

BOKLOK

LAND TO THE SOUTH OF LITTLEHAMPTON ACADEMY

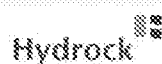
Drainage Strategy and Water Quality Management Part 2

DOC: LTH-AKSW-XX-XX-RP-C-00002

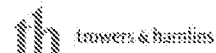
March 2021



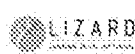
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podPOINT



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GENERAL NOTES

- All setting out to be in accordance with the Architects drawings. Any discrepancies between the Engineers and the Architects drawings to be referred to the Architect before proceeding. Dimensions must not be scaled.
- Flood flow paths for storm events greater than the design storm of 100 year + 40% climate change.



Scale 1:500 (m)
0 5 10 15 20 25

P03	Updated for planning	RG	GT	08.03.21
P02	Issue for planning	RG	GT	02.03.21
P01	Issue for information	RG	GT	12.02.21

Rev.	Amendment	Drm	Chkd	Date
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Drg. Status	PRELIMINARY	Suitability	S1
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AKSWard²

CONSTRUCTION CONSULTANTS

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Client **Boklok**

Project **Land South of Littlehampton Academy**

Title **Existing & Proposed Exceedance Flood Route**

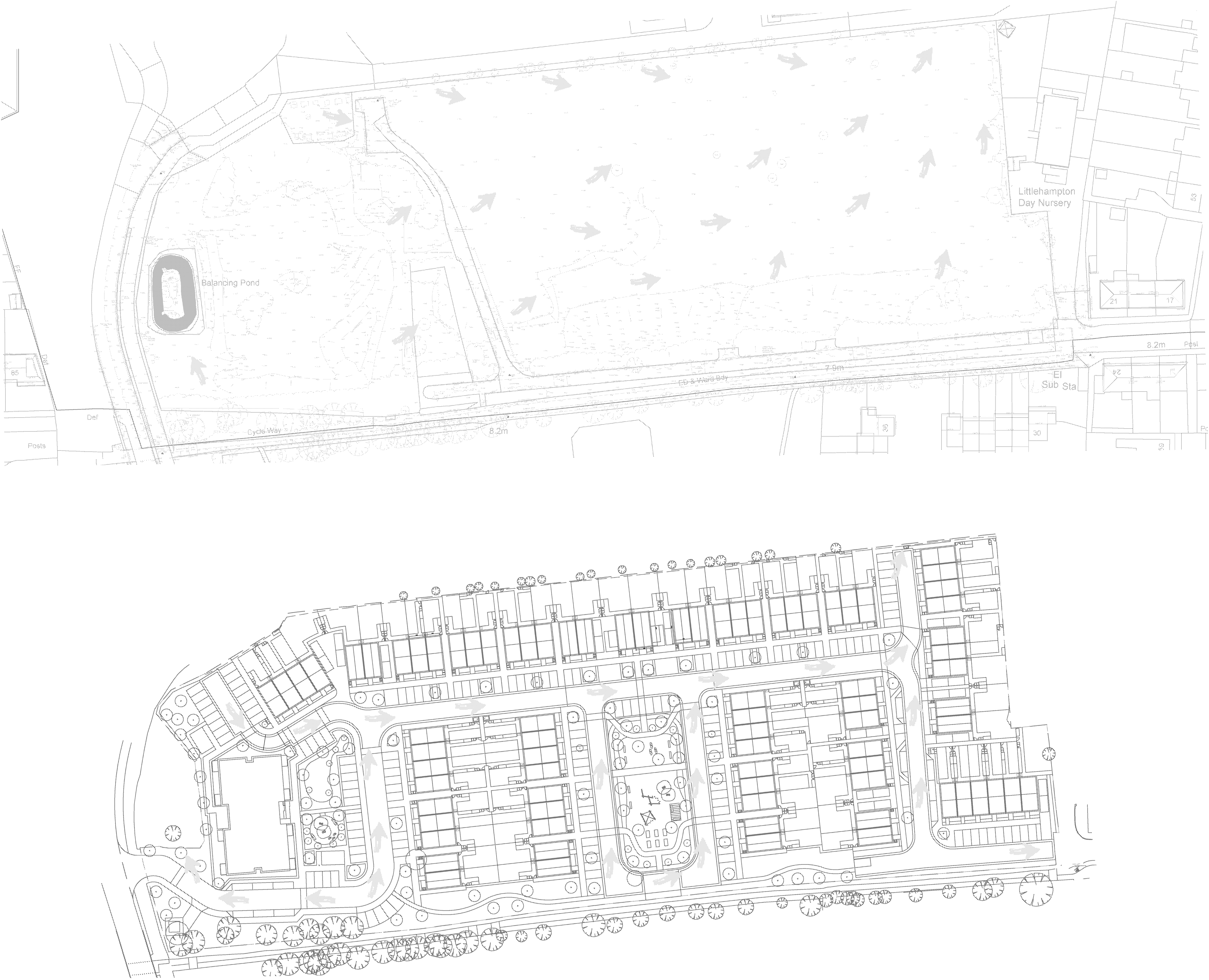
Reviewed Scheme	GT	Date	12.02.21
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Reviewed Final	Date
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Scales at A1	1:500	Project No.	S208134
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Project Ref.	Originator	Zone	Level	Type	Role	Drg No.	Rev.
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LLA AKSW XX XX DR C 9205 - P03



Appendix D

Microdrainage Calculations for the proposed Surface Water Drainage Network

AKSWard Ltd		Page 1
Seacourt Tower West Way Oxford OX2 0JJ	S208134 Land South of Littlehampton-Proposed Network 100%, 3.3% & 1% AEP	
Date 5/2/2021	Designed by Georgios Roinas	
File PO1 SW Network 2021.02.05.MDX	Checked by Graham Taylor	
Micro Drainage	Network 2020.1	

<u>STORM SEWER DESIGN by the Modified Rational Method</u>		
<u>Design Criteria for Copy of Copy of Storm (Separate Tanks)</u>		
Pipe Sizes STANDARD Manhole Sizes STANDARD		
FEH Rainfall Model		
Return Period (years)		2
FEH Rainfall Version		1999
Site Location	GB 502300 102250 TQ 02300 02250	
C (1km)		-0.026
D1 (1km)		0.384
D2 (1km)		0.275
D3 (1km)		0.403
E (1km)		0.313
F (1km)		2.333
Maximum Rainfall (mm/hr)		550
Maximum Time of Concentration (mins)		30
Foul Sewage (l/s/ha)		0.000
Volumetric Runoff Coeff.		0.750
PIMP (%)		100
Add Flow / Climate Change (%)		0
Minimum Backdrop Height (m)		0.200
Maximum Backdrop Height (m)		1.500
Min Design Depth for Optimisation (m)		0.450
Min Vel for Auto Design only (m/s)		1.00
Min Slope for Optimisation (1:X)		500
Designed with Level Soffits		
<u>Time Area Diagram for Copy of Copy of Storm (Separate Tanks)</u>		
Time (mins)	Area (ha)	Time (mins)
0-4	0.245	4-8
		0.753
		8-12
		0.337
Total Area Contributing (ha) = 1.335		
Total Pipe Volume (m³) = 75.482		

<u>Network Design Table for Copy of Copy of Storm (Separate Tanks)</u>												
« - Indicates pipe capacity < flow												
PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow	k (l/s)	HYD SECT	DIA (mm)	Section	Type	Auto Design
1.000	9.391	0.185	50.8	0.018	5.00	0.0	0.600	o	225	Pipe/Conduit		⚙
2.000	33.145	0.569	58.3	0.035	5.00	0.0	0.600	o	225	Pipe/Conduit		⚙
2.001	15.099	0.555	27.2	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit		⚙
<u>Network Results Table</u>												
PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow	(l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)	
1.000	61.24	5.09	6.261	0.018	0.0	0.0		0.0	1.84	73.2	2.9	
2.000	59.50	5.32	7.200	0.035	0.0	0.0		0.0	1.72	68.3	5.6	
2.001	58.80	5.42	6.631	0.035	0.0	0.0		0.0	2.52	100.1	5.6	

AKSWard Ltd		Page 2
Seacourt Tower West Way Oxford OX2 0JJ	S208134 Land South of Littlehampton-Proposed Network 100%, 3.3% & 1% AEP	
Date 5/2/2021 File PO1 SW Network 2021.02.05.MDX	Designed by Georgios Roinas Checked by Graham Taylor	
Micro Drainage	Network 2020.1	

Network Design Table for Copy of Copy of Storm (Separate Tanks)

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
3.000	9.733	0.034	286.3	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.001	12.417	0.242	51.3	0.021	0.00	0.0	0.600	o	225	Pipe/Conduit	
4.000	30.778	0.478	64.4	0.047	5.00	0.0	0.600	o	225	Pipe/Conduit	
4.001	8.201	1.038	7.9	0.034	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.002	22.171	0.114	194.5	0.032	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.003	78.011	0.355	219.7	0.040	0.00	0.0	0.600	o	300	Pipe/Conduit	
5.000	15.329	0.102	150.3	0.020	5.00	0.0	0.600	o	150	Pipe/Conduit	
6.000	18.307	0.152	120.4	0.038	5.00	0.0	0.600	o	150	Pipe/Conduit	
5.001	51.776	0.420	123.3	0.029	0.00	0.0	0.600	o	150	Pipe/Conduit	
7.000	25.766	0.592	43.5	0.042	5.00	0.0	0.600	o	225	Pipe/Conduit	
8.000	17.383	0.607	28.6	0.026	5.00	0.0	0.600	o	150	Pipe/Conduit	
5.002	22.932	0.653	35.1	0.055	0.00	0.0	0.600	o	150	Pipe/Conduit	
5.003	16.103	0.360	44.7	0.012	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.004	13.903	0.063	220.7	0.182	0.00	0.0	0.600	o	450	Pipe/Conduit	
9.000	27.778	0.347	80.1	0.040	5.00	0.0	0.600	o	150	Pipe/Conduit	
9.001	15.450	0.104	148.6	0.046	0.00	0.0	0.600	o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
3.000	59.83	5.28	6.110	0.000	0.0	0.0	0.0	0.59	10.4	0.0
1.001	58.03	5.53	6.076	0.074	0.0	0.0	0.0	1.83	72.8	11.6
4.000	59.55	5.31	7.350	0.047	0.0	0.0	0.0	1.63	64.9	7.6
4.001	59.34	5.34	6.872	0.081	0.0	0.0	0.0	4.68	186.3	13.0
1.002	55.95	5.86	5.759	0.186	0.0	0.0	0.0	1.12	79.4	28.3
1.003	49.58	7.09	5.645	0.227	0.0	0.0	0.0	1.06	74.7	30.5
5.000	59.56	5.31	6.675	0.020	0.0	0.0	0.0	0.82	14.4	3.2
6.000	59.41	5.33	6.725	0.038	0.0	0.0	0.0	0.91	16.2	6.2
5.001	53.52	6.29	6.573	0.087	0.0	0.0	0.0	0.90	16.0	12.6
7.000	60.26	5.22	6.745	0.042	0.0	0.0	0.0	1.99	79.1	6.8
8.000	60.72	5.15	6.760	0.026	0.0	0.0	0.0	1.89	33.4	4.3
5.002	52.35	6.51	6.153	0.210	0.0	0.0	0.0	1.70	30.1	29.7
5.003	51.46	6.69	5.500	0.222	0.0	0.0	0.0	1.51	26.7«	30.9
1.004	48.84	7.26	5.140	0.631	0.0	0.0	0.0	1.36	217.0	83.5
9.000	58.87	5.41	6.292	0.040	0.0	0.0	0.0	1.12	19.9	6.4
9.001	56.80	5.72	5.945	0.085	0.0	0.0	0.0	0.82	14.5	13.2

AKSWard Ltd		Page 3
Seacourt Tower	S208134 Land South of	
West Way Oxford	Littlehampton-Proposed Network	
OX2 0JJ	100%, 3.3% & 1% AEP	
Date 5/2/2021	Designed by Georgios Roinas	
File PO1 SW Network 2021.02.05.MDX	Checked by Graham Taylor	
Micro Drainage	Network 2020.1	

Network Design Table for Copy of Copy of Storm (Separate Tanks)

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
9.002	12.630	0.341	37.0	0.041	0.00	0.0	0.600	o	150	Pipe/Conduit	
9.003	16.352	0.423	38.7	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.005	74.083	0.063	1175.9	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
10.000	23.564	0.736	32.0	0.024	5.00	0.0	0.600	o	450	Pipe/Conduit	
11.000	6.357	0.042	151.4	0.000	5.00	0.0	0.600	o	450	Pipe/Conduit	
1.006	53.247	0.076	700.6	0.136	0.00	0.0	0.600	o	450	Pipe/Conduit	
12.000	18.062	0.355	50.9	0.025	5.00	0.0	0.600	o	225	Pipe/Conduit	
12.001	16.585	0.171	97.0	0.022	0.00	0.0	0.600	o	225	Pipe/Conduit	
12.002	7.167	0.796	9.0	0.027	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.007	6.857	0.008	857.1	0.018	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.008	27.424	0.034	806.6	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
13.000	44.954	0.185	243.0	0.043	5.00	0.0	0.600	o	300	Pipe/Conduit	
13.001	9.754	0.040	243.9	0.021	0.00	0.0	0.600	o	300	Pipe/Conduit	
13.002	43.833	0.180	243.5	0.031	0.00	0.0	0.600	o	300	Pipe/Conduit	
13.003	75.802	0.309	245.3	0.041	0.00	0.0	0.600	o	300	Pipe/Conduit	
14.000	4.075	0.027	150.9	0.000	5.00	0.0	0.600	o	300	Pipe/Conduit	
13.004	75.802	0.309	245.3	0.054	0.00	0.0	0.600	o	300	Pipe/Conduit	
13.005	7.451	0.030	248.4	0.024	0.00	0.0	0.600	o	300	Pipe/Conduit	
13.006	50.462	0.206	245.0	0.016	0.00	0.0	0.600	o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
9.002	56.02	5.85	5.841	0.126	0.0	0.0	0.0	1.66	29.3	19.2
9.003	55.02	6.02	5.500	0.126	0.0	0.0	0.0	1.62	28.7	19.2
1.005	41.54	9.38	5.077	0.758	0.0	0.0	0.0	0.58	92.9	85.3
10.000	61.05	5.11	5.780	0.024	0.0	0.0	0.0	3.60	573.0	4.0
11.000	61.40	5.06	5.056	0.000	0.0	0.0	0.0	1.65	262.5	0.0
1.006	38.57	10.54	5.014	0.918	0.0	0.0	0.0	0.76	120.9	95.9
12.000	60.64	5.16	6.485	0.025	0.0	0.0	0.0	1.84	73.1	4.1
12.001	59.14	5.37	6.130	0.047	0.0	0.0	0.0	1.33	52.8	7.5
12.002	58.95	5.40	5.959	0.074	0.0	0.0	0.0	4.39	174.4	11.8
1.007	38.19	10.71	4.938	1.010	0.0	0.0	0.0	0.69	109.2	104.4
1.008	36.79	11.36	4.930	1.010	0.0	0.0	0.0	0.71	112.6	104.4
13.000	56.67	5.75	6.289	0.043	0.0	0.0	0.0	1.00	71.0	6.6
13.001	55.68	5.91	6.104	0.064	0.0	0.0	0.0	1.00	70.9	9.6
13.002	51.72	6.64	6.064	0.095	0.0	0.0	0.0	1.00	70.9	13.3
13.003	46.31	7.90	5.884	0.135	0.0	0.0	0.0	1.00	70.6	17.0
14.000	61.48	5.05	5.602	0.000	0.0	0.0	0.0	1.28	90.3	0.0
13.004	42.15	9.16	5.575	0.190	0.0	0.0	0.0	1.00	70.6	21.6
13.005	41.79	9.29	5.266	0.213	0.0	0.0	0.0	0.99	70.2	24.1
13.006	39.56	10.13	5.236	0.229	0.0	0.0	0.0	1.00	70.7	24.5

AKSWard Ltd		Page 4
Seacourt Tower West Way Oxford OX2 0JJ	S208134 Land South of Littlehampton-Proposed Network 100%, 3.3% & 1% AEP	
Date 5/2/2021 File PO1 SW Network 2021.02.05.MDX	Designed by Georgios Roinas Checked by Graham Taylor	
Micro Drainage	Network 2020.1	

Network Design Table for Copy of Copy of Storm (Separate Tanks)

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section	Type	Auto Design
13.007	32.829	0.134	245.0	0.032	0.00	0.0	0.600	o	300	Pipe/Conduit		
15.000	6.365	0.042	151.5	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit		
1.009	14.414	0.096	150.1	0.064	0.00	0.0	0.600	o	150	Pipe/Conduit		

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
13.007	38.26	10.68	5.030	0.260	0.0	0.0	0.0	1.00	70.7	27.0
15.000	60.89	5.13	4.938	0.000	0.0	0.0	0.0	0.81	14.4	0.0
1.009	36.20	11.65	4.896	1.335	0.0	0.0	0.0	0.82	14.5«	130.9

Manhole Schedules for Copy of Copy of Storm (Separate Tanks)											
MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
1	7.900	1.639	Open Manhole	600	1.000	6.261	225				
2	8.400	1.200	Open Manhole	600	2.000	7.200	225				
3	8.400	1.769	Open Manhole	600	2.001	6.631	225	2.000	6.631	225	
4	7.900	1.790	Open Manhole	1200	3.000	6.110	150				
5	7.825	1.749	Open Manhole	1200	1.001	6.076	225	1.000	6.076	225	
								2.001	6.076	225	
								3.000	6.076	150	
6	8.400	1.050	Open Manhole	600	4.000	7.350	225				
7	8.400	1.528	Open Manhole	600	4.001	6.872	225	4.000	6.872	225	
8	7.771	2.012	Open Manhole	1200	1.002	5.759	300	1.001	5.834	225	
								4.001	5.834	225	
9	7.850	2.205	Open Manhole	1200	1.003	5.645	300	1.002	5.645	300	
10	8.100	1.425	Open Manhole	1200	5.000	6.675	150				
11	8.150	1.425	Open Manhole	1200	6.000	6.725	150				
12	8.130	1.557	Open Manhole	1200	5.001	6.573	150	5.000	6.573	150	
								6.000	6.573	150	
13	8.170	1.425	Open Manhole	600	7.000	6.745	225				
14	8.110	1.350	Open Manhole	450	8.000	6.760	150				
15	8.110	1.957	Open Manhole	600	5.002	6.153	150	5.001	6.153	150	
								7.000	6.153	225	
								8.000	6.153	150	
Tank 2	7.900	2.400	Open Manhole	1200	5.003	5.500	150	5.002	5.500	150	
16	7.800	2.660	Open Manhole	1350	1.004	5.140	450	1.003	5.290	300	
								5.003	5.140	150	
17	7.830	1.538	Open Manhole	600	9.000	6.292	150				
18	7.740	1.795	Open Manhole	600	9.001	5.945	150	9.000	5.945	150	
19	7.820	1.979	Open Manhole	600	9.002	5.841	150	9.001	5.841	150	
Tank	7.900	2.400	Open Manhole	1200	9.003	5.500	150	9.002	5.500	150	
20	7.550	2.473	Open Manhole	1350	1.005	5.077	450	1.004	5.077	450	
								9.003	5.077	150	
21	7.430	1.650	Open Manhole	1350	10.000	5.780	450				
Tank 3	7.450	2.394	Open Manhole	1350	11.000	5.056	450				
22	7.600	2.586	Open Manhole	1350	1.006	5.014	450	1.005	5.014	450	
								10.000	5.044	450	
								11.000	5.014	450	
23	7.910	1.425	Open Manhole	600	12.000	6.485	225				
24	8.000	1.870	Open Manhole	600	12.001	6.130	225	12.000	6.130	225	
25	8.150	2.191	Open Manhole	600	12.002	5.959	225	12.001	5.959	225	
26	8.150	3.212	Open Manhole	1350	1.007	4.938	450	1.006	4.938	450	
								12.002	5.163	225	
27	8.200	3.270	Open Manhole	1350	1.008	4.930	450	1.007	4.930	450	
28	8.100	1.811	Open Manhole	1200	13.000	6.289	300				
29	8.190	2.086	Open Manhole	1200	13.001	6.104	300	13.000	6.104	300	
30	8.106	2.042	Open Manhole	1200	13.002	6.064	300	13.001	6.064	300	
31	7.791	1.907	Open Manhole	1200	13.003	5.884	300	13.002	5.884	300	
Tank Highway 1	7.750	2.148	Open Manhole	1200	14.000	5.602	300				

