


Coopers		Page 0
Park House Sandpiper Court Chester CH4 9QU	Edge Hill Phase 4	
Date 14/03/2024 File 7843 - FW01 REV K.MDX	Designed by JAR Checked by	
Micro Drainage	Network 2020.1.3	

FOUL SEWERAGE DESIGN











Design Criteria for 7843 FW01 REV H.FWS

Pipe Sizes 7843 FW01 REV H Manhole Sizes 7843 FW01 REV H

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 7843 FW01 REV H.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	31.664	0.396	80.0	0.000	9	0.0	1.500	o	150	Pipe/Conduit	
1.001	21.217	0.285	74.4	0.000	3	0.0	1.500	o	150	Pipe/Conduit	
2.000	29.698	1.024	29.0	0.000	12	0.0	1.500	o	150	Pipe/Conduit	
1.002	21.016	0.156	134.7	0.000	5	0.0	1.500	o	150	Pipe/Conduit	
1.003	20.926	1.126	18.6	0.000	6	0.0	1.500	o	150	Pipe/Conduit	
3.000	8.654	0.451	19.2	0.000	15	0.0	1.500	o	150	Pipe/Conduit	
3.001	9.091	0.473	19.2	0.000	9	0.0	1.500	o	150	Pipe/Conduit	
3.002	21.109	0.212	99.7	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
1.004	14.522	0.108	134.4	0.000	4	0.0	1.500	o	150	Pipe/Conduit	
1.005	21.267	0.792	26.9	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	Add Flow (l/s)	P.Dep (mm)	P.Vel (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	88.961	0.000	0.0	9	0.0	16	0.40	0.98	17.3	0.4
1.001	88.565	0.000	0.0	12	0.0	18	0.45	1.02	18.0	0.6
2.000	89.304	0.000	0.0	12	0.0	15	0.62	1.63	28.8	0.6
1.002	88.280	0.000	0.0	29	0.0	33	0.48	0.75	13.3	1.4
1.003	88.124	0.000	0.0	35	0.0	22	1.02	2.04	36.0	1.6
3.000	88.134	0.000	0.0	15	0.0	15	0.77	2.01	35.5	0.7
3.001	87.683	0.000	0.0	24	0.0	19	0.89	2.01	35.4	1.1
3.002	87.210	0.000	0.0	24	0.0	28	0.51	0.88	15.5	1.1
1.004	86.998	0.000	0.0	63	0.0	48	0.60	0.75	13.3	3.0
1.005	86.890	0.000	0.0	63	0.0	32	1.07	1.70	30.0	3.0

Network Design Table for 7843 FW01 REV H.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
4.000	45.414	0.568	80.0	0.000	5	0.0	1.500	o	150	Pipe/Conduit	🔒
4.001	33.000	0.245	134.7	0.000	8	0.0	1.500	o	150	Pipe/Conduit	🔒
1.006	15.617	0.596	26.2	0.000	2	0.0	1.500	o	150	Pipe/Conduit	👤
1.007	22.479	1.756	12.8	0.000	2	0.0	1.500	o	150	Pipe/Conduit	👤
1.008	34.934	0.349	100.0	0.000	8	0.0	1.500	o	150	Pipe/Conduit	👤
5.000	29.945	1.004	29.8	0.000	4	0.0	1.500	o	150	Pipe/Conduit	🔒
1.009	35.162	1.080	32.6	0.000	7	0.0	1.500	o	150	Pipe/Conduit	👤
1.010	28.841	2.152	13.4	0.000	4	0.0	1.500	o	150	Pipe/Conduit	👤
1.011	22.958	0.173	132.8	0.000	0	0.0	1.500	o	150	Pipe/Conduit	👤
1.012	20.274	0.966	21.0	0.000	4	0.0	1.500	o	150	Pipe/Conduit	👤
1.013	45.276	3.234	14.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	👤
1.014	30.731	3.361	9.1	0.000	0	0.0	1.500	o	150	Pipe/Conduit	👤
1.015	34.060	1.447	23.5	0.000	0	0.0	1.500	o	150	Pipe/Conduit	👤
1.016	73.734	3.820	19.3	0.000	0	0.0	1.500	o	150	Pipe/Conduit	👤
1.017	18.067	0.772	23.4	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)	
4.000	86.911	0.000	0.0	5	0.0	13	0.33	0.98	17.3	0.2
4.001	86.343	0.000	0.0	13	0.0	22	0.38	0.75	13.3	0.6
1.006	86.098	0.000	0.0	78	0.0	35	1.15	1.72	30.3	3.7
1.007	85.502	0.000	0.0	80	0.0	30	1.49	2.46	43.4	3.8
1.008	83.745	0.000	0.0	88	0.0	53	0.74	0.88	15.5	4.1
5.000	84.400	0.000	0.0	4	0.0	9	0.43	1.61	28.4	0.2
1.009	83.396	0.000	0.0	99	0.0	42	1.14	1.54	27.2	4.6
1.010	82.316	0.000	0.0	103	0.0	34	1.59	2.40	42.4	4.8
1.011	80.164	0.000	0.0	103	0.0	62	0.70	0.76	13.4	4.8
1.012	79.991	0.000	0.0	107	0.0	39	1.37	1.92	33.9	5.0
1.013	79.025	0.000	0.0	107	0.0	35	1.58	2.35	41.5	5.0
1.014	74.061	0.000	0.0	107	0.0	32	1.83	2.91	51.4	5.0
1.015	70.700	0.000	0.0	107	0.0	40	1.31	1.81	32.0	5.0
1.016	69.253	0.000	0.0	107	0.0	38	1.41	2.00	35.3	5.0
1.017	65.433	0.000	0.0	107	0.0	40	1.32	1.82	32.1	5.0



