	28	10.000	29	0.2	0.440	0.011	0.0164	
120 minute summer	29	9.002	30	0.5	0.084	0.001	0.0174	
120 minute summer	30	6.006	31	21.8	0.999	0.055	0.5975	
120 minute summer	31	6.007	32	21.8	0.791	0.055	1.0734	
120 minute summer	32	6.008	33	32.8	0.900	0.083	0.4521	
120 minute summer	33	6.009	34	32.7	0.778	0.169	0.5130	
120 minute summer	34	1.007	44	64.3	1.351	0.333	0.6806	
120 minute summer	35	11.000	36	0.0	0.000	0.000	0.0030	
120 minute summer	36	11.001	37	0.2	0.270	0.033	0.0363	
120 minute summer	37	11.002	38	0.6	0.745	0.069	0.0099	
120 minute summer	38	11.003	44	0.9	0.091	0.014	0.0680	
120 minute summer	39	12.000	42	4.1	0.391	0.097	0.3750	
120 minute summer	40	13.000	41	11.7	0.778	0.129	0.2241	
120 minute summer	41	13.001	42	11.7	0.676	0.129	0.0993	
120 minute summer	42	12.001	43	16.8	1.265	0.185	0.1797	
120 minute summer	43	12.002	44	16.8	0.805	0.071	0.3948	
120 minute summer	44	1.008	44_OUT	81.4	2.028	0.247	0.4937	164.4

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.98%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute summer	1	64	6.103	0.068	1.1	0.0764	0.0000	OK
120 minute summer	2	64	6.103	0.265	39.5	0.4679	0.0000	OK
120 minute summer	3	64	6.028	0.132	42.9	0.2330	0.0000	OK
120 minute summer	4	2	6.135	0.000	0.0	0.0000	0.0000	OK
120 minute summer	5	64	5.918	0.051	3.7	0.0325	0.0000	OK
120 minute summer	6	64	5.933	0.125	43.0	0.0000	0.0000	OK
120 minute summer	8	64	5.628	0.061	5.1	0.0386	0.0000	OK
120 minute summer	9	64	5.630	0.121	40.0	0.2144	0.0000	OK
120 minute summer	10	2	5.954	0.000	0.0	0.0000	0.0000	OK
120 minute summer	11	2	5.717	0.000	0.0	0.0000	0.0000	OK
120 minute summer	13	64	5.366	0.099	6.1	0.0632	0.0000	OK
120 minute summer	14	64	5.361	0.152	59.2	0.2679	0.0000	OK
120 minute summer	15	66	4.919	0.169	75.0	0.2418	0.0000	OK
120 minute summer	17	2	5.812	0.000	0.0	0.0000	0.0000	OK
120 minute summer	18	2	5.512	0.000	0.0	0.0000	0.0000	OK
120 minute summer	19	2	5.619	0.000	0.0	0.0000	0.0000	OK
120 minute summer	20	2	5.542	0.000	0.0	0.0000	0.0000	OK
120 minute summer	21	2	5.327	0.000	0.0	0.0000	0.0000	OK
120 minute summer	23	64	5.383	0.062	11.9	0.1089	0.0000	OK
120 minute summer	24	64	5.283	0.127	45.9	0.2236	0.0000	OK
120 minute summer	25	64	5.138	0.139	49.5	0.2459	0.0000	OK
Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute summer	1	1.000	2	1.3	0.046	0.033	0.8301	
120 minute summer	2	1.001	3	39.5	1.077	0.204	0.3887	
120 minute summer	3	1.002	6	43.0	1.241	0.222	0.4552	
120 minute summer	4	2.000	5	0.0	0.000	0.000	0.0540	
120 minute summer	5	2.001	6	-3.1	-0.287	-0.182	0.0675	
120 minute summer	5	3.000	8	3.6	0.609	0.252	0.2690	
120 minute summer	6	1.003	9	40.0	1.230	0.207	1.4626	
120 minute summer	8	3.001	9	-1.5	-0.136	-0.085	0.0692	
120 minute summer	8	5.000	13	5.0	0.524	0.346	0.4289	
120 minute summer	9	1.004	14	38.4	1.018	0.198	1.6991	
120 minute summer	10	4.000	11	0.0	0.000	0.000	0.0000	
120 minute summer	10	6.000	17	0.0	0.000	0.000	0.0000	
120 minute summer	11	4.001	13	0.0	0.000	0.000	0.2797	