Manhole Schedules for Copy of Copy of Storm (Separate Tanks)

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
32	7.750	2.175	Open Manhole	1200	13.004	5.575	300	13.003	5.575	300	
								14.000	5.575	300	
33	7.687	2.421	Open Manhole	1200	13.005	5.266	300	13.004	5.266	300	
34	7.714	2.478	Open Manhole	1200	13.006	5.236	300	13.005	5.236	300	
35	8.215	3.185	Open Manhole	1200	13.007	5.030	300	13.006	5.030	300	
Tank 4	8.130	3.192	Open Manhole	1200	15.000	4.938	150				
36	8.190	3.294	Open Manhole	1350	1.009	4.896	150	1.008	4.896	450	
								13.007	4.896	300	
								15.000	4.896	150	
	8.260	3.460	Open Manhole	0		OUTFALL		1.009	4.800	150	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
1	503202.886	102626.032	503202.886	102626.032	Required	
2	503191.246	102576.166	503191.246	102576.166	Required	
3	503188.384	102609.187	503188.384	102609.187	Required	
4	503192.689	102620.991	503192.689	102620.991	Required	
5	503201.450	102616.752	503201.450	102616.752	Required	
6	503220.235	102579.949	503220.235	102579.949	Required	
7	503218.036	102610.648	503218.036	102610.648	Required	
8	503213.832	102617.690	503213.832	102617.690	Required	
9	503233.267	102628.360	503233.267	102628.360	Required	
10	503245.501	102611.620	503245.501	102611.620	Required	
11	503249.298	102578.206	503249.298	102578.206	Required	
12	503247.561	102596.430	503247.561	102596.430	Required	
13	503301.777	102576.508	503301.777	102576.508	Required	

Seacourt Tower
West Way Oxford
OX2 0JJ

S208134 Land South of
Littlehampton-Proposed Network
100%, 3.3% & 1% AEP



Date 5/2/2021

Designed by Georgios Roinas

File PO1 SW Network 2021.02.05.MDX

Checked by Graham Taylor

Micro Drainage

Network 2020.1

Manhole Schedules for Copy of Copy of Storm (Separate Tanks)

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
14	503296.875	102619.376	503296.875	102619.376	Required	
15	503299.023	102602.126	503299.023	102602.126	Required	
Tank 2	503312.148	102620.931	503312.148	102620.931	Required	
16	503310.801	102636.977	503310.801	102636.977	Required	
17	503344.551	102579.812	503344.551	102579.812	Required	
18	503341.411	102607.412	503341.411	102607.412	Required	
19	503338.888	102622.655	503338.888	102622.655	Required	
Tank	503326.282	102621.882	503326.282	102621.882	Required	
20	503324.654	102638.154	503324.654	102638.154	Required	
21	503396.408	102669.462	503396.408	102669.462	Required	
Tank 3	503394.769	102651.246	503394.769	102651.246	Required	
22	503398.323	102645.976	503398.323	102645.976	Required	
23	503392.876	102627.108	503392.876	102627.108	Required	
24	503394.409	102609.112	503394.409	102609.112	Required	
25	503396.077	102592.611	503396.077	102592.611	Required	
26	503403.236	102592.956	503403.236	102592.956	Required	
27	503405.427	102586.459	503405.427	102586.459	Required	
28	503193.603	102568.167	503193.603	102568.167	Required	
29	503238.549	102569.044	503238.549	102569.044	Required	

Manhole Schedules for Copy of Copy of Storm (Separate Tanks)						
MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
	30 503243.942	102577.171	503243.942	102577.171	Required	
	31 503239.355	102620.763	503239.355	102620.763	Required	
Tank Highway 1	503314.294	102625.089	503314.294	102625.089	Required	
	32 503314.692	102629.144	503314.692	102629.144	Required	
	33 503390.030	102637.526	503390.030	102637.526	Required	
	34 503395.169	102632.131	503395.169	102632.131	Required	
	35 503399.806	102581.883	503399.806	102581.883	Required	
Tank 4	503429.352	102588.359	503429.352	102588.359	Required	
	36 503432.619	102582.897	503432.619	102582.897	Required	
	503446.476	102578.929			No Entry	

AKSWard Ltd		Page 9
Seacourt Tower West Way Oxford OX2 0JJ	S208134 Land South of Littlehampton-Proposed Network 100%, 3.3% & 1% AEP	
Date 5/2/2021 File PO1 SW Network 2021.02.05.MDX	Designed by Georgios Roinas Checked by Graham Taylor	
Micro Drainage		Network 2020.1

PIPELINE SCHEDULES for Copy of Copy of Storm (Separate Tanks)									
Upstream Manhole									
PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., (mm)	L*W
1.000	o	225	1	7.900	6.261	1.414	Open Manhole		600
2.000	o	225	2	8.400	7.200	0.975	Open Manhole		600
2.001	o	225	3	8.400	6.631	1.544	Open Manhole		600
3.000	o	150	4	7.900	6.110	1.640	Open Manhole		1200
1.001	o	225	5	7.825	6.076	1.524	Open Manhole		1200
4.000	o	225	6	8.400	7.350	0.825	Open Manhole		600
4.001	o	225	7	8.400	6.872	1.303	Open Manhole		600
1.002	o	300	8	7.771	5.759	1.712	Open Manhole		1200
1.003	o	300	9	7.850	5.645	1.905	Open Manhole		1200
5.000	o	150	10	8.100	6.675	1.275	Open Manhole		1200
6.000	o	150	11	8.150	6.725	1.275	Open Manhole		1200
5.001	o	150	12	8.130	6.573	1.407	Open Manhole		1200
7.000	o	225	13	8.170	6.745	1.200	Open Manhole		600
8.000	o	150	14	8.110	6.760	1.200	Open Manhole		450
5.002	o	150	15	8.110	6.153	1.807	Open Manhole		600
Downstream Manhole									
PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., (mm)	L*W
1.000	9.391	50.8	5	7.825	6.076	1.524	Open Manhole		1200
2.000	33.145	58.3	3	8.400	6.631	1.544	Open Manhole		600
2.001	15.099	27.2	5	7.825	6.076	1.524	Open Manhole		1200
3.000	9.733	286.3	5	7.825	6.076	1.599	Open Manhole		1200
1.001	12.417	51.3	8	7.771	5.834	1.712	Open Manhole		1200
4.000	30.778	64.4	7	8.400	6.872	1.303	Open Manhole		600
4.001	8.201	7.9	8	7.771	5.834	1.712	Open Manhole		1200
1.002	22.171	194.5	9	7.850	5.645	1.905	Open Manhole		1200
1.003	78.011	219.7	16	7.800	5.290	2.210	Open Manhole		1350
5.000	15.329	150.3	12	8.130	6.573	1.407	Open Manhole		1200
6.000	18.307	120.4	12	8.130	6.573	1.407	Open Manhole		1200
5.001	51.776	123.3	15	8.110	6.153	1.807	Open Manhole		600
7.000	25.766	43.5	15	8.110	6.153	1.732	Open Manhole		600
8.000	17.383	28.6	15	8.110	6.153	1.807	Open Manhole		600
5.002	22.932	35.1	Tank 2	7.900	5.500	2.250	Open Manhole		1200

PIPELINE SCHEDULES for Copy of Copy of Storm (Separate Tanks)								
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)
5.003	o	150	Tank 2	7.900	5.500	2.250	Open Manhole	1200
1.004	o	450	16	7.800	5.140	2.210	Open Manhole	1350
9.000	o	150	17	7.830	6.292	1.388	Open Manhole	600
9.001	o	150	18	7.740	5.945	1.645	Open Manhole	600
9.002	o	150	19	7.820	5.841	1.829	Open Manhole	600
9.003	o	150	Tank	7.900	5.500	2.250	Open Manhole	1200
1.005	o	450	20	7.550	5.077	2.023	Open Manhole	1350
10.000	o	450	21	7.430	5.780	1.200	Open Manhole	1350
11.000	o	450	Tank 3	7.450	5.056	1.944	Open Manhole	1350
1.006	o	450	22	7.600	5.014	2.136	Open Manhole	1350
12.000	o	225	23	7.910	6.485	1.200	Open Manhole	600
12.001	o	225	24	8.000	6.130	1.645	Open Manhole	600
12.002	o	225	25	8.150	5.959	1.966	Open Manhole	600
1.007	o	450	26	8.150	4.938	2.762	Open Manhole	1350
1.008	o	450	27	8.200	4.930	2.820	Open Manhole	1350
13.000	o	300	28	8.100	6.289	1.511	Open Manhole	1200
13.001	o	300	29	8.190	6.104	1.786	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)
5.003	16.103	44.7	16	7.800	5.140	2.510	Open Manhole	1350
1.004	13.903	220.7	20	7.550	5.077	2.023	Open Manhole	1350
9.000	27.778	80.1	18	7.740	5.945	1.645	Open Manhole	600
9.001	15.450	148.6	19	7.820	5.841	1.829	Open Manhole	600
9.002	12.630	37.0	Tank	7.900	5.500	2.250	Open Manhole	1200
9.003	16.352	38.7	20	7.550	5.077	2.323	Open Manhole	1350
1.005	74.083	1175.9	22	7.600	5.014	2.136	Open Manhole	1350
10.000	23.564	32.0	22	7.600	5.044	2.106	Open Manhole	1350
11.000	6.357	151.4	22	7.600	5.014	2.136	Open Manhole	1350
1.006	53.247	700.6	26	8.150	4.938	2.762	Open Manhole	1350
12.000	18.062	50.9	24	8.000	6.130	1.645	Open Manhole	600
12.001	16.585	97.0	25	8.150	5.959	1.966	Open Manhole	600
12.002	7.167	9.0	26	8.150	5.163	2.762	Open Manhole	1350
1.007	6.857	857.1	27	8.200	4.930	2.820	Open Manhole	1350
1.008	27.424	806.6	36	8.190	4.896	2.844	Open Manhole	1350
13.000	44.954	243.0	29	8.190	6.104	1.786	Open Manhole	1200
13.001	9.754	243.9	30	8.106	6.064	1.742	Open Manhole	1200

AKSWard Ltd		Page 11
Seacourt Tower West Way Oxford OX2 0JJ	S208134 Land South of Littlehampton-Proposed Network 100%, 3.3% & 1% AEP	
Date 5/2/2021 File PO1 SW Network 2021.02.05.MDX	Designed by Georgios Roinas Checked by Graham Taylor	
Micro Drainage		Network 2020.1

PIPELINE SCHEDULES for Copy of Copy of Storm (Separate Tanks)

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)
13.002	o	300		30	8.106	6.064	1.742 Open Manhole	1200
13.003	o	300		31	7.791	5.884	1.607 Open Manhole	1200
14.000	o	300	Tank Highway 1	7.750	5.602	1.848	Open Manhole	1200
13.004	o	300		32	7.750	5.575	1.875 Open Manhole	1200
13.005	o	300		33	7.687	5.266	2.121 Open Manhole	1200
13.006	o	300		34	7.714	5.236	2.178 Open Manhole	1200
13.007	o	300		35	8.215	5.030	2.885 Open Manhole	1200
15.000	o	150	Tank 4	8.130	4.938	3.042	Open Manhole	1200
1.009	o	150		36	8.190	4.896	3.144 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)
13.002	43.833	243.5	31	7.791	5.884	1.607	Open Manhole	1200
13.003	75.802	245.3	32	7.750	5.575	1.875	Open Manhole	1200
14.000	4.075	150.9	32	7.750	5.575	1.875	Open Manhole	1200
13.004	75.802	245.3	33	7.687	5.266	2.121	Open Manhole	1200
13.005	7.451	248.4	34	7.714	5.236	2.178	Open Manhole	1200
13.006	50.462	245.0	35	8.215	5.030	2.885	Open Manhole	1200
13.007	32.829	245.0	36	8.190	4.896	2.994	Open Manhole	1350
15.000	6.365	151.5	36	8.190	4.896	3.144	Open Manhole	1350
1.009	14.414	150.1		8.260	4.800	3.310	Open Manhole	0

Setting Out Information - True Coordinates (Copy of Copy of Storm (Separate Tanks))

PN	USMH Name	Dia/Len (mm)	Width (mm)	US Easting (m)	US Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Layout (North)
1.000		1	600	503202.886	102626.032	503202.886	102626.032	
2.000		2	600	503191.246	102576.166	503191.246	102576.166	
2.001		3	600	503188.384	102609.187	503188.384	102609.187	
3.000		4	1200	503192.689	102620.991	503192.689	102620.991	
1.001		5	1200	503201.450	102616.752	503201.450	102616.752	
4.000		6	600	503220.235	102579.949	503220.235	102579.949	
4.001		7	600	503218.036	102610.648	503218.036	102610.648	
1.002		8	1200	503213.832	102617.690	503213.832	102617.690	
1.003		9	1200	503233.267	102628.360	503233.267	102628.360	
5.000		10	1200	503245.501	102611.620	503245.501	102611.620	
6.000		11	1200	503249.298	102578.206	503249.298	102578.206	
5.001		12	1200	503247.561	102596.430	503247.561	102596.430	
7.000		13	600	503301.777	102576.508	503301.777	102576.508	
8.000		14	450	503296.875	102619.376	503296.875	102619.376	
5.002		15	600	503299.023	102602.126	503299.023	102602.126	
5.003	Tank 2	1200		503312.148	102620.931	503312.148	102620.931	
1.004		16	1350	503310.801	102636.977	503310.801	102636.977	
9.000		17	600	503344.551	102579.812	503344.551	102579.812	
9.001		18	600	503341.411	102607.412	503341.411	102607.412	

Setting Out Information - True Coordinates (Copy of Copy of Storm (Separate Tanks))

PN	USMH Name	Dia/Len (mm)	Width (mm)	US Easting (m)	US Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Layout (North)
9.002		19	600	503338.888	102622.655	503338.888	102622.655	
9.003	Tank	1200		503326.282	102621.882	503326.282	102621.882	
1.005		20	1350	503324.654	102638.154	503324.654	102638.154	
10.000		21	1350	503396.408	102669.462	503396.408	102669.462	
11.000	Tank 3	1350		503394.769	102651.246	503394.769	102651.246	
1.006		22	1350	503398.323	102645.976	503398.323	102645.976	
12.000		23	600	503392.876	102627.108	503392.876	102627.108	
12.001		24	600	503394.409	102609.112	503394.409	102609.112	
12.002		25	600	503396.077	102592.611	503396.077	102592.611	
1.007		26	1350	503403.236	102592.956	503403.236	102592.956	
1.008		27	1350	503405.427	102586.459	503405.427	102586.459	
13.000		28	1200	503193.603	102568.167	503193.603	102568.167	
13.001		29	1200	503238.549	102569.044	503238.549	102569.044	
13.002		30	1200	503243.942	102577.171	503243.942	102577.171	
13.003		31	1200	503239.355	102620.763	503239.355	102620.763	
14.000	Tank Highway 1	1200		503314.294	102625.089	503314.294	102625.089	
13.004		32	1200	503314.692	102629.144	503314.692	102629.144	
13.005		33	1200	503390.030	102637.526	503390.030	102637.526	
13.006		34	1200	503395.169	102632.131	503395.169	102632.131	

Setting Out Information - True Coordinates (Copy of Copy of Storm (Separate Tanks))

PN	USMH Name	Dia/Len (mm)	Width (mm)	US Easting (m)	US Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Layout (North)
13.007		35	1200	503399.806	102581.883	503399.806	102581.883	
15.000	Tank 4		1200	503429.352	102588.359	503429.352	102588.359	
1.009		36	1350	503432.619	102582.897	503432.619	102582.897	

PN	DSMH Name	Dia/Len (mm)	Width (mm)	DS Easting (m)	DS Northing (m)	Layout (North)
1.009			0	503446.476	102578.929	

AKSWard Ltd		Page 15
Seacourt Tower West Way Oxford OX2 0JJ	S208134 Land South of Littlehampton-Proposed Network 100%, 3.3% & 1% AEP	
Date 5/2/2021 File PO1 SW Network 2021.02.05.MDX	Designed by Georgios Roinas Checked by Graham Taylor	
Micro Drainage		Network 2020.1

Area Summary for Copy of Copy of Storm (Separate Tanks)

