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20047.D102A

Fusion Student Accommodation, Deansgate South, Manchester.

Foul Water and Surface Water Hydraulic Drainage Calculations

Contract No:	**20047.D102**
Date:	**28.05.2024**
By:	**TU**

DOCUMENT INDEX SHEET

Contract: Fusion Student Accommodation **Project No: 20047**

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Issue	Prepared by	Checked by	NOTES	Date
-	TU	TS/DK	First Issue	27/10/2023
A	EB	DKK	Non-material Amendment	28/05/2024

1.0 DRAINAGE OVERVIEW

The proposed student accommodation development at Deansgate South is a 28-storey building that almost entirely covers the proposed site. There is an entrance at ground floor level to the west end of the building and there is an entrance to the lower ground floor level at the east end of the building.

Foul drainage is collected internally using sanitary pipework and drops to below-ground at internal waste points on the lower ground floor. The below-ground foul drainage will collect foul waste from the foul waste points and discharge to the existing adopted sewer via a boundary chamber and a lateral connection to the United Utilities combined sewer.

Rainwater is collected from roof level and external areas. The roof levels will have areas of green roof and terraces, with rainwater from these areas to be directed to an internal concrete attenuation tank at lower ground floor level. Discharge from the attenuation tank is to be restricted via a Hydrobrake or similar approved device. External areas are to be collected at surface level and directed to below-ground drainage at lower ground floor level, downstream of the Hydrobrake. The principle of having a partially restricted and unrestricted discharge has already been agreed at planning. The current model has amended the ratio of restricted to unrestricted discharge, while keeping the overall flow from the site the same. The attenuation tank drainage is separate from the external areas to prevent flooding of the lower ground floor.

The Hydrobrake will restrict discharge from the attenuation tank to 1.5 L/s and the external areas will discharge at a peak flow rate of 3.4 L/s for the 1 in 100-year critical storm event (plus 40% allowance for climate change). The surface water drainage has been modelled using Causeway Flow which confirms that the total flow from the site does not exceed 4.9 L/s for the 1 in 100-year storm (with a 40%

allowance for climate change) which is below the agreed maximum discharge rate of 5 L/s for the site.

The attenuation tank has a higher head of water than the external paved area to the east, therefore, in case of an exceedance or blockage event, non-return valves have been provided to prevent the head of water from the attenuation tank from surcharging the permeable paved area.

The attenuation tank will be cast in-situ as part of the overall structure, using waterproof concrete and be fully enclosed at lower ground floor level. A penstock valve has been provided on the outlet between the attenuation tank and the Hydrobrake chamber; the valve will remain open but can be closed to allow for maintenance access to the Hydrobrake chamber to avoid lengthy drain-down times. Access to the tank, penstock and hydrobrake will be via hatches located at ground floor level. The flow from the Hydrobrake will be set at 1.5 L/s and there will be an overflow provided within the Hydrobrake chamber, to direct flows downstream of the Hydrobrake if an exceedance event were to occur. The invert level of the overflow is to be set to be equal to the head of water for the 1 in 100-year +40% critical storm.

The lower ground floor entrance is accessed via the south-east, near an area of permeable paving, with water collected into surface water drainage arranged alongside the foul drainage within the pilecap. Channels provide backup drainage in the event of water running off the permeable paving to prevent it from entering the building. Small external areas within the site boundary have individual drainage channels connecting back into the building. Water will discharge from this system and the flow rate does not exceed 5.0 L/s for the whole site.