120 minute summer	13	4.002	14	6.2	0.397	0.366	0.0952	
120 minute summer	14	1.005	15	58.6	1.251	0.303	3.2218	
120 minute summer	15	1.006	34	74.1	0.978	0.383	4.1596	
120 minute summer	17	6.001	18	0.0	0.000	0.000	0.0000	
120 minute summer	18	6.002	21	0.0	0.000	0.000	0.0000	
120 minute summer	19	7.000	20	0.0	0.000	0.000	0.0000	
120 minute summer	20	7.001	21	0.0	0.000	0.000	0.0000	
120 minute summer	20	8.000	23	0.0	0.000	0.000	0.0350	
120 minute summer	21	6.003	24	0.0	0.000	0.000	0.0814	
120 minute summer	23	8.001	24	11.9	0.455	0.030	0.6709	
120 minute summer	24	6.004	25	45.9	1.071	0.116	1.0100	
120 minute summer	25	6.005	30	49.5	1.144	0.125	0.0870	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.98%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute summer	26	2	6.050	0.000	0.0	0.0000	0.0000	OK
120 minute summer	27	64	5.682	0.027	0.8	0.0044	0.0000	OK
120 minute summer	28	66	5.977	0.019	0.5	0.0121	0.0000	OK
120 minute summer	29	64	5.626	0.010	1.3	0.0029	0.0000	OK
120 minute summer	30	64	5.115	0.129	50.8	0.0000	0.0000	OK
120 minute summer	31	64	4.929	0.125	50.8	0.2202	0.0000	OK
120 minute summer	32	64	4.736	0.191	76.9	0.3372	0.0000	OK
120 minute summer	33	64	4.701	0.239	76.6	0.4215	0.0000	OK
120 minute summer	34	64	4.678	0.297	150.2	0.3364	0.0000	OK
120 minute summer	35	2	6.027	0.000	0.0	0.0000	0.0000	OK
120 minute summer	36	64	5.924	0.019	0.5	0.0031	0.0000	OK
120 minute summer	37	64	5.483	0.028	1.3	0.0045	0.0000	OK
120 minute summer	38	64	5.228	0.018	2.0	0.0029	0.0000	OK
120 minute summer	39	64	5.495	0.072	9.5	0.0813	0.0000	OK
120 minute summer	40	64	5.450	0.123	27.2	0.2176	0.0000	OK
120 minute summer	41	64	5.367	0.139	27.2	0.1577	0.0000	OK
120 minute summer	42	64	5.335	0.145	39.0	0.1639	0.0000	OK
120 minute summer	43	64	5.183	0.082	39.0	0.0922	0.0000	OK
120 minute summer	44	64	4.547	0.261	189.9	0.2949	0.0000	OK
120 minute summer	44_OUT	64	4.264	0.214	189.4	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute summer	26	9.000	27	0.0	0.000	0.000	0.0345	
120 minute summer	27	9.001	29	0.8	0.776	0.132	0.0043	
120 minute summer	28	10.000	29	0.5	0.572	0.028	0.0309	
120 minute summer	29	9.002	30	1.3	0.106	0.002	0.0311	
120 minute summer	30	6.006	31	50.8	1.270	0.129	1.0946	
120 minute summer	31	6.007	32	50.8	0.932	0.128	2.1341	
120 minute summer	32	6.008	33	76.6	0.954	0.193	1.0287	
120 minute summer	33	6.009	34	76.1	0.862	0.394	1.0798	
120 minute summer	34	1.007	44	149.9	1.609	0.776	1.3310	
120 minute summer	35	11.000	36	0.0	0.000	0.000	0.0059	
120 minute summer	36	11.001	37	0.5	0.346	0.082	0.0649	
120 minute summer	37	11.002	38	1.3	0.931	0.150	0.0172	
120 minute summer	38	11.003	44	2.0	0.176	0.031	0.0699	
120 minute summer	39	12.000	42	9.5	0.502	0.225	0.6643	
120 minute summer	40	13.000	41	27.2	0.919	0.300	0.4409	
120 minute summer	41	13.001	42	27.2	0.827	0.300	0.1886	
120 minute summer	42	12.001	43	39.0	1.604	0.431	0.3269	
120 minute summer	43	12.002	44	39.0	0.961	0.164	0.7200	
120 minute summer	44	1.008	44_OUT	189.4	2.450	0.575	0.9504	385.4

