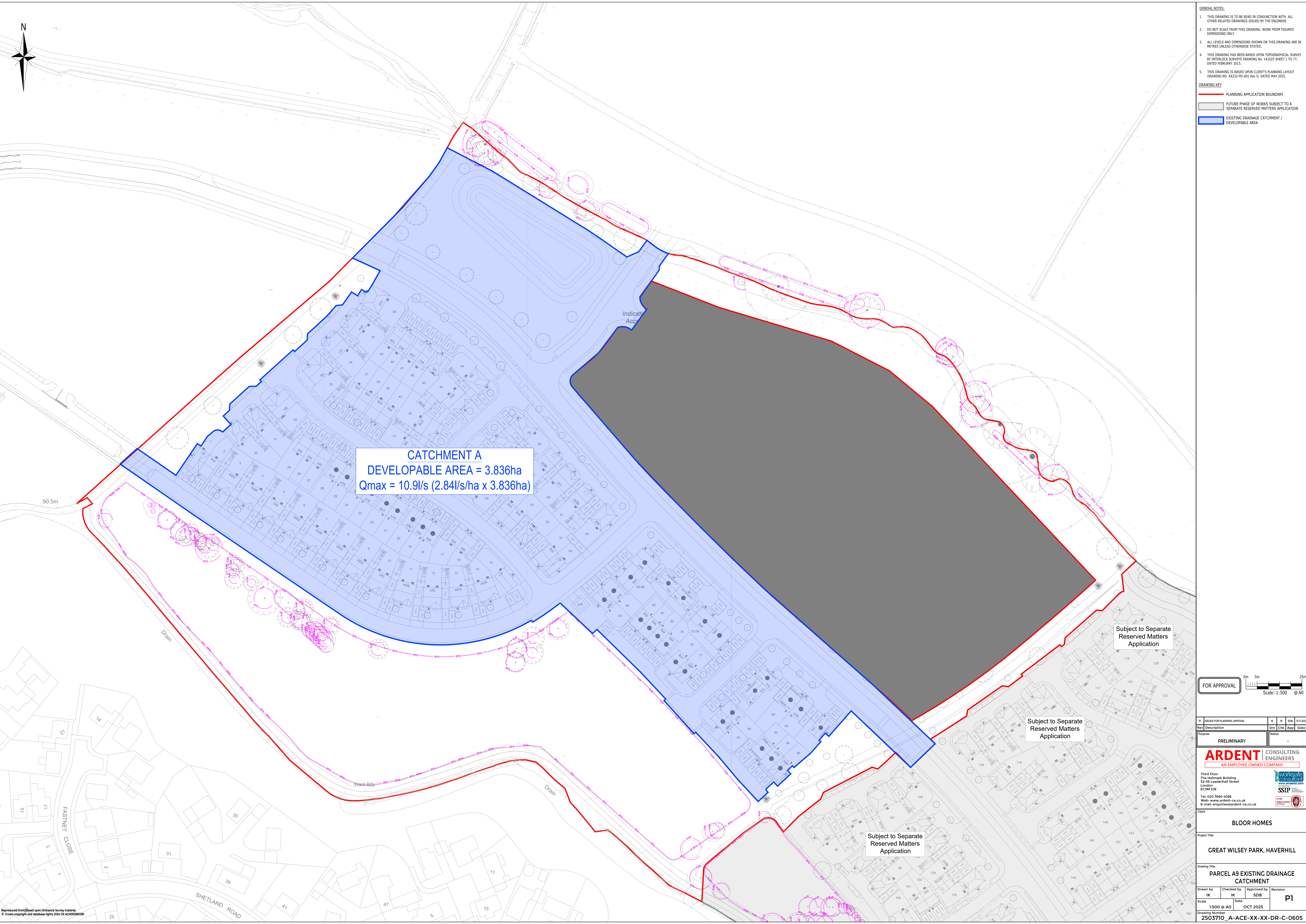




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- THIS DRAWING HAS BEEN BASED UPON TOPOGRAPHICAL SURVEY BY INTERLOCK SURVEYS DRAWING NO. 141025 SHEET 1 TO 77, DATED FEBRUARY 2015.
- THIS DRAWING IS BASED UPON CLIENT'S PLANNING LAYOUT DRAWING NO. EA252-PD-001 Rev D, DATED MAY 2025.

DRAWING KEY

- PLANNING APPLICATION BOUNDARY
- FUTURE PHASE OF WORKS SUBJECT TO A SEPARATE RESERVED MATTERS APPLICATION
- EXISTING DRAINAGE CATCHMENT / DEVELOPABLE AREA

FOR APPROVAL

0m 5m 25m
Scale: 1:500 @ A0

PI	ISSUED FOR PLANNING APPROVAL	IK	IK	SDB	13.11.2025
Rev	Description	Drn	Chk	App	Date
Purpose	PRELIMINARY	Status	-		

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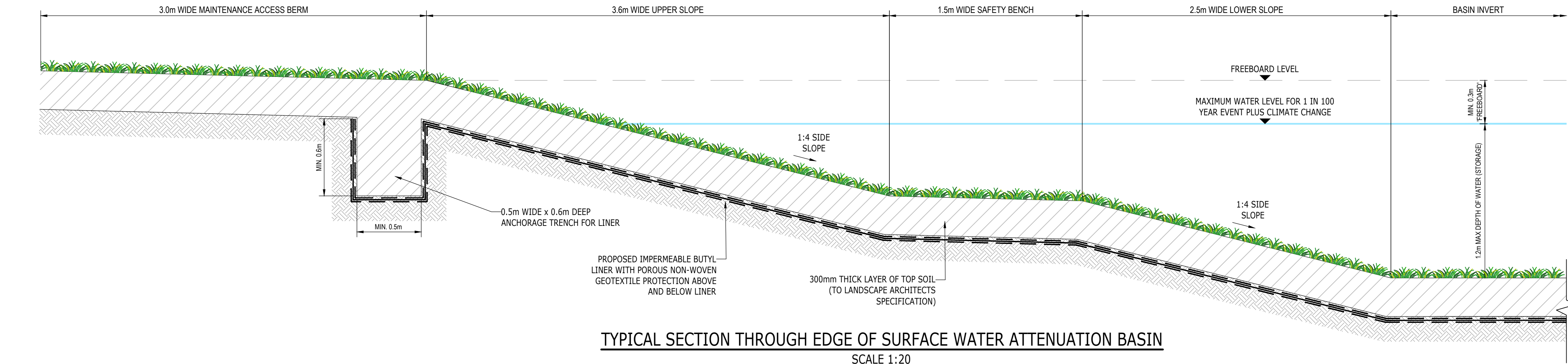
Third Floor
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Tel: 020 7680 4088
Web: www.ardent-ce.co.uk
E-mail: enquiries@ardent-ce.co.uk

Client
BLOOR HOMES

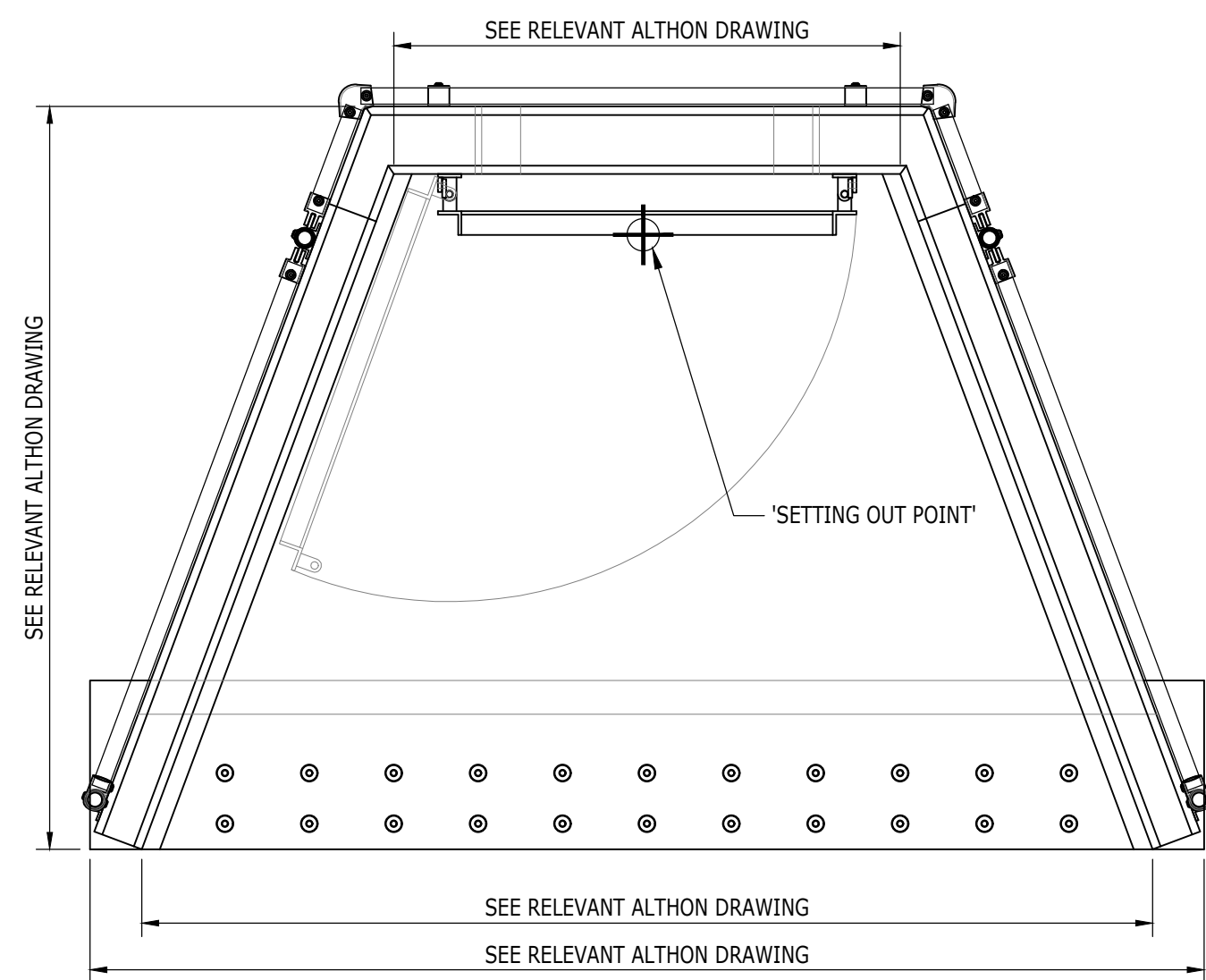
Project Title:
GREAT WILSEY PARK, HAVERHILL

Drawing Title:
PARCEL A9 EXISTING DRAINAGE CATCHMENT

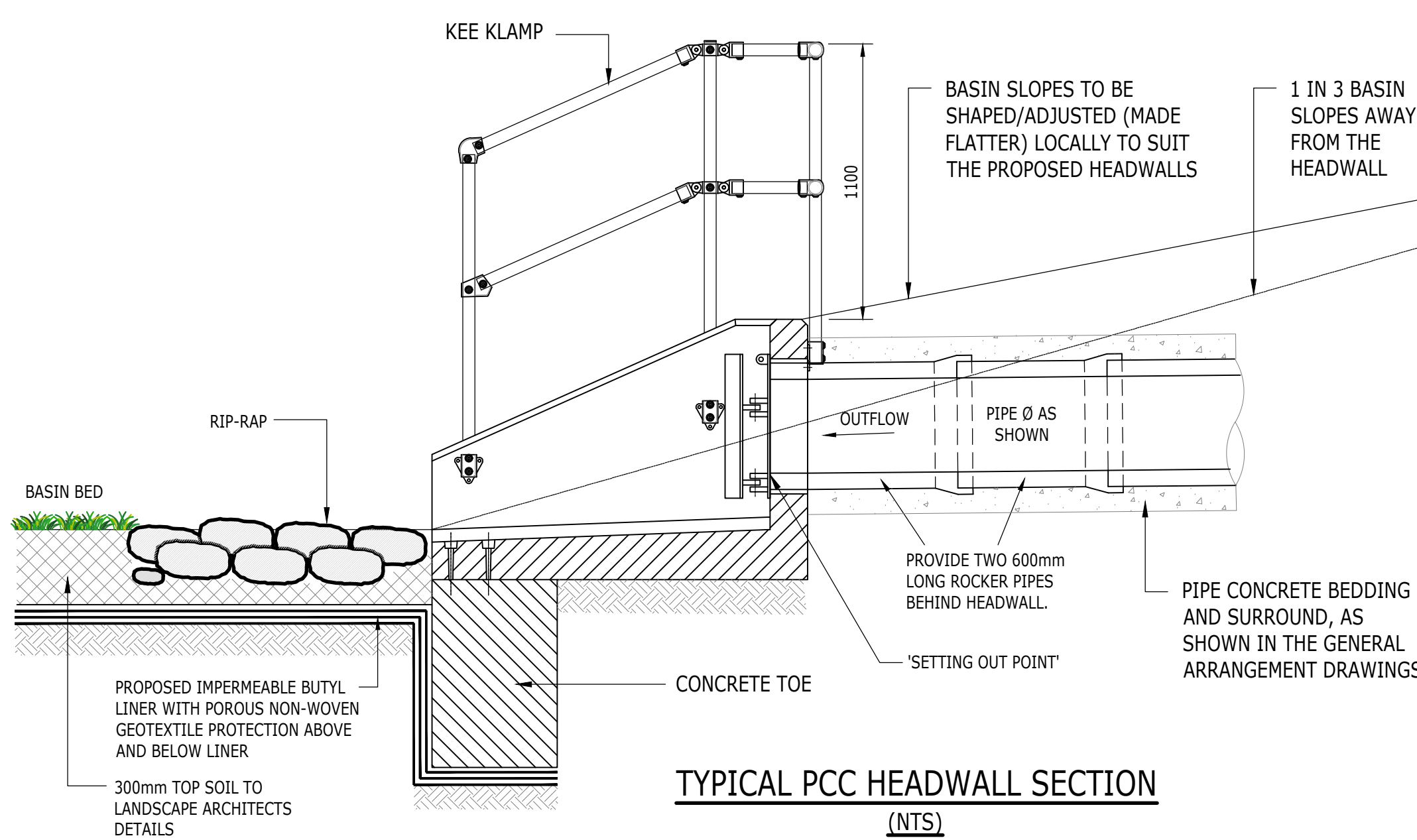
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Scale 1:500 @ A0	Date OCT 2025	Drawing Number 2503710_A-ACE-XX-XX-DR-C-0605	