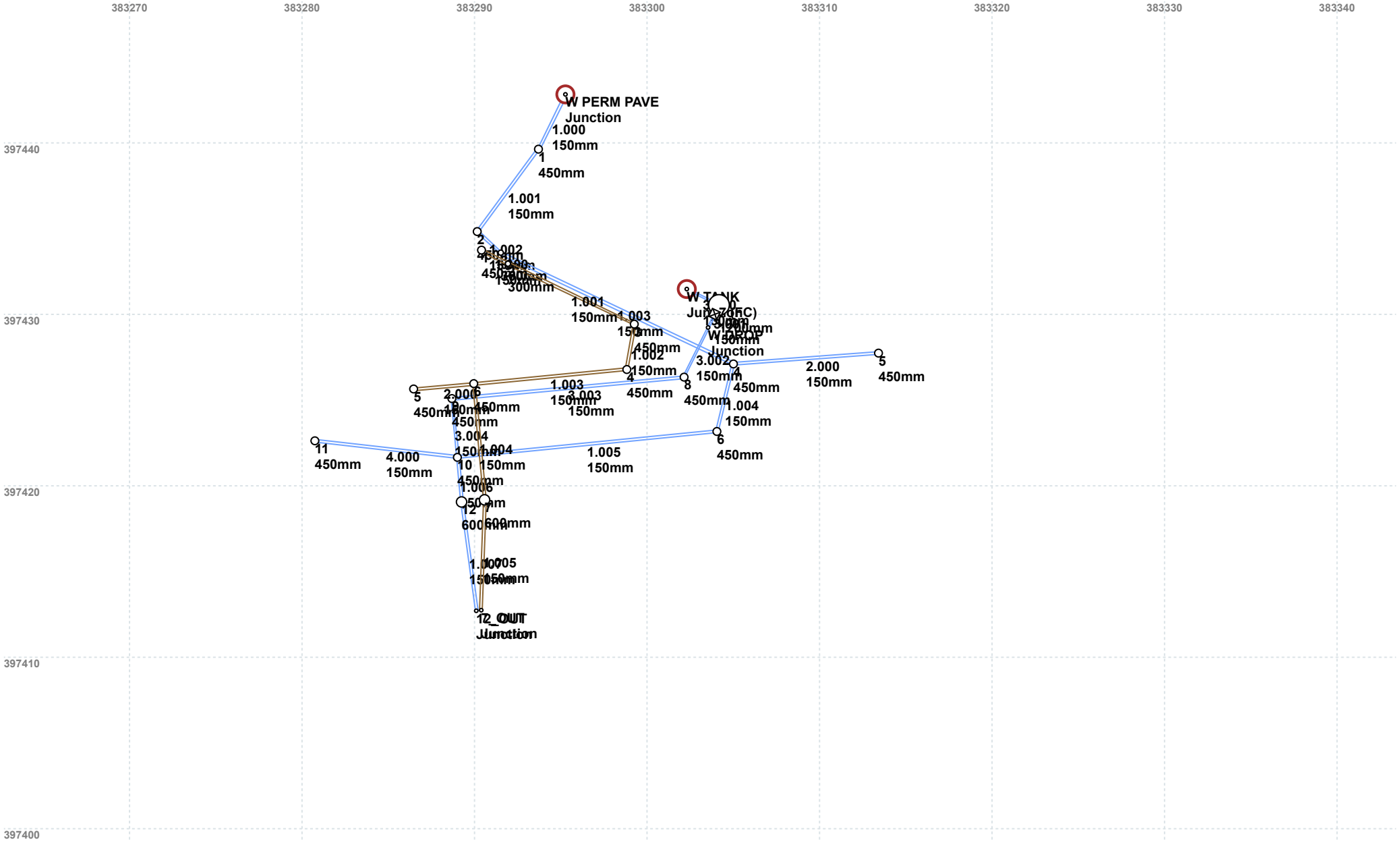
All underground drainage is conveyed by gravity and is part of a Causeway Flow hydraulic model with information provided in Appendices B and C. United Utilities has confirmed that they have measures in place to deal with sewer surcharging and that the development is not at risk. Therefore, there are no measures to prevent

backflow from the main sewers. Vermin excluders may be fitted at inspection chambers should problems arise. Design of above-ground drainage, including sanitary pipework and fittings, roof rainwater collection. The attenuation tank is vented via the overflow within the Hydrobrake chamber, and overflow point between the tank and the chamber (set at the 1 in 100-year +40% level) with another 100mm below the soffit of the slab above the tank, to prevent a vacuum forming in an exceedance event.

The façade on all three elevations is specified as Corten Steel and is to have runoff collected into the proposed surface water drainage system with channels located beneath the lowest façade panels directing water to the proposed surface water drainage system. This is because, it is believed that there is a potential issue with the runoff from the façade staining other surfaces. Therefore, should there be runoff from the facades, it will be collected by the channels and will not affect the public realm.

