

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	1.000	Drain Down Time (mins)	1440	Check Discharge Volume	x
Winter CV	1.000	Additional Storage (m³/ha)	0.0		

Storm Durations									
15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

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	0	0	0	100	0	0	0
30	0	0	0	100	40	0	0
30	35	0	0				

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	40	Minimum Backdrop Height (m)	0.200
CV	1.000	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)	Invert Level (m)
MH-001-S	0.772	5.00	3.600	1200	524721.924	323044.014	1.130	2.470
IC-004-S		5.00	3.600	450	524724.514	323036.679	1.030	2.570
Outfall			3.600	1200	524727.352	323047.580	1.200	2.400

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
PN-003-S	IC-003-S	MH-001-S	11.537	0.600	2.570	2.470	0.100	115.4	225	5.16	50.0
PN-004-S	IC-004-S	MH-001-S	7.779	0.600	2.570	2.470	0.100	77.8	300	5.07	50.0
PN-005-S	IC-005-S	IC-004-S	7.634	0.600	2.770	2.570	0.200	38.2	225	5.06	50.0
PN-006-S	IC-006-S	IC-004-S	33.065	0.600	2.970	2.670	0.300	110.2	225	5.44	50.0
PN-007-S	IC-007-S	IC-004-S	42.036	0.600	2.870	2.670	0.200	210.2	225	5.78	50.0
PN-008-S	IC-008-S	IC-007-S	34.254	0.600	3.020	2.870	0.150	228.4	225	5.73	50.0
PN-009-S	IC-009-S	IC-008-S	3.696	0.600	3.050	3.020	0.030	123.2	150	5.07	50.0
Outfall PN	MH-001-S	Outfall	6.495	0.600	2.470	2.400	0.070	92.8	150	5.18	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
PN-003-S	1.216	48.4	6.6		0.905	0.026	0.0	56	0.855
PN-004-S	1.784	126.1	0.0	0.730	0.830	0.000	0.0	0	0.000
PN-005-S	2.124	84.4	5.1		0.805	0.020	0.0	37	1.182
PN-006-S	1.245	49.5	5.1		0.705	0.020	0.0	49	0.810
PN-007-S	0.898	35.7	0.0		0.705	0.000	0.0	0	0.000
PN-008-S	0.861	34.2	5.1			0.020	0.0	58	0.620
PN-009-S	0.904	16.0	5.1			0.020	0.0	58	0.801
Outfall PN	1.043	18.4	195.3	0.980	1.050	0.772	0.0	150	1.063

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)
PN-003-S	11.537	115.4	225	Circular	3.600	2.570	0.730	3.600	2.470	0.905
PN-004-S	7.779	77.8	300					3.600	2.470	0.830
PN-005-S	7.634	38.2	225					3.600	2.570	0.805
PN-006-S	33.065	110.2	225					3.600	2.670	0.705
PN-007-S	42.036	210.2	225					3.600	2.670	0.705
PN-008-S	34.254	228.4	225						2.870	
PN-009-S	3.696	123.2	150			3.050			3.020	
Outfall PN	6.495	92.8	150	Circular	3.600	2.470	0.980	3.600	2.400	1.050

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
PN-003-S					MH-001-S	1200	Manhole	Adoptable
PN-004-S	IC-004-S	450	Manhole	Adoptable	MH-001-S	1200	Manhole	Adoptable
PN-005-S					IC-004-S	450	Manhole	Adoptable
PN-006-S					IC-004-S	450	Manhole	Adoptable
PN-007-S					IC-004-S	450	Manhole	Adoptable
PN-008-S								
PN-009-S								

Outfall PN	MH-001-S	1200	Manhole	Adoptable	Outfall	1200	Manhole	Adoptable
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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
MH-001-S	524721.924	323044.014	3.600	1.130	1200		PN-004-S	2.470	300
IC-004-S	524724.514	323036.679	3.600	1.030	450		Outfall PN	2.470	150
Outfall	524727.352	323047.580	3.600	1.200	1200		PN-004-S	2.570	300
							Outfall PN	2.400	150

Node MH-001-S Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	2.470	Product Number	CTL-SHE-0065-2000-1130-2000
Design Depth (m)	1.130	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node IC-004-S Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	2.570
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	200.0	0.0	0.400	200.0	2.0	0.401	0.0	2.0

