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7 St James Crescent Swansea Wales SA1 6DP	C1941 Foul Calculations	
Date 28/10/2022 File FOUL CALCS.MDX	Designed by AJ Checked by DH	
XP Solutions	Network 2019.1	

FOUL SEWERAGE DESIGN

Design Criteria for Foul - gravity

Pipe Sizes STANDARD Manhole Sizes STANDARD

Industrial Flow (l/s/ha)	0.00	Add Flow / Climate Change (%)	0
Industrial Peak Flow Factor	0.00	Minimum Backdrop Height (m)	0.650
Flow Per Person (l/per/day)	222.00	Maximum Backdrop Height (m)	1.500
Persons per House	3.00	Min Design Depth for Optimisation (m)	1.200
Domestic (l/s/ha)	0.00	Min Vel for Auto Design only (m/s)	0.75
Domestic Peak Flow Factor	6.00	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Network Design Table for Foul - gravity

PN	Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	19.357	0.270	71.7	0.000	5	0.0	1.500	o	100	Pipe/Conduit	
1.001	19.119	0.270	70.8	0.000	2	0.0	1.500	o	100	Pipe/Conduit	
1.002	18.374	0.140	131.2	0.000	5	0.0	1.500	o	150	Pipe/Conduit	
1.003	51.024	0.370	137.9	0.000	9	0.0	1.500	o	150	Pipe/Conduit	
2.000	8.031	0.110	73.0	0.000	3	0.0	1.500	o	100	Pipe/Conduit	
1.004	18.987	0.140	135.6	0.000	2	0.0	1.500	o	150	Pipe/Conduit	
1.005	6.109	0.050	122.2	0.000	2	0.0	1.500	o	150	Pipe/Conduit	
1.006	21.220	0.160	132.6	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
1.007	19.333	0.505	38.3	0.000	3	0.0	1.500	o	150	Pipe/Conduit	
1.008	20.195	0.150	134.6	0.000	4	0.0	1.500	o	150	Pipe/Conduit	
3.000	54.331	0.770	70.6	0.000	9	0.0	1.500	o	100	Pipe/Conduit	

Network Results Table

PN	US/IL (m)	E Area (ha)	E Base Flow (l/s)	E Hse	Add Flow (l/s)	P.Dep (mm)	P.Vel (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	133.800	0.000	0.0	5	0.0	14	0.36	0.79	6.2	0.2
1.001	133.530	0.000	0.0	7	0.0	16	0.41	0.79	6.2	0.3
1.002	133.210	0.000	0.0	12	0.0	21	0.37	0.76	13.5	0.6
1.003	133.070	0.000	0.0	21	0.0	28	0.43	0.75	13.2	1.0
2.000	132.830	0.000	0.0	3	0.0	11	0.31	0.78	6.1	0.1
1.004	132.700	0.000	0.0	26	0.0	31	0.46	0.75	13.3	1.2
1.005	132.560	0.000	0.0	28	0.0	31	0.49	0.79	14.0	1.3
1.006	132.510	0.000	0.0	28	0.0	32	0.48	0.76	13.4	1.3
1.007	131.855	0.000	0.0	31	0.0	25	0.76	1.42	25.1	1.4
1.008	131.350	0.000	0.0	35	0.0	35	0.51	0.75	13.3	1.6
3.000	131.600	0.000	0.0	9	0.0	18	0.44	0.79	6.2	0.4

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Network Design Table for Foul - gravity

PN	Length (m)	Fall (m)	Slope (1:X)	Area (ha)	Houses	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.009	14.546	0.110	132.2	0.000	2	0.0	1.500	o	150	Pipe/Conduit	
1.010	9.412	0.070	134.5	0.000	1	0.0	1.500	o	150	Pipe/Conduit	
1.011	28.790	0.220	130.9	0.000	3	0.0	1.500	o	150	Pipe/Conduit	
4.000	23.132	0.330	70.1	0.000	2	0.0	1.500	o	100	Pipe/Conduit	
4.001	35.018	0.500	70.0	0.000	3	0.0	1.500	o	100	Pipe/Conduit	
1.012	24.946	0.190	131.3	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
1.013	10.808	0.080	135.1	0.000	0	0.0	1.500	o	150	Pipe/Conduit	

Network Results Table

PN	US/IL (m)	Σ Area (ha)	Σ Base Flow (l/s)	Σ Hse	Add Flow (l/s)	P.Dep (mm)	P.Vel (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.009	130.900	0.000	0.0	46	0.0	40	0.55	0.76	13.4	2.1
1.010	130.650	0.000	0.0	47	0.0	41	0.55	0.75	13.3	2.2
1.011	130.450	0.000	0.0	50	0.0	42	0.57	0.77	13.5	2.3
4.000	131.000	0.000	0.0	2	0.0	9	0.27	0.80	6.2	0.1
4.001	130.670	0.000	0.0	5	0.0	13	0.37	0.80	6.2	0.2
1.012	130.120	0.000	0.0	55	0.0	44	0.58	0.76	13.5	2.5
1.013	129.930	0.000	0.0	55	0.0	45	0.58	0.75	13.3	2.5

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Network Classifications for Foul - gravity

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
1.000	F1	100	0.900	2.770	Unclassified	1200	0	0.900	Unclassified
1.001	F2	100	2.770	4.290	Unclassified	1200	0	2.770	Unclassified
1.002	F3	150	4.290	4.580	Unclassified	1200	0	4.290	Unclassified
1.003	F4	150	2.750	4.580	Unclassified	1200	0	4.580	Unclassified
2.000	F15	100	2.780	2.820	Unclassified	1200	0	2.820	Unclassified
1.004	F5	150	2.390	2.750	Unclassified	1200	0	2.750	Unclassified
1.005	F6	150	2.190	2.390	Unclassified	1200	0	2.390	Unclassified
1.006	F7	150	1.650	2.190	Unclassified	1200	0	2.190	Unclassified
1.007	F8	150	2.000	2.145	Unclassified	1200	0	2.145	Unclassified
1.008	F9	150	1.650	2.000	Unclassified	1200	0	2.000	Unclassified
3.000	F16	100	2.070	2.400	Unclassified	1200	0	2.400	Unclassified
1.009	F10	150	1.760	1.950	Unclassified	1200	0	1.950	Unclassified
1.010	F11	150	1.770	1.900	Unclassified	1200	0	1.900	Unclassified
1.011	F12	150	0.820	1.900	Unclassified	1200	0	1.900	Unclassified
4.000	F17	100	1.100	1.430	Unclassified	1200	0	1.100	Unclassified
4.001	F18	100	0.930	1.430	Unclassified	1200	0	1.430	Unclassified
1.012	F13	150	0.930	1.220	Unclassified	1200	0	0.930	Unclassified
1.013	14	150	1.220	1.320	Unclassified	1200	0	1.220	Unclassified

Free Flowing Outfall Details for Foul - gravity

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
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1.013	3907	131.320	129.850	129.610	0	0
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Simulation Criteria for Foul - gravity

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coefficient	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	0
Number of Online Controls	0	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	0	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	0.000	Storm Duration (mins)	30
Ratio R	0.000		