Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	100	Maximum Rainfall (mm/hr)	40.0
Additional Flow (%)	20	Minimum Velocity (m/s)	0.70
FSR Region	Scotland and Ireland	Connection Type	Level Inverts
M5-60 (mm)	16.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.300	Preferred Cover Depth (m)	0.800
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	15.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
SWMH Con			73.750	1200	303817.958	230626.095	1.930
SWMH 1.1			73.750	1200	303815.504	230625.668	1.920
SWMH 1.2			74.110	1200	303799.696	230598.832	2.155
SWMH 1.3			74.950	1200	303782.426	230580.233	2.894
SWMH 1.4			74.000	1200	303758.271	230566.848	1.834
SWMH 1.5			73.400	1200	303757.069	230569.573	1.200
SWMH 2.1			73.400	1200	303711.904	230562.661	1.200
SWMH 2.2			74.070	1200	303687.569	230556.650	1.589
SWMH 2.3			74.470	1200	303670.643	230547.154	1.773
SWMH 2.4			74.750	1200	303642.697	230541.928	1.740
SWMH 2.5			74.400	1200	303635.113	230535.287	1.100
SWMH 3.1			73.400	1200	303713.345	230563.983	1.200
SWMH 3.2			73.440	1200	303712.194	230567.644	1.224
SWMH 3.3			73.350	1200	303708.217	230566.882	1.118
SWMH 3.4			73.350	1200	303704.599	230566.252	1.118
SWMH 3.5			73.950	1200	303686.012	230558.931	1.377
SWMH 3.6	0.100	15.00	73.980	1200	303661.138	230552.006	1.000
SWMH 4.1			74.400	1200	303631.352	230537.088	1.100
SWMH 4.2			74.430	1200	303631.148	230539.756	1.100
SWMH 4.3			74.420	1200	303634.232	230540.511	1.055
SWMH 4.4	0.095	15.00	74.410	1200	303637.844	230541.476	1.010
SWMH 5.1			73.580	1200	303685.833	230580.559	1.238
SWMH 5.2	0.304	15.00	73.590	1200	303672.259	230648.324	0.990
SWMH 6.1			73.200	1200	303847.702	230663.364	1.340
SWMH 6.2			73.210	1200	303844.808	230663.133	1.270
SWMH 6.3			73.230	1200	303842.379	230664.158	1.210
SWMH 6.4			73.260	1200	303839.319	230665.554	1.160
SWMH 6.5	0.919	15.00	73.200	1200	303833.673	230655.847	0.990
SWMH 7.1			74.090	1200	303773.734	230579.515	1.940
SWMH 7.2	0.176	15.00	73.330	1200	303768.761	230579.061	1.130
SWMH 8.1	0.578	15.00	73.240	1200	303839.708	230679.632	0.990
SWMH 9.1			73.200	1200	303847.525	230671.902	1.500
SWMH 9.2			73.780	1200	303792.728	230685.834	1.852

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
SWMH 9.3			73.850	1200	303704.302	230668.965	1.562
SWMH 9.4			73.630	1200	303671.938	230669.031	1.214
SWMH 9.5	0.147	15.00	73.830	1200	303667.664	230668.294	1.330
SWMH 10.1	0.107	15.00	73.840	1200	303667.035	230606.315	1.140
SWMH 11.1			73.400	1200	303649.445	230812.584	1.400
SWMH 11.2			73.480	1200	303650.077	230810.421	1.470
SWMH 11.3			73.510	1200	303646.938	230809.503	1.484
SWMH 11.4			73.450	1200	303640.412	230807.832	1.400
SWMH 11.5			73.650	1200	303642.244	230781.958	1.496
SWMH 11.6			73.600	1200	303656.748	230746.601	1.294
SWMH 11.7			73.580	1200	303671.252	230711.244	1.122
SWMH 11.8	0.620	15.00	73.580	1200	303676.967	230683.964	1.000
SWMH 12.1			73.400	1200	303738.067	230855.865	1.400
SWMH 12.2			73.480	1200	303734.936	230849.613	1.440
SWMH 12.3			73.590	1200	303702.648	230834.615	1.360
SWMH 12.4			73.710	1200	303669.274	230819.112	1.250
SWMH 12.5	0.545	15.00	73.810	1200	303667.251	230811.410	1.310
SWMH 13.1			73.400	1200	303711.263	230852.399	1.250
SWMH 13.2			73.380	1200	303712.947	230849.060	1.170
SWMH 13.3			73.390	1200	303717.240	230850.696	1.110
SWMH 13.4			73.390	1200	303721.614	230852.503	1.040
SWMH 13.5	0.228	15.00	73.390	1200	303722.638	230850.369	1.000
SWMH 14.1			72.500	1200	303694.193	230852.700	0.550
SWMH 14.2			73.180	1200	303696.055	230852.502	1.205
SWMH 14.3			73.400	1200	303698.321	230852.272	1.400
SWMH 15.1			72.500	1200	303817.102	230737.720	1.200
SWMH 15.2			72.710	1200	303816.412	230732.304	1.370
SWMH 15.3			73.200	1200	303850.692	230702.747	1.606
SWMH 15.4			73.200	1200	303857.797	230686.534	1.500
SWMH 16.1			73.400	1200	303800.963	230758.451	1.170
SWMH 16.2			73.380	1200	303799.149	230762.228	1.100
SWMH 16.3			73.400	1200	303797.672	230765.466	1.070
SWMH 16.4	0.537	15.00	73.380	1200	303795.212	230764.430	1.000
SWMH 17.1			72.500	1200	303793.390	230792.952	0.550
SWMH 17.2			73.300	1200	303793.004	230791.640	1.325
SWMH 17.3			73.400	1200	303792.566	230790.278	1.400
SWMH 18.1	0.622	15.00	73.940	1200	303621.405	230776.978	1.586

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.1	SWMH 1.1	SWMH Con	2.491	0.600	71.830	71.820	0.010	249.1	300	16.49	40.0
1.2	SWMH 1.2	SWMH 1.1	31.146	0.600	71.955	71.830	0.125	249.2	300	16.45	40.0
1.3	SWMH 1.3	SWMH 1.2	25.381	0.600	72.056	71.955	0.101	251.3	300	15.92	40.0
1.4	SWMH 1.4	SWMH 1.3	27.616	0.600	72.166	72.056	0.110	251.1	300	15.50	40.0
1.5	SWMH 1.5	SWMH 1.4	2.978	0.600	72.200	72.166	0.034	87.6	300	15.03	40.0
2.2	SWMH 2.2	SWMH 2.1	25.066	0.600	72.481	72.200	0.281	89.2	150	16.24	40.0
2.3	SWMH 2.3	SWMH 2.2	19.408	0.600	72.697	72.481	0.216	89.9	150	15.85	40.0
2.4	SWMH 2.4	SWMH 2.3	28.430	0.600	73.010	72.697	0.313	90.8	150	15.55	40.0
2.5	SWMH 2.5	SWMH 2.4	10.081	0.600	73.300	73.010	0.290	34.8	150	15.10	40.0
3.2	SWMH 3.2	SWMH 3.1	3.838	0.600	72.216	72.200	0.016	239.9	300	16.76	40.0
3.3	SWMH 3.3	SWMH 3.2	4.049	0.600	72.232	72.216	0.016	253.1	300	16.70	40.0
3.4	SWMH 3.4	SWMH 3.3	3.672	0.600	72.248	72.232	0.016	229.5	300	16.63	40.0
3.5	SWMH 3.5	SWMH 3.4	19.977	0.600	72.573	72.248	0.325	61.5	225	15.46	40.0
3.6	SWMH 3.6	SWMH 3.5	25.820	0.600	72.980	72.573	0.407	63.4	225	15.26	40.0
4.2	SWMH 4.2	SWMH 4.1	2.676	0.600	73.330	73.300	0.030	89.2	225	15.12	40.0
4.3	SWMH 4.3	SWMH 4.2	3.175	0.600	73.365	73.330	0.035	90.7	225	15.09	40.0
4.4	SWMH 4.4	SWMH 4.3	3.739	0.600	73.400	73.365	0.035	106.8	225	15.05	40.0
5.1	SWMH 5.1	SWMH 3.4	23.598	0.600	72.342	72.232	0.110	214.5	300	16.57	40.0
5.2	SWMH 5.2	SWMH 5.1	69.111	0.600	72.600	72.342	0.258	267.9	300	16.21	40.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.1	0.991	70.1	101.7	1.620	1.630	0.782	0.0	300	1.004
1.2	0.991	70.1	101.7	1.855	1.620	0.782	0.0	300	1.004
1.3	0.987	69.8	101.7	2.594	1.855	0.782	0.0	300	1.000
1.4	0.987	69.8	78.8	1.534	2.594	0.606	0.0	300	1.000
1.5	1.681	118.8	78.8	0.900	1.534	0.606	0.0	179	1.793
2.2	1.064	18.8	12.4	1.439	1.050	0.095	0.0	89	1.135
2.3	1.060	18.7	12.4	1.623	1.439	0.095	0.0	89	1.130
2.4	1.055	18.6	12.4	1.590	1.623	0.095	0.0	89	1.127
2.5	1.713	30.3	12.4	0.950	1.590	0.095	0.0	67	1.625
3.2	1.011	71.4	66.5	0.924	0.900	0.511	0.0	230	1.142
3.3	0.984	69.5	66.5	0.818	0.924	0.511	0.0	236	1.114
3.4	1.033	73.0	66.5	0.802	0.818	0.511	0.0	226	1.166
3.5	1.671	66.4	13.0	1.152	0.877	0.100	0.0	67	1.303
3.6	1.644	65.4	13.0	0.775	1.152	0.100	0.0	68	1.292
4.2	1.385	55.1	12.4	0.875	0.875	0.095	0.0	73	1.124
4.3	1.373	54.6	12.4	0.830	0.875	0.095	0.0	73	1.115
4.4	1.264	50.3	12.4	0.785	0.830	0.095	0.0	76	1.052
5.1	1.069	75.6	53.5	0.938	0.818	0.411	0.0	187	1.156
5.2	0.956	67.5	39.6	0.690	0.938	0.304	0.0	165	0.992

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
6.2	SWMH 6.2	SWMH 6.1	2.903	0.600	71.940	71.860	0.080	36.3	225	15.24	40.0
6.3	SWMH 6.3	SWMH 6.2	2.636	0.600	72.020	71.940	0.080	33.0	225	15.22	40.0
6.4	SWMH 6.4	SWMH 6.3	3.363	0.600	72.100	72.020	0.080	42.0	225	15.20	40.0
6.5	SWMH 6.5	SWMH 6.4	11.230	0.600	72.210	72.100	0.110	102.1	225	15.14	40.0
7.1	SWMH 7.1	SWMH 1.3	8.722	0.600	72.150	72.056	0.094	92.8	150	15.22	40.0
7.2	SWMH 7.2	SWMH 7.1	4.994	0.600	72.200	72.150	0.050	99.9	150	15.08	40.0
8.1	SWMH 8.1	SWMH 6.4	14.083	0.600	72.250	72.100	0.150	93.9	225	15.17	40.0
9.2	SWMH 9.2	SWMH 9.1	56.540	0.600	71.928	71.700	0.228	248.0	300	19.03	40.0
9.3	SWMH 9.3	SWMH 9.2	90.021	0.600	72.288	71.928	0.360	250.1	300	18.08	40.0
9.4	SWMH 9.4	SWMH 9.3	32.364	0.600	72.416	72.288	0.128	252.8	300	16.57	40.0
9.5	SWMH 9.5	SWMH 9.4	4.337	0.600	72.500	72.416	0.084	51.6	300	15.03	40.0
10.1	SWMH 10.1	SWMH 5.1	26.113	0.600	72.700	72.342	0.358	72.9	225	15.38	40.0
11.2	SWMH 11.2	SWMH 11.1	2.253	0.600	72.010	72.000	0.010	225.3	300	17.38	40.0
11.3	SWMH 11.3	SWMH 11.2	3.270	0.600	72.026	72.010	0.016	204.4	300	17.35	40.0
11.4	SWMH 11.4	SWMH 11.3	6.737	0.600	72.050	72.026	0.024	280.7	300	17.30	40.0
11.5	SWMH 11.5	SWMH 11.4	25.939	0.600	72.154	72.050	0.104	249.4	300	17.18	40.0
11.6	SWMH 11.6	SWMH 11.5	38.216	0.600	72.306	72.154	0.152	251.4	300	16.74	40.0
11.7	SWMH 11.7	SWMH 11.6	38.216	0.600	72.458	72.306	0.152	251.4	300	16.09	40.0
11.8	SWMH 11.8	SWMH 11.7	27.872	0.600	72.580	72.458	0.122	228.5	300	15.45	40.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
6.2	2.178	86.6	194.8	1.045	1.115	1.497	0.0	225	2.218
6.3	2.287	90.9	194.8	0.985	1.045	1.497	0.0	225	2.329
6.4	2.023	80.4	194.8	0.935	0.985	1.497	0.0	225	2.060
6.5	1.294	51.4	119.6	0.765	0.935	0.919	0.0	225	1.317
7.1	1.043	18.4	22.9	1.790	2.744	0.176	0.0	150	1.063
7.2	1.005	17.8	22.9	0.980	1.790	0.176	0.0	150	1.024
8.1	1.349	53.7	75.2	0.765	0.935	0.578	0.0	225	1.374
9.2	0.994	70.2	19.1	1.552	1.200	0.147	0.0	107	0.850
9.3	0.989	69.9	19.1	1.262	1.552	0.147	0.0	107	0.847
9.4	0.984	69.6	19.1	0.914	1.262	0.147	0.0	107	0.842
9.5	2.193	155.0	19.1	1.030	0.914	0.147	0.0	71	1.505
10.1	1.533	60.9	13.9	0.915	1.013	0.107	0.0	73	1.244
11.2	1.043	73.7	161.6	1.170	1.100	1.242	0.0	300	1.057
11.3	1.096	77.5	161.6	1.184	1.170	1.242	0.0	300	1.110
11.4	0.933	66.0	161.6	1.100	1.184	1.242	0.0	300	0.945
11.5	0.991	70.0	161.6	1.196	1.100	1.242	0.0	300	1.004
11.6	0.987	69.8	80.7	0.994	1.196	0.620	0.0	300	1.000
11.7	0.987	69.8	80.7	0.822	0.994	0.620	0.0	300	1.000
11.8	1.036	73.2	80.7	0.700	0.822	0.620	0.0	300	1.049