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.98%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute summer	1	64	6.154	0.119	2.0	0.1349	0.0000	OK
120 minute summer	2	64	6.154	0.316	68.3	0.5588	0.0000	OK
120 minute summer	3	64	6.074	0.178	74.3	0.3145	0.0000	OK
120 minute summer	4	2	6.135	0.000	0.0	0.0000	0.0000	OK
120 minute summer	5	64	5.947	0.080	8.2	0.0511	0.0000	OK
120 minute summer	6	64	5.973	0.165	74.3	0.0000	0.0000	OK
120 minute summer	8	64	5.666	0.099	11.4	0.0631	0.0000	OK
120 minute summer	9	64	5.671	0.162	67.4	0.2854	0.0000	OK
120 minute summer	10	2	5.954	0.000	0.0	0.0000	0.0000	OK
120 minute summer	11	2	5.717	0.000	0.0	0.0000	0.0000	OK
120 minute summer	13	64	5.466	0.199	13.2	0.1263	0.0000	SURCHARGED
120 minute summer	14	64	5.413	0.204	103.1	0.3610	0.0000	OK
120 minute summer	15	66	5.162	0.412	131.8	0.5899	0.0000	SURCHARGED
120 minute summer	17	2	5.812	0.000	0.0	0.0000	0.0000	OK
120 minute summer	18	2	5.512	0.000	0.0	0.0000	0.0000	OK
120 minute summer	19	2	5.619	0.000	0.0	0.0000	0.0000	OK
120 minute summer	20	2	5.542	0.000	0.0	0.0000	0.0000	OK
120 minute summer	21	64	5.328	0.001	0.0	0.0009	0.0000	OK
120 minute summer	23	64	5.401	0.080	20.6	0.1415	0.0000	OK
120 minute summer	24	64	5.328	0.172	79.4	0.3045	0.0000	OK
120 minute summer	25	64	5.187	0.188	85.6	0.3323	0.0000	OK
Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute summer	1	1.000	2	2.1	0.064	0.053	1.0195	
120 minute summer	2	1.001	3	68.4	1.228	0.353	0.5896	
120 minute summer	3	1.002	6	74.3	1.449	0.384	0.6742	
120 minute summer	4	2.000	5	0.0	0.000	0.000	0.0906	
120 minute summer	5	2.001	6	-7.1	-0.461	-0.422	0.0881	
120 minute summer	5	3.000	8	8.2	0.744	0.566	0.4942	
120 minute summer	6	1.003	9	67.4	1.408	0.348	2.1542	
120 minute summer	8	3.001	9	-3.2	-0.205	-0.191	0.0945	
120 minute summer	8	5.000	13	11.3	0.688	0.781	0.6740	
120 minute summer	9	1.004	14	63.8	1.144	0.330	2.5126	
120 minute summer	10	4.000	11	0.0	0.000	0.000	0.0000	
120 minute summer	10	6.000	17	0.0	0.000	0.000	0.0000	
120 minute summer	11	4.001	13	0.0	0.000	0.000	0.3972	
120 minute summer	13	4.002	14	13.2	0.751	0.779	0.1117	
120 minute summer	14	1.005	15	103.4	1.374	0.535	6.4629	
120 minute summer	15	1.006	34	121.1	1.004	0.627	6.9373	
120 minute summer	17	6.001	18	0.0	0.000	0.000	0.0000	
120 minute summer	18	6.002	21	0.0	0.000	0.000	0.0000	
120 minute summer	19	7.000	20	0.0	0.000	0.000	0.0000	
120 minute summer	20	7.001	21	0.0	0.000	0.000	0.0000	
120 minute summer	20	8.000	23	0.0	0.000	0.000	0.0491	
120 minute summer	21	6.003	24	0.0	-0.001	0.000	0.0905	
120 minute summer	23	8.001	24	20.6	0.517	0.052	1.0205	
120 minute summer	24	6.004	25	79.3	1.214	0.201	1.5444	
120 minute summer	25	6.005	30	85.3	1.328	0.216	0.1324	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.98%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute summer	26	2	6.050	0.000	0.0	0.0000	0.0000	OK
120 minute summer	27	64	5.692	0.037	1.4	0.0058	0.0000	OK
120 minute summer	28	64	5.983	0.025	0.9	0.0160	0.0000	OK
120 minute summer	29	64	5.629	0.013	2.3	0.0038	0.0000	OK
120 minute summer	30	64	5.160	0.174	87.6	0.0000	0.0000	OK
120 minute summer	31	66	5.057	0.253	87.0	0.4462	0.0000	OK
120 minute summer	32	66	5.060	0.515	129.5	0.9098	0.0000	OK
120 minute summer	33	66	5.045	0.583	120.7	1.0309	0.0000	SURCHARGED
120 minute summer	34	66	4.990	0.609	241.8	0.6890	0.0000	SURCHARGED
120 minute summer	35	2	6.027	0.000	0.0	0.0000	0.0000	OK
120 minute summer	36	64	5.930	0.025	0.8	0.0039	0.0000	OK
120 minute summer	37	64	5.493	0.038	2.2	0.0060	0.0000	OK
120 minute summer	38	64	5.234	0.024	3.4	0.0038	0.0000	OK
120 minute summer	39	64	5.520	0.097	16.5	0.1094	0.0000	OK
120 minute summer	40	64	5.503	0.176	47.1	0.3111	0.0000	OK
120 minute summer	41	64	5.429	0.201	47.1	0.2268	0.0000	OK
120 minute summer	42	64	5.389	0.199	67.5	0.2255	0.0000	OK
120 minute summer	43	64	5.209	0.108	67.5	0.1226	0.0000	OK
120 minute summer	44	66	4.743	0.457	308.3	0.5165	0.0000	SURCHARGED
120 minute summer	44_OUT	66	4.349	0.299	307.8	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute summer	26	9.000	27	0.0	0.000	0.000	0.0514	
120 minute summer	27	9.001	29	1.4	0.913	0.232	0.0063	
120 minute summer	28	10.000	29	0.9	0.682	0.051	0.0464	
120 minute summer	29	9.002	30	2.3	0.127	0.004	0.0457	
120 minute summer	30	6.006	31	87.0	1.468	0.220	2.1824	
120 minute summer	31	6.007	32	84.3	0.944	0.213	6.1638	
120 minute summer	32	6.008	33	120.7	0.956	0.304	2.6675	
120 minute summer	33	6.009	34	121.0	0.966	0.626	1.5211	
120 minute summer	34	1.007	44	242.1	1.934	1.254	1.7886	
120 minute summer	35	11.000	36	0.0	0.000	0.000	0.0085	
120 minute summer	36	11.001	37	0.8	0.384	0.132	0.0940	
120 minute summer	37	11.002	38	2.2	1.078	0.255	0.0251	
120 minute summer	38	11.003	44	3.4	0.651	0.054	0.0720	
120 minute summer	39	12.000	42	16.5	0.596	0.390	0.9372	
120 minute summer	40	13.000	41	47.1	1.014	0.520	0.6915	
120 minute summer	41	13.001	42	47.1	0.944	0.520	0.2862	
120 minute summer	42	12.001	43	67.5	1.856	0.745	0.4831	
120 minute summer	43	12.002	44	67.5	1.224	0.283	0.8351	
120 minute summer	44	1.008	44_OUT	307.8	2.605	0.935	1.3873	667.3