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	User	-	100	0.018	0.018	0.018
2.000	User	-	100	0.035	0.035	0.035
2.001	-	-	100	0.000	0.000	0.000
3.000	-	-	100	0.000	0.000	0.000
1.001	User	-	100	0.019	0.019	0.019
	User	-	100	0.002	0.002	0.021
4.000	User	-	100	0.021	0.021	0.021
	User	-	100	0.008	0.008	0.028
	User	-	100	0.011	0.011	0.039
	User	-	100	0.002	0.002	0.041
	User	-	100	0.006	0.006	0.047
4.001	User	-	100	0.018	0.018	0.018
	User	-	100	0.008	0.008	0.026
	User	-	100	0.008	0.008	0.034
1.002	User	-	100	0.012	0.012	0.012
	User	-	100	0.010	0.010	0.022
	User	-	100	0.006	0.006	0.028
	User	-	100	0.001	0.001	0.029
	User	-	100	0.001	0.001	0.031
	User	-	100	0.001	0.001	0.032
1.003	User	-	100	0.014	0.014	0.014
	User	-	100	0.002	0.002	0.016
	User	-	100	0.002	0.002	0.018
	User	-	100	0.021	0.021	0.039
	User	-	100	0.001	0.001	0.040
5.000	User	-	100	0.005	0.005	0.005
	User	-	100	0.010	0.010	0.015
	User	-	100	0.003	0.003	0.018
	User	-	100	0.002	0.002	0.020
6.000	User	-	100	0.010	0.010	0.010
	User	-	100	0.011	0.011	0.021
	User	-	100	0.005	0.005	0.026
	User	-	100	0.001	0.001	0.028
	User	-	100	0.003	0.003	0.031
	User	-	100	0.007	0.007	0.037
	User	-	100	0.001	0.001	0.038
5.001	User	-	100	0.010	0.010	0.010
	User	-	100	0.018	0.018	0.028
	User	-	100	0.001	0.001	0.029
7.000	User	-	100	0.018	0.018	0.018
	User	-	100	0.002	0.002	0.020
	User	-	100	0.022	0.022	0.042
8.000	User	-	100	0.010	0.010	0.010
	User	-	100	0.016	0.016	0.026
5.002	User	-	100	0.004	0.004	0.004
	User	-	100	0.010	0.010	0.014
	User	-	100	0.017	0.017	0.031
	User	-	100	0.006	0.006	0.037
	User	-	100	0.018	0.018	0.055
5.003	User	-	100	0.005	0.005	0.005
	User	-	100	0.008	0.008	0.012
1.004	User	-	100	0.015	0.015	0.015
	User	-	100	0.018	0.018	0.033
	User	-	100	0.000	0.000	0.034
	User	-	100	0.019	0.019	0.053
	User	-	100	0.031	0.031	0.084
	User	-	100	0.020	0.020	0.104
	User	-	100	0.006	0.006	0.109
	User	-	100	0.005	0.005	0.114
	User	-	100	0.006	0.006	0.120
	User	-	100	0.001	0.001	0.121
	User	-	100	0.003	0.003	0.124

Area Summary for Copy of Copy of Storm (Separate Tanks)

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
	User	-	100	0.003	0.003	0.127
	User	-	100	0.036	0.036	0.163
	User	-	100	0.019	0.019	0.182
9.000	User	-	100	0.022	0.022	0.022
	User	-	100	0.018	0.018	0.040
	User	-	100	0.000	0.000	0.040
	User	-	100	0.000	0.000	0.040
9.001	User	-	100	0.015	0.015	0.015
	User	-	100	0.015	0.015	0.030
	User	-	100	0.011	0.011	0.041
	User	-	100	0.005	0.005	0.046
9.002	User	-	100	0.031	0.031	0.031
	User	-	100	0.006	0.006	0.037
	User	-	100	0.003	0.003	0.040
	User	-	100	0.001	0.001	0.041
9.003	-	-	100	0.000	0.000	0.000
1.005	-	-	100	0.000	0.000	0.000
10.000	User	-	100	0.024	0.024	0.024
11.000	-	-	100	0.000	0.000	0.000
1.006	User	-	100	0.006	0.006	0.006
	User	-	100	0.018	0.018	0.025
	User	-	100	0.000	0.000	0.025
	User	-	100	0.000	0.000	0.025
	User	-	100	0.002	0.002	0.027
	User	-	100	0.017	0.017	0.044
	User	-	100	0.003	0.003	0.047
	User	-	100	0.000	0.000	0.047
	User	-	100	0.000	0.000	0.047
	User	-	100	0.003	0.003	0.051
	User	-	100	0.003	0.003	0.054
	User	-	100	0.010	0.010	0.064
	User	-	100	0.011	0.011	0.075
	User	-	100	0.000	0.000	0.075
	User	-	100	0.034	0.034	0.109
	User	-	100	0.001	0.001	0.111
	User	-	100	0.002	0.002	0.113
	User	-	100	0.024	0.024	0.136
12.000	User	-	100	0.018	0.018	0.018
	User	-	100	0.004	0.004	0.022
	User	-	100	0.001	0.001	0.023
	User	-	100	0.002	0.002	0.025
12.001	User	-	100	0.016	0.016	0.016
	User	-	100	0.006	0.006	0.022
12.002	User	-	100	0.017	0.017	0.017
	User	-	100	0.000	0.000	0.017
	User	-	100	0.000	0.000	0.017
	User	-	100	0.000	0.000	0.017
	User	-	100	0.004	0.004	0.021
	User	-	100	0.001	0.001	0.023
	User	-	100	0.004	0.004	0.027
1.007	User	-	100	0.007	0.007	0.007
	User	-	100	0.009	0.009	0.016
	User	-	100	0.002	0.002	0.018
1.008	User	-	100	0.000	0.000	0.000
	User	-	100	0.000	0.000	0.000
13.000	User	-	100	0.043	0.043	0.043
13.001	User	-	100	0.021	0.021	0.021
13.002	User	-	100	0.031	0.031	0.031
13.003	User	-	100	0.041	0.041	0.041
14.000	-	-	100	0.000	0.000	0.000
13.004	User	-	100	0.054	0.054	0.054
13.005	User	-	100	0.024	0.024	0.024

Area Summary for Copy of Copy of Storm (Separate Tanks)

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
13.006	User	-	100	0.016	0.016	0.016
13.007	User	-	100	0.032	0.032	0.032
15.000	-	-	100	0.000	0.000	0.000
1.009	User	-	100	0.020	0.020	0.020
	User	-	100	0.007	0.007	0.028
	User	-	100	0.014	0.014	0.042
	User	-	100	0.009	0.009	0.050
	User	-	100	0.000	0.000	0.051
	User	-	100	0.000	0.000	0.051
	User	-	100	0.000	0.000	0.051
	User	-	100	0.013	0.013	0.064
				Total	Total	Total
				1.335	1.335	1.335

Free Flowing Outfall Details for Copy of Copy of Storm (Separate Tanks)

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.009		8.260	4.800	4.800	0	0

Simulation Criteria for Copy of Copy of Storm (Separate Tanks)

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	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 Online Controls	1	Number of Storage Structures	21
		Number of Time/Area Diagrams	0
		Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	E (1km)	0.313
Return Period (years)	30	F (1km)	2.333
FEH Rainfall Version	1999	Summer Storms	Yes
Site Location	GB 502300 102250 TQ 02300 02250	Winter Storms	Yes
C (1km)	-0.026	Cv (Summer)	0.750
D1 (1km)	0.384	Cv (Winter)	0.840
D2 (1km)	0.275	Storm Duration (mins)	30
D3 (1km)	0.403		

Online Controls for Copy of Copy of Storm (Separate Tanks)

Hydro-Brake® Optimum Manhole: 36, DS/PN: 1.009, Volume (m³): 11.2

Unit Reference	MD-SHE-0053-2200-3294-2200
Design Head (m)	3.294
Design Flow (l/s)	2.2
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	53
Invert Level (m)	4.896
Minimum Outlet Pipe Diameter (mm)	75
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	3.294	2.2	Kick-Flo®	0.477	0.9
Flush-Flo™	0.231	1.1	Mean Flow over Head Range	-	1.6

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	1.0	0.800	1.2	2.000	1.7	4.000	2.4	7.000	3.1
0.200	1.1	1.000	1.3	2.200	1.8	4.500	2.5	7.500	3.2
0.300	1.1	1.200	1.4	2.400	1.9	5.000	2.7	8.000	3.3
0.400	1.1	1.400	1.5	2.600	2.0	5.500	2.8	8.500	3.4
0.500	0.9	1.600	1.6	3.000	2.1	6.000	2.9	9.000	3.5
0.600	1.0	1.800	1.7	3.500	2.3	6.500	3.0	9.500	3.6

AKSWard Ltd		Page 19
Seacourt Tower West Way Oxford OX2 0JJ	S208134 Land South of Littlehampton-Proposed Network 100%, 3.3% & 1% AEP	
Date 5/2/2021	Designed by Georgios Roinas	
File PO1 SW Network 2021.02.05.MDX	Checked by Graham Taylor	
Micro Drainage		Network 2020.1

Storage Structures for Copy of Copy of Storm (Separate Tanks)

Porous Car Park Manhole: 1, DS/PN: 1.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	19.0
Max Percolation (l/s)	25.3	Slope (1:X)	189.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	7.400	Membrane Depth (mm)	160

Porous Car Park Manhole: 4, DS/PN: 3.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	19.2
Max Percolation (l/s)	25.6	Slope (1:X)	180.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	7.400	Membrane Depth (mm)	160

Porous Car Park Manhole: 6, DS/PN: 4.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	17.6
Max Percolation (l/s)	23.5	Slope (1:X)	180.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	7.900	Membrane Depth (mm)	160

Porous Car Park Manhole: 7, DS/PN: 4.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	9.6
Max Percolation (l/s)	12.8	Slope (1:X)	189.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	7.900	Membrane Depth (mm)	160

Porous Car Park Manhole: 9, DS/PN: 1.003

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	2.5
Membrane Percolation (mm/hr)	1000	Length (m)	19.0
Max Percolation (l/s)	13.2	Slope (1:X)	180.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	7.350	Membrane Depth (mm)	160

Porous Car Park Manhole: 10, DS/PN: 5.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	9.6
Max Percolation (l/s)	12.8	Slope (1:X)	180.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	7.600	Membrane Depth (mm)	160

Porous Car Park Manhole: 11, DS/PN: 6.000

Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.30
Membrane Percolation (mm/hr)	1000	Invert Level (m)	7.650
Max Percolation (l/s)	36.0	Width (m)	4.8
Safety Factor	2.0	Length (m)	27.0

Seacourt Tower
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OX2 0JJ

S208134 Land South of
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Network 2020.1

Porous Car Park Manhole: 11, DS/PN: 6.000

Slope (1:X) 180.0 Evaporation (mm/day) 3
Depression Storage (mm) 5 Membrane Depth (mm) 160

Porous Car Park Manhole: 13, DS/PN: 7.000

Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 4.8
Membrane Percolation (mm/hr) 1000 Length (m) 18.5
Max Percolation (l/s) 24.7 Slope (1:X) 180.0
Safety Factor 2.0 Depression Storage (mm) 5
Porosity 0.30 Evaporation (mm/day) 3
Invert Level (m) 7.670 Membrane Depth (mm) 160

Porous Car Park Manhole: 14, DS/PN: 8.000

Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 4.8
Membrane Percolation (mm/hr) 1000 Length (m) 14.4
Max Percolation (l/s) 19.2 Slope (1:X) 180.0
Safety Factor 2.0 Depression Storage (mm) 5
Porosity 0.30 Evaporation (mm/day) 3
Invert Level (m) 7.610 Membrane Depth (mm) 160

Complex Manhole: Tank 2, DS/PN: 5.003

Cellular Storage

Invert Level (m) 5.500 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	340.0	340.0	1.600	340.0	495.2	1.601	0.0	495.2

Filter Drain

Infiltration Coefficient Base (m/hr) 0.00000 Pipe Diameter (m) 0.150
Infiltration Coefficient Side (m/hr) 0.00000 Pipe Depth above Invert (m) 1.900
Safety Factor 2.0 Number of Pipes 1
Porosity 0.30 Slope (1:X) 200.0
Invert Level (m) 7.400 Cap Volume Depth (m) 0.000
Trench Width (m) 0.5 Cap Infiltration Depth (m) 0.000
Trench Length (m) 120.0

Porous Car Park Manhole: 16, DS/PN: 1.004

Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 4.8
Membrane Percolation (mm/hr) 1000 Length (m) 38.0
Max Percolation (l/s) 50.7 Slope (1:X) 180.0
Safety Factor 2.0 Depression Storage (mm) 5
Porosity 0.30 Evaporation (mm/day) 3
Invert Level (m) 7.300 Membrane Depth (mm) 160

Porous Car Park Manhole: 17, DS/PN: 9.000

Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 4.8
Membrane Percolation (mm/hr) 1000 Length (m) 23.6
Max Percolation (l/s) 31.5 Slope (1:X) 180.0
Safety Factor 2.0 Depression Storage (mm) 5
Porosity 0.30 Evaporation (mm/day) 3
Invert Level (m) 7.300 Membrane Depth (mm) 160

Seacourt Tower
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OX2 0JJ

S208134 Land South of
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Micro Drainage

Network 2020.1

Porous Car Park Manhole: 19, DS/PN: 9.002

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	12.0
Max Percolation (l/s)	16.0	Slope (1:X)	180.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	7.320	Membrane Depth (mm)	160

Cellular Storage Manhole: Tank, DS/PN: 9.003

Invert Level (m)	5.500	Safety Factor	2.0
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95
Infiltration Coefficient Side (m/hr)	0.00000		

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	340.0	340.0	1.600	340.0	495.2	1.601	0.0	495.2

Complex Manhole: Tank 3, DS/PN: 11.000

Cellular Storage

Invert Level (m)	5.056	Safety Factor	2.0
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95
Infiltration Coefficient Side (m/hr)	0.00000		

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	119.0	119.0	1.600	119.0	195.8	1.601	0.0	195.8

Porous Car Park

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	21.6
Max Percolation (l/s)	28.8	Slope (1:X)	180.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	6.950	Membrane Depth (mm)	160

Porous Car Park Manhole: 22, DS/PN: 1.006

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	43.0
Max Percolation (l/s)	57.3	Slope (1:X)	180.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	7.100	Membrane Depth (mm)	160

Porous Car Park Manhole: 23, DS/PN: 12.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	2.0
Membrane Percolation (mm/hr)	1000	Length (m)	12.0
Max Percolation (l/s)	6.7	Slope (1:X)	180.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	7.610	Membrane Depth (mm)	160

Porous Car Park Manhole: 24, DS/PN: 12.001

Infiltration Coefficient Base (m/hr)	0.00000	Max Percolation (l/s)	3.3
Membrane Percolation (mm/hr)	1000	Safety Factor	2.0

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Micro Drainage

Network 2020.1

Porous Car Park Manhole: 24, DS/PN: 12.001

Porosity 0.30 Slope (1:X) 180.0
Invert Level (m) 7.500 Depression Storage (mm) 5
Width (m) 2.0 Evaporation (mm/day) 3
Length (m) 6.0 Membrane Depth (mm) 160

Porous Car Park Manhole: 26, DS/PN: 1.007

Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 2.0
Membrane Percolation (mm/hr) 1000 Length (m) 17.9
Max Percolation (l/s) 9.9 Slope (1:X) 180.0
Safety Factor 2.0 Depression Storage (mm) 5
Porosity 0.30 Evaporation (mm/day) 3
Invert Level (m) 7.650 Membrane Depth (mm) 160

Cellular Storage Manhole: Tank Highway 1, DS/PN: 14.000

Invert Level (m) 5.602 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	45.0	45.0	1.200	45.0	78.6	1.201	0.0	78.6

Complex Manhole: Tank 4, DS/PN: 15.000

Cellular Storage

Invert Level (m) 4.938 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	49.5	49.5	2.000	49.5	111.5	2.001	0.0	111.5

Porous Car Park

Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 4.8
Membrane Percolation (mm/hr) 1000 Length (m) 21.6
Max Percolation (l/s) 28.8 Slope (1:X) 180.0
Safety Factor 2.0 Depression Storage (mm) 5
Porosity 0.30 Evaporation (mm/day) 3
Invert Level (m) 7.630 Membrane Depth (mm) 160

AKSWard Ltd		Page 23
Seacourt Tower West Way Oxford OX2 0JJ	S208134 Land South of Littlehampton-Proposed Network 100%, 3.3% & 1% AEP	
Date 5/2/2021 File PO1 SW Network 2021.02.05.MDX	Designed by Georgios Roinas Checked by Graham Taylor	
Micro Drainage		Network 2020.1

<u>Manhole Headloss for Copy of Copy of Storm (Separate Tanks)</u>			
PN	US/MH Name	US/MH Headloss	
1.000		1	0.500
2.000		2	0.500
2.001		3	0.500
3.000		4	0.500
1.001		5	0.500
4.000		6	0.500
4.001		7	0.500
1.002		8	0.500
1.003		9	0.500
5.000		10	0.500
6.000		11	0.500
5.001		12	0.500
7.000		13	0.500
8.000		14	0.500
5.002		15	0.500
5.003	Tank 2		0.500
1.004		16	0.500
9.000		17	0.500
9.001		18	0.500
9.002		19	0.500
9.003	Tank		0.500
1.005		20	0.500
10.000		21	0.500
11.000	Tank 3		0.500
1.006		22	0.500
12.000		23	0.500
12.001		24	0.500
12.002		25	0.500
1.007		26	0.500
1.008		27	0.500
13.000		28	0.500
13.001		29	0.500
13.002		30	0.500
13.003		31	0.500
14.000	Tank Highway 1		0.500
13.004		32	0.500
13.005		33	0.500
13.006		34	0.500
13.007		35	0.500
15.000	Tank 4		0.500
1.009		36	0.500

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Copy of Copy of Storm (Separate Tanks)

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	1	Number of Storage Structures	21	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	D3 (1km)	0.403
FEH Rainfall Version	1999	E (1km)	0.313
Site Location	GB 502300 102250 TQ 02300 02250	F (1km)	2.333
C (1km)	-0.026	Cv (Summer)	0.750
D1 (1km)	0.384	Cv (Winter)	0.840
D2 (1km)	0.275		

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 0

					Water		Surcharged		Flooded		
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Level (m)	Depth (m)	Volume (m³)
1.000	1	15 Winter	1	+0%	100/15 Summer				6.289	-0.197	0.000
2.000	2	15 Winter	1	+0%					7.236	-0.189	0.000
2.001	3	15 Winter	1	+0%	100/15 Winter				6.661	-0.195	0.000
3.000	4	15 Winter	1	+0%	100/15 Summer				6.118	-0.142	0.000
1.001	5	15 Winter	1	+0%	100/15 Summer				6.127	-0.174	0.000
4.000	6	15 Winter	1	+0%					7.394	-0.181	0.000
4.001	7	15 Winter	1	+0%					6.907	-0.190	0.000
1.002	8	15 Winter	1	+0%	30/15 Summer				5.863	-0.196	0.000
1.003	9	15 Winter	1	+0%	30/15 Summer				5.757	-0.188	0.000
5.000	10	15 Winter	1	+0%	30/15 Summer				6.716	-0.109	0.000
6.000	11	15 Winter	1	+0%	30/15 Summer				6.779	-0.096	0.000
5.001	12	15 Winter	1	+0%	30/15 Summer				6.654	-0.069	0.000
7.000	13	15 Winter	1	+0%	30/15 Summer				6.781	-0.189	0.000
8.000	14	15 Winter	1	+0%	30/15 Summer				6.791	-0.119	0.000
5.002	15	15 Winter	1	+0%	30/15 Summer				6.245	-0.058	0.000
5.003	Tank 2	7200 Winter	1	+0%	1/720 Winter				5.681	0.031	0.000
1.004	16	7200 Winter	1	+0%	1/360 Winter				5.682	0.092	0.000
9.000	17	15 Winter	1	+0%	30/15 Summer				6.341	-0.101	0.000
9.001	18	15 Winter	1	+0%	30/15 Summer				6.032	-0.063	0.000
9.002	19	15 Winter	1	+0%	30/15 Summer				5.912	-0.079	0.000
9.003	Tank	7200 Winter	1	+0%	1/960 Winter				5.680	0.030	0.000
1.005	20	7200 Winter	1	+0%	1/180 Winter				5.685	0.158	0.000
10.000	21	15 Winter	1	+0%	100/480 Winter				5.792	-0.438	0.000
11.000	Tank 3	7200 Winter	1	+0%	1/120 Winter				5.682	0.176	0.000
1.006	22	7200 Winter	1	+0%	1/120 Winter				5.687	0.223	0.000
12.000	23	15 Winter	1	+0%					6.514	-0.196	0.000
12.001	24	15 Winter	1	+0%	100/960 Winter				6.178	-0.177	0.000