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
12.2	SWMH 12.2	SWMH 12.1	6.992	0.600	72.040	72.000	0.040	174.8	300	16.23	40.0
12.3	SWMH 12.3	SWMH 12.2	35.601	0.600	72.230	72.040	0.190	187.4	300	16.13	40.0
12.4	SWMH 12.4	SWMH 12.3	36.799	0.600	72.460	72.230	0.230	160.0	300	15.61	40.0
12.5	SWMH 12.5	SWMH 12.4	7.963	0.600	72.500	72.460	0.040	199.1	300	15.12	40.0
13.2	SWMH 13.2	SWMH 13.1	3.740	0.600	72.210	72.150	0.060	62.3	225	15.16	40.0
13.3	SWMH 13.3	SWMH 13.2	4.594	0.600	72.280	72.210	0.070	65.6	225	15.12	40.0
13.4	SWMH 13.4	SWMH 13.3	4.733	0.600	72.350	72.280	0.070	67.6	225	15.07	40.0
13.5	SWMH 13.5	SWMH 13.4	2.367	0.600	72.390	72.350	0.040	59.2	225	15.02	40.0
14.2	SWMH 14.2	SWMH 14.1	1.872	0.600	71.975	71.950	0.025	74.9	225	15.05	40.0
14.3	SWMH 14.3	SWMH 14.2	2.278	0.600	72.000	71.975	0.025	91.1	225	15.03	40.0
15.2	SWMH 15.2	SWMH 15.1	5.460	0.600	71.340	71.300	0.040	136.5	225	16.15	40.0
15.3	SWMH 15.3	SWMH 15.2	45.263	0.600	71.594	71.340	0.254	178.2	225	16.07	40.0
15.4	SWMH 15.4	SWMH 15.3	17.701	0.600	71.700	71.597	0.103	171.9	225	15.30	40.0
16.2	SWMH 16.2	SWMH 16.1	4.190	0.600	72.280	72.230	0.050	83.8	225	15.11	40.0
16.3	SWMH 16.3	SWMH 16.2	3.559	0.600	72.330	72.280	0.050	71.2	225	15.06	40.0
16.4	SWMH 16.4	SWMH 16.3	2.669	0.600	72.380	72.330	0.050	53.4	225	15.02	40.0
17.2	SWMH 17.2	SWMH 17.1	1.368	0.600	71.975	71.950	0.025	54.7	225	15.03	40.0
17.3	SWMH 17.3	SWMH 17.2	1.431	0.600	72.000	71.975	0.025	57.2	225	15.01	40.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
12.2	1.186	83.8	70.9	1.140	1.100	0.545	0.0	212	1.324
12.3	1.145	80.9	70.9	1.060	1.140	0.545	0.0	218	1.285
12.4	1.240	87.7	70.9	0.950	1.060	0.545	0.0	205	1.375
12.5	1.110	78.5	70.9	1.010	0.950	0.545	0.0	224	1.251
13.2	1.659	66.0	29.7	0.945	1.025	0.228	0.0	106	1.617
13.3	1.617	64.3	29.7	0.885	0.945	0.228	0.0	108	1.587
13.4	1.592	63.3	29.7	0.815	0.885	0.228	0.0	109	1.569
13.5	1.703	67.7	29.7	0.775	0.815	0.228	0.0	104	1.648
14.2	1.513	60.1	191.3	0.980	0.325	1.470	0.0	225	1.540
14.3	1.370	54.5	191.3	1.175	0.980	1.470	0.0	225	1.395
15.2	1.117	44.4	213.9	1.145	0.975	1.644	0.0	225	1.138
15.3	0.976	38.8	213.9	1.381	1.145	1.644	0.0	225	0.994
15.4	0.994	39.5	213.9	1.275	1.378	1.644	0.0	225	1.013
16.2	1.429	56.8	69.9	0.875	0.945	0.537	0.0	225	1.455
16.3	1.552	61.7	69.9	0.845	0.875	0.537	0.0	225	1.580
16.4	1.794	71.3	69.9	0.775	0.845	0.537	0.0	181	2.034
17.2	1.772	70.4	140.8	1.100	0.325	1.082	0.0	225	1.804
17.3	1.732	68.9	140.8	1.175	1.100	1.082	0.0	225	1.764

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
Pond 1.1	SWMH 11.1	SWMH 14.3	62.960	0.600	72.000	72.000	0.000	0.0	300	18.88	40.0
Pond 1.2	SWMH 13.1	SWMH 14.3	12.943	0.600	72.150	72.000	0.150	86.3	225	15.31	40.0
Pond 2.1	SWMH 12.1	SWMH 17.3	85.275	0.600	72.000	72.000	0.000	0.0	300	18.26	40.0
Pond 2.2	SWMH 16.1	SWMH 17.3	32.916	0.600	72.230	72.000	0.230	143.1	225	15.61	40.0
Pond 3.1	SWMH 9.1	SWMH 15.4	17.878	0.600	71.700	71.700	0.000	0.0	300	19.46	40.0
Pond 3.2	SWMH 6.1	SWMH 15.4	25.274	0.600	71.860	71.700	0.160	158.0	300	15.58	40.0
Pond 4.1	SWMH 3.1	SWMH 1.5	44.080	0.600	72.200	72.200	0.000	0.0	300	17.81	40.0
Pond 4.2	SWMH 2.1	SWMH 1.5	45.691	0.600	72.200	72.200	0.000	0.0	150	17.33	40.0
Pond 5	SWMH 4.1	SWMH 2.5	4.170	0.600	73.300	73.300	0.000	0.0	225	15.22	40.0
18.1	SWMH 18.1	SWMH 11.5	21.426	0.600	72.354	72.154	0.200	107.1	300	15.24	40.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
Pond 1.1	0.700	49.5	161.6	1.100	1.100	1.242	0.0	0	∞
Pond 1.2	1.408	56.0	29.7	1.025	1.175	0.228	0.0	116	1.428
Pond 2.1	0.700	49.5	70.9	1.100	1.100	0.545	0.0	0	∞
Pond 2.2	1.091	43.4	69.9	0.945	1.175	0.537	0.0	225	1.111
Pond 3.1	0.700	49.5	19.1	1.200	1.200	0.147	0.0	0	∞
Pond 3.2	1.248	88.2	194.8	1.040	1.200	1.497	0.0	300	1.264
Pond 4.1	0.700	49.5	66.5	0.900	0.900	0.511	0.0	0	∞
Pond 4.2	0.700	12.4	12.4	1.050	1.050	0.095	0.0	0	∞
Pond 5	0.700	27.8	12.4	0.875	0.875	0.095	0.0	0	∞
18.1	1.518	107.3	80.9	1.286	1.196	0.622	0.0	195	1.663

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.1	2.491	249.1	300	Circular	73.750	71.830	1.620	73.750	71.820	1.630
1.2	31.146	249.2	300	Circular	74.110	71.955	1.855	73.750	71.830	1.620
1.3	25.381	251.3	300	Circular	74.950	72.056	2.594	74.110	71.955	1.855
1.4	27.616	251.1	300	Circular	74.000	72.166	1.534	74.950	72.056	2.594
1.5	2.978	87.6	300	Circular	73.400	72.200	0.900	74.000	72.166	1.534
2.2	25.066	89.2	150	Circular	74.070	72.481	1.439	73.400	72.200	1.050
2.3	19.408	89.9	150	Circular	74.470	72.697	1.623	74.070	72.481	1.439
2.4	28.430	90.8	150	Circular	74.750	73.010	1.590	74.470	72.697	1.623

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.1	SWMH 1.1	1200	Manhole	Adoptable	SWMH Con	1200	Manhole	Adoptable
1.2	SWMH 1.2	1200	Manhole	Adoptable	SWMH 1.1	1200	Manhole	Adoptable
1.3	SWMH 1.3	1200	Manhole	Adoptable	SWMH 1.2	1200	Manhole	Adoptable
1.4	SWMH 1.4	1200	Manhole	Adoptable	SWMH 1.3	1200	Manhole	Adoptable
1.5	SWMH 1.5	1200	Manhole	Adoptable	SWMH 1.4	1200	Manhole	Adoptable
2.2	SWMH 2.2	1200	Manhole	Adoptable	SWMH 2.1	1200	Manhole	Adoptable
2.3	SWMH 2.3	1200	Manhole	Adoptable	SWMH 2.2	1200	Manhole	Adoptable
2.4	SWMH 2.4	1200	Manhole	Adoptable	SWMH 2.3	1200	Manhole	Adoptable

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
2.5	10.081	34.8	150	Circular	74.400	73.300	0.950	74.750	73.010	1.590
3.2	3.838	239.9	300	Circular	73.440	72.216	0.924	73.400	72.200	0.900
3.3	4.049	253.1	300	Circular	73.350	72.232	0.818	73.440	72.216	0.924
3.4	3.672	229.5	300	Circular	73.350	72.248	0.802	73.350	72.232	0.818
3.5	19.977	61.5	225	Circular	73.950	72.573	1.152	73.350	72.248	0.877
3.6	25.820	63.4	225	Circular	73.980	72.980	0.775	73.950	72.573	1.152
4.2	2.676	89.2	225	Circular	74.430	73.330	0.875	74.400	73.300	0.875
4.3	3.175	90.7	225	Circular	74.420	73.365	0.830	74.430	73.330	0.875
4.4	3.739	106.8	225	Circular	74.410	73.400	0.785	74.420	73.365	0.830
5.1	23.598	214.5	300	Circular	73.580	72.342	0.938	73.350	72.232	0.818
5.2	69.111	267.9	300	Circular	73.590	72.600	0.690	73.580	72.342	0.938
6.2	2.903	36.3	225	Circular	73.210	71.940	1.045	73.200	71.860	1.115
6.3	2.636	33.0	225	Circular	73.230	72.020	0.985	73.210	71.940	1.045
6.4	3.363	42.0	225	Circular	73.260	72.100	0.935	73.230	72.020	0.985
6.5	11.230	102.1	225	Circular	73.200	72.210	0.765	73.260	72.100	0.935
7.1	8.722	92.8	150	Circular	74.090	72.150	1.790	74.950	72.056	2.744
7.2	4.994	99.9	150	Circular	73.330	72.200	0.980	74.090	72.150	1.790
8.1	14.083	93.9	225	Circular	73.240	72.250	0.765	73.260	72.100	0.935

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
2.5	SWMH 2.5	1200	Manhole	Adoptable	SWMH 2.4	1200	Manhole	Adoptable
3.2	SWMH 3.2	1200	Manhole	Adoptable	SWMH 3.1	1200	Manhole	Adoptable
3.3	SWMH 3.3	1200	Manhole	Adoptable	SWMH 3.2	1200	Manhole	Adoptable
3.4	SWMH 3.4	1200	Manhole	Adoptable	SWMH 3.3	1200	Manhole	Adoptable
3.5	SWMH 3.5	1200	Manhole	Adoptable	SWMH 3.4	1200	Manhole	Adoptable
3.6	SWMH 3.6	1200	Manhole	Adoptable	SWMH 3.5	1200	Manhole	Adoptable
4.2	SWMH 4.2	1200	Manhole	Adoptable	SWMH 4.1	1200	Manhole	Adoptable
4.3	SWMH 4.3	1200	Manhole	Adoptable	SWMH 4.2	1200	Manhole	Adoptable
4.4	SWMH 4.4	1200	Manhole	Adoptable	SWMH 4.3	1200	Manhole	Adoptable
5.1	SWMH 5.1	1200	Manhole	Adoptable	SWMH 3.4	1200	Manhole	Adoptable
5.2	SWMH 5.2	1200	Manhole	Adoptable	SWMH 5.1	1200	Manhole	Adoptable
6.2	SWMH 6.2	1200	Manhole	Adoptable	SWMH 6.1	1200	Manhole	Adoptable
6.3	SWMH 6.3	1200	Manhole	Adoptable	SWMH 6.2	1200	Manhole	Adoptable
6.4	SWMH 6.4	1200	Manhole	Adoptable	SWMH 6.3	1200	Manhole	Adoptable
6.5	SWMH 6.5	1200	Manhole	Adoptable	SWMH 6.4	1200	Manhole	Adoptable
7.1	SWMH 7.1	1200	Manhole	Adoptable	SWMH 1.3	1200	Manhole	Adoptable
7.2	SWMH 7.2	1200	Manhole	Adoptable	SWMH 7.1	1200	Manhole	Adoptable
8.1	SWMH 8.1	1200	Manhole	Adoptable	SWMH 6.4	1200	Manhole	Adoptable

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
9.2	56.540	248.0	300	Circular	73.780	71.928	1.552	73.200	71.700	1.200
9.3	90.021	250.1	300	Circular	73.850	72.288	1.262	73.780	71.928	1.552
9.4	32.364	252.8	300	Circular	73.630	72.416	0.914	73.850	72.288	1.262
9.5	4.337	51.6	300	Circular	73.830	72.500	1.030	73.630	72.416	0.914
10.1	26.113	72.9	225	Circular	73.840	72.700	0.915	73.580	72.342	1.013
11.2	2.253	225.3	300	Circular	73.480	72.010	1.170	73.400	72.000	1.100
11.3	3.270	204.4	300	Circular	73.510	72.026	1.184	73.480	72.010	1.170
11.4	6.737	280.7	300	Circular	73.450	72.050	1.100	73.510	72.026	1.184
11.5	25.939	249.4	300	Circular	73.650	72.154	1.196	73.450	72.050	1.100
11.6	38.216	251.4	300	Circular	73.600	72.306	0.994	73.650	72.154	1.196
11.7	38.216	251.4	300	Circular	73.580	72.458	0.822	73.600	72.306	0.994
11.8	27.872	228.5	300	Circular	73.580	72.580	0.700	73.580	72.458	0.822
12.2	6.992	174.8	300	Circular	73.480	72.040	1.140	73.400	72.000	1.100
12.3	35.601	187.4	300	Circular	73.590	72.230	1.060	73.480	72.040	1.140
12.4	36.799	160.0	300	Circular	73.710	72.460	0.950	73.590	72.230	1.060
12.5	7.963	199.1	300	Circular	73.810	72.500	1.010	73.710	72.460	0.950
13.2	3.740	62.3	225	Circular	73.380	72.210	0.945	73.400	72.150	1.025
13.3	4.594	65.6	225	Circular	73.390	72.280	0.885	73.380	72.210	0.945
13.4	4.733	67.6	225	Circular	73.390	72.350	0.815	73.390	72.280	0.885
13.5	2.367	59.2	225	Circular	73.390	72.390	0.775	73.390	72.350	0.815

