



PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.007	1.800	0.000	0.0	0.000	0.00	2.0	0.600	o	300	Pipe/Conduit	🔧
S1.008	14.060	0.040	351.5	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	🔧
S1.009	7.690	0.030	256.3	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	🔧
S1.010	21.030	0.070	300.4	0.000	0.00	2.0	0.600	o	300	Pipe/Conduit	🔧
S3.000	5.780	0.040	144.5	0.030	5.00	0.0	0.600	o	150	Pipe/Conduit	🔧
S1.011	8.650	0.030	288.3	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	🔧
S1.012	2.170	0.010	217.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	🔧

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.007	63.63	6.42	29.870	0.328	2.0	0.0	0.0	0.15	10.5«	71.7
S1.008	62.34	6.70	29.870	0.328	2.0	0.0	0.0	0.83	58.9«	71.7
S1.009	61.76	6.83	29.830	0.328	2.0	0.0	0.0	0.98	69.1«	71.7
S1.010	60.12	7.22	29.800	0.328	4.0	0.0	0.0	0.90	63.7«	71.7
S3.000	70.46	5.12	29.920	0.030	0.0	0.0	0.0	0.83	14.7	7.1
S1.011	59.63	7.34	29.580	0.358	4.0	0.0	0.0	1.19	189.6	75.3
S1.012	59.53	7.37	29.540	0.358	4.0	0.0	0.0	1.38	218.9	75.3

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
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S1.012	S	30.500	29.530	29.530	0	0
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Volumetric Runoff Coeff	0.925	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Storage Structures	1
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Rainfall Model	FSR	Ratio R	0.406
Return Period (years)	2	Profile Type	Summer
Region	England and Wales	Cv (Summer)	0.925
M5-60 (mm)	20.100	Cv (Winter)	0.840

