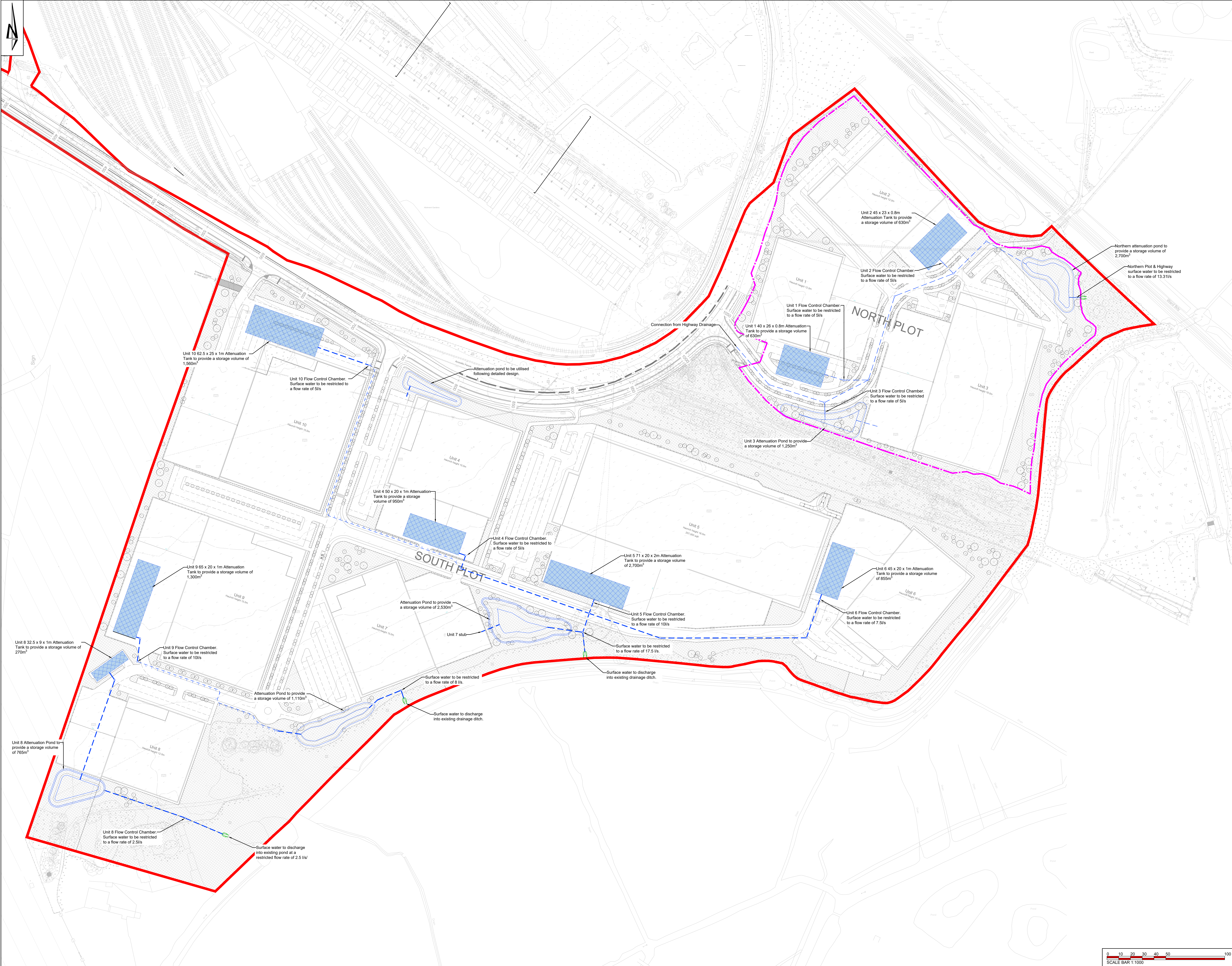
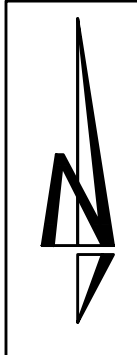




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IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING:

CONSTRUCTION

MAINTENANCE

DEMOLITION

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT

GENERAL NOTES

1. This drawing shall be read in conjunction with all the relevant architects, engineers' and service engineers drawings & specifications.

2. All units in millimeters U.O.N. on the drawing.

3. Do Not Scale off the drawing.

LEGEND

Surface Water Drainage

Surface Water Rising Main

Attenuation Tank

Attenuation Pond

Plot Boundary

Site Boundary

P06	10.04.26	MM	Updated to suit MSA Layout	JW
P05	24.03.26	JB	Southern drainage revised to suit hydraulic calculations	JW
P04	17.02.26	MM	Updated to suit MSA Layout	JW
P03	30.01.26	MM	Updated to suit Ecologist comments	JW
P02	23.01.26	MM	Southern plots flow rate amended	JW
P01	22.12.25	MM	Issued for information	JW
REV	DATE	BY	DESCRIPTION	CHKD

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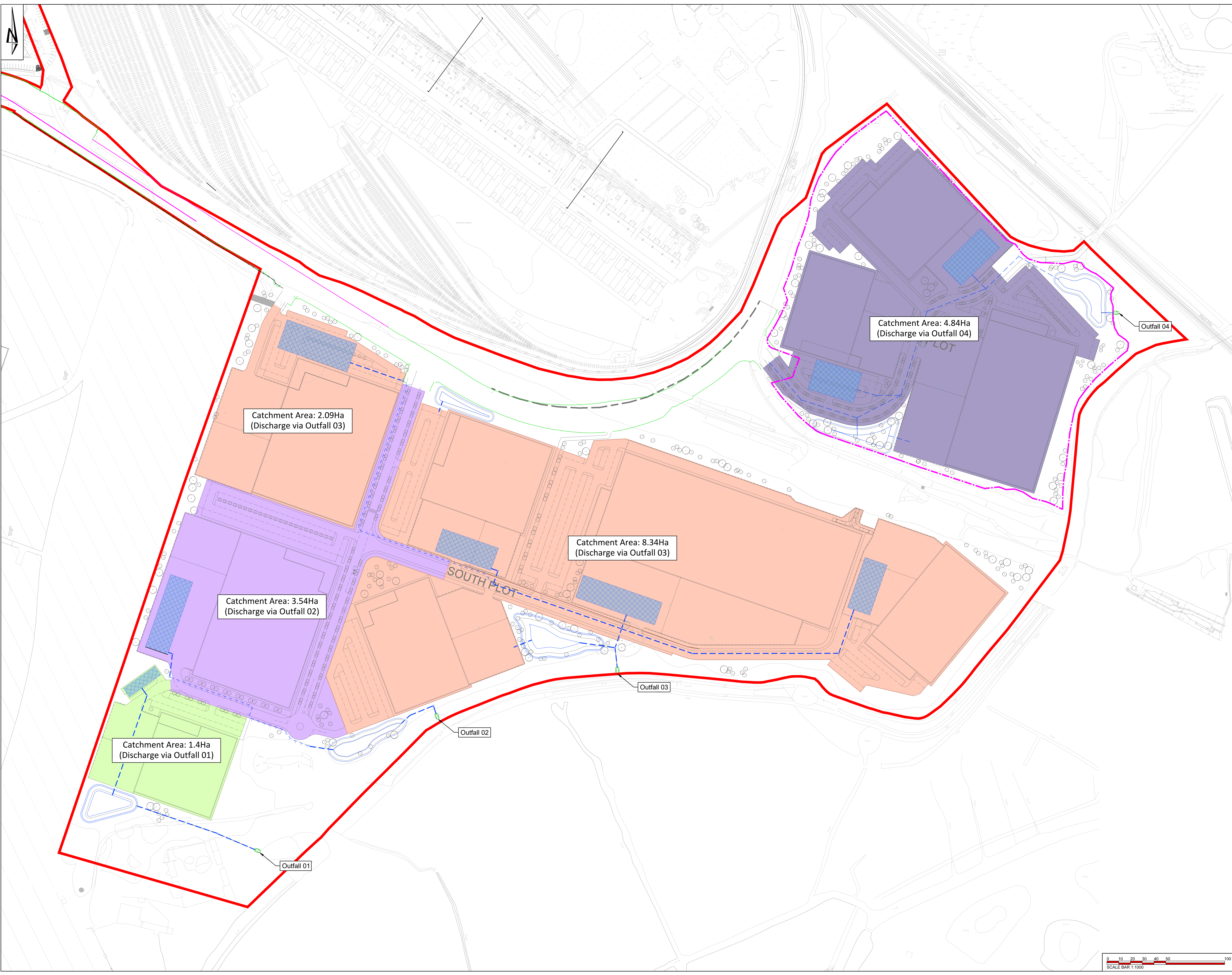
PROJECT

BLOC NAVIGATION QUARTER
SOUTHAMPTON

DRAWING TITLE

INDICATIVE DRAINAGE LAYOUT 2

BGL PROJECT NUMBER	DRAWING STATUS	OFFICE
30228	PRELIMINARY	NORTH
SCALE @ A0	DATE	DRAWN BY
1:1000	DECEMBER 2025	MM
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PROPOSED CATCHMENT PLAN

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SCALE @ A0 1:1000	DATE 24.03.2026	DRAWN BY JB
DRAWING No 30228-BGL-XX-XX-SK-C-00022		CHECKED BY JW
		REV P01

APPENDIX E – HYDRAULIC CALCULATIONS

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	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	0.400	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)
SWM07			11.000	1500	445934.764	117461.838	1.682
Outfall 02			10.500	1200	445937.112	117454.880	1.225
Unit 10 Pumping Station	2.100	5.00	9.450	1800	445907.352	117738.104	2.091
Unit 10 Tank		5.00	9.450		445864.171	117753.145	2.000
Attenuation Pond 01	1.000	5.00	11.000		445907.603	117446.893	1.500
Outfall 01			10.000	1200	445736.086	117348.852	3.100
Unit 9 Flow Control	2.200	5.00	9.590	1500	445714.410	117503.085	2.186
Unit 8 Flow Control	1.400	5.00	10.985	1350	445699.644	117369.509	3.839
Unit 8 Pond			8.750		445663.313	117389.463	1.500
Unit 9 Tank	0.000	5.00	9.450		445702.045	117522.678	2.000
Unit 8 Tank		5.00	10.000		445687.159	117477.032	2.000
SWM02			11.500	1200	445985.625	117565.087	1.643
SWM03			13.460	1200	446094.551	117527.146	4.905
Unit 5 Flow Control	3.550	5.00	13.500	1800	446097.767	117536.409	3.026
Unit 5 Tank		5.00	13.500		446102.992	117548.251	3.000
SWM04			13.325	1200	446154.668	117506.205	2.808
SWM05			13.500	1200	446279.041	117506.386	2.250
Unit 6 Flow Control	1.400	5.00	13.500	1500	446290.384	117538.952	2.047
Unit 6 Tank		5.00	13.500		446298.023	117561.340	2.000
SWM06			10.170	1800	446089.150	117511.059	2.704
Outfall 03			10.000	1200	446090.892	117494.193	2.604
Attenuation Pond 02	2.320	5.00	10.000		446075.693	117514.337	2.500
Unit 4 Flow Control	1.400	5.00	12.000	1500	445989.562	117576.390	2.024
Unit 4 Tank		5.00	12.000		445994.453	117587.456	2.000

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
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	0.400	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	120	180	240	360	480	600	720	960	1440
Return Period (years)	Climate Change (CC %)		Additional Area (A %)		Additional Flow (Q %)						
1	0		0		0						
30	25		0		0						
100	25		0		0						

Node Unit 10 Pumping Station Online Pump Control

Flap Valve	x	Design Depth (m)	2.000	Switch off depth (m)	0.000
Replaces Downstream Link	✓	Design Flow (l/s)	5.0		
Invert Level (m)	7.359	Switch on depth (m)	0.100		

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.000	0.500	5.000	0.900	5.000	1.300	5.000	1.700	5.000
0.200	5.000	0.600	5.000	1.000	5.000	1.400	5.000	1.800	5.000
0.300	5.000	0.700	5.000	1.100	5.000	1.500	5.000	1.900	5.000
0.400	5.000	0.800	5.000	1.200	5.000	1.600	5.000	2.000	5.000

Node Unit 5 Flow Control Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	10.474	Product Number	CTL-SHE-0131-1000-2000-1000
Design Depth (m)	2.000	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	10.0	Min Node Diameter (mm)	1500

Node Unit 6 Flow Control Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	11.453	Product Number	CTL-SHE-0113-7500-2000-7500
Design Depth (m)	2.000	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	7.5	Min Node Diameter (mm)	1500

Node SWM06 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	7.466	Product Number	CTL-SHE-0180-1750-1500-1750
Design Depth (m)	1.500	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	17.5	Min Node Diameter (mm)	1800

Node Unit 8 Flow Control Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	7.146	Product Number	CTL-SHE-0064-2500-2000-2500
Design Depth (m)	2.000	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.5	Min Node Diameter (mm)	1200

Node Unit 9 Flow Control Online Pump Control

Flap Valve	x	Design Depth (m)	2.000	Switch off depth (m)	0.000
Replaces Downstream Link	✓	Design Flow (l/s)	10.0		
Invert Level (m)	7.404	Switch on depth (m)	0.100		

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	10.000	0.500	10.000	0.900	10.000	1.300	10.000	1.700	10.000	2.100	10.000
0.200	10.000	0.600	10.000	1.000	10.000	1.400	10.000	1.800	10.000	2.200	10.000
0.300	10.000	0.700	10.000	1.100	10.000	1.500	10.000	1.900	10.000		
0.400	10.000	0.800	10.000	1.200	10.000	1.600	10.000	2.000	10.000		

Node Unit 4 Flow Control Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	9.976	Product Number	CTL-SHE-0092-5000-2000-5000
Design Depth (m)	2.000	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	5.0	Min Node Diameter (mm)	1200

Node SWM07 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	9.318	Product Number	CTL-SHE-0124-8000-1500-8000
Design Depth (m)	1.500	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	8.0	Min Node Diameter (mm)	1500

Node Unit 10 Tank Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	7.450
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	1650.0	1650.0	1.000	1650.0	1794.0	1.001	0.0	1794.0

Node Unit 5 Tank Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	10.500
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	1420.0	1420.0	2.000	1420.0	1687.2	2.001	0.0	1687.2

Node Attenuation Pond 02 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	7.500
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	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	442.0	442.0	2.500	1595.0	1626.2	2.501	0.0	1626.2

Node Unit 6 Tank Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	11.500
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	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	900.0	900.0	1.000	900.0	1006.3	1.001	0.0	1006.3

Node Unit 9 Tank Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	7.450
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	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	1370.0	1370.0	1.000	1370.0	1501.2	1.001	0.0	1501.2

Node Attenuation Pond 01 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	9.500
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	415.0	415.0	1.500	1070.0	1085.0	1.501	0.0	1085.0

Node Unit 8 Tank Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	8.000
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	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	285.0	285.0	1.000	285.0	344.8	1.001	0.0	344.8