APPENDIX A

Foul and Surface Water Network Diagram



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APPENDIX B

Foul Water Hydraulic Drainage Model Information

Design Settings

Frequency of use (kDU)	0.50	Additional Flow (%)	0	Preferred Cover Depth (m)	0.750
Flow per dwelling per day (l/day)	0	Minimum Velocity (m/s)	1.00	Include Intermediate Ground	✓
Domestic Flow (l/s/ha)	0.0	Connection Type	Level Soffits		
Industrial Flow (l/s/ha)	0.0	Minimum Backdrop Height (m)	1.000		

Nodes

Name	Cover Level (m)	Manhole Type	Easting (m)	Northing (m)	Depth (m)
1	28.100	Private	383290.405	397433.748	0.900
2	28.100	Private	383291.938	397432.955	0.930
3	28.100	Private	383299.261	397429.431	1.050
4	28.100	Private	383298.828	397426.784	1.100
5	28.100	Private	383286.469	397425.648	1.100
6	28.100	Private	383289.955	397425.961	1.650
7	29.700	Private	383290.581	397419.184	3.450
7_OUT	29.680		383290.389	397412.746	3.580

Links (Input)

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)
1.000	1	2	1.726	1.500	27.200	27.170	0.030	57.5	150
1.001	2	3	8.127	1.500	27.170	27.050	0.120	67.7	150
1.002	3	4	2.682	1.500	27.050	27.000	0.050	53.6	150
1.003	4	6	8.911	1.500	27.000	26.450	0.550	16.2	150
2.000	5	6	3.500	1.500	27.000	26.500	0.500	7.0	150
1.004	6	7	6.806	1.500	26.450	26.250	0.200	34.0	150
1.005	7	7_OUT	6.441	1.500	26.250	26.100	0.150	42.9	150

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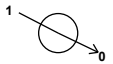
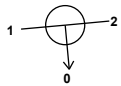
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
1	383290.405	397433.748	28.100	0.900	450		0	1.000	27.200	150
2	383291.938	397432.955	28.100	0.930	300		1	1.000	27.170	150
							0	1.001	27.170	150
3	383299.261	397429.431	28.100	1.050	450		1	1.001	27.050	150
							0	1.002	27.050	150
4	383298.828	397426.784	28.100	1.100	450		1	1.002	27.000	150
							0	1.003	27.000	150
5	383286.469	397425.648	28.100	1.100	450		0	2.000	27.000	150
6	383289.955	397425.961	28.100	1.650	450		1	2.000	26.500	150
							2	1.003	26.450	150
							0	1.004	26.450	150
7	383290.581	397419.184	29.700	3.450	600		1	1.004	26.250	150
							0	1.005	26.250	150
7_OUT	383290.389	397412.746	29.680	3.580			1	1.005	26.100	150

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APPENDIX C

Surface Water Hydraulic Drainage Model Information

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	Maximum Rainfall (mm/hr)	250.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	18.000	Minimum Backdrop Height (m)	1.000
Ratio-R	0.366	Preferred Cover Depth (m)	0.750
CV	1.000	Include Intermediate Ground	x
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
W PERM PAVE	0.002	5.00	30.850		383295.269	397442.830	0.610
1			30.850	450	383293.706	397439.636	3.600
2			28.100	450	383290.156	397434.830	1.150
3			28.100	300	383291.522	397433.599	1.200
5	0.003	6.00	28.100	450	383313.418	397427.740	1.190
4			28.100	450	383305.009	397427.108	1.300
6			28.025	450	383304.050	397423.170	1.255
W TANK	0.060	7.00	30.575		383302.305	397431.477	2.475
7 (FC)			30.850	1200	383304.170	397430.550	2.800
8			28.100	450	383302.148	397426.339	1.000
9			28.100	450	383288.688	397425.090	1.150
11	0.001	5.00	28.100	450	383280.745	397422.626	0.850
10			28.100	450	383289.006	397421.660	1.480
12			29.750	600	383289.248	397419.060	3.150
12_OUT			29.680		383290.101	397412.712	3.580
W DROP			29.250		383303.539	397429.236	2.125

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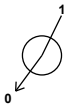
Links (Input)