Node MH-001-S Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	2.470
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	0.0	0.0	0.610	7700.0	7700.0	1.031	0.0	7830.6
0.609	0.0	0.0	1.030	7700.0	7830.6			

Results for 2 year Critical Storm Duration. Lowest mass balance: 83.44%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute summer	MH-001-S	360	3.124	0.654	36.8	103.6473	0.0000	SURCHARGED
360 minute summer	IC-004-S	368	3.124	0.554	28.0	76.1831	0.0000	SURCHARGED
60 minute summer	Outfall	28	2.432	0.032	1.8	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)
360 minute summer	MH-001-S	Outfall PN	Outfall	1.8	0.650	0.099	0.0182	168.4
360 minute summer	IC-004-S	PN-004-S	MH-001-S	-28.0	-0.398	-0.222	0.5478	

Results for 30 year Critical Storm Duration. Lowest mass balance: 89.94%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	MH-001-S	945	3.238	0.768	23.4	367.3241	0.0000	SURCHARGED
15 minute winter	IC-004-S	14	3.350	0.780	165.3	76.2191	0.0000	FLOOD RISK
30 minute winter	Outfall	7	2.432	0.032	1.8	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)
960 minute winter	MH-001-S	Outfall PN	Outfall	1.8	0.650	0.099	0.0182	231.8
15 minute winter	IC-004-S	PN-004-S	MH-001-S	-165.3	-2.568	-1.311	0.5478	

Results for 30 year +35% CC Critical Storm Duration. Lowest mass balance: 93.09%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	MH-001-S	945	3.318	0.848	31.6	551.8794	0.0000	FLOOD RISK
30 minute summer	IC-004-S	17	3.339	0.769	143.1	76.2173	0.0000	FLOOD RISK
60 minute summer	Outfall	6	2.432	0.032	1.8	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)
960 minute winter	MH-001-S	Outfall PN	Outfall	1.8	0.650	0.099	0.0182	240.7
30 minute summer	IC-004-S	PN-004-S	MH-001-S	-143.1	-2.111	-1.135	0.5478	

Results for 100 year Critical Storm Duration. Lowest mass balance: 93.58%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
960 minute winter	MH-001-S	945	3.318	0.848	31.4	552.1965	0.0000	FLOOD RISK
60 minute winter	IC-004-S	32	3.375	0.805	118.5	76.2230	0.0000	FLOOD RISK
60 minute summer	Outfall	6	2.432	0.032	1.8	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)
960 minute winter	MH-001-S	Outfall PN	Outfall	1.8	0.650	0.099	0.0182	240.7
60 minute winter	IC-004-S	PN-004-S	MH-001-S	-118.5	-1.683	-0.939	0.5478	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 96.42%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	MH-001-S	1440	3.448	0.978	31.2	851.2003	0.0000	FLOOD RISK
1440 minute winter	IC-004-S	1440	3.448	0.878	5.5	76.2345	0.0000	FLOOD RISK
1440 minute winter	Outfall	1440	2.432	0.032	1.8	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)
1440 minute winter	MH-001-S	Outfall PN	Outfall	1.8	0.653	0.100	0.0184	300.7
1440 minute winter	IC-004-S	PN-004-S	MH-001-S	-5.5	-0.180	-0.044	0.5478	

Water Quality (TSS)

Node	Treatment	Effectiveness	SuDS Component	Mitigation TSS	Cumulative TSS
MH-001-S	Depth/Area	1.0	Pond	0.700	0.000
IC-004-S	Depth/Area	1.0	Pond	0.700	0.000
Outfall					0.000

Water Quality (Metals)

Node	Treatment	Effectiveness	SuDS Component	Mitigation Metals	Cumulative Metals
MH-001-S	Depth/Area	1.0	Pond	0.700	0.000
IC-004-S	Depth/Area	1.0	Pond	0.700	0.000
Outfall					0.000

Water Quality (Hydrocarbons)

Node	Treatment	Effectiveness	SuDS Component	Mitigation Hydrocarbons	Cumulative Hydrocarbons
MH-001-S	Depth/Area	1.0	Pond	0.500	0.000
IC-004-S	Depth/Area	1.0	Pond	0.500	0.000
Outfall					0.000