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Copy of Copy of Storm (Separate Tanks)

PN	US/MH Name	Flow / Cap.	Overflow (1/s)	Half Drain Time (mins)	Pipe Flow (1/s)	Status	Level Exceeded
1.000	1	0.03		5	1.9	OK	
2.000	2	0.06			3.8	OK	
2.001	3	0.04			3.8	OK	
3.000	4	0.00		3	0.0	OK	
1.001	5	0.12			7.4	OK	
4.000	6	0.08		6	5.0	OK	
4.001	7	0.06		7	8.1	OK	
1.002	8	0.25			17.7	OK	
1.003	9	0.30		7	21.5	OK	
5.000	10	0.16		6	2.1	OK	
6.000	11	0.27		6	4.1	OK	
5.001	12	0.52			8.1	OK	
7.000	13	0.06		6	4.5	OK	
8.000	14	0.09		6	2.9	OK	
5.002	15	0.67			19.1	OK	
5.003	Tank 2	0.11		2414	2.6	SURCHARGED	
1.004	16	0.03		3006	4.1	SURCHARGED	
9.000	17	0.22		6	4.3	OK	
9.001	18	0.63			8.5	OK	
9.002	19	0.46		8	12.2	OK	
9.003	Tank	0.11		2411	2.9	SURCHARGED	
1.005	20	0.02			2.0	SURCHARGED	
10.000	21	0.01			2.6	OK	
11.000	Tank 3	0.07		4111	10.6	SURCHARGED	
1.006	22	0.03		4332	2.9	SURCHARGED	
12.000	23	0.04		6	2.7	OK	
12.001	24	0.10		7	4.7	OK	

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Copy of Copy of Storm (Separate Tanks)

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
12.002	25	15 Winter	1	+0%	100/360 Winter				5.994	-0.190
1.007	26	7200 Winter	1	+0%	1/120 Summer				5.690	0.302
1.008	27	7200 Winter	1	+0%	1/60 Winter				5.690	0.310
13.000	28	15 Winter	1	+0%					6.341	-0.248
13.001	29	15 Winter	1	+0%	100/2160 Winter				6.172	-0.232
13.002	30	15 Winter	1	+0%	100/960 Winter				6.138	-0.226
13.003	31	15 Winter	1	+0%	100/15 Summer				5.971	-0.213
14.000	Tank Highway 1	7200 Winter	1	+0%	30/120 Winter				5.680	-0.222
13.004	32	7200 Winter	1	+0%	30/15 Summer				5.684	-0.191
13.005	33	7200 Winter	1	+0%	1/240 Winter				5.686	0.120
13.006	34	7200 Winter	1	+0%	1/180 Winter				5.693	0.157
13.007	35	7200 Winter	1	+0%	1/60 Summer				5.693	0.363
15.000	Tank 4	7200 Winter	1	+0%	1/15 Summer				5.681	0.593
1.009	36	7200 Winter	1	+0%	1/15 Summer				5.692	0.646

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
12.002	25	0.000	0.06			7.2	OK	
1.007	26	0.000	0.03		4715	2.7	SURCHARGED	
1.008	27	0.000	0.03			2.7	SURCHARGED	
13.000	28	0.000	0.07			4.5	OK	
13.001	29	0.000	0.12			6.4	OK	
13.002	30	0.000	0.14			9.0	OK	
13.003	31	0.000	0.17			11.7	OK	
14.000	Tank Highway 1	0.000	0.02		1624	1.3	OK	
13.004	32	0.000	0.02			1.3	OK	
13.005	33	0.000	0.05			2.8	SURCHARGED	
13.006	34	0.000	0.03			1.7	SURCHARGED	
13.007	35	0.000	0.02			1.4	SURCHARGED	
15.000	Tank 4	0.000	0.29		4559	3.5	SURCHARGED	
1.009	36	0.000	0.09			1.2	SURCHARGED	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Copy of Copy of Storm (Separate Tanks)

Simulation Criteria			
Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		
Number of Input Hydrographs	0	Number of Offline Controls	0
Number of Online Controls	1	Number of Storage Structures	21
		Number of Time/Area Diagrams	0
		Number of Real Time Controls	0
Synthetic Rainfall Details			
Rainfall Model	FEH	D3 (1km)	0.403
FEH Rainfall Version	1999	E (1km)	0.313
Site Location	GB 502300 102250 TQ 02300 02250	F (1km)	2.333
C (1km)	-0.026	Cv (Summer)	0.750
D1 (1km)	0.384	Cv (Winter)	0.840
D2 (1km)	0.275		
Margin for Flood Risk Warning (mm)	300.0		
Analysis Timestep	2.5	Second Increment (Extended)	
DTS Status	ON		
DVD Status	ON		
Inertia Status	OFF		
Profile(s)	Summer and Winter		
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080		
Return Period(s) (years)	1, 30, 100		
Climate Change (%)	0, 0, 0		

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
1.000	1	15 Winter	30	+0%	100/15	Summer			6.309	-0.177	0.000
2.000	2	15 Winter	30	+0%					7.267	-0.158	0.000
2.001	3	15 Winter	30	+0%	100/15	Winter			6.687	-0.169	0.000
3.000	4	15 Winter	30	+0%	100/15	Summer			6.182	-0.078	0.000
1.001	5	15 Winter	30	+0%	100/15	Summer			6.214	-0.087	0.000
4.000	6	15 Winter	30	+0%					7.430	-0.145	0.000
4.001	7	15 Winter	30	+0%					6.941	-0.156	0.000
1.002	8	15 Winter	30	+0%	30/15	Summer			6.186	0.127	0.000
1.003	9	7200 Winter	30	+0%	30/15	Summer			6.174	0.229	0.000
5.000	10	15 Winter	30	+0%	30/15	Summer			7.633	0.808	0.000
6.000	11	15 Winter	30	+0%	30/15	Summer			7.666	0.791	0.000
5.001	12	15 Winter	30	+0%	30/15	Summer			7.630	0.907	0.000
7.000	13	15 Winter	30	+0%	30/15	Summer			7.338	0.368	0.000
8.000	14	15 Winter	30	+0%	30/15	Summer			7.345	0.435	0.000
5.002	15	15 Winter	30	+0%	30/15	Summer			7.311	1.008	0.000
5.003	Tank 2	7200 Winter	30	+0%	1/720	Winter			6.171	0.521	0.000
1.004	16	7200 Winter	30	+0%	1/360	Winter			6.176	0.586	0.000
9.000	17	15 Winter	30	+0%	30/15	Summer			6.947	0.505	0.000
9.001	18	15 Winter	30	+0%	30/15	Summer			6.790	0.695	0.000
9.002	19	15 Winter	30	+0%	30/15	Summer			6.382	0.391	0.000
9.003	Tank	7200 Winter	30	+0%	1/960	Winter			6.170	0.520	0.000
1.005	20	7200 Winter	30	+0%	1/180	Winter			6.183	0.656	0.000
10.000	21	7200 Winter	30	+0%	100/480	Winter			6.176	-0.054	0.000
11.000	Tank 3	7200 Winter	30	+0%	1/120	Winter			6.173	0.667	0.000
1.006	22	7200 Winter	30	+0%	1/120	Winter			6.181	0.717	0.000
12.000	23	15 Winter	30	+0%					6.540	-0.170	0.000
12.001	24	15 Winter	30	+0%	100/960	Winter			6.224	-0.131	0.000

AKSWard Ltd		Page 28
Seacourt Tower West Way Oxford OX2 0JJ	S208134 Land South of Littlehampton-Proposed Network 100%, 3.3% & 1% AEP	
Date 5/2/2021 File PO1 SW Network 2021.02.05.MDX	Designed by Georgios Roinas Checked by Graham Taylor	
Micro Drainage		Network 2020.1

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Copy of Copy of Storm (Separate Tanks)

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.10			6 6.3	OK	
2.000	2	0.19			12.3	OK	
2.001	3	0.14			12.2	OK	
3.000	4	0.07			3 0.7	OK	
1.001	5	0.41			25.9	OK	
4.000	6	0.27			6 16.5	OK	
4.001	7	0.20			6 29.1	OK	
1.002	8	0.90			63.1	SURCHARGED	
1.003	9	0.02		4620	1.5	SURCHARGED	
5.000	10	0.43		5	5.8	SURCHARGED	
6.000	11	0.59		6	8.9	SURCHARGED	
5.001	12	1.21			18.9	SURCHARGED	
7.000	13	0.18		4	13.5	SURCHARGED	
8.000	14	0.27		4	8.5	SURCHARGED	
5.002	15	1.59			45.3	SURCHARGED	
5.003	Tank 2	0.14		4957	3.5	SURCHARGED	
1.004	16	0.03		7931	5.6	SURCHARGED	
9.000	17	0.69		3	13.1	SURCHARGED	
9.001	18	1.96			26.4	SURCHARGED	
9.002	19	1.46		5	39.0	SURCHARGED	
9.003	Tank	0.15		4964	4.1	SURCHARGED	
1.005	20	0.03			2.5	SURCHARGED	
10.000	21	0.00			0.9	OK	
11.000	Tank 3	0.08		7954	13.0	SURCHARGED	
1.006	22	0.03		10212	2.9	SURCHARGED	
12.000	23	0.14		6	8.9	OK	
12.001	24	0.37		6	17.1	OK	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Copy of Copy of Storm (Separate Tanks)

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
12.002		25 7200 Winter	30	+0%	100/360 Winter				6.177	-0.007
1.007		26 7200 Winter	30	+0%	1/120 Summer				6.177	0.789
1.008		27 7200 Winter	30	+0%	1/60 Winter				6.177	0.797
13.000		28 15 Winter	30	+0%					6.386	-0.203
13.001		29 15 Winter	30	+0%	100/2160 Winter				6.241	-0.163
13.002		30 15 Winter	30	+0%	100/960 Winter				6.214	-0.150
13.003		31 7200 Winter	30	+0%	100/15 Summer				6.171	-0.013
14.000	Tank Highway 1	7200 Winter	30	+0%	30/120 Winter				6.170	0.268
13.004		32 7200 Winter	30	+0%	30/15 Summer				6.172	0.297
13.005		33 7200 Winter	30	+0%	1/240 Winter				6.175	0.609
13.006		34 7200 Winter	30	+0%	1/180 Winter				6.175	0.639
13.007		35 7200 Winter	30	+0%	1/60 Summer				6.176	0.846
15.000	Tank 4	7200 Winter	30	+0%	1/15 Summer				6.171	1.083
1.009		36 7200 Winter	30	+0%	1/15 Summer				6.176	1.130

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
12.002		25	0.000	0.00		0.5	OK	
1.007		26	0.000	0.03	10633	2.7	SURCHARGED	
1.008		27	0.000	0.03		2.7	SURCHARGED	
13.000		28	0.000	0.22		14.7	OK	
13.001		29	0.000	0.40		21.9	OK	
13.002		30	0.000	0.47		31.5	OK	
13.003		31	0.000	0.01		0.7	OK	
14.000	Tank Highway 1		0.000	0.05	4326	2.7	SURCHARGED	
13.004		32	0.000	0.03		2.2	SURCHARGED	
13.005		33	0.000	0.06		3.0	SURCHARGED	
13.006		34	0.000	0.03		1.7	SURCHARGED	
13.007		35	0.000	0.02		1.5	SURCHARGED	
15.000	Tank 4		0.000	0.35	8797	4.3	SURCHARGED	
1.009		36	0.000	0.11		1.4	SURCHARGED	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Copy of Copy of Storm (Separate Tanks)

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	1	Number of Storage Structures	21	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	D3 (1km)	0.403
FEH Rainfall Version	1999	E (1km)	0.313
Site Location	GB 502300 102250 TQ 02300 02250	F (1km)	2.333
C (1km)	-0.026	Cv (Summer)	0.750
D1 (1km)	0.384	Cv (Winter)	0.840
D2 (1km)	0.275		

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 0

					Water		Surcharged	Flooded			
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Level (m)	Depth (m)	Volume (m³)
1.000	1	15 Winter	100	+0%	100/15 Summer				6.904	0.418	0.000
2.000	2	15 Winter	100	+0%					7.284	-0.141	0.000
2.001	3	15 Winter	100	+0%	100/15 Winter				6.921	0.065	0.000
3.000	4	15 Winter	100	+0%	100/15 Summer				6.885	0.625	0.000
1.001	5	15 Winter	100	+0%	100/15 Summer				6.893	0.592	0.000
4.000	6	15 Winter	100	+0%					7.452	-0.123	0.000
4.001	7	15 Winter	100	+0%					6.959	-0.138	0.000
1.002	8	15 Winter	100	+0%	30/15 Summer				6.804	0.745	0.000
1.003	9	15 Winter	100	+0%	30/15 Summer				6.632	0.687	0.000
5.000	10	15 Winter	100	+0%	30/15 Summer				7.842	1.017	0.000
6.000	11	15 Winter	100	+0%	30/15 Summer				7.844	0.969	0.000
5.001	12	15 Winter	100	+0%	30/15 Summer				7.832	1.109	0.000
7.000	13	15 Winter	100	+0%	30/15 Summer				7.756	0.786	0.000
8.000	14	15 Winter	100	+0%	30/15 Summer				7.749	0.839	0.000
5.002	15	15 Winter	100	+0%	30/15 Summer				7.730	1.427	0.000
5.003	Tank 2	5760 Winter	100	+0%	1/720 Winter				6.464	0.814	0.000
1.004	16	5760 Winter	100	+0%	1/360 Winter				6.470	0.880	0.000
9.000	17	15 Winter	100	+0%	30/15 Summer				7.439	0.997	0.000
9.001	18	15 Winter	100	+0%	30/15 Summer				7.394	1.299	0.000
9.002	19	15 Summer	100	+0%	30/15 Summer				6.946	0.955	0.000
9.003	Tank 5	5760 Winter	100	+0%	1/960 Winter				6.463	0.813	0.000
1.005	20	4320 Winter	100	+0%	1/180 Winter				6.477	0.950	0.000
10.000	21	5760 Winter	100	+0%	100/480 Winter				6.469	0.239	0.000
11.000	Tank 3	4320 Winter	100	+0%	1/120 Winter				6.464	0.958	0.000
1.006	22	4320 Winter	100	+0%	1/120 Winter				6.474	1.010	0.000
12.000	23	15 Winter	100	+0%					6.554	-0.156	0.000
12.001	24	4320 Winter	100	+0%	100/960 Winter				6.467	0.112	0.000

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Copy of Copy of Storm (Separate Tanks)

PN	US/MH Name	Flow / Cap.	Overflow (1/s)	Half Drain Time (mins)	Pipe Flow (1/s)	Status	Level Exceeded
1.000	1	0.14			4 8.2	SURCHARGED	
2.000	2	0.29			18.8	OK	
2.001	3	0.21			18.2	SURCHARGED	
3.000	4	0.45			4 4.2	SURCHARGED	
1.001	5	0.63			39.1	SURCHARGED	
4.000	6	0.42			6 25.2	OK	
4.001	7	0.31			6 44.6	OK	
1.002	8	1.21			85.1	SURCHARGED	
1.003	9	1.34			9 96.5	SURCHARGED	
5.000	10	0.76			7 10.2	FLOOD RISK	
6.000	11	1.02			7 15.4	SURCHARGED	
5.001	12	1.65			25.7	FLOOD RISK	
7.000	13	0.27			4 19.9	SURCHARGED	
8.000	14	0.67			4 20.9	SURCHARGED	
5.002	15	1.78			50.7	SURCHARGED	
5.003	Tank 2	0.12		5141	3.0	SURCHARGED	
1.004	16	0.02			4.0	SURCHARGED	
9.000	17	1.24			4 23.5	SURCHARGED	
9.001	18	2.30			31.0	SURCHARGED	
9.002	19	1.90			7 50.6	SURCHARGED	
9.003	Tank	0.10		5143	2.6	SURCHARGED	
1.005	20	0.03			2.6	SURCHARGED	
10.000	21	0.00			0.8	SURCHARGED	
11.000	Tank 3	0.05		7772	7.4	SURCHARGED	
1.006	22	0.03			3.2	SURCHARGED	
12.000	23	0.21		6	13.6	OK	
12.001	24	0.01		1137	0.5	SURCHARGED	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Copy of Copy of Storm (Separate Tanks)

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
12.002		25 4320 Winter	100	+0%	100/360 Winter				6.466	0.282
1.007		26 5760 Winter	100	+0%	1/120 Summer				6.468	1.080
1.008		27 5760 Winter	100	+0%	1/60 Winter				6.467	1.087
13.000		28 5760 Winter	100	+0%					6.463	-0.126
13.001		29 5760 Winter	100	+0%	100/2160 Winter				6.463	0.059
13.002		30 4320 Winter	100	+0%	100/960 Winter				6.469	0.105
13.003		31 4320 Winter	100	+0%	100/15 Summer				6.469	0.285
14.000	Tank Highway 1	4320 Winter	100	+0%	30/120 Winter				6.463	0.561
13.004		32 4320 Winter	100	+0%	30/15 Summer				6.471	0.596
13.005		33 4320 Winter	100	+0%	1/240 Winter				6.467	0.901
13.006		34 5760 Winter	100	+0%	1/180 Winter				6.467	0.931
13.007		35 5760 Winter	100	+0%	1/60 Summer				6.467	1.137
15.000	Tank 4	5760 Winter	100	+0%	1/15 Summer				6.463	1.375
1.009		36 5760 Winter	100	+0%	1/15 Summer				6.466	1.420

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
12.002		25	0.000	0.01		1.0	SURCHARGED	
1.007		26	0.000	0.02		2.4	SURCHARGED	
1.008		27	0.000	0.03		2.3	SURCHARGED	
13.000		28	0.000	0.01		0.3	OK	
13.001		29	0.000	0.03		1.6	SURCHARGED	
13.002		30	0.000	0.02		1.6	SURCHARGED	
13.003		31	0.000	0.02		1.4	SURCHARGED	
14.000	Tank Highway 1		0.000	0.06	4463	3.3	SURCHARGED	
13.004		32	0.000	0.03		2.1	SURCHARGED	
13.005		33	0.000	0.04		2.2	SURCHARGED	
13.006		34	0.000	0.03		1.8	SURCHARGED	
13.007		35	0.000	0.03		1.9	SURCHARGED	
15.000	Tank 4		0.000	0.15	8745	1.8	SURCHARGED	
1.009		36	0.000	0.12		1.6	SURCHARGED	

AKSWard Ltd		Page 1
Seacourt Tower West Way Oxford OX2 0JJ	S208134 Land South of Littlehampton-Proposed Network 1% AEP plus 40% CC	
Date 5/2/2021	Designed by Georgios Roinas	
File PO1 SW Network 2021.02.05.MDX	Checked by Graham Taylor	
Micro Drainage	Network 2020.1	