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
9.2	SWMH 9.2	1200	Manhole	Adoptable	SWMH 9.1	1200	Manhole	Adoptable
9.3	SWMH 9.3	1200	Manhole	Adoptable	SWMH 9.2	1200	Manhole	Adoptable
9.4	SWMH 9.4	1200	Manhole	Adoptable	SWMH 9.3	1200	Manhole	Adoptable
9.5	SWMH 9.5	1200	Manhole	Adoptable	SWMH 9.4	1200	Manhole	Adoptable
10.1	SWMH 10.1	1200	Manhole	Adoptable	SWMH 5.1	1200	Manhole	Adoptable
11.2	SWMH 11.2	1200	Manhole	Adoptable	SWMH 11.1	1200	Manhole	Adoptable
11.3	SWMH 11.3	1200	Manhole	Adoptable	SWMH 11.2	1200	Manhole	Adoptable
11.4	SWMH 11.4	1200	Manhole	Adoptable	SWMH 11.3	1200	Manhole	Adoptable
11.5	SWMH 11.5	1200	Manhole	Adoptable	SWMH 11.4	1200	Manhole	Adoptable
11.6	SWMH 11.6	1200	Manhole	Adoptable	SWMH 11.5	1200	Manhole	Adoptable
11.7	SWMH 11.7	1200	Manhole	Adoptable	SWMH 11.6	1200	Manhole	Adoptable
11.8	SWMH 11.8	1200	Manhole	Adoptable	SWMH 11.7	1200	Manhole	Adoptable
12.2	SWMH 12.2	1200	Manhole	Adoptable	SWMH 12.1	1200	Manhole	Adoptable
12.3	SWMH 12.3	1200	Manhole	Adoptable	SWMH 12.2	1200	Manhole	Adoptable
12.4	SWMH 12.4	1200	Manhole	Adoptable	SWMH 12.3	1200	Manhole	Adoptable
12.5	SWMH 12.5	1200	Manhole	Adoptable	SWMH 12.4	1200	Manhole	Adoptable
13.2	SWMH 13.2	1200	Manhole	Adoptable	SWMH 13.1	1200	Manhole	Adoptable
13.3	SWMH 13.3	1200	Manhole	Adoptable	SWMH 13.2	1200	Manhole	Adoptable
13.4	SWMH 13.4	1200	Manhole	Adoptable	SWMH 13.3	1200	Manhole	Adoptable
13.5	SWMH 13.5	1200	Manhole	Adoptable	SWMH 13.4	1200	Manhole	Adoptable

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
14.2	1.872	74.9	225	Circular	73.180	71.975	0.980	72.500	71.950	0.325
14.3	2.278	91.1	225	Circular	73.400	72.000	1.175	73.180	71.975	0.980
15.2	5.460	136.5	225	Circular	72.710	71.340	1.145	72.500	71.300	0.975
15.3	45.263	178.2	225	Circular	73.200	71.594	1.381	72.710	71.340	1.145
15.4	17.701	171.9	225	Circular	73.200	71.700	1.275	73.200	71.597	1.378
16.2	4.190	83.8	225	Circular	73.380	72.280	0.875	73.400	72.230	0.945
16.3	3.559	71.2	225	Circular	73.400	72.330	0.845	73.380	72.280	0.875
16.4	2.669	53.4	225	Circular	73.380	72.380	0.775	73.400	72.330	0.845
17.2	1.368	54.7	225	Circular	73.300	71.975	1.100	72.500	71.950	0.325
17.3	1.431	57.2	225	Circular	73.400	72.000	1.175	73.300	71.975	1.100
Pond 1.1	62.960	0.0	300	Circular	73.400	72.000	1.100	73.400	72.000	1.100
Pond 1.2	12.943	86.3	225	Circular	73.400	72.150	1.025	73.400	72.000	1.175
Pond 2.1	85.275	0.0	300	Circular	73.400	72.000	1.100	73.400	72.000	1.100
Pond 2.2	32.916	143.1	225	Circular	73.400	72.230	0.945	73.400	72.000	1.175
Pond 3.1	17.878	0.0	300	Circular	73.200	71.700	1.200	73.200	71.700	1.200
Pond 3.2	25.274	158.0	300	Circular	73.200	71.860	1.040	73.200	71.700	1.200
Pond 4.1	44.080	0.0	300	Circular	73.400	72.200	0.900	73.400	72.200	0.900
Pond 4.2	45.691	0.0	150	Circular	73.400	72.200	1.050	73.400	72.200	1.050
Pond 5	4.170	0.0	225	Circular	74.400	73.300	0.875	74.400	73.300	0.875
18.1	21.426	107.1	300	Circular	73.940	72.354	1.286	73.650	72.154	1.196

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
14.2	SWMH 14.2	1200	Manhole	Adoptable	SWMH 14.1	1200	Manhole	Adoptable
14.3	SWMH 14.3	1200	Manhole	Adoptable	SWMH 14.2	1200	Manhole	Adoptable
15.2	SWMH 15.2	1200	Manhole	Adoptable	SWMH 15.1	1200	Manhole	Adoptable
15.3	SWMH 15.3	1200	Manhole	Adoptable	SWMH 15.2	1200	Manhole	Adoptable
15.4	SWMH 15.4	1200	Manhole	Adoptable	SWMH 15.3	1200	Manhole	Adoptable
16.2	SWMH 16.2	1200	Manhole	Adoptable	SWMH 16.1	1200	Manhole	Adoptable
16.3	SWMH 16.3	1200	Manhole	Adoptable	SWMH 16.2	1200	Manhole	Adoptable
16.4	SWMH 16.4	1200	Manhole	Adoptable	SWMH 16.3	1200	Manhole	Adoptable
17.2	SWMH 17.2	1200	Manhole	Adoptable	SWMH 17.1	1200	Manhole	Adoptable
17.3	SWMH 17.3	1200	Manhole	Adoptable	SWMH 17.2	1200	Manhole	Adoptable
Pond 1.1	SWMH 11.1	1200	Manhole	Adoptable	SWMH 14.3	1200	Manhole	Adoptable
Pond 1.2	SWMH 13.1	1200	Manhole	Adoptable	SWMH 14.3	1200	Manhole	Adoptable
Pond 2.1	SWMH 12.1	1200	Manhole	Adoptable	SWMH 17.3	1200	Manhole	Adoptable
Pond 2.2	SWMH 16.1	1200	Manhole	Adoptable	SWMH 17.3	1200	Manhole	Adoptable
Pond 3.1	SWMH 9.1	1200	Manhole	Adoptable	SWMH 15.4	1200	Manhole	Adoptable
Pond 3.2	SWMH 6.1	1200	Manhole	Adoptable	SWMH 15.4	1200	Manhole	Adoptable
Pond 4.1	SWMH 3.1	1200	Manhole	Adoptable	SWMH 1.5	1200	Manhole	Adoptable
Pond 4.2	SWMH 2.1	1200	Manhole	Adoptable	SWMH 1.5	1200	Manhole	Adoptable
Pond 5	SWMH 4.1	1200	Manhole	Adoptable	SWMH 2.5	1200	Manhole	Adoptable
18.1	SWMH 18.1	1200	Manhole	Adoptable	SWMH 11.5	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SWMH Con	303817.958	230626.095	73.750	1.930	1200	1	1.1	71.820	300
SWMH 1.1	303815.504	230625.668	73.750	1.920	1200	1	1.2	71.830	300
						0	1.1	71.830	300
SWMH 1.2	303799.696	230598.832	74.110	2.155	1200	1	1.3	71.955	300
						0	1.2	71.955	300
SWMH 1.3	303782.426	230580.233	74.950	2.894	1200	1	7.1	72.056	150
						2	1.4	72.056	300
						0	1.3	72.056	300
SWMH 1.4	303758.271	230566.848	74.000	1.834	1200	1	1.5	72.166	300
						0	1.4	72.166	300
SWMH 1.5	303757.069	230569.573	73.400	1.200	1200	1	Pond 4.2	72.200	150
						2	Pond 4.1	72.200	300
						0	1.5	72.200	300
SWMH 2.1	303711.904	230562.661	73.400	1.200	1200	1	2.2	72.200	150
						0	Pond 4.2	72.200	150
SWMH 2.2	303687.569	230556.650	74.070	1.589	1200	1	2.3	72.481	150
						0	2.2	72.481	150
SWMH 2.3	303670.643	230547.154	74.470	1.773	1200	1	2.4	72.697	150
						0	2.3	72.697	150
SWMH 2.4	303642.697	230541.928	74.750	1.740	1200	1	2.5	73.010	150
						0	2.4	73.010	150
SWMH 2.5	303635.113	230535.287	74.400	1.100	1200	1	Pond 5	73.300	225
						0	2.5	73.300	150
SWMH 3.1	303713.345	230563.983	73.400	1.200	1200	1	3.2	72.200	300
						0	Pond 4.1	72.200	300
SWMH 3.2	303712.194	230567.644	73.440	1.224	1200	1	3.3	72.216	300
						0	3.2	72.216	300

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SWMH 3.3	303708.217	230566.882	73.350	1.118	1200	1	3.4	72.232	300
						0	3.3	72.232	300
SWMH 3.4	303704.599	230566.252	73.350	1.118	1200	1	3.5	72.248	225
						2	5.1	72.232	300
						0	3.4	72.248	300
SWMH 3.5	303686.012	230558.931	73.950	1.377	1200	1	3.6	72.573	225
						0	3.5	72.573	225
SWMH 3.6	303661.138	230552.006	73.980	1.000	1200	0	3.6	72.980	225
SWMH 4.1	303631.352	230537.088	74.400	1.100	1200	1	4.2	73.300	225
						0	Pond 5	73.300	225
SWMH 4.2	303631.148	230539.756	74.430	1.100	1200	1	4.3	73.330	225
						0	4.2	73.330	225
SWMH 4.3	303634.232	230540.511	74.420	1.055	1200	1	4.4	73.365	225
						0	4.3	73.365	225
SWMH 4.4	303637.844	230541.476	74.410	1.010	1200	0	4.4	73.400	225
SWMH 5.1	303685.833	230580.559	73.580	1.238	1200	1	10.1	72.342	225
						2	5.2	72.342	300
						0	5.1	72.342	300
SWMH 5.2	303672.259	230648.324	73.590	0.990	1200	0	5.2	72.600	300
SWMH 6.1	303847.702	230663.364	73.200	1.340	1200	1	6.2	71.860	225
						0	Pond 3.2	71.860	300
SWMH 6.2	303844.808	230663.133	73.210	1.270	1200	1	6.3	71.940	225
						0	6.2	71.940	225
SWMH 6.3	303842.379	230664.158	73.230	1.210	1200	1	6.4	72.020	225
						0	6.3	72.020	225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SWMH 6.4	303839.319	230665.554	73.260	1.160	1200		1 6.5 2 8.1 0 6.4	72.100 72.100 72.100	225 225 225
SWMH 6.5	303833.673	230655.847	73.200	0.990	1200		0 6.5	72.210	225
SWMH 7.1	303773.734	230579.515	74.090	1.940	1200		1 7.2 0 7.1	72.150 72.150	150 150
SWMH 7.2	303768.761	230579.061	73.330	1.130	1200		0 7.2	72.200	150
SWMH 8.1	303839.708	230679.632	73.240	0.990	1200		0 8.1	72.250	225
SWMH 9.1	303847.525	230671.902	73.200	1.500	1200		1 9.2 0 Pond 3.1	71.700 71.700	300 300
SWMH 9.2	303792.728	230685.834	73.780	1.852	1200		1 9.3 0 9.2	71.928 71.928	300 300
SWMH 9.3	303704.302	230668.965	73.850	1.562	1200		1 9.4 0 9.3	72.288 72.288	300 300
SWMH 9.4	303671.938	230669.031	73.630	1.214	1200		1 9.5 0 9.4	72.416 72.416	300 300
SWMH 9.5	303667.664	230668.294	73.830	1.330	1200		0 9.5	72.500	300
SWMH 10.1	303667.035	230606.315	73.840	1.140	1200		0 10.1	72.700	225
SWMH 11.1	303649.445	230812.584	73.400	1.400	1200		1 11.2 0 Pond 1.1	72.000 72.000	300 300
SWMH 11.2	303650.077	230810.421	73.480	1.470	1200		1 11.3 0 11.2	72.010 72.010	300 300

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SWMH 11.3	303646.938	230809.503	73.510	1.484	1200	1	11.4	72.026	300
									
						0	11.3	72.026	300
SWMH 11.4	303640.412	230807.832	73.450	1.400	1200	1	11.5	72.050	300
									
						0	11.4	72.050	300
SWMH 11.5	303642.244	230781.958	73.650	1.496	1200	1	18.1	72.154	300
							2	11.6	72.154	300
						0	11.5	72.154	300
SWMH 11.6	303656.748	230746.601	73.600	1.294	1200	1	11.7	72.306	300
									
						0	11.6	72.306	300
SWMH 11.7	303671.252	230711.244	73.580	1.122	1200	1	11.8	72.458	300
									
						0	11.7	72.458	300
SWMH 11.8	303676.967	230683.964	73.580	1.000	1200				
						0	11.8	72.580	300
SWMH 12.1	303738.067	230855.865	73.400	1.400	1200	1	12.2	72.000	300
									
						0	Pond 2.1	72.000	300
SWMH 12.2	303734.936	230849.613	73.480	1.440	1200	1	12.3	72.040	300
									
						0	12.2	72.040	300
SWMH 12.3	303702.648	230834.615	73.590	1.360	1200	1	12.4	72.230	300
									
						0	12.3	72.230	300
SWMH 12.4	303669.274	230819.112	73.710	1.250	1200	1	12.5	72.460	300
									
						0	12.4	72.460	300
SWMH 12.5	303667.251	230811.410	73.810	1.310	1200				
						0	12.5	72.500	300
SWMH 13.1	303711.263	230852.399	73.400	1.250	1200	1	13.2	72.150	225
									
						0	Pond 1.2	72.150	225
SWMH 13.2	303712.947	230849.060	73.380	1.170	1200	1	13.3	72.210	225
									
						0	13.2	72.210	225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SWMH 13.3	303717.240	230850.696	73.390	1.110	1200	1	13.4	72.280	225
									
						0	13.3	72.280	225
SWMH 13.4	303721.614	230852.503	73.390	1.040	1200	1	13.5	72.350	225
									
						0	13.4	72.350	225
SWMH 13.5	303722.638	230850.369	73.390	1.000	1200				
						0	13.5	72.390	225
SWMH 14.1	303694.193	230852.700	72.500	0.550	1200	1	14.2	71.950	225
									
SWMH 14.2	303696.055	230852.502	73.180	1.205	1200	1	14.3	71.975	225
									
						0	14.2	71.975	225
SWMH 14.3	303698.321	230852.272	73.400	1.400	1200	1	Pond 1.2	72.000	225
						2	Pond 1.1	72.000	300
									
						0	14.3	72.000	225
SWMH 15.1	303817.102	230737.720	72.500	1.200	1200	1	15.2	71.300	225
									
SWMH 15.2	303816.412	230732.304	72.710	1.370	1200	1	15.3	71.340	225
									
						0	15.2	71.340	225
SWMH 15.3	303850.692	230702.747	73.200	1.606	1200	1	15.4	71.597	225
									
						0	15.3	71.594	225
SWMH 15.4	303857.797	230686.534	73.200	1.500	1200	1	Pond 3.2	71.700	300
						2	Pond 3.1	71.700	300
									