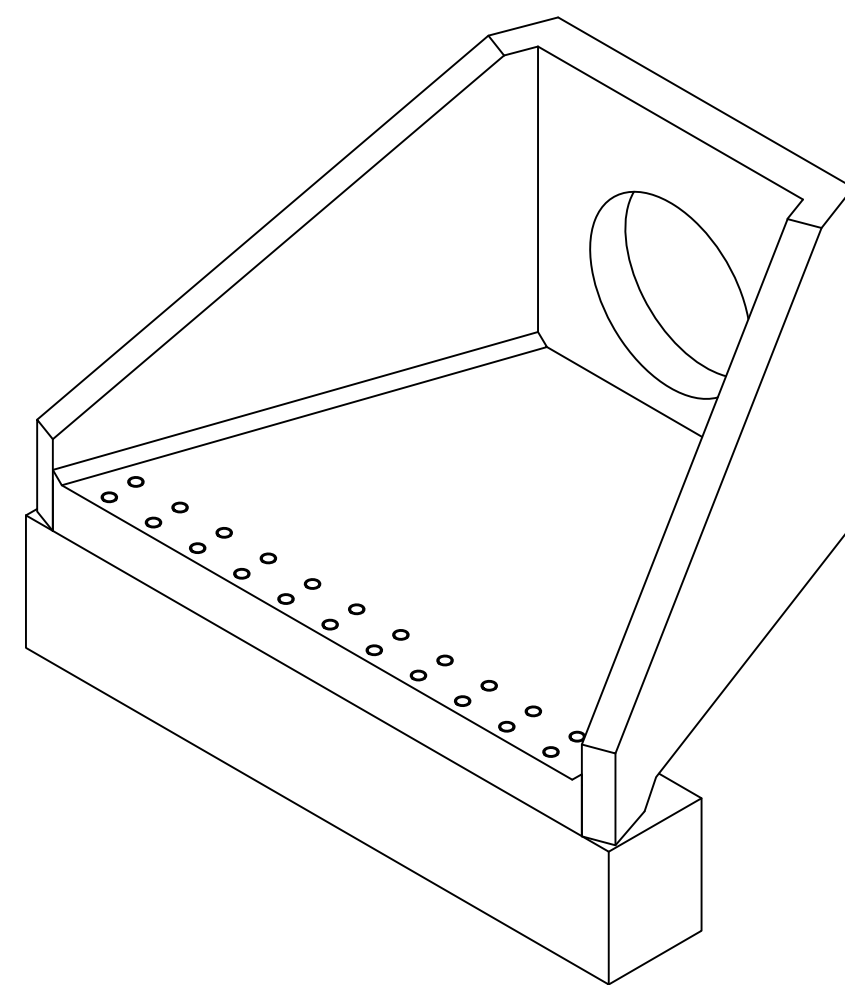
TYPICAL SECTION THROUGH EDGE OF SURFACE WATER ATTENUATION BASIN
SCALE 1:20



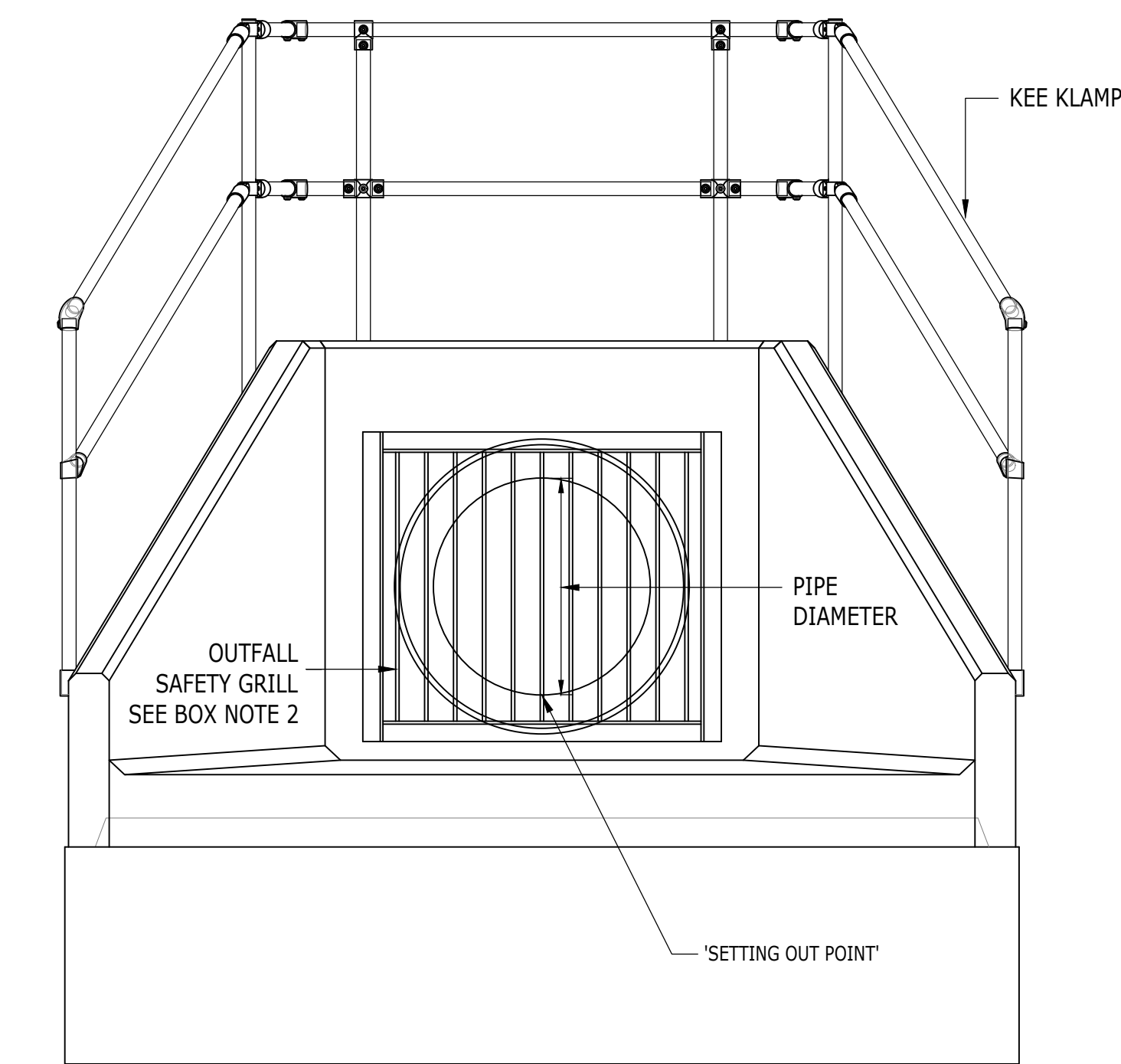
PLAN VIEW
NTS



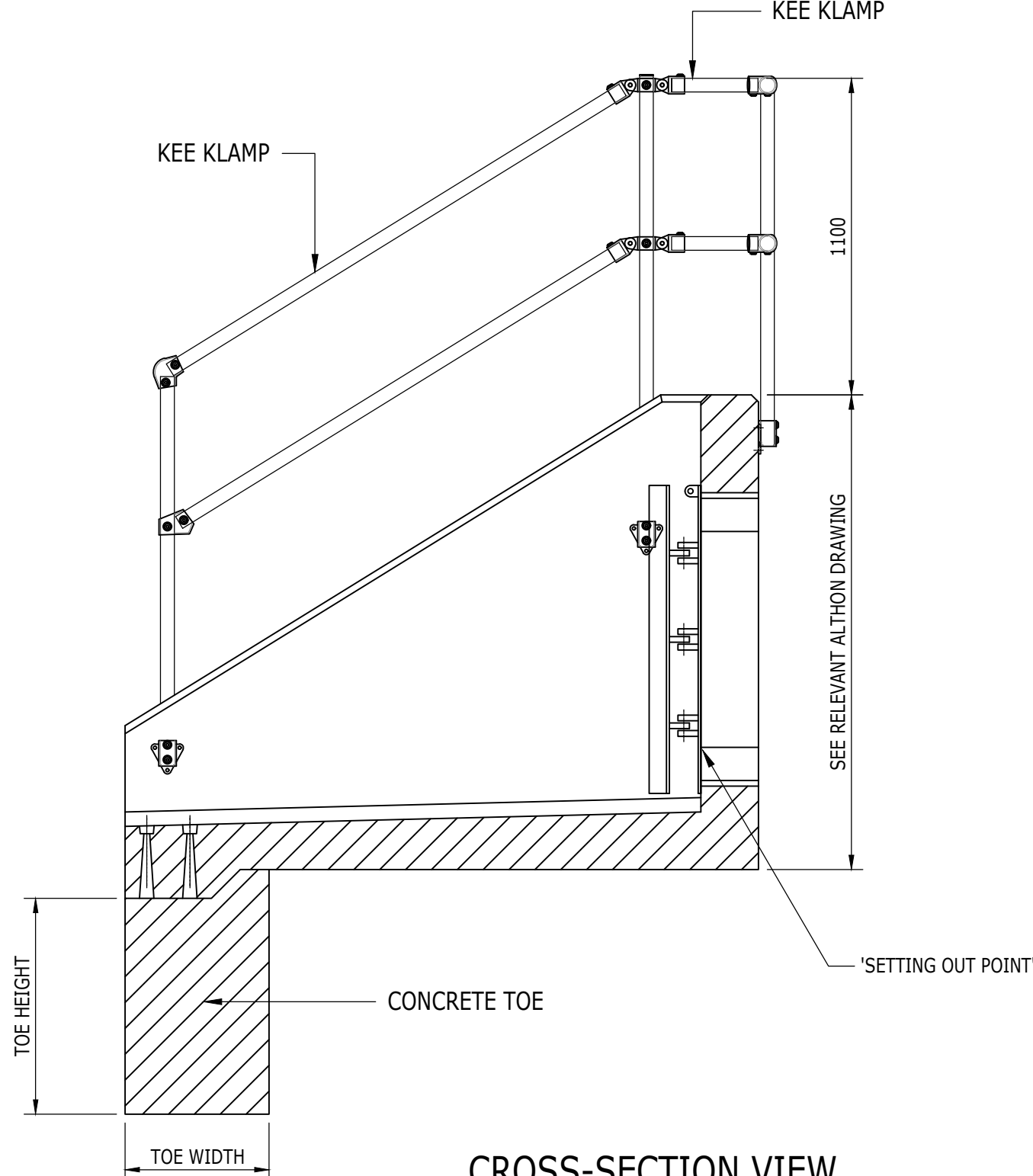
TYPICAL PCC HEADWALL SECTION
(NTS)



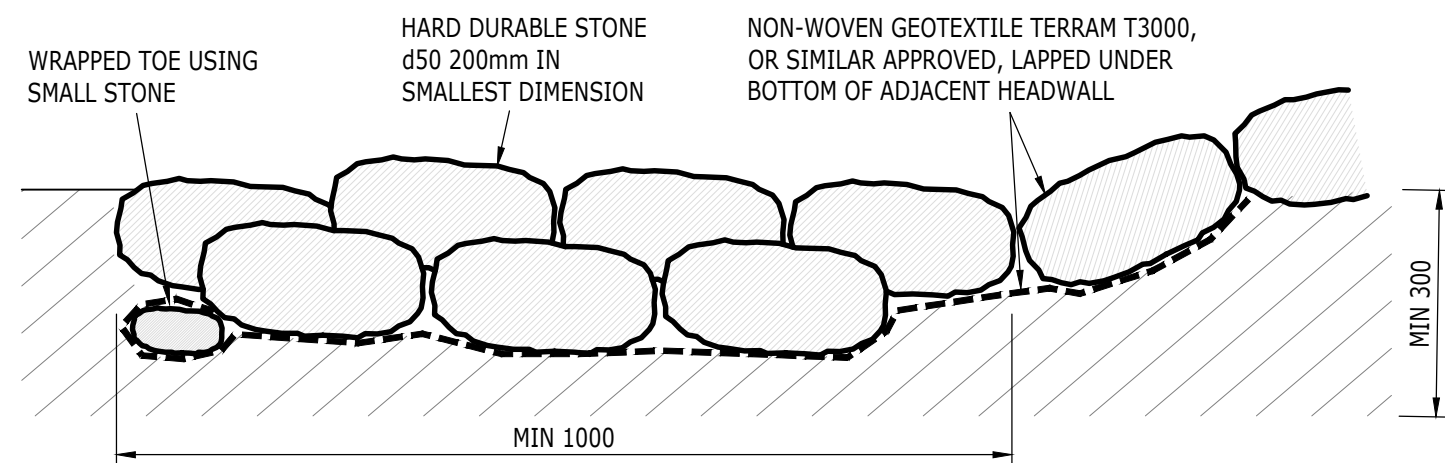
ISOMETRIC VIEW
NTS



FRONT VIEW
NTS



CROSS-SECTION VIEW
NTS



TYPICAL RIP-RAP DETAIL FOR INCOMING PIPES INTO DRY BASIN
1:10

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ISSUED FOR PLANNING APPROVAL	SDB	SDB	JK	15.10.25
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Rev	Description	Drn	Chk	App	Date
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Client:

BLOOR HOMES

Project Title:

GREAT WILSEY PARK, HAVERHILL

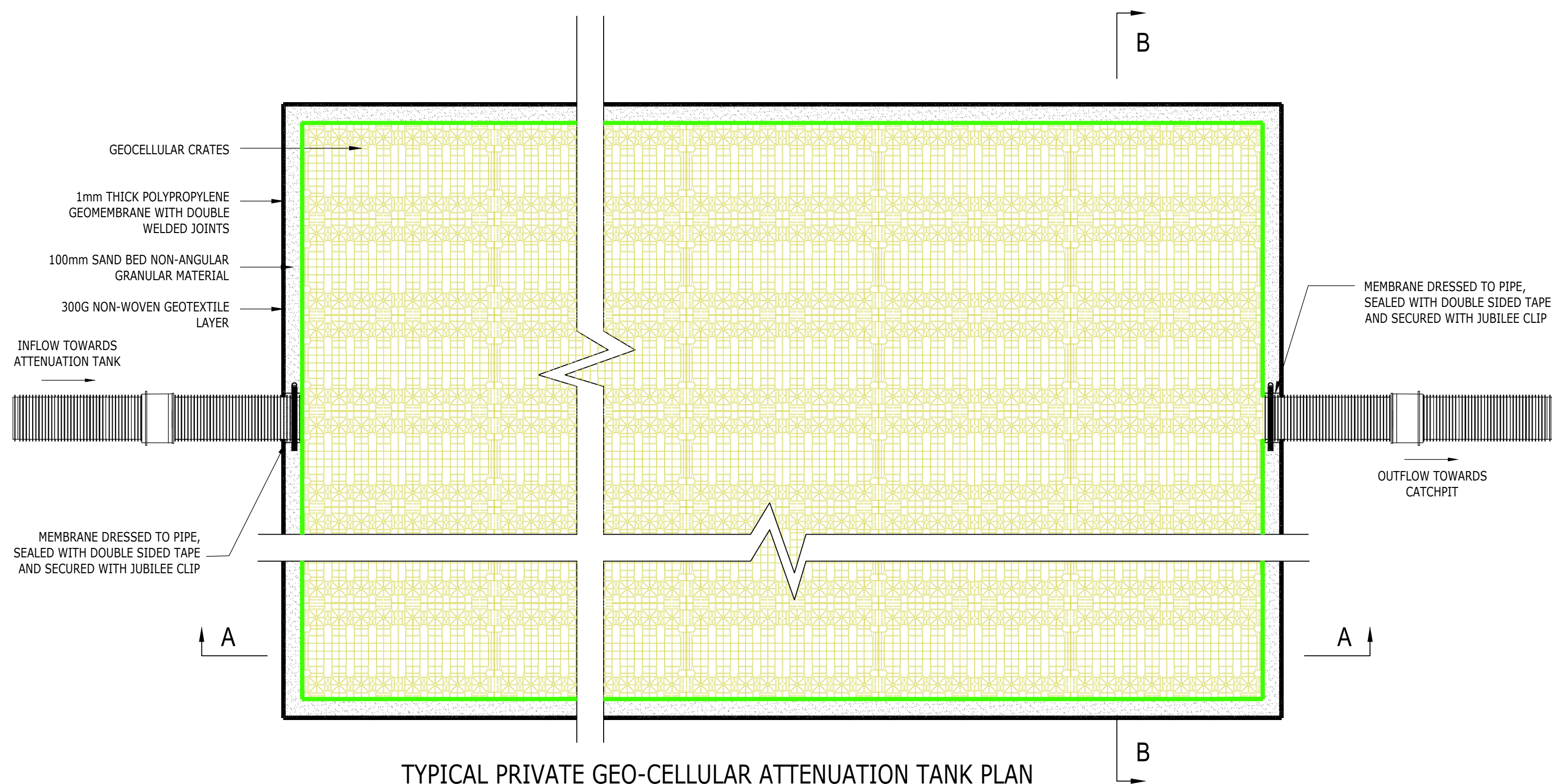
Drawing Title:

TYPICAL BASIN DETAILS

Drawn by	Checked by	Approved by	Revision
SDB	SDB	IK	-

A1 Scale	Date
AS SHOWN	02:10:25

Drawing Number
2503710_A-ACE-XX-XX-DR-C-0651

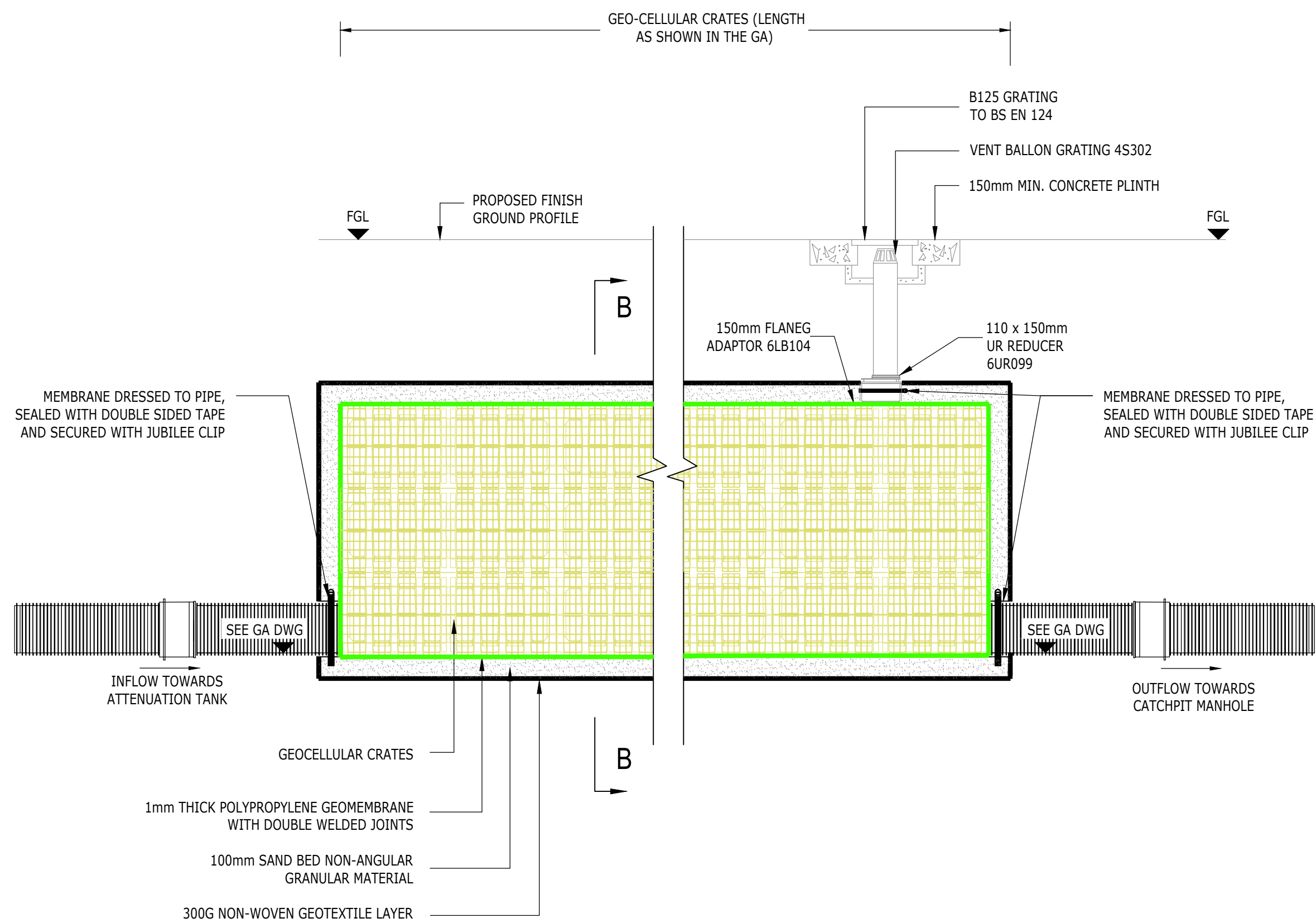


TYPICAL PRIVATE GEO-CELLULAR ATTENUATION TANK PLAN
(REFER TO GA DRAWINGS FOR DIMENSIONS AND LAYOUT)

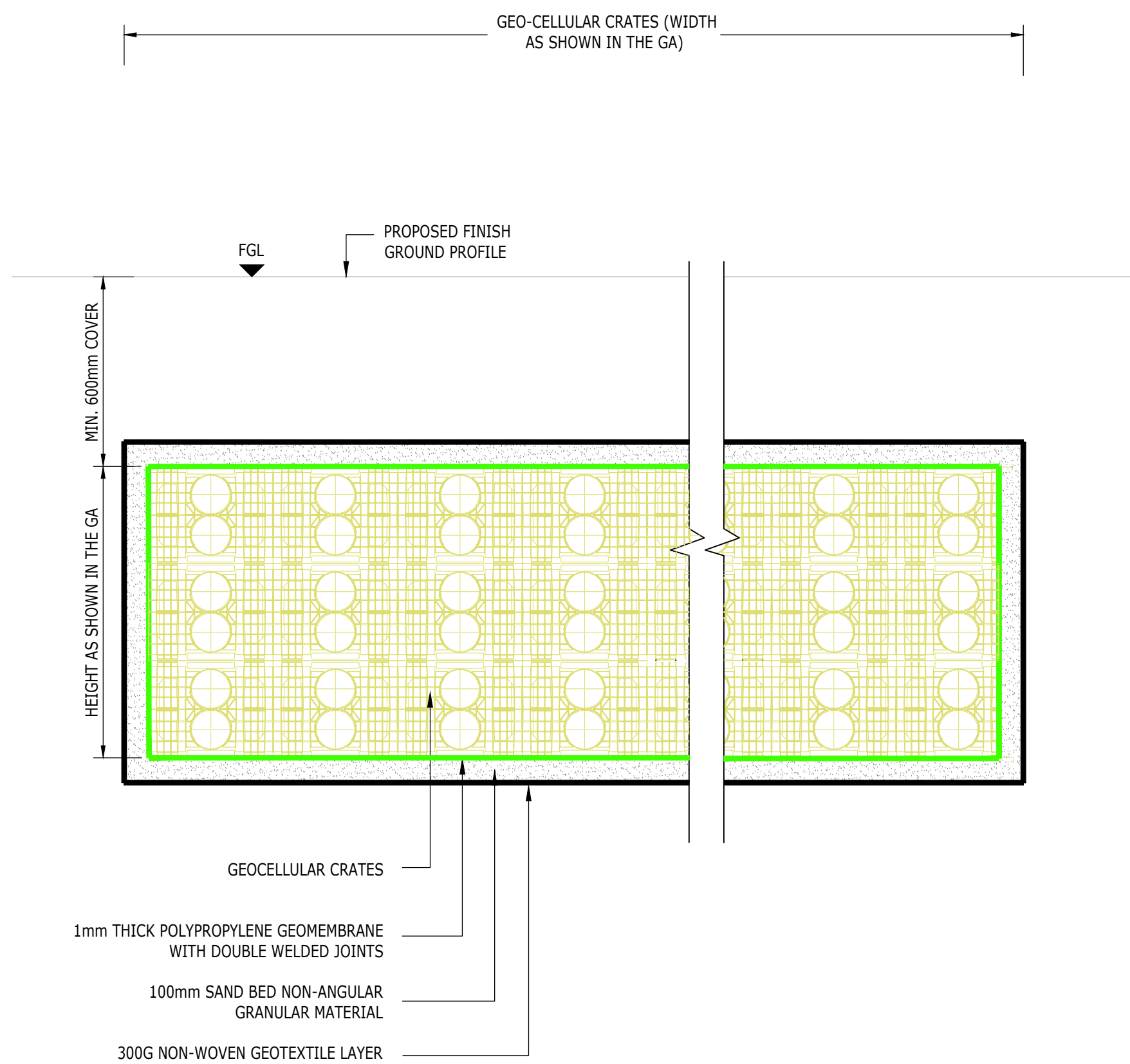
BOX NOTE 1 - THE SURFACE WATER ATTENUATION TANK
SHALL BE INSTALLED STRICTLY IN ACCORDANCE WITH
MANUFACTURERS RECOMMENDATIONS.

ATTENUATION TANK NOTES:

- ATTENUATION TANK TO BE WRAPPED IN PROTECTIVE GEOTEXTILE AND WATERPROOFING GEO-MEMBRANE. THIS IS REQUIRED TO AVOID SEEPAGE OF GROUNDWATER INTO THE ATTENUATION TANK AND ENTRY OF SILT.
- THE MAIN INLET AND OUTLET PIPES OF THE ATTENUATION TANK AND THE CENTRAL ROW OF THE CRATES TO ALLOW FOR CCTV ACCESS AND FLUSHING OF THE ATTENUATION.
- SPECIFICATION OF THE GEO-CELLULAR CRATES TO BE CONFIRMED BY THE MANUFACTURER UPON DETAILED CALCULATIONS.
- NO LOADING TRANSPOSED FROM THE BUILDING ONTO THE PROPOSED GEO-CELLULAR CRATES.
- VENTS TO BE PROVIDED AT THE LOCATION AND FREQUENCY RECOMMENDED BY THE MANUFACTURER.
- REFER TO TANK SUPPLIER FOR DETAILS AND SPECIFICATION OF TANK UNITS, SPECIFIC CONSTRUCTION DETAILS, CALCULATIONS AND MAINTENANCE REGIME.
- MINIMUM DEPTH OF COVER OVER TANK TO BE 600mm, ALL IN ACCORDANCE WITH THE MANUFACTURER'S DETAILS.



PRIVATE GEO-CELLULAR ATTENUATION TANK
TYPICAL LONG-SECTION A-A



PRIVATE GEO-CELLULAR ATTENUATION TANK
TYPICAL CROSS-SECTION B-B

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-	ISSUED FOR PLANNING APPROVAL	SDB	SDB	IK	15.10.25

Rev	Description	Drn	Chk	App	Date
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Purpose:	PRELIMINARY	Status:	NOT YET APPROVED
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Certification

Client:

BLOOR HOMES

Project Title:

GREAT WILSEY PARK, HAVERHILL

Drawing Title:

TYPICAL ATTENUATION TANK DETAILS

Drawn by	Checked by	Approved by	Revision
SDB	SDB	IK	P1

A1 Scale	Date
AS SHOWN	02:10:25

Drawing Number
2503710_A-ACE-XX-XX-DR-C-0653

Appendix H

Drainage Calculations

**Land at Haverhill
Suffolk**

Flood Risk Assessment

Hallam Land Management Ltd & Mrs Pelly

Document Control Sheet

Document Title: Flood Risk Assessment

Document Ref: 10173/FRA/01

Project Name: Land at Haverhill

Project Number: 10173

Client: Hallam Land Management & Mrs Pelly

Document Status

Rev	Issue Status	Prepared / Date	Checked / Date	Approved / Date
0	Draft	SO 17.04.15	LW 17.04.15	PAB 17.04.15
1	Draft	PMcA 17.06.15	LW 17.06.15	PAB 17.06.15
2	Draft	PMcA 08.07.15	LW 08.07.15	PAB 08.07.15
3	Draft	SO 10.08.15	LW 10.08.15	PAB 10.08.15
4	Draft	SO 23.09.15	LW 23.09.15	PAB 23.09.15
5	Final	SO 02.10.15	LW 02.10.15	PAB 02.10.15

Issue Record

Name / Date & Revision	17.04.15	17.06.15	08.07.15	10.08.15	23.09.15	02.10.15
Dave Lewis – Commercial Estates Group	0	1	2	3	4	5
Sally Adlen - Hallam Land Management Ltd	0	1	2	3	4	5

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3	Flooding Risk	4
4	Storm Drainage	11
5	Foul Drainage	20
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Appendix

Conceptual Site Drainage plan

1D ISIS Flood Model Result

GEG-14-366 Haverhill Infil Rpt 23 01 15 FINAL FULL

IoH 124 Assessment

WinDES detention routing calculations

Anglian Water Pre Development Reports

Suffolk County Council - Drainage proforma

Brookbanks Consulting		Page 1
6150 Knights Court Solihull Parkway Birmingham B37 7WY		
Date 04/06/2015 15:52 File Basin A2.srcx	Designed by philip.mcateer Checked by	
Micro Drainage	Source Control W.12.6	
<u>IH 124 Mean Annual Flood</u> Input Return Period (years) 100 SAAR (mm) 600 Urban 0.000 Area (ha) 50.000 Soil 0.400 Region Number Region 5 Results l/s QBAR Rural 142.0 QBAR Urban 142.0 Q100 years 505.7 Q1 year 123.6 Q2 years 126.9 Q5 years 183.2 Q10 years 235.1 Q20 years 297.0 Q25 years 321.3 Q30 years 341.3 Q50 years 403.7 Q100 years 505.7 Q200 years 595.2 Q250 years 623.6 Q1000 years 818.2		
©1982-2011 Micro Drainage Ltd		