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	W PERM PAVE	1	3.556	0.600	30.240	29.500	0.740	4.8	150	5.01	60.3
1.001	1	2	5.975	0.600	27.250	26.950	0.300	19.9	150	5.06	60.1
1.002	2	3	1.839	0.600	26.950	26.900	0.050	36.8	150	5.08	60.0
1.003	3	4	14.968	0.600	26.900	26.800	0.100	149.7	150	5.38	58.6
2.000	5	4	8.433	0.600	26.910	26.850	0.060	140.5	150	6.17	55.2
1.004	4	6	4.053	0.600	26.800	26.770	0.030	135.1	150	6.24	54.9
1.005	6	10	15.120	0.600	26.770	26.670	0.100	151.2	150	6.55	53.7
3.000	W TANK	7 (FC)	2.083	0.600	28.100	28.050	0.050	41.7	150	7.02	52.0
3.001	7 (FC)	W DROP	1.458	0.600	28.050	27.125	0.925	1.6	150	7.03	52.0
3.003	8	9	13.518	0.600	27.100	26.950	0.150	90.1	150	7.30	51.1
3.004	9	10	3.445	0.600	26.950	26.620	0.330	10.4	150	7.32	51.0
4.000	11	10	8.317	0.600	27.250	26.670	0.580	14.3	150	5.05	60.1
1.006	10	12	2.611	0.600	26.620	26.600	0.020	130.6	150	7.37	50.9
1.007	12	12_OUT	6.405	0.600	26.600	26.100	0.500	12.8	150	7.40	50.7
3.002	W DROP	8	3.214	0.600	27.125	27.100	0.025	128.5	150	7.09	51.8

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
W PERM PAVE	383295.269	397442.830	30.850	0.610			0	1.000	30.240	150
1	383293.706	397439.636	30.850	3.600	450		1	1.000	29.500	150
							0	1.001	27.250	150
2	383290.156	397434.830	28.100	1.150	450		1	1.001	26.950	150
							0	1.002	26.950	150

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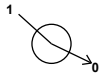
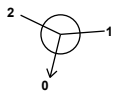
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
3	383291.522	397433.599	28.100	1.200	300	1	1.002	26.900	150
									
						0	1.003	26.900	150
5	383313.418	397427.740	28.100	1.190	450				
						0	2.000	26.910	150
4	383305.009	397427.108	28.100	1.300	450	1	2.000	26.850	150
						2	1.003	26.800	150
									
						0	1.004	26.800	150
6	383304.050	397423.170	28.025	1.255	450	1	1.004	26.770	150
						0	1.005	26.770	150
W TANK	383302.305	397431.477	30.575	2.475					
						0	3.000	28.100	150
7 (FC)	383304.170	397430.550	30.850	2.800	1200	1	3.000	28.050	150
						0	3.001	28.050	150
8	383302.148	397426.339	28.100	1.000	450	1	3.002	27.100	150
						0	3.003	27.100	150
9	383288.688	397425.090	28.100	1.150	450	1	3.003	26.950	150
						0	3.004	26.950	150

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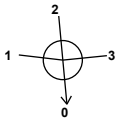
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
11	383280.745	397422.626	28.100	0.850	450				
						0	4.000	27.250	150
10	383289.006	397421.660	28.100	1.480	450		1	4.000	26.670	150
							2	3.004	26.620	150
							3	1.005	26.670	150
							0	1.006	26.620	150
12	383289.248	397419.060	29.750	3.150	600		1	1.006	26.600	150
							0	1.007	26.600	150
12_OUT	383290.101	397412.712	29.680	3.580			1	1.007	26.100	150
W DROP	383303.539	397429.236	29.250	2.125			1	3.001	27.125	150
							0	3.002	27.125	150

Node 7 (FC) Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Downstream Link	3.001	Sump Available	✓
Replaces Downstream Link	x	Product Number	CTL-SHE-0056-1500-1150-1500
Invert Level (m)	28.050	Min Outlet Diameter (m)	0.075
Design Depth (m)	1.150	Min Node Diameter (mm)	1200
Design Flow (l/s)	1.5		

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Node W TANK Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	28.100
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	232

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	24.0	0.0	1.100	24.0	0.0	1.101	0.0	0.0

Node W PERM PAVE Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	30.240
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Time to half empty (mins)	0