						0	15.4	71.700	225
SWMH 16.1	303800.963	230758.451	73.400	1.170	1200	1	16.2	72.230	225
									
						0	Pond 2.2	72.230	225
SWMH 16.2	303799.149	230762.228	73.380	1.100	1200	1	16.3	72.280	225
									
						0	16.2	72.280	225
SWMH 16.3	303797.672	230765.466	73.400	1.070	1200	1	16.4	72.330	225
									
						0	16.3	72.330	225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SWMH 16.4	303795.212	230764.430	73.380	1.000	1200				
						0	16.4	72.380	225
SWMH 17.1	303793.390	230792.952	72.500	0.550	1200	1	17.2	71.950	225
									
SWMH 17.2	303793.004	230791.640	73.300	1.325	1200	 1	17.3	71.975	225
						0	17.2	71.975	225
SWMH 17.3	303792.566	230790.278	73.400	1.400	1200	 1	Pond 2.2	72.000	225
						2	Pond 2.1	72.000	300
						0	17.3	72.000	225
SWMH 18.1	303621.405	230776.978	73.940	1.586	1200				
						0	18.1	72.354	300

Simulation Settings

Rainfall Methodology	FSR	Drain Down Time (mins)	1440
FSR Region	Scotland and Ireland	Additional Storage (m^3/ha)	20.0
M5-60 (mm)	16.800	Check Discharge Rate(s)	✓
Ratio-R	0.300	1 year (l/s)	8.5
Summer CV	0.750	30 year (l/s)	19.4
Winter CV	0.840	100 year (l/s)	24.7
Analysis Speed	Normal	Check Discharge Volume	✓
Skip Steady State	x	100 year +20% 1440 minute (m^3)	1876

Storm Durations

1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
100	20	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	1.95
Greenfield Method	IH124	Growth Factor 100 year	2.48
Positively Drained Area (ha)	5.005	Betterment (%)	0
SAAR (mm)	755	QBar	10.0
Soil Index	3	Q 1 year (l/s)	8.5
SPR	0.30	Q 30 year (l/s)	19.4
Region	11	Q 100 year (l/s)	24.7
Growth Factor 1 year	0.85		

Pre-development Discharge Volume

Site Makeup	Greenfield	Return Period (years)	100
Greenfield Method	FSR/FEH	Climate Change (%)	20
Positively Drained Area (ha)	5.005	Storm Duration (mins)	1440
Soil Index	3	Betterment (%)	0
SPR	0.30	PR	0.378
CWI	124.865	Runoff Volume (m^3)	1876

Node SWMH 1.4 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	72.166	Product Number	CTL-SHE-0079-3000-1200-3000
Design Depth (m)	1.200	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	3.0	Min Node Diameter (mm)	1200

Node SWMH 2.4 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	73.010	Product Number	CTL-SHE-0013-1000-1000-1000
Design Depth (m)	1.000	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	0.1	Min Node Diameter (mm)	1200

Node SWMH 7.2 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	72.200	Product Number	CTL-SHE-0023-2000-0500-2000
Design Depth (m)	0.500	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	0.2	Min Node Diameter (mm)	1200

Node SWMH 8.1 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	72.250	Product Number	CTL-SHE-0023-2000-0500-2000
Design Depth (m)	0.500	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	0.2	Min Node Diameter (mm)	1200

Node SWMH 13.5 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	72.390	Product Number	CTL-SHE-0023-2000-0500-2000
Design Depth (m)	0.500	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	0.2	Min Node Diameter (mm)	1200

Node SWMH 14.2 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	71.975	Product Number	CTL-SHE-0064-1800-1000-1800
Design Depth (m)	1.000	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	1.8	Min Node Diameter (mm)	1200

Node SWMH 15.3 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	71.594	Product Number	CTL-SHE-0071-2500-1300-2500
Design Depth (m)	1.300	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.5	Min Node Diameter (mm)	1200

Node SWMH 16.4 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	72.380	Product Number	CTL-SHE-0045-7000-0500-7000
Design Depth (m)	0.500	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	0.7	Min Node Diameter (mm)	1200

Node SWMH 17.2 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	71.975	Product Number	CTL-SHE-0064-1800-1000-1800
Design Depth (m)	1.000	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	1.8	Min Node Diameter (mm)	1200

Node SWMH 18.1 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	72.354	Product Number	CTL-SHE-0029-3000-0500-3000
Design Depth (m)	0.500	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	0.3	Min Node Diameter (mm)	1200

Node SWMH 13.5 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.02500	Invert Level (m)	72.390	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.02500	Time to half empty (mins)	360	Depth (m)	0.350
Safety Factor	2.0	Width (m)	43.000	Inf Depth (m)	0.350
Porosity	0.33	Length (m)	17.000		

Node SWMH 16.4 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.05000	Invert Level (m)	72.380	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.05000	Time to half empty (mins)	330	Depth (m)	0.350
Safety Factor	2.0	Width (m)	57.000	Inf Depth (m)	0.350
Porosity	0.36	Length (m)	17.000		

Node SWMH 8.1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.02000	Invert Level (m)	72.250	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.02000	Time to half empty (mins)	420	Depth (m)	0.350
Safety Factor	2.0	Width (m)	46.000	Inf Depth (m)	0.350
Porosity	0.33	Length (m)	44.000		

Node SWMH 7.2 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.01000	Invert Level (m)	72.200	Slope (1:X)	100.0
Side Inf Coefficient (m/hr)	0.01000	Time to half empty (mins)	450	Depth (m)	0.350
Safety Factor	2.0	Width (m)	58.000	Inf Depth (m)	0.350
Porosity	0.33	Length (m)	17.000		

Node SWMH 1.5 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	72.200
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	900

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	211.0	0.0	1.100	422.0	0.0

Node SWMH 2.5 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	73.300
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	138.0	0.0	1.100	60.0	0.0

Node SWMH 15.4 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	71.700
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	500.0	0.0	1.500	800.0	0.0

Node SWMH 17.3 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	72.000
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	600

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	300.0	0.0	1.300	750.0	0.0

Node SWMH 14.3 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	72.000
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	750

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	300.0	0.0	1.300	850.0	0.0

Node SWMH 18.1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.02000	Invert Level (m)	72.354	Slope (1:X)	1000.0
Side Inf Coefficient (m/hr)	0.02000	Time to half empty (mins)	0	Depth (m)	0.350
Safety Factor	2.0	Width (m)	20.000	Inf Depth (m)	0.350
Porosity	0.33	Length (m)	160.000		

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +20% CC 1440 minute summer	15.421	4.133	100 year +20% CC 1440 minute winter	10.364	4.133

Results for 100 year +20% CC 1440 minute summer. 2880 minute analysis at 30 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute summer	SWMH Con	720	71.861	0.041	3.1	0.0000	0.0000	OK
1440 minute summer	SWMH 1.1	720	71.876	0.046	3.1	0.0518	0.0000	OK
1440 minute summer	SWMH 1.2	720	71.997	0.042	3.1	0.0480	0.0000	OK
1440 minute summer	SWMH 1.3	720	72.099	0.043	3.1	0.0490	0.0000	OK
1440 minute summer	SWMH 1.4	1080	72.889	0.723	3.6	0.8176	0.0000	SURCHARGED
1440 minute summer	SWMH 1.5	1080	72.889	0.689	15.6	191.6685	0.0000	SURCHARGED
1440 minute summer	SWMH 2.1	1080	72.889	0.689	0.3	0.7791	0.0000	SURCHARGED
1440 minute summer	SWMH 2.2	1080	72.889	0.408	0.3	0.4612	0.0000	SURCHARGED
1440 minute summer	SWMH 2.3	1080	72.889	0.192	0.1	0.2169	0.0000	SURCHARGED
1440 minute summer	SWMH 2.4	1470	73.788	0.778	0.2	0.8803	0.0000	SURCHARGED
1440 minute summer	SWMH 2.5	1470	73.788	0.488	2.9	59.4913	0.0000	SURCHARGED
1440 minute summer	SWMH 3.1	1110	72.890	0.690	15.6	0.7805	0.0000	SURCHARGED
1440 minute summer	SWMH 3.2	1500	72.934	0.718	15.7	0.8125	0.0000	SURCHARGED
1440 minute summer	SWMH 3.3	1110	72.892	0.660	15.7	0.7467	0.0000	SURCHARGED
1440 minute summer	SWMH 3.4	1230	72.900	0.668	15.8	0.7551	0.0000	SURCHARGED
1440 minute summer	SWMH 3.5	1230	72.895	0.322	3.2	0.3636	0.0000	SURCHARGED
1440 minute summer	SWMH 3.6	720	73.014	0.034	3.2	0.1071	0.0000	OK
1440 minute summer	SWMH 4.1	1470	73.790	0.490	3.0	0.5538	0.0000	SURCHARGED
1440 minute summer	SWMH 4.2	1440	73.790	0.460	3.0	0.5203	0.0000	SURCHARGED
1440 minute summer	SWMH 4.3	1470	73.790	0.425	3.0	0.4804	0.0000	SURCHARGED
1440 minute summer	SWMH 4.4	1440	73.790	0.390	3.1	1.1742	0.0000	SURCHARGED

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute summer	SWMH 1.1	1.1	SWMH Con	3.1	0.490	0.044	0.0157	406.0
1440 minute summer	SWMH 1.2	1.2	SWMH 1.1	3.1	0.480	0.044	0.1999	
1440 minute summer	SWMH 1.3	1.3	SWMH 1.2	3.1	0.500	0.044	0.1564	
1440 minute summer	SWMH 1.4	1.4	SWMH 1.3	2.9	0.487	0.042	0.1683	
1440 minute summer	SWMH 1.5	1.5	SWMH 1.4	3.6	0.262	0.030	0.2097	
1440 minute summer	SWMH 2.1	Pond 4.2	SWMH 1.5	0.3	0.062	0.027	0.8044	
1440 minute summer	SWMH 2.2	2.2	SWMH 2.1	0.3	0.089	0.016	0.4413	
1440 minute summer	SWMH 2.3	2.3	SWMH 2.2	0.3	0.271	0.013	0.3417	
1440 minute summer	SWMH 2.4	2.4	SWMH 2.3	0.1	0.271	0.005	0.2550	
1440 minute summer	SWMH 2.5	2.5	SWMH 2.4	0.2	0.165	0.006	0.1775	
1440 minute summer	SWMH 3.1	Pond 4.1	SWMH 1.5	15.6	0.256	0.315	3.1041	
1440 minute summer	SWMH 3.2	3.2	SWMH 3.1	15.6	0.222	0.219	0.2703	
1440 minute summer	SWMH 3.3	3.3	SWMH 3.2	15.7	0.268	0.226	0.2851	
1440 minute summer	SWMH 3.4	3.4	SWMH 3.3	15.7	0.363	0.216	0.2586	
1440 minute summer	SWMH 3.5	3.5	SWMH 3.4	3.2	0.174	0.048	0.7945	
1440 minute summer	SWMH 3.6	3.6	SWMH 3.5	3.2	0.857	0.049	0.5457	
1440 minute summer	SWMH 4.1	Pond 5	SWMH 2.5	2.9	0.383	0.105	0.1658	
1440 minute summer	SWMH 4.2	4.2	SWMH 4.1	3.0	0.247	0.054	0.1064	
1440 minute summer	SWMH 4.3	4.3	SWMH 4.2	3.0	0.421	0.055	0.1263	
1440 minute summer	SWMH 4.4	4.4	SWMH 4.3	3.0	0.515	0.060	0.1487	

Results for 100 year +20% CC 1440 minute summer. 2880 minute analysis at 30 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute summer	SWMH 5.1	1110	72.895	0.553	13.2	0.6254	0.0000	SURCHARGED
1440 minute summer	SWMH 5.2	1110	72.895	0.295	9.8	2.1438	0.0000	OK
1440 minute summer	SWMH 6.1	1440	72.684	0.824	28.8	0.9321	0.0000	SURCHARGED
1440 minute summer	SWMH 6.2	1440	72.687	0.747	28.8	0.8453	0.0000	SURCHARGED
1440 minute summer	SWMH 6.3	1440	72.683	0.663	28.9	0.7502	0.0000	SURCHARGED
1440 minute summer	SWMH 6.4	1440	72.687	0.587	29.3	0.6635	0.0000	SURCHARGED
1440 minute summer	SWMH 6.5	1440	72.686	0.476	29.5	9.3722	0.0000	SURCHARGED
1440 minute summer	SWMH 7.1	600	72.160	0.010	0.2	0.0113	0.0000	OK
1440 minute summer	SWMH 7.2	930	72.460	0.260	5.7	58.1699	0.0000	SURCHARGED
1440 minute summer	SWMH 8.1	930	72.800	0.550	18.6	182.5781	0.0000	SURCHARGED
1440 minute summer	SWMH 9.1	1440	72.685	0.985	4.3	1.1139	0.0000	SURCHARGED
1440 minute summer	SWMH 9.2	1440	72.685	0.757	4.7	0.8561	0.0000	SURCHARGED
1440 minute summer	SWMH 9.3	1440	72.685	0.397	4.7	0.4489	0.0000	SURCHARGED
1440 minute summer	SWMH 9.4	1440	72.685	0.269	4.7	0.3042	0.0000	OK
1440 minute summer	SWMH 9.5	1440	72.685	0.185	4.7	0.6179	0.0000	OK
1440 minute summer	SWMH 10.1	1230	72.895	0.195	3.4	0.5876	0.0000	OK
1440 minute summer	SWMH 11.1	1290	72.707	0.707	266.9	0.7999	0.0000	SURCHARGED

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute summer	SWMH 5.1	5.1	SWMH 3.4	12.9	0.303	0.170	1.6618	
1440 minute summer	SWMH 5.2	5.2	SWMH 5.1	9.8	0.516	0.145	4.8571	
1440 minute summer	SWMH 6.1	Pond 3.2	SWMH 15.4	28.7	0.963	0.325	1.7798	
1440 minute summer	SWMH 6.2	6.2	SWMH 6.1	28.8	1.136	0.332	0.1155	
1440 minute summer	SWMH 6.3	6.3	SWMH 6.2	28.8	1.253	0.317	0.1048	
1440 minute summer	SWMH 6.4	6.4	SWMH 6.3	28.9	1.289	0.359	0.1338	
1440 minute summer	SWMH 6.5	6.5	SWMH 6.4	29.3	1.196	0.569	0.4466	
1440 minute summer	SWMH 7.1	7.1	SWMH 1.3	0.2	0.209	0.009	0.0205	
1440 minute summer	SWMH 7.2	7.2	SWMH 7.1	0.2	0.313	0.009	0.0025	
1440 minute summer	SWMH 7.2	Infiltration		1.4				
1440 minute summer	SWMH 8.1	8.1	SWMH 6.4	-0.4	0.088	-0.007	0.5601	
1440 minute summer	SWMH 8.1	Infiltration		5.7				
1440 minute summer	SWMH 9.1	Pond 3.1	SWMH 15.4	4.3	0.171	0.086	1.2590	
1440 minute summer	SWMH 9.2	9.2	SWMH 9.1	4.3	0.162	0.062	3.9815	
1440 minute summer	SWMH 9.3	9.3	SWMH 9.2	4.7	0.456	0.067	6.3392	
1440 minute summer	SWMH 9.4	9.4	SWMH 9.3	4.7	0.567	0.068	2.2171	
1440 minute summer	SWMH 9.5	9.5	SWMH 9.4	4.7	0.701	0.030	0.2432	
1440 minute summer	SWMH 10.1	10.1	SWMH 5.1	3.4	0.325	0.056	0.9974	
1440 minute summer	SWMH 11.1	Pond 1.1	SWMH 14.3	25.4	0.361	0.513	4.4336	