<u>STORM SEWER DESIGN by the Modified Rational Method</u>		
<u>Design Criteria for Copy of Copy of Storm (Separate Tanks)</u>		
Pipe Sizes STANDARD Manhole Sizes STANDARD		
FEH Rainfall Model		
Return Period (years)		2
FEH Rainfall Version		1999
Site Location	GB 502300 102250 TQ 02300 02250	
C (1km)		-0.026
D1 (1km)		0.384
D2 (1km)		0.275
D3 (1km)		0.403
E (1km)		0.313
F (1km)		2.333
Maximum Rainfall (mm/hr)		550
Maximum Time of Concentration (mins)		30
Foul Sewage (l/s/ha)		0.000
Volumetric Runoff Coeff.		0.750
PIMP (%)		100
Add Flow / Climate Change (%)		0
Minimum Backdrop Height (m)		0.200
Maximum Backdrop Height (m)		1.500
Min Design Depth for Optimisation (m)		0.450
Min Vel for Auto Design only (m/s)		1.00
Min Slope for Optimisation (1:X)		500
Designed with Level Soffits		
<u>Time Area Diagram for Copy of Copy of Storm (Separate Tanks)</u>		
Time (mins)	Area (ha)	Time (mins)
Area (ha)	Time (mins)	Area (ha)
0-4 0.245	4-8 0.753	8-12 0.337
Total Area Contributing (ha) = 1.335		
Total Pipe Volume (m³) = 75.482		

<u>Network Design Table for Copy of Copy of Storm (Separate Tanks)</u>												
« - Indicates pipe capacity < flow												
PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow	k (l/s)	HYD SECT	DIA (mm)	Section	Type	Auto Design
1.000	9.391	0.185	50.8	0.018	5.00	0.0	0.600	o	225	Pipe/Conduit		
2.000	33.145	0.569	58.3	0.035	5.00	0.0	0.600	o	225	Pipe/Conduit		
2.001	15.099	0.555	27.2	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit		
<u>Network Results Table</u>												
PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow	(l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)	
1.000	61.24	5.09	6.261	0.018	0.0	0.0		0.0	1.84	73.2	2.9	
2.000	59.50	5.32	7.200	0.035	0.0	0.0		0.0	1.72	68.3	5.6	
2.001	58.80	5.42	6.631	0.035	0.0	0.0		0.0	2.52	100.1	5.6	

AKSWard Ltd		Page 2
Seacourt Tower	S208134 Land South of	
West Way Oxford	Littlehampton-Proposed Network	
OX2 0JJ	1% AEP plus 40% CC	
Date 5/2/2021	Designed by Georgios Roinas	
File PO1 SW Network 2021.02.05.MDX	Checked by Graham Taylor	
Micro Drainage	Network 2020.1	

Network Design Table for Copy of Copy of Storm (Separate Tanks)

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
3.000	9.733	0.034	286.3	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.001	12.417	0.242	51.3	0.021	0.00	0.0	0.600	o	225	Pipe/Conduit	
4.000	30.778	0.478	64.4	0.047	5.00	0.0	0.600	o	225	Pipe/Conduit	
4.001	8.201	1.038	7.9	0.034	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.002	22.171	0.114	194.5	0.032	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.003	78.011	0.355	219.7	0.040	0.00	0.0	0.600	o	300	Pipe/Conduit	
5.000	15.329	0.102	150.3	0.020	5.00	0.0	0.600	o	150	Pipe/Conduit	
6.000	18.307	0.152	120.4	0.038	5.00	0.0	0.600	o	150	Pipe/Conduit	
5.001	51.776	0.420	123.3	0.029	0.00	0.0	0.600	o	150	Pipe/Conduit	
7.000	25.766	0.592	43.5	0.042	5.00	0.0	0.600	o	225	Pipe/Conduit	
8.000	17.383	0.607	28.6	0.026	5.00	0.0	0.600	o	150	Pipe/Conduit	
5.002	22.932	0.653	35.1	0.055	0.00	0.0	0.600	o	150	Pipe/Conduit	
5.003	16.103	0.360	44.7	0.012	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.004	13.903	0.063	220.7	0.182	0.00	0.0	0.600	o	450	Pipe/Conduit	
9.000	27.778	0.347	80.1	0.040	5.00	0.0	0.600	o	150	Pipe/Conduit	
9.001	15.450	0.104	148.6	0.046	0.00	0.0	0.600	o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
3.000	59.83	5.28	6.110	0.000	0.0	0.0	0.0	0.59	10.4	0.0
1.001	58.03	5.53	6.076	0.074	0.0	0.0	0.0	1.83	72.8	11.6
4.000	59.55	5.31	7.350	0.047	0.0	0.0	0.0	1.63	64.9	7.6
4.001	59.34	5.34	6.872	0.081	0.0	0.0	0.0	4.68	186.3	13.0
1.002	55.95	5.86	5.759	0.186	0.0	0.0	0.0	1.12	79.4	28.3
1.003	49.58	7.09	5.645	0.227	0.0	0.0	0.0	1.06	74.7	30.5
5.000	59.56	5.31	6.675	0.020	0.0	0.0	0.0	0.82	14.4	3.2
6.000	59.41	5.33	6.725	0.038	0.0	0.0	0.0	0.91	16.2	6.2
5.001	53.52	6.29	6.573	0.087	0.0	0.0	0.0	0.90	16.0	12.6
7.000	60.26	5.22	6.745	0.042	0.0	0.0	0.0	1.99	79.1	6.8
8.000	60.72	5.15	6.760	0.026	0.0	0.0	0.0	1.89	33.4	4.3
5.002	52.35	6.51	6.153	0.210	0.0	0.0	0.0	1.70	30.1	29.7
5.003	51.46	6.69	5.500	0.222	0.0	0.0	0.0	1.51	26.7«	30.9
1.004	48.84	7.26	5.140	0.631	0.0	0.0	0.0	1.36	217.0	83.5
9.000	58.87	5.41	6.292	0.040	0.0	0.0	0.0	1.12	19.9	6.4
9.001	56.80	5.72	5.945	0.085	0.0	0.0	0.0	0.82	14.5	13.2

AKSWard Ltd		Page 3
Seacourt Tower	S208134 Land South of	
West Way Oxford	Littlehampton-Proposed Network	
OX2 0JJ	1% AEP plus 40% CC	
Date 5/2/2021	Designed by Georgios Roinas	
File PO1 SW Network 2021.02.05.MDX	Checked by Graham Taylor	
Micro Drainage	Network 2020.1	

Network Design Table for Copy of Copy of Storm (Separate Tanks)

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
9.002	12.630	0.341	37.0	0.041	0.00	0.0	0.600	o	150	Pipe/Conduit	
9.003	16.352	0.423	38.7	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
1.005	74.083	0.063	1175.9	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
10.000	23.564	0.736	32.0	0.024	5.00	0.0	0.600	o	450	Pipe/Conduit	
11.000	6.357	0.042	151.4	0.000	5.00	0.0	0.600	o	450	Pipe/Conduit	
1.006	53.247	0.076	700.6	0.136	0.00	0.0	0.600	o	450	Pipe/Conduit	
12.000	18.062	0.355	50.9	0.025	5.00	0.0	0.600	o	225	Pipe/Conduit	
12.001	16.585	0.171	97.0	0.022	0.00	0.0	0.600	o	225	Pipe/Conduit	
12.002	7.167	0.796	9.0	0.027	0.00	0.0	0.600	o	225	Pipe/Conduit	
1.007	6.857	0.008	857.1	0.018	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.008	27.424	0.034	806.6	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
13.000	44.954	0.185	243.0	0.043	5.00	0.0	0.600	o	300	Pipe/Conduit	
13.001	9.754	0.040	243.9	0.021	0.00	0.0	0.600	o	300	Pipe/Conduit	
13.002	43.833	0.180	243.5	0.031	0.00	0.0	0.600	o	300	Pipe/Conduit	
13.003	75.802	0.309	245.3	0.041	0.00	0.0	0.600	o	300	Pipe/Conduit	
14.000	4.075	0.027	150.9	0.000	5.00	0.0	0.600	o	300	Pipe/Conduit	
13.004	75.802	0.309	245.3	0.054	0.00	0.0	0.600	o	300	Pipe/Conduit	
13.005	7.451	0.030	248.4	0.024	0.00	0.0	0.600	o	300	Pipe/Conduit	
13.006	50.462	0.206	245.0	0.016	0.00	0.0	0.600	o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
9.002	56.02	5.85	5.841	0.126	0.0	0.0	0.0	1.66	29.3	19.2
9.003	55.02	6.02	5.500	0.126	0.0	0.0	0.0	1.62	28.7	19.2
1.005	41.54	9.38	5.077	0.758	0.0	0.0	0.0	0.58	92.9	85.3
10.000	61.05	5.11	5.780	0.024	0.0	0.0	0.0	3.60	573.0	4.0
11.000	61.40	5.06	5.056	0.000	0.0	0.0	0.0	1.65	262.5	0.0
1.006	38.57	10.54	5.014	0.918	0.0	0.0	0.0	0.76	120.9	95.9
12.000	60.64	5.16	6.485	0.025	0.0	0.0	0.0	1.84	73.1	4.1
12.001	59.14	5.37	6.130	0.047	0.0	0.0	0.0	1.33	52.8	7.5
12.002	58.95	5.40	5.959	0.074	0.0	0.0	0.0	4.39	174.4	11.8
1.007	38.19	10.71	4.938	1.010	0.0	0.0	0.0	0.69	109.2	104.4
1.008	36.79	11.36	4.930	1.010	0.0	0.0	0.0	0.71	112.6	104.4
13.000	56.67	5.75	6.289	0.043	0.0	0.0	0.0	1.00	71.0	6.6
13.001	55.68	5.91	6.104	0.064	0.0	0.0	0.0	1.00	70.9	9.6
13.002	51.72	6.64	6.064	0.095	0.0	0.0	0.0	1.00	70.9	13.3
13.003	46.31	7.90	5.884	0.135	0.0	0.0	0.0	1.00	70.6	17.0
14.000	61.48	5.05	5.602	0.000	0.0	0.0	0.0	1.28	90.3	0.0
13.004	42.15	9.16	5.575	0.190	0.0	0.0	0.0	1.00	70.6	21.6
13.005	41.79	9.29	5.266	0.213	0.0	0.0	0.0	0.99	70.2	24.1
13.006	39.56	10.13	5.236	0.229	0.0	0.0	0.0	1.00	70.7	24.5

AKSWard Ltd		Page 4
Seacourt Tower West Way Oxford OX2 0JJ	S208134 Land South of Littlehampton-Proposed Network 1% AEP plus 40% CC	
Date 5/2/2021 File PO1 SW Network 2021.02.05.MDX	Designed by Georgios Roinas Checked by Graham Taylor	
Micro Drainage	Network 2020.1	

Network Design Table for Copy of Copy of Storm (Separate Tanks)

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
13.007	32.829	0.134	245.0	0.032	0.00	0.0	0.600	o	300	Pipe/Conduit	
15.000	6.365	0.042	151.5	0.000	5.00	0.0	0.600	o	150	Pipe/Conduit	
1.009	14.414	0.096	150.1	0.064	0.00	0.0	0.600	o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL Σ (m)	I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
13.007	38.26	10.68	5.030	0.260	0.0	0.0	0.0	1.00	70.7	27.0
15.000	60.89	5.13	4.938	0.000	0.0	0.0	0.0	0.81	14.4	0.0
1.009	36.20	11.65	4.896	1.335	0.0	0.0	0.0	0.82	14.5«	130.9

Manhole Schedules for Copy of Copy of Storm (Separate Tanks)											
MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
1	7.900	1.639	Open Manhole	600	1.000	6.261	225				
2	8.400	1.200	Open Manhole	600	2.000	7.200	225				
3	8.400	1.769	Open Manhole	600	2.001	6.631	225	2.000	6.631	225	
4	7.900	1.790	Open Manhole	1200	3.000	6.110	150				
5	7.825	1.749	Open Manhole	1200	1.001	6.076	225	1.000	6.076	225	
								2.001	6.076	225	
								3.000	6.076	150	
6	8.400	1.050	Open Manhole	600	4.000	7.350	225				
7	8.400	1.528	Open Manhole	600	4.001	6.872	225	4.000	6.872	225	
8	7.771	2.012	Open Manhole	1200	1.002	5.759	300	1.001	5.834	225	
								4.001	5.834	225	
9	7.850	2.205	Open Manhole	1200	1.003	5.645	300	1.002	5.645	300	
10	8.100	1.425	Open Manhole	1200	5.000	6.675	150				
11	8.150	1.425	Open Manhole	1200	6.000	6.725	150				
12	8.130	1.557	Open Manhole	1200	5.001	6.573	150	5.000	6.573	150	
								6.000	6.573	150	
13	8.170	1.425	Open Manhole	600	7.000	6.745	225				
14	8.110	1.350	Open Manhole	450	8.000	6.760	150				
15	8.110	1.957	Open Manhole	600	5.002	6.153	150	5.001	6.153	150	
								7.000	6.153	225	
								8.000	6.153	150	
Tank 2	7.900	2.400	Open Manhole	1200	5.003	5.500	150	5.002	5.500	150	
16	7.800	2.660	Open Manhole	1350	1.004	5.140	450	1.003	5.290	300	
								5.003	5.140	150	
17	7.830	1.538	Open Manhole	600	9.000	6.292	150				
18	7.740	1.795	Open Manhole	600	9.001	5.945	150	9.000	5.945	150	
19	7.820	1.979	Open Manhole	600	9.002	5.841	150	9.001	5.841	150	
Tank	7.900	2.400	Open Manhole	1200	9.003	5.500	150	9.002	5.500	150	
20	7.550	2.473	Open Manhole	1350	1.005	5.077	450	1.004	5.077	450	
								9.003	5.077	150	
21	7.430	1.650	Open Manhole	1350	10.000	5.780	450				
Tank 3	7.450	2.394	Open Manhole	1350	11.000	5.056	450				
22	7.600	2.586	Open Manhole	1350	1.006	5.014	450	1.005	5.014	450	
								10.000	5.044	450	
								11.000	5.014	450	
23	7.910	1.425	Open Manhole	600	12.000	6.485	225				
24	8.000	1.870	Open Manhole	600	12.001	6.130	225	12.000	6.130	225	
25	8.150	2.191	Open Manhole	600	12.002	5.959	225	12.001	5.959	225	
26	8.150	3.212	Open Manhole	1350	1.007	4.938	450	1.006	4.938	450	
								12.002	5.163	225	
27	8.200	3.270	Open Manhole	1350	1.008	4.930	450	1.007	4.930	450	
28	8.100	1.811	Open Manhole	1200	13.000	6.289	300				
29	8.190	2.086	Open Manhole	1200	13.001	6.104	300	13.000	6.104	300	
30	8.106	2.042	Open Manhole	1200	13.002	6.064	300	13.001	6.064	300	
31	7.791	1.907	Open Manhole	1200	13.003	5.884	300	13.002	5.884	300	
Tank Highway 1	7.750	2.148	Open Manhole	1200	14.000	5.602	300				

Manhole Schedules for Copy of Copy of Storm (Separate Tanks)											
MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
Tank 4	32	7.750	2.175	Open Manhole	1200	13.004	5.575	300	13.003	5.575	300
									14.000	5.575	300
	33	7.687	2.421	Open Manhole	1200	13.005	5.266	300	13.004	5.266	300
	34	7.714	2.478	Open Manhole	1200	13.006	5.236	300	13.005	5.236	300
	35	8.215	3.185	Open Manhole	1200	13.007	5.030	300	13.006	5.030	300
	8.130	3.192	Open Manhole	1200	15.000	4.938	150				
	36	8.190	3.294	Open Manhole	1350	1.009	4.896	150	1.008	4.896	450
									13.007	4.896	300
									15.000	4.896	150
	8.260	3.460	Open Manhole	0		OUTFALL			1.009	4.800	150

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
1	503202.886	102626.032	503202.886	102626.032	Required	
2	503191.246	102576.166	503191.246	102576.166	Required	
3	503188.384	102609.187	503188.384	102609.187	Required	
4	503192.689	102620.991	503192.689	102620.991	Required	
5	503201.450	102616.752	503201.450	102616.752	Required	
6	503220.235	102579.949	503220.235	102579.949	Required	
7	503218.036	102610.648	503218.036	102610.648	Required	
8	503213.832	102617.690	503213.832	102617.690	Required	
9	503233.267	102628.360	503233.267	102628.360	Required	
10	503245.501	102611.620	503245.501	102611.620	Required	
11	503249.298	102578.206	503249.298	102578.206	Required	
12	503247.561	102596.430	503247.561	102596.430	Required	
13	503301.777	102576.508	503301.777	102576.508	Required	

Seacourt Tower
West Way Oxford
OX2 0JJ

S208134 Land South of
Littlehampton-Proposed Network
1% AEP plus 40% CC



Date 5/2/2021

Designed by Georgios Roinas

File PO1 SW Network 2021.02.05.MDX

Checked by Graham Taylor

Micro Drainage

Network 2020.1

Manhole Schedules for Copy of Copy of Storm (Separate Tanks)

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
14	503296.875	102619.376	503296.875	102619.376	Required	
15	503299.023	102602.126	503299.023	102602.126	Required	
Tank 2	503312.148	102620.931	503312.148	102620.931	Required	
16	503310.801	102636.977	503310.801	102636.977	Required	
17	503344.551	102579.812	503344.551	102579.812	Required	
18	503341.411	102607.412	503341.411	102607.412	Required	
19	503338.888	102622.655	503338.888	102622.655	Required	
Tank	503326.282	102621.882	503326.282	102621.882	Required	
20	503324.654	102638.154	503324.654	102638.154	Required	
21	503396.408	102669.462	503396.408	102669.462	Required	
Tank 3	503394.769	102651.246	503394.769	102651.246	Required	
22	503398.323	102645.976	503398.323	102645.976	Required	
23	503392.876	102627.108	503392.876	102627.108	Required	
24	503394.409	102609.112	503394.409	102609.112	Required	
25	503396.077	102592.611	503396.077	102592.611	Required	
26	503403.236	102592.956	503403.236	102592.956	Required	
27	503405.427	102586.459	503405.427	102586.459	Required	
28	503193.603	102568.167	503193.603	102568.167	Required	
29	503238.549	102569.044	503238.549	102569.044	Required	

Manhole Schedules for Copy of Copy of Storm (Separate Tanks)

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
30	503243.942	102577.171	503243.942	102577.171	Required	
31	503239.355	102620.763	503239.355	102620.763	Required	
Tank Highway 1	503314.294	102625.089	503314.294	102625.089	Required	
32	503314.692	102629.144	503314.692	102629.144	Required	
33	503390.030	102637.526	503390.030	102637.526	Required	
34	503395.169	102632.131	503395.169	102632.131	Required	
35	503399.806	102581.883	503399.806	102581.883	Required	
Tank 4	503429.352	102588.359	503429.352	102588.359	Required	
36	503432.619	102582.897	503432.619	102582.897	Required	
	503446.476	102578.929			No Entry	