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)	0.200
Ratio-R	0.300	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
45	0.186	5.00	7.475	1200	336763.380	186438.787	1.409
46			7.475	1200	336791.348	186436.477	1.596
47	0.360	5.00	7.123	1200	336810.582	186423.935	1.318
48			7.315	1200	336815.967	186430.815	1.591
49			7.475	1200	336819.316	186434.167	1.783
50			7.479	1200	336820.112	186443.802	3.279

Links (Results)

Name	US Node	DS Node	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)
13.000	45	46	1.281	90.6	25.2	1.109	1.296	0.186	0.0	108	1.103
13.001	46	49	1.281	90.6	25.2	1.296	1.483	0.186	0.0	108	1.103
14.000	47	48	1.307	92.4	48.8	1.018	1.291	0.360	0.0	155	1.325
14.001	48	49	1.290	91.2	48.8	1.291	1.483	0.360	0.0	156	1.310
13.002	49	50	6.213	439.2	74.0	1.483	2.979	0.546	0.0	83	4.666

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)
13.000	28.063	150.0	300	Circular	7.475	6.066	1.109	7.475	5.879	1.296
13.001	28.063	150.0	300	Circular	7.475	5.879	1.296	7.475	5.692	1.483
14.000	11.672	144.1	300	Circular	7.123	5.805	1.018	7.315	5.724	1.291
14.001	4.738	148.1	300	Circular	7.315	5.724	1.291	7.475	5.692	1.483
13.002	9.668	6.5	300	Circular	7.475	5.692	1.483	7.479	4.200	2.979

Link	US Node	Dia (mm)	Node Type	DS Node	Dia (mm)	Node Type
13.000	45	1200	Manhole	46	1200	Manhole
13.001	46	1200	Manhole	49	1200	Manhole
14.000	47	1200	Manhole	48	1200	Manhole
14.001	48	1200	Manhole	49	1200	Manhole
13.002	49	1200	Manhole	50	1200	Manhole

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Detailed
Rainfall Events	Singular	Skip Steady State	x
FSR Region	England and Wales	Drain Down Time (mins)	240
M5-60 (mm)	20.000	Additional Storage (m³/ha)	0.0
Ratio-R	0.300	Starting Level (m)	
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Durations

15 | 30 | 60

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	40	0	0

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year 15 minute summer	128.797	36.445	30 year 30 minute winter	116.763	47.082
2 year 15 minute winter	90.384	36.445	30 year 60 minute summer	116.589	30.811
2 year 30 minute summer	87.307	24.705	30 year 60 minute winter	77.459	30.811
2 year 30 minute winter	61.268	24.705	100 year +40% CC 15 minute summer	441.486	124.925
2 year 60 minute summer	61.301	16.200	100 year +40% CC 15 minute winter	309.815	124.925
2 year 60 minute winter	40.727	16.200	100 year +40% CC 30 minute summer	304.460	86.152
30 year 15 minute summer	243.818	68.992	100 year +40% CC 30 minute winter	213.656	86.152
30 year 15 minute winter	171.101	68.992	100 year +40% CC 60 minute summer	214.603	56.713
30 year 30 minute summer	166.387	47.082	100 year +40% CC 60 minute winter	142.577	56.713

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	45	10	6.191	0.125	30.8	0.1414	0.0000	OK
15 minute winter	46	10	6.003	0.124	30.4	0.1404	0.0000	OK
15 minute winter	47	10	6.002	0.197	59.8	0.2229	0.0000	OK
15 minute winter	48	10	5.904	0.180	59.4	0.2036	0.0000	OK
15 minute winter	49	10	5.795	0.103	88.9	0.1159	0.0000	OK
15 minute winter	50	10	4.290	0.090	88.4	0.0000	0.0000	OK

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	45	13.000	46	30.4	1.101	0.336	0.7759	
15 minute winter	46	13.001	49	30.1	1.245	0.332	0.6842	
15 minute winter	47	14.000	48	59.4	1.275	0.643	0.5440	
15 minute winter	48	14.001	49	59.1	1.812	0.648	0.1549	
15 minute winter	49	13.002	50	88.4	4.526	0.201	0.1891	41.8



Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	45	10	6.252	0.186	58.4	0.2108	0.0000	OK
15 minute winter	46	10	6.061	0.182	57.7	0.2058	0.0000	OK
15 minute winter	47	10	6.190	0.385	113.1	0.4350	0.0000	SURCHARGED
15 minute winter	48	10	5.997	0.273	112.4	0.3090	0.0000	OK
15 minute winter	49	10	5.845	0.153	168.6	0.1730	0.0000	OK
15 minute winter	50	10	4.327	0.127	167.9	0.0000	0.0000	OK
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	45	13.000	46	57.7	1.272	0.637	1.2726	
15 minute winter	46	13.001	49	56.9	1.427	0.628	1.1340	
15 minute winter	47	14.000	48	112.4	1.597	1.216	0.8040	
15 minute winter	48	14.001	49	111.9	2.090	1.227	0.2451	
15 minute winter	49	13.002	50	167.9	5.204	0.382	0.3120	79.0

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	45	10	6.543	0.477	105.7	0.5395	0.0000	SURCHARGED
15 minute winter	46	10	6.226	0.347	103.7	0.3925	0.0000	SURCHARGED
15 minute winter	47	10	6.944	1.139	204.8	1.2882	0.0000	FLOOD RISK
15 minute winter	48	10	6.325	0.601	202.5	0.6799	0.0000	SURCHARGED
15 minute winter	49	10	5.934	0.242	302.5	0.2736	0.0000	OK
15 minute winter	50	10	4.380	0.180	300.8	0.0000	0.0000	OK
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	45	13.000	46	103.7	1.472	1.145	1.9762	
15 minute winter	46	13.001	49	102.2	1.558	1.128	1.8422	
15 minute winter	47	14.000	48	202.5	2.876	2.191	0.8219	
15 minute winter	48	14.001	49	201.4	2.908	2.209	0.3110	
15 minute winter	49	13.002	50	300.8	5.699	0.685	0.5074	143.2

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
45	0.186	5.00	7.475	1200	336763.380	186438.787	1.409
46			7.475	1200	336791.348	186436.477	1.596
47	0.360	5.00	7.123	1200	336810.582	186423.935	1.318
48			7.315	1200	336815.967	186430.815	1.591
49			7.475	1200	336819.316	186434.167	1.783
50			7.479	1200	336820.112	186443.802	3.279