Node Unit 8 Pond Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	7.250
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	450.0	450.0	1.500	935.0	954.2	1.501	0.0	954.2

Node Unit 4 Tank Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	10.000
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	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	1000.0	1000.0	1.000	1000.0	1112.1	1.001	0.0	1112.1

Results for 1 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
1440 minute winter	SWM07	1260	10.104	0.786	8.0	1.3887	0.0000	SURCHARGED
120 minute winter	Outfall 02	198	9.343	0.068	8.0	0.0000	0.0000	OK
15 minute winter	Unit 10 Pumping Station	10	7.846	0.487	295.5	1.2406	0.0000	SURCHARGED
360 minute winter	Unit 10 Tank	352	7.627	0.177	40.0	276.7661	0.0000	OK
1440 minute winter	Attenuation Pond 01	1260	10.111	0.611	17.8	335.3131	0.0000	SURCHARGED
30 minute winter	Outfall 01	133	6.932	0.032	1.8	0.0000	0.0000	OK
15 minute winter	Unit 9 Flow Control	10	7.855	0.451	309.6	0.7975	0.0000	SURCHARGED
960 minute winter	Unit 8 Flow Control	930	7.707	0.561	14.6	0.8032	0.0000	SURCHARGED
960 minute winter	Unit 8 Pond	930	7.707	0.457	12.6	239.6052	0.0000	SURCHARGED
180 minute winter	Unit 9 Tank	176	7.624	0.174	66.5	226.5857	0.0000	OK
15 minute summer	Unit 8 Tank	1	8.000	0.000	0.0	0.0000	0.0000	OK
15 minute winter	SWM02	12	9.933	0.076	9.0	0.0858	0.0000	OK
1440 minute winter	SWM03	1680	8.817	0.262	23.8	0.2958	0.0000	OK
15 minute winter	Unit 5 Flow Control	10	10.923	0.449	499.6	1.1422	0.0000	SURCHARGED
960 minute winter	Unit 5 Tank	720	10.897	0.397	28.8	535.4557	0.0000	OK
15 minute winter	SWM04	12	10.558	0.041	6.6	0.0464	0.0000	OK
15 minute winter	SWM05	11	11.316	0.066	6.6	0.0749	0.0000	OK
15 minute winter	Unit 6 Flow Control	10	11.824	0.371	197.0	0.6562	0.0000	SURCHARGED
480 minute winter	Unit 6 Tank	368	11.698	0.198	19.2	169.1298	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node		Outflow (l/s)	Velocity (m/s)	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	SWM07	6.003	Outfall 02		8.0	0.753	0.0780	616.8
15 minute winter	Unit 10 Pumping Station	Pump	SWM02		5.0			
360 minute winter	Unit 10 Tank	1.000	Unit 10 Pumping Station		-40.0	-0.554	5.0208	
1440 minute winter	Attenuation Pond 01	6.002	SWM07		8.0	0.268	1.2329	
15 minute winter	Unit 9 Flow Control	Pump	Attenuation Pond 01		10.0			
960 minute winter	Unit 8 Flow Control	7.002	Outfall 01		1.8	0.506	0.1453	111.3
960 minute winter	Unit 8 Pond	7.001	Unit 8 Flow Control		-12.6	-0.157	6.5675	
180 minute winter	Unit 9 Tank	6.000	Unit 9 Flow Control		-66.5	-1.172	1.8672	
15 minute summer	Unit 8 Tank	7.000	Unit 8 Pond		0.0	0.000	0.0001	
15 minute winter	SWM02	1.002	SWM03		9.0	1.010	1.0247	
1440 minute winter	SWM03	1.003	SWM06		24.9	0.884	1.1504	
15 minute winter	Unit 5 Flow Control	4.001	SWM03		9.5	0.982	0.0949	
960 minute winter	Unit 5 Tank	4.000	Unit 5 Flow Control		-28.8	-0.402	3.1860	
15 minute winter	SWM04	3.003	SWM03		6.6	1.202	0.3927	
15 minute winter	SWM05	3.002	SWM04		6.6	0.916	0.9106	
15 minute winter	Unit 6 Flow Control	3.001	SWM05		6.6	0.897	0.3219	
480 minute winter	Unit 6 Tank	3.000	Unit 6 Flow Control		-19.2	-0.417	2.2343	

Results for 1 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
1440 minute winter	SWM06	1680	8.811	1.345	32.7	3.4223	0.0000	SURCHARGED
60 minute winter	Outfall 03	108	7.496	0.100	17.5	0.0000	0.0000	OK
1440 minute winter	Attenuation Pond 02	1680	8.811	1.311	22.3	976.0665	0.0000	SURCHARGED
15 minute winter	Unit 4 Flow Control	10	10.299	0.323	197.0	0.5714	0.0000	SURCHARGED
960 minute winter	Unit 4 Tank	720	10.218	0.218	11.3	207.4724	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	SWM06	1.004	Outfall 03	17.5	0.817	0.3633	1307.0
1440 minute winter	Attenuation Pond 02	5.000	SWM06	-16.8	-0.309	2.1944	
15 minute winter	Unit 4 Flow Control	2.001	SWM02	4.0	0.834	0.0828	
960 minute winter	Unit 4 Tank	2.000	Unit 4 Flow Control	-11.3	-0.327	1.2053	

Results for 30 year +25% CC Critical Storm Duration. Lowest mass balance: 99.85%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	SWM07	1680	10.772	1.454	8.0	2.5694	0.0000	FLOOD RISK
30 minute summer	Outfall 02	20	9.343	0.068	8.0	0.0000	0.0000	OK
15 minute winter	Unit 10 Pumping Station	10	8.144	0.785	907.0	1.9981	0.0000	SURCHARGED
960 minute winter	Unit 10 Tank	945	8.100	0.650	52.1	1019.0680	0.0000	OK
1440 minute winter	Attenuation Pond 01	1680	10.780	1.280	29.9	888.6446	0.0000	FLOOD RISK
15 minute winter	Outfall 01	10	6.937	0.037	2.4	0.0000	0.0000	OK
15 minute winter	Unit 9 Flow Control	10	8.415	1.011	950.2	1.7860	0.0000	SURCHARGED
15 minute winter	Unit 8 Flow Control	10	9.043	1.897	604.7	2.7146	0.0000	SURCHARGED
1440 minute winter	Unit 8 Pond	1410	8.353	1.103	26.2	692.9796	0.0000	SURCHARGED
480 minute winter	Unit 9 Tank	472	8.142	0.692	93.2	901.1791	0.0000	SURCHARGED
1440 minute winter	Unit 8 Tank	1410	8.353	0.353	8.1	95.5597	0.0000	OK
60 minute winter	SWM02	189	9.934	0.077	9.1	0.0868	0.0000	OK
1440 minute winter	SWM03	1680	9.633	1.078	25.7	1.2195	0.0000	SURCHARGED
1440 minute winter	Unit 5 Flow Control	1410	11.857	1.383	70.7	3.5189	0.0000	SURCHARGED
1440 minute winter	Unit 5 Tank	1410	11.857	1.357	60.8	1830.1630	0.0000	SURCHARGED
120 minute summer	SWM04	136	10.559	0.042	6.9	0.0475	0.0000	OK
15 minute winter	SWM05	10	11.318	0.068	6.9	0.0766	0.0000	OK
600 minute winter	Unit 6 Flow Control	585	12.195	0.742	55.1	1.3105	0.0000	SURCHARGED
600 minute winter	Unit 6 Tank	585	12.195	0.695	47.9	593.9510	0.0000	SURCHARGED
Link Event (Upstream Depth)	US Node	Link	DS Node		Outflow (l/s)	Velocity (m/s)	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	SWM07	6.003	Outfall 02		8.0	0.753	0.0780	702.2
15 minute winter	Unit 10 Pumping Station	Pump	SWM02		5.0			
960 minute winter	Unit 10 Tank	1.000	Unit 10 Pumping Station		-52.1	-0.366	19.3119	
1440 minute winter	Attenuation Pond 01	6.002	SWM07		8.0	0.270	1.2329	
15 minute winter	Unit 9 Flow Control	Pump	Attenuation Pond 01		10.0			
15 minute winter	Unit 8 Flow Control	7.002	Outfall 01		2.4	0.554	0.1814	22.7
1440 minute winter	Unit 8 Pond	7.001	Unit 8 Flow Control		-26.2	-0.166	6.5675	
480 minute winter	Unit 9 Tank	6.000	Unit 9 Flow Control		-93.2	-0.728	6.5259	
1440 minute winter	Unit 8 Tank	7.000	Unit 8 Pond		-8.1	-0.157	13.2428	
60 minute winter	SWM02	1.002	SWM03		9.1	1.015	1.0395	
1440 minute winter	SWM03	1.003	SWM06		25.5	0.902	1.1949	
1440 minute winter	Unit 5 Flow Control	4.001	SWM03		9.8	0.990	0.0974	
1440 minute winter	Unit 5 Tank	4.000	Unit 5 Flow Control		-60.8	-0.590	5.6965	
120 minute summer	SWM04	3.003	SWM03		6.9	1.156	1.4269	
15 minute winter	SWM05	3.002	SWM04		6.9	0.936	0.9413	
600 minute winter	Unit 6 Flow Control	3.001	SWM05		6.9	0.717	0.3318	
600 minute winter	Unit 6 Tank	3.000	Unit 6 Flow Control		-47.9	-0.387	6.6631	

Results for 30 year +25% CC Critical Storm Duration. Lowest mass balance: 99.85%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	SWM06	1680	9.622	2.156	25.5	5.4877	0.0000	SURCHARGED
1440 minute winter	Outfall 03	1680	7.504	0.108	20.3	0.0000	0.0000	OK
1440 minute winter	Attenuation Pond 02	1680	9.622	2.122	56.0	1976.6540	0.0000	SURCHARGED
960 minute winter	Unit 4 Flow Control	930	10.733	0.757	38.4	1.3370	0.0000	SURCHARGED
960 minute winter	Unit 4 Tank	930	10.733	0.733	34.1	696.0236	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	SWM06	1.004	Outfall 03	20.3	0.849	0.4048	1655.9
1440 minute winter	Attenuation Pond 02	5.000	SWM06	-10.7	-0.379	2.1944	
960 minute winter	Unit 4 Flow Control	2.001	SWM02	4.1	0.594	0.0843	
960 minute winter	Unit 4 Tank	2.000	Unit 4 Flow Control	-34.1	-0.442	3.4080	

Results for 100 year +25% CC Critical Storm Duration. Lowest mass balance: 99.75%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	SWM07	1680	10.951	1.633	8.1	2.8860	0.0000	FLOOD RISK
1440 minute winter	Outfall 02	1680	9.344	0.069	8.1	0.0000	0.0000	OK
15 minute winter	Unit 10 Pumping Station	10	8.373	1.014	1177.4	2.5803	0.0000	SURCHARGED
1440 minute winter	Unit 10 Tank	1410	8.334	0.884	47.6	1386.4340	0.0000	SURCHARGED
1440 minute winter	Attenuation Pond 01	1680	10.960	1.460	35.3	1071.0940	0.0000	FLOOD RISK
15 minute winter	Outfall 01	11	6.940	0.040	2.8	0.0000	0.0000	OK
15 minute winter	Unit 9 Flow Control	10	8.861	1.457	1233.4	2.5736	0.0000	SURCHARGED
15 minute winter	Unit 8 Flow Control	10	9.859	2.713	784.9	3.8827	0.0000	SURCHARGED
1440 minute winter	Unit 8 Pond	1440	8.578	1.328	33.6	882.2962	0.0000	FLOOD RISK
600 minute winter	Unit 9 Tank	585	8.408	0.958	101.1	1247.4520	0.0000	SURCHARGED
1440 minute winter	Unit 8 Tank	1440	8.578	0.578	11.3	156.3712	0.0000	SURCHARGED
1440 minute winter	SWM02	1680	10.194	0.337	9.1	0.3807	0.0000	SURCHARGED
1440 minute winter	SWM03	1680	9.894	1.339	25.7	1.5149	0.0000	SURCHARGED
1440 minute winter	Unit 5 Flow Control	1410	12.304	1.830	89.7	4.6561	0.0000	SURCHARGED
1440 minute winter	Unit 5 Tank	1410	12.304	1.804	80.3	2432.9550	0.0000	SURCHARGED
60 minute summer	SWM04	228	10.559	0.042	6.9	0.0475	0.0000	OK
15 minute winter	SWM05	9	11.318	0.068	6.9	0.0765	0.0000	OK
720 minute winter	Unit 6 Flow Control	705	12.465	1.012	61.6	1.7882	0.0000	SURCHARGED
720 minute winter	Unit 6 Tank	705	12.465	0.965	54.4	825.0978	0.0000	SURCHARGED
Link Event (Upstream Depth)	US Node	Link	DS Node		Outflow (l/s)	Velocity (m/s)	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	SWM07	6.003	Outfall 02		8.1	0.757	0.0791	732.0
15 minute winter	Unit 10 Pumping Station	Pump	SWM02		5.0			
1440 minute winter	Unit 10 Tank	1.000	Unit 10 Pumping Station		-47.6	-0.271	20.1250	
1440 minute winter	Attenuation Pond 01	6.002	SWM07		8.1	0.258	1.2329	
15 minute winter	Unit 9 Flow Control	Pump	Attenuation Pond 01		10.0			
15 minute winter	Unit 8 Flow Control	7.002	Outfall 01		2.8	0.582	0.2037	23.7
1440 minute winter	Unit 8 Pond	7.001	Unit 8 Flow Control		-33.6	-0.212	6.5675	
600 minute winter	Unit 9 Tank	6.000	Unit 9 Flow Control		-101.1	-0.618	6.5259	
1440 minute winter	Unit 8 Tank	7.000	Unit 8 Pond		-11.3	-0.176	14.3800	
1440 minute winter	SWM02	1.002	SWM03		9.1	1.014	2.0306	
1440 minute winter	SWM03	1.003	SWM06		25.5	0.901	1.1949	
1440 minute winter	Unit 5 Flow Control	4.001	SWM03		9.8	0.990	0.0974	
1440 minute winter	Unit 5 Tank	4.000	Unit 5 Flow Control		-80.3	-0.653	5.6965	
60 minute summer	SWM04	3.003	SWM03		6.9	1.092	1.4286	
15 minute winter	SWM05	3.002	SWM04		6.9	0.941	0.9397	
720 minute winter	Unit 6 Flow Control	3.001	SWM05		6.9	0.716	0.3318	
720 minute winter	Unit 6 Tank	3.000	Unit 6 Flow Control		-54.4	-0.398	6.6631	