AKSWard Ltd		Page 9
Seacourt Tower West Way Oxford OX2 0JJ	S208134 Land South of Littlehampton-Proposed Network 1% AEP plus 40% CC	
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File PO1 SW Network 2021.02.05.MDX	Checked by Graham Taylor	
Micro Drainage		Network 2020.1

PIPELINE SCHEDULES for Copy of Copy of Storm (Separate Tanks)

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	225	1	7.900	6.261	1.414	Open Manhole	600
2.000	o	225	2	8.400	7.200	0.975	Open Manhole	600
2.001	o	225	3	8.400	6.631	1.544	Open Manhole	600
3.000	o	150	4	7.900	6.110	1.640	Open Manhole	1200
1.001	o	225	5	7.825	6.076	1.524	Open Manhole	1200
4.000	o	225	6	8.400	7.350	0.825	Open Manhole	600
4.001	o	225	7	8.400	6.872	1.303	Open Manhole	600
1.002	o	300	8	7.771	5.759	1.712	Open Manhole	1200
1.003	o	300	9	7.850	5.645	1.905	Open Manhole	1200
5.000	o	150	10	8.100	6.675	1.275	Open Manhole	1200
6.000	o	150	11	8.150	6.725	1.275	Open Manhole	1200
5.001	o	150	12	8.130	6.573	1.407	Open Manhole	1200
7.000	o	225	13	8.170	6.745	1.200	Open Manhole	600
8.000	o	150	14	8.110	6.760	1.200	Open Manhole	450
5.002	o	150	15	8.110	6.153	1.807	Open Manhole	600

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	9.391	50.8	5	7.825	6.076	1.524	Open Manhole	1200
2.000	33.145	58.3	3	8.400	6.631	1.544	Open Manhole	600
2.001	15.099	27.2	5	7.825	6.076	1.524	Open Manhole	1200
3.000	9.733	286.3	5	7.825	6.076	1.599	Open Manhole	1200
1.001	12.417	51.3	8	7.771	5.834	1.712	Open Manhole	1200
4.000	30.778	64.4	7	8.400	6.872	1.303	Open Manhole	600
4.001	8.201	7.9	8	7.771	5.834	1.712	Open Manhole	1200
1.002	22.171	194.5	9	7.850	5.645	1.905	Open Manhole	1200
1.003	78.011	219.7	16	7.800	5.290	2.210	Open Manhole	1350
5.000	15.329	150.3	12	8.130	6.573	1.407	Open Manhole	1200
6.000	18.307	120.4	12	8.130	6.573	1.407	Open Manhole	1200
5.001	51.776	123.3	15	8.110	6.153	1.807	Open Manhole	600
7.000	25.766	43.5	15	8.110	6.153	1.732	Open Manhole	600
8.000	17.383	28.6	15	8.110	6.153	1.807	Open Manhole	600
5.002	22.932	35.1	Tank 2	7.900	5.500	2.250	Open Manhole	1200

AKSWard Ltd		Page 10
Seacourt Tower West Way Oxford OX2 0JJ	S208134 Land South of Littlehampton-Proposed Network 1% AEP plus 40% CC	
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Micro Drainage		Network 2020.1

PIPELINE SCHEDULES for Copy of Copy of Storm (Separate Tanks)

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)
5.003	o	150	Tank 2	7.900	5.500	2.250	Open Manhole	1200
1.004	o	450	16	7.800	5.140	2.210	Open Manhole	1350
9.000	o	150	17	7.830	6.292	1.388	Open Manhole	600
9.001	o	150	18	7.740	5.945	1.645	Open Manhole	600
9.002	o	150	19	7.820	5.841	1.829	Open Manhole	600
9.003	o	150	Tank	7.900	5.500	2.250	Open Manhole	1200
1.005	o	450	20	7.550	5.077	2.023	Open Manhole	1350
10.000	o	450	21	7.430	5.780	1.200	Open Manhole	1350
11.000	o	450	Tank 3	7.450	5.056	1.944	Open Manhole	1350
1.006	o	450	22	7.600	5.014	2.136	Open Manhole	1350
12.000	o	225	23	7.910	6.485	1.200	Open Manhole	600
12.001	o	225	24	8.000	6.130	1.645	Open Manhole	600
12.002	o	225	25	8.150	5.959	1.966	Open Manhole	600
1.007	o	450	26	8.150	4.938	2.762	Open Manhole	1350
1.008	o	450	27	8.200	4.930	2.820	Open Manhole	1350
13.000	o	300	28	8.100	6.289	1.511	Open Manhole	1200
13.001	o	300	29	8.190	6.104	1.786	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)
5.003	16.103	44.7	16	7.800	5.140	2.510	Open Manhole	1350
1.004	13.903	220.7	20	7.550	5.077	2.023	Open Manhole	1350
9.000	27.778	80.1	18	7.740	5.945	1.645	Open Manhole	600
9.001	15.450	148.6	19	7.820	5.841	1.829	Open Manhole	600
9.002	12.630	37.0	Tank	7.900	5.500	2.250	Open Manhole	1200
9.003	16.352	38.7	20	7.550	5.077	2.323	Open Manhole	1350
1.005	74.083	1175.9	22	7.600	5.014	2.136	Open Manhole	1350
10.000	23.564	32.0	22	7.600	5.044	2.106	Open Manhole	1350
11.000	6.357	151.4	22	7.600	5.014	2.136	Open Manhole	1350
1.006	53.247	700.6	26	8.150	4.938	2.762	Open Manhole	1350
12.000	18.062	50.9	24	8.000	6.130	1.645	Open Manhole	600
12.001	16.585	97.0	25	8.150	5.959	1.966	Open Manhole	600
12.002	7.167	9.0	26	8.150	5.163	2.762	Open Manhole	1350
1.007	6.857	857.1	27	8.200	4.930	2.820	Open Manhole	1350
1.008	27.424	806.6	36	8.190	4.896	2.844	Open Manhole	1350
13.000	44.954	243.0	29	8.190	6.104	1.786	Open Manhole	1200
13.001	9.754	243.9	30	8.106	6.064	1.742	Open Manhole	1200

AKSWard Ltd		Page 11
Seacourt Tower West Way Oxford OX2 0JJ	S208134 Land South of Littlehampton-Proposed Network 1% AEP plus 40% CC	
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PIPELINE SCHEDULES for Copy of Copy of Storm (Separate Tanks)

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)
13.002	o	300		30	8.106	6.064	1.742 Open Manhole	1200
13.003	o	300		31	7.791	5.884	1.607 Open Manhole	1200
14.000	o	300	Tank Highway 1	7.750	5.602	1.848	Open Manhole	1200
13.004	o	300		32	7.750	5.575	1.875 Open Manhole	1200
13.005	o	300		33	7.687	5.266	2.121 Open Manhole	1200
13.006	o	300		34	7.714	5.236	2.178 Open Manhole	1200
13.007	o	300		35	8.215	5.030	2.885 Open Manhole	1200
15.000	o	150	Tank 4	8.130	4.938	3.042	Open Manhole	1200
1.009	o	150		36	8.190	4.896	3.144 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)
13.002	43.833	243.5	31	7.791	5.884	1.607	Open Manhole	1200
13.003	75.802	245.3	32	7.750	5.575	1.875	Open Manhole	1200
14.000	4.075	150.9	32	7.750	5.575	1.875	Open Manhole	1200
13.004	75.802	245.3	33	7.687	5.266	2.121	Open Manhole	1200
13.005	7.451	248.4	34	7.714	5.236	2.178	Open Manhole	1200
13.006	50.462	245.0	35	8.215	5.030	2.885	Open Manhole	1200
13.007	32.829	245.0	36	8.190	4.896	2.994	Open Manhole	1350
15.000	6.365	151.5	36	8.190	4.896	3.144	Open Manhole	1350
1.009	14.414	150.1		8.260	4.800	3.310	Open Manhole	0

Setting Out Information - True Coordinates (Copy of Copy of Storm (Separate Tanks))

PN	USMH Name	Dia/Len (mm)	Width (mm)	US Easting (m)	US Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Layout (North)
1.000		1	600	503202.886	102626.032	503202.886	102626.032	
2.000		2	600	503191.246	102576.166	503191.246	102576.166	
2.001		3	600	503188.384	102609.187	503188.384	102609.187	
3.000		4	1200	503192.689	102620.991	503192.689	102620.991	
1.001		5	1200	503201.450	102616.752	503201.450	102616.752	
4.000		6	600	503220.235	102579.949	503220.235	102579.949	
4.001		7	600	503218.036	102610.648	503218.036	102610.648	
1.002		8	1200	503213.832	102617.690	503213.832	102617.690	
1.003		9	1200	503233.267	102628.360	503233.267	102628.360	
5.000		10	1200	503245.501	102611.620	503245.501	102611.620	
6.000		11	1200	503249.298	102578.206	503249.298	102578.206	
5.001		12	1200	503247.561	102596.430	503247.561	102596.430	
7.000		13	600	503301.777	102576.508	503301.777	102576.508	
8.000		14	450	503296.875	102619.376	503296.875	102619.376	
5.002		15	600	503299.023	102602.126	503299.023	102602.126	
5.003	Tank 2		1200	503312.148	102620.931	503312.148	102620.931	
1.004		16	1350	503310.801	102636.977	503310.801	102636.977	
9.000		17	600	503344.551	102579.812	503344.551	102579.812	
9.001		18	600	503341.411	102607.412	503341.411	102607.412	

Setting Out Information - True Coordinates (Copy of Copy of Storm (Separate Tanks))

PN	USMH Name	Dia/Len (mm)	Width (mm)	US Easting (m)	US Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Layout (North)
9.002		19	600	503338.888	102622.655	503338.888	102622.655	
9.003	Tank	1200		503326.282	102621.882	503326.282	102621.882	
1.005		20	1350	503324.654	102638.154	503324.654	102638.154	
10.000		21	1350	503396.408	102669.462	503396.408	102669.462	
11.000	Tank 3	1350		503394.769	102651.246	503394.769	102651.246	
1.006		22	1350	503398.323	102645.976	503398.323	102645.976	
12.000		23	600	503392.876	102627.108	503392.876	102627.108	
12.001		24	600	503394.409	102609.112	503394.409	102609.112	
12.002		25	600	503396.077	102592.611	503396.077	102592.611	
1.007		26	1350	503403.236	102592.956	503403.236	102592.956	
1.008		27	1350	503405.427	102586.459	503405.427	102586.459	
13.000		28	1200	503193.603	102568.167	503193.603	102568.167	
13.001		29	1200	503238.549	102569.044	503238.549	102569.044	
13.002		30	1200	503243.942	102577.171	503243.942	102577.171	
13.003		31	1200	503239.355	102620.763	503239.355	102620.763	
14.000	Tank Highway 1	1200		503314.294	102625.089	503314.294	102625.089	
13.004		32	1200	503314.692	102629.144	503314.692	102629.144	
13.005		33	1200	503390.030	102637.526	503390.030	102637.526	
13.006		34	1200	503395.169	102632.131	503395.169	102632.131	

Setting Out Information - True Coordinates (Copy of Copy of Storm (Separate Tanks))

PN	USMH Name	Dia/Len (mm)	Width (mm)	US Easting (m)	US Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Layout (North)
13.007		35	1200	503399.806	102581.883	503399.806	102581.883	
15.000	Tank 4		1200	503429.352	102588.359	503429.352	102588.359	
1.009		36	1350	503432.619	102582.897	503432.619	102582.897	

PN	DSMH Name	Dia/Len (mm)	Width (mm)	DS Easting (m)	DS Northing (m)	Layout (North)
1.009			0	503446.476	102578.929	

Area Summary for Copy of Copy of Storm (Separate Tanks)

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	User	-	100	0.018	0.018	0.018
2.000	User	-	100	0.035	0.035	0.035
2.001	-	-	100	0.000	0.000	0.000
3.000	-	-	100	0.000	0.000	0.000
1.001	User	-	100	0.019	0.019	0.019
	User	-	100	0.002	0.002	0.021
4.000	User	-	100	0.021	0.021	0.021
	User	-	100	0.008	0.008	0.028
	User	-	100	0.011	0.011	0.039
	User	-	100	0.002	0.002	0.041
	User	-	100	0.006	0.006	0.047
4.001	User	-	100	0.018	0.018	0.018
	User	-	100	0.008	0.008	0.026
	User	-	100	0.008	0.008	0.034
1.002	User	-	100	0.012	0.012	0.012
	User	-	100	0.010	0.010	0.022
	User	-	100	0.006	0.006	0.028
	User	-	100	0.001	0.001	0.029
	User	-	100	0.001	0.001	0.031
	User	-	100	0.001	0.001	0.032
1.003	User	-	100	0.014	0.014	0.014
	User	-	100	0.002	0.002	0.016
	User	-	100	0.002	0.002	0.018
	User	-	100	0.021	0.021	0.039
	User	-	100	0.001	0.001	0.040
5.000	User	-	100	0.005	0.005	0.005
	User	-	100	0.010	0.010	0.015
	User	-	100	0.003	0.003	0.018
	User	-	100	0.002	0.002	0.020
6.000	User	-	100	0.010	0.010	0.010
	User	-	100	0.011	0.011	0.021
	User	-	100	0.005	0.005	0.026
	User	-	100	0.001	0.001	0.028
	User	-	100	0.003	0.003	0.031
	User	-	100	0.007	0.007	0.037
	User	-	100	0.001	0.001	0.038
5.001	User	-	100	0.010	0.010	0.010
	User	-	100	0.018	0.018	0.028
	User	-	100	0.001	0.001	0.029
7.000	User	-	100	0.018	0.018	0.018
	User	-	100	0.002	0.002	0.020
	User	-	100	0.022	0.022	0.042
8.000	User	-	100	0.010	0.010	0.010
	User	-	100	0.016	0.016	0.026
5.002	User	-	100	0.004	0.004	0.004
	User	-	100	0.010	0.010	0.014
	User	-	100	0.017	0.017	0.031
	User	-	100	0.006	0.006	0.037
	User	-	100	0.018	0.018	0.055
5.003	User	-	100	0.005	0.005	0.005
	User	-	100	0.008	0.008	0.012
1.004	User	-	100	0.015	0.015	0.015
	User	-	100	0.018	0.018	0.033
	User	-	100	0.000	0.000	0.034
	User	-	100	0.019	0.019	0.053
	User	-	100	0.031	0.031	0.084
	User	-	100	0.020	0.020	0.104
	User	-	100	0.006	0.006	0.109
	User	-	100	0.005	0.005	0.114
	User	-	100	0.006	0.006	0.120
	User	-	100	0.001	0.001	0.121
	User	-	100	0.003	0.003	0.124

Area Summary for Copy of Copy of Storm (Separate Tanks)

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
	User	-	100	0.003	0.003	0.127
	User	-	100	0.036	0.036	0.163
	User	-	100	0.019	0.019	0.182
9.000	User	-	100	0.022	0.022	0.022
	User	-	100	0.018	0.018	0.040
	User	-	100	0.000	0.000	0.040
	User	-	100	0.000	0.000	0.040
9.001	User	-	100	0.015	0.015	0.015
	User	-	100	0.015	0.015	0.030
	User	-	100	0.011	0.011	0.041
	User	-	100	0.005	0.005	0.046
9.002	User	-	100	0.031	0.031	0.031
	User	-	100	0.006	0.006	0.037
	User	-	100	0.003	0.003	0.040
	User	-	100	0.001	0.001	0.041
9.003	-	-	100	0.000	0.000	0.000
1.005	-	-	100	0.000	0.000	0.000
10.000	User	-	100	0.024	0.024	0.024
11.000	-	-	100	0.000	0.000	0.000
1.006	User	-	100	0.006	0.006	0.006
	User	-	100	0.018	0.018	0.025
	User	-	100	0.000	0.000	0.025
	User	-	100	0.000	0.000	0.025
	User	-	100	0.002	0.002	0.027
	User	-	100	0.017	0.017	0.044
	User	-	100	0.003	0.003	0.047
	User	-	100	0.000	0.000	0.047
	User	-	100	0.000	0.000	0.047
	User	-	100	0.003	0.003	0.051
	User	-	100	0.003	0.003	0.054
	User	-	100	0.010	0.010	0.064
	User	-	100	0.011	0.011	0.075
	User	-	100	0.000	0.000	0.075
	User	-	100	0.034	0.034	0.109
	User	-	100	0.001	0.001	0.111
	User	-	100	0.002	0.002	0.113
	User	-	100	0.024	0.024	0.136
12.000	User	-	100	0.018	0.018	0.018
	User	-	100	0.004	0.004	0.022
	User	-	100	0.001	0.001	0.023
	User	-	100	0.002	0.002	0.025
12.001	User	-	100	0.016	0.016	0.016
	User	-	100	0.006	0.006	0.022
12.002	User	-	100	0.017	0.017	0.017
	User	-	100	0.000	0.000	0.017
	User	-	100	0.000	0.000	0.017
	User	-	100	0.000	0.000	0.017
	User	-	100	0.004	0.004	0.021
	User	-	100	0.001	0.001	0.023
	User	-	100	0.004	0.004	0.027
1.007	User	-	100	0.007	0.007	0.007
	User	-	100	0.009	0.009	0.016
	User	-	100	0.002	0.002	0.018
1.008	User	-	100	0.000	0.000	0.000
	User	-	100	0.000	0.000	0.000
13.000	User	-	100	0.043	0.043	0.043
13.001	User	-	100	0.021	0.021	0.021
13.002	User	-	100	0.031	0.031	0.031
13.003	User	-	100	0.041	0.041	0.041
14.000	-	-	100	0.000	0.000	0.000
13.004	User	-	100	0.054	0.054	0.054
13.005	User	-	100	0.024	0.024	0.024

AKSWard Ltd		Page 17
Seacourt Tower West Way Oxford OX2 0JJ	S208134 Land South of Littlehampton-Proposed Network 1% AEP plus 40% CC	
Date 5/2/2021	Designed by Georgios Roinas	
File PO1 SW Network 2021.02.05.MDX	Checked by Graham Taylor	
Micro Drainage	Network 2020.1	

Area Summary for Copy of Copy of Storm (Separate Tanks)

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
13.006	User	-	100	0.016	0.016	0.016
13.007	User	-	100	0.032	0.032	0.032
15.000	-	-	100	0.000	0.000	0.000
1.009	User	-	100	0.020	0.020	0.020
	User	-	100	0.007	0.007	0.028
	User	-	100	0.014	0.014	0.042
	User	-	100	0.009	0.009	0.050
	User	-	100	0.000	0.000	0.051
	User	-	100	0.000	0.000	0.051
	User	-	100	0.000	0.000	0.051
	User	-	100	0.013	0.013	0.064
				Total	Total	Total
				1.335	1.335	1.335

Free Flowing Outfall Details for Copy of Copy of Storm (Separate Tanks)

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.009		8.260	4.800	4.800	0	0

Simulation Criteria for Copy of Copy of Storm (Separate Tanks)