Results for 100 year +20% CC 1440 minute summer. 2880 minute analysis at 30 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute summer	SWMH 11.2	2070	72.962	0.952	338.5	1.0763	0.0000	SURCHARGED
1440 minute summer	SWMH 11.3	930	72.728	0.702	194.6	0.7938	0.0000	SURCHARGED
1440 minute summer	SWMH 11.4	1380	72.711	0.661	35.7	0.7475	0.0000	SURCHARGED
1440 minute summer	SWMH 11.5	1380	72.708	0.554	19.5	0.6266	0.0000	SURCHARGED
1440 minute summer	SWMH 11.6	1380	72.709	0.403	19.9	0.4557	0.0000	SURCHARGED
1440 minute summer	SWMH 11.7	1380	72.710	0.252	19.9	0.2849	0.0000	OK
1440 minute summer	SWMH 11.8	1230	72.710	0.130	19.9	1.7569	0.0000	OK
1440 minute summer	SWMH 12.1	1140	72.687	0.687	17.1	0.7767	0.0000	SURCHARGED
1440 minute summer	SWMH 12.2	1140	72.687	0.647	17.2	0.7315	0.0000	SURCHARGED
1440 minute summer	SWMH 12.3	1140	72.687	0.457	17.5	0.5168	0.0000	SURCHARGED
1440 minute summer	SWMH 12.4	1140	72.687	0.227	17.5	0.2569	0.0000	OK
1440 minute summer	SWMH 12.5	1140	72.687	0.187	17.5	1.7692	0.0000	OK
1440 minute summer	SWMH 13.1	1440	72.706	0.556	0.9	0.6289	0.0000	SURCHARGED
1440 minute summer	SWMH 13.2	1350	72.706	0.496	1.0	0.5614	0.0000	SURCHARGED
1440 minute summer	SWMH 13.3	1260	72.706	0.426	0.8	0.4812	0.0000	SURCHARGED
1440 minute summer	SWMH 13.4	1410	72.708	0.358	3.5	0.4046	0.0000	SURCHARGED
1440 minute summer	SWMH 13.5	900	72.697	0.307	7.3	55.3402	0.0000	SURCHARGED
1440 minute summer	SWMH 14.1	660	71.976	0.026	1.7	0.0000	0.0000	OK
1440 minute summer	SWMH 14.2	1350	72.706	0.731	1.8	0.8269	0.0000	SURCHARGED
1440 minute summer	SWMH 14.3	1350	72.706	0.706	25.4	318.1295	0.0000	SURCHARGED

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute summer	SWMH 11.2	11.2	SWMH 11.1	259.2	3.727	3.515	0.1587	
1440 minute summer	SWMH 11.3	11.3	SWMH 11.2	-166.1	-2.360	-2.144	0.2303	
1440 minute summer	SWMH 11.4	11.4	SWMH 11.3	-30.4	-0.432	-0.461	0.4744	
1440 minute summer	SWMH 11.5	11.5	SWMH 11.4	19.3	0.442	0.276	1.8266	
1440 minute summer	SWMH 11.6	11.6	SWMH 11.5	19.5	0.680	0.280	2.6911	
1440 minute summer	SWMH 11.7	11.7	SWMH 11.6	19.9	0.808	0.285	2.5525	
1440 minute summer	SWMH 11.8	11.8	SWMH 11.7	19.9	0.859	0.272	1.2855	
1440 minute summer	SWMH 12.1	Pond 2.1	SWMH 17.3	17.1	0.242	0.345	6.0050	
1440 minute summer	SWMH 12.2	12.2	SWMH 12.1	17.1	0.243	0.204	0.4924	
1440 minute summer	SWMH 12.3	12.3	SWMH 12.2	17.2	0.425	0.212	2.5070	
1440 minute summer	SWMH 12.4	12.4	SWMH 12.3	17.5	0.850	0.200	2.3486	
1440 minute summer	SWMH 12.5	12.5	SWMH 12.4	17.5	0.901	0.223	0.4119	
1440 minute summer	SWMH 13.1	Pond 1.2	SWMH 14.3	1.1	0.323	0.020	0.5148	
1440 minute summer	SWMH 13.2	13.2	SWMH 13.1	-1.0	0.327	-0.015	0.1487	
1440 minute summer	SWMH 13.3	13.3	SWMH 13.2	-0.8	0.343	-0.013	0.1827	
1440 minute summer	SWMH 13.4	13.4	SWMH 13.3	-1.6	0.338	-0.026	0.1882	
1440 minute summer	SWMH 13.5	13.5	SWMH 13.4	0.9	0.342	0.013	0.0941	
1440 minute summer	SWMH 13.5	Infiltration		2.6				
1440 minute summer	SWMH 14.2	14.2	SWMH 14.1	1.7	0.627	0.028	0.0051	245.1
1440 minute summer	SWMH 14.3	14.3	SWMH 14.2	1.8	0.172	0.034	0.0906	

Results for 100 year +20% CC 1440 minute summer. 2880 minute analysis at 30 minute timestep. Mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute summer	SWMH 15.1	1440	71.334	0.034	2.3	0.0000	0.0000	OK
1440 minute summer	SWMH 15.2	1440	71.376	0.036	2.3	0.0410	0.0000	OK
1440 minute summer	SWMH 15.3	1440	72.684	1.090	2.3	1.2333	0.0000	SURCHARGED
1440 minute summer	SWMH 15.4	1440	72.685	0.985	32.5	590.5580	0.0000	SURCHARGED
1440 minute summer	SWMH 16.1	1170	72.688	0.458	1.3	0.5181	0.0000	SURCHARGED
1440 minute summer	SWMH 16.2	1170	72.689	0.409	3.6	0.4623	0.0000	SURCHARGED
1440 minute summer	SWMH 16.3	1200	72.687	0.357	2.3	0.4035	0.0000	SURCHARGED
1440 minute summer	SWMH 16.4	870	73.250	0.870	17.3	102.9511	0.0000	FLOOD RISK
1440 minute summer	SWMH 17.1	660	71.974	0.024	1.7	0.0000	0.0000	OK
1440 minute summer	SWMH 17.2	1170	72.686	0.711	3.2	0.8045	0.0000	SURCHARGED
1440 minute summer	SWMH 17.3	1170	72.686	0.686	17.8	288.2270	0.0000	SURCHARGED
1440 minute summer	SWMH 18.1	870	72.560	0.206	20.0	135.4268	0.0000	OK

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute summer	SWMH 15.2	15.2	SWMH 15.1	2.3	0.573	0.051	0.0217	354.7
1440 minute summer	SWMH 15.3	15.3	SWMH 15.2	2.3	0.542	0.059	0.1900	
1440 minute summer	SWMH 15.4	15.4	SWMH 15.3	2.3	0.170	0.058	0.7040	
1440 minute summer	SWMH 16.1	Pond 2.2	SWMH 17.3	-1.2	0.363	-0.027	1.3091	
1440 minute summer	SWMH 16.2	16.2	SWMH 16.1	-1.6	0.441	-0.029	0.1666	
1440 minute summer	SWMH 16.3	16.3	SWMH 16.2	2.4	0.495	0.039	0.1415	
1440 minute summer	SWMH 16.4	16.4	SWMH 16.3	2.3	0.533	0.033	0.1061	
1440 minute summer	SWMH 16.4	Infiltration		7.0				
1440 minute summer	SWMH 17.2	17.2	SWMH 17.1	1.7	0.688	0.024	0.0034	248.4
1440 minute summer	SWMH 17.3	17.3	SWMH 17.2	3.2	0.287	0.046	0.0569	
1440 minute summer	SWMH 18.1	18.1	SWMH 11.5	-13.6	-0.238	-0.127	1.5088	
1440 minute summer	SWMH 18.1	Infiltration		9.0				

Results for 100 year +20% CC 1440 minute winter. 2880 minute analysis at 30 minute timestep. Mass balance: 99.16%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	SWMH Con	690	71.861	0.041	3.1	0.0000	0.0000	OK
1440 minute winter	SWMH 1.1	690	71.876	0.046	3.1	0.0518	0.0000	OK
1440 minute winter	SWMH 1.2	690	71.997	0.042	3.1	0.0480	0.0000	OK
1440 minute winter	SWMH 1.3	660	72.099	0.043	3.1	0.0490	0.0000	OK
1440 minute winter	SWMH 1.4	1170	72.981	0.815	3.0	0.9219	0.0000	SURCHARGED
1440 minute winter	SWMH 1.5	1170	72.981	0.781	11.8	224.2416	0.0000	SURCHARGED
1440 minute winter	SWMH 2.1	1170	72.981	0.781	0.2	0.8838	0.0000	SURCHARGED
1440 minute winter	SWMH 2.2	1170	72.982	0.501	0.2	0.5661	0.0000	SURCHARGED
1440 minute winter	SWMH 2.3	1170	72.982	0.285	0.1	0.3219	0.0000	SURCHARGED
1440 minute winter	SWMH 2.4	1440	73.866	0.856	0.3	0.9676	0.0000	SURCHARGED
1440 minute winter	SWMH 2.5	1440	73.865	0.565	2.8	67.3372	0.0000	SURCHARGED
1440 minute winter	SWMH 3.1	1230	72.985	0.785	11.8	0.8877	0.0000	SURCHARGED
1440 minute winter	SWMH 3.2	1230	72.988	0.772	12.2	0.8730	0.0000	SURCHARGED
1440 minute winter	SWMH 3.3	1230	72.987	0.755	11.8	0.8540	0.0000	SURCHARGED
1440 minute winter	SWMH 3.4	1230	72.990	0.758	11.8	0.8572	0.0000	SURCHARGED
1440 minute winter	SWMH 3.5	1230	72.995	0.422	2.4	0.4768	0.0000	SURCHARGED
1440 minute winter	SWMH 3.6	750	73.009	0.029	2.4	0.0921	0.0000	OK
1440 minute winter	SWMH 4.1	1410	73.866	0.566	2.3	0.6397	0.0000	SURCHARGED
1440 minute winter	SWMH 4.2	1440	73.869	0.539	3.3	0.6093	0.0000	SURCHARGED
1440 minute winter	SWMH 4.3	1440	73.866	0.501	2.2	0.5666	0.0000	SURCHARGED
1440 minute winter	SWMH 4.4	1440	73.867	0.467	2.3	1.4060	0.0000	SURCHARGED

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	SWMH 1.1	1.1	SWMH Con	3.1	0.490	0.044	0.0157	436.0
1440 minute winter	SWMH 1.2	1.2	SWMH 1.1	3.1	0.480	0.044	0.1998	
1440 minute winter	SWMH 1.3	1.3	SWMH 1.2	3.1	0.500	0.044	0.1563	
1440 minute winter	SWMH 1.4	1.4	SWMH 1.3	2.9	0.487	0.042	0.1682	
1440 minute winter	SWMH 1.5	1.5	SWMH 1.4	3.0	0.225	0.025	0.2097	
1440 minute winter	SWMH 2.1	Pond 4.2	SWMH 1.5	0.2	-0.034	0.019	0.8044	
1440 minute winter	SWMH 2.2	2.2	SWMH 2.1	0.2	0.056	0.012	0.4413	
1440 minute winter	SWMH 2.3	2.3	SWMH 2.2	0.2	0.273	0.011	0.3417	
1440 minute winter	SWMH 2.4	2.4	SWMH 2.3	0.1	0.274	0.005	0.2551	
1440 minute winter	SWMH 2.5	2.5	SWMH 2.4	0.3	0.091	0.009	0.1775	
1440 minute winter	SWMH 3.1	Pond 4.1	SWMH 1.5	11.8	0.262	0.238	3.1041	
1440 minute winter	SWMH 3.2	3.2	SWMH 3.1	11.8	0.193	0.166	0.2703	
1440 minute winter	SWMH 3.3	3.3	SWMH 3.2	12.2	0.272	0.175	0.2851	
1440 minute winter	SWMH 3.4	3.4	SWMH 3.3	11.8	0.366	0.162	0.2586	
1440 minute winter	SWMH 3.5	3.5	SWMH 3.4	2.3	0.174	0.035	0.7945	
1440 minute winter	SWMH 3.6	3.6	SWMH 3.5	2.4	0.777	0.037	0.5481	
1440 minute winter	SWMH 4.1	Pond 5	SWMH 2.5	2.8	0.363	0.100	0.1658	
1440 minute winter	SWMH 4.2	4.2	SWMH 4.1	2.3	0.273	0.042	0.1064	
1440 minute winter	SWMH 4.3	4.3	SWMH 4.2	3.3	0.431	0.061	0.1263	
1440 minute winter	SWMH 4.4	4.4	SWMH 4.3	2.2	0.529	0.044	0.1487	

Results for 100 year +20% CC 1440 minute winter. 2880 minute analysis at 30 minute timestep. Mass balance: 99.16%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	SWMH 5.1	1230	72.993	0.651	10.0	0.7359	0.0000	SURCHARGED
1440 minute winter	SWMH 5.2	1230	72.992	0.392	7.4	2.8527	0.0000	SURCHARGED
1440 minute winter	SWMH 6.1	1410	72.811	0.951	21.3	1.0755	0.0000	SURCHARGED
1440 minute winter	SWMH 6.2	1380	72.813	0.873	21.4	0.9876	0.0000	SURCHARGED
1440 minute winter	SWMH 6.3	1410	72.811	0.791	21.4	0.8941	0.0000	SURCHARGED
1440 minute winter	SWMH 6.4	1410	72.813	0.713	21.6	0.8062	0.0000	SURCHARGED
1440 minute winter	SWMH 6.5	1410	72.812	0.602	22.2	11.8597	0.0000	SURCHARGED
1440 minute winter	SWMH 7.1	510	72.160	0.010	0.2	0.0113	0.0000	OK
1440 minute winter	SWMH 7.2	1020	72.479	0.279	4.3	64.3698	0.0000	SURCHARGED
1440 minute winter	SWMH 8.1	990	72.827	0.577	14.0	197.0560	0.0000	SURCHARGED
1440 minute winter	SWMH 9.1	1410	72.812	1.112	3.3	1.2573	0.0000	SURCHARGED
1440 minute winter	SWMH 9.2	1410	72.812	0.884	3.6	0.9995	0.0000	SURCHARGED
1440 minute winter	SWMH 9.3	1410	72.812	0.524	3.6	0.5923	0.0000	SURCHARGED
1440 minute winter	SWMH 9.4	1410	72.812	0.396	8.0	0.4475	0.0000	SURCHARGED
1440 minute winter	SWMH 9.5	1410	72.812	0.312	3.6	1.0414	0.0000	SURCHARGED
1440 minute winter	SWMH 10.1	1230	72.995	0.295	2.6	0.8861	0.0000	SURCHARGED
1440 minute winter	SWMH 11.1	2640	72.951	0.951	335.3	1.0761	0.0000	SURCHARGED

Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	SWMH 5.1	5.1	SWMH 3.4	9.7	0.301	0.128	1.6618	
1440 minute winter	SWMH 5.2	5.2	SWMH 5.1	7.4	0.511	0.109	4.8667	
1440 minute winter	SWMH 6.1	Pond 3.2	SWMH 15.4	21.3	0.908	0.242	1.7798	
1440 minute winter	SWMH 6.2	6.2	SWMH 6.1	21.3	1.119	0.246	0.1155	
1440 minute winter	SWMH 6.3	6.3	SWMH 6.2	21.4	1.225	0.235	0.1048	
1440 minute winter	SWMH 6.4	6.4	SWMH 6.3	21.4	1.260	0.266	0.1338	
1440 minute winter	SWMH 6.5	6.5	SWMH 6.4	21.5	1.157	0.417	0.4466	
1440 minute winter	SWMH 7.1	7.1	SWMH 1.3	0.2	0.160	0.009	0.0205	
1440 minute winter	SWMH 7.2	7.2	SWMH 7.1	0.2	0.313	0.009	0.0025	
1440 minute winter	SWMH 7.2	Infiltration		1.4				
1440 minute winter	SWMH 8.1	8.1	SWMH 6.4	-0.4	0.081	-0.008	0.5601	
1440 minute winter	SWMH 8.1	Infiltration		5.7				
1440 minute winter	SWMH 9.1	Pond 3.1	SWMH 15.4	3.3	0.173	0.066	1.2590	
1440 minute winter	SWMH 9.2	9.2	SWMH 9.1	3.3	0.176	0.047	3.9815	
1440 minute winter	SWMH 9.3	9.3	SWMH 9.2	3.6	0.450	0.051	6.3392	
1440 minute winter	SWMH 9.4	9.4	SWMH 9.3	3.6	0.525	0.052	2.2791	
1440 minute winter	SWMH 9.5	9.5	SWMH 9.4	8.0	0.665	0.051	0.3054	
1440 minute winter	SWMH 10.1	10.1	SWMH 5.1	2.6	0.316	0.043	1.0385	
1440 minute winter	SWMH 11.1	Pond 1.1	SWMH 14.3	18.0	0.272	0.365	4.4336	

Results for 100 year +20% CC 1440 minute winter. 2880 minute analysis at 30 minute timestep. Mass balance: 99.16%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	SWMH 11.2	2820	73.069	1.059	187.5	1.1981	0.0000	SURCHARGED
1440 minute winter	SWMH 11.3	1320	72.792	0.766	251.8	0.8659	0.0000	SURCHARGED
1440 minute winter	SWMH 11.4	1410	72.793	0.743	38.8	0.8405	0.0000	SURCHARGED
1440 minute winter	SWMH 11.5	1410	72.794	0.640	18.2	0.7240	0.0000	SURCHARGED
1440 minute winter	SWMH 11.6	1410	72.793	0.487	18.1	0.5504	0.0000	SURCHARGED
1440 minute winter	SWMH 11.7	1410	72.793	0.335	15.0	0.3790	0.0000	SURCHARGED
1440 minute winter	SWMH 11.8	1410	72.794	0.214	15.0	2.8933	0.0000	OK
1440 minute winter	SWMH 12.1	1320	72.763	0.763	13.0	0.8631	0.0000	SURCHARGED
1440 minute winter	SWMH 12.2	1320	72.763	0.723	13.0	0.8180	0.0000	SURCHARGED
1440 minute winter	SWMH 12.3	1320	72.763	0.533	13.2	0.6033	0.0000	SURCHARGED
1440 minute winter	SWMH 12.4	1320	72.764	0.304	13.2	0.3434	0.0000	SURCHARGED
1440 minute winter	SWMH 12.5	1320	72.764	0.264	13.2	2.4919	0.0000	OK
1440 minute winter	SWMH 13.1	1380	72.791	0.641	1.2	0.7247	0.0000	SURCHARGED
1440 minute winter	SWMH 13.2	1380	72.791	0.581	1.2	0.6566	0.0000	SURCHARGED
1440 minute winter	SWMH 13.3	1380	72.790	0.510	0.5	0.5773	0.0000	SURCHARGED
1440 minute winter	SWMH 13.4	1350	72.790	0.440	1.3	0.4980	0.0000	SURCHARGED
1440 minute winter	SWMH 13.5	990	72.707	0.317	5.5	57.8103	0.0000	SURCHARGED
1440 minute winter	SWMH 14.1	600	71.976	0.026	1.7	0.0000	0.0000	OK
1440 minute winter	SWMH 14.2	1380	72.790	0.815	1.7	0.9218	0.0000	SURCHARGED
1440 minute winter	SWMH 14.3	1380	72.790	0.790	18.0	369.9526	0.0000	SURCHARGED

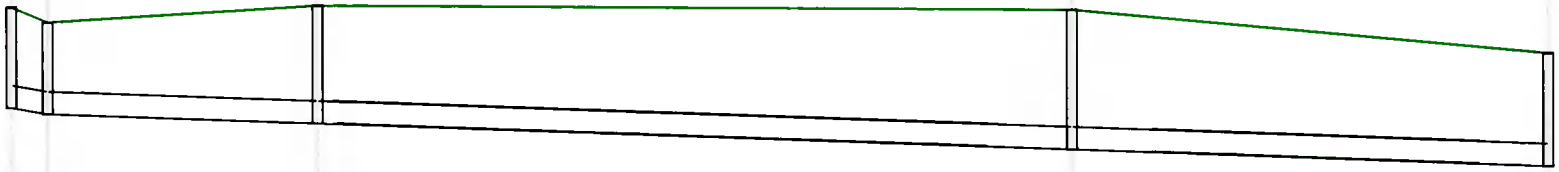
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	SWMH 11.2	11.2	SWMH 11.1	293.8	4.172	3.984	0.1587	
1440 minute winter	SWMH 11.3	11.3	SWMH 11.2	-176.7	-2.510	-2.282	0.2303	
1440 minute winter	SWMH 11.4	11.4	SWMH 11.3	-34.0	-0.483	-0.515	0.4744	
1440 minute winter	SWMH 11.5	11.5	SWMH 11.4	14.9	0.456	0.213	1.8266	
1440 minute winter	SWMH 11.6	11.6	SWMH 11.5	18.2	0.646	0.261	2.6911	
1440 minute winter	SWMH 11.7	11.7	SWMH 11.6	18.1	0.748	0.259	2.6911	
1440 minute winter	SWMH 11.8	11.8	SWMH 11.7	15.0	0.797	0.205	1.7300	
1440 minute winter	SWMH 12.1	Pond 2.1	SWMH 17.3	13.0	0.240	0.262	6.0050	
1440 minute winter	SWMH 12.2	12.2	SWMH 12.1	13.0	0.211	0.155	0.4924	
1440 minute winter	SWMH 12.3	12.3	SWMH 12.2	13.0	0.425	0.161	2.5070	
1440 minute winter	SWMH 12.4	12.4	SWMH 12.3	13.2	0.804	0.151	2.5914	
1440 minute winter	SWMH 12.5	12.5	SWMH 12.4	13.2	0.834	0.168	0.5415	
1440 minute winter	SWMH 13.1	Pond 1.2	SWMH 14.3	-1.2	0.173	-0.022	0.5148	
1440 minute winter	SWMH 13.2	13.2	SWMH 13.1	-1.2	0.328	-0.018	0.1487	
1440 minute winter	SWMH 13.3	13.3	SWMH 13.2	-0.5	0.343	-0.009	0.1827	
1440 minute winter	SWMH 13.4	13.4	SWMH 13.3	-0.9	0.338	-0.014	0.1882	
1440 minute winter	SWMH 13.5	13.5	SWMH 13.4	-0.8	0.343	-0.012	0.0941	
1440 minute winter	SWMH 13.5	Infiltration		2.6				
1440 minute winter	SWMH 14.2	14.2	SWMH 14.1	1.7	0.627	0.028	0.0051	248.4
1440 minute winter	SWMH 14.3	14.3	SWMH 14.2	1.7	0.227	0.032	0.0906	

Results for 100 year +20% CC 1440 minute winter. 2880 minute analysis at 30 minute timestep. Mass balance: 99.16%

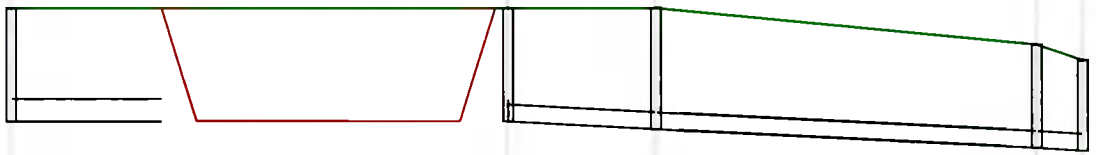
Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
1440 minute winter	SWMH 15.1	1410	71.335	0.035	2.4	0.0000	0.0000	OK
1440 minute winter	SWMH 15.2	1410	71.377	0.037	2.4	0.0421	0.0000	OK
1440 minute winter	SWMH 15.3	1410	72.811	1.217	2.4	1.3767	0.0000	SURCHARGED
1440 minute winter	SWMH 15.4	1410	72.812	1.112	24.3	680.6896	0.0000	SURCHARGED
1440 minute winter	SWMH 16.1	1380	72.764	0.534	1.7	0.6038	0.0000	SURCHARGED
1440 minute winter	SWMH 16.2	1320	72.763	0.483	1.2	0.5458	0.0000	SURCHARGED
1440 minute winter	SWMH 16.3	1350	72.763	0.433	1.8	0.4896	0.0000	SURCHARGED
1440 minute winter	SWMH 16.4	930	72.795	0.415	13.0	97.5464	0.0000	SURCHARGED
1440 minute winter	SWMH 17.1	600	71.974	0.024	1.7	0.0000	0.0000	OK
1440 minute winter	SWMH 17.2	1320	72.763	0.788	4.9	0.8909	0.0000	SURCHARGED
1440 minute winter	SWMH 17.3	1320	72.763	0.763	13.6	330.3813	0.0000	SURCHARGED
1440 minute winter	SWMH 18.1	930	72.558	0.204	15.1	132.9076	0.0000	OK

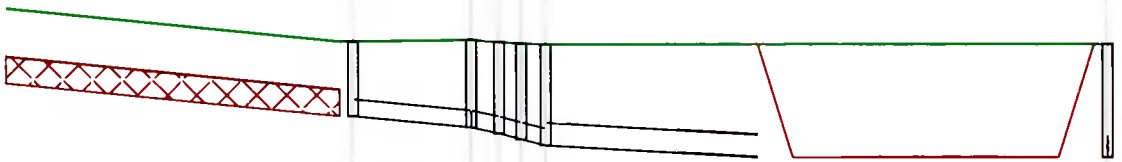
Link Event	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
1440 minute winter	SWMH 15.2	15.2	SWMH 15.1	2.4	0.581	0.054	0.0225	368.5
1440 minute winter	SWMH 15.3	15.3	SWMH 15.2	2.4	0.550	0.062	0.1972	
1440 minute winter	SWMH 15.4	15.4	SWMH 15.3	2.4	0.162	0.061	0.7040	
1440 minute winter	SWMH 16.1	Pond 2.2	SWMH 17.3	-1.0	0.339	-0.023	1.3091	
1440 minute winter	SWMH 16.2	16.2	SWMH 16.1	1.7	0.441	0.030	0.1666	
1440 minute winter	SWMH 16.3	16.3	SWMH 16.2	-1.7	0.495	-0.027	0.1415	
1440 minute winter	SWMH 16.4	16.4	SWMH 16.3	-1.4	0.533	-0.020	0.1061	
1440 minute winter	SWMH 16.4	Infiltration		7.0				
1440 minute winter	SWMH 17.2	17.2	SWMH 17.1	1.7	0.688	0.024	0.0034	250.0
1440 minute winter	SWMH 17.3	17.3	SWMH 17.2	4.9	0.302	0.071	0.0569	
1440 minute winter	SWMH 18.1	18.1	SWMH 11.5	6.6	0.099	0.061	1.5088	
1440 minute winter	SWMH 18.1	Infiltration		9.0				

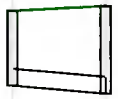
PINNACLE CONSULTING ENGINEERS	Pinnacle Engineering Grosvenor Court 67a Patrick Street Dun Laoghaire, County Dublin	File: Back Up.pfd Network: Storm Network Francois Jansen van Rensburg 2021/12/02	Page 1 Apollo Hydraulic Model Rev 3 (Layout C2) 1:100 year 24 hour storm

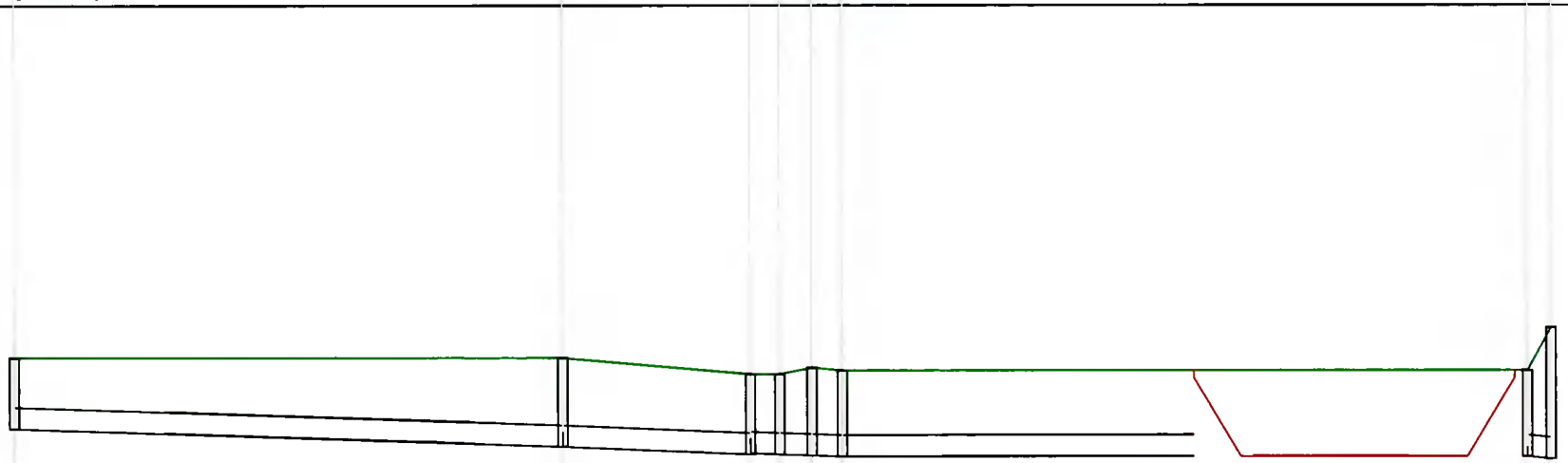
Node Name	SWMH 9.5	SWMH 9.4	SWMH 9.3	SWMH 9.2	SWMH 9.1
A4 drawing Hor Scale 900 Ver Scale 100 Datum (m) 67.000					
Link Name	9.5	9.4	9.3	9.2	
Section Type	300	300mm	300mm	300mm	
Slope (1:X)	51.	252.8	250.1	248.0	
Cover Level (m)	73.830	73.630	73.850	73.780	73.200
Invert Level (m)	72.500	72.416	72.288	71.928	71.700
Length (m)	4.3	32.364	90.021	56.540	