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	30	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.900	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1-S1	0.134	5.00	89.130	1200	568587.960	245758.440	1.867
1-S2	0.112	5.00	89.511	1200	568639.284	245723.139	2.579
1-S3	0.058	5.00	89.193	1200	568679.192	245696.421	2.514
1-S4	0.044	5.00	88.351	1350	568707.982	245688.938	2.243
1-S5	0.048	5.00	87.514	1350	568734.912	245692.743	1.587
1-S6	0.062	5.00	86.605	1350	568746.350	245723.323	1.434
1-S7	0.107	5.00	86.349	1200	568761.354	245706.382	2.033
1-S8	0.000	5.00	82.845	1350	568890.310	245673.384	1.050
1-S8 MOCK	0.035	5.00	83.275	1350	568891.687	245672.148	1.405
1-S9			82.317	1350	568916.283	245649.884	1.133
1-S9A	0.025	5.00	81.974	1350	568927.467	245639.068	0.687
1-S10			82.615	1350	568914.023	245647.371	1.604
1-S11	0.031	5.00	83.705	1350	568869.345	245671.826	1.355
1-S12	0.022	5.00	83.454	1350	568880.609	245662.534	1.355
1-S13			83.074	1200	568888.076	245670.712	2.179
1-S14	0.069	5.00	86.282	1350	568789.556	245685.057	1.425
1-S15	0.053	5.00	85.026	1350	568844.118	245626.686	1.495
1-S16	0.114	5.00	85.571	1200	568820.607	245652.808	2.384
1-S18			83.301	1350	568864.379	245696.285	1.050
1-S18 MOCK	0.035	5.00	83.275	1350	568865.731	245694.984	0.950
1-S19			83.541	1350	568861.994	245693.383	2.836
1-S20	0.039	5.00	84.227	1350	568833.775	245705.342	1.350
1-S21	0.026	5.00	84.444	1200	568814.571	245724.839	1.815
1-S22			84.152	1350	568821.337	245731.412	3.616
1-S23			84.005	1500	568806.298	245746.638	3.684
1-S24	0.056	5.00	86.775	1350	568660.675	245786.976	1.525
1-S25	0.060	5.00	86.918	1350	568628.398	245797.258	1.394
1-S26	0.078	5.00	86.270	1350	568641.075	245808.821	1.572
1-S27	0.029	5.00	84.739	1350	568667.527	245833.780	1.623
1-S28	0.050	5.00	83.981	1350	568677.597	245851.420	1.569
1-S53			83.643	1350	568693.395	245843.004	1.440
1-S29	0.026	5.00	83.356	1350	568725.420	245819.438	1.676
1-S30	0.121	5.00	86.654	1350	568682.736	245771.999	1.660
1-S31	0.077	5.00	86.576	1350	568725.893	245742.603	1.350
1-S32	0.069	5.00	86.181	1350	568707.764	245754.717	1.625
1-S33	0.119	5.00	85.150	1350	568722.102	245776.769	1.575
1-S34	0.082	5.00	84.515	1350	568776.878	245762.660	1.350
1-S35			83.805	1200	568746.549	245797.264	2.372
1-S36	0.071	5.00	83.867	1350	568815.795	245742.600	0.950
1-S36 MOCK	0.067	5.00	83.882	1350	568817.415	245740.980	0.950
1-S37			83.155	1350	568769.534	245794.323	1.134
1-S38	0.068	5.00	83.075	1350	568694.756	245854.419	1.425

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1-S54			82.906	1350	568710.845	245845.706	1.525
1-S39	0.060	5.00	82.869	1350	568750.766	245815.947	0.925
1-S40			82.623	1350	568731.789	245834.811	1.069
1-S41			82.853	1350	568729.415	245831.969	1.724
1-S42			83.314	1500	568756.249	245804.672	3.375
1-S43			82.108	1350	568778.683	245823.073	2.229
1-S44	0.020	5.00	80.070	1350	568805.545	245860.931	0.834
1-S45			81.032	1800	568791.101	245840.473	2.282
1-S49	0.068	5.00	82.558	1350	568764.792	245815.183	0.905
1-S50			80.084	1350	568796.504	245854.392	0.931
1-S46 TANK		5.00	81.977	1350	568762.217	245829.354	3.160
1-S47			80.112	1800	568781.031	245847.839	1.412
1-S48 BASIN A	0.159	5.00	80.113	1800	568768.088	245858.330	1.613
1-S51HB			80.370	1500	568784.336	245861.270	1.949
1-S55			79.310	1500	568826.565	245847.640	1.185
1-S52 OUTFALL			79.660	1350	568828.611	245852.021	1.566

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	1-S1	1-S2	66.153	0.600	87.263	86.932	0.331	200.0	300	6.00	50.0
1.001	1-S2	1-S3	47.034	0.600	86.932	86.697	0.235	200.1	300	6.70	50.0
1.002	1-S3	1-S4	29.747	0.600	86.679	86.183	0.496	60.0	300	6.95	50.0
1.003	1-S4	1-S5	27.197	0.600	86.108	85.927	0.181	150.3	375	7.25	50.0
1.004	1-S5	1-S7	29.752	0.600	85.927	84.316	1.611	18.5	375	7.37	50.0
2.000	1-S6	1-S7	22.630	0.600	85.171	84.541	0.630	35.9	150	5.22	50.0
1.005	1-S7	1-S23	60.337	0.600	84.316	80.469	3.847	15.7	375	7.59	50.0
3.000	1-S8	1-S13	3.483	0.600	81.795	81.309	0.486	7.2	100	5.37	50.0
3.000A	1-S8 MOCK	1-S9	33.176	0.025	81.870	81.184	0.686	48.4	300	5.32	50.0
20.0	1-S9A	1-S9	15.559	0.600	81.287	81.184	0.103	151.1	150	5.32	50.0
3.001	1-S9	1-S10	3.025	0.600	81.184	81.161	0.023	131.5	150	5.38	50.0
3.002	1-S10	1-S13	34.906	0.600	81.011	80.895	0.116	300.9	300	6.02	50.0
4.000	1-S11	1-S12	14.602	0.600	82.350	82.099	0.251	58.2	150	5.18	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
1.000	1.108	78.3	21.7	1.567	2.279	0.134	0.0
1.001	1.107	78.3	39.9	2.279	2.196	0.246	0.0
1.002	2.034	143.7	49.4	2.214	1.868	0.304	0.0
1.003	1.476	163.0	56.6	1.868	1.212	0.348	0.0
1.004	4.233	467.5	64.4	1.212	1.658	0.396	0.0
2.000	1.685	29.8	10.1	1.284	1.658	0.062	0.0
1.005	4.594	507.4	91.9	1.658	3.161	0.565	0.0
3.000	2.906	22.8	5.7	0.950	1.665	0.035	0.0
3.000A	1.739	887.1	5.7	1.105	0.833	0.035	0.0
20.0	0.815	14.4	4.1	0.537	0.983	0.025	0.0
3.001	0.874	15.5	9.8	0.983	1.304	0.060	0.0
3.002	0.901	63.7	9.8	1.304	1.879	0.060	0.0
4.000	1.321	23.3	5.1	1.205	1.205	0.031	0.0

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
4.001	1-S12	1-S13	11.075	0.600	82.099	81.145	0.954	11.6	150	5.25	50.0
3.003	1-S13	1-S19	34.558	0.600	80.895	80.780	0.115	300.0	300	6.66	50.0
5.000	1-S14	1-S16	44.768	0.600	84.857	83.262	1.595	28.1	225	5.30	50.0
6.000	1-S15	1-S16	41.006	0.600	83.531	83.262	0.269	152.4	225	5.65	50.0
5.001	1-S16	1-S19	57.958	0.600	83.187	80.780	2.407	24.1	300	5.95	50.0
7.001	1-S18	1-S19	3.983	0.600	82.251	80.943	1.308	3.0	100	5.89	50.0
4.000A	1-S18 MOCK	1-S8	32.721	0.025	82.325	81.795	0.530	61.7	300	5.35	50.0
3.004	1-S19	1-S22	55.670	0.600	80.705	80.536	0.169	330.0	375	7.60	50.0
8.000	1-S20	1-S21	27.366	0.600	82.877	82.629	0.248	110.3	150	5.48	50.0
8.001	1-S21	1-S22	9.433	0.600	82.629	82.393	0.236	40.0	150	5.58	50.0
3.005	1-S22	1-S23	21.401	0.600	80.536	80.471	0.065	330.0	375	7.96	50.0
1.006	1-S23	1-S42	76.634	0.600	80.321	80.154	0.167	458.9	525	9.18	50.0
9.000	1-S24	1-S26	29.348	0.600	85.250	84.698	0.552	53.2	225	5.27	50.0
10.000	1-S25	1-S26	17.158	0.600	85.524	84.773	0.751	22.8	150	5.14	50.0
9.001	1-S26	1-S27	36.368	0.600	84.698	83.116	1.582	23.0	225	5.49	50.0
9.002	1-S27	1-S28	20.312	0.600	83.116	82.412	0.704	28.9	300	5.61	50.0
9.003	1-S28	1-S53	17.901	0.600	82.412	82.203	0.209	85.7	300	5.78	50.0
9.004	1-S53	1-S29	39.761	0.600	82.203	81.680	0.523	76.0	300	6.15	50.0
9.005	1-S29	1-S35	30.628	0.600	81.680	81.508	0.172	178.1	300	6.59	50.0
11.000	1-S30	1-S32	30.415	0.600	84.994	84.629	0.365	83.3	225	5.35	50.0
12.000	1-S31	1-S32	21.804	0.600	85.226	84.706	0.520	41.9	150	5.23	50.0
11.001	1-S32	1-S33	26.303	0.600	84.556	83.650	0.906	29.0	300	5.50	50.0
11.002	1-S33	1-S35	31.902	0.600	83.575	81.433	2.142	14.9	375	5.62	50.0
13.000	1-S34	1-S35	46.015	0.600	83.165	81.583	1.582	29.1	225	5.32	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
4.001	2.973	52.5	8.7	1.205	1.779	0.054	0.0
3.003	0.902	63.8	24.2	1.879	2.461	0.149	0.0
5.000	2.479	98.6	11.3	1.200	2.084	0.069	0.0
6.000	1.056	42.0	8.7	1.270	2.084	0.053	0.0
5.001	3.217	227.4	38.5	2.084	2.461	0.237	0.0
7.001	4.465	35.1	10.9	0.950	2.498	0.067	0.0
4.000A	1.539	785.1	5.7	0.650	0.750	0.035	0.0
3.004	0.992	109.5	73.5	2.461	3.241	0.452	0.0
8.000	0.956	16.9	6.4	1.200	1.665	0.039	0.0
8.001	1.596	28.2	10.6	1.665	1.609	0.065	0.0
3.005	0.992	109.5	84.2	3.241	3.159	0.518	0.0
1.006	1.039	224.9	176.0	3.159	2.635	1.082	0.0
9.000	1.797	71.5	9.1	1.300	1.347	0.056	0.0
10.000	2.116	37.4	9.7	1.244	1.347	0.060	0.0
9.001	2.740	109.0	31.6	1.347	1.398	0.194	0.0
9.002	2.938	207.6	36.4	1.323	1.269	0.224	0.0
9.003	1.700	120.1	44.5	1.269	1.140	0.274	0.0
9.004	1.805	127.6	44.5	1.140	1.376	0.274	0.0
9.005	1.175	83.0	48.8	1.376	1.997	0.300	0.0
11.000	1.433	57.0	19.7	1.435	1.327	0.121	0.0
12.000	1.558	27.5	12.5	1.200	1.325	0.077	0.0
11.001	2.928	207.0	43.3	1.325	1.200	0.267	0.0
11.002	4.715	520.7	62.7	1.200	1.997	0.385	0.0
13.000	2.435	96.8	13.4	1.125	1.997	0.082	0.0

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
9.006	1-S35	1-S42	12.205	0.600	81.433	80.239	1.194	10.2	375	6.62	50.0
14.000	1-S36	1-S37	77.934	0.025	82.917	82.021	0.896	87.0	300	6.00	50.0
8.000A	1-S36 MOCK	1-S18	64.833	0.025	82.932	82.251	0.681	95.2	300	5.87	50.0
14.001	1-S37	1-S42	16.192	0.600	82.021	80.464	1.557	10.4	150	6.09	50.0
15.000	1-S38	1-S54	18.297	0.600	81.650	81.381	0.269	68.0	225	5.19	50.0
15.001	1-S54	1-S41	23.098	0.600	81.381	81.129	0.252	91.7	225	5.47	50.0
16.000	1-S39	1-S40	26.758	0.025	81.944	81.554	0.390	68.6	300	5.31	50.0
16.001	1-S40	1-S41	3.703	0.600	81.554	81.204	0.350	10.6	150	5.33	50.0
15.002	1-S41	1-S42	38.279	0.600	81.129	80.464	0.665	57.6	225	5.84	50.0
1.007	1-S42	1-S43	29.015	0.600	79.939	79.879	0.060	483.6	675	9.59	50.0
1.008	1-S43	1-S45	21.377	0.600	79.879	78.825	1.054	20.3	675	9.65	50.0
20.000	1-S44	1-S50	11.158	0.600	79.236	79.153	0.083	134.4	150	5.22	50.0
1.009	1-S45	1-S47	12.476	0.600	78.750	78.700	0.050	249.5	750	9.77	50.0
18.000	1-S49	1-S50	50.428	0.025	81.653	79.153	2.500	20.2	300	5.31	50.0
18.001	1-S50	1-S47	16.803	0.600	79.153	78.985	0.168	100.0	150	5.59	50.0
19.000	1-S46 TANK	1-S47	26.375	0.600	78.817	78.700	0.117	225.0	225	5.51	50.0
1.010	1-S47	1-S48 BASIN A	16.661	0.600	78.700	78.650	0.050	333.2	750	9.95	50.0
1.011	1-S48 BASIN A	1-S51HB	23.789	0.600	78.500	78.421	0.079	301.1	600	10.24	50.0
1.012	1-S51HB	1-S55	44.374	0.600	78.421	78.125	0.296	149.9	225	10.93	50.0
1.013	1-S55	1-S52 OUTFALL	4.830	0.600	78.125	78.094	0.031	155.8	225	11.01	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
9.006	5.694	628.9	124.9	1.997	2.700	0.768	0.0
14.000	1.296	661.5	11.6	0.650	0.834	0.071	0.0
8.000A	1.239	632.3	10.9	0.650	0.750	0.067	0.0
14.001	3.142	55.5	11.6	0.984	2.700	0.071	0.0
15.000	1.588	63.1	11.0	1.200	1.300	0.068	0.0
15.001	1.366	54.3	11.0	1.300	1.499	0.068	0.0
16.000	1.460	744.8	9.7	0.625	0.769	0.060	0.0
16.001	3.115	55.0	9.7	0.919	1.499	0.060	0.0
15.002	1.727	68.7	20.8	1.499	2.625	0.128	0.0
1.007	1.185	424.0	333.3	2.700	1.554	2.049	0.0
1.008	5.835	2088.0	333.3	1.554	1.532	2.049	0.0
20.000	0.865	15.3	3.2	0.684	0.781	0.020	0.0
1.009	1.767	780.5	333.3	1.532	0.662	2.049	0.0
18.000	2.692	1373.6	11.1	0.605	0.631	0.068	0.0
18.001	1.005	17.8	14.2	0.781	0.977	0.088	0.0
19.000	0.867	103.5	0.0	2.935	1.187	0.000	0.0
1.010	1.527	674.7	347.5	0.662	0.713	2.137	0.0
1.011	1.398	395.2	373.3	1.013	1.349	2.295	0.0
1.012	1.065	42.4	373.3	1.724	0.960	2.295	0.0
1.013	1.045	41.5	373.3	0.960	1.341	2.295	0.0