Results for 100 year +25% CC Critical Storm Duration. Lowest mass balance: 99.75%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	SWM06	1680	9.883	2.417	25.5	6.1511	0.0000	FLOOD RISK
1440 minute winter	Outfall 03	1680	7.507	0.111	21.4	0.0000	0.0000	OK
1440 minute winter	Attenuation Pond 02	1680	9.883	2.383	66.8	2362.6400	0.0000	FLOOD RISK
1440 minute winter	Unit 4 Flow Control	1410	11.436	1.460	35.4	2.5796	0.0000	SURCHARGED
1440 minute winter	Unit 4 Tank	1410	11.436	1.436	31.2	950.4750	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	SWM06	1.004	Outfall 03	21.4	0.862	0.4217	1751.7
1440 minute winter	Attenuation Pond 02	5.000	SWM06	-10.7	-0.403	2.1944	
1440 minute winter	Unit 4 Flow Control	2.001	SWM02	4.1	0.595	0.2107	
1440 minute winter	Unit 4 Tank	2.000	Unit 4 Flow Control	-31.2	-0.397	3.4080	

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	1	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	0.400	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		5.00	13.246	1500	445375.421	117823.073	2.053
2	0.084	5.00	12.830	1500	445391.479	117881.060	1.757
3			12.890	1500	445395.002	117925.348	1.906
4	0.234	5.00	13.118	1500	445408.902	117953.928	2.198
5			13.462	1500	445448.416	117985.815	2.644
6			13.663	1500	445487.528	117995.955	2.926
7	0.175	5.00	12.683	2100	445545.231	117995.708	2.661
9			13.030	2100	445842.262	117807.533	4.930
10			13.600	2100	445767.139	117857.098	5.700
11	0.237	5.00	12.191	2100	445698.429	117902.072	4.496
12			9.947	2100	445623.955	117952.873	2.700
Pump			10.000	2100	445628.458	117956.484	2.482
14	0.450	5.00	12.795	2100	445917.384	117757.969	4.495
15			11.600	1350	445993.768	117711.796	1.800
16			11.327	1350	446028.978	117701.561	1.600
17			12.488	1350	446097.026	117699.860	2.897
22			11.800	1350	446219.724	117753.634	2.503
23			11.454	1350	446247.177	117721.797	2.261
20	0.239	5.00	13.425	1350	446149.440	117721.654	3.948
21			12.924	1350	446185.262	117752.575	3.542
24			11.367	1500	446294.481	117706.341	2.426
25			10.800	1500	446294.744	117694.552	1.829
Unit 3 Pond	1.710	5.00	10.800		446294.871	117681.306	1.800
26			11.323	1500	446331.672	117725.585	2.467
27			11.630	1350	446295.451	117730.103	1.715
Unit 1 Tank	0.780	5.00	11.630		446274.635	117732.616	1.575
28			11.416	1800	446342.375	117756.252	3.012
29			11.330	1800	446403.913	117815.897	3.097
30			11.379	1800	446431.834	117843.324	3.224
Northern Pond			11.130		446493.000	117813.500	3.222
31			11.130	1500	446508.431	117795.541	3.275
Outfall			9.000	1200	446537.863	117795.785	1.318
Unit 2 Tank	1.100	5.00	11.445		446304.035	117917.919	1.650
32			11.445	1350	446248.589	117868.284	1.833
33			11.445	1350	446271.449	117829.320	1.945

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
Rainfall Events	Singular	Skip Steady State	x
FSR Region	England and Wales	Drain Down Time (mins)	240
M5-60 (mm)	20.000	Additional Storage (m ³ /ha)	0.0
Ratio-R	0.400	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 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	25	0	0
100	0	0	0
100	25	0	0

Node Pump Online Pump Control

Flap Valve	x	Design Depth (m)	5.000	Switch off depth (m)	0.050
Replaces Downstream Link	✓	Design Flow (l/s)	7.0		
Invert Level (m)	7.518	Switch on depth (m)	0.100		

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	7.000	5.000	7.000

Node 25 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	8.971	Product Number	CTL-SHE-0094-5000-1800-5000
Design Depth (m)	1.800	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	5.0	Min Node Diameter (mm)	1200

Node 33 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	9.500	Product Number	CTL-SHE-0093-5000-1900-5000
Design Depth (m)	1.900	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	5.0	Min Node Diameter (mm)	1200

Node 31 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	7.855	Product Number	CTL-SHE-0137-1330-3000-1330
Design Depth (m)	3.000	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	13.3	Min Node Diameter (mm)	1500

Node 27 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	9.915	Product Number	CTL-SHE-0095-5000-1700-5000
Design Depth (m)	1.700	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	5.0	Min Node Diameter (mm)	1200

Node Unit 3 Pond Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	9.000
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	258.0	258.0	1.800	1140.0	1154.2

Node Unit 1 Tank Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	10.055
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	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	829.0	829.0	0.800	829.0	910.7	0.801	0.0	910.7

Node Northern Pond Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	7.908
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	546.0	546.0	2.925	1100.0	1172.8

Node Unit 2 Tank Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	9.795
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	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	1015.0	1015.0	0.800	1015.0	1105.3	0.801	0.0	1105.3

Results for 1 year Critical Storm Duration. Lowest mass balance: 98.94%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	1	11.193	0.000	0.0	0.0000	0.0000	OK
15 minute winter	2	11	11.150	0.077	11.7	0.1352	0.0000	OK
15 minute winter	3	12	11.078	0.094	11.1	0.1658	0.0000	OK
15 minute winter	4	11	11.071	0.150	41.3	0.2659	0.0000	OK
15 minute winter	5	12	10.967	0.149	40.3	0.2637	0.0000	OK
15 minute winter	6	14	10.881	0.144	39.7	0.2539	0.0000	OK
15 minute winter	7	13	10.093	0.071	50.6	0.2459	0.0000	OK
15 minute winter	9	12	8.242	0.142	62.9	0.4917	0.0000	OK
180 minute winter	10	164	8.098	0.198	15.5	0.6860	0.0000	OK
180 minute winter	11	176	8.099	0.404	23.5	1.3985	0.0000	OK
180 minute winter	12	172	8.099	0.852	33.2	2.9507	0.0000	OK
180 minute winter	Pump	172	8.099	0.581	9.3	2.0124	0.0000	SURCHARGED
15 minute winter	14	10	8.445	0.145	63.2	0.5028	0.0000	OK
15 minute winter	15	13	9.873	0.073	7.0	0.1038	0.0000	OK
60 minute summer	16	35	9.797	0.070	7.4	0.1003	0.0000	OK
15 minute summer	17	24	9.658	0.067	7.2	0.0963	0.0000	OK
15 minute winter	22	12	9.430	0.133	29.9	0.1909	0.0000	OK
15 minute winter	23	13	9.312	0.119	29.4	0.1698	0.0000	OK
15 minute winter	20	11	9.620	0.143	33.5	0.2048	0.0000	OK
15 minute winter	21	11	9.518	0.136	30.4	0.1942	0.0000	OK
15 minute winter	24	14	9.081	0.140	32.2	0.2469	0.0000	OK
480 minute winter	25	456	9.595	0.624	4.7	1.1025	0.0000	SURCHARGED
480 minute winter	Unit 3 Pond	456	9.595	0.595	29.6	240.2195	0.0000	OK
15 minute winter	26	15	8.995	0.139	35.3	0.2462	0.0000	OK
240 minute winter	27	220	10.174	0.259	5.5	0.3711	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	2	0.0	0.000	0.6079	
15 minute winter	2	1.001	3	11.1	0.476	1.0804	
15 minute winter	3	1.002	4	12.1	0.356	1.3195	
15 minute winter	4	1.003	5	40.3	0.761	2.7482	
15 minute winter	5	1.004	6	39.7	0.784	2.1141	
15 minute winter	6	1.005	7	37.4	0.811	2.6657	
15 minute winter	7	1.006	12	50.7	1.763	14.2288	
15 minute winter	9	2.001	10	59.3	0.933	5.9601	
180 minute winter	10	2.002	11	15.5	0.469	21.1796	
180 minute winter	11	2.003	12	19.2	0.183	63.4047	
180 minute winter	12	1.007	Pump	9.3	0.242	7.8479	
180 minute winter	Pump	Pump	15	7.0			
15 minute winter	14	2.000	9	62.9	0.859	6.7010	
15 minute winter	15	1.009	16	7.5	0.792	0.5584	
60 minute summer	16	1.010	17	7.2	0.660	1.0042	
15 minute summer	17	1.011	20	7.1	0.473	1.2665	
15 minute winter	22	1.014	23	29.4	0.862	1.5128	
15 minute winter	23	1.015	24	28.3	0.877	1.6139	
15 minute winter	20	1.012	21	30.4	0.734	1.9760	
15 minute winter	21	1.013	22	29.9	0.766	1.3661	
15 minute winter	24	1.016	26	32.3	0.736	1.8996	
480 minute winter	25	3.001	24	4.4	0.384	0.3363	
480 minute winter	Unit 3 Pond	3.000	25	4.7	0.126	4.2225	
15 minute winter	26	1.017	28	34.7	0.835	1.3528	
240 minute winter	27	4.001	26	4.2	0.483	0.3176	

Results for 1 year Critical Storm Duration. Lowest mass balance: 98.94%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	Unit 1 Tank	272	10.172	0.117	16.8	92.2111	0.0000	OK
1440 minute winter	28	1440	8.573	0.169	21.4	0.4311	0.0000	OK
1440 minute winter	29	1440	8.573	0.340	21.4	0.8658	0.0000	OK
1440 minute winter	30	1440	8.573	0.418	21.4	1.0644	0.0000	OK
1440 minute winter	Northern Pond	1440	8.573	0.665	21.3	404.9927	0.0000	SURCHARGED
1440 minute winter	31	1440	8.573	0.718	11.0	1.2686	0.0000	SURCHARGED
960 minute winter	Outfall	945	7.762	0.080	11.0	0.0000	0.0000	OK
480 minute winter	Unit 2 Tank	376	9.933	0.138	19.1	132.7556	0.0000	OK
360 minute winter	32	280	9.933	0.321	11.2	0.4592	0.0000	OK
360 minute winter	33	280	9.933	0.433	6.1	0.6196	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Link Vol (m³)	Discharge Vol (m³)
360 minute winter	Unit 1 Tank	4.000	27	4.9	0.419	0.8685	
1440 minute winter	28	1.018	29	21.4	0.605	12.9369	
1440 minute winter	29	1.019	30	21.4	0.545	9.9372	
1440 minute winter	30	1.020	Northern Pond	21.3	0.679	12.6050	
1440 minute winter	Northern Pond	1.021	31	11.0	0.121	6.6696	
1440 minute winter	31	1.022	Outfall	11.0	0.850	0.3816	783.0
480 minute winter	Unit 2 Tank	5.000	32	9.4	0.440	6.0231	
360 minute winter	32	5.001	33	6.1	0.161	6.2674	
360 minute winter	33	5.002	28	4.3	0.621	0.7024	

Results for 30 year +25% CC Critical Storm Duration. Lowest mass balance: 99.34%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	13	11.221	0.028	2.0	0.0490	0.0000	OK
15 minute winter	2	11	11.215	0.142	35.9	0.2513	0.0000	OK
15 minute winter	3	11	11.203	0.219	29.7	0.3867	0.0000	OK
15 minute winter	4	11	11.196	0.276	124.3	0.4872	0.0000	OK
15 minute winter	5	12	11.091	0.273	123.5	0.4832	0.0000	OK
15 minute winter	6	13	10.999	0.262	121.0	0.4633	0.0000	OK
15 minute winter	7	12	10.148	0.126	174.6	0.4374	0.0000	OK
360 minute winter	9	352	8.809	0.709	26.5	2.4558	0.0000	OK
360 minute winter	10	352	8.810	0.910	21.8	3.1509	0.0000	OK
360 minute winter	11	352	8.809	1.114	27.8	3.8581	0.0000	OK
360 minute winter	12	352	8.807	1.560	33.8	5.4047	0.0000	SURCHARGED
360 minute winter	Pump	352	8.806	1.288	18.6	4.4602	0.0000	SURCHARGED
360 minute winter	14	360	8.809	0.509	26.6	1.7646	0.0000	OK
15 minute winter	15	10	9.875	0.075	7.0	0.1070	0.0000	OK
60 minute winter	16	23	9.797	0.070	7.1	0.1004	0.0000	OK
15 minute winter	17	12	9.762	0.171	17.0	0.2448	0.0000	OK
15 minute winter	22	13	9.541	0.244	86.8	0.3497	0.0000	OK
15 minute winter	23	14	9.410	0.217	86.6	0.3112	0.0000	OK
15 minute winter	20	12	9.741	0.264	102.9	0.3778	0.0000	OK
15 minute winter	21	13	9.633	0.251	87.6	0.3591	0.0000	OK
1440 minute winter	24	1680	9.202	0.261	15.5	0.4609	0.0000	OK
960 minute winter	25	945	10.413	1.442	4.7	2.5475	0.0000	SURCHARGED
960 minute winter	Unit 3 Pond	945	10.413	1.413	47.0	853.4702	0.0000	SURCHARGED
1440 minute winter	26	1680	9.201	0.345	19.9	0.6104	0.0000	OK
480 minute winter	27	464	10.459	0.544	5.0	0.7791	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	-2.0	-0.095	1.6319	
15 minute winter	2	1.001	3	29.7	0.507	3.1965	
15 minute winter	3	1.002	4	36.4	0.436	3.4844	
15 minute winter	4	1.003	5	123.5	0.998	6.3229	
15 minute winter	5	1.004	6	121.0	1.028	4.9064	
15 minute winter	6	1.005	7	118.7	1.120	6.1205	
15 minute winter	7	1.006	12	174.1	2.001	36.6357	
360 minute winter	9	2.001	10	21.8	0.552	72.4688	
360 minute winter	10	2.002	11	12.7	0.384	103.4950	
360 minute winter	11	2.003	12	-14.8	0.171	142.5701	
360 minute winter	12	1.007	Pump	18.2	0.148	16.9006	
360 minute winter	Pump	Pump	15	7.0			
360 minute winter	14	2.000	9	26.5	0.613	51.6843	
15 minute winter	15	1.009	16	7.6	0.821	0.5464	
60 minute winter	16	1.010	17	7.2	0.652	1.3373	
15 minute winter	17	1.011	20	17.1	0.471	4.3120	
15 minute winter	22	1.014	23	86.6	1.063	3.4306	
15 minute winter	23	1.015	24	86.0	1.183	3.6159	
15 minute winter	20	1.012	21	87.6	0.937	4.4309	
15 minute winter	21	1.013	22	86.8	0.976	3.0818	
1440 minute winter	24	1.016	26	15.5	0.548	5.3950	
960 minute winter	25	3.001	24	4.4	0.289	0.3656	
960 minute winter	Unit 3 Pond	3.000	25	4.7	0.111	4.2252	
1440 minute winter	26	1.017	28	19.9	0.712	5.4681	
480 minute winter	27	4.001	26	4.6	0.497	0.3364	