Links (Results)

Name	US Node	DS Node	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)
13.000	45	46	1.281	90.6	22.3	1.109	1.296	0.186	0.0	101	1.066
13.001	46	49	1.281	90.6	21.7	1.296	1.483	0.186	0.0	99	1.056
14.000	47	48	1.307	92.4	44.0	1.018	1.291	0.360	0.0	146	1.291
14.001	48	49	1.290	91.2	43.8	1.291	1.483	0.360	0.0	147	1.278
13.002	49	50	6.213	439.2	63.7	1.483	2.979	0.546	0.0	76	4.465

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)
13.000	28.063	150.0	300	Circular	7.475	6.066	1.109	7.475	5.879	1.296
13.001	28.063	150.0	300	Circular	7.475	5.879	1.296	7.475	5.692	1.483
14.000	11.672	144.1	300	Circular	7.123	5.805	1.018	7.315	5.724	1.291
14.001	4.738	148.1	300	Circular	7.315	5.724	1.291	7.475	5.692	1.483
13.002	9.668	6.5	300	Circular	7.475	5.692	1.483	7.479	4.200	2.979

Link	US Node	Dia (mm)	Node Type	DS Node	Dia (mm)	Node Type
13.000	45	1200	Manhole	46	1200	Manhole
13.001	46	1200	Manhole	49	1200	Manhole
14.000	47	1200	Manhole	48	1200	Manhole
14.001	48	1200	Manhole	49	1200	Manhole
13.002	49	1200	Manhole	50	1200	Manhole

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m ³ /ha)	0.0		

Storm Durations

120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	40	0	0

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year 120 minute summer	32.350	8.549	30 year 480 minute winter	18.746	7.457
2 year 120 minute winter	21.493	8.549	30 year 600 minute summer	22.967	6.282
2 year 180 minute summer	27.339	7.035	30 year 600 minute winter	15.693	6.282
2 year 180 minute winter	17.771	7.035	30 year 720 minute summer	20.341	5.452
2 year 240 minute summer	22.762	6.015	30 year 720 minute winter	13.671	5.452
2 year 240 minute winter	15.122	6.015	30 year 960 minute summer	16.513	4.348
2 year 360 minute summer	18.229	4.691	30 year 960 minute winter	10.938	4.348
2 year 360 minute winter	11.849	4.691	30 year 1440 minute summer	11.796	3.161
2 year 480 minute summer	14.688	3.882	30 year 1440 minute winter	7.928	3.161
2 year 480 minute winter	9.758	3.882	100 year +40% CC 120 minute summer	130.437	34.471
2 year 600 minute summer	12.177	3.331	100 year +40% CC 120 minute winter	86.660	34.471
2 year 600 minute winter	8.320	3.331	100 year +40% CC 180 minute summer	100.766	25.930
2 year 720 minute summer	10.928	2.929	100 year +40% CC 180 minute winter	65.500	25.930
2 year 720 minute winter	7.345	2.929	100 year +40% CC 240 minute summer	79.783	21.084
2 year 960 minute summer	9.021	2.376	100 year +40% CC 240 minute winter	53.006	21.084
2 year 960 minute winter	5.976	2.376	100 year +40% CC 360 minute summer	60.738	15.630
2 year 1440 minute summer	6.605	1.770	100 year +40% CC 360 minute winter	39.481	15.630
2 year 1440 minute winter	4.439	1.770	100 year +40% CC 480 minute summer	47.563	12.570
30 year 120 minute summer	75.400	19.926	100 year +40% CC 480 minute winter	31.600	12.570
30 year 120 minute winter	50.094	19.926	100 year +40% CC 600 minute summer	38.720	10.591
30 year 180 minute summer	59.020	15.188	100 year +40% CC 600 minute winter	26.456	10.591
30 year 180 minute winter	38.365	15.188	100 year +40% CC 720 minute summer	34.314	9.197
30 year 240 minute summer	47.046	12.433	100 year +40% CC 720 minute winter	23.061	9.197
30 year 240 minute winter	31.256	12.433	100 year +40% CC 960 minute summer	27.907	7.349
30 year 360 minute summer	35.993	9.262	100 year +40% CC 960 minute winter	18.486	7.349
30 year 360 minute winter	23.397	9.262	100 year +40% CC 1440 minute summer	19.977	5.354
30 year 480 minute summer	28.217	7.457	100 year +40% CC 1440 minute winter	13.426	5.354

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute summer	45	64	6.141	0.075	12.0	0.0848	0.0000	OK
120 minute summer	46	64	5.956	0.077	12.0	0.0866	0.0000	OK
120 minute summer	47	64	5.916	0.111	23.2	0.1253	0.0000	OK
120 minute summer	48	64	5.832	0.108	23.2	0.1221	0.0000	OK
120 minute summer	49	64	5.753	0.061	35.2	0.0693	0.0000	OK
120 minute summer	50	64	4.257	0.057	35.2	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute summer	45	13.000	46	12.0	0.861	0.133	0.3912	
120 minute summer	46	13.001	49	12.0	0.985	0.133	0.3431	
120 minute summer	47	14.000	48	23.2	1.000	0.251	0.2709	
120 minute summer	48	14.001	49	23.2	1.425	0.255	0.0784	
120 minute summer	49	13.002	50	35.2	3.596	0.080	0.0947	70.0

