Design Settings

Rainfall Methodology	FEH-99	E (1km)	0.314	Connection Type	Level Soffits
Return Period (years)	100	F (1km)	2.381	Minimum Backdrop Height (m)	0.200
Additional Flow (%)	40	CV	0.750	Preferred Cover Depth (m)	0.600
C (1km)	-0.027	Time of Entry (mins)	4.00	Include Intermediate Ground	✓
D1 (1km)	0.403	Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
D2 (1km)	0.327	Maximum Rainfall (mm/hr)	50.0		
D3 (1km)	0.351	Minimum Velocity (m/s)	1.00		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
7	0.011	4.00	14.980	600	1534.454	836.849	0.855
6	0.004	4.00	14.890	600	1535.151	846.516	0.700
5	0.009	4.00	14.890	600	1558.286	840.239	0.750
4	0.004	4.00	14.890	600	1558.286	831.262	0.810
3	0.009	4.00	14.800	600	1545.958	827.658	0.806
2	0.004	4.00	14.810	1200	1533.791	827.658	1.328
Existing			14.700	1200	1531.551	822.868	1.253
Attenuation tank			14.810		1536.417	827.626	1.310
PERMEABLE 2		4.00	14.840		1547.340	826.618	0.590
PERMEABLE 1		4.00	14.850		1530.514	837.289	0.600

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)
1.003	2	Existing	5.288	0.600	13.482	13.447	0.035	150.0	150	4.76	50.0
2.001	7	2	9.215	0.600	14.125	14.064	0.061	150.0	100	4.50	50.0
1.002	3	Attenuation tank	9.541	0.600	13.994	13.899	0.095	100.4	150	4.60	50.0
1.001	4	3	12.844	0.600	14.080	13.994	0.086	150.0	150	4.44	50.0
1.000	5	4	8.977	0.600	14.140	14.080	0.060	150.0	150	4.18	50.0
2.000	6	7	9.692	0.600	14.190	14.125	0.065	150.0	100	4.26	50.0
1.003_1	Attenuation tank	2	2.626	0.600	13.500	13.482	0.018	150.0	150	4.66	50.0

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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)
2.000_1	PERMEABLE 2	3	1.729	0.600	14.250	14.044	0.206	8.4	100	4.01	50.0
4.000	PERMEABLE 1	7	3.965	0.600	14.250	14.125	0.125	31.7	100	4.05	50.0

Simulation Settings

Rainfall Methodology	FEH-99	D3 (1km)	0.351	Winter CV	0.840	Additional Storage (m³/ha)	0.0
C (1km)	-0.027	E (1km)	0.314	Analysis Speed	Normal	Check Discharge Rate(s)	x
D1 (1km)	0.403	F (1km)	2.381	Skip Steady State	x	Check Discharge Volume	x
D2 (1km)	0.327	Summer CV	0.750	Drain Down Time (mins)	1440		

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

Node 2 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Downstream Link	1.003	Sump Available	✓
Replaces Downstream Link	✓	Product Number	CTL-SHE-0103-5000-1200-5000
Invert Level (m)	13.482	Min Outlet Diameter (m)	0.150
Design Depth (m)	1.200	Min Node Diameter (mm)	1200
Design Flow (l/s)	5.0		

Node Attenuation tank Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	13.500
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	37

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Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	15.0	0.0	0.400	15.0	0.0	0.600	15.0	0.0	0.601	0.0	0.0

Node PERMEABLE 2 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Width (m)	4.800	Depth (m)	0.450
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	14.250	Length (m)	9.600	Inf Depth (m)	
Safety Factor	2.0	Time to half empty (mins)	0	Slope (1:X)	1000.0		

Node PERMEABLE 1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Width (m)	4.800	Depth (m)	
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	14.250	Length (m)	7.200	Inf Depth (m)	0.450
Safety Factor	2.0	Time to half empty (mins)	0	Slope (1:X)	1000.0		