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	20.0	0.0	0.350	20.0	0.0	0.351	0.0	0.0

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

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	W PERM PAVE	11	30.248	0.008	0.4	0.0461	0.0000	OK
15 minute winter	1	11	27.260	0.010	0.4	0.0017	0.0000	OK
15 minute summer	2	11	26.962	0.012	0.4	0.0019	0.0000	OK
15 minute winter	3	12	26.916	0.016	0.4	0.0012	0.0000	OK
15 minute summer	5	12	26.929	0.019	0.5	0.0040	0.0000	OK
15 minute winter	4	13	26.825	0.025	0.9	0.0039	0.0000	OK
15 minute winter	6	13	26.795	0.025	0.8	0.0039	0.0000	OK
60 minute summer	W TANK	49	28.310	0.210	11.5	5.1329	0.0000	SURCHARGED
60 minute summer	7 (FC)	49	28.309	0.259	5.2	0.2934	0.0000	SURCHARGED
60 minute summer	8	44	27.129	0.029	1.3	0.0046	0.0000	OK
60 minute summer	9	45	26.966	0.016	1.3	0.0025	0.0000	OK
15 minute summer	11	12	27.257	0.007	0.2	0.0013	0.0000	OK
30 minute summer	10	20	26.660	0.040	2.2	0.0063	0.0000	OK
30 minute summer	12	20	26.622	0.022	2.2	0.0061	0.0000	OK
30 minute summer	12_OUT	20	26.121	0.021	2.2	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	W PERM PAVE	1.000	1	0.4	1.171	0.005	0.0012	
15 minute winter	1	1.001	2	0.4	0.633	0.009	0.0036	
15 minute summer	2	1.002	3	0.4	0.594	0.013	0.0015	
15 minute winter	3	1.003	4	0.4	0.249	0.025	0.0219	
15 minute summer	5	2.000	4	0.5	0.389	0.033	0.0108	
15 minute winter	4	1.004	6	0.8	0.455	0.055	0.0077	
15 minute winter	6	1.005	10	0.8	0.440	0.057	0.0280	
60 minute summer	W TANK	3.000	7 (FC)	5.2	0.534	0.190	0.0367	
60 minute summer	7 (FC)	3.001	W DROP	1.3	0.935	0.009	0.0021	
60 minute summer	8	3.003	9	1.3	0.776	0.068	0.0227	
60 minute summer	9	3.004	10	1.3	0.881	0.023	0.0078	
15 minute summer	11	4.000	10	0.2	0.657	0.004	0.0025	
30 minute summer	10	1.006	12	2.2	0.838	0.140	0.0069	
30 minute summer	12	1.007	12_OUT	2.2	1.401	0.043	0.0099	7.5

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

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute summer	W DROP	44	27.155	0.030	1.3	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
60 minute summer	W DROP	3.002	8	1.3	0.523	0.081	0.0078	

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

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	W PERM PAVE	11	30.250	0.010	0.8	0.0627	0.0000	OK
15 minute summer	1	11	27.264	0.014	0.7	0.0023	0.0000	OK
15 minute summer	2	11	26.967	0.017	0.7	0.0027	0.0000	OK
15 minute summer	3	12	26.923	0.023	0.7	0.0016	0.0000	OK
15 minute summer	5	12	26.937	0.027	1.0	0.0056	0.0000	OK
15 minute summer	4	12	26.836	0.036	1.7	0.0057	0.0000	OK
15 minute summer	6	13	26.805	0.035	1.7	0.0056	0.0000	OK
120 minute winter	W TANK	116	28.620	0.520	7.0	12.7368	0.0000	SURCHARGED
120 minute winter	7 (FC)	116	28.620	0.570	6.1	0.6447	0.0000	SURCHARGED
15 minute summer	8	68	27.129	0.029	1.3	0.0046	0.0000	OK
15 minute summer	9	68	26.966	0.016	1.3	0.0025	0.0000	OK
15 minute summer	11	11	27.260	0.010	0.4	0.0018	0.0000	OK
15 minute summer	10	12	26.669	0.049	3.3	0.0078	0.0000	OK
15 minute summer	12	12	26.626	0.026	3.2	0.0075	0.0000	OK
15 minute summer	12_OUT	12	26.126	0.026	3.2	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	W PERM PAVE	1.000	1	0.7	1.423	0.009	0.0018	
15 minute summer	1	1.001	2	0.7	0.763	0.018	0.0058	
15 minute summer	2	1.002	3	0.7	0.606	0.025	0.0025	
15 minute summer	3	1.003	4	0.7	0.295	0.049	0.0368	
15 minute summer	5	2.000	4	1.0	0.476	0.067	0.0177	
15 minute summer	4	1.004	6	1.7	0.544	0.112	0.0129	
15 minute summer	6	1.005	10	1.7	0.543	0.116	0.0467	
120 minute winter	W TANK	3.000	7 (FC)	6.1	0.548	0.222	0.0367	
120 minute winter	7 (FC)	3.001	W DROP	1.3	0.934	0.009	0.0021	
15 minute summer	8	3.003	9	1.3	0.776	0.068	0.0227	
15 minute summer	9	3.004	10	1.3	0.737	0.023	0.0102	
15 minute summer	11	4.000	10	0.4	0.808	0.008	0.0041	
15 minute summer	10	1.006	12	3.2	0.941	0.209	0.0092	
15 minute summer	12	1.007	12_OUT	3.2	1.574	0.065	0.0132	10.8