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute summer	45	64	6.184	0.118	27.9	0.1339	0.0000	OK
120 minute summer	46	64	5.998	0.119	27.9	0.1347	0.0000	OK
120 minute summer	47	64	5.990	0.185	54.1	0.2089	0.0000	OK
120 minute summer	48	64	5.895	0.171	54.1	0.1933	0.0000	OK
120 minute summer	49	64	5.790	0.098	82.0	0.1108	0.0000	OK
120 minute summer	50	64	4.287	0.087	82.0	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute summer	45	13.000	46	27.9	1.076	0.308	0.7279	
120 minute summer	46	13.001	49	27.9	1.215	0.308	0.6455	
120 minute summer	47	14.000	48	54.1	1.244	0.585	0.5073	
120 minute summer	48	14.001	49	54.1	1.770	0.593	0.1455	
120 minute summer	49	13.002	50	82.0	4.450	0.187	0.1783	163.3

**Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute summer	45	64	6.231	0.165	48.3	0.1863	0.0000	OK
120 minute summer	46	64	6.043	0.164	48.3	0.1849	0.0000	OK
120 minute summer	47	64	6.103	0.298	93.6	0.3365	0.0000	OK
120 minute summer	48	64	5.963	0.239	93.6	0.2704	0.0000	OK
120 minute summer	49	64	5.829	0.137	141.9	0.1547	0.0000	OK
120 minute summer	50	64	4.316	0.116	141.9	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute summer	45	13.000	46	48.3	1.225	0.533	1.1064	
120 minute summer	46	13.001	49	48.3	1.370	0.533	0.9896	
120 minute summer	47	14.000	48	93.6	1.409	1.013	0.7618	
120 minute summer	48	14.001	49	93.6	2.016	1.027	0.2167	
120 minute summer	49	13.002	50	141.9	5.034	0.323	0.2727	282.3

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)	0.200
Ratio-R	0.300	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
51		5.00	7.660	450	336772.996	186315.265	1.020
52	0.023	5.00	7.030	450	336804.002	186332.768	1.395
53	0.008	5.00	6.675	450	336822.505	186422.956	0.750
54	0.007	5.00	6.511	150	336821.553	186393.092	1.026
55	0.009	5.00	6.350	450	336820.964	186363.098	1.300
56			7.313	1200	336815.424	186363.548	3.285
57			7.306	1200	336815.759	186367.677	3.306

Links (Results)

Name	US Node	DS Node	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)
15.000	51	52	1.262	9.9	0.0	0.920	1.295	0.000	0.0	0	0.000
15.001	52	55	0.981	7.7	3.2	1.295	1.200	0.023	0.0	45	0.935
16.000	53	54	0.935	7.3	1.1	0.650	0.926	0.008	0.0	25	0.659
16.001	54	55	0.928	7.3	2.0	0.926	1.200	0.015	0.0	36	0.797
15.002	55	56	4.350	76.9	6.5	1.150	3.135	0.048	0.0	30	2.672
15.003	56	57	0.824	14.6	6.5	3.135	3.156	0.048	0.0	70	0.800

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)
15.000	37.748	37.6	100	Circular	7.660	6.640	0.920	7.030	5.635	1.295
15.001	36.175	61.8	100	Circular	7.030	5.635	1.295	6.350	5.050	1.200
16.000	29.896	67.9	100	Circular	6.675	5.925	0.650	6.511	5.485	0.926
16.001	30.011	69.0	100	Circular	6.511	5.485	0.926	6.350	5.050	1.200
15.002	5.558	5.4	150	Circular	6.350	5.050	1.150	7.313	4.028	3.135
15.003	4.143	147.9	150	Circular	7.313	4.028	3.135	7.306	4.000	3.156

Link	US Node	Dia (mm)	Node Type	DS Node	Dia (mm)	Node Type
15.000	51	450	Manhole	52	450	Manhole
15.001	52	450	Manhole	55	450	Manhole
16.000	53	450	Manhole	54	150	Manhole
16.001	54	150	Manhole	55	450	Manhole
15.002	55	450	Manhole	56	1200	Manhole
15.003	56	1200	Manhole	57	1200	Manhole

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Detailed
Rainfall Events	Singular	Skip Steady State	x
FSR Region	England and Wales	Drain Down Time (mins)	240
M5-60 (mm)	20.000	Additional Storage (m³/ha)	0.0
Ratio-R	0.300	Starting Level (m)	
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Durations

15 | 30 | 60

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	40	0	0

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year 15 minute summer	128.797	36.445	30 year 30 minute winter	116.763	47.082
2 year 15 minute winter	90.384	36.445	30 year 60 minute summer	116.589	30.811
2 year 30 minute summer	87.307	24.705	30 year 60 minute winter	77.459	30.811
2 year 30 minute winter	61.268	24.705	100 year +40% CC 15 minute summer	441.486	124.925
2 year 60 minute summer	61.301	16.200	100 year +40% CC 15 minute winter	309.815	124.925
2 year 60 minute winter	40.727	16.200	100 year +40% CC 30 minute summer	304.460	86.152
30 year 15 minute summer	243.818	68.992	100 year +40% CC 30 minute winter	213.656	86.152
30 year 15 minute winter	171.101	68.992	100 year +40% CC 60 minute summer	214.603	56.713
30 year 30 minute summer	166.387	47.082	100 year +40% CC 60 minute winter	142.577	56.713

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	51	1	6.640	0.000	0.0	0.0000	0.0000	OK
15 minute winter	52	11	5.689	0.054	3.9	0.0085	0.0000	OK
15 minute winter	53	10	5.953	0.028	1.3	0.0044	0.0000	OK
15 minute winter	54	11	5.526	0.041	2.4	0.0007	0.0000	OK
15 minute winter	55	11	5.082	0.032	7.6	0.0051	0.0000	OK
15 minute winter	56	11	4.113	0.085	7.6	0.0964	0.0000	OK
15 minute winter	57	11	4.077	0.077	7.6	0.0000	0.0000	OK