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Results for 2 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	7	10	14.181	0.056	2.8	0.0159	0.0000	OK
15 minute winter	6	10	14.217	0.027	0.8	0.0077	0.0000	OK
15 minute winter	5	10	14.176	0.036	1.8	0.0102	0.0000	OK
15 minute summer	4	10	14.123	0.043	2.6	0.0123	0.0000	OK
15 minute winter	3	10	14.045	0.051	4.3	0.0145	0.0000	OK
15 minute winter	2	13	13.599	0.117	4.0	0.1323	0.0000	OK
15 minute summer	Existing	1	13.447	0.000	3.7	0.0000	0.0000	OK
15 minute winter	Attenuation tank	13	13.600	0.099	4.6	1.4178	0.0000	OK
15 minute summer	PERMEABLE 2	1	14.250	0.000	0.0	0.0000	0.0000	OK
15 minute summer	PERMEABLE 1	1	14.250	0.000	0.0	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	7	2.001	2	2.7	0.627	0.560	0.0404	
15 minute winter	6	2.000	7	0.8	0.259	0.162	0.0303	
15 minute winter	5	1.000	4	1.8	0.482	0.125	0.0336	
15 minute summer	4	1.001	3	2.6	0.545	0.179	0.0612	
15 minute winter	3	1.002	Attenuation tank	4.2	0.814	0.239	0.0497	
15 minute winter	2	Hydro-Brake®	Existing	4.0				3.4
15 minute winter	Attenuation tank	1.003_1	2	2.7	0.293	0.190	0.0356	
15 minute summer	PERMEABLE 2	2.000_1	3	0.0	0.000	0.000	0.0000	
15 minute summer	PERMEABLE 1	4.000	7	0.0	0.000	0.000	0.0090	

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Results for 30 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	7	10	14.276	0.151	8.1	0.0427	0.0000	SURCHARGED
15 minute winter	6	10	14.292	0.102	2.4	0.0289	0.0000	SURCHARGED
15 minute summer	5	10	14.205	0.065	5.1	0.0183	0.0000	OK
15 minute summer	4	10	14.160	0.080	7.5	0.0227	0.0000	OK
15 minute winter	3	10	14.090	0.096	12.4	0.0272	0.0000	OK
30 minute winter	2	25	13.916	0.434	7.1	0.4914	0.0000	SURCHARGED
15 minute summer	Existing	1	13.447	0.000	5.0	0.0000	0.0000	OK
30 minute winter	Attenuation tank	25	13.918	0.418	10.0	5.9509	0.0000	SURCHARGED
15 minute summer	PERMEABLE 2	1	14.250	0.000	0.0	0.0000	0.0000	OK
15 minute winter	PERMEABLE 1	12	14.269	0.019	1.3	0.1518	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	7	2.001	2	6.7	0.861	1.356	0.0681	
15 minute winter	6	2.000	7	2.3	0.296	0.471	0.0758	
15 minute summer	5	1.000	4	5.1	0.606	0.353	0.0756	
15 minute summer	4	1.001	3	7.5	0.698	0.519	0.1380	
15 minute winter	3	1.002	Attenuation tank	12.4	1.063	0.697	0.1108	
30 minute winter	2	Hydro-Brake®	Existing	5.0				12.3
30 minute winter	Attenuation tank	1.003_1	2	4.6	0.296	0.316	0.0462	
15 minute summer	PERMEABLE 2	2.000_1	3	0.0	0.000	0.000	0.0031	
15 minute winter	PERMEABLE 1	4.000	7	-1.3	-0.261	-0.120	0.0175	

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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	7	10	14.339	0.214	12.5	0.0605	0.0000	SURCHARGED
15 minute winter	6	10	14.377	0.187	3.7	0.0529	0.0000	SURCHARGED
30 minute winter	5	32	14.294	0.154	5.5	0.0437	0.0000	SURCHARGED
30 minute winter	4	24	14.294	0.214	8.1	0.0605	0.0000	SURCHARGED
30 minute winter	3	32	14.290	0.296	13.3	0.0838	0.0000	SURCHARGED
30 minute winter	2	32	14.286	0.804	9.1	0.9093	0.0000	SURCHARGED
15 minute summer	Existing	1	13.447	0.000	5.0	0.0000	0.0000	OK
30 minute winter	Attenuation tank	32	14.287	0.787	16.0	8.5571	0.0000	SURCHARGED
30 minute winter	PERMEABLE 2	29	14.287	0.037	2.0	0.4466	0.0000	OK
15 minute winter	PERMEABLE 1	12	14.335	0.085	4.5	0.8209	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	7	2.001	2	8.0	1.022	1.626	0.0721	
15 minute winter	6	2.000	7	3.4	0.439	0.700	0.0758	
30 minute winter	5	1.000	4	5.5	0.614	0.378	0.1580	
30 minute winter	4	1.001	3	8.0	0.705	0.551	0.2261	
30 minute winter	3	1.002	Attenuation tank	13.2	1.079	0.743	0.1680	
30 minute winter	2	Hydro-Brake®	Existing	5.0				18.4
30 minute winter	Attenuation tank	1.003_1	2	4.6	0.298	0.319	0.0462	
30 minute winter	PERMEABLE 2	2.000_1	3	2.6	0.474	0.125	0.0091	
15 minute winter	PERMEABLE 1	4.000	7	-4.5	-0.784	-0.413	0.0295	

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