Results for 30 year +25% CC Critical Storm Duration. Lowest mass balance: 99.34%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	Unit 1 Tank	464	10.460	0.405	36.8	318.6042	0.0000	SURCHARGED
1440 minute winter	28	1680	9.201	0.797	24.1	2.0285	0.0000	OK
1440 minute winter	29	1680	9.201	0.968	24.1	2.4635	0.0000	SURCHARGED
1440 minute winter	30	1680	9.201	1.046	23.3	2.6619	0.0000	SURCHARGED
1440 minute winter	Northern Pond	1680	9.200	1.292	22.7	863.1536	0.0000	SURCHARGED
1440 minute winter	31	1680	9.199	1.344	11.0	2.3757	0.0000	SURCHARGED
360 minute summer	Outfall	600	7.762	0.080	11.0	0.0000	0.0000	OK
720 minute winter	Unit 2 Tank	705	10.300	0.505	37.7	487.1232	0.0000	SURCHARGED
720 minute winter	32	705	10.300	0.688	7.4	0.9846	0.0000	SURCHARGED
720 minute winter	33	705	10.300	0.800	5.1	1.1448	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Link Vol (m³)	Discharge Vol (m³)
480 minute winter	Unit 1 Tank	4.000	27	5.0	0.412	2.3126	
1440 minute winter	28	1.018	29	24.1	0.617	52.6039	
1440 minute winter	29	1.019	30	23.3	0.548	24.8053	
1440 minute winter	30	1.020	Northern Pond	22.7	0.664	13.3112	
1440 minute winter	Northern Pond	1.021	31	11.0	0.127	6.6696	
1440 minute winter	31	1.022	Outfall	11.0	0.850	0.3816	866.2
720 minute winter	Unit 2 Tank	5.000	32	7.4	0.419	11.7909	
720 minute winter	32	5.001	33	5.1	0.147	7.1577	
720 minute winter	33	5.002	28	4.3	0.621	0.7025	

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.35%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	13	11.227	0.034	2.5	0.0598	0.0000	OK
15 minute winter	2	12	11.220	0.147	37.3	0.2596	0.0000	OK
15 minute winter	3	11	11.208	0.224	30.3	0.3963	0.0000	OK
15 minute winter	4	11	11.201	0.281	128.5	0.4967	0.0000	OK
15 minute winter	5	12	11.097	0.279	127.5	0.4928	0.0000	OK
15 minute winter	6	13	11.004	0.267	125.0	0.4719	0.0000	OK
15 minute winter	7	12	10.151	0.129	181.3	0.4456	0.0000	OK
360 minute winter	9	360	8.860	0.760	27.5	2.6332	0.0000	OK
360 minute winter	10	352	8.860	0.960	25.6	3.3243	0.0000	OK
360 minute winter	11	352	8.859	1.164	27.1	4.0323	0.0000	OK
360 minute winter	12	360	8.858	1.611	37.4	5.5804	0.0000	SURCHARGED
360 minute winter	Pump	360	8.856	1.338	15.3	4.6352	0.0000	SURCHARGED
360 minute winter	14	352	8.862	0.562	27.6	1.9464	0.0000	OK
15 minute winter	15	10	9.875	0.075	7.0	0.1075	0.0000	OK
60 minute winter	16	23	9.797	0.070	7.4	0.1004	0.0000	OK
15 minute winter	17	12	9.769	0.178	17.8	0.2543	0.0000	OK
15 minute winter	22	13	9.548	0.251	90.5	0.3588	0.0000	OK
15 minute winter	23	14	9.416	0.223	90.3	0.3187	0.0000	OK
15 minute winter	20	12	9.749	0.272	106.8	0.3886	0.0000	OK
15 minute winter	21	13	9.640	0.258	91.5	0.3688	0.0000	OK
1440 minute winter	24	1680	9.207	0.266	15.5	0.4692	0.0000	OK
960 minute winter	25	945	10.436	1.465	4.7	2.5887	0.0000	SURCHARGED
960 minute winter	Unit 3 Pond	945	10.436	1.436	48.0	875.7485	0.0000	SURCHARGED
1440 minute winter	26	1680	9.206	0.350	20.0	0.6187	0.0000	OK
480 minute winter	27	464	10.476	0.561	4.8	0.8031	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	-2.5	-0.111	1.7492	
15 minute winter	2	1.001	3	30.3	0.509	3.3193	
15 minute winter	3	1.002	4	37.7	0.444	3.5846	
15 minute winter	4	1.003	5	127.5	1.007	6.4848	
15 minute winter	5	1.004	6	125.0	1.035	5.0334	
15 minute winter	6	1.005	7	122.8	1.132	6.2675	
15 minute winter	7	1.006	12	181.0	2.029	37.8981	
360 minute winter	9	2.001	10	22.7	0.544	77.3328	
360 minute winter	10	2.002	11	14.5	0.389	109.1155	
360 minute winter	11	2.003	12	-15.7	0.177	145.4673	
360 minute winter	12	1.007	Pump	15.3	0.293	16.9006	
360 minute winter	Pump	Pump	15	7.0			
360 minute winter	14	2.000	9	27.5	0.620	57.1213	
15 minute winter	15	1.009	16	7.5	0.836	0.5464	
60 minute winter	16	1.010	17	7.2	0.650	1.4029	
15 minute winter	17	1.011	20	17.6	0.471	4.4875	
15 minute winter	22	1.014	23	90.3	1.073	3.5403	
15 minute winter	23	1.015	24	89.5	1.197	3.7235	
15 minute winter	20	1.012	21	91.5	0.946	4.5789	
15 minute winter	21	1.013	22	90.5	0.985	3.1827	
1440 minute winter	24	1.016	26	15.5	0.549	5.4953	
960 minute winter	25	3.001	24	4.5	0.289	0.3688	
960 minute winter	Unit 3 Pond	3.000	25	4.7	0.101	4.2252	
1440 minute winter	26	1.017	28	20.0	0.713	5.5378	
480 minute winter	27	4.001	26	4.6	0.497	0.3364	

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.35%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	Unit 1 Tank	464	10.476	0.421	38.0	331.8235	0.0000	SURCHARGED
1440 minute winter	28	1680	9.206	0.802	24.2	2.0405	0.0000	OK
1440 minute winter	29	1680	9.206	0.973	24.2	2.4755	0.0000	SURCHARGED
1440 minute winter	30	1680	9.206	1.051	23.3	2.6738	0.0000	SURCHARGED
1440 minute winter	Northern Pond	1680	9.204	1.296	22.7	866.8725	0.0000	SURCHARGED
1440 minute winter	31	1680	9.204	1.349	11.0	2.3840	0.0000	SURCHARGED
360 minute summer	Outfall	584	7.762	0.080	11.0	0.0000	0.0000	OK
720 minute winter	Unit 2 Tank	705	10.319	0.524	38.7	504.8086	0.0000	SURCHARGED
720 minute winter	32	705	10.318	0.706	7.7	1.0108	0.0000	SURCHARGED
720 minute winter	33	705	10.318	0.818	5.2	1.1709	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Link Vol (m³)	Discharge Vol (m³)
480 minute winter	Unit 1 Tank	4.000	27	4.8	0.415	2.3126	
1440 minute winter	28	1.018	29	24.2	0.617	52.7170	
1440 minute winter	29	1.019	30	23.3	0.549	24.8053	
1440 minute winter	30	1.020	Northern Pond	22.7	0.666	13.3112	
1440 minute winter	Northern Pond	1.021	31	11.0	0.124	6.6696	
1440 minute winter	31	1.022	Outfall	11.0	0.850	0.3816	867.2
720 minute winter	Unit 2 Tank	5.000	32	7.7	0.425	11.7909	
720 minute winter	32	5.001	33	5.2	0.147	7.1577	
720 minute winter	33	5.002	28	4.3	0.621	0.7025	

Results for 100 year +25% CC Critical Storm Duration. Lowest mass balance: 99.49%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	13	11.266	0.073	6.8	0.1295	0.0000	OK
15 minute winter	2	12	11.253	0.180	46.7	0.3184	0.0000	OK
15 minute winter	3	11	11.243	0.259	37.6	0.4571	0.0000	OK
15 minute winter	4	11	11.237	0.317	156.5	0.5598	0.0000	OK
15 minute winter	5	12	11.132	0.314	154.5	0.5547	0.0000	OK
15 minute winter	6	12	11.036	0.299	151.7	0.5278	0.0000	OK
15 minute winter	7	12	10.164	0.142	224.5	0.4935	0.0000	OK
480 minute winter	9	472	9.719	1.619	25.4	5.6081	0.0000	SURCHARGED
480 minute winter	10	472	9.721	1.821	21.7	6.3065	0.0000	SURCHARGED
480 minute winter	11	472	9.722	2.027	29.7	7.0202	0.0000	SURCHARGED
480 minute winter	12	472	9.723	2.476	30.0	8.5774	0.0000	FLOOD RISK
480 minute winter	Pump	472	9.723	2.205	15.7	7.6373	0.0000	FLOOD RISK
480 minute winter	14	472	9.719	1.419	27.4	4.9141	0.0000	SURCHARGED
15 minute summer	15	10	9.875	0.075	7.0	0.1073	0.0000	OK
15 minute winter	16	13	9.829	0.102	11.5	0.1463	0.0000	OK
15 minute winter	17	12	9.801	0.210	23.4	0.2999	0.0000	OK
15 minute winter	22	13	9.581	0.284	111.8	0.4059	0.0000	OK
15 minute winter	23	13	9.446	0.253	110.2	0.3622	0.0000	OK
15 minute winter	20	12	9.788	0.311	133.7	0.4446	0.0000	OK
15 minute winter	21	12	9.679	0.297	112.1	0.4254	0.0000	OK
1440 minute winter	24	1680	9.296	0.355	17.0	0.6268	0.0000	OK
1440 minute winter	25	1410	10.693	1.722	4.8	3.0428	0.0000	FLOOD RISK
1440 minute winter	Unit 3 Pond	1410	10.693	1.693	43.2	1139.0660	0.0000	FLOOD RISK
1440 minute winter	26	1680	9.296	0.440	21.6	0.7766	0.0000	OK
480 minute winter	27	472	10.610	0.695	5.0	0.9941	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	-6.8	-0.186	2.7048	
15 minute winter	2	1.001	3	37.6	0.523	4.1582	
15 minute winter	3	1.002	4	47.9	0.488	4.2451	
15 minute winter	4	1.003	5	154.5	1.051	7.5390	
15 minute winter	5	1.004	6	151.7	1.084	5.8441	
15 minute winter	6	1.005	7	149.5	1.197	7.2082	
15 minute winter	7	1.006	12	225.1	1.907	43.5303	
480 minute winter	9	2.001	10	18.3	0.506	101.4365	
480 minute winter	10	2.002	11	-13.1	0.383	144.6219	
480 minute winter	11	2.003	12	-18.7	0.172	158.7093	
480 minute winter	12	1.007	Pump	15.1	0.161	16.9006	
480 minute winter	Pump	Pump	15	7.0			
480 minute winter	14	2.000	9	25.4	0.582	101.4027	
15 minute summer	15	1.009	16	7.5	0.840	0.6978	
15 minute winter	16	1.010	17	11.9	0.476	3.2966	
15 minute winter	17	1.011	20	27.3	0.471	5.3657	
15 minute winter	22	1.014	23	110.2	1.130	4.1419	
15 minute winter	23	1.015	24	109.1	1.266	4.3131	
15 minute winter	20	1.012	21	112.1	0.997	5.3916	
15 minute winter	21	1.013	22	111.8	1.034	3.7295	
1440 minute winter	24	1.016	26	17.0	0.565	7.2938	
1440 minute winter	25	3.001	24	4.8	0.272	2.4681	
1440 minute winter	Unit 3 Pond	3.000	25	4.8	0.106	4.2252	
1440 minute winter	26	1.017	28	21.5	0.730	6.6305	
480 minute winter	27	4.001	26	4.6	0.497	0.3363	

Results for 100 year +25% CC Critical Storm Duration. Lowest mass balance: 99.49%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	Unit 1 Tank	472	10.610	0.555	47.5	436.9606	0.0000	SURCHARGED
1440 minute winter	28	1680	9.295	0.891	25.7	2.2680	0.0000	OK
1440 minute winter	29	1680	9.295	1.062	25.1	2.7030	0.0000	SURCHARGED
1440 minute winter	30	1680	9.295	1.140	24.2	2.9014	0.0000	SURCHARGED
1440 minute winter	Northern Pond	1680	9.294	1.386	23.5	938.3951	0.0000	SURCHARGED
1440 minute winter	31	1680	9.294	1.439	11.0	2.5420	0.0000	SURCHARGED
360 minute summer	Outfall	536	7.762	0.080	11.0	0.0000	0.0000	OK
960 minute winter	Unit 2 Tank	945	10.493	0.698	38.6	672.7698	0.0000	SURCHARGED
960 minute winter	32	945	10.493	0.881	6.6	1.2602	0.0000	SURCHARGED
960 minute winter	33	945	10.493	0.993	4.9	1.4203	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Link Vol (m³)	Discharge Vol (m³)
480 minute winter	Unit 1 Tank	4.000	27	5.0	0.416	2.3126	
1440 minute winter	28	1.018	29	25.1	0.615	54.2776	
1440 minute winter	29	1.019	30	24.2	0.550	24.8053	
1440 minute winter	30	1.020	Northern Pond	23.5	0.677	13.3112	
1440 minute winter	Northern Pond	1.021	31	11.0	0.121	6.6696	
1440 minute winter	31	1.022	Outfall	11.0	0.850	0.3816	875.7
960 minute winter	Unit 2 Tank	5.000	32	6.6	0.427	11.7909	
960 minute winter	32	5.001	33	4.9	0.147	7.1577	
960 minute winter	33	5.002	28	4.3	0.621	2.8556	

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	1	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	0.400	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)	Invert Level (m)
1		5.00	13.246	1500	445375.421	117823.073	2.053	11.193
2	0.084	5.00	12.830	1500	445391.479	117881.060	1.757	11.073
3			12.890	1500	445395.002	117925.348	1.906	10.984
4	0.234	5.00	13.118	1500	445408.902	117953.928	2.198	10.920
5			13.462	1500	445448.416	117985.815	2.644	10.818
6			13.663	1500	445487.528	117995.955	2.926	10.737
7	0.175	5.00	12.683	2100	445545.231	117995.708	2.661	10.022
9			13.030	2100	445842.262	117807.533	4.930	8.100
10			13.600	2100	445767.139	117857.098	5.700	7.900
11	0.237	5.00	12.191	2100	445698.429	117902.072	4.496	7.695
12			9.947	2100	445623.955	117952.873	2.700	7.247
Pump			10.000	2100	445628.458	117956.484	2.482	7.518
14	0.450	5.00	12.795	2100	445917.384	117757.969	4.495	8.300
15			11.600	1350	445993.768	117711.796	1.800	9.800
16			11.327	1350	446028.978	117701.561	1.600	9.727
17			12.488	1350	446097.026	117699.860	2.897	9.591
22			11.800	1350	446219.724	117753.634	2.503	9.297
23			11.454	1350	446247.177	117721.797	2.261	9.193
20	0.239	5.00	13.425	1350	446149.440	117721.654	3.948	9.477
21			12.924	1350	446185.262	117752.575	3.542	9.382
24			11.367	1500	446294.481	117706.341	2.426	8.941
25			10.800	1500	446294.744	117694.552	1.829	8.971
Unit 3 Pond	1.710	5.00	10.800		446294.871	117681.306	1.800	9.000
26			11.323	1500	446331.672	117725.585	2.467	8.856
27			11.630	1350	446295.451	117730.103	1.715	9.915
Unit 1 Tank	0.780	5.00	11.630		446274.635	117732.616	1.575	10.055
28			11.416	1800	446342.375	117756.252	3.012	8.404
29			11.330	1800	446403.913	117815.897	3.015	8.315
30			11.379	1800	446431.834	117843.324	3.105	8.274
Northern Pond			11.130		446493.000	117813.500	2.927	8.203
31			11.130	1800	446508.431	117795.541	2.952	8.178
Outfall			9.000	1800	446537.863	117795.785	2.100	6.900
Unit 2 Tank	1.100	5.00	11.445		446304.035	117917.919	1.650	9.795
32			11.445	1350	446248.589	117868.284	1.833	9.612
33			11.445	1350	446271.449	117829.320	1.945	9.500