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	66.153	200.0	300	Circular	89.130	87.263	1.567	89.511	86.932	2.279
1.001	47.034	200.1	300	Circular	89.511	86.932	2.279	89.193	86.697	2.196
1.002	29.747	60.0	300	Circular	89.193	86.679	2.214	88.351	86.183	1.868
1.003	27.197	150.3	375	Circular	88.351	86.108	1.868	87.514	85.927	1.212
1.004	29.752	18.5	375	Circular	87.514	85.927	1.212	86.349	84.316	1.658
2.000	22.630	35.9	150	Circular	86.605	85.171	1.284	86.349	84.541	1.658
1.005	60.337	15.7	375	Circular	86.349	84.316	1.658	84.005	80.469	3.161
3.000	3.483	7.2	100	Circular	82.845	81.795	0.950	83.074	81.309	1.665
3.000A	33.176	48.4	300	SWALE	83.275	81.870	1.105	82.317	81.184	0.833
20.0	15.559	151.1	150	Circular	81.974	81.287	0.537	82.317	81.184	0.983
3.001	3.025	131.5	150	Circular	82.317	81.184	0.983	82.615	81.161	1.304
3.002	34.906	300.9	300	Circular	82.615	81.011	1.304	83.074	80.895	1.879
4.000	14.602	58.2	150	Circular	83.705	82.350	1.205	83.454	82.099	1.205
4.001	11.075	11.6	150	Circular	83.454	82.099	1.205	83.074	81.145	1.779
3.003	34.558	300.0	300	Circular	83.074	80.895	1.879	83.541	80.780	2.461
5.000	44.768	28.1	225	Circular	86.282	84.857	1.200	85.571	83.262	2.084
6.000	41.006	152.4	225	Circular	85.026	83.531	1.270	85.571	83.262	2.084
5.001	57.958	24.1	300	Circular	85.571	83.187	2.084	83.541	80.780	2.461
7.001	3.983	3.0	100	Circular	83.301	82.251	0.950	83.541	80.943	2.498
4.000A	32.721	61.7	300	SWALE	83.275	82.325	0.650	82.845	81.795	0.750
3.004	55.670	330.0	375	Circular	83.541	80.705	2.461	84.152	80.536	3.241
8.000	27.366	110.3	150	Circular	84.227	82.877	1.200	84.444	82.629	1.665
8.001	9.433	40.0	150	Circular	84.444	82.629	1.665	84.152	82.393	1.609
3.005	21.401	330.0	375	Circular	84.152	80.536	3.241	84.005	80.471	3.159
1.006	76.634	458.9	525	Circular	84.005	80.321	3.159	83.314	80.154	2.635

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1-S1	1200	Manhole	Adoptable	1-S2	1200	Manhole	Adoptable
1.001	1-S2	1200	Manhole	Adoptable	1-S3	1200	Manhole	Adoptable
1.002	1-S3	1200	Manhole	Adoptable	1-S4	1350	Manhole	Adoptable
1.003	1-S4	1350	Manhole	Adoptable	1-S5	1350	Manhole	Adoptable
1.004	1-S5	1350	Manhole	Adoptable	1-S7	1200	Manhole	Adoptable
2.000	1-S6	1350	Manhole	Adoptable	1-S7	1200	Manhole	Adoptable
1.005	1-S7	1200	Manhole	Adoptable	1-S23	1500	Manhole	Adoptable
3.000	1-S8	1350	Manhole	Adoptable	1-S13	1200	Manhole	Adoptable
3.000A	1-S8 MOCK	1350	Junction		1-S9	1350	Manhole	Adoptable
20.0	1-S9A	1350	Manhole	Adoptable	1-S9	1350	Manhole	Adoptable
3.001	1-S9	1350	Manhole	Adoptable	1-S10	1350	Manhole	Adoptable
3.002	1-S10	1350	Manhole	Adoptable	1-S13	1200	Manhole	Adoptable
4.000	1-S11	1350	Manhole	Adoptable	1-S12	1350	Manhole	Adoptable
4.001	1-S12	1350	Manhole	Adoptable	1-S13	1200	Manhole	Adoptable
3.003	1-S13	1200	Manhole	Adoptable	1-S19	1350	Manhole	Adoptable
5.000	1-S14	1350	Manhole	Adoptable	1-S16	1200	Manhole	Adoptable
6.000	1-S15	1350	Manhole	Adoptable	1-S16	1200	Manhole	Adoptable
5.001	1-S16	1200	Manhole	Adoptable	1-S19	1350	Manhole	Adoptable
7.001	1-S18	1350	Manhole	Adoptable	1-S19	1350	Manhole	Adoptable
4.000A	1-S18 MOCK	1350	Junction		1-S8	1350	Manhole	Adoptable
3.004	1-S19	1350	Manhole	Adoptable	1-S22	1350	Manhole	Adoptable
8.000	1-S20	1350	Manhole	Adoptable	1-S21	1200	Manhole	Adoptable
8.001	1-S21	1200	Manhole	Adoptable	1-S22	1350	Manhole	Adoptable
3.005	1-S22	1350	Manhole	Adoptable	1-S23	1500	Manhole	Adoptable
1.006	1-S23	1500	Manhole	Adoptable	1-S42	1500	Manhole	Adoptable

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
9.000	29.348	53.2	225	Circular	86.775	85.250	1.300	86.270	84.698	1.347
10.000	17.158	22.8	150	Circular	86.918	85.524	1.244	86.270	84.773	1.347
9.001	36.368	23.0	225	Circular	86.270	84.698	1.347	84.739	83.116	1.398
9.002	20.312	28.9	300	Circular	84.739	83.116	1.323	83.981	82.412	1.269
9.003	17.901	85.7	300	Circular	83.981	82.412	1.269	83.643	82.203	1.140
9.004	39.761	76.0	300	Circular	83.643	82.203	1.140	83.356	81.680	1.376
9.005	30.628	178.1	300	Circular	83.356	81.680	1.376	83.805	81.508	1.997
11.000	30.415	83.3	225	Circular	86.654	84.994	1.435	86.181	84.629	1.327
12.000	21.804	41.9	150	Circular	86.576	85.226	1.200	86.181	84.706	1.325
11.001	26.303	29.0	300	Circular	86.181	84.556	1.325	85.150	83.650	1.200
11.002	31.902	14.9	375	Circular	85.150	83.575	1.200	83.805	81.433	1.997
13.000	46.015	29.1	225	Circular	84.515	83.165	1.125	83.805	81.583	1.997
9.006	12.205	10.2	375	Circular	83.805	81.433	1.997	83.314	80.239	2.700
14.000	77.934	87.0	300	SWALE	83.867	82.917	0.650	83.155	82.021	0.834
8.000A	64.833	95.2	300	SWALE	83.882	82.932	0.650	83.301	82.251	0.750
14.001	16.192	10.4	150	Circular	83.155	82.021	0.984	83.314	80.464	2.700
15.000	18.297	68.0	225	Circular	83.075	81.650	1.200	82.906	81.381	1.300
15.001	23.098	91.7	225	Circular	82.906	81.381	1.300	82.853	81.129	1.499
16.000	26.758	68.6	300	SWALE	82.869	81.944	0.625	82.623	81.554	0.769
16.001	3.703	10.6	150	Circular	82.623	81.554	0.919	82.853	81.204	1.499
15.002	38.279	57.6	225	Circular	82.853	81.129	1.499	83.314	80.464	2.625
1.007	29.015	483.6	675	Circular	83.314	79.939	2.700	82.108	79.879	1.554
1.008	21.377	20.3	675	Circular	82.108	79.879	1.554	81.032	78.825	1.532
20.000	11.158	134.4	150	Circular	80.070	79.236	0.684	80.084	79.153	0.781
1.009	12.476	249.5	750	Circular	81.032	78.750	1.532	80.112	78.700	0.662

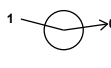
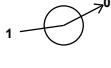
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
9.000	1-S24	1350	Manhole	Adoptable	1-S26	1350	Manhole	Adoptable
10.000	1-S25	1350	Manhole	Adoptable	1-S26	1350	Manhole	Adoptable
9.001	1-S26	1350	Manhole	Adoptable	1-S27	1350	Manhole	Adoptable
9.002	1-S27	1350	Manhole	Adoptable	1-S28	1350	Manhole	Adoptable
9.003	1-S28	1350	Manhole	Adoptable	1-S53	1350	Manhole	Adoptable
9.004	1-S53	1350	Manhole	Adoptable	1-S29	1350	Manhole	Adoptable
9.005	1-S29	1350	Manhole	Adoptable	1-S35	1200	Manhole	Adoptable
11.000	1-S30	1350	Manhole	Adoptable	1-S32	1350	Manhole	Adoptable
12.000	1-S31	1350	Manhole	Adoptable	1-S32	1350	Manhole	Adoptable
11.001	1-S32	1350	Manhole	Adoptable	1-S33	1350	Manhole	Adoptable
11.002	1-S33	1350	Manhole	Adoptable	1-S35	1200	Manhole	Adoptable
13.000	1-S34	1350	Manhole	Adoptable	1-S35	1200	Manhole	Adoptable
9.006	1-S35	1200	Manhole	Adoptable	1-S42	1500	Manhole	Adoptable
14.000	1-S36	1350	Manhole	Adoptable	1-S37	1350	Manhole	Adoptable
8.000A	1-S36 MOCK	1350	Junction		1-S18	1350	Manhole	Adoptable
14.001	1-S37	1350	Manhole	Adoptable	1-S42	1500	Manhole	Adoptable
15.000	1-S38	1350	Manhole	Adoptable	1-S54	1350	Manhole	Adoptable
15.001	1-S54	1350	Manhole	Adoptable	1-S41	1350	Manhole	Adoptable
16.000	1-S39	1350	Manhole	Adoptable	1-S40	1350	Manhole	Adoptable
16.001	1-S40	1350	Manhole	Adoptable	1-S41	1350	Manhole	Adoptable
15.002	1-S41	1350	Manhole	Adoptable	1-S42	1500	Manhole	Adoptable
1.007	1-S42	1500	Manhole	Adoptable	1-S43	1350	Manhole	Adoptable
1.008	1-S43	1350	Manhole	Adoptable	1-S45	1800	Manhole	Adoptable
20.000	1-S44	1350	Manhole	Adoptable	1-S50	1350	Manhole	Adoptable
1.009	1-S45	1800	Manhole	Adoptable	1-S47	1800	Manhole	Adoptable

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
18.000	50.428	20.2	300	SWALE	82.558	81.653	0.605	80.084	79.153	0.631
18.001	16.803	100.0	150	Circular	80.084	79.153	0.781	80.112	78.985	0.977
19.000	26.375	225.0	225	3x225	81.977	78.817	2.935	80.112	78.700	1.187
1.010	16.661	333.2	750	Circular	80.112	78.700	0.662	80.113	78.650	0.713
1.011	23.789	301.1	600	Circular	80.113	78.500	1.013	80.370	78.421	1.349
1.012	44.374	149.9	225	Circular	80.370	78.421	1.724	79.310	78.125	0.960
1.013	4.830	155.8	225	Circular	79.310	78.125	0.960	79.660	78.094	1.341

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
18.000	1-S49	1350	Manhole	Adoptable	1-S50	1350	Manhole	Adoptable
18.001	1-S50	1350	Manhole	Adoptable	1-S47	1800	Manhole	Adoptable
19.000	1-S46 TANK	1350	Manhole	Adoptable	1-S47	1800	Manhole	Adoptable
1.010	1-S47	1800	Manhole	Adoptable	1-S48 BASIN A	1800	Manhole	Adoptable
1.011	1-S48 BASIN A	1800	Manhole	Adoptable	1-S51HB	1500	Manhole	Adoptable
1.012	1-S51HB	1500	Manhole	Adoptable	1-S55	1500	Manhole	Adoptable
1.013	1-S55	1500	Manhole	Adoptable	1-S52 OUTFALL	1350	Manhole	Adoptable

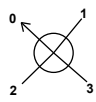
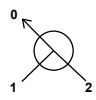
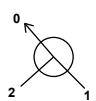
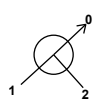
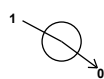
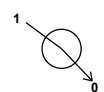
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
1-S1	568587.960	245758.440	89.130	1.867	1200		0	1.000	87.263	300
1-S2	568639.284	245723.139	89.511	2.579	1200		1	1.000	86.932	300
							0	1.001	86.932	300
1-S3	568679.192	245696.421	89.193	2.514	1200		1	1.001	86.697	300
							0	1.002	86.679	300
1-S4	568707.982	245688.938	88.351	2.243	1350		1	1.002	86.183	300
							0	1.003	86.108	375
1-S5	568734.912	245692.743	87.514	1.587	1350		1	1.003	85.927	375
							0	1.004	85.927	375
1-S6	568746.350	245723.323	86.605	1.434	1350		0	2.000	85.171	150
1-S7	568761.354	245706.382	86.349	2.033	1200		1	2.000	84.541	150
							2	1.004	84.316	375
							0	1.005	84.316	375

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
1-S8	568890.310	245673.384	82.845	1.050	1350		1 4.000A	81.795	300
							0 3.000	81.795	100
1-S8 MOCK	568891.687	245672.148	83.275	1.405	1350		0 3.000A	81.870	300
							1 20.0	81.184	150
1-S9	568916.283	245649.884	82.317	1.133	1350		2 3.000A	81.184	300
							0 3.001	81.184	150
1-S9A	568927.467	245639.068	81.974	0.687	1350		0 20.0	81.287	150
							1 3.001	81.161	150
1-S10	568914.023	245647.371	82.615	1.604	1350		0 3.002	81.011	300
1-S11	568869.345	245671.826	83.705	1.355	1350		0 4.000	82.350	150
							1 4.000	82.099	150
1-S12	568880.609	245662.534	83.454	1.355	1350		0 4.001	82.099	150
							1 4.001	81.145	150
1-S13	568888.076	245670.712	83.074	2.179	1200		2 3.000	81.309	100
							3 3.002	80.895	300
							0 3.003	80.895	300
1-S14	568789.556	245685.057	86.282	1.425	1350		0 5.000	84.857	225
1-S15	568844.118	245626.686	85.026	1.495	1350		0 6.000	83.531	225
							1 6.000	83.262	225
1-S16	568820.607	245652.808	85.571	2.384	1200		2 5.000	83.262	225
							0 5.001	83.187	300
1-S18	568864.379	245696.285	83.301	1.050	1350		1 8.000A	82.251	300
							0 7.001	82.251	100
1-S18 MOCK	568865.731	245694.984	83.275	0.950	1350		0 4.000A	82.325	300

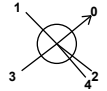
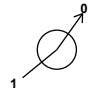
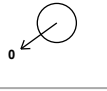
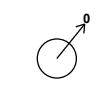
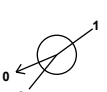
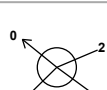
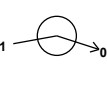
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)
1-S19	568861.994	245693.383	83.541	2.836	1350		1	7.001	80.943	100
							2	5.001	80.780	300
							3	3.003	80.780	300
							0	3.004	80.705	375
1-S20	568833.775	245705.342	84.227	1.350	1350		0	8.000	82.877	150
1-S21	568814.571	245724.839	84.444	1.815	1200		1	8.000	82.629	150
1-S22	568821.337	245731.412	84.152	3.616	1350		0	8.001	82.629	150
							1	8.001	82.393	150
							2	3.004	80.536	375
1-S23	568806.298	245746.638	84.005	3.684	1500		0	3.005	80.536	375
							1	3.005	80.471	375
							2	1.005	80.469	375
1-S24	568660.675	245786.976	86.775	1.525	1350		0	1.006	80.321	525
							0	9.000	85.250	225
1-S25	568628.398	245797.258	86.918	1.394	1350		0	10.000	85.524	150
							1	10.000	84.773	150
1-S26	568641.075	245808.821	86.270	1.572	1350		2	9.000	84.698	225
							0	9.001	84.698	225
1-S27	568667.527	245833.780	84.739	1.623	1350		1	9.001	83.116	225
							0	9.002	83.116	300
1-S28	568677.597	245851.420	83.981	1.569	1350		1	9.002	82.412	300
							0	9.003	82.412	300
1-S53	568693.395	245843.004	83.643	1.440	1350		1	9.003	82.203	300
							0	9.004	82.203	300
1-S29	568725.420	245819.438	83.356	1.676	1350		1	9.004	81.680	300
							0	9.005	81.680	300
1-S30	568682.736	245771.999	86.654	1.660	1350		0	11.000	84.994	225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
1-S31	568725.893	245742.603	86.576	1.350	1350		0	12.000	85.226	150
1-S32	568707.764	245754.717	86.181	1.625	1350		1	12.000	84.706	150
							2	11.000	84.629	225
							0	11.001	84.556	300
1-S33	568722.102	245776.769	85.150	1.575	1350		1	11.001	83.650	300
1-S34	568776.878	245762.660	84.515	1.350	1350		0	11.002	83.575	375
							0	13.000	83.165	225
1-S35	568746.549	245797.264	83.805	2.372	1200		1	13.000	81.583	225
							2	11.002	81.433	375
							3	9.005	81.508	300
							0	9.006	81.433	375
1-S36	568815.795	245742.600	83.867	0.950	1350		0	14.000	82.917	300
							0	8.000A	82.932	300
1-S37	568769.534	245794.323	83.155	1.134	1350		1	14.000	82.021	300
1-S38	568694.756	245854.419	83.075	1.425	1350		0	15.000	81.650	225
							1	15.000	81.381	225
1-S54	568710.845	245845.706	82.906	1.525	1350		0	15.001	81.381	225
1-S39	568750.766	245815.947	82.869	0.925	1350		0	16.000	81.944	300
							1	16.000	81.554	300
1-S40	568731.789	245834.811	82.623	1.069	1350		0	16.001	81.554	150
							1	16.001	81.204	150
1-S41	568729.415	245831.969	82.853	1.724	1350		2	15.001	81.129	225
							0	15.002	81.129	225