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	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 Online Controls	1	Number of Storage Structures	21
		Number of Time/Area Diagrams	0
		Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	E (1km)	0.313
Return Period (years)	30	F (1km)	2.333
FEH Rainfall Version	1999	Summer Storms	Yes
Site Location	GB 502300 102250 TQ 02300 02250	Winter Storms	Yes
C (1km)	-0.026	Cv (Summer)	0.750
D1 (1km)	0.384	Cv (Winter)	0.840
D2 (1km)	0.275	Storm Duration (mins)	30
D3 (1km)	0.403		

AKSWard Ltd		Page 18
Seacourt Tower West Way Oxford OX2 0JJ	S208134 Land South of Littlehampton-Proposed Network 1% AEP plus 40% CC	
Date 5/2/2021	Designed by Georgios Roinas	
File PO1 SW Network 2021.02.05.MDX	Checked by Graham Taylor	
Micro Drainage		Network 2020.1

Online Controls for Copy of Copy of Storm (Separate Tanks)

Hydro-Brake® Optimum Manhole: 36, DS/PN: 1.009, Volume (m³): 11.2

Unit Reference	MD-SHE-0053-2200-3294-2200
Design Head (m)	3.294
Design Flow (l/s)	2.2
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	53
Invert Level (m)	4.896
Minimum Outlet Pipe Diameter (mm)	75
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	3.294	2.2	Kick-Flo®	0.477	0.9
Flush-Flo™	0.231	1.1	Mean Flow over Head Range	-	1.6

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	1.0	0.800	1.2	2.000	1.7	4.000	2.4	7.000	3.1
0.200	1.1	1.000	1.3	2.200	1.8	4.500	2.5	7.500	3.2
0.300	1.1	1.200	1.4	2.400	1.9	5.000	2.7	8.000	3.3
0.400	1.1	1.400	1.5	2.600	2.0	5.500	2.8	8.500	3.4
0.500	0.9	1.600	1.6	3.000	2.1	6.000	2.9	9.000	3.5
0.600	1.0	1.800	1.7	3.500	2.3	6.500	3.0	9.500	3.6

Storage Structures for Copy of Copy of Storm (Separate Tanks)

Porous Car Park Manhole: 1, DS/PN: 1.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	19.0
Max Percolation (l/s)	25.3	Slope (1:X)	189.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	7.400	Membrane Depth (mm)	160

Porous Car Park Manhole: 4, DS/PN: 3.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	19.2
Max Percolation (l/s)	25.6	Slope (1:X)	180.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	7.400	Membrane Depth (mm)	160

Porous Car Park Manhole: 6, DS/PN: 4.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	17.6
Max Percolation (l/s)	23.5	Slope (1:X)	180.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	7.900	Membrane Depth (mm)	160

Porous Car Park Manhole: 7, DS/PN: 4.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	9.6
Max Percolation (l/s)	12.8	Slope (1:X)	189.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	7.900	Membrane Depth (mm)	160

Porous Car Park Manhole: 9, DS/PN: 1.003

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	2.5
Membrane Percolation (mm/hr)	1000	Length (m)	19.0
Max Percolation (l/s)	13.2	Slope (1:X)	180.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	7.350	Membrane Depth (mm)	160

Porous Car Park Manhole: 10, DS/PN: 5.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	9.6
Max Percolation (l/s)	12.8	Slope (1:X)	180.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	7.600	Membrane Depth (mm)	160

Porous Car Park Manhole: 11, DS/PN: 6.000

Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.30
Membrane Percolation (mm/hr)	1000	Invert Level (m)	7.650
Max Percolation (l/s)	36.0	Width (m)	4.8
Safety Factor	2.0	Length (m)	27.0

Porous Car Park Manhole: 11, DS/PN: 6.000

Slope (1:X) 180.0 Evaporation (mm/day) 3
Depression Storage (mm) 5 Membrane Depth (mm) 160

Porous Car Park Manhole: 13, DS/PN: 7.000

Infiltration Coefficient Base (m/hr) 0.00000	Width (m)	4.8
Membrane Percolation (mm/hr) 1000	Length (m)	18.5
Max Percolation (l/s) 24.7	Slope (1:X)	180.0
Safety Factor 2.0	Depression Storage (mm)	5
Porosity 0.30	Evaporation (mm/day)	3
Invert Level (m) 7.670	Membrane Depth (mm)	160

Porous Car Park Manhole: 14, DS/PN: 8.000

Infiltration Coefficient Base (m/hr) 0.00000	Width (m)	4.8
Membrane Percolation (mm/hr) 1000	Length (m)	14.4
Max Percolation (l/s) 19.2	Slope (1:X)	180.0
Safety Factor 2.0	Depression Storage (mm)	5
Porosity 0.30	Evaporation (mm/day)	3
Invert Level (m) 7.610	Membrane Depth (mm)	160

Complex Manhole: Tank 2, DS/PN: 5.003

Cellular Storage

Invert Level (m) 5.500 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	340.0	340.0	1.600	340.0	495.2	1.601	0.0	495.2

Filter Drain

Infiltration Coefficient Base (m/hr) 0.00000	Pipe Diameter (m)	0.150
Infiltration Coefficient Side (m/hr) 0.00000	Pipe Depth above Invert (m)	1.900
Safety Factor 2.0	Number of Pipes	1
Porosity 0.30	Slope (1:X)	200.0
Invert Level (m) 7.400	Cap Volume Depth (m)	0.000
Trench Width (m) 0.5	Cap Infiltration Depth (m)	0.000
Trench Length (m) 120.0		

Porous Car Park Manhole: 16, DS/PN: 1.004

Infiltration Coefficient Base (m/hr) 0.00000	Width (m)	4.8
Membrane Percolation (mm/hr) 1000	Length (m)	38.0
Max Percolation (l/s) 50.7	Slope (1:X)	180.0
Safety Factor 2.0	Depression Storage (mm)	5
Porosity 0.30	Evaporation (mm/day)	3
Invert Level (m) 7.300	Membrane Depth (mm)	160

Porous Car Park Manhole: 17, DS/PN: 9.000

Infiltration Coefficient Base (m/hr) 0.00000	Width (m)	4.8
Membrane Percolation (mm/hr) 1000	Length (m)	23.6
Max Percolation (l/s) 31.5	Slope (1:X)	180.0
Safety Factor 2.0	Depression Storage (mm)	5
Porosity 0.30	Evaporation (mm/day)	3
Invert Level (m) 7.300	Membrane Depth (mm)	160

S208134 Land South of Littlehampton-Proposed Network 1% AEP plus 40% CC



Micro
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Network 2020.1

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	12.0
Max Percolation (l/s)	16.0	Slope (1:X)	180.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	7.320	Membrane Depth (mm)	160

Invert Level (m)	5.500	Safety Factor	2.0
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95
Infiltration Coefficient Side (m/hr)	0.00000		

Complex Manhole: Tank 3, DS/PN: 11.000

Invert Level (m)	5.056	Safety Factor	2.0
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95
Infiltration Coefficient Side (m/hr)	0.00000		

Porous Car Park

Infiltration Coefficient	Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation	(mm/hr)	1000	Length (m)	21.6
Max Percolation	(l/s)	28.8	Slope (1:X)	180.0
Safety Factor	2.0	Depression Storage (mm)	5	
Porosity	0.30	Evaporation (mm/day)	3	
Invert Level (m)	6.950	Membrane Depth (mm)	160	

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	43.0
Max Percolation (l/s)	57.3	Slope (1:X)	180.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	7.100	Membrane Depth (mm)	160

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	2.0
Membrane Percolation (mm/hr)	1000	Length (m)	12.0
Max Percolation (l/s)	6.7	Slope (1:X)	180.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	7.610	Membrane Depth (mm)	160

Infiltration Coefficient Base (m/hr)	0.00000	Max Percolation (l/s)	3.3
Membrane Percolation (mm/hr)	1000	Safety Factor	2.0

S208134 Land South of Littlehampton-Proposed Network 1% AEP plus 40% CC



Micro
Drainage

Designed by Georgios Roinas
Checked by Graham Taylor

Network 2020.1

Porosity	0.30	Slope (1:X)	180.0
Invert Level (m)	7.500	Depression Storage (mm)	5
Width (m)	2.0	Evaporation (mm/day)	3
Length (m)	6.0	Membrane Depth (mm)	160

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	2.0
Membrane Percolation (mm/hr)	1000	Length (m)	17.9
Max Percolation (l/s)	9.9	Slope (1:X)	180.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	7.650	Membrane Depth (mm)	160

Invert Level (m)	5.602	Safety Factor	2.0
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95
Infiltration Coefficient Side (m/hr)	0.00000		

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	45.0	45.0	1.200	45.0	78.6	1.201	0.0	78.6

Cellular Storage

Invert Level (m)	4.938	Safety Factor	2.0
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95
Infiltration Coefficient Side (m/hr)	0.00000		

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	49.5	49.5	2.000	49.5	111.5	2.001	0.0	111.5

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.8
Membrane Percolation (mm/hr)	1000	Length (m)	21.6
Max Percolation (l/s)	28.8	Slope (1:X)	180.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	7.630	Membrane Depth (mm)	160

AKSWard Ltd		Page 23
Seacourt Tower West Way Oxford OX2 0JJ	S208134 Land South of Littlehampton-Proposed Network 1% AEP plus 40% CC	
Date 5/2/2021 File PO1 SW Network 2021.02.05.MDX	Designed by Georgios Roinas Checked by Graham Taylor	
Micro Drainage		Network 2020.1

<u>Manhole Headloss for Copy of Copy of Storm (Separate Tanks)</u>			
PN	US/MH Name	US/MH Headloss	
1.000		1	0.500
2.000		2	0.500
2.001		3	0.500
3.000		4	0.500
1.001		5	0.500
4.000		6	0.500
4.001		7	0.500
1.002		8	0.500
1.003		9	0.500
5.000		10	0.500
6.000		11	0.500
5.001		12	0.500
7.000		13	0.500
8.000		14	0.500
5.002		15	0.500
5.003	Tank 2		0.500
1.004		16	0.500
9.000		17	0.500
9.001		18	0.500
9.002		19	0.500
9.003	Tank		0.500
1.005		20	0.500
10.000		21	0.500
11.000	Tank 3		0.500
1.006		22	0.500
12.000		23	0.500
12.001		24	0.500
12.002		25	0.500
1.007		26	0.500
1.008		27	0.500
13.000		28	0.500
13.001		29	0.500
13.002		30	0.500
13.003		31	0.500
14.000	Tank Highway 1		0.500
13.004		32	0.500
13.005		33	0.500
13.006		34	0.500
13.007		35	0.500
15.000	Tank 4		0.500
1.009		36	0.500

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Copy of Copy of Storm (Separate Tanks)

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 21 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH D3 (1km) 0.403
FEH Rainfall Version 1999 E (1km) 0.313
Site Location GB 502300 102250 TQ 02300 02250 F (1km) 2.333
C (1km) -0.026 Cv (Summer) 0.750
D1 (1km) 0.384 Cv (Winter) 0.840
D2 (1km) 0.275

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status ON
Inertia Status OFF

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 100
Climate Change (%) 40

									Water Level	Surcharged Depth	Flooded Volume
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	(m)	(m)	(m³)
1.000	1	15 Winter	100	+40%	100/15 Summer				7.516	1.030	0.000
2.000	2	15 Winter	100	+40%	100/15 Summer				7.648	0.223	0.000
2.001	3	15 Winter	100	+40%	100/15 Summer				7.567	0.711	0.000
3.000	4	15 Winter	100	+40%	100/15 Summer				7.478	1.218	0.000
1.001	5	15 Winter	100	+40%	100/15 Summer				7.524	1.223	0.000
4.000	6	15 Winter	100	+40%	100/15 Summer				7.769	0.194	0.000
4.001	7	15 Winter	100	+40%	100/15 Summer				7.638	0.541	0.000
1.002	8	15 Winter	100	+40%	100/15 Summer				7.492	1.433	0.000
1.003	9	8640 Winter	100	+40%	100/15 Summer				7.304	1.359	0.000
5.000	10	15 Winter	100	+40%	100/15 Summer				8.066	1.241	0.000
6.000	11	15 Winter	100	+40%	100/15 Summer				7.998	1.123	0.000
5.001	12	15 Winter	100	+40%	100/15 Summer				8.030	1.307	0.000
7.000	13	15 Winter	100	+40%	100/15 Summer				7.908	0.938	0.000
8.000	14	15 Winter	100	+40%	100/15 Summer				7.905	0.995	0.000
5.002	15	15 Winter	100	+40%	100/15 Summer				7.900	1.597	0.000
5.003	Tank 2	8640 Winter	100	+40%	100/15 Summer				7.305	1.655	0.000
1.004	16	8640 Winter	100	+40%	100/15 Summer				7.304	1.714	0.000
9.000	17	15 Winter	100	+40%	100/15 Summer				7.616	1.174	0.000
9.001	18	15 Summer	100	+40%	100/15 Summer				7.652	1.557	0.000
9.002	19	15 Summer	100	+40%	100/15 Summer				7.317	1.326	0.000
9.003	Tank	8640 Winter	100	+40%	100/15 Summer				7.304	1.654	0.000
1.005	20	8640 Winter	100	+40%	100/15 Summer				7.304	1.777	0.000
10.000	21	8640 Winter	100	+40%	100/30 Winter				7.304	1.074	0.000
11.000	Tank 3	8640 Winter	100	+40%	100/15 Summer				7.304	1.798	0.000
1.006	22	8640 Winter	100	+40%	100/15 Summer				7.304	1.840	0.000
12.000	23	8640 Winter	100	+40%	100/600 Winter				7.306	0.596	0.000
12.001	24	8640 Winter	100	+40%	100/15 Summer				7.306	0.951	0.000

AKSWard Ltd		Page 25
Seacourt Tower West Way Oxford OX2 0JJ	S208134 Land South of Littlehampton-Proposed Network 1% AEP plus 40% CC	
Date 5/2/2021 File PO1 SW Network 2021.02.05.MDX	Designed by Georgios Roinas Checked by Graham Taylor	
Micro Drainage		Network 2020.1

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Copy of Copy of Storm (Separate Tanks)

PN	US/MH Name	Flow / Cap.	Overflow (1/s)	Half Drain Time (mins)	Pipe Flow (1/s)	Status	Level Exceeded
1.000	1	0.38			3 22.7	SURCHARGED	
2.000	2	0.37			23.8	SURCHARGED	
2.001	3	0.26			23.2	SURCHARGED	
3.000	4	1.21			4 11.2	SURCHARGED	
1.001	5	0.80			50.0	SURCHARGED	
4.000	6	0.56			3 33.8	SURCHARGED	
4.001	7	0.36			5 51.8	SURCHARGED	
1.002	8	1.40			97.9	FLOOD RISK	
1.003	9	0.03		10868	2.0	SURCHARGED	
5.000	10	0.73			12 9.8	FLOOD RISK	
6.000	11	1.34			11 20.2	FLOOD RISK	
5.001	12	1.69			26.3	FLOOD RISK	
7.000	13	0.31			6 23.0	FLOOD RISK	
8.000	14	0.79			7 24.7	FLOOD RISK	
5.002	15	1.84			52.5	FLOOD RISK	
5.003	Tank 2	0.08		7232	2.1	SURCHARGED	
1.004	16	0.02			2.7	SURCHARGED	
9.000	17	1.51			6 28.7	FLOOD RISK	
9.001	18	2.39			32.1	FLOOD RISK	
9.002	19	2.20			10 58.7	SURCHARGED	
9.003	Tank	0.07		7228	1.9	SURCHARGED	
1.005	20	0.03			2.9	FLOOD RISK	
10.000	21	0.00			0.8	FLOOD RISK	
11.000	Tank 3	0.04		11594	6.7	FLOOD RISK	
1.006	22	0.04			4.0	FLOOD RISK	
12.000	23	0.00		2008	0.2	SURCHARGED	
12.001	24	0.01		5616	0.6	SURCHARGED	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Copy of Copy of Storm (Separate Tanks)

									Water	Surcharged
PN	US/MH		Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Level	Depth
	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	(m)	(m)
12.002		25 8640 Winter	100	+40%	100/15 Summer				7.307	1.123
1.007		26 8640 Winter	100	+40%	100/15 Summer				7.307	1.919
1.008		27 8640 Winter	100	+40%	100/15 Summer				7.307	1.927
13.000		28 8640 Winter	100	+40%	100/15 Summer				7.305	0.716
13.001		29 8640 Winter	100	+40%	100/15 Summer				7.305	0.901
13.002		30 8640 Winter	100	+40%	100/15 Summer				7.305	0.941
13.003		31 8640 Winter	100	+40%	100/15 Summer				7.306	1.122
14.000	Tank Highway 1	8640 Winter	100	+40%	100/15 Summer				7.306	1.404
13.004		32 8640 Winter	100	+40%	100/15 Summer				7.306	1.431
13.005		33 8640 Winter	100	+40%	100/15 Summer				7.306	1.740
13.006		34 8640 Winter	100	+40%	100/15 Summer				7.307	1.771
13.007		35 8640 Winter	100	+40%	100/15 Summer				7.307	1.977
15.000	Tank 4	8640 Winter	100	+40%	100/15 Summer				7.306	2.218
1.009		36 8640 Winter	100	+40%	100/15 Summer				7.307	2.261

		Flooded		Half Drain		Pipe		
PN	US/MH	Volume	Flow /	Overflow	Time	Flow	Status	Level
	Name	(m³)	Cap.	(l/s)	(mins)	(l/s)		Exceeded
12.002		25	0.000	0.01		0.8	SURCHARGED	
1.007		26	0.000	0.03		2.9	SURCHARGED	
1.008		27	0.000	0.03		2.6	SURCHARGED	
13.000		28	0.000	0.01		0.5	SURCHARGED	
13.001		29	0.000	0.02		1.1	SURCHARGED	
13.002		30	0.000	0.02		1.1	SURCHARGED	
13.003		31	0.000	0.02		1.2	SURCHARGED	
14.000	Tank Highway 1	0.000	0.06		8208	3.6	SURCHARGED	
13.004		32	0.000	0.03		2.0	SURCHARGED	
13.005		33	0.000	0.04		2.0	SURCHARGED	
13.006		34	0.000	0.03		1.8	SURCHARGED	
13.007		35	0.000	0.03		2.0	SURCHARGED	
15.000	Tank 4	0.000	0.11		11149	1.4	SURCHARGED	
1.009		36	0.000	0.14		1.9	SURCHARGED	

Appendix E

SuDS Maintenance Schedule

Bio-retention Operation & Maintenance Requirements

Regular inspection and maintenance is important for the effective operation of bio-retention areas as designed. Maintenance responsibility for a bio-retention area should always be placed with an appropriate contractor appointed by the owner.

Operation and maintenance requirements for bio-retention areas are described in table below.