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	1	2	60.169	0.600	11.193	11.073	0.120	500.0	600	5.93	50.0
1.001	2	3	44.428	0.600	11.073	10.984	0.089	499.2	600	6.61	48.1
1.002	3	4	31.781	0.600	10.984	10.920	0.064	500.0	600	7.10	46.4
1.003	4	5	50.775	0.600	10.920	10.818	0.102	500.0	600	7.88	44.0
1.004	5	6	40.405	0.600	10.818	10.737	0.081	500.0	600	8.50	42.3
1.005	6	7	57.704	0.600	10.737	10.622	0.115	500.0	600	9.39	40.1
1.006	7	12	89.623	0.600	10.022	7.547	2.475	36.2	1200	9.63	39.6
2.000	14	9	89.999	0.600	8.300	8.100	0.200	450.0	1200	5.85	50.0
2.001	9	10	90.029	0.600	8.100	7.900	0.200	450.1	1200	6.71	47.7
2.002	10	11	82.149	0.600	7.900	7.695	0.205	400.0	1500	7.35	45.6
2.003	11	12	90.151	0.600	7.695	7.247	0.448	201.2	1500	7.85	44.1
1.007	12	Pump	15.000	0.600	7.547	7.518	0.029	524.7	1200	9.79	39.3
1.008	Pump	15	439.686	0.600	7.518	9.800	-2.282	-192.7	200	30.00	20.2
1.013	21	22	34.478	0.600	9.382	9.297	0.085	405.6	450	30.00	20.2
1.009	15	16	36.667	0.600	9.800	9.727	0.073	502.3	450	30.00	20.2
1.010	16	17	68.069	0.600	9.727	9.591	0.136	500.5	450	30.00	20.2
1.011	17	20	56.764	0.600	9.591	9.477	0.114	500.0	450	30.00	20.2
1.014	22	23	42.039	0.600	9.297	9.193	0.104	404.2	450	30.00	20.2
1.015	23	24	49.765	0.600	9.193	9.016	0.177	281.2	450	30.00	20.2
1.012	20	21	47.321	0.600	9.477	9.382	0.095	500.0	450	30.00	20.2
3.001	25	24	15.000	0.600	8.971	8.941	0.030	500.0	600	5.47	50.0
3.000	Unit 3 Pond	25	15.000	0.600	9.000	8.971	0.029	517.2	600	5.24	50.0
1.016	24	26	41.875	0.600	8.941	8.856	0.085	492.6	525	30.00	20.2
4.001	27	26	36.502	0.600	9.915	9.818	0.097	375.0	450	5.93	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.082	305.9	0.0	1.453	1.157	0.000	0.0	0	0.000
1.001	1.083	306.2	10.9	1.157	1.306	0.084	0.0	76	0.521
1.002	1.082	305.9	10.5	1.306	1.598	0.084	0.0	75	0.515
1.003	1.082	305.9	37.9	1.598	2.044	0.318	0.0	142	0.747
1.004	1.082	305.9	36.4	2.044	2.326	0.318	0.0	139	0.738
1.005	1.082	305.9	34.5	2.326	1.461	0.318	0.0	135	0.728
1.006	6.225	7040.8	52.9	1.461	1.200	0.493	0.0	72	1.929
2.000	1.757	1986.8	61.0	3.295	3.730	0.450	0.0	141	0.818
2.001	1.756	1986.5	58.2	3.730	4.500	0.450	0.0	138	0.808
2.002	2.138	3778.4	55.6	4.200	2.996	0.450	0.0	123	0.807
2.003	3.020	5336.4	82.1	2.996	1.200	0.687	0.0	126	1.155
1.007	1.626	1838.9	125.6	1.200	1.282	1.180	0.0	209	0.954
1.008	0.008	0.3	64.7	2.282	1.600	1.180	0.0	200	0.000
1.013	1.003	159.5	77.8	3.092	2.053	1.419	0.0	222	0.997
1.009	0.900	143.2	64.7	1.350	1.150	1.180	0.0	212	0.879
1.010	0.902	143.4	64.7	1.150	2.447	1.180	0.0	211	0.879
1.011	0.902	143.5	64.7	2.447	3.498	1.180	0.0	211	0.879
1.014	1.005	159.8	77.8	2.053	1.811	1.419	0.0	221	0.998
1.015	1.207	192.0	77.8	1.811	1.901	1.419	0.0	199	1.146
1.012	0.902	143.5	77.8	3.498	3.092	1.419	0.0	236	0.919
3.001	1.082	305.9	231.7	1.229	1.826	1.710	0.0	392	1.184
3.000	1.064	300.7	231.7	1.200	1.229	1.710	0.0	397	1.168
1.016	1.002	216.9	171.4	1.901	1.942	3.129	0.0	354	1.106
4.001	1.044	166.0	105.7	1.265	1.055	0.780	0.0	261	1.104

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)
4.000	Unit 1 Tank	27	20.967	0.600	10.055	9.990	0.065	322.6	375	5.35	50.0
1.017	26	28	32.481	0.600	8.856	8.779	0.077	421.8	525	30.00	20.2
1.018	28	29	85.700	0.600	8.404	8.315	0.089	962.9	900	30.00	20.2
1.019	29	30	39.139	0.600	8.315	8.274	0.041	954.6	900	30.00	20.2
1.020	30	Northern Pond	68.050	0.600	8.274	8.203	0.071	958.4	900	30.00	20.2
1.021	Northern Pond	31	23.678	0.600	8.203	8.178	0.025	947.1	900	30.00	20.2
1.022	31	Outfall	29.433	0.600	8.178	6.900	1.278	23.0	900	30.00	20.2
5.000	Unit 2 Tank	32	74.417	0.600	9.795	9.612	0.183	406.7	450	6.24	49.4
5.001	32	33	45.175	0.600	9.612	9.500	0.112	403.3	450	6.99	46.8
5.002	33	28	101.830	0.600	9.500	8.854	0.646	157.6	450	8.04	43.6

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)
4.000	1.003	110.8	105.7	1.200	1.265	0.780	0.0	295	1.135
1.017	1.084	234.7	214.2	1.942	2.112	3.909	0.0	397	1.221
1.018	1.001	636.9	274.5	2.112	2.115	5.009	0.0	413	0.966
1.019	1.006	639.7	274.5	2.115	2.205	5.009	0.0	411	0.969
1.020	1.003	638.4	274.5	2.205	2.027	5.009	0.0	412	0.967
1.021	1.010	642.3	274.5	2.027	2.052	5.009	0.0	410	0.971
1.022	6.543	4162.3	274.5	2.052	1.200	5.009	0.0	153	3.794
5.000	1.002	159.3	147.4	1.200	1.383	1.100	0.0	344	1.131
5.001	1.006	160.0	139.5	1.383	1.495	1.100	0.0	327	1.127
5.002	1.616	257.1	129.8	1.495	2.112	1.100	0.0	226	1.620

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	60.169	500.0	600	Circular	13.246	11.193	1.453	12.830	11.073	1.157
1.001	44.428	499.2	600	Circular	12.830	11.073	1.157	12.890	10.984	1.306
1.002	31.781	500.0	600	Circular	12.890	10.984	1.306	13.118	10.920	1.598
1.003	50.775	500.0	600	Circular	13.118	10.920	1.598	13.462	10.818	2.044
1.004	40.405	500.0	600	Circular	13.462	10.818	2.044	13.663	10.737	2.326
1.005	57.704	500.0	600	Circular	13.663	10.737	2.326	12.683	10.622	1.461
1.006	89.623	36.2	1200	Circular	12.683	10.022	1.461	9.947	7.547	1.200
2.000	89.999	450.0	1200	Circular	12.795	8.300	3.295	13.030	8.100	3.730
2.001	90.029	450.1	1200	Circular	13.030	8.100	3.730	13.600	7.900	4.500
2.002	82.149	400.0	1500	Circular	13.600	7.900	4.200	12.191	7.695	2.996

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1	1500	Manhole	Adoptable	2	1500	Manhole	Adoptable
1.001	2	1500	Manhole	Adoptable	3	1500	Manhole	Adoptable
1.002	3	1500	Manhole	Adoptable	4	1500	Manhole	Adoptable
1.003	4	1500	Manhole	Adoptable	5	1500	Manhole	Adoptable
1.004	5	1500	Manhole	Adoptable	6	1500	Manhole	Adoptable
1.005	6	1500	Manhole	Adoptable	7	2100	Manhole	Adoptable
1.006	7	2100	Manhole	Adoptable	12	2100	Manhole	Adoptable
2.000	14	2100	Manhole	Adoptable	9	2100	Manhole	Adoptable
2.001	9	2100	Manhole	Adoptable	10	2100	Manhole	Adoptable
2.002	10	2100	Manhole	Adoptable	11	2100	Manhole	Adoptable

Pipeline Schedule

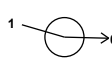
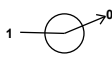
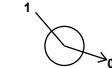
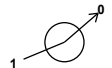
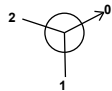
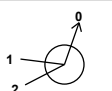
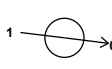
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
2.003	90.151	201.2	1500	Circular	12.191	7.695	2.996	9.947	7.247	1.200
1.007	15.000	524.7	1200	Circular	9.947	7.547	1.200	10.000	7.518	1.282
1.008	439.686	-192.7	200	Circular	10.000	7.518	2.282	11.600	9.800	1.600
1.013	34.478	405.6	450	Circular	12.924	9.382	3.092	11.800	9.297	2.053
1.009	36.667	502.3	450	Circular	11.600	9.800	1.350	11.327	9.727	1.150
1.010	68.069	500.5	450	Circular	11.327	9.727	1.150	12.488	9.591	2.447
1.011	56.764	500.0	450	Circular	12.488	9.591	2.447	13.425	9.477	3.498
1.014	42.039	404.2	450	Circular	11.800	9.297	2.053	11.454	9.193	1.811
1.015	49.765	281.2	450	Circular	11.454	9.193	1.811	11.367	9.016	1.901
1.012	47.321	500.0	450	Circular	13.425	9.477	3.498	12.924	9.382	3.092
3.001	15.000	500.0	600	Circular	10.800	8.971	1.229	11.367	8.941	1.826
3.000	15.000	517.2	600	Circular	10.800	9.000	1.200	10.800	8.971	1.229
1.016	41.875	492.6	525	Circular	11.367	8.941	1.901	11.323	8.856	1.942
4.001	36.502	375.0	450	Circular	11.630	9.915	1.265	11.323	9.818	1.055
4.000	20.967	322.6	375	Circular	11.630	10.055	1.200	11.630	9.990	1.265
1.017	32.481	421.8	525	Circular	11.323	8.856	1.942	11.416	8.779	2.112
1.018	85.700	962.9	900	Circular	11.416	8.404	2.112	11.330	8.315	2.115
1.019	39.139	954.6	900	Circular	11.330	8.315	2.115	11.379	8.274	2.205
1.020	68.050	958.4	900	Circular	11.379	8.274	2.205	11.130	8.203	2.027
1.021	23.678	947.1	900	Circular	11.130	8.203	2.027	11.130	8.178	2.052
1.022	29.433	23.0	900	Circular	11.130	8.178	2.052	9.000	6.900	1.200
5.000	74.417	406.7	450	Circular	11.445	9.795	1.200	11.445	9.612	1.383
5.001	45.175	403.3	450	Circular	11.445	9.612	1.383	11.445	9.500	1.495
5.002	101.830	157.6	450	Circular	11.445	9.500	1.495	11.416	8.854	2.112

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
2.003	11	2100	Manhole	Adoptable	12	2100	Manhole	Adoptable
1.007	12	2100	Manhole	Adoptable	Pump	2100	Manhole	Adoptable
1.008	Pump	2100	Manhole	Adoptable	15	1350	Manhole	Adoptable
1.013	21	1350	Manhole	Adoptable	22	1350	Manhole	Adoptable
1.009	15	1350	Manhole	Adoptable	16	1350	Manhole	Adoptable
1.010	16	1350	Manhole	Adoptable	17	1350	Manhole	Adoptable
1.011	17	1350	Manhole	Adoptable	20	1350	Manhole	Adoptable
1.014	22	1350	Manhole	Adoptable	23	1350	Manhole	Adoptable
1.015	23	1350	Manhole	Adoptable	24	1500	Manhole	Adoptable
1.012	20	1350	Manhole	Adoptable	21	1350	Manhole	Adoptable
3.001	25	1500	Manhole	Adoptable	24	1500	Manhole	Adoptable
3.000	Unit 3 Pond		Junction		25	1500	Manhole	Adoptable
1.016	24	1500	Manhole	Adoptable	26	1500	Manhole	Adoptable
4.001	27	1350	Manhole	Adoptable	26	1500	Manhole	Adoptable
4.000	Unit 1 Tank		Junction		27	1350	Manhole	Adoptable
1.017	26	1500	Manhole	Adoptable	28	1800	Manhole	Adoptable
1.018	28	1800	Manhole	Adoptable	29	1800	Manhole	Adoptable
1.019	29	1800	Manhole	Adoptable	30	1800	Manhole	Adoptable
1.020	30	1800	Manhole	Adoptable	Northern Pond		Junction	
1.021	Northern Pond		Junction		31	1800	Manhole	Adoptable
1.022	31	1800	Manhole	Adoptable	Outfall	1800	Manhole	Adoptable
5.000	Unit 2 Tank		Junction		32	1350	Manhole	Adoptable
5.001	32	1350	Manhole	Adoptable	33	1350	Manhole	Adoptable
5.002	33	1350	Manhole	Adoptable	28	1800	Manhole	Adoptable

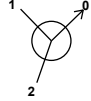
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
1	445375.421	117823.073	13.246	2.053	1500		0	1.000	11.193	600
2	445391.479	117881.060	12.830	1.757	1500		1	1.000	11.073	600
3	445395.002	117925.348	12.890	1.906	1500		0	1.001	11.073	600
4	445408.902	117953.928	13.118	2.198	1500		1	1.001	10.984	600
5	445448.416	117985.815	13.462	2.644	1500		0	1.002	10.984	600
6	445487.528	117995.955	13.663	2.926	1500		1	1.002	10.920	600
7	445545.231	117995.708	12.683	2.661	2100		0	1.003	10.920	600
9	445842.262	117807.533	13.030	4.930	2100		1	1.003	10.818	600
10	445767.139	117857.098	13.600	5.700	2100		0	1.004	10.818	600
11	445698.429	117902.072	12.191	4.496	2100		1	1.004	10.737	600
12	445623.955	117952.873	9.947	2.700	2100		0	1.005	10.737	600
Pump	445628.458	117956.484	10.000	2.482	2100		1	1.005	10.622	600
14	445917.384	117757.969	12.795	4.495	2100		0	1.006	10.622	600