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
1-S42	568756.249	245804.672	83.314	3.375	1500		1	15.002	80.464	225
							2	14.001	80.464	150
							3	9.006	80.239	375
							4	1.006	80.154	525
							0	1.007	79.939	675
1-S43	568778.683	245823.073	82.108	2.229	1350		1	1.007	79.879	675
							0	1.008	79.879	675
1-S44	568805.545	245860.931	80.070	0.834	1350		0	20.000	79.236	150
1-S45	568791.101	245840.473	81.032	2.282	1800		1	1.008	78.825	675
1-S49	568764.792	245815.183	82.558	0.905	1350		0	18.000	81.653	300
							1	20.000	79.153	150
1-S50	568796.504	245854.392	80.084	0.931	1350		2	18.000	79.153	300
							0	18.001	79.153	150
							0	18.001	79.153	150
1-S46 TANK	568762.217	245829.354	81.977	3.160	1350		0	19.000	78.817	225
							1	19.000	78.700	225
1-S47	568781.031	245847.839	80.112	1.412	1800		2	18.001	78.985	150
							3	1.009	78.700	750
							0	1.010	78.700	750
							1	1.010	78.650	750
1-S51HB	568784.336	245861.270	80.370	1.949	1500		0	1.011	78.500	600
							1	1.011	78.421	600
1-S55	568826.565	245847.640	79.310	1.185	1500		0	1.012	78.421	225
							1	1.012	78.125	225
1-S52 OUTFALL	568828.611	245852.021	79.660	1.566	1350		1	1.013	78.094	225

Simulation Settings

Rainfall Methodology	FEH-22	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	0.900	Drain Down Time (mins)	10080	Check Discharge Volume	x
Analysis Speed	Detailed	Additional Storage (m ³ /ha)	20.0		

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	35	0	0
100	40	0	0

Node 1-S51HB Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	78.421	Product Number	CTL-SHE-0149-1090-1200-1090
Design Depth (m)	1.200	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	10.9	Min Node Diameter (mm)	1200

Node 1-S48 BASIN A Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	78.500
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	1016

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)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	470.0	0.0	0.500	733.8	0.0	1.000	1233.5	0.0	1.500	1565.3	0.0
0.100	520.0	0.0	0.600	789.8	0.0	1.100	1297.9	0.0	1.600	2040.1	0.0
0.200	571.9	0.0	0.700	1046.4	0.0	1.200	1363.2	0.0	1.613	2135.2	0.0
0.300	624.9	0.0	0.800	1107.8	0.0	1.300	1429.6	0.0			
0.400	678.8	0.0	0.900	1170.1	0.0	1.400	1496.9	0.0			

Node 1-S46 TANK Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	78.817
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	1464

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	644.0	0.0	0.800	644.0	0.0	0.801	0.0	0.0

Other (defaults)

Entry Loss (manhole)	0.250	Entry Loss (junction)	0.000	Apply Recommended Losses	x
Exit Loss (manhole)	0.250	Exit Loss (junction)	0.000	Flood Risk (m)	0.300

Results for 2 year Critical Storm Duration. Lowest mass balance: 92.92%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1-S1	11	87.358	0.095	18.0	0.2429	0.0000	OK
15 minute winter	1-S2	11	87.066	0.134	32.3	0.2676	0.0000	OK
15 minute winter	1-S3	11	86.788	0.109	38.1	0.1740	0.0000	OK
15 minute winter	1-S4	11	86.248	0.140	43.3	0.2563	0.0000	OK
15 minute winter	1-S5	11	86.008	0.081	49.1	0.1660	0.0000	OK
15 minute winter	1-S6	10	85.226	0.055	8.4	0.1271	0.0000	OK
15 minute winter	1-S7	11	84.409	0.093	70.3	0.2035	0.0000	OK
15 minute winter	1-S8	11	81.827	0.032	4.5	0.0460	0.0000	OK
15 minute winter	1-S8 MOCK	11	81.892	0.022	4.7	0.0111	0.0000	OK
15 minute winter	1-S9	12	81.261	0.077	7.8	0.1095	0.0000	OK
15 minute winter	1-S9A	10	81.336	0.049	3.4	0.1054	0.0000	OK
15 minute winter	1-S10	13	81.075	0.064	6.6	0.0918	0.0000	OK
15 minute winter	1-S11	10	82.395	0.045	4.2	0.0849	0.0000	OK
15 minute winter	1-S12	10	82.138	0.039	7.1	0.0680	0.0000	OK
15 minute winter	1-S13	12	81.002	0.107	16.8	0.1208	0.0000	OK
15 minute winter	1-S14	10	84.904	0.047	9.4	0.1122	0.0000	OK
15 minute winter	1-S15	11	83.593	0.062	7.2	0.1338	0.0000	OK
15 minute winter	1-S16	10	83.261	0.074	31.1	0.1542	0.0000	OK
15 minute winter	1-S18	12	82.287	0.036	8.7	0.0515	0.0000	OK
15 minute winter	1-S18 MOCK	11	82.349	0.024	4.7	0.0177	0.0000	OK
15 minute winter	1-S19	12	80.893	0.188	54.1	0.2683	0.0000	OK
15 minute winter	1-S20	10	82.935	0.058	5.3	0.1163	0.0000	OK
15 minute winter	1-S21	11	82.689	0.060	8.7	0.0854	0.0000	OK
15 minute winter	1-S22	12	80.742	0.206	61.3	0.2952	0.0000	OK
15 minute winter	1-S23	13	80.603	0.282	127.3	0.4979	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1-S1	1.000	1-S2	17.3	0.727	0.221	1.6367	
15 minute winter	1-S2	1.001	1-S3	30.7	1.039	0.392	1.3944	
15 minute winter	1-S3	1.002	1-S4	37.7	1.686	0.262	0.6658	
15 minute winter	1-S4	1.003	1-S5	43.0	1.586	0.264	0.7509	
15 minute winter	1-S5	1.004	1-S7	48.7	2.522	0.104	0.5794	
15 minute winter	1-S6	2.000	1-S7	8.2	1.418	0.276	0.1312	
15 minute winter	1-S7	1.005	1-S23	70.3	3.142	0.139	1.6624	
15 minute winter	1-S8	3.000	1-S13	4.3	2.114	0.190	0.0072	
15 minute winter	1-S8 MOCK	3.000A	1-S9	4.5	0.218	0.005	1.1048	
15 minute winter	1-S9	3.001	1-S10	6.6	0.785	0.427	0.0254	
15 minute winter	1-S9A	20.0	1-S9	3.3	0.568	0.230	0.1048	
15 minute winter	1-S10	3.002	1-S13	6.5	0.406	0.103	0.5810	
15 minute winter	1-S11	4.000	1-S12	4.1	1.039	0.178	0.0584	
15 minute winter	1-S12	4.001	1-S13	7.1	2.025	0.134	0.0386	
15 minute winter	1-S13	3.003	1-S19	16.8	0.759	0.263	0.8052	
15 minute winter	1-S14	5.000	1-S16	9.1	1.548	0.092	0.2629	
15 minute winter	1-S15	6.000	1-S16	6.9	0.783	0.165	0.3627	
15 minute winter	1-S16	5.001	1-S19	30.7	2.128	0.135	1.0629	
15 minute winter	1-S18	7.001	1-S19	8.2	3.463	0.235	0.0095	
15 minute winter	1-S18 MOCK	4.000A	1-S8	4.5	0.317	0.006	0.4837	
15 minute winter	1-S19	3.004	1-S22	53.6	0.915	0.489	3.2613	
15 minute winter	1-S20	8.000	1-S21	5.2	0.806	0.306	0.1757	
15 minute winter	1-S21	8.001	1-S22	8.5	1.348	0.303	0.0598	
15 minute winter	1-S22	3.005	1-S23	59.8	1.060	0.546	1.2143	
15 minute winter	1-S23	1.006	1-S42	123.4	1.170	0.549	8.0891	

Results for 2 year Critical Storm Duration. Lowest mass balance: 92.92%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1-S24	10	85.299	0.049	7.6	0.1059	0.0000	OK
15 minute winter	1-S25	10	85.573	0.049	8.1	0.1113	0.0000	OK
15 minute winter	1-S26	10	84.774	0.076	26.0	0.1840	0.0000	OK
15 minute winter	1-S27	11	83.192	0.076	29.5	0.1355	0.0000	OK
15 minute winter	1-S28	11	82.532	0.120	35.9	0.2487	0.0000	OK
15 minute winter	1-S53	11	82.311	0.108	36.1	0.1549	0.0000	OK
15 minute winter	1-S29	11	81.830	0.150	39.5	0.2615	0.0000	OK
15 minute winter	1-S30	10	85.077	0.083	16.3	0.2412	0.0000	OK
15 minute winter	1-S31	10	85.291	0.065	10.4	0.1678	0.0000	OK
15 minute winter	1-S32	10	84.642	0.086	35.3	0.1965	0.0000	OK
15 minute winter	1-S33	10	83.653	0.078	50.8	0.2294	0.0000	OK
15 minute winter	1-S34	10	83.216	0.051	11.1	0.1359	0.0000	OK
15 minute winter	1-S35	11	81.544	0.111	99.2	0.1257	0.0000	OK
15 minute winter	1-S36	11	82.957	0.040	9.6	0.1183	0.0000	OK
15 minute winter	1-S36 MOCK	11	82.973	0.041	9.0	0.0580	0.0000	OK
15 minute winter	1-S37	13	82.061	0.040	9.2	0.0573	0.0000	OK
15 minute winter	1-S38	10	81.709	0.059	9.2	0.1403	0.0000	OK
15 minute winter	1-S54	10	81.443	0.062	9.1	0.0884	0.0000	OK
15 minute winter	1-S39	10	81.978	0.034	8.1	0.0915	0.0000	OK
15 minute winter	1-S40	11	81.596	0.042	7.8	0.0602	0.0000	OK
15 minute winter	1-S41	11	81.206	0.077	16.7	0.1097	0.0000	OK
15 minute winter	1-S42	12	80.255	0.316	235.9	0.5583	0.0000	OK
15 minute winter	1-S43	12	80.030	0.151	235.9	0.2164	0.0000	OK
15 minute winter	1-S44	10	79.277	0.041	2.6	0.0786	0.0000	OK
15 minute winter	1-S45	12	79.091	0.341	235.6	0.8668	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1-S24	9.000	1-S26	7.5	0.835	0.104	0.2650	
15 minute winter	1-S25	10.000	1-S26	8.0	1.651	0.213	0.0828	
15 minute winter	1-S26	9.001	1-S27	25.6	2.193	0.235	0.4249	
15 minute winter	1-S27	9.002	1-S28	29.3	1.471	0.141	0.4085	
15 minute winter	1-S28	9.003	1-S53	36.1	1.468	0.300	0.4404	
15 minute winter	1-S53	9.004	1-S29	36.2	1.265	0.284	1.1547	
15 minute winter	1-S29	9.005	1-S35	38.5	1.140	0.463	1.0385	
15 minute winter	1-S30	11.000	1-S32	15.8	1.216	0.278	0.3976	
15 minute winter	1-S31	12.000	1-S32	10.2	1.414	0.369	0.1569	
15 minute winter	1-S32	11.001	1-S33	34.8	2.151	0.168	0.4270	
15 minute winter	1-S33	11.002	1-S35	50.4	2.379	0.097	0.6980	
15 minute winter	1-S34	13.000	1-S35	10.8	1.606	0.111	0.3089	
15 minute winter	1-S35	9.006	1-S42	99.2	3.920	0.158	0.3092	
15 minute winter	1-S36	14.000	1-S37	9.2	0.420	0.014	1.7529	
15 minute winter	1-S36 MOCK	8.000A	1-S18	8.7	0.408	0.014	1.3913	
15 minute winter	1-S37	14.001	1-S42	8.2	2.216	0.148	0.0599	
15 minute winter	1-S38	15.000	1-S54	9.1	1.061	0.144	0.1563	
15 minute winter	1-S54	15.001	1-S41	8.9	0.891	0.165	0.2388	
15 minute winter	1-S39	16.000	1-S40	7.8	0.374	0.010	0.5743	
15 minute winter	1-S40	16.001	1-S41	7.7	2.052	0.141	0.0140	
15 minute winter	1-S41	15.002	1-S42	16.5	1.410	0.240	0.4483	
15 minute winter	1-S42	1.007	1-S43	235.9	2.155	0.556	3.2414	
15 minute winter	1-S43	1.008	1-S45	235.6	2.681	0.113	2.0293	
15 minute winter	1-S44	20.000	1-S50	2.6	0.529	0.167	0.0736	
15 minute winter	1-S45	1.009	1-S47	234.9	1.259	0.301	2.3398	

Results for 2 year Critical Storm Duration. Lowest mass balance: 92.92%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1-S49	11	81.679	0.026	9.2	0.0752	0.0000	OK
15 minute winter	1-S50	12	79.233	0.080	11.4	0.1149	0.0000	OK
360 minute winter	1-S46 TANK	304	78.926	0.109	19.4	66.7743	0.0000	OK
15 minute winter	1-S47	12	79.022	0.322	244.0	0.8198	0.0000	OK
360 minute winter	1-S48 BASIN A	304	78.926	0.426	51.6	248.6819	0.0000	OK
360 minute winter	1-S51HB	304	78.926	0.505	11.4	0.8918	0.0000	SURCHARGED
120 minute winter	1-S55	88	78.211	0.086	10.9	0.1525	0.0000	OK
120 minute winter	1-S52 OUTFALL	88	78.172	0.078	10.9	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1-S49	18.000	1-S50	8.9	0.373	0.006	1.8267	
15 minute winter	1-S50	18.001	1-S47	9.2	0.993	0.521	0.1564	
360 minute winter	1-S46 TANK	19.000	1-S47	-19.4	-0.287	-0.187	2.3251	
15 minute winter	1-S47	1.010	1-S48 BASIN A	222.1	1.334	0.329	2.7859	
360 minute winter	1-S48 BASIN A	1.011	1-S51HB	11.4	0.168	0.029	5.5529	
360 minute winter	1-S51HB	1.012	1-S55	10.9	0.834	0.257	0.5802	
120 minute winter	1-S55	1.013	1-S52 OUTFALL	10.9	0.832	0.262	0.0633	328.4