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 summer	51	15.000	52	0.0	0.000	0.000	0.0781	
15 minute winter	52	15.001	55	3.7	1.166	0.482	0.1159	
15 minute winter	53	16.000	54	1.2	0.530	0.170	0.0719	
15 minute winter	54	16.001	55	2.4	0.916	0.325	0.0778	
15 minute winter	55	15.002	56	7.6	1.208	0.099	0.0363	
15 minute winter	56	15.003	57	7.6	0.788	0.525	0.0402	3.6

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	51	1	6.640	0.000	0.0	0.0000	0.0000	OK
15 minute winter	52	11	5.721	0.086	7.3	0.0137	0.0000	OK
15 minute winter	53	10	5.964	0.039	2.4	0.0062	0.0000	OK
15 minute winter	54	11	5.546	0.061	4.7	0.0011	0.0000	OK
15 minute winter	55	11	5.094	0.044	14.4	0.0070	0.0000	OK
15 minute winter	56	11	4.165	0.137	14.4	0.1545	0.0000	OK
15 minute winter	57	11	4.111	0.111	14.4	0.0000	0.0000	OK

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 summer	51	15.000	52	0.0	0.000	0.000	0.1304	
15 minute winter	52	15.001	55	7.0	1.306	0.907	0.1899	
15 minute winter	53	16.000	54	2.4	0.609	0.321	0.1171	
15 minute winter	54	16.001	55	4.6	1.095	0.627	0.1252	
15 minute winter	55	15.002	56	14.4	1.320	0.187	0.0587	
15 minute winter	56	15.003	57	14.4	0.925	0.990	0.0640	6.9

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	51	1	6.640	0.000	0.0	0.0000	0.0000	OK
15 minute winter	52	13	6.120	0.485	13.2	0.0771	0.0000	SURCHARGED
15 minute winter	53	10	5.980	0.055	4.4	0.0088	0.0000	OK
15 minute winter	54	12	5.655	0.170	8.5	0.0031	0.0000	SURCHARGED
15 minute winter	55	11	5.103	0.053	20.8	0.0084	0.0000	OK
15 minute winter	56	11	4.229	0.201	20.7	0.2269	0.0000	SURCHARGED
15 minute winter	57	11	4.131	0.131	20.6	0.0000	0.0000	OK

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 summer	51	15.000	52	0.0	0.000	0.000	0.1477	
15 minute winter	52	15.001	55	8.9	1.311	1.151	0.2179	
15 minute winter	53	16.000	54	4.3	0.683	0.590	0.1833	
15 minute winter	54	16.001	55	7.2	1.224	0.981	0.1808	
15 minute winter	55	15.002	56	20.7	1.512	0.270	0.0644	
15 minute winter	56	15.003	57	20.6	1.176	1.418	0.0702	12.6

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
51		5.00	7.660	450	336772.996	186315.265	1.020
52	0.023	5.00	7.030	450	336804.002	186332.768	1.395
53	0.008	5.00	6.675	450	336822.505	186422.956	0.750
54	0.007	5.00	6.511	150	336821.553	186393.092	1.026
55	0.009	5.00	6.350	450	336820.964	186363.098	1.300
56			7.313	1200	336815.424	186363.548	3.285
57			7.306	1200	336815.759	186367.677	3.306

Links (Results)

Name	US Node	DS Node	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)
15.000	51	52	1.262	9.9	0.0	0.920	1.295	0.000	0.0	0	0.000
15.001	52	55	0.981	7.7	2.6	1.295	1.200	0.023	0.0	40	0.887
16.000	53	54	0.935	7.3	0.9	0.650	0.926	0.008	0.0	24	0.635
16.001	54	55	0.928	7.3	1.7	0.926	1.200	0.015	0.0	33	0.760
15.002	55	56	4.350	76.9	5.4	1.150	3.135	0.048	0.0	27	2.509
15.003	56	57	0.824	14.6	5.4	3.135	3.156	0.048	0.0	63	0.762

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)
15.000	37.748	37.6	100	Circular	7.660	6.640	0.920	7.030	5.635	1.295
15.001	36.175	61.8	100	Circular	7.030	5.635	1.295	6.350	5.050	1.200
16.000	29.896	67.9	100	Circular	6.675	5.925	0.650	6.511	5.485	0.926
16.001	30.011	69.0	100	Circular	6.511	5.485	0.926	6.350	5.050	1.200
15.002	5.558	5.4	150	Circular	6.350	5.050	1.150	7.313	4.028	3.135
15.003	4.143	147.9	150	Circular	7.313	4.028	3.135	7.306	4.000	3.156

Link	US Node	Dia (mm)	Node Type	DS Node	Dia (mm)	Node Type
15.000	51	450	Manhole	52	450	Manhole
15.001	52	450	Manhole	55	450	Manhole
16.000	53	450	Manhole	54	150	Manhole
16.001	54	150	Manhole	55	450	Manhole
15.002	55	450	Manhole	56	1200	Manhole
15.003	56	1200	Manhole	57	1200	Manhole

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Detailed	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	0.750	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	0.840	Additional Storage (m ³ /ha)	0.0		