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
15	445993.768	117711.796	11.600	1.800	1350		1 1.008	9.800	200
							0 1.009	9.800	450
16	446028.978	117701.561	11.327	1.600	1350		1 1.009	9.727	450
							0 1.010	9.727	450
17	446097.026	117699.860	12.488	2.897	1350		1 1.010	9.591	450
							0 1.011	9.591	450
22	446219.724	117753.634	11.800	2.503	1350		1 1.013	9.297	450
							0 1.014	9.297	450
23	446247.177	117721.797	11.454	2.261	1350		1 1.014	9.193	450
							0 1.015	9.193	450
20	446149.440	117721.654	13.425	3.948	1350		1 1.011	9.477	450
							0 1.012	9.477	450
21	446185.262	117752.575	12.924	3.542	1350		1 1.012	9.382	450
							0 1.013	9.382	450
24	446294.481	117706.341	11.367	2.426	1500		1 3.001	8.941	600
							2 1.015	9.016	450
							0 1.016	8.941	525
25	446294.744	117694.552	10.800	1.829	1500		1 3.000	8.971	600
							0 3.001	8.971	600
Unit 3 Pond	446294.871	117681.306	10.800	1.800					
							0 3.000	9.000	600
26	446331.672	117725.585	11.323	2.467	1500		1 4.001	9.818	450
							2 1.016	8.856	525
							0 1.017	8.856	525
27	446295.451	117730.103	11.630	1.715	1350		1 4.000	9.990	375
							0 4.001	9.915	450
Unit 1 Tank	446274.635	117732.616	11.630	1.575					
							0 4.000	10.055	375

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
28	446342.375	117756.252	11.416	3.012	1800		1 5.002 2 1.017	8.854 8.779	450 525
29	446403.913	117815.897	11.330	3.015	1800		1 1.018	8.404 8.315	900 900
30	446431.834	117843.324	11.379	3.105	1800		1 1.019	8.315 8.274	900 900
Northern Pond	446493.000	117813.500	11.130	2.927			1 1.020	8.274 8.203	900 900
31	446508.431	117795.541	11.130	2.952	1800		1 1.021	8.203 8.178	900 900
Outfall	446537.863	117795.785	9.000	2.100	1800		0 1.022	8.178 6.900	900 900
Unit 2 Tank	446304.035	117917.919	11.445	1.650			0 5.000	9.795 9.612	450 450
32	446248.589	117868.284	11.445	1.833	1350		1 5.001	9.612 9.500	450 450
33	446271.449	117829.320	11.445	1.945	1350		1 5.002	9.500 9.500	450 450

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
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	0.400	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 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	0	0	0
100	25	0	0

Node Pump Online Pump Control

Flap Valve	x	Design Depth (m)	5.000	Switch off depth (m)	0.050
Replaces Downstream Link	✓	Design Flow (l/s)	7.0		
Invert Level (m)	7.518	Switch on depth (m)	0.100		

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	7.000	5.000	7.000

Node 25 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	8.971	Product Number	CTL-SHE-0094-5000-1800-5000
Design Depth (m)	1.800	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	5.0	Min Node Diameter (mm)	1200

Node 33 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	9.500	Product Number	CTL-SHE-0093-5000-1900-5000
Design Depth (m)	1.900	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	5.0	Min Node Diameter (mm)	1200

Node 31 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	8.178	Product Number	CTL-SHE-0137-1330-3000-1330
Design Depth (m)	3.000	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	13.3	Min Node Diameter (mm)	1500

Node 27 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	9.915	Product Number	CTL-SHE-0095-5000-1700-5000
Design Depth (m)	1.700	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	5.0	Min Node Diameter (mm)	1200

Node Unit 3 Pond Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	9.000
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	258.0	258.0	1.800	1140.0	1154.2

Node Unit 1 Tank Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	10.055
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	315.0	315.0	1.500	315.0	409.4	1.501	0.0	409.4

Node Northern Pond Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	8.203
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	546.0	546.0	2.925	1100.0	1172.8

Node Unit 2 Tank Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	9.795
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	467.0	467.0	1.650	467.0	593.4	1.651	0.0	593.4

Results for 1 year Critical Storm Duration. Lowest mass balance: 98.91%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	1	11.193	0.000	0.0	0.0000	0.0000	OK
15 minute winter	2	11	11.150	0.077	11.7	0.1352	0.0000	OK
15 minute winter	3	12	11.078	0.094	11.1	0.1658	0.0000	OK
15 minute winter	4	11	11.070	0.150	41.3	0.2659	0.0000	OK
15 minute winter	5	12	10.967	0.149	40.3	0.2637	0.0000	OK
15 minute winter	6	14	10.881	0.144	39.7	0.2539	0.0000	OK
15 minute winter	7	13	10.093	0.071	50.6	0.2459	0.0000	OK
15 minute winter	9	12	8.242	0.142	62.9	0.4917	0.0000	OK
180 minute winter	10	164	8.098	0.198	15.5	0.6860	0.0000	OK
180 minute winter	11	176	8.099	0.404	23.5	1.3985	0.0000	OK
180 minute winter	12	172	8.099	0.852	33.2	2.9507	0.0000	OK
180 minute winter	Pump	172	8.099	0.581	9.3	2.0124	0.0000	SURCHARGED
15 minute winter	14	10	8.445	0.145	63.2	0.5028	0.0000	OK
15 minute winter	15	13	9.873	0.073	7.0	0.1038	0.0000	OK
60 minute summer	16	35	9.797	0.070	7.4	0.1003	0.0000	OK
15 minute summer	17	24	9.658	0.067	7.2	0.0963	0.0000	OK
15 minute winter	22	12	9.430	0.133	29.9	0.1909	0.0000	OK
15 minute winter	23	13	9.312	0.119	29.4	0.1698	0.0000	OK
15 minute winter	20	11	9.620	0.143	33.5	0.2048	0.0000	OK
15 minute winter	21	11	9.518	0.136	30.4	0.1942	0.0000	OK
15 minute winter	24	14	9.081	0.140	32.3	0.2468	0.0000	OK
480 minute winter	25	456	9.595	0.624	4.7	1.1023	0.0000	SURCHARGED
480 minute winter	Unit 3 Pond	456	9.595	0.595	29.6	240.1538	0.0000	OK
15 minute winter	26	15	8.998	0.142	36.5	0.2507	0.0000	OK
240 minute winter	27	188	10.315	0.400	5.9	0.5725	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	1	1.000	2	0.0	0.000	0.000	0.6079	
15 minute winter	2	1.001	3	11.1	0.476	0.036	1.0803	
15 minute winter	3	1.002	4	12.1	0.356	0.040	1.3194	
15 minute winter	4	1.003	5	40.3	0.761	0.132	2.7481	
15 minute winter	5	1.004	6	39.7	0.784	0.130	2.1140	
15 minute winter	6	1.005	7	37.4	0.811	0.122	2.6657	
15 minute winter	7	1.006	12	50.7	1.763	0.007	14.2257	
15 minute winter	9	2.001	10	59.3	0.933	0.030	5.9601	
180 minute winter	10	2.002	11	15.5	0.469	0.004	21.1796	
180 minute winter	11	2.003	12	19.2	0.183	0.004	63.4047	
180 minute winter	12	1.007	Pump	9.3	0.242	0.005	7.8479	
180 minute winter	Pump	Pump	15	7.0				
15 minute winter	14	2.000	9	62.9	0.859	0.032	6.7009	
15 minute winter	15	1.009	16	7.5	0.792	0.052	0.5584	
60 minute summer	16	1.010	17	7.2	0.660	0.050	1.0042	
15 minute summer	17	1.011	20	7.1	0.473	0.049	1.2665	
15 minute winter	22	1.014	23	29.4	0.862	0.184	1.5127	
15 minute winter	23	1.015	24	28.3	0.877	0.148	1.6138	
15 minute winter	20	1.012	21	30.4	0.734	0.212	1.9760	
15 minute winter	21	1.013	22	29.9	0.766	0.187	1.3660	
15 minute winter	24	1.016	26	32.3	0.713	0.149	1.9238	
480 minute winter	25	3.001	24	4.4	0.384	0.014	0.3350	
480 minute winter	Unit 3 Pond	3.000	25	4.7	0.126	0.016	4.2225	
15 minute winter	26	1.017	28	35.9	0.842	0.153	1.3904	
240 minute winter	27	4.001	26	4.5	0.496	0.027	0.3349	

Results for 1 year Critical Storm Duration. Lowest mass balance: 98.91%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	Unit 1 Tank	192	10.314	0.259	22.3	81.5049	0.0000	OK
1440 minute winter	28	1440	8.822	0.418	21.6	1.0649	0.0000	OK
1440 minute winter	29	1440	8.822	0.507	21.2	1.2915	0.0000	OK
1440 minute winter	30	1440	8.823	0.549	20.5	1.3960	0.0000	OK
1440 minute winter	Northern Pond	1440	8.823	0.620	19.9	374.6819	0.0000	OK
1440 minute winter	31	1440	8.823	0.645	11.1	1.6406	0.0000	OK
1440 minute winter	Outfall	1200	6.934	0.034	11.0	0.0000	0.0000	OK
240 minute winter	Unit 2 Tank	232	10.051	0.256	31.5	119.6207	0.0000	OK
240 minute winter	32	228	10.056	0.444	14.3	0.6353	0.0000	OK
240 minute winter	33	228	10.056	0.556	7.2	0.7959	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)
240 minute winter	Unit 1 Tank	4.000	27	5.9	0.416	0.053	1.9135	
1440 minute winter	28	1.018	29	21.2	0.443	0.033	28.1502	
1440 minute winter	29	1.019	30	20.5	0.426	0.032	15.1271	
1440 minute winter	30	1.020	Northern Pond	19.9	0.435	0.031	29.6075	
1440 minute winter	Northern Pond	1.021	31	11.1	0.111	0.017	11.2655	
1440 minute winter	31	1.022	Outfall	11.0	1.465	0.003	0.2213	804.8
240 minute winter	Unit 2 Tank	5.000	32	14.3	0.472	0.090	9.3392	
240 minute winter	32	5.001	33	7.2	0.186	0.045	7.1485	
240 minute winter	33	5.002	28	4.3	0.621	0.017	0.7025	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.23%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	1	11.193	0.000	0.0	0.0000	0.0000	OK
15 minute winter	2	11	11.192	0.119	28.8	0.2108	0.0000	OK
15 minute winter	3	11	11.173	0.189	26.8	0.3336	0.0000	OK
15 minute winter	4	11	11.166	0.246	102.0	0.4345	0.0000	OK
15 minute winter	5	12	11.062	0.244	101.1	0.4310	0.0000	OK
15 minute winter	6	13	10.972	0.235	99.5	0.4154	0.0000	OK
15 minute winter	7	12	10.135	0.113	138.5	0.3910	0.0000	OK
240 minute winter	9	232	8.574	0.474	29.5	1.6435	0.0000	OK
240 minute winter	10	236	8.576	0.676	29.1	2.3400	0.0000	OK
240 minute winter	11	236	8.573	0.878	34.1	3.0425	0.0000	OK
240 minute winter	12	240	8.575	1.328	41.7	4.6003	0.0000	OK
240 minute winter	Pump	240	8.575	1.057	10.1	3.6617	0.0000	SURCHARGED
240 minute winter	14	240	8.575	0.275	29.0	0.9534	0.0000	OK
15 minute summer	15	11	9.875	0.075	7.0	0.1069	0.0000	OK
60 minute winter	16	25	9.797	0.070	7.4	0.1004	0.0000	OK
15 minute winter	17	12	9.725	0.134	12.6	0.1919	0.0000	OK
15 minute winter	22	13	9.508	0.211	68.4	0.3021	0.0000	OK
15 minute winter	23	13	9.382	0.189	68.0	0.2705	0.0000	OK
15 minute winter	20	11	9.704	0.227	82.3	0.3242	0.0000	OK
15 minute winter	21	12	9.599	0.217	68.6	0.3101	0.0000	OK
1440 minute winter	24	1680	9.293	0.352	14.9	0.6222	0.0000	OK
960 minute winter	25	930	10.188	1.217	4.7	2.1500	0.0000	SURCHARGED
960 minute winter	Unit 3 Pond	930	10.188	1.188	37.6	652.0798	0.0000	SURCHARGED
1440 minute winter	26	1680	9.293	0.437	19.5	0.7720	0.0000	OK
360 minute winter	27	352	10.804	0.889	5.2	1.2724	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 summer	1	1.000	2	0.0	0.000	0.000	1.1463	
15 minute winter	2	1.001	3	26.8	0.512	0.088	2.5664	
15 minute winter	3	1.002	4	30.0	0.408	0.098	2.9322	
15 minute winter	4	1.003	5	101.1	0.951	0.330	5.4010	
15 minute winter	5	1.004	6	99.5	0.978	0.325	4.1944	
15 minute winter	6	1.005	7	96.6	1.054	0.316	5.2891	
15 minute winter	7	1.006	12	137.4	1.848	0.020	32.3896	
240 minute winter	9	2.001	10	27.9	0.624	0.014	48.0493	
240 minute winter	10	2.002	11	19.0	0.423	0.005	75.5966	
240 minute winter	11	2.003	12	-19.5	0.206	-0.004	122.5916	
240 minute winter	12	1.007	Pump	10.1	0.185	0.006	15.5968	
240 minute winter	Pump	Pump	15	7.0				
240 minute winter	14	2.000	9	29.5	0.659	0.015	27.3600	
15 minute summer	15	1.009	16	7.5	0.830	0.052	0.5467	
60 minute winter	16	1.010	17	7.2	0.650	0.050	1.1012	
15 minute winter	17	1.011	20	14.6	0.471	0.102	3.3821	
15 minute winter	22	1.014	23	68.0	1.015	0.426	2.8623	
15 minute winter	23	1.015	24	67.5	1.108	0.352	3.0347	
15 minute winter	20	1.012	21	68.6	0.891	0.478	3.6700	
15 minute winter	21	1.013	22	68.4	0.928	0.429	2.5534	
1440 minute winter	24	1.016	26	14.9	0.540	0.069	7.2449	
960 minute winter	25	3.001	24	4.4	0.289	0.014	0.6041	
960 minute winter	Unit 3 Pond	3.000	25	4.7	0.108	0.015	4.2252	
1440 minute winter	26	1.017	28	19.5	0.709	0.083	6.6077	
360 minute winter	27	4.001	26	4.6	0.497	0.027	0.3364	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.23%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	Unit 1 Tank	352	10.804	0.749	36.9	236.0076	0.0000	SURCHARGED
1440 minute winter	28	1680	9.293	0.889	23.7	2.2615	0.0000	OK
1440 minute winter	29	1680	9.293	0.978	23.1	2.4878	0.0000	SURCHARGED
1440 minute winter	30	1680	9.292	1.018	22.2	2.5920	0.0000	SURCHARGED
1440 minute winter	Northern Pond	1680	9.292	1.089	21.5	707.2043	0.0000	SURCHARGED
1440 minute winter	31	1680	9.292	1.114	11.2	2.8361	0.0000	SURCHARGED
480 minute winter	Outfall	704	6.934	0.034	11.0	0.0000	0.0000	OK
600 minute winter	Unit 2 Tank	585	10.561	0.766	34.6	357.6966	0.0000	SURCHARGED
600 minute winter	32	585	10.561	0.949	6.9	1.3578	0.0000	SURCHARGED
600 minute winter	33	585	10.561	1.061	4.9	1.5179	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)
360 minute winter	Unit 1 Tank	4.000	27	5.2	0.412	0.047	2.3126	
1440 minute winter	28	1.018	29	23.1	0.430	0.036	54.2519	
1440 minute winter	29	1.019	30	22.2	0.433	0.035	24.8053	
1440 minute winter	30	1.020	Northern Pond	21.5	0.607	0.034	43.1283	
1440 minute winter	Northern Pond	1.021	31	11.2	0.113	0.017	15.0065	
1440 minute winter	31	1.022	Outfall	11.0	1.465	0.003	0.2213	884.6
600 minute winter	Unit 2 Tank	5.000	32	6.9	0.424	0.043	11.7909	
600 minute winter	32	5.001	33	4.9	0.155	0.031	7.1577	
600 minute winter	33	5.002	28	4.3	0.621	0.017	0.7025	