Manhole Schedules for 7843 FW01 REV H.FWS

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., I*W (mm)	Pipe Out PN	Invert Level (m)	Diameter (mm)	Pipes In PN	Invert Level (m)	Diameter (mm)	Backdrop (mm)
1	90.608	1.647	Open Manhole	1350	1.000	88.961	150				
2	90.661	2.096	Open Manhole	1350	1.001	88.565	150	1.000	88.565	150	
3	91.355	2.051	Open Manhole	1350	2.000	89.304	150				
4	90.550	2.270	Open Manhole	1350	1.002	88.280	150	1.001	88.280	150	
								2.000	88.280	150	
5	90.313	2.189	Open Manhole	1350	1.003	88.124	150	1.002	88.124	150	
6	89.733	1.599	Open Manhole	1350	3.000	88.134	150				
7	89.912	2.229	Open Manhole	1200	3.001	87.683	150	3.000	87.683	150	
8	90.049	2.839	Open Manhole	1350	3.002	87.210	150	3.001	87.210	150	
9	90.054	3.056	Open Manhole	1350	1.004	86.998	150	1.003	86.998	150	
								3.002	86.998	150	
10	89.526	2.636	Open Manhole	1350	1.005	86.890	150	1.004	86.890	150	
11	88.962	2.051	Open Manhole	1350	4.000	86.911	150				
12	89.214	2.871	Open Manhole	1350	4.001	86.343	150	4.000	86.343	150	
13	88.475	2.377	Open Manhole	1350	1.006	86.098	150	1.005	86.098	150	
								4.001	86.098	150	
14	87.709	2.207	Open Manhole	1200	1.007	85.502	150	1.006	85.502	150	
15	86.760	3.015	Open Manhole	1350	1.008	83.745	150	1.007	83.745	150	
16	86.143	1.743	Open Manhole	1200	5.000	84.400	150				
17	86.517	3.121	Open Manhole	1350	1.009	83.396	150	1.008	83.396	150	
								5.000	83.396	150	
18	84.470	2.154	Open Manhole	1350	1.010	82.316	150	1.009	82.316	150	
19	81.611	1.447	Open Manhole	1350	1.011	80.164	150	1.010	80.164	150	
20	81.468	1.477	Open Manhole	1350	1.012	79.991	150	1.011	79.991	150	
21	80.375	1.350	Open Manhole	1350	1.013	79.025	150	1.012	79.025	150	
22	77.500	3.439	Open Manhole	1350	1.014	74.061	150	1.013	75.791	150	1730
23	72.050	1.350	Open Manhole	1350	1.015	70.700	150	1.014	70.700	150	
24	70.903	1.650	Open Manhole	1350	1.016	69.253	150	1.015	69.253	150	
25	67.094	1.661	Open Manhole	1350	1.017	65.433	150	1.016	65.433	150	
26	67.094	2.433	Open Manhole	1200		OUTFALL		1.017	64.661	150	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
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2	297270.075	515804.767	297270.075	515804.767	Required	
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2	297300.563	515813.317	297300.563	515813.317	Required	
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Manhole Schedules for 7843 FW01 REV H.FWS

