

Design Settings

Rainfall Methodology	FEH-13	Minimum Velocity (m/s)	1.00
Return Period (years)	100	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)
S1		5.00	66.972	480	601313.355	257145.331	0.500
S2	0.012	5.00	66.761	480	601341.586	257141.590	0.500
S3	0.008	5.00	66.660	480	601358.992	257136.025	0.521
S4	0.025	5.00	66.480	480	601373.626	257130.794	0.500
S5	0.037	5.00	66.242	480	601392.462	257127.875	0.872
S6	0.043	5.00	66.002	480	601411.534	257125.931	1.409
S7	0.029	5.00	65.917	480	601418.326	257125.239	1.390
S8	0.029	5.00	65.447	1200	601430.167	257134.000	1.093
S9	0.006	5.00	65.239	480	601440.088	257133.412	0.884
S10			64.527	480	601443.910	257131.144	0.227
S11		5.00	65.900	600	601418.904	257130.609	1.475
S12		5.00	66.300	600	601389.912	257131.670	0.900

Links (Input)

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)
1.000	S1	S2	28.478	0.600	66.472	66.261	0.211	135.0	150	5.55	50.0
1.001	S2	S3	18.274	0.600	66.261	66.139	0.122	149.8	150	5.92	50.0
1.002	S3	S4	15.541	0.600	66.139	65.980	0.159	97.7	150	6.18	50.0
1.003	S4	S5	19.061	0.600	65.980	65.370	0.610	31.2	150	6.35	50.0
1.004	S5	S6	19.170	0.600	65.370	64.593	0.777	24.7	150	6.51	50.0
1.005	S6	S7	6.827	0.600	64.593	64.527	0.066	103.4	150	6.62	50.0
1.006	S7	S8	14.729	0.600	64.527	64.429	0.098	150.3	150	6.93	50.0
1.007	S8	S9	9.939	0.600	64.479	64.355	0.124	80.2	100	7.12	50.0
1.008	S9	S10	4.444	0.600	64.355	64.300	0.055	80.8	100	7.20	50.0
2.000	S11	S8	11.800	0.600	64.425	64.354	0.071	166.2	225	5.19	50.0
3.000	S12	S5	4.572	0.600	65.400	65.370	0.030	152.4	150	5.09	50.0

Simulation Settings

Rainfall Methodology	FEH-13	Analysis Speed	Normal	Additional Storage (m ³ /ha)	20.0
Summer CV	0.750	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	0.840	Drain Down Time (mins)	1440	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	45	0	0

Node S8 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	64.479	Product Number	CTL-SHE-0058-1100-0400-1100
Design Depth (m)	0.400	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.1	Min Node Diameter (mm)	1200

Node S5 Online Orifice Control

Flap Valve	x	Invert Level (m)	65.370	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Diameter (m)	0.025		

Node S2 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	3.0	Invert Level (m)	66.151
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	123.9	0.0	0.400	123.9	0.0	0.401	0.0	0.0

Node S3 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	3.0	Invert Level (m)	66.050
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	75.3	0.0	0.400	75.3	0.0	0.401	0.0	0.0

Node S4 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	65.880
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	136

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	82.7	0.0	0.400	82.7	0.0	0.401	0.0	0.0

Node S5 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	3.0	Invert Level (m)	65.632
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	472

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	105.2	0.0	0.400	105.2	0.0	0.401	0.0	0.0

Node S6 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	3.0	Invert Level (m)	65.392
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	210.3	0.0	0.400	210.3	0.0	0.401	0.0	0.0

Node S7 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	65.307
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	43.5	0.0	0.400	43.5	0.0	0.401	0.0	0.0

Node S8 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	3.0	Invert Level (m)	64.837
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	1005

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	146.7	0.0	0.400	146.7	0.0	0.401	0.0	0.0

Node S11 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	64.425
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	1365

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)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	62.5	0.0	0.400	62.5	0.0	0.800	62.5	0.0	0.801	0.0	0.0

Node S12 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	65.400
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	880

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	62.5	0.0	0.400	62.5	0.0	0.401	0.0	0.0

Node S5 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	1.003
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	65.370	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	760	Diameter (mm)	450

Node S6 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	1.004
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	64.593	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	990	Diameter (mm)	450

Node S7 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	1.005
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	64.527	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	1395	Diameter (mm)	450

Node S8 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	1.006
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	64.429	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)		Diameter (mm)	450