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.34%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	13	11.227	0.034	2.5	0.0597	0.0000	OK
15 minute winter	2	11	11.220	0.147	37.3	0.2596	0.0000	OK
15 minute winter	3	11	11.208	0.224	30.3	0.3963	0.0000	OK
15 minute winter	4	11	11.201	0.281	128.5	0.4966	0.0000	OK
15 minute winter	5	12	11.097	0.279	127.5	0.4927	0.0000	OK
15 minute winter	6	13	11.004	0.267	124.9	0.4717	0.0000	OK
15 minute winter	7	12	10.151	0.129	181.3	0.4455	0.0000	OK
360 minute winter	9	360	8.860	0.760	27.5	2.6334	0.0000	OK
360 minute winter	10	352	8.859	0.959	25.7	3.3235	0.0000	OK
360 minute winter	11	352	8.859	1.164	27.1	4.0338	0.0000	OK
360 minute winter	12	360	8.858	1.611	37.4	5.5789	0.0000	SURCHARGED
360 minute winter	Pump	352	8.856	1.338	22.1	4.6351	0.0000	SURCHARGED
360 minute winter	14	352	8.862	0.562	27.6	1.9470	0.0000	OK
15 minute winter	15	10	9.875	0.075	7.0	0.1075	0.0000	OK
60 minute winter	16	23	9.797	0.070	7.4	0.1004	0.0000	OK
15 minute winter	17	12	9.769	0.178	17.8	0.2542	0.0000	OK
15 minute winter	22	13	9.548	0.251	90.4	0.3586	0.0000	OK
15 minute winter	23	14	9.416	0.223	90.3	0.3186	0.0000	OK
15 minute winter	20	12	9.748	0.271	106.8	0.3883	0.0000	OK
15 minute winter	21	13	9.640	0.258	91.4	0.3686	0.0000	OK
1440 minute winter	24	1680	9.385	0.444	15.5	0.7845	0.0000	OK
960 minute winter	25	945	10.436	1.465	4.7	2.5886	0.0000	SURCHARGED
960 minute winter	Unit 3 Pond	945	10.436	1.436	48.0	875.6968	0.0000	SURCHARGED
1440 minute winter	26	1680	9.385	0.529	20.0	0.9344	0.0000	SURCHARGED
360 minute winter	27	352	11.091	1.176	5.2	1.6832	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	-2.5	-0.111	-0.008	1.7480	
15 minute winter	2	1.001	3	30.3	0.509	0.099	3.3192	
15 minute winter	3	1.002	4	37.6	0.444	0.123	3.5845	
15 minute winter	4	1.003	5	127.5	1.007	0.417	6.4842	
15 minute winter	5	1.004	6	124.9	1.035	0.408	5.0321	
15 minute winter	6	1.005	7	122.7	1.131	0.401	6.2644	
15 minute winter	7	1.006	12	180.8	2.029	0.026	37.8895	
360 minute winter	9	2.001	10	22.7	0.544	0.011	77.3181	
360 minute winter	10	2.002	11	15.7	0.389	0.004	109.1246	
360 minute winter	11	2.003	12	-15.6	0.177	-0.003	145.4915	
360 minute winter	12	1.007	Pump	21.9	0.293	0.012	16.9006	
360 minute winter	Pump	Pump	15	7.0				
360 minute winter	14	2.000	9	27.5	0.620	0.014	57.1262	
15 minute winter	15	1.009	16	7.5	0.836	0.052	0.5464	
60 minute winter	16	1.010	17	7.2	0.650	0.050	1.4029	
15 minute winter	17	1.011	20	17.6	0.471	0.123	4.4846	
15 minute winter	22	1.014	23	90.3	1.073	0.565	3.5386	
15 minute winter	23	1.015	24	89.5	1.197	0.466	3.7216	
15 minute winter	20	1.012	21	91.4	0.946	0.637	4.5762	
15 minute winter	21	1.013	22	90.4	0.985	0.567	3.1810	
1440 minute winter	24	1.016	26	15.5	0.550	0.071	8.6002	
960 minute winter	25	3.001	24	4.5	0.289	0.015	1.1630	
960 minute winter	Unit 3 Pond	3.000	25	4.7	0.101	0.015	4.2252	
1440 minute winter	26	1.017	28	20.0	0.713	0.085	7.0157	
360 minute winter	27	4.001	26	4.6	0.497	0.027	0.3364	

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.34%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	Unit 1 Tank	352	11.091	1.036	47.9	326.4471	0.0000	SURCHARGED
1440 minute winter	28	1680	9.384	0.980	24.2	2.4952	0.0000	SURCHARGED
1440 minute winter	29	1680	9.384	1.069	23.6	2.7215	0.0000	SURCHARGED
1440 minute winter	30	1680	9.384	1.110	22.7	2.8257	0.0000	SURCHARGED
1440 minute winter	Northern Pond	1680	9.384	1.181	21.9	777.0839	0.0000	SURCHARGED
1440 minute winter	31	1680	9.384	1.206	11.2	3.0698	0.0000	SURCHARGED
480 minute summer	Outfall	656	6.934	0.034	11.0	0.0000	0.0000	OK
600 minute winter	Unit 2 Tank	585	10.845	1.050	44.6	490.5453	0.0000	SURCHARGED
600 minute winter	32	585	10.845	1.233	7.1	1.7648	0.0000	SURCHARGED
600 minute winter	33	585	10.845	1.345	5.0	1.9250	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)
360 minute winter	Unit 1 Tank	4.000	27	5.2	0.410	0.047	2.3126	
1440 minute winter	28	1.018	29	23.6	0.434	0.037	54.3144	
1440 minute winter	29	1.019	30	22.7	0.430	0.035	24.8053	
1440 minute winter	30	1.020	Northern Pond	21.9	0.562	0.034	43.1283	
1440 minute winter	Northern Pond	1.021	31	11.2	0.113	0.017	15.0065	
1440 minute winter	31	1.022	Outfall	11.0	1.465	0.003	0.2213	900.8
600 minute winter	Unit 2 Tank	5.000	32	7.1	0.441	0.044	11.7909	
600 minute winter	32	5.001	33	5.0	0.190	0.031	7.1577	
600 minute winter	33	5.002	28	4.3	0.621	0.017	1.6113	

Results for 100 year +25% CC Critical Storm Duration. Lowest mass balance: 99.50%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	13	11.266	0.073	6.8	0.1295	0.0000	OK
15 minute winter	2	12	11.253	0.180	46.7	0.3184	0.0000	OK
15 minute winter	3	11	11.243	0.259	37.6	0.4570	0.0000	OK
15 minute winter	4	11	11.237	0.317	156.5	0.5598	0.0000	OK
15 minute winter	5	12	11.132	0.314	154.5	0.5546	0.0000	OK
15 minute winter	6	12	11.036	0.299	151.7	0.5277	0.0000	OK
15 minute winter	7	12	10.164	0.142	224.4	0.4935	0.0000	OK
480 minute winter	9	472	9.726	1.626	25.4	5.6316	0.0000	SURCHARGED
480 minute winter	10	472	9.725	1.825	21.8	6.3210	0.0000	SURCHARGED
480 minute winter	11	472	9.722	2.027	30.0	7.0210	0.0000	SURCHARGED
480 minute winter	12	472	9.721	2.474	30.0	8.5710	0.0000	FLOOD RISK
480 minute winter	Pump	472	9.719	2.201	11.7	7.6255	0.0000	FLOOD RISK
480 minute winter	14	472	9.727	1.427	27.4	4.9424	0.0000	SURCHARGED
15 minute summer	15	10	9.875	0.075	7.0	0.1073	0.0000	OK
15 minute winter	16	13	9.829	0.102	11.4	0.1463	0.0000	OK
15 minute winter	17	12	9.801	0.210	23.4	0.2999	0.0000	OK
15 minute winter	22	13	9.581	0.284	111.9	0.4060	0.0000	OK
1440 minute winter	23	1680	9.555	0.362	13.0	0.5179	0.0000	OK
15 minute winter	20	12	9.788	0.311	133.7	0.4449	0.0000	OK
15 minute winter	21	12	9.679	0.297	112.2	0.4256	0.0000	OK
1440 minute winter	24	1680	9.555	0.614	17.0	1.0841	0.0000	SURCHARGED
1440 minute winter	25	1410	10.698	1.727	4.7	3.0511	0.0000	FLOOD RISK
1440 minute winter	Unit 3 Pond	1410	10.698	1.698	43.2	1144.1870	0.0000	FLOOD RISK
1440 minute winter	26	1680	9.555	0.699	21.2	1.2347	0.0000	SURCHARGED
480 minute winter	27	472	11.411	1.496	5.4	2.1401	0.0000	FLOOD RISK

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	-6.8	-0.186	-0.022	2.7039	
15 minute winter	2	1.001	3	37.6	0.523	0.123	4.1573	
15 minute winter	3	1.002	4	47.9	0.488	0.157	4.2446	
15 minute winter	4	1.003	5	154.5	1.051	0.505	7.5386	
15 minute winter	5	1.004	6	151.7	1.084	0.496	5.8430	
15 minute winter	6	1.005	7	149.4	1.197	0.489	7.2064	
15 minute winter	7	1.006	12	225.1	1.907	0.032	43.5323	
480 minute winter	9	2.001	10	18.3	0.506	0.009	101.4365	
480 minute winter	10	2.002	11	-13.2	0.383	-0.003	144.6219	
480 minute winter	11	2.003	12	-19.0	0.172	-0.004	158.7093	
480 minute winter	12	1.007	Pump	11.5	0.161	0.006	16.9006	
480 minute winter	Pump	Pump	15	7.0				
480 minute winter	14	2.000	9	25.4	0.582	0.013	101.4027	
15 minute summer	15	1.009	16	7.5	0.840	0.052	0.6973	
15 minute winter	16	1.010	17	11.9	0.476	0.083	3.2942	
15 minute winter	17	1.011	20	27.3	0.471	0.190	5.3680	
15 minute winter	22	1.014	23	110.2	1.130	0.690	4.1427	
1440 minute winter	23	1.015	24	13.0	0.706	0.068	7.3419	
15 minute winter	20	1.012	21	112.2	0.996	0.782	5.3944	
15 minute winter	21	1.013	22	111.9	1.034	0.701	3.7304	
1440 minute winter	24	1.016	26	17.0	0.571	0.078	9.0464	
1440 minute winter	25	3.001	24	4.6	0.272	0.015	4.2102	
1440 minute winter	Unit 3 Pond	3.000	25	4.7	0.106	0.016	4.2252	
1440 minute winter	26	1.017	28	21.2	0.726	0.090	7.0170	
480 minute winter	27	4.001	26	4.6	0.500	0.028	0.3407	

Results for 100 year +25% CC Critical Storm Duration. Lowest mass balance: 99.50%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute winter	Unit 1 Tank	472	11.411	1.356	47.5	427.0378	0.0000	FLOOD RISK
1440 minute winter	28	1680	9.554	1.150	24.8	2.9270	0.0000	SURCHARGED
1440 minute winter	29	1680	9.554	1.239	24.2	3.1533	0.0000	SURCHARGED
1440 minute winter	30	1680	9.554	1.280	23.2	3.2574	0.0000	SURCHARGED
1440 minute winter	Northern Pond	1680	9.554	1.351	22.4	910.3759	0.0000	SURCHARGED
1440 minute winter	31	1680	9.554	1.376	11.2	3.5015	0.0000	SURCHARGED
360 minute summer	Outfall	560	6.934	0.034	11.0	0.0000	0.0000	OK
720 minute winter	Unit 2 Tank	705	11.175	1.380	48.4	644.4509	0.0000	FLOOD RISK
720 minute winter	32	705	11.175	1.563	7.4	2.2364	0.0000	FLOOD RISK
720 minute winter	33	705	11.175	1.675	5.1	2.3965	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
480 minute winter	Unit 1 Tank	4.000	27	5.4	0.414	0.049	2.3126	
1440 minute winter	28	1.018	29	24.2	0.450	0.038	54.3144	
1440 minute winter	29	1.019	30	23.2	0.449	0.036	24.8053	
1440 minute winter	30	1.020	Northern Pond	22.4	0.751	0.035	43.1283	
1440 minute winter	Northern Pond	1.021	31	11.2	0.115	0.017	15.0065	
1440 minute winter	31	1.022	Outfall	11.0	1.465	0.003	0.2213	897.7
720 minute winter	Unit 2 Tank	5.000	32	7.4	0.447	0.046	11.7909	
720 minute winter	32	5.001	33	5.1	0.189	0.032	7.1577	
720 minute winter	33	5.002	28	4.7	0.635	0.018	5.1493	