Storm Durations

120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	40	0	0

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year 120 minute summer	32.350	8.549	30 year 480 minute winter	18.746	7.457
2 year 120 minute winter	21.493	8.549	30 year 600 minute summer	22.967	6.282
2 year 180 minute summer	27.339	7.035	30 year 600 minute winter	15.693	6.282
2 year 180 minute winter	17.771	7.035	30 year 720 minute summer	20.341	5.452
2 year 240 minute summer	22.762	6.015	30 year 720 minute winter	13.671	5.452
2 year 240 minute winter	15.122	6.015	30 year 960 minute summer	16.513	4.348
2 year 360 minute summer	18.229	4.691	30 year 960 minute winter	10.938	4.348
2 year 360 minute winter	11.849	4.691	30 year 1440 minute summer	11.796	3.161
2 year 480 minute summer	14.688	3.882	30 year 1440 minute winter	7.928	3.161
2 year 480 minute winter	9.758	3.882	100 year +40% CC 120 minute summer	130.437	34.471
2 year 600 minute summer	12.177	3.331	100 year +40% CC 120 minute winter	86.660	34.471
2 year 600 minute winter	8.320	3.331	100 year +40% CC 180 minute summer	100.766	25.930
2 year 720 minute summer	10.928	2.929	100 year +40% CC 180 minute winter	65.500	25.930
2 year 720 minute winter	7.345	2.929	100 year +40% CC 240 minute summer	79.783	21.084
2 year 960 minute summer	9.021	2.376	100 year +40% CC 240 minute winter	53.006	21.084
2 year 960 minute winter	5.976	2.376	100 year +40% CC 360 minute summer	60.738	15.630
2 year 1440 minute summer	6.605	1.770	100 year +40% CC 360 minute winter	39.481	15.630
2 year 1440 minute winter	4.439	1.770	100 year +40% CC 480 minute summer	47.563	12.570
30 year 120 minute summer	75.400	19.926	100 year +40% CC 480 minute winter	31.600	12.570
30 year 120 minute winter	50.094	19.926	100 year +40% CC 600 minute summer	38.720	10.591
30 year 180 minute summer	59.020	15.188	100 year +40% CC 600 minute winter	26.456	10.591
30 year 180 minute winter	38.365	15.188	100 year +40% CC 720 minute summer	34.314	9.197
30 year 240 minute summer	47.046	12.433	100 year +40% CC 720 minute winter	23.061	9.197
30 year 240 minute winter	31.256	12.433	100 year +40% CC 960 minute summer	27.907	7.349
30 year 360 minute summer	35.993	9.262	100 year +40% CC 960 minute winter	18.486	7.349
30 year 360 minute winter	23.397	9.262	100 year +40% CC 1440 minute summer	19.977	5.354
30 year 480 minute summer	28.217	7.457	100 year +40% CC 1440 minute winter	13.426	5.354

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute summer	51	2	6.640	0.000	0.0	0.0000	0.0000	OK
120 minute summer	52	64	5.667	0.032	1.5	0.0051	0.0000	OK
120 minute summer	53	66	5.943	0.018	0.5	0.0028	0.0000	OK
120 minute summer	54	64	5.511	0.026	1.0	0.0005	0.0000	OK
120 minute summer	55	64	5.071	0.021	3.1	0.0033	0.0000	OK
120 minute summer	56	64	4.078	0.050	3.1	0.0570	0.0000	OK
120 minute summer	57	64	4.047	0.047	3.1	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute summer	51	15.000	52	0.0	0.000	0.000	0.0412	
120 minute summer	52	15.001	55	1.5	0.908	0.194	0.0603	
120 minute summer	53	16.000	54	0.5	0.441	0.068	0.0382	
120 minute summer	54	16.001	55	1.0	0.719	0.137	0.0417	
120 minute summer	55	15.002	56	3.1	0.974	0.040	0.0184	
120 minute summer	56	15.003	57	3.1	0.626	0.212	0.0204	6.3

**Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%**

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute summer	51	2	6.640	0.000	0.0	0.0000	0.0000	OK
120 minute summer	52	64	5.687	0.052	3.5	0.0082	0.0000	OK
120 minute summer	53	64	5.952	0.027	1.2	0.0044	0.0000	OK
120 minute summer	54	64	5.526	0.041	2.3	0.0007	0.0000	OK
120 minute summer	55	64	5.081	0.031	7.2	0.0049	0.0000	OK
120 minute summer	56	64	4.110	0.082	7.2	0.0927	0.0000	OK
120 minute summer	57	64	4.074	0.074	7.2	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute summer	51	15.000	52	0.0	0.000	0.000	0.0770	
120 minute summer	52	15.001	55	3.5	1.146	0.454	0.1110	
120 minute summer	53	16.000	54	1.2	0.514	0.163	0.0705	
120 minute summer	54	16.001	55	2.3	0.913	0.315	0.0757	
120 minute summer	55	15.002	56	7.2	1.187	0.094	0.0346	
120 minute summer	56	15.003	57	7.2	0.776	0.493	0.0383	14.2

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute summer	51	2	6.640	0.000	0.0	0.0000	0.0000	OK
120 minute summer	52	64	5.710	0.075	6.1	0.0120	0.0000	OK
120 minute summer	53	64	5.961	0.036	2.0	0.0057	0.0000	OK
120 minute summer	54	64	5.540	0.055	3.9	0.0010	0.0000	OK
120 minute summer	55	64	5.091	0.041	12.5	0.0065	0.0000	OK
120 minute summer	56	64	4.149	0.121	12.5	0.1369	0.0000	OK
120 minute summer	57	64	4.104	0.104	12.5	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute summer	51	15.000	52	0.0	0.000	0.000	0.1195	
120 minute summer	52	15.001	55	6.1	1.291	0.790	0.1688	
120 minute summer	53	16.000	54	2.0	0.580	0.272	0.1037	
120 minute summer	54	16.001	55	3.9	1.048	0.534	0.1116	
120 minute summer	55	15.002	56	12.5	1.288	0.162	0.0531	
120 minute summer	56	15.003	57	12.5	0.881	0.856	0.0584	24.8