Results for 10 year Critical Storm Duration. Lowest mass balance: 96.74%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute summer	S1	1	66.472	0.000	0.0	0.0000	0.0000	OK
30 minute winter	S2	23	66.291	0.030	2.5	1.1018	0.0000	OK
30 minute winter	S3	23	66.173	0.034	2.5	0.7658	0.0000	OK
15 minute winter	S4	12	66.025	0.045	7.4	1.1652	0.0000	OK
240 minute winter	S5	232	65.657	0.287	4.1	1.2394	0.0000	SURCHARGED
360 minute winter	S6	352	64.839	0.246	2.1	0.2790	0.0000	SURCHARGED
360 minute winter	S7	352	64.839	0.312	3.2	0.4069	0.0000	SURCHARGED
360 minute winter	S8	352	64.838	0.484	4.2	1.5130	0.0000	SURCHARGED
15 minute winter	S9	10	64.399	0.044	2.7	0.0139	0.0000	OK
15 minute winter	S10	10	64.344	0.044	2.7	0.0000	0.0000	OK
360 minute winter	S11	352	64.838	0.413	3.0	24.6458	0.0000	SURCHARGED
240 minute winter	S12	232	65.657	0.257	3.4	15.3130	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute summer	S1	1.000	S2	0.0	0.000	0.000	0.0281	
30 minute winter	S2	1.001	S3	1.2	0.460	0.086	0.0493	
30 minute winter	S3	1.002	S4	2.0	0.620	0.111	0.0541	
15 minute winter	S4	1.003	S5	6.3	0.562	0.198	0.2088	
240 minute winter	S5	Orifice	S6	0.7				
360 minute winter	S6	1.005	S7	2.1	0.500	0.122	0.1202	
360 minute winter	S7	1.006	S8	3.1	0.427	0.212	0.2593	
360 minute winter	S8	Hydro-Brake®	S9	1.1				
15 minute winter	S9	1.008	S10	2.7	0.811	0.398	0.0147	19.7
360 minute winter	S11	2.000	S8	-3.0	-0.135	-0.074	0.4693	
240 minute winter	S12	3.000	S5	-3.4	-0.253	-0.239	0.0805	

Results for 30 year Critical Storm Duration. Lowest mass balance: 96.74%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute summer	S1	1	66.472	0.000	0.0	0.0000	0.0000	OK
30 minute winter	S2	22	66.297	0.036	3.2	1.3316	0.0000	OK
30 minute winter	S3	22	66.180	0.041	3.5	0.9354	0.0000	OK
15 minute winter	S4	12	66.034	0.054	10.0	1.3947	0.0000	OK
240 minute winter	S5	232	65.722	0.352	5.3	3.4428	0.0000	SURCHARGED
15 minute winter	S6	11	64.934	0.341	15.7	0.4409	0.0000	SURCHARGED
360 minute winter	S7	352	64.916	0.389	4.0	0.5245	0.0000	SURCHARGED
360 minute winter	S8	352	64.915	0.561	5.3	5.1974	0.0000	SURCHARGED
15 minute winter	S9	10	64.403	0.048	3.2	0.0154	0.0000	OK
15 minute winter	S10	10	64.348	0.048	3.2	0.0000	0.0000	OK
360 minute winter	S11	352	64.915	0.490	4.0	29.2583	0.0000	SURCHARGED
240 minute winter	S12	232	65.722	0.322	4.5	19.1970	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute summer	S1	1.000	S2	0.0	0.000	0.000	0.0380	
30 minute winter	S2	1.001	S3	1.8	0.509	0.125	0.0649	
30 minute winter	S3	1.002	S4	2.9	0.692	0.164	0.0711	
15 minute winter	S4	1.003	S5	8.9	0.645	0.278	0.2223	
240 minute winter	S5	Orifice	S6	0.8				
15 minute winter	S6	1.005	S7	14.1	0.798	0.805	0.1202	
360 minute winter	S7	1.006	S8	3.9	0.444	0.270	0.2593	
360 minute winter	S8	Hydro-Brake®	S9	1.1				
15 minute winter	S9	1.008	S10	3.2	0.848	0.473	0.0167	26.9
360 minute winter	S11	2.000	S8	-4.0	-0.147	-0.100	0.4693	
240 minute winter	S12	3.000	S5	-4.5	-0.258	-0.317	0.0805	

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 96.74%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
15 minute summer	S1	1	66.472	0.000	0.0	0.0000	0.0000	OK
30 minute winter	S2	21	66.316	0.055	6.1	2.0656	0.0000	OK
360 minute winter	S3	344	66.239	0.100	1.9	2.2996	0.0000	OK
360 minute winter	S4	336	66.239	0.259	5.6	6.7226	0.0000	FLOOD RISK
360 minute winter	S5	336	66.239	0.869	8.2	14.8998	0.0000	FLOOD RISK
720 minute winter	S6	705	65.434	0.841	3.1	4.4325	0.0000	SURCHARGED
720 minute winter	S7	705	65.433	0.906	4.5	2.9676	0.0000	SURCHARGED
720 minute winter	S8	705	65.432	1.078	6.0	21.2596	0.0000	FLOOD RISK
15 minute winter	S9	10	64.419	0.064	5.0	0.0204	0.0000	OK
15 minute winter	S10	10	64.364	0.064	5.0	0.0000	0.0000	OK
720 minute winter	S11	705	65.432	1.007	3.7	47.8148	0.0000	SURCHARGED
360 minute winter	S12	336	66.239	0.839	4.8	24.0171	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
15 minute summer	S1	1.000	S2	0.0	0.000	0.000	0.0754	
30 minute winter	S2	1.001	S3	4.2	0.646	0.290	0.1187	
360 minute winter	S3	1.002	S4	1.8	0.598	0.101	0.2339	
360 minute winter	S4	1.003	S5	4.1	0.329	0.130	0.3356	
360 minute winter	S5	Orifice	S6	1.2				
720 minute winter	S6	1.005	S7	3.0	0.439	0.173	0.1202	
720 minute winter	S7	1.006	S8	4.5	0.425	0.309	0.2593	
720 minute winter	S8	Hydro-Brake®	S9	1.6				
15 minute winter	S9	1.008	S10	5.0	0.941	0.742	0.0236	53.4
720 minute winter	S11	2.000	S8	-3.7	-0.133	-0.093	0.4693	
360 minute winter	S12	3.000	S5	-4.8	-0.270	-0.332	0.0805	