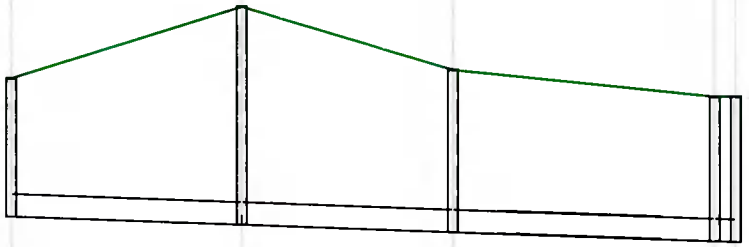
PINNACLE CONSULTING ENGINEERS	Pinnacle Engineering Grosvenor Court 67a Patrick Street Dun Laoghaire, County Dublin	File: Back Up.pfd Network: Storm Network Francois Jansen van Rensburg 2021/12/02	Page 2 Apollo Hydraulic Model Rev 3 (Layout C2) 1:100 year 24 hour storm

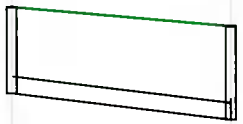
Node Name	SWMH 9.1		SWMH 15.4	SWMH 15.3	SWMH 15.2	SWMH 15.1
A4 drawing Hor Scale 900 Ver Scale 100 Datum (m) 66.000						
Link Name	Pond 3.1		15.4	15.3	15.2	
Section Type	300mm		225mm	225mm	225r	
Slope (1:X)	0.0		171.9	178.2	136.	
Cover Level (m)	73.200		73.200	73.200	72.710	72.500
Invert Level (m)	71.700	71.700	71.700	71.597 71.594	71.340	71.340 71.300
Length (m)	17.878		17.701	45.263	5.46	

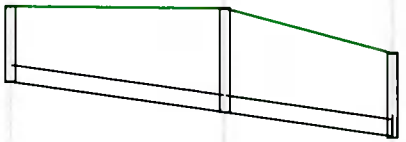
Node Name	SWMH 8.1	SWMH 15.1	SWMH 15.4
A4 drawing Hor Scale 900 Ver Scale 100 Datum (m) 67.000			
Link Name	8.1	6.4 6.6	Pond 3.2
Section Type	225mm	222 22	300mm
Slope (1:X)	93.9	423 36	158.0
Cover Level (m)	73.240	73.260 73.230 73.210 73.200	73.200
Invert Level (m)	72.250	72.100 71.860	71.700
Length (m)	14.083	3.2 2.5	25.274

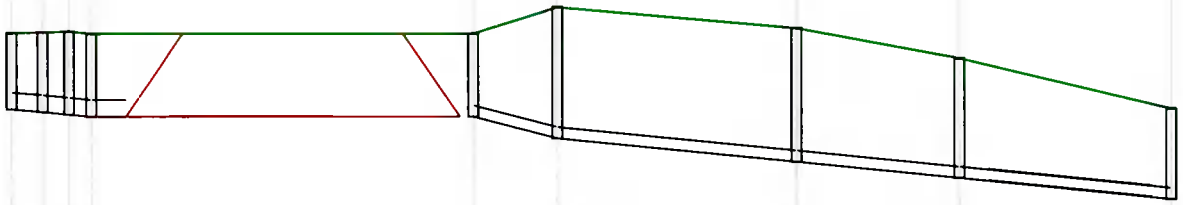
Node Name	SWMH 6.5	SWMH 6.4
A4 drawing Hor Scale 900 Ver Scale 100 Datum (m) 67.000		
Link Name	6.5	
Section Type	225mm	
Slope (1:X)	102.1	
Cover Level (m)	73.200	73.260
Invert Level (m)	72.210	72.100
Length (m)	11.230	

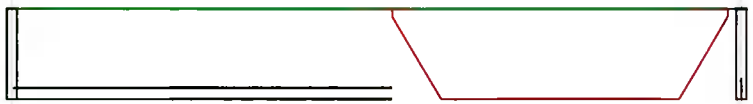
Node Name	SWMH 5.2	SWMH 5.1	SW	SWMH 4.1	SWMH 1.4
A4 drawing Hor Scale 900 Ver Scale 100 Datum (m) 67.000					
Link Name	5.2	5.1	3.4	3.3 3.2	Pond 4.1	1.5
Section Type	300mm	300mm	300	300 300	300mm	300
Slope (1:X)	267.9	214.5	22	25 23	0.0	87
Cover Level (m)	73.590	73.580	73.350	73.350 73.440	73.400	73.400 74.000
Invert Level (m)	72.600	72.342 72.342	72.232	72.248 72.238 72.200	72.200	72.166
Length (m)	69.111	23.598	3.6	4.0 3.8	44.080	2.5

Node Name	SWMH 1.4	SWMH 1.3	SWMH 1.2	SWMH 1.Con
A4 drawing Hor Scale 900 Ver Scale 100 Datum (m) 68.000				
Link Name	1.4	1.3	1.2	1.
Section Type	300mm	300mm	300mm	3(
Slope (1:X)	251.1	251.3	249.2	2(
Cover Level (m)	74.000	74.950	74.110	73.750 73.750
Invert Level (m)	72.166	72.056 72.056	71.955 71.955	71.830 71.830
Length (m)	27.616	25.381	31.146	2.

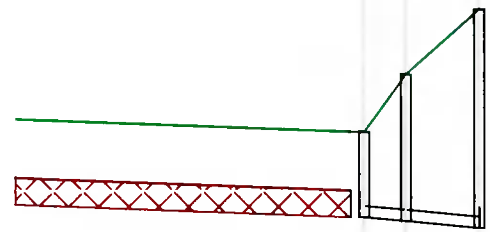
Node Name		SWMH 10.1	SWMH 5.1
A4 drawing Hor Scale 900 Ver Scale 100 Datum (m) 67.000			
Link Name		10.1	
Section Type		225mm	
Slope (1:X)		72.9	
Cover Level (m)		73.840	73.580
Invert Level (m)		72.700	72.342
Length (m)		26.113	

Node Name		SWMH 3.6	SWMH 3.5	SWMH 3.4
A4 drawing Hor Scale 900 Ver Scale 100 Datum (m) 67.000				
Link Name		3.6	3.5	
Section Type		225mm	225mm	
Slope (1:X)		63.4	61.5	
Cover Level (m)		73.980	73.950	73.350
Invert Level (m)		72.980	72.573 / 72.573	72.248
Length (m)		25.820	19.977	

Node Name	SWMH 2.5	SWMH 2.4	SWMH 2.3	SWMH 2.2	SWMH 2.1
A4 drawing Hor Scale 900 Ver Scale 100 Datum (m) 68.000					
Link Name	4.4	2.5	2.4	2.3	2.2
Section Type	22	150mm	150mm	150mm	150mm
Slope (1:X)	10	34.8	90.8	89.9	89.2
Cover Level (m)	74.410	74.400	74.750	74.470	74.070	73.400
Invert Level (m)	73.300	73.300	73.010	73.010	72.697	72.697	72.481	72.481	72.200
Length (m)	3.7	10.081	28.430	19.408	25.066

Node Name	SWMH 2.1	SWMH 1.5
A4 drawing Hor Scale 900 Ver Scale 100 Datum (m) 67.000		
Link Name	Pond 4.2	
Section Type	150mm	
Slope (1:X)	0.0	
Cover Level (m)	73.400	73.400
Invert Level (m)	72.200	72.200
Length (m)	45.691	

Node Name: SWISWMIESTMMH 1.3

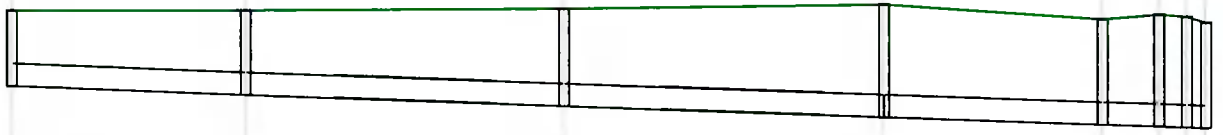


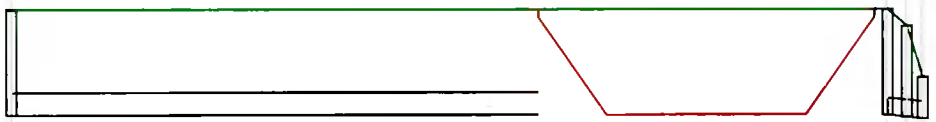
A4 drawing

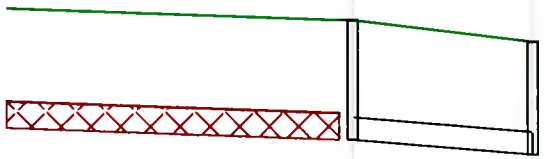
Hor Scale 900
Ver Scale 100

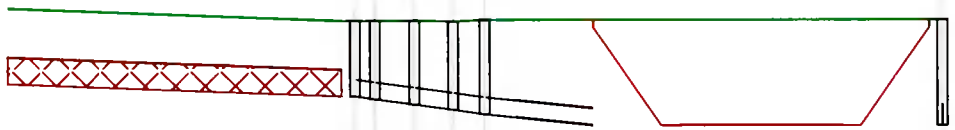
Datum (m) 68.000

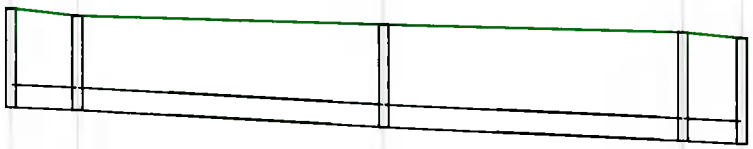
Link Name	7.2	7.1	
Section Type	150	150mn	
Slope (1:X)	99.9	92.8	
Cover Level (m)	73.330	74.090	74.950
Invert Level (m)	72.200 / 72.150	72.150	72.056
Length (m)	4.99	8.722	

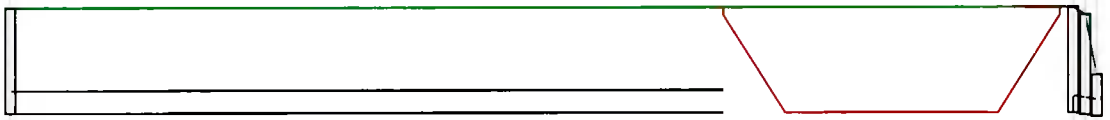
Node Name	SWMH 11.8	SWMH 11.7	SWMH 11.6	SWMH 11.5	SWMH 11.4	SWMH 11.1
A4 drawing Hor Scale 900 Ver Scale 100 Datum (m) 67.000						
Link Name	11.8	11.7	11.6	11.5	11.4	11.1
Section Type	300mm	300mm	300mm	300mm	300m	303(
Slope (1:X)	228.5	251.4	251.4	249.4	280.7	202.
Cover Level (m)	73.580	73.580	73.600	73.650	73.450	73.510 73.480 73.400
Invert Level (m)	72.580	72.458 72.458	72.306 72.306	72.154 72.154	72.050	72.050 72.026
Length (m)	27.872	38.216	38.216	25.939	6.737	3.2.

Node Name	SWMH 11.1	S[illegible]
A4 drawing Hor Scale 900 Ver Scale 100 Datum (m) 67.000		
Link Name	Pond 1.1	1.1
Section Type	300mm	2.2
Slope (1:X)	0.0	9.7
Cover Level (m)	73.400	73.400 73.180 72.580
Invert Level (m)	72.000 72.000	71.975 71.960 71.975
Length (m)	62.960	2.1

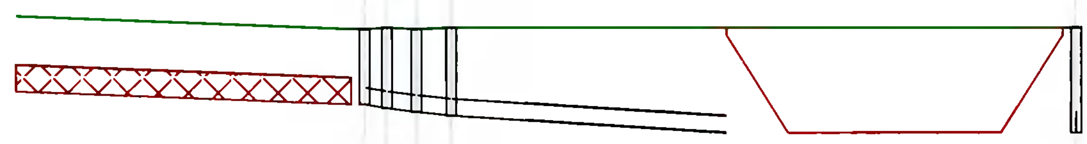
Node Name		SWMH 18.1	SWMH 11.5
A4 drawing Hor Scale 900 Ver Scale 100 Datum (m) 67.000			
Link Name		18.1	
Section Type		300mm	
Slope (1:X)		107.1	
Cover Level (m)		73.940	73.650
Invert Level (m)		72.354	72.154
Length (m)		21.426	

Node Name	SWMH 14.3
A4 drawing Hor Scale 900 Ver Scale 100 Datum (m) 67.000	
Link Name	1 13. 13. 13. Pond 1.2
Section Type	2 225 225 225 225mm
Slope (1:X)	5 67. 65. 62. 86.3
Cover Level (m)	73.390 73.390 73.390 73.380 73.400 73.400
Invert Level (m)	72.150 72.000
Length (m)	2.4 7.4 5.5 3.7 12.943

Node Name	SWMH 12.5	SWMH 12.4	SWMH 12.3	SWMH 12.2	SWMH 12.1
A4 drawing Hor Scale 900 Ver Scale 100 Datum (m) 67.000					
Link Name	12.5	12.4	12.3	12.2	
Section Type	300mm	300mm	300mm	300mm	
Slope (1:X)	199.1	160.0	187.4	174.8	
Cover Level (m)	73.810	73.710	73.590	73.480	73.400
Invert Level (m)	72.500	72.460 / 72.460	72.230 / 72.230	72.040	72.040 / 72.000
Length (m)	7.963	36.799	35.601	6.992	