Results for 30 year +35% CC Critical Storm Duration. Lowest mass balance: 92.92%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1-S1	11	87.715	0.452	69.1	1.1590	0.0000	SURCHARGED
15 minute winter	1-S2	11	87.470	0.538	117.6	1.0755	0.0000	SURCHARGED
15 minute winter	1-S3	11	86.947	0.268	139.9	0.4284	0.0000	OK
15 minute winter	1-S4	11	86.414	0.306	159.3	0.5588	0.0000	OK
15 minute winter	1-S5	11	86.096	0.169	182.1	0.3435	0.0000	OK
15 minute winter	1-S6	11	85.382	0.211	32.0	0.4835	0.0000	SURCHARGED
15 minute winter	1-S7	11	84.505	0.189	262.9	0.4116	0.0000	OK
15 minute winter	1-S8	13	81.915	0.120	17.6	0.1711	0.0000	SURCHARGED
15 minute winter	1-S8 MOCK	10	81.917	0.047	18.1	0.0235	0.0000	OK
15 minute winter	1-S9	14	81.662	0.478	60.1	0.6840	0.0000	SURCHARGED
15 minute winter	1-S9A	14	81.677	0.390	12.9	0.8427	0.0000	FLOOD RISK
15 minute winter	1-S10	12	81.763	0.752	38.5	1.0762	0.0000	SURCHARGED
15 minute winter	1-S11	10	82.449	0.099	16.2	0.1883	0.0000	OK
15 minute winter	1-S12	11	82.190	0.091	27.7	0.1606	0.0000	OK
15 minute winter	1-S13	12	81.794	0.899	55.5	1.0172	0.0000	SURCHARGED
15 minute winter	1-S14	10	84.952	0.095	35.9	0.2290	0.0000	OK
15 minute winter	1-S15	10	83.665	0.134	27.6	0.2877	0.0000	OK
15 minute winter	1-S16	10	83.340	0.153	120.4	0.3189	0.0000	OK
15 minute winter	1-S18	14	82.377	0.126	33.9	0.1804	0.0000	SURCHARGED
15 minute winter	1-S18 MOCK	10	82.375	0.050	18.1	0.0372	0.0000	OK
15 minute winter	1-S19	12	81.785	1.080	159.7	1.5449	0.0000	SURCHARGED
15 minute winter	1-S20	11	83.209	0.332	20.3	0.6683	0.0000	SURCHARGED
15 minute winter	1-S21	11	82.891	0.262	30.3	0.3718	0.0000	SURCHARGED
15 minute winter	1-S22	12	81.535	0.999	154.4	1.4298	0.0000	SURCHARGED
15 minute winter	1-S23	12	81.356	1.035	411.1	1.8280	0.0000	SURCHARGED
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1-S1	1.000	1-S2	63.2	0.946	0.806	4.6584	
15 minute winter	1-S2	1.001	1-S3	111.5	1.593	1.425	3.1659	
15 minute winter	1-S3	1.002	1-S4	138.6	2.211	0.964	1.8581	
15 minute winter	1-S4	1.003	1-S5	158.7	2.176	0.974	1.9627	
15 minute winter	1-S5	1.004	1-S7	182.1	3.533	0.390	1.5405	
15 minute winter	1-S6	2.000	1-S7	28.9	1.833	0.972	0.3984	
15 minute winter	1-S7	1.005	1-S23	263.0	3.551	0.518	5.0028	
15 minute winter	1-S8	3.000	1-S13	17.3	2.690	0.760	0.0273	
15 minute winter	1-S8 MOCK	3.000A	1-S9	17.5	0.298	0.020	8.9024	
15 minute winter	1-S9	3.001	1-S10	38.5	2.187	2.491	0.0533	
15 minute winter	1-S9A	20.0	1-S9	11.3	0.736	0.787	0.2739	
15 minute winter	1-S10	3.002	1-S13	46.4	0.802	0.729	2.4581	
15 minute winter	1-S11	4.000	1-S12	16.1	1.443	0.688	0.1676	
15 minute winter	1-S12	4.001	1-S13	26.4	2.787	0.502	0.1595	
15 minute winter	1-S13	3.003	1-S19	60.5	1.026	0.949	2.4336	
15 minute winter	1-S14	5.000	1-S16	35.2	2.248	0.357	0.7009	
15 minute winter	1-S15	6.000	1-S16	26.8	1.112	0.637	0.9866	
15 minute winter	1-S16	5.001	1-S19	119.4	2.341	0.525	3.0868	
15 minute winter	1-S18	7.001	1-S19	27.4	3.562	0.783	0.0312	
15 minute winter	1-S18 MOCK	4.000A	1-S8	17.6	0.443	0.022	2.1922	
15 minute winter	1-S19	3.004	1-S22	136.4	1.237	1.246	6.1402	
15 minute winter	1-S20	8.000	1-S21	17.8	1.014	1.056	0.4818	
15 minute winter	1-S21	8.001	1-S22	30.0	1.705	1.064	0.1660	
15 minute winter	1-S22	3.005	1-S23	159.6	1.447	1.457	2.3605	
15 minute winter	1-S23	1.006	1-S42	412.4	1.909	1.834	16.5555	

Results for 30 year +35% CC Critical Storm Duration. Lowest mass balance: 92.92%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1-S24	10	85.349	0.099	29.0	0.2136	0.0000	OK
15 minute winter	1-S25	10	85.636	0.112	31.0	0.2576	0.0000	OK
15 minute winter	1-S26	10	84.876	0.178	99.9	0.4320	0.0000	OK
15 minute winter	1-S27	12	83.430	0.314	114.7	0.5633	0.0000	SURCHARGED
15 minute winter	1-S28	12	83.211	0.799	133.6	1.6538	0.0000	SURCHARGED
15 minute winter	1-S53	12	82.907	0.704	124.4	1.0070	0.0000	SURCHARGED
15 minute winter	1-S29	12	82.317	0.637	134.7	1.1107	0.0000	SURCHARGED
15 minute winter	1-S30	11	85.257	0.263	62.6	0.7596	0.0000	SURCHARGED
15 minute winter	1-S31	11	85.803	0.577	39.7	1.4831	0.0000	SURCHARGED
15 minute winter	1-S32	11	84.742	0.186	127.6	0.4227	0.0000	OK
15 minute winter	1-S33	10	83.728	0.153	186.5	0.4492	0.0000	OK
15 minute winter	1-S34	10	83.271	0.106	42.6	0.2815	0.0000	OK
15 minute winter	1-S35	11	81.677	0.244	358.9	0.2755	0.0000	OK
15 minute winter	1-S36	11	82.996	0.079	36.8	0.2320	0.0000	OK
15 minute winter	1-S36 MOCK	10	83.012	0.080	34.6	0.1134	0.0000	OK
15 minute winter	1-S37	12	82.105	0.084	35.7	0.1205	0.0000	OK
15 minute winter	1-S38	10	81.777	0.127	35.1	0.3034	0.0000	OK
15 minute winter	1-S54	10	81.519	0.138	34.7	0.1977	0.0000	OK
15 minute winter	1-S39	10	82.013	0.069	31.0	0.1875	0.0000	OK
15 minute winter	1-S40	11	81.649	0.095	30.4	0.1361	0.0000	OK
15 minute winter	1-S41	11	81.308	0.179	63.9	0.2568	0.0000	OK
15 minute winter	1-S42	11	80.718	0.779	854.4	1.3765	0.0000	SURCHARGED
15 minute winter	1-S43	12	80.243	0.364	854.5	0.5203	0.0000	OK
480 minute winter	1-S44	480	79.491	0.255	1.1	0.4840	0.0000	SURCHARGED
15 minute winter	1-S45	12	79.548	0.798	857.4	2.0300	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1-S24	9.000	1-S26	28.7	1.155	0.402	0.7392	
15 minute winter	1-S25	10.000	1-S26	30.6	2.256	0.818	0.2323	
15 minute winter	1-S26	9.001	1-S27	99.6	2.968	0.914	1.2899	
15 minute winter	1-S27	9.002	1-S28	107.7	1.817	0.518	1.4304	
15 minute winter	1-S28	9.003	1-S53	124.4	1.769	1.036	1.2606	
15 minute winter	1-S53	9.004	1-S29	123.5	1.753	0.968	2.7999	
15 minute winter	1-S29	9.005	1-S35	134.4	1.909	1.618	2.1114	
15 minute winter	1-S30	11.000	1-S32	59.3	1.568	1.041	1.1708	
15 minute winter	1-S31	12.000	1-S32	34.8	1.976	1.263	0.3834	
15 minute winter	1-S32	11.001	1-S33	127.7	2.950	0.617	1.1380	
15 minute winter	1-S33	11.002	1-S35	185.9	3.303	0.357	1.8798	
15 minute winter	1-S34	13.000	1-S35	41.8	2.318	0.431	0.8294	
15 minute winter	1-S35	9.006	1-S42	357.5	4.724	0.569	1.1353	
15 minute winter	1-S36	14.000	1-S37	35.7	0.605	0.054	4.7553	
15 minute winter	1-S36 MOCK	8.000A	1-S18	33.9	0.590	0.054	5.3980	
15 minute winter	1-S37	14.001	1-S42	33.6	2.965	0.605	0.2249	
15 minute winter	1-S38	15.000	1-S54	34.7	1.426	0.550	0.4455	
15 minute winter	1-S54	15.001	1-S41	34.1	1.181	0.628	0.6800	
15 minute winter	1-S39	16.000	1-S40	30.4	0.506	0.041	1.6697	
15 minute winter	1-S40	16.001	1-S41	29.9	2.631	0.544	0.0461	
15 minute winter	1-S41	15.002	1-S42	65.4	1.890	0.952	1.4113	
15 minute winter	1-S42	1.007	1-S43	854.5	2.821	2.015	8.0214	
15 minute winter	1-S43	1.008	1-S45	857.4	2.786	0.411	5.9098	
480 minute winter	1-S44	20.000	1-S50	1.1	0.288	0.072	0.1964	
15 minute winter	1-S45	1.009	1-S47	859.3	1.958	1.101	5.3655	

Results for 30 year +35% CC Critical Storm Duration. Lowest mass balance: 92.92%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1-S49	10	81.706	0.053	35.2	0.1564	0.0000	OK
480 minute winter	1-S50	480	79.491	0.338	5.0	0.4833	0.0000	SURCHARGED
480 minute winter	1-S46 TANK	480	79.491	0.674	52.2	413.1904	0.0000	SURCHARGED
480 minute winter	1-S47	480	79.491	0.791	122.6	2.0123	0.0000	SURCHARGED
480 minute winter	1-S48 BASIN A	480	79.491	0.991	82.0	802.5629	0.0000	SURCHARGED
480 minute winter	1-S51HB	480	79.491	1.070	54.1	1.8900	0.0000	SURCHARGED
480 minute winter	1-S55	176	78.211	0.086	10.9	0.1525	0.0000	OK
480 minute winter	1-S52 OUTFALL	176	78.172	0.078	10.9	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1-S49	18.000	1-S50	34.1	0.513	0.025	13.4079	
480 minute winter	1-S50	18.001	1-S47	5.0	0.818	0.282	0.2958	
480 minute winter	1-S46 TANK	19.000	1-S47	-52.2	-0.481	-0.505	3.1469	
480 minute winter	1-S47	1.010	1-S48 BASIN A	73.0	0.863	0.108	7.3329	
480 minute winter	1-S48 BASIN A	1.011	1-S51HB	54.1	0.215	0.137	6.7008	
480 minute winter	1-S51HB	1.012	1-S55	10.9	0.834	0.257	0.5802	
480 minute winter	1-S55	1.013	1-S52 OUTFALL	10.9	0.832	0.262	0.0633	1519.0

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 92.92%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1-S1	12	88.735	1.472	90.6	3.7704	0.0000	SURCHARGED
15 minute winter	1-S2	12	88.371	1.439	145.9	2.8765	0.0000	SURCHARGED
15 minute winter	1-S3	12	87.480	0.801	176.2	1.2783	0.0000	SURCHARGED
15 minute winter	1-S4	11	86.562	0.454	201.1	0.8287	0.0000	SURCHARGED
15 minute winter	1-S5	11	86.120	0.193	229.1	0.3924	0.0000	OK
15 minute winter	1-S6	11	85.797	0.626	42.0	1.4370	0.0000	SURCHARGED
15 minute winter	1-S7	11	84.545	0.229	333.4	0.4994	0.0000	OK
15 minute winter	1-S8	14	82.106	0.311	33.2	0.4445	0.0000	SURCHARGED
15 minute winter	1-S8 MOCK	15	81.925	0.055	23.8	0.0276	0.0000	OK
15 minute winter	1-S9	15	81.919	0.735	83.8	1.0523	0.0000	SURCHARGED
15 minute winter	1-S9A	15	81.939	0.652	17.0	1.4077	0.0000	FLOOD RISK
15 minute winter	1-S10	12	82.133	1.122	52.0	1.6050	0.0000	SURCHARGED
15 minute winter	1-S11	12	82.674	0.324	21.2	0.6133	0.0000	SURCHARGED
15 minute winter	1-S12	12	82.533	0.434	35.7	0.7644	0.0000	SURCHARGED
15 minute winter	1-S13	12	82.207	1.312	72.0	1.4836	0.0000	SURCHARGED
15 minute winter	1-S14	10	84.966	0.109	47.1	0.2622	0.0000	OK
15 minute winter	1-S15	10	83.694	0.163	36.3	0.3495	0.0000	OK
15 minute winter	1-S16	11	83.410	0.223	158.9	0.4644	0.0000	OK
15 minute winter	1-S18	15	82.473	0.222	44.0	0.3179	0.0000	SURCHARGED
15 minute winter	1-S18 MOCK	10	82.383	0.058	23.8	0.0430	0.0000	OK
15 minute winter	1-S19	12	82.233	1.528	166.5	2.1866	0.0000	SURCHARGED
15 minute winter	1-S20	12	83.600	0.723	26.6	1.4550	0.0000	SURCHARGED
15 minute winter	1-S21	11	83.093	0.464	38.6	0.6585	0.0000	SURCHARGED
15 minute winter	1-S22	12	82.007	1.471	169.5	2.1053	0.0000	SURCHARGED
15 minute winter	1-S23	12	81.823	1.502	483.2	2.6537	0.0000	SURCHARGED
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1-S1	1.000	1-S2	77.2	1.097	0.986	4.6584	
15 minute winter	1-S2	1.001	1-S3	141.1	2.005	1.803	3.3121	
15 minute winter	1-S3	1.002	1-S4	174.5	2.478	1.214	2.0948	
15 minute winter	1-S4	1.003	1-S5	200.1	2.209	1.228	2.2750	
15 minute winter	1-S5	1.004	1-S7	228.3	3.673	0.488	1.8962	
15 minute winter	1-S6	2.000	1-S7	37.0	2.100	1.241	0.3982	
15 minute winter	1-S7	1.005	1-S23	330.0	3.506	0.650	5.4535	
15 minute winter	1-S8	3.000	1-S13	20.7	2.827	0.908	0.0273	
15 minute winter	1-S8 MOCK	3.000A	1-S9	23.0	0.312	0.026	9.0557	
15 minute winter	1-S9	3.001	1-S10	-48.7	-2.765	-3.150	0.0533	
15 minute winter	1-S9A	20.0	1-S9	12.3	0.767	0.852	0.2739	
15 minute winter	1-S10	3.002	1-S13	-52.0	0.811	-0.817	2.4581	
15 minute winter	1-S11	4.000	1-S12	20.5	1.468	0.878	0.2571	
15 minute winter	1-S12	4.001	1-S13	29.4	2.820	0.560	0.1950	
15 minute winter	1-S13	3.003	1-S19	74.6	1.125	1.170	2.4336	
15 minute winter	1-S14	5.000	1-S16	47.2	2.342	0.479	1.0284	
15 minute winter	1-S15	6.000	1-S16	35.1	1.172	0.837	1.2296	
15 minute winter	1-S16	5.001	1-S19	152.3	2.278	0.670	3.6661	
15 minute winter	1-S18	7.001	1-S19	29.3	4.194	0.836	0.0312	
15 minute winter	1-S18 MOCK	4.000A	1-S8	23.2	0.462	0.030	8.7439	
15 minute winter	1-S19	3.004	1-S22	146.6	1.329	1.338	6.1402	
15 minute winter	1-S20	8.000	1-S21	22.5	1.281	1.335	0.4818	
15 minute winter	1-S21	8.001	1-S22	37.7	2.142	1.337	0.1659	
15 minute winter	1-S22	3.005	1-S23	175.7	1.593	1.604	2.3605	
15 minute winter	1-S23	1.006	1-S42	483.4	2.238	2.150	16.5555	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 92.92%

