

Bryan G Hall		Page 0
Suite E8 Joseph's Well		
Hanover Walk		
Leeds LS3 1AB		
Date 01/01/0001	Designed by nathanbridge	
File FWSV2.MDX	Checked by	
Elstree Computing Ltd	Network 2020.1.3	

FOUL SEWERAGE DESIGN

Design Criteria for FWSV1.FWS

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)	0.200
Flow Per Person (l/per/day)	225.00	Maximum Backdrop Height (m)	0.000
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 FWSV1.FWS

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	12.187	0.590	20.7	0.000	7	0.0	1.500	o	150	Pipe/Conduit	
1.001	37.640	0.290	129.8	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
1.002	43.546	0.335	130.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
1.003	54.530	0.419	130.1	0.000	5	0.0	1.500	o	150	Pipe/Conduit	
1.004	11.753	0.090	130.0	0.000	6	0.0	1.500	o	150	Pipe/Conduit	
1.005	16.900	0.219	77.1	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
1.006	27.753	0.214	129.7	0.000	2	0.0	1.500	o	150	Pipe/Conduit	
2.000	49.847	0.500	99.7	0.000	8	0.0	1.500	o	150	Pipe/Conduit	
2.001	32.225	2.600	12.4	0.000	8	0.0	1.500	o	150	Pipe/Conduit	
2.002	34.467	0.900	38.3	0.000	5	0.0	1.500	o	150	Pipe/Conduit	
2.003	34.801	1.400	24.9	0.000	7	0.0	1.500	o	150	Pipe/Conduit	
2.004	13.658	1.366	10.0	0.000	4	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)
1.000	84.190	0.000	0.0	7	0.0	11	0.59	1.93	34.2	0.3
1.001	83.600	0.000	0.0	7	0.0	16	0.31	0.77	13.6	0.3
1.002	83.310	0.000	0.0	7	0.0	16	0.31	0.77	13.6	0.3
1.003	82.975	0.000	0.0	12	0.0	21	0.37	0.77	13.6	0.6
1.004	82.556	0.000	0.0	18	0.0	26	0.42	0.77	13.6	0.8
1.005	82.466	0.000	0.0	18	0.0	23	0.51	1.00	17.6	0.8
1.006	82.247	0.000	0.0	20	0.0	27	0.44	0.77	13.6	0.9
2.000	89.600	0.000	0.0	8	0.0	16	0.36	0.88	15.5	0.4
2.001	89.100	0.000	0.0	16	0.0	14	0.91	2.50	44.1	0.8
2.002	86.500	0.000	0.0	21	0.0	21	0.68	1.42	25.1	1.0
2.003	85.600	0.000	0.0	28	0.0	21	0.86	1.76	31.1	1.3
2.004	84.200	0.000	0.0	32	0.0	18	1.23	2.78	49.1	1.5

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Network Design Table for FWSV1.FWS

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
1.007	43.316	0.333	130.0	0.000	2	0.0	1.500	o	150	Pipe/Conduit	
1.008	49.317	0.379	130.0	0.000	10	0.0	1.500	o	150	Pipe/Conduit	
1.009	20.333	0.156	130.3	0.000	4	0.0	1.500	o	150	Pipe/Conduit	
1.010	18.219	0.140	130.1	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
1.011	17.515	0.135	129.7	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
1.012	30.195	2.348	12.9	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 (l/s)	Add Flow (l/s)	P.Dep (mm)	P.Vel (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.007	82.033	0.000	0.0	54	0.0	44	0.59	0.77	13.6	2.5
1.008	81.700	0.000	0.0	64	0.0	48	0.61	0.77	13.6	3.0
1.009	81.321	0.000	0.0	68	0.0	50	0.62	0.77	13.5	3.2
1.010	81.165	0.000	0.0	68	0.0	50	0.63	0.77	13.6	3.2
1.011	81.025	0.000	0.0	68	0.0	50	0.63	0.77	13.6	3.2
1.012	80.890	0.000	0.0	68	0.0	28	1.42	2.45	43.3	3.2

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Manhole Schedules for FWSV1.FWS