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
3	297318.909	515842.514	297318.909	515842.514	Required	
4	297321.777	515812.955	297321.777	515812.955	Required	
5	297341.524	515805.764	297341.524	515805.764	Required	
6	297386.772	515816.346	297386.772	515816.346	Required	
7	297382.972	515808.571	297382.972	515808.571	Required	
8	297376.852	515801.849	297376.852	515801.849	Required	
9	297357.845	515792.668	297357.845	515792.668	Required	
10	297365.788	515780.511	297365.788	515780.511	Required	
11	297298.333	515739.687	297298.333	515739.687	Required	
12	297342.065	515751.931	297342.065	515751.931	Required	
13	297373.843	515760.829	297373.843	515760.829	Required	
14	297381.190	515747.048	297381.190	515747.048	Required	
15	297392.467	515727.602	297392.467	515727.602	Required	
16	297341.106	515687.962	297341.106	515687.962	Required	
17	297364.812	515706.258	297364.812	515706.258	Required	
18	297386.220	515678.364	297386.220	515678.364	Required	
19	297408.102	515659.576	297408.102	515659.576	Required	

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Manhole Schedules for 7843 FW01 REV H.FWS

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
20	297425.493	515674.563	297425.493	515674.563	Required	
21	297443.037	515684.724	297443.037	515684.724	Required	
22	297470.187	515720.956	297470.187	515720.956	Required	
23	297497.938	515734.158	297497.938	515734.158	Required	
24	297515.745	515763.192	297515.745	515763.192	Required	
25	297583.042	515793.323	297583.042	515793.323	Required	
26	297592.855	515808.493			No Entry	

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PIPELINE SCHEDULES for 7843 FW01 REV H.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	90.608	88.961	1.497	Open Manhole	1350
1.001	o	150	2	90.661	88.565	1.946	Open Manhole	1350
2.000	o	150	3	91.355	89.304	1.901	Open Manhole	1350
1.002	o	150	4	90.550	88.280	2.120	Open Manhole	1350
1.003	o	150	5	90.313	88.124	2.039	Open Manhole	1350
3.000	o	150	6	89.733	88.134	1.449	Open Manhole	1350
3.001	o	150	7	89.912	87.683	2.079	Open Manhole	1200
3.002	o	150	8	90.049	87.210	2.689	Open Manhole	1350
1.004	o	150	9	90.054	86.998	2.906	Open Manhole	1350
1.005	o	150	10	89.526	86.890	2.486	Open Manhole	1350
4.000	o	150	11	88.962	86.911	1.901	Open Manhole	1350
4.001	o	150	12	89.214	86.343	2.721	Open Manhole	1350
1.006	o	150	13	88.475	86.098	2.227	Open Manhole	1350
1.007	o	150	14	87.709	85.502	2.057	Open Manhole	1200
1.008	o	150	15	86.760	83.745	2.865	Open Manhole	1350
5.000	o	150	16	86.143	84.400	1.593	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	31.664	80.0	2	90.661	88.565	1.946	Open Manhole	1350
1.001	21.217	74.4	4	90.550	88.280	2.120	Open Manhole	1350
2.000	29.698	29.0	4	90.550	88.280	2.120	Open Manhole	1350
1.002	21.016	134.7	5	90.313	88.124	2.039	Open Manhole	1350
1.003	20.926	18.6	9	90.054	86.998	2.906	Open Manhole	1350
3.000	8.654	19.2	7	89.912	87.683	2.079	Open Manhole	1200
3.001	9.091	19.2	8	90.049	87.210	2.689	Open Manhole	1350
3.002	21.109	99.7	9	90.054	86.998	2.906	Open Manhole	1350
1.004	14.522	134.4	10	89.526	86.890	2.486	Open Manhole	1350
1.005	21.267	26.9	13	88.475	86.098	2.227	Open Manhole	1350
4.000	45.414	80.0	12	89.214	86.343	2.721	Open Manhole	1350
4.001	33.000	134.7	13	88.475	86.098	2.227	Open Manhole	1350
1.006	15.617	26.2	14	87.709	85.502	2.057	Open Manhole	1200
1.007	22.479	12.8	15	86.760	83.745	2.865	Open Manhole	1350
1.008	34.934	100.0	17	86.517	83.396	2.971	Open Manhole	1350
5.000	29.945	29.8	17	86.517	83.396	2.971	Open Manhole	1350