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

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	W DROP	67	27.155	0.030	1.3	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	W DROP	3.002	8	1.3	0.563	0.081	0.0078	

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

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	W PERM PAVE	10	30.254	0.014	1.4	0.0830	0.0000	OK
15 minute summer	1	11	27.269	0.019	1.3	0.0030	0.0000	OK
15 minute summer	2	11	26.974	0.024	1.3	0.0037	0.0000	OK
15 minute summer	3	11	26.931	0.031	1.4	0.0022	0.0000	OK
15 minute summer	5	11	26.946	0.036	1.8	0.0076	0.0000	OK
15 minute summer	4	12	26.850	0.050	3.1	0.0079	0.0000	OK
15 minute summer	6	12	26.818	0.048	3.1	0.0077	0.0000	OK
180 minute winter	W TANK	168	29.510	1.410	9.7	27.0959	0.0000	SURCHARGED
180 minute winter	7 (FC)	168	29.510	1.460	6.9	1.6510	0.0000	SURCHARGED
180 minute winter	8	168	27.133	0.033	1.7	0.0053	0.0000	OK
180 minute winter	9	168	26.968	0.018	1.7	0.0029	0.0000	OK
15 minute summer	11	11	27.263	0.013	0.7	0.0024	0.0000	OK
15 minute summer	10	12	26.680	0.060	4.9	0.0096	0.0000	OK
15 minute summer	12	12	26.633	0.033	4.9	0.0092	0.0000	OK
15 minute summer	12_OUT	12	26.132	0.032	4.9	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	W PERM PAVE	1.000	1	1.3	1.710	0.016	0.0028	
15 minute summer	1	1.001	2	1.3	0.892	0.034	0.0091	
15 minute summer	2	1.002	3	1.4	0.672	0.046	0.0040	
15 minute summer	3	1.003	4	1.3	0.352	0.092	0.0573	
15 minute summer	5	2.000	4	1.8	0.562	0.120	0.0270	
15 minute summer	4	1.004	6	3.1	0.626	0.202	0.0203	
15 minute summer	6	1.005	10	3.1	0.642	0.215	0.0728	
180 minute winter	W TANK	3.000	7 (FC)	6.9	0.522	0.249	0.0367	
180 minute winter	7 (FC)	3.001	W DROP	1.7	1.007	0.012	0.0026	
180 minute winter	8	3.003	9	1.7	0.841	0.089	0.0275	
180 minute winter	9	3.004	10	1.7	0.767	0.030	0.0082	
15 minute summer	11	4.000	10	0.7	0.960	0.015	0.0061	
15 minute summer	10	1.006	12	4.9	1.058	0.316	0.0123	
15 minute summer	12	1.007	12_OUT	4.9	1.775	0.098	0.0177	19.6

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

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	W DROP	168	27.159	0.034	1.7	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
180 minute winter	W DROP	3.002	8	1.7	0.565	0.107	0.0095	

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