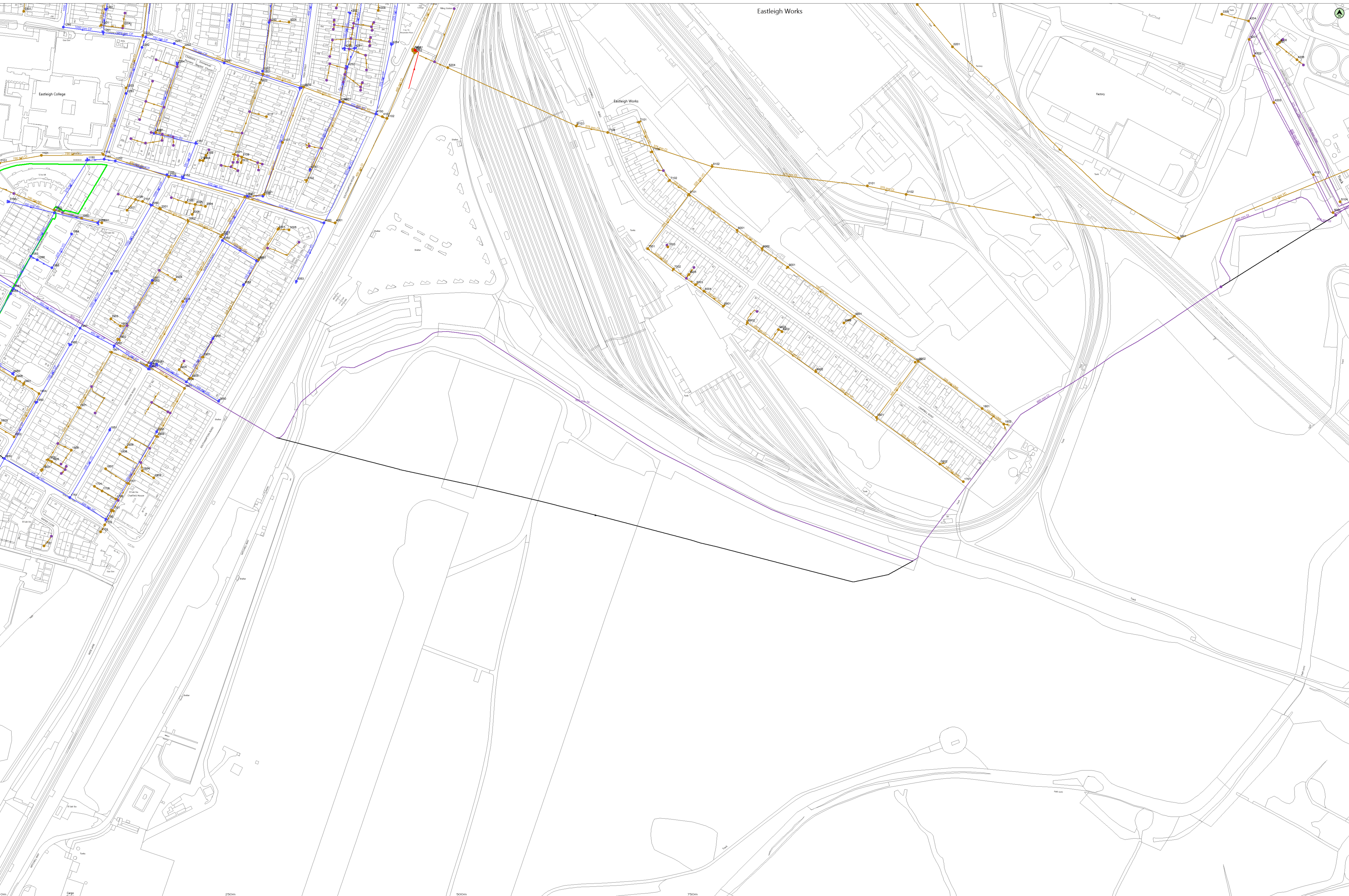
APPENDIX F – DRAINAGE INSPECTION & MAINTENANCE SCHEDULE

Maintenance Schedule	Required Action	Typical Frequency
Below Ground Drainage Pipes, Manholes, Outfall headwalls, ditches, trash screens etc		
Regular Maintenance	Lift covers and inspect manholes for evidence of debris and silt deposits and evidence of blockages (standing water). Carry out CCTV survey if required. Inspect ditches, trash screens, headwalls etc. and clear debris and silt deposits to avoid restriction to flow.	Quarterly or following significant rainfall events.
Remedial Actions	High pressure jetting and/or remove minor blockages and silt build up	As required – 20% loss of pipe cross-section
	Replace broken access covers, remove major blockages, repair structurally defective pipework	As required
Flow control chamber		
Regular Maintenance	Lift covers and inspect chamber for evidence of debris and silt deposits and evidence of blockages. Test bypass door operating correctly.	Quarterly or following significant rainfall events.
Remedial Actions	High pressure jetting and or remove minor blockages and silt build up	As required
	Replace broken access covers, remove major blockages, repair/replace defective flow control devices	As required
Linear channel drains and gullies		
Regular Maintenance	Lift access covers and inspect for silt/debris accumulation	Quarterly or following significant rainfall events.
Remedial Actions	Replace broken access covers, gratings	Annually
	High pressure jetting and/or remove minor blockages and silt build up	As required
Rainwater pipes		
Regular Maintenance	Inspect rainwater goods for evidence of leaking pipework	Monthly (or as required)
Occasional Maintenance	Remove rodding eyes and carry out high pressure jetting to remove any debris	Quarterly
Remedial Actions	Replace cracked / leaking pipework	As required
Ponds		
Regular Maintenance	Remove litter and debris	Monthly (or as required)
	Cut the grass – public areas	Monthly (during growing season)

Maintenance Schedule	Required Action	Typical Frequency
	Cut the meadow grass	Half yearly (spring, before nesting season, and autumn)
	Inspect marginal and bankside vegetation and remove nuisance plants (for first 3 years)	Monthly (at the start, then as required)
	Inspect inlets, outlets, banksides, structures, pipework etc for evidence of blockage and/or physical damage	Monthly
	Inspect water body for signs of poor water quality	Monthly (May – October)
	Inspect silt accumulation rates in any forebay and in main body of the pond and establish appropriate removal frequencies; undertake contamination testing once some build-up has occurred, to inform management and disposal options	Half yearly
	Check any mechanical devices, e.g. penstocks	Half yearly
	Hand cut submerged and emergent aquatic plants (at minimum of 0.1m above pond base; include max 25% of pond surface)	Annually
	Remove 25% of bank vegetation from water's edge to a minimum of 1m above water level	Annually
	Tidy all dead growth (scrub clearance) before start of growing season (Note: tree maintenance is usually part of overall landscape management contract)	Annually
	Remove sediment from any forebay.	Every 1 to 5 years, or as required
	Remove sediment and planting from one quadrant of the main body of ponds without sediment forebays.	Every 5 years, or as required
Occasional Maintenance	Remove sediment from the main body of big ponds when pool volume is reduced by 20%	With effective pre-treatment, this will only be required rarely, eg every 25–50 years
Remedial actions	Repair erosion or other damage	As required
	Replant, where necessary	As required
	Aerate pond when signs of eutrophication are detected	As required

Maintenance Schedule	Required Action	Typical Frequency
	Realign rip-rap or repair other damage	As required
	Repair / rehabilitate inlets, outlets and overflows	As required
Attenuation Tank (Maintenance activities recommended by the manufacturer should be added to this schedule where not included)		
Regular maintenance	Remove litter and debris and inspect for sediment, oil and grease accumulation.	Six monthly
	Change the filter media	As recommended by manufacturer
Remedial actions	Replace malfunctioning parts or structures	As required
Monitoring	Inspect for evidence of poor performance	Six monthly
	Inspect sediment accumulation rates and filter media, and establish appropriate replacement frequencies.	Monthly during first half of the year, then every six months
Pumps (Maintenance activities recommended by the manufacturer should be added to this schedule where not included)		
Regular Maintenance	Ensure sumps and Floats are clean	Quarterly
	Assess the condition of the pipework for wear or damage	Quarterly
	Lift covers and inspect manholes for evidence of debris and silt deposits and evidence of blockages - quarterly	Quarterly
	Examine the condition of pump including impeller, seals, valves and pipework (as recommended by the manufacturer)	Quarterly
Remedial Actions	Consult pump specialist	As Required
	Service and replace and elements of the system	Six Monthly

APPENDIX G – SEWER RECORDS



The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy. The actual positions should be determined on site. This plan is produced by Southern Water Services Ltd (c) Crown copyright and database rights 2025 Ordnance Survey 1000089122. This map is to be used for the purposes of viewing the location of Southern Water plan only. Any other uses of the map data or further copies is not permitted.

WARNING: BAC pipes are constructed of Bonded Asbestos Cement.

WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement.



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Anchorhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
5207	C	0.00	0.00	
0101	F	13.53	0.00	
0101	F	0.00	0.00	
0102	F	0.00	0.00	
0201	F	0.00	0.00	
0301	F	14.44	0.00	
0302	F	0.00	0.00	
0801	F	13.18	9.47	
0802	F	13.13	0.00	
0802	F	12.92	11.81	
0803	F	13.18	11.98	
0901	F	12.99	11.29	
0901	F	0.00	0.00	
0902	F	13.15	0.00	
0905	F	13.04	11.18	
1001	F	0.00	0.00	
1001	F	0.00	0.00	
1002	F	0.00	0.00	
1003	F	0.00	0.00	
1101	F	13.59	7.16	
1101	F	13.81	7.18	
1202	F	14.32	12.88	
1701	F	12.60	11.45	
1701	F	13.20	11.94	
1702	F	12.73	11.57	
1703	F	12.66	11.67	
1704	F	0.00	0.00	
1705	F	0.00	0.00	
1706	F	0.00	0.00	
1707	F	0.00	0.00	
1801	F	13.14	10.93	
1801	F	13.15	11.43	
1802	F	13.07	0.00	
1802	F	13.01	11.94	
1803	F	12.90	12.13	
1804	F	12.89	11.45	
1805	F	0.00	0.00	
1806	F	0.00	0.00	
1807	F	0.00	0.00	
1808	F	0.00	0.00	
1901	F	12.95	10.20	
1902	F	13.10	12.11	
1903	F	0.00	0.00	
1904	F	0.00	0.00	
2001	F	13.53	12.27	
2002	F	13.86	10.93	
2003	F	13.57	11.42	
2004	F	0.00	0.00	
2005	F	0.00	0.00	
2006	F	0.00	0.00	
2007	F	0.00	0.00	
2008	F	0.00	0.00	
2101	F	13.95	11.95	
2102	F	13.68	7.40	
2103	F	0.00	0.00	
2104	F	0.00	0.00	
2105	F	0.00	0.00	
2106	F	0.00	0.00	
2107	F	0.00	0.00	
2108	F	0.00	0.00	
2201	F	13.92	8.81	
2202	F	13.90	10.86	
2203	F	14.35	8.70	
2204	F	0.00	0.00	
2701	F	12.64	11.95	
2801	F	13.47	10.20	
2802	F	12.94	10.54	
2803	F	0.00	0.00	
2804	F	0.00	0.00	
2806	F	0.00	0.00	
2801	F	13.72	11.93	
2902	F	13.17	9.59	
2903	F	13.50	12.28	
2904	F	13.36	9.62	
2905	F	0.00	0.00	
3001	F	14.01	12.79	
3001	F	12.05	6.49	
3002	F	13.80	11.11	
3003	F	13.61	9.29	
3004	F	13.58	9.30	
3005	F	0.00	0.00	
3101	F	13.67	11.77	
3102	F	14.46	0.00	
3103	F	13.92	9.11	
3104	F	13.84	9.20	
3107	F	14.04	8.95	
3109	F	0.00	0.00	
3110	F	0.00	0.00	
3111	F	0.00	0.00	
3201	F	13.99	10.48	
3202	F	14.15	8.81	
3203	F	0.00	0.00	
3204	F	0.00	0.00	
3301	F	0.00	0.00	
4001	F	0.00	0.00	
4101	F	14.47	8.54	
4101	F	0.00	0.00	
4102	F	14.33	8.07	
4201	F	14.19	8.69	
4201	F	0.00	0.00	
4201	F	0.00	0.00	
4203	F	0.00	0.00	
4203	F	0.00	0.00	
4204	F	0.00	0.00	
4206	F	0.00	0.00	
4207	F	0.00	0.00	
4208	F	0.00	0.00	
4308	F	0.00	0.00	
5001	F	0.00	0.00	
5104	F	0.00	0.00	
5201	F	14.46	0.00	
5202	F	14.45	0.00	
5203	F	14.41	8.29	
5204	F	0.00	0.00	
6101	F	13.81	7.87	
7001	F	13.82	11.80	
7002	F	13.73	11.48	
7003	F	0.00	0.00	
7101	F	14.27	12.91	
7102	F	14.09	11.86	
7103	F	14.20	12.37	
7104	F	14.27	7.87	
8001	F	13.82	12.00	
8002	F	13.72	12.62	
8003	F	13.79	0.00	
8004	F	13.77	12.29	
8005	F	0.00	0.00	
8101	F	14.01	10.72	
8102	F	13.96	7.86	
8901	F	13.73	12.76	
8902	F	13.69	12.74	
9001	F	13.75	0.00	
9901	F	13.41	0.00	
9902	F	13.46	0.00	
9903	F	0.00	0.00	
9904	F	0.00	0.00	
9906	F	0.00	0.00	
0051	S	13.92	10.43	
0052	S	0.00	0.00	
0150	S	14.14	12.87	
0850	S	12.97	10.37	
1050	S	13.10	11.91	
1051	S	13.95	0.00	
1051	S	13.78	12.38	
1052	S	13.13	10.66	
1053	S	0.00	0.00	
1054	S	0.00	0.00	
1055	S	0.00	0.00	
1056	S	0.00	0.00	
1150	S	13.61	10.99	
1151	S	13.79	10.88	
1152	S	13.70	10.96	
1250	S	14.59	11.30	

Penhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
1251	S	14.33	11.24	
1351	S	14.24	13.13	
1750	S	12.79	0.00	
1751	S	12.60	0.00	
1850	S	12.86	10.43	
1851	S	12.82	0.00	
1950	S	13.01	11.03	
1951	S	12.95	10.55	
1952	S	12.85	10.54	
2050	S	13.50	10.81	
2051	S	13.62	12.73	
2150	S	14.11	12.89	
2151	S	13.60	11.68	
2152	S	13.69	11.34	
2153	S	13.69	10.88	
2250	S	13.92	11.14	
2251	S	13.82	11.52	
2252	S	14.00	11.14	
2253	S	14.30	11.08	
2254	S	13.88	13.34	
2850	S	12.96	0.00	
2950	S	13.13	10.68	
2951	S	13.09	12.13	
2952	S	13.21	11.17	
2953	S	13.16	11.19	
2954	S	13.40	12.52	
2955	S	13.89	0.00	
3050	S	13.57	11.44	
3051	S	13.81	12.70	
3052	S	13.95	13.01	
3053	S	13.97	0.00	
3150	S	13.91	11.57	
3151	S	13.85	11.50	
3250	S	14.00	0.00	
3251	S	13.94	11.66	
3252	S	13.90	13.49	
3253	S	14.20	11.78	
3850	S	13.79	12.71	
4050	S	14.09	0.00	
4150	S	14.39	0.00	
4151	S	14.29	13.37	
4250	S	14.18	13.53	
4251	S	14.21	13.43	
4252	S	14.08	13.31	
4253	S	14.20	12.24	
4254	S	14.41	13.07	
4353	S	14.18	13.54	

act

 Length (mm) |

