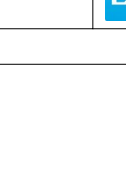

Appendix 4.2 H

Foul Drainage Network Calculations

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Donnachadh O'Brien & Associates										Page 1	
Unit W9 E&F Ladytown BP					Herbata Data Centre						
Newhall Naas					Naas, Co. Kildare						
Co Kildare					Foul Water Catchment 1						
Date 01/07/2023					Designed by MJC						
File FOUL WATER.MDX					Checked by RK						
XP Solutions					Network 2020.1.3						

FOUL SEWERAGE DESIGN

Design Criteria for Foul Catchment 1

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)	100.00	Maximum Backdrop Height (m)	1.500
Persons per House	1.00	Min Design Depth for Optimisation (m)	1.200
Domestic (l/s/ha)	0.00	Min Vel for Auto Design only (m/s)	1.00
Domestic Peak Flow Factor	6.00	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Network Design Table for Foul Catchment 1

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	68.330	0.505	135.4	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
1.001	75.690	0.505	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
1.002	76.961	0.513	150.0	0.000	14	0.0	1.500	o	150	Pipe/Conduit	
1.003	20.425	0.136	150.2	0.000	14	0.0	1.500	o	150	Pipe/Conduit	
2.000	68.620	0.507	135.5	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
2.001	67.693	0.451	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
2.002	10.280	0.069	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
1.004	36.175	0.241	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
1.005	97.870	0.652	150.0	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	82.500	0.000	0.0	0	0.0	0	0.00	0.75	13.3	0.0
1.001	81.995	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
1.002	81.491	0.000	0.0	14	0.0	10	0.20	0.71	12.6	0.1
1.003	80.978	0.000	0.0	28	0.0	13	0.25	0.71	12.6	0.2
2.000	82.500	0.000	0.0	0	0.0	0	0.00	0.75	13.3	0.0
2.001	81.993	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
2.002	81.542	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
1.004	80.842	0.000	0.0	28	0.0	13	0.25	0.71	12.6	0.2
1.005	80.009	0.000	0.0	28	0.0	13	0.25	0.71	12.6	0.2

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Micro
Drainage

Network Design Table for Foul Catchment 1												
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
3.000	50.000	0.333	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit		
3.001	35.211	0.235	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit		
4.000	50.566	0.315	160.4	0.000	0	0.0	1.500	o	150	Pipe/Conduit		
3.002	19.799	0.132	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit		
3.003	6.990	0.047	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit		
3.004	19.744	0.132	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit		
3.005	58.464	0.390	149.9	0.000	55	0.0	1.500	o	150	Pipe/Conduit		
3.006	36.253	0.242	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit		
1.006	30.463	0.203	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit		
5.000	66.859	0.446	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit		
5.001	72.761	0.485	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit		
5.002	11.901	0.079	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit		
5.003	54.536	0.364	149.8	0.000	14	0.0	1.500	o	150	Pipe/Conduit		
5.004	36.167	0.241	150.1	0.000	14	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)
3.000	82.510	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
3.001	82.176	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
4.000	82.793	0.000	0.0	0	0.0	0	0.00	0.69	12.2	0.0
3.002	81.942	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
3.003	81.810	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
3.004	81.763	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
3.005	81.631	0.000	0.0	55	0.0	18	0.31	0.71	12.6	0.4
3.006	81.242	0.000	0.0	55	0.0	18	0.31	0.71	12.6	0.4
1.006	79.356	0.000	0.0	83	0.0	22	0.36	0.71	12.6	0.6
5.000	81.000	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
5.001	80.554	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
5.002	80.069	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
5.003	79.990	0.000	0.0	14	0.0	10	0.20	0.71	12.6	0.1
5.004	79.626	0.000	0.0	28	0.0	13	0.25	0.71	12.6	0.2

Donnachadh O'Brien & Associates		Page 3
Unit W9 E&F Ladytown BP	Herbata Data Centre	
Newhall Naas	Naas, Co. Kildare	
Co Kildare	Foul Water Catchment 1	
Date 01/07/2023	Designed by MJC	
File FOUL WATER.MDX	Checked by RK	
XP Solutions	Network 2020.1.3	