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Date 03/08/2022 16:39	Designed by garethjones	
File CANAL OUTFALL 2_SW_REV D.MDX	Checked by	
Innovyze	Network 2020.1.3	
<u>Synthetic Rainfall Details</u> Storm Duration (mins) 30		
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		Micro Drainage
Date 03/08/2022 16:39	Designed by garethjones	
File CANAL OUTFALL 2_SW_REV D.MDX	Checked by	
Innovyze	Network 2020.1.3	
Online Controls for Storm		
Hydro-Brake® Optimum Manhole: S11, DS/PN: S1.011, Volume (m³): 2.9		
Unit Reference MD-SHE-0177-1500-0800-1500 Design Head (m)0.800 Design Flow (l/s)15.0 Flush-Flo™Calculated ObjectiveMinimise upstream storage ApplicationSurface Sump AvailableYes Diameter (mm)177 Invert Level (m)29.590 Minimum Outlet Pipe Diameter (mm)225 Suggested Manhole Diameter (mm)1200		
Control Points Head (m)Flow (l/s) Design Point (Calculated)0.80015.0 Flush-Flo™0.28815.0 Kick-Flo®0.59013.0 Mean Flow over Head Range-12.5		
The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated		
Depth (m)Flow (l/s) Depth (m)Flow (l/s) Depth (m)Flow (l/s) Depth (m)Flow (l/s) 0.1006.3 0.20014.7 0.30015.0 0.40014.7 0.50014.2 0.60013.1 0.80015.0 1.00016.7 1.20018.2 1.40019.6 1.60020.9 1.80022.1 2.00023.2 2.20024.3 2.40025.3 2.60026.3 3.00028.2 3.50030.4 4.00032.4 4.50034.3 5.00036.1 5.50037.8 6.00039.4 6.50040.9 7.00042.4 7.50043.9 8.00045.3 8.50046.4 9.00047.8 9.50049.1		
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		Micro Drainage
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Innovyze	Network 2020.1.3	
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Date 03/08/2022 16:39							Designed by garethjones		
File CANAL OUTFALL 2_SW_REV D.MDX							Checked by		
Innovyze							Network 2020.1.3		
<u>100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm</u>									
<u>Simulation Criteria</u>									
Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000									
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000									
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800									
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000									
Foul Sewage per hectare (l/s) 0.000									
Number of Input Hydrographs 0 Number of Storage Structures 1									
Number of Online Controls 1 Number of Time/Area Diagrams 0									
Number of Offline Controls 0 Number of Real Time Controls 0									
<u>Synthetic Rainfall Details</u>									
Rainfall Model FSR Ratio R 0.406									
Region England and Wales Cv (Summer) 0.925									
M5-60 (mm) 20.100 Cv (Winter) 0.925									
Margin for Flood Risk Warning (mm) 300.0 DVD Status ON									
Analysis Timestep Fine Inertia Status ON									
DTS Status OFF									
Profile(s) Summer and Winter									
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600,									
720, 960, 1440, 2160, 2880, 4320, 5760,									
7200, 8640, 10080									
Return Period(s) (years) 100									
Climate Change (%) 40									
	US/MH								Water
PN	Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Level (m)
S1.000	S1	15 Summer	100	+40%	100/15 Summer				30.904
S1.001	S2	15 Summer	100	+40%	100/15 Summer				30.894
S1.002	S3	15 Summer	100	+40%	100/15 Summer				30.745
S1.003	S3	15 Summer	100	+40%	100/15 Summer				30.719
S1.004	S4	15 Summer	100	+40%	100/15 Summer				30.616
S1.005	S5	15 Summer	100	+40%	100/15 Summer				30.533
S1.006	S6	180 Summer	100	+40%	100/15 Summer				30.372
S2.000	S7	15 Summer	100	+40%	100/15 Summer				30.935
S2.001	S8	15 Summer	100	+40%	100/15 Summer				30.773
S2.002	S9	15 Summer	100	+40%	100/15 Summer				30.586
S2.003	S10	15 Summer	100	+40%	100/15 Summer				30.403
S1.007	S7	180 Summer	100	+40%	100/30 Summer				30.370
S1.008	S8	180 Summer	100	+40%	100/30 Summer				30.368
S1.009	S9	180 Summer	100	+40%	100/30 Summer				30.359
S1.010	S10	180 Summer	100	+40%	100/30 Summer				30.353
S3.000	S11	180 Summer	100	+40%	100/15 Summer				30.343
S1.011	S11	180 Summer	100	+40%	100/15 Summer				30.339
S1.012	S12	720 Winter	100	+40%					29.642
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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged		Flooded	Flow / Cap.	Overflow (l/s)	Half Drain	Pipe	Status	Level Exceeded
		Depth (m)	Volume (m³)	Time (mins)			Flow (l/s)			
S1.000	S1	0.364	0.000	0.46				5.9	FLOOD RISK	
S1.001	S2	0.404	0.000	1.37				17.4	FLOOD RISK	
S1.002	S3	0.250	0.000	0.62				19.4	SURCHARGED	
S1.003	S3	0.274	0.000	0.84				32.5	SURCHARGED	
S1.004	S4	0.311	0.000	1.17				40.4	SURCHARGED	
S1.005	S5	0.288	0.000	1.65				61.5	SURCHARGED	
S1.006	S6	0.217	0.000	0.61				20.9	SURCHARGED	
S2.000	S7	0.575	0.000	1.51				81.8	FLOOD RISK	
S2.001	S8	0.413	0.000	1.84				162.9	SURCHARGED	
S2.002	S9	0.331	0.000	1.91				163.6	SURCHARGED	
S2.003	S10	0.153	0.000	1.88				163.6	SURCHARGED	
S1.007	S7	0.200	0.000	0.29			183	15.8	SURCHARGED	
S1.008	S8	0.198	0.000	0.34				15.4	SURCHARGED	
S1.009	S9	0.229	0.000	0.29				14.8	SURCHARGED	
S1.010	S10	0.253	0.000	0.28				15.7	SURCHARGED	
S3.000	S11	0.273	0.000	0.57				7.0	FLOOD RISK	
S1.011	S11	0.309	0.000	0.12				15.0	FLOOD RISK	
S1.012	S12	-0.348	0.000	0.12				15.0	OK	