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PIPELINE SCHEDULES for 7843 FW01 REV H.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)
1.009	o	150	17	86.517	83.396	2.971	Open Manhole	1350
1.010	o	150	18	84.470	82.316	2.004	Open Manhole	1350
1.011	o	150	19	81.611	80.164	1.297	Open Manhole	1350
1.012	o	150	20	81.468	79.991	1.327	Open Manhole	1350
1.013	o	150	21	80.375	79.025	1.200	Open Manhole	1350
1.014	o	150	22	77.500	74.061	3.289	Open Manhole	1350
1.015	o	150	23	72.050	70.700	1.200	Open Manhole	1350
1.016	o	150	24	70.903	69.253	1.500	Open Manhole	1350
1.017	o	150	25	67.094	65.433	1.511	Open Manhole	1350

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)
1.009	35.162	32.6	18	84.470	82.316	2.004	Open Manhole	1350
1.010	28.841	13.4	19	81.611	80.164	1.297	Open Manhole	1350
1.011	22.958	132.8	20	81.468	79.991	1.327	Open Manhole	1350
1.012	20.274	21.0	21	80.375	79.025	1.200	Open Manhole	1350
1.013	45.276	14.0	22	77.500	75.791	1.559	Open Manhole	1350
1.014	30.731	9.1	23	72.050	70.700	1.200	Open Manhole	1350
1.015	34.060	23.5	24	70.903	69.253	1.500	Open Manhole	1350
1.016	73.734	19.3	25	67.094	65.433	1.511	Open Manhole	1350
1.017	18.067	23.4	26	67.094	64.661	2.283	Open Manhole	1200

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Network Classifications for 7843 FW01 REV H.FWS

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	1	150	1.366	1.946	Unclassified	1350	0	1.497	Unclassified
1.001	2	150	1.946	2.120	Unclassified	1350	0	1.946	Unclassified
2.000	3	150	1.901	2.120	Unclassified	1350	0	1.901	Unclassified
1.002	4	150	2.039	2.120	Unclassified	1350	0	2.120	Unclassified
1.003	5	150	2.039	2.906	Unclassified	1350	0	2.039	Unclassified
3.000	6	150	1.449	2.079	Unclassified	1350	0	1.449	Unclassified
3.001	7	150	2.079	2.689	Unclassified	1200	0	2.079	Unclassified
3.002	8	150	2.689	2.906	Unclassified	1350	0	2.689	Unclassified
1.004	9	150	2.486	2.906	Unclassified	1350	0	2.906	Unclassified
1.005	10	150	2.227	2.486	Unclassified	1350	0	2.486	Unclassified
4.000	11	150	1.901	2.721	Unclassified	1350	0	1.901	Unclassified
4.001	12	150	2.227	2.721	Unclassified	1350	0	2.721	Unclassified
1.006	13	150	2.057	2.227	Unclassified	1350	0	2.227	Unclassified
1.007	14	150	2.057	2.865	Unclassified	1200	0	2.057	Unclassified
1.008	15	150	2.865	3.020	Unclassified	1350	0	2.865	Unclassified
5.000	16	150	1.593	2.971	Unclassified	1200	0	1.593	Unclassified
1.009	17	150	2.004	2.971	Unclassified	1350	0	2.971	Unclassified
1.010	18	150	1.297	2.004	Unclassified	1350	0	2.004	Unclassified
1.011	19	150	1.146	1.327	Unclassified	1350	0	1.297	Unclassified
1.012	20	150	1.166	1.327	Unclassified	1350	0	1.327	Unclassified
1.013	21	150	0.275	1.559	Unclassified	1350	0	1.200	Unclassified
1.014	22	150	1.200	3.289	Unclassified	1350	0	3.289	Unclassified
1.015	23	150	1.200	1.500	Unclassified	1350	0	1.200	Unclassified
1.016	24	150	1.500	1.511	Unclassified	1350	0	1.500	Unclassified
1.017	25	150	1.511	2.283	Unclassified	1350	0	1.511	Unclassified

Free Flowing Outfall Details for 7843 FW01 REV H.FWS

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D, L (mm)	W (mm)
1.017	26	67.094	64.661	66.598	1200	0


Simulation Criteria for 7843 FW01 REV H.FWS

Volumetric Runoff Coeff	0.750	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 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 Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 0 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm)	0.000
Return Period (years)	0	Ratio R	0.000
Region England and Wales		Profile Type	Summer

Coopers		Page 8
Park House Sandpiper Court Chester CH4 9QU	Edge Hill Phase 4	
Date 14/03/2024 File 7843 - FW01 REV K.MDX	Designed by JAR Checked by	
Micro Drainage	Network 2020.1.3	

Synthetic Rainfall Details

Cv (Summer) 0.750 Storm Duration (mins) 30
Cv (Winter) 0.840