Network Design Table for Foul Catchment 1

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
6.000	67.867	0.452	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
6.001	76.277	0.509	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
5.005	34.780	0.232	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
1.007	38.057	0.254	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
7.000	67.803	0.452	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
7.001	72.717	0.485	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
7.002	8.371	0.056	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
7.003	21.944	0.146	150.3	0.000	14	0.0	1.500	o	150	Pipe/Conduit	
7.004	65.617	0.437	150.2	0.000	14	0.0	1.500	o	150	Pipe/Conduit	
8.000	66.921	0.446	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
8.001	70.674	0.471	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
8.002	11.179	0.075	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
7.005	33.179	0.221	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
1.008	40.768	0.272	150.0	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)
6.000	81.000	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
6.001	80.548	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
5.005	79.385	0.000	0.0	28	0.0	13	0.25	0.71	12.6	0.2
1.007	79.153	0.000	0.0	111	0.0	25	0.39	0.71	12.6	0.8
7.000	78.750	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
7.001	78.298	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
7.002	77.813	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
7.003	77.757	0.000	0.0	14	0.0	10	0.20	0.71	12.6	0.1
7.004	77.611	0.000	0.0	28	0.0	13	0.25	0.71	12.6	0.2
8.000	78.750	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
8.001	78.304	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
8.002	77.833	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
7.005	77.174	0.000	0.0	28	0.0	13	0.25	0.71	12.6	0.2
1.008	76.952	0.000	0.0	139	0.0	28	0.42	0.71	12.6	1.0

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Unit W9 E&F Ladytown BP	Herbata Data Centre	
Newhall Naas	Naas, Co. Kildare	
Co Kildare	Foul Water Catchment 1	
Date 01/07/2023	Designed by MJC	
File FOUL WATER.MDX	Checked by RK	
XP Solutions	Network 2020.1.3	

Network Design Table for Foul Catchment 1

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	8.207	0.055	150.0	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	76.681	0.000	0.0	139	0.0	28	0.42	0.71	12.6	1.0

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Unit W9 E&F Ladytown BP	Herbata Data Centre	
Newhall Naas	Naas, Co. Kildare	
Co Kildare	Foul Water Catchment 2	
Date 01/07/2023	Designed by MJC	
File FOUL WATER.MDX	Checked by RK	
XP Solutions	Network 2020.1.3	

Network Design Table for Foul Catchment 2

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
3.001	72.760	0.485	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
3.002	12.352	0.082	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
3.003	103.024	0.687	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
1.006	48.052	0.320	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
4.000	66.133	0.441	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
4.001	73.316	0.489	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
4.002	7.474	0.050	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
4.003	87.402	0.583	149.9	0.000	14	0.0	1.500	o	150	Pipe/Conduit	
4.004	8.979	0.060	149.7	0.000	14	0.0	1.500	o	150	Pipe/Conduit	
5.000	71.377	0.476	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
5.001	77.968	0.520	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
4.005	40.099	0.267	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
1.007	104.874	0.699	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
6.000	67.605	0.451	150.0	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)
3.001	82.454	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
3.002	81.969	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
3.003	81.887	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
1.006	80.215	0.000	0.0	28	0.0	33	0.46	0.71	12.6	1.3
4.000	80.750	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
4.001	80.309	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
4.002	79.820	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
4.003	79.770	0.000	0.0	14	0.0	23	0.37	0.71	12.6	0.6
4.004	79.188	0.000	0.0	28	0.0	33	0.46	0.72	12.6	1.3
5.000	80.750	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
5.001	80.274	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
4.005	79.128	0.000	0.0	28	0.0	33	0.46	0.71	12.6	1.3
1.007	78.860	0.000	0.0	56	0.0	46	0.56	0.71	12.6	2.6
6.000	80.750	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0

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Unit W9 E&F Ladytown BP	Herbata Data Centre	
Newhall Naas	Naas, Co. Kildare	
Co Kildare	Foul Water Catchment 2	
Date 01/07/2023	Designed by MJC	
File FOUL WATER.MDX	Checked by RK	
XP Solutions	Network 2020.1.3	

Network Design Table for Foul Catchment 2

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
6.001	71.776	0.479	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
6.002	8.782	0.059	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
6.003	87.415	0.583	149.9	0.000	14	0.0	1.500	o	150	Pipe/Conduit	
6.004	9.539	0.064	149.0	0.000	14	0.0	1.500	o	150	Pipe/Conduit	
7.000	72.953	0.486	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
7.001	77.338	0.516	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
6.005	34.434	0.230	150.0	0.000	0	0.0	1.500	o	150	Pipe/Conduit	
1.008	11.270	0.075	150.0	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)
6.001	80.299	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
6.002	79.821	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
6.003	79.762	0.000	0.0	14	0.0	23	0.37	0.71	12.6	0.6
6.004	79.179	0.000	0.0	28	0.0	33	0.46	0.72	12.7	1.3
7.000	80.750	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
7.001	80.264	0.000	0.0	0	0.0	0	0.00	0.71	12.6	0.0
6.005	79.116	0.000	0.0	28	0.0	33	0.46	0.71	12.6	1.3
1.008	78.161	0.000	0.0	84	0.0	57	0.63	0.71	12.6	3.9