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
1	85.769	1.579	Open Manhole	1500	1.000	84.190	150				
2	84.950	1.350	Open Manhole	1200	1.001	83.600	150	1.000	83.600	150	
3	86.700	3.390	Open Manhole	1200	1.002	83.310	150	1.001	83.310	150	
4	86.244	3.269	Open Manhole	1500	1.003	82.975	150	1.002	82.975	150	
5	85.100	2.544	Open Manhole	1500	1.004	82.556	150	1.003	82.556	150	
6	83.800	1.334	Open Manhole	1200	1.005	82.466	150	1.004	82.466	150	
7	83.297	1.050	Open Manhole	1200	1.006	82.247	150	1.005	82.247	150	
8	93.283	3.683	Open Manhole	1500	2.000	89.600	150				
9	91.408	2.308	Open Manhole	1500	2.001	89.100	150	2.000	89.100	150	
10	88.821	2.321	Open Manhole	1200	2.002	86.500	150	2.001	86.500	150	
11	87.942	2.342	Open Manhole	1200	2.003	85.600	150	2.002	85.600	150	
12	86.153	1.953	Open Manhole	1500	2.004	84.200	150	2.003	84.200	150	
13	85.037	3.004	Open Manhole	1500	1.007	82.033	150	1.006	82.033	150	
								2.004	82.834	150	801
14	85.987	4.287	Open Manhole	1500	1.008	81.700	150	1.007	81.700	150	
15	87.009	5.688	Open Manhole	1500	1.009	81.321	150	1.008	81.321	150	
16	84.000	2.835	Open Manhole	1200	1.010	81.165	150	1.009	81.165	150	
17	83.700	2.675	Open Manhole	1200	1.011	81.025	150	1.010	81.025	150	
18	84.000	3.110	Open Manhole	1200	1.012	80.890	150	1.011	80.890	150	
19	80.000	1.458	Open Manhole	1500		OUTFALL		1.012	78.542	150	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
1	418620.399	414706.084	418620.399	414706.084	Required	
2	418608.398	414703.964	418608.398	414703.964	Required	
3	418601.154	414740.900	418601.154	414740.900	Required	
4	418590.176	414783.040	418590.176	414783.040	Required	
5	418577.013	414835.958	418577.013	414835.958	Required	

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PIPELINE SCHEDULES for FWSV1.FWS

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	150	1	85.769	84.190	1.429	Open Manhole	1500
1.001	o	150	2	84.950	83.600	1.200	Open Manhole	1200
1.002	o	150	3	86.700	83.310	3.240	Open Manhole	1200
1.003	o	150	4	86.244	82.975	3.119	Open Manhole	1500
1.004	o	150	5	85.100	82.556	2.394	Open Manhole	1500
1.005	o	150	6	83.800	82.466	1.184	Open Manhole	1200
1.006	o	150	7	83.297	82.247	0.900	Open Manhole	1200
2.000	o	150	8	93.283	89.600	3.533	Open Manhole	1500
2.001	o	150	9	91.408	89.100	2.158	Open Manhole	1500
2.002	o	150	10	88.821	86.500	2.171	Open Manhole	1200
2.003	o	150	11	87.942	85.600	2.192	Open Manhole	1200
2.004	o	150	12	86.153	84.200	1.803	Open Manhole	1500
1.007	o	150	13	85.037	82.033	2.854	Open Manhole	1500
1.008	o	150	14	85.987	81.700	4.137	Open Manhole	1500
1.009	o	150	15	87.009	81.321	5.538	Open Manhole	1500
1.010	o	150	16	84.000	81.165	2.685	Open Manhole	1200
1.011	o	150	17	83.700	81.025	2.525	Open Manhole	1200
1.012	o	150	18	84.000	80.890	2.960	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	12.187	20.7	2	84.950	83.600	1.200	Open Manhole	1200
1.001	37.640	129.8	3	86.700	83.310	3.240	Open Manhole	1200
1.002	43.546	130.0	4	86.244	82.975	3.119	Open Manhole	1500
1.003	54.530	130.1	5	85.100	82.556	2.394	Open Manhole	1500
1.004	11.753	130.0	6	83.800	82.466	1.184	Open Manhole	1200
1.005	16.900	77.1	7	83.297	82.247	0.900	Open Manhole	1200
1.006	27.753	129.7	13	85.037	82.033	2.854	Open Manhole	1500
2.000	49.847	99.7	9	91.408	89.100	2.158	Open Manhole	1500
2.001	32.225	12.4	10	88.821	86.500	2.171	Open Manhole	1200
2.002	34.467	38.3	11	87.942	85.600	2.192	Open Manhole	1200
2.003	34.801	24.9	12	86.153	84.200	1.803	Open Manhole	1500
2.004	13.658	10.0	13	85.037	82.834	2.053	Open Manhole	1500
1.007	43.316	130.0	14	85.987	81.700	4.137	Open Manhole	1500
1.008	49.317	130.0	15	87.009	81.321	5.538	Open Manhole	1500
1.009	20.333	130.3	16	84.000	81.165	2.685	Open Manhole	1200
1.010	18.219	130.1	17	83.700	81.025	2.525	Open Manhole	1200
1.011	17.515	129.7	18	84.000	80.890	2.960	Open Manhole	1200
1.012	30.195	12.9	19	80.000	78.542	1.308	Open Manhole	1500

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Free Flowing Outfall Details for FWSV1.FWS

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.012	19	80.000	78.542	78.542	1500	0