Maintenance schedule	Required action	Frequency
Regular inspections	Inspect infiltration surface for silting and ponding, record dewatering time of the facility and assess standing water levels in under-drain (if appropriate) to determine if maintenance is necessary	Quarterly
	Check operation of under-drains by inspection of flows after rain	Annually
	Assess plants for disease infection, poor growth, invasive species etc. and replace as necessary	Quarterly
	Inspect inlets and outlets for blockages	Quarterly
Regular maintenance	Remove litter and surface debris and weeds	Quarterly (or more frequently for tidiness or aesthetic reasons)
	Replace any plants, to maintain planting density	As required
	Remove sediment, litter, and debris buildup from around inlets or from forebays	Quarterly to biannually
Occasional maintenance	Infill any holes or scour in the filter medium, improve erosion protection if required	As required
	Repair minor accumulations of silt by raking away surface mulch, scarifying surface of medium and replacing mulch	As required
Remedial actions	Remove and replace filter medium and vegetation above	As required
Monitoring	Inspect inlets, outlets and overflows for blockages, and clear if required.	Monthly/after large storms
	Inspect infiltration surfaces for ponding. Record dewatering time of the facility to determine if maintenance is necessary.	Monthly, or when required
	Inspect inlets and facility surface for silt accumulation. Establish appropriate silt removal frequencies.	Half yearly
	Test planting soil for pH – if adjustment is necessary, amalgamate with appropriate substances	Annually

Adequate access must be provided for all bio-retention areas for inspection and maintenance, including the appropriate equipment and vehicles.

When found necessary, infiltration in the facility should be restored or improved by removing silt or damaged vegetation and reinstating design levels. Damaged or silt-covered vegetation should be removed to a depth 50 mm below original design level and cultivated to a fine tilth. Infiltration rates can also be affected by the build-up of 'thatch'. Any re-turfing that is required should be done using turf of a quality and appearance to match the existing sward.

Sediments excavated from pre-treatment devices that receive runoff from residential or standard road and roof areas are generally not toxic or hazardous material and can be safely disposed of by either land application or landfilling. However, consultation should take place with the environmental regulator to confirm appropriate protocols. Sediment testing may be required before sediment excavation to determine its classification and appropriate disposal methods. For industrial site runoff, sediment testing will be essential. In the majority of cases, it will be acceptable to distribute the sediment on-site if there is an appropriate safe and acceptable location to do so.

Specific maintenance needs of the bio-retention area should be monitored and maintenance schedules adjusted to suit requirements. In general, the maintenance for bio-retention areas often can be undertaken as part of landscape maintenance and, if landscape management is already required at the site, it should have marginal cost implications.

Maintenance activities should be detailed in the health and safety plan and a risk assessment should be undertaken, where required.

Cellular Tanks Operation & Maintenance Requirements

Regular inspection and maintenance is required to ensure the effective long-term operation of below ground modular storage systems.

Specific maintenance needs of the system should be monitored, and maintenance schedules adjusted to suit requirements.

Modular systems – operation and maintenance requirements

Maintenance schedule	Required action	Recommended Frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for three months then annually
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
	For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae, or other matter; remove and replace surface infiltration medium as necessary	Annually
	Remove sediment from pretreatment structures and/or internal forebays	Annually, or as required
Remedial actions	Repair/rehabilitate inlets, outlets, overflows, and vents	As required
Monitoring	Inspect/check all inlets, outlets, overflows, and vents to ensure that they are in good condition and operating as designed	Annually
	Survey inside of tank for sediment buildup and remove if necessary	Every five years or as required

Maintenance activities should be detailed in the health and safety plan and a risk assessment should be undertaken.

Permeable Paving Operation & Maintenance Requirements

Regular inspection and maintenance is important for the effective operation of pervious pavements. The facility should be inspected regularly, preferably during and after heavy rainfall to check effective operation and to identify any areas of ponding.

Pervious surfaces need to be regularly cleaned of silt and other sediments to preserve their infiltration capability. Manufacturers' recommendations should always be followed.

A brush cleaner, which can be a lorry-mounted device or a smaller precinct sweeper, should be used and the sweeping regime should be as follows:

1. End of winter (April) – to collect winter debris.
2. Mid-summer (July/August) – to collect dust, flower and grass-type deposits.
3. After autumn leaf fall (November).

Care should be taken in using vacuuming equipment to avoid removal of jointing material. Any lost material should be replaced.

If reconstruction is necessary, the following procedure should be followed:

1. Lift surface layer and laying course.
2. Remove any geo-textile filter layer.
3. Inspect sub-base and remove, and replace if required.
4. Renew any geo-textile layers.
5. Renew laying course, jointing material and concrete block paving.

The reconstruction of failed areas of concrete block pavement should be less costly and disruptive than the rehabilitation of continuous concrete or asphalt porous surfaces due to the reduced area that is likely to be affected. Materials removed from the voids or the layers below the surface may contain heavy metals and hydrocarbons and may need to be disposed of as controlled waste. Sediment testing should be carried out before disposal to confirm its classification and appropriate disposal methods.

Pervious pavement operation and maintenance requirements

Maintenance schedule	Required action	Frequency
Regular maintenance	Brushing	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment
Occasional maintenance	Stabilize and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosphate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements

Maintenance schedule	Required action	Frequency
Remedial actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the paving	As required
	Remedial work to any depressions, rutting, and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every ten to fifteen years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48hrs after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

Maintenance activities should be detailed in the Health and Safety Plan and a risk assessment should be undertaken.

Vortex Flow Control Operation & Maintenance Requirements

Regular inspection and maintenance are required to ensure the effective long-term operation of vortex flow control systems

Specific maintenance needs of the system should be monitored, and maintenance schedules adjusted to suit requirements.

Vortex Flow control – operation and maintenance requirements

Maintenance schedule	Required action	Recommended Frequency
Project completion	Following installation of the Flow Control it is vitally important that any extraneous material i.e. building materials are removed from the unit and the chamber.	On completion of the project by the contractor
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then six monthly then annually
	Debris removal from chamber (where may cause risks to performance)	As required during inspections
	Check bypass door is operational	Annually
	Remove sediment	Annually, or as required
Remedial actions	Repair / replace flow control if damaged	As required
Monitoring	Inspect/check to ensure that they are in good condition and operating as designed	Annually and after large storms

Maintenance activities should be detailed in the health and safety plan and a risk assessment should be undertaken.

Water Butts Operation & Maintenance Requirements

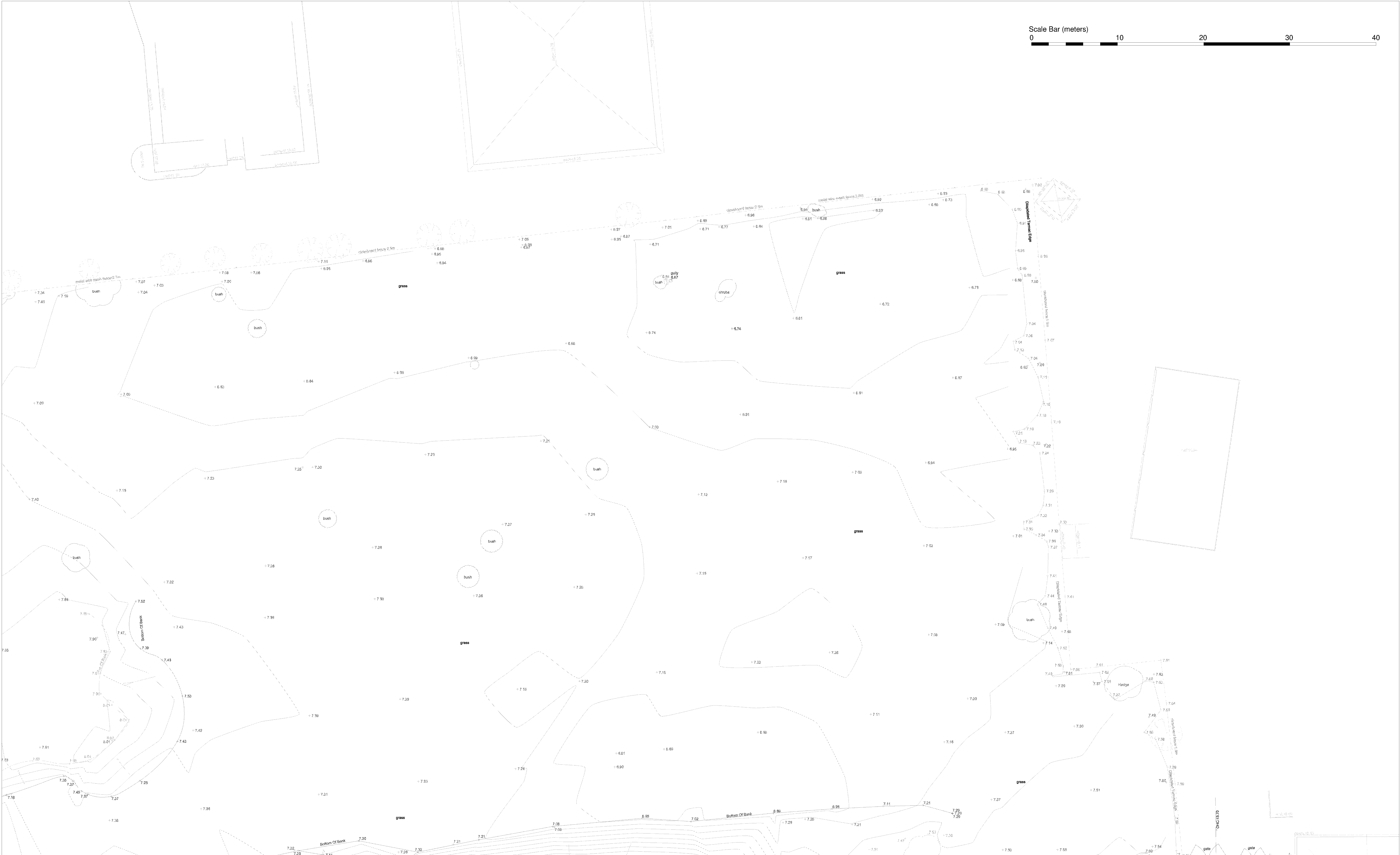
Water butts are low maintenance devices. The operation and maintenance requirements for water butts are described below.

Water butts operation and maintenance requirements

Maintenance schedule	Required action	Frequency
Regular maintenance	Cleaning of tank, inlets, outlets, gutters, withdrawal devices and roof drain filters of silts and other debris.	Annually (or following poor performance).
Occasional maintenance	Replacement of any filters.	As required.
Remedial actions	Repair of erosion damage, or damage to tank.	As required.
Monitoring	Inspection of the tank for debris and sediment build up.	Annually (or following poor performance).
	Inspection of inlets, outlets and withdrawal devices.	Annually (or following poor performance).
	Inspection of areas receiving overflow, for evidence of erosion.	After extreme storms.
	Inspection of roof drain filters.	Annually (or following poor performance).

Appendix F

Topographical Survey



NOTES

SURVEY IS BASED ON OS GRID SYSTEM

ORIGINATING FROM STATION 18

④ E 503176.950, N 102631.059, RL 7.748

Main area of field is very undulating seeded spoil.

LAYER INFORMATION

0	Boundary of Block	0.00	Boundary of Block
1	Building Lines	1.00	Building Lines
2	Edge of Concrete	2.00	Edge of Concrete
3	Edge of Road	3.00	Edge of Road
4	Edge of Surface	4.00	Edge of Surface
5	Edge of Footpath	5.00	Edge of Footpath
6	Edge of Road	6.00	Edge of Road
7	Edge of Concrete	7.00	Edge of Concrete
8	Edge of Surface	8.00	Edge of Surface
9	Edge of Footpath	9.00	Edge of Footpath
10	Edge of Road	10.00	Edge of Road
11	Edge of Concrete	11.00	Edge of Concrete
12	Edge of Surface	12.00	Edge of Surface
13	Edge of Footpath	13.00	Edge of Footpath
14	Edge of Road	14.00	Edge of Road
15	Edge of Concrete	15.00	Edge of Concrete
16	Edge of Surface	16.00	Edge of Surface
17	Edge of Footpath	17.00	Edge of Footpath
18	Edge of Road	18.00	Edge of Road
19	Edge of Concrete	19.00	Edge of Concrete
20	Edge of Surface	20.00	Edge of Surface
21	Edge of Footpath	21.00	Edge of Footpath
22	Edge of Road	22.00	Edge of Road
23	Edge of Concrete	23.00	Edge of Concrete
24	Edge of Surface	24.00	Edge of Surface
25	Edge of Footpath	25.00	Edge of Footpath
26	Edge of Road	26.00	Edge of Road
27	Edge of Concrete	27.00	Edge of Concrete
28	Edge of Surface	28.00	Edge of Surface
29	Edge of Footpath	29.00	Edge of Footpath
30	Edge of Road	30.00	Edge of Road
31	Edge of Concrete	31.00	Edge of Concrete
32	Edge of Surface	32.00	Edge of Surface
33	Edge of Footpath	33.00	Edge of Footpath
34	Edge of Road	34.00	Edge of Road
35	Edge of Concrete	35.00	Edge of Concrete
36	Edge of Surface	36.00	Edge of Surface
37	Edge of Footpath	37.00	Edge of Footpath
38	Edge of Road	38.00	Edge of Road
39	Edge of Concrete	39.00	Edge of Concrete
40	Edge of Surface	40.00	Edge of Surface
41	Edge of Footpath	41.00	Edge of Footpath
42	Edge of Road	42.00	Edge of Road
43	Edge of Concrete	43.00	Edge of Concrete
44	Edge of Surface	44.00	Edge of Surface
45	Edge of Footpath	45.00	Edge of Footpath
46	Edge of Road	46.00	Edge of Road
47	Edge of Concrete	47.00	Edge of Concrete
48	Edge of Surface	48.00	Edge of Surface
49	Edge of Footpath	49.00	Edge of Footpath
50	Edge of Road	50.00	Edge of Road
51	Edge of Concrete	51.00	Edge of Concrete
52	Edge of Surface	52.00	Edge of Surface
53	Edge of Footpath	53.00	Edge of Footpath
54	Edge of Road	54.00	Edge of Road
55	Edge of Concrete	55.00	Edge of Concrete
56	Edge of Surface	56.00	Edge of Surface
57	Edge of Footpath	57.00	Edge of Footpath
58	Edge of Road	58.00	Edge of Road
59	Edge of Concrete	59.00	Edge of Concrete
60	Edge of Surface	60.00	Edge of Surface
61	Edge of Footpath	61.00	Edge of Footpath
62	Edge of Road	62.00	Edge of Road
63	Edge of Concrete	63.00	Edge of Concrete
64	Edge of Surface	64.00	Edge of Surface
65	Edge of Footpath	65.00	Edge of Footpath
66	Edge of Road	66.00	Edge of Road
67	Edge of Concrete	67.00	Edge of Concrete
68	Edge of Surface	68.00	Edge of Surface
69	Edge of Footpath	69.00	Edge of Footpath
70	Edge of Road	70.00	Edge of Road
71	Edge of Concrete	71.00	Edge of Concrete
72	Edge of Surface	72.00	Edge of Surface
73	Edge of Footpath	73.00	Edge of Footpath
74	Edge of Road	74.00	Edge of Road
75	Edge of Concrete	75.00	Edge of Concrete
76	Edge of Surface	76.00	Edge of Surface
77	Edge of Footpath	77.00	Edge of Footpath
78	Edge of Road	78.00	Edge of Road
79	Edge of Concrete	79.00	Edge of Concrete
80	Edge of Surface	80.00	Edge of Surface
81	Edge of Footpath	81.00	Edge of Footpath
82	Edge of Road	82.00	Edge of Road
83	Edge of Concrete	83.00	Edge of Concrete
84	Edge of Surface	84.00	Edge of Surface
85	Edge of Footpath	85.00	Edge of Footpath
86	Edge of Road	86.00	Edge of Road
87	Edge of Concrete	87.00	Edge of Concrete
88	Edge of Surface	88.00	Edge of Surface
89	Edge of Footpath	89.00	Edge of Footpath
90	Edge of Road	90.00	Edge of Road
91	Edge of Concrete	91.00	Edge of Concrete
92	Edge of Surface	92.00	Edge of Surface
93	Edge of Footpath	93.00	Edge of Footpath
94	Edge of Road	94.00	Edge of Road
95	Edge of Concrete	95.00	Edge of Concrete
96	Edge of Surface	96.00	Edge of Surface
97	Edge of Footpath	97.00	Edge of Footpath
98	Edge of Road	98.00	Edge of Road
99	Edge of Concrete	99.00	Edge of Concrete
100	Edge of Surface	100.00	Edge of Surface

Line types and Symbols

Building Lines	.....
Rooflines	.....
Top & Back of Kerb	.....
Edge of Surface / Footpath	.....
Edge of Road	.....
Edge of Concrete	.....
Top of bank	.....
Bottom of bank	.....
Fence / Handrail	.....
Overhead Cables	.....

Garden Line

Scrub Line

Gullies / Waste Water

Man holes & Flow

Trees

Spot Levels

Road Markings

Hedge Line

Walls

Steps

Plant

Gates

Control Stations

Point Number	Easting	Northing	Height	Description
Sta 1	503176.950	102631.059	7.748	HELIX
Sta 2	503176.950	102631.059	7.748	HELIX
Sta 3	503176.950	102631.059	7.748	HELIX
Sta 4	503176.950	102631.059	7.748	HELIX
Sta 5	503176.950	102631.059	7.748	HELIX
Sta 6	503176.950	102631.059	7.748	HELIX
Sta 7	503176.950	102631.059	7.748	HELIX
Sta 8	503176.950	102631.059	7.748	HELIX
Sta 9	503176.950	102631.059	7.748	HELIX
Sta 10	503176.950	102631.059	7.748	HELIX

Orientation

North

Rev	Date	Description
1	21/05/20	GA/SE
2	21/05/20	SE

Client

ECE Architecture

Drawing Title

Topographical Survey P2/4

Job Title

Land Next To Littlehampton Academy

Scale

1:200 @ A1

Date

21/05/20

Drawn

GA/SE

Job No

006 05 20

Drawing No

002

Rev

-

Scale Bar (meters)

0 10 20 30 40

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Appendix G

Pro-Forma



ARUN DISTRICT COUNCIL LU/116/21/PL

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தமிழ்நாடு அரசுத் துறைமுகக் குழு - ஸ்ரீஹரிஸ்ரீ				
பெரும்புதல்	தர		b IX	✓
பெரும்புதல் - தமிழ்நாடு அரசுத் துறைமுகக் குழு	தர	✓	b IX	
பெரும்புதல் - தமிழ்நாடு அரசுத் துறைமுகக் குழு - ஸ்ரீஹரிஸ்ரீ	தர		b IX	✓
பெரும்புதல் - தமிழ்நாடு அரசுத் துறைமுகக் குழு - ஸ்ரீஹரிஸ்ரீ - ஸ்ரீஹரிஸ்ரீ	தர		b IX	✓
பெரும்புதல் - தமிழ்நாடு அரசுத் துறைமுகக் குழு - ஸ்ரீஹரிஸ்ரீ - ஸ்ரீஹரிஸ்ரீ - ஸ்ரீஹரிஸ்ரீ	தர	✓	b IX	

2021年12月10日 星期四
 2021年12月10日 星期四

ARUN DISTRICT COUNCIL LU/116/21/PL

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Appendix H

Impermeable area plan