Node Name	SWMH 12.1		SWMH 12.21
A4 drawing Hor Scale 900 Ver Scale 100 Datum (m) 67.000			
Link Name	Pond 2.1		11
Section Type	300mm		22
Slope (1:X)	0.0		55
Cover Level (m)	73.400		73.400 73.300
Invert Level (m)	72.000	72.000	71.975
Length (m)	85.275		11

Node Name: SWMH 16.1 (overlapping labels) | SWMH 17.3



A4 drawing

Hor Scale 900
Ver Scale 100

Datum (m) 67.000

Link Name	1€16 16.	Pond 2.2
Section Type	2222225	225mm
Slope (1:X)	5:71 83.	143.1
Cover Level (m)	73.380 73.400 73.380 73.400	73.400
Invert Level (m)	72.330 72.380 72.280 72.230	72.000
Length (m)	2.3.54.1	32.916

Met Eireann
Return Period Rainfall Depths for sliding Durations
Irish Grid: Easting: 304087, Northing: 230773,

	Interval		Years												
DURATION	6months,	1year,	2,	3,	4,	5,	10,	20,	30,	50,	75,	100,	150,	200,	250,	500,
5 mins	2.3,	3.4,	4.1,	5.0,	5.7,	6.2,	8.0,	10.0,	11.4,	13.4,	15.2,	16.6,	18.8,	20.6,	22.1,	N/A ,
10 mins	3.2,	4.8,	5.7,	7.0,	7.9,	8.7,	11.1,	14.0,	15.9,	18.7,	21.2,	23.2,	26.3,	28.7,	30.7,	N/A ,
15 mins	3.8,	5.7,	6.7,	8.3,	9.3,	10.2,	13.1,	16.4,	18.7,	22.0,	24.9,	27.3,	30.9,	33.8,	36.2,	N/A ,
30 mins	5.0,	7.4,	8.7,	10.7,	12.0,	13.1,	16.7,	20.9,	23.7,	27.7,	31.4,	34.2,	38.7,	42.2,	45.1,	N/A ,
1 hours	6.6,	9.6,	11.2,	13.7,	15.5,	16.8,	21.3,	26.5,	30.0,	35.0,	39.4,	42.9,	48.4,	52.6,	56.2,	N/A ,
2 hours	8.6,	12.5,	14.6,	17.7,	19.9,	21.6,	27.2,	33.7,	38.0,	44.1,	49.6,	53.9,	60.5,	65.7,	70.0,	N/A ,
3 hours	10.1,	14.6,	17.0,	20.6,	23.1,	25.0,	31.4,	38.7,	43.6,	50.5,	56.7,	61.5,	69.0,	74.8,	79.7,	N/A ,
4 hours	11.4,	16.2,	18.9,	22.9,	25.6,	27.7,	34.7,	42.7,	48.1,	55.6,	62.3,	67.6,	75.7,	82.0,	87.3,	N/A ,
6 hours	13.3,	18.9,	22.0,	26.6,	29.7,	32.1,	40.1,	49.2,	55.2,	63.7,	71.3,	77.2,	86.3,	93.4,	99.3,	N/A ,
9 hours	15.6,	22.1,	25.6,	30.8,	34.4,	37.2,	46.2,	56.5,	63.3,	72.9,	81.5,	88.1,	98.4,	106.4,	113.0,	N/A ,
12 hours	17.5,	24.7,	28.5,	34.3,	38.2,	41.2,	51.2,	62.4,	69.8,	80.3,	89.6,	96.8,	108.0,	116.6,	123.8,	N/A ,
18 hours	20.5,	28.8,	33.2,	39.8,	44.3,	47.7,	59.0,	71.8,	80.2,	92.0,	102.5,	110.6,	123.1,	132.8,	140.8,	N/A ,
24 hours	23.0,	32.1,	37.0,	44.2,	49.1,	52.9,	65.3,	79.3,	88.4,	101.3,	112.7,	121.5,	135.1,	145.6,	154.3,	184.7,
2 days	28.9,	39.2,	44.6,	52.5,	57.8,	61.9,	75.1,	89.6,	99.1,	112.2,	123.7,	132.5,	146.0,	156.4,	164.9,	194.5,
3 days	33.6,	44.9,	50.7,	59.2,	64.9,	69.2,	83.0,	98.2,	108.0,	121.4,	133.2,	142.2,	155.9,	166.3,	174.9,	204.4,
4 days	37.8,	49.9,	56.1,	65.1,	71.0,	75.6,	90.0,	105.7,	115.8,	129.6,	141.6,	150.8,	164.7,	175.3,	183.9,	213.6,
6 days	45.1,	58.5,	65.4,	75.2,	81.7,	86.6,	102.0,	118.7,	129.3,	143.8,	156.3,	165.8,	180.1,	191.0,	199.9,	230.1,
8 days	51.6,	66.2,	73.5,	84.1,	91.0,	96.2,	112.5,	130.0,	141.1,	156.2,	169.1,	178.9,	193.7,	204.8,	213.9,	244.7,
10 days	57.5,	73.2,	81.0,	92.1,	99.4,	104.9,	122.0,	140.2,	151.7,	167.3,	180.7,	190.8,	205.9,	217.3,	226.6,	257.9,
12 days	63.1,	79.6,	87.9,	99.6,	107.2,	112.9,	130.7,	149.6,	161.5,	177.6,	191.3,	201.7,	217.1,	228.8,	238.3,	270.2,
16 days	73.5,	91.6,	100.6,	113.3,	121.5,	127.7,	146.7,	166.8,	179.4,	196.3,	210.7,	221.5,	237.6,	249.7,	259.5,	292.4,
20 days	83.0,	102.7,	112.3,	125.9,	134.6,	141.1,	161.3,	182.4,	195.5,	213.2,	228.1,	239.3,	256.0,	268.5,	278.6,	312.4,
25 days	94.3,	115.5,	125.9,	140.4,	149.7,	156.6,	178.0,	200.3,	214.1,	232.5,	248.1,	259.8,	277.1,	290.0,	300.4,	335.2,

NOTES:
N/A Data not available
These values are derived from a Depth Duration Frequency (DDF) Model
For details refer to:
'Fitzgerald D. L. (2007), Estimates of Point Rainfall Frequencies, Technical Note No. 61, Met Eireann, Dublin',
Available for download at www.met.ie/climate/dataproducts/Estimation-of-Point-Rainfall-Frequencies_TN61.pdf

PINNACLE
CONSULTING ENGINEERS

APPENDIX B

Irish Water COF

Ref: CDS 21005426

Pinnacle Consulting/Shaun O' Reilly

Grosvenor Court
67A Patrick Street
Dun Laoighaire
Co. Dublin
A96 W3Y7

Uisce Éireann
Bosca OP 448
Oifig Sheachadta na
Cathrach Theas
Cathair Chorcaí

Irish Water
PO Box 448,
South City
Delivery Office,
Cork City

www.water.ie

1 November 2021

Re: CDS21005426 pre-connection enquiry - Subject to contract | Contract denied

Connection for Business Connection of 1 unit at Profile Park, Grange Castle, Dublin

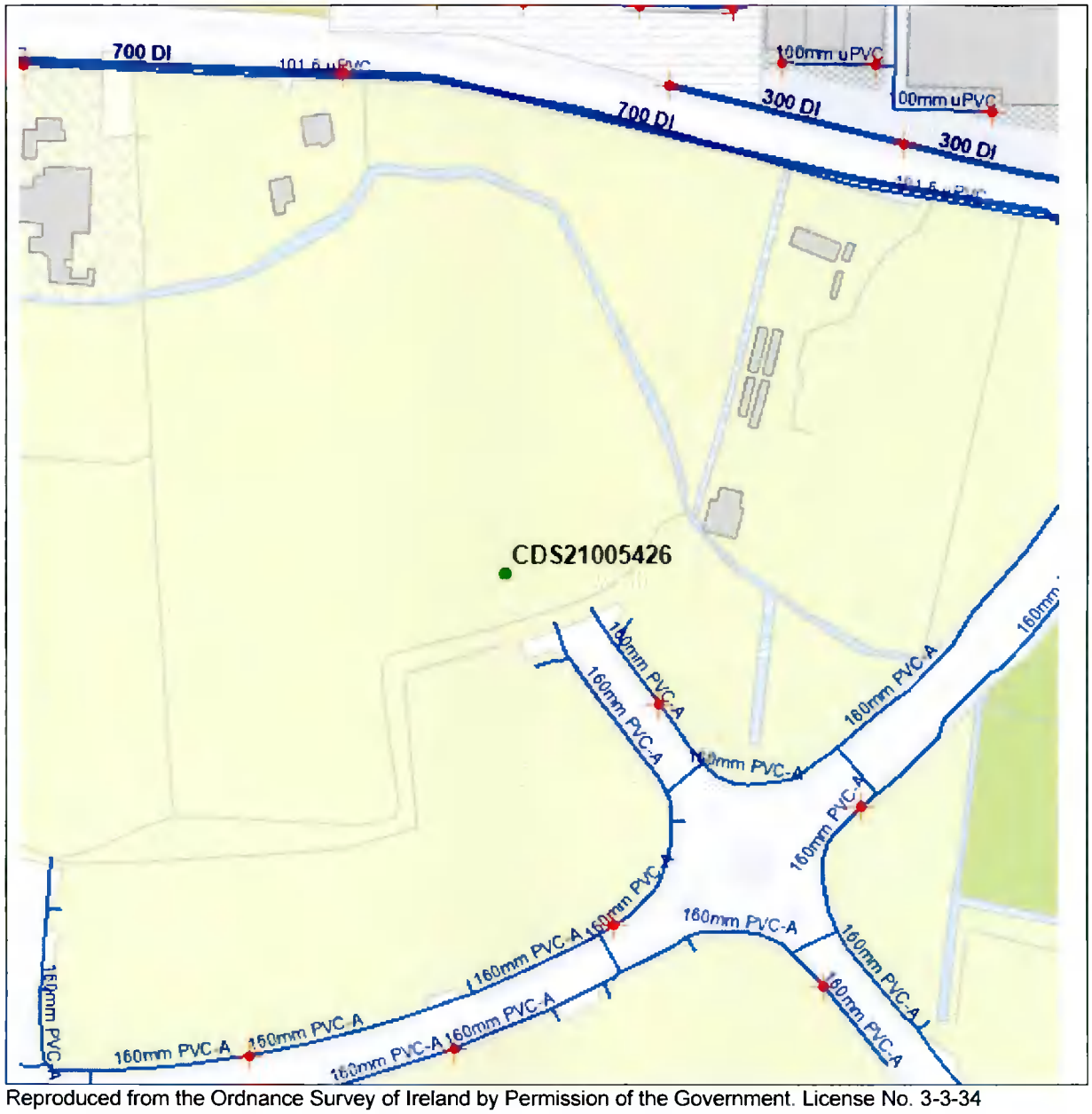
Dear Sir/Madam,

Irish Water has reviewed your pre-connection enquiry in relation to a Water & Wastewater connection at Profile Park, Grange Castle, Dublin (the **Premises**). Based upon the details you have provided with your pre-connection enquiry and on our desk top analysis of the capacity currently available in the Irish Water network(s) as assessed by Irish Water, we wish to advise you that your proposed connection to the Irish Water network(s) can be facilitated at this moment in time.

SERVICE	OUTCOME OF PRE-CONNECTION ENQUIRY THIS IS NOT A CONNECTION OFFER. YOU MUST APPLY FOR A CONNECTION(S) TO THE IRISH WATER NETWORK(S) IF YOU WISH TO PROCEED.
Water Connection	Feasible without infrastructure upgrade by Irish Water
Wastewater Connection	Feasible without infrastructure upgrade by Irish Water
SITE SPECIFIC COMMENTS	
Wastewater Connection	The proposed wastewater connection for this development connects to the Irish Water network via private infrastructure. Please be advised that at connection application stage you have to provide written confirmation from the owner of the infrastructure that you have received legal permission to connect to and that the infrastructure has capacity to cater for the additional load from the Development. A new connection to the existing network is feasible without Irish Water network upgrade on the condition that the existing (privately owned) Grange Castle Pumping Station does not increase maximum output flow rate of Phase 2 PS set up (55l/s). However, should your Development trigger the Phase 3 Pumping Station set up (270 l/s), it will be necessary to carry out further detailed study and investigations to confirm the available capacity and to determine the full extent of any upgrades which may be required to be completed to Irish Water Infrastructure, prior to agreeing to the proposed connection.

The design and construction of the Water & Wastewater pipes and related infrastructure to be installed in this development shall comply with the Irish Water Connections and Developer Services Standard Details and Codes of Practice that are available on the Irish Water website. Irish Water reserves the right to supplement these requirements with Codes of Practice and these will be issued with the connection agreement.

The map included below outlines the current Irish Water infrastructure adjacent to your site:



Reproduced from the Ordnance Survey of Ireland by Permission of the Government. License No. 3-3-34

Whilst every care has been taken in its compilation Irish Water gives this information as to the position of its underground network as a general guide only on the strict understanding that it is based on the best available information provided by each Local Authority in Ireland to Irish Water. Irish Water can assume no responsibility for and give no guarantees, undertakings or warranties concerning the accuracy, completeness or up to date nature of the information provided and does not accept any liability whatsoever arising from any errors or omissions. This information

should not be relied upon in the event of excavations or any other works being carried out in the vicinity of the Irish Water underground network. The onus is on the parties carrying out excavations or any other works to ensure the exact location of the Irish Water underground network is identified prior to excavations or any other works being carried out. Service connection pipes are not generally shown but their presence should be anticipated.

General Notes:

1) The initial assessment referred to above is carried out taking into account water demand and wastewater discharge volumes and infrastructure details on the date of the assessment. **The availability of capacity may change at any date after this assessment.**
2) This feedback does not constitute a contract in whole or in part to provide a connection to any Irish Water infrastructure. All feasibility assessments are subject to the constraints of the Irish Water Capital Investment Plan.
3) The feedback provided is subject to a Connection Agreement/contract being signed at a later date.
4) A Connection Agreement will be required to commencing the connection works associated with the enquiry this can be applied for at https://www.water.ie/connections/get-connected/
5) A Connection Agreement cannot be issued until all statutory approvals are successfully in place.
6) Irish Water Connection Policy/ Charges can be found at https://www.water.ie/connections/information/connection-charges/
7) Please note the Confirmation of Feasibility does not extend to your fire flow requirements.
8) Irish Water is not responsible for the management or disposal of storm water or ground waters. You are advised to contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges
9) To access Irish Water Maps email datarequests@water.ie
10) All works to the Irish Water infrastructure, including works in the Public Space, shall have to be carried out by Irish Water.

If you have any further questions, please contact Marina Byrne from the design team via email mzbyrne@water.ie For further information, visit **www.water.ie/connections.**

Yours sincerely,

Yvonne Harris

Yvonne Harris

Head of Customer Operations