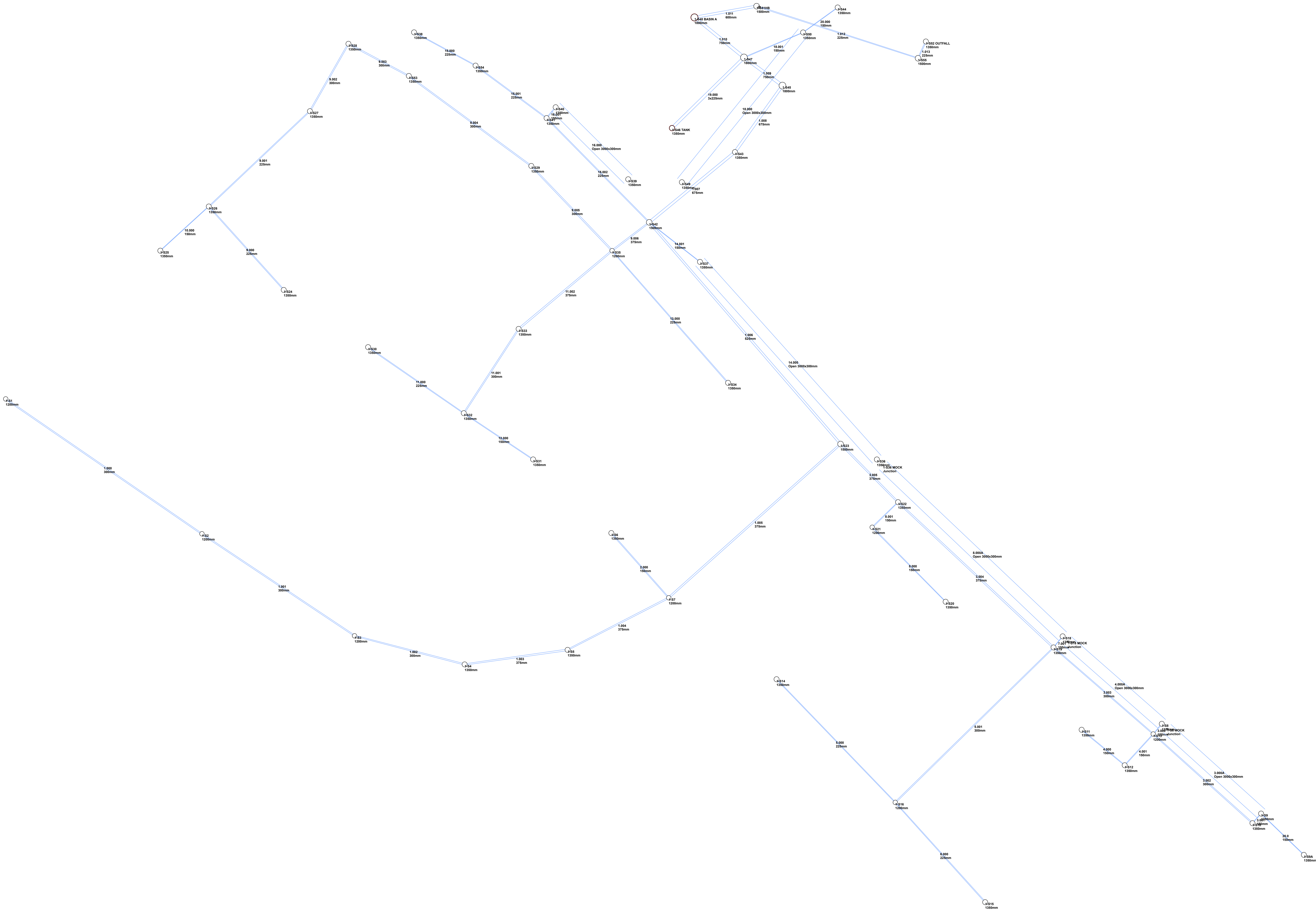
Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1-S24	12	85.681	0.431	38.1	0.9332	0.0000	SURCHARGED
15 minute winter	1-S25	12	86.201	0.677	40.6	1.5514	0.0000	SURCHARGED
15 minute winter	1-S26	12	85.576	0.878	121.5	2.1329	0.0000	SURCHARGED
15 minute winter	1-S27	12	84.028	0.912	122.8	1.6334	0.0000	SURCHARGED
15 minute winter	1-S28	12	83.740	1.328	148.5	2.7501	0.0000	FLOOD RISK
15 minute winter	1-S53	12	83.350	1.147	140.0	1.6408	0.0000	FLOOD RISK
15 minute winter	1-S29	12	82.608	0.928	152.8	1.6179	0.0000	SURCHARGED
15 minute winter	1-S30	11	85.623	0.629	82.1	1.8178	0.0000	SURCHARGED
15 minute winter	1-S31	12	86.354	1.128	52.1	2.8967	0.0000	FLOOD RISK
15 minute winter	1-S32	11	84.783	0.227	165.2	0.5164	0.0000	OK
15 minute winter	1-S33	11	83.752	0.177	241.2	0.5200	0.0000	OK
15 minute winter	1-S34	10	83.286	0.121	55.9	0.3222	0.0000	OK
15 minute winter	1-S35	12	81.881	0.448	440.9	0.5066	0.0000	SURCHARGED
15 minute winter	1-S36	10	83.007	0.090	48.3	0.2650	0.0000	OK
15 minute winter	1-S36 MOCK	10	83.022	0.090	45.5	0.1266	0.0000	OK
15 minute winter	1-S37	12	82.126	0.105	46.7	0.1509	0.0000	OK
15 minute winter	1-S38	12	81.863	0.213	46.0	0.5083	0.0000	OK
15 minute winter	1-S54	12	81.749	0.368	45.2	0.5272	0.0000	SURCHARGED
15 minute winter	1-S39	10	82.023	0.079	40.7	0.2152	0.0000	OK
15 minute winter	1-S40	13	81.747	0.193	39.9	0.2763	0.0000	SURCHARGED
15 minute winter	1-S41	12	81.599	0.470	72.1	0.6730	0.0000	SURCHARGED
15 minute winter	1-S42	12	80.934	0.995	1015.2	1.7587	0.0000	SURCHARGED
15 minute winter	1-S43	12	80.328	0.449	1016.8	0.6426	0.0000	OK
360 minute winter	1-S44	344	79.659	0.423	1.8	0.8037	0.0000	SURCHARGED
480 minute winter	1-S45	408	79.703	0.953	150.5	2.4245	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1-S24	9.000	1-S26	34.8	1.128	0.487	1.1672	
15 minute winter	1-S25	10.000	1-S26	36.6	2.236	0.978	0.3021	
15 minute winter	1-S26	9.001	1-S27	104.1	2.975	0.956	1.4464	
15 minute winter	1-S27	9.002	1-S28	116.4	1.808	0.561	1.4304	
15 minute winter	1-S28	9.003	1-S53	140.0	1.988	1.165	1.2606	
15 minute winter	1-S53	9.004	1-S29	142.6	2.025	1.118	2.7999	
15 minute winter	1-S29	9.005	1-S35	154.9	2.200	1.865	2.1568	
15 minute winter	1-S30	11.000	1-S32	78.0	1.962	1.369	1.1974	
15 minute winter	1-S31	12.000	1-S32	43.8	2.486	1.589	0.3831	
15 minute winter	1-S32	11.001	1-S33	165.3	3.083	0.799	1.4082	
15 minute winter	1-S33	11.002	1-S35	241.4	3.384	0.464	2.5743	
15 minute winter	1-S34	13.000	1-S35	55.6	2.409	0.574	1.4006	
15 minute winter	1-S35	9.006	1-S42	426.9	4.667	0.679	1.3462	
15 minute winter	1-S36	14.000	1-S37	46.7	0.646	0.071	6.1387	
15 minute winter	1-S36 MOCK	8.000A	1-S18	44.0	0.614	0.070	11.2162	
15 minute winter	1-S37	14.001	1-S42	41.4	2.840	0.746	0.2496	
15 minute winter	1-S38	15.000	1-S54	45.2	1.475	0.716	0.7202	
15 minute winter	1-S54	15.001	1-S41	40.1	1.218	0.739	0.9186	
15 minute winter	1-S39	16.000	1-S40	39.9	0.529	0.054	3.7814	
15 minute winter	1-S40	16.001	1-S41	37.6	2.567	0.682	0.0652	
15 minute winter	1-S41	15.002	1-S42	68.5	1.809	0.997	1.5224	
15 minute winter	1-S42	1.007	1-S43	1016.8	3.048	2.398	8.8363	
15 minute winter	1-S43	1.008	1-S45	1017.4	3.050	0.487	6.5102	
360 minute winter	1-S44	20.000	1-S50	1.8	0.327	0.118	0.1964	
480 minute winter	1-S45	1.009	1-S47	149.3	0.845	0.191	5.4909	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 92.92%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1-S49	10	81.714	0.061	46.2	0.1802	0.0000	OK
480 minute winter	1-S50	432	79.659	0.506	6.4	0.7239	0.0000	SURCHARGED
480 minute winter	1-S46 TANK	464	79.852	1.035	55.7	491.2266	0.0000	SURCHARGED
480 minute winter	1-S47	408	79.682	0.982	152.3	2.4992	0.0000	SURCHARGED
480 minute winter	1-S48 BASIN A	432	79.657	1.157	117.1	1016.2220	0.0000	SURCHARGED
480 minute winter	1-S51HB	432	79.657	1.236	55.4	2.1836	0.0000	SURCHARGED
720 minute winter	1-S55	240	78.211	0.086	10.9	0.1525	0.0000	OK
720 minute winter	1-S52 OUTFALL	240	78.172	0.078	10.9	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1-S49	18.000	1-S50	44.9	0.550	0.033	13.8947	
480 minute winter	1-S50	18.001	1-S47	6.2	0.838	0.349	0.2958	
480 minute winter	1-S46 TANK	19.000	1-S47	-55.7	-0.491	-0.539	3.1469	
480 minute winter	1-S47	1.010	1-S48 BASIN A	115.0	0.839	0.170	7.3329	
480 minute winter	1-S48 BASIN A	1.011	1-S51HB	55.4	0.212	0.140	6.7008	
480 minute winter	1-S51HB	1.012	1-S55	10.9	0.834	0.257	0.5801	
720 minute winter	1-S55	1.013	1-S52 OUTFALL	10.9	0.832	0.262	0.0633	1926.4



Design Settings

Frequency of use (kDU)	0.00	Minimum Velocity (m/s)	0.75
Flow per dwelling per day (l/day)	4000	Connection Type	Level Soffits
Domestic Flow (l/s/ha)	0.0	Minimum Backdrop Height (m)	0.500
Industrial Flow (l/s/ha)	0.0	Preferred Cover Depth (m)	1.200
Additional Flow (%)	0	Include Intermediate Ground	✓

Nodes

Name	Dwellings	Add Inflow (l/s)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1-F1	6		89.256	1350	568603.135	245745.287	1.350
1-F2	4		89.561	1200	568640.847	245719.744	2.274
1-F3	2		89.259	1200	568679.667	245693.840	2.283
1-F4	3		88.419	1350	568711.023	245686.742	1.658
1-F5			87.530	1350	568736.771	245691.204	1.439
1-F6	5		86.457	1350	568761.001	245704.259	1.507
1-F8	6		86.319	1200	568795.281	245680.814	1.748
1-F9	5		85.154	1350	568843.836	245629.097	1.119
1-F10	7		85.897	1200	568820.286	245654.777	2.341
1-F11	3		83.347	1350	568879.082	245662.494	1.012
1-F12			83.627	1350	568865.779	245673.545	1.407
1-F14A		32.9	83.495	1350	568866.522	245685.888	1.407
1-F14			83.638	1350	568858.547	245692.799	1.780
1-F15	5		84.333	1350	568827.162	245710.164	1.349
1-F16	1		84.434	1200	568815.946	245721.380	1.950
1-F17			84.195	1350	568822.280	245728.008	2.626
1-F18			84.063	1350	568806.312	245744.242	2.624
1-F19	7		86.728	1350	568743.386	245724.181	1.350
1-F20	5		86.615	1350	568724.136	245741.389	1.495
1-F21	13		86.876	1350	568668.109	245780.076	1.453
1-F22	4		86.208	1200	568705.371	245754.321	1.804
1-F23	4		85.295	1350	568719.435	245776.497	1.412
1-F26	3		84.395	1200	568777.886	245759.817	1.716
1-F24	5		83.517	1350	568713.143	245826.550	0.950
1-F25			83.700	1350	568725.881	245817.379	1.330
1-F27			83.724	1200	568744.154	245798.249	1.734
1-F35			82.994	1350	568768.109	245809.678	1.517
1-F28			83.312	1350	568752.311	245806.779	2.345
1-F29			82.908	1200	568729.853	245829.354	2.123
1-F30			82.965	1350	568708.328	245845.162	2.333
1-F31	3		87.279	1350	568627.877	245795.460	1.776
1-F32	2		86.072	1200	568645.895	245811.698	1.855
1-F33	2		84.830	1350	568667.455	245831.981	1.575
1-F34			83.269	1350	568684.413	245859.635	2.797
F43			83.286	1350	568668.666	245864.706	2.874

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)
1.000	1-F1	1-F2	45.548	1.500	87.906	87.337	0.569	80.0	100
1.001	1-F2	1-F3	46.669	1.500	87.287	86.976	0.311	150.1	150
1.002	1-F3	1-F4	32.149	1.500	86.976	86.761	0.215	149.5	150
1.003	1-F4	1-F5	26.132	1.500	86.761	86.108	0.653	40.0	150
1.004	1-F5	1-F6	27.523	1.500	86.091	84.950	1.141	24.1	150
1.005	1-F6	1-F18	60.430	1.500	84.950	81.664	3.286	18.4	150
2.000	1-F8	1-F10	36.100	1.500	84.571	83.606	0.965	37.4	100
3.000	1-F9	1-F10	34.843	1.500	84.035	83.606	0.429	81.2	100
2.001	1-F10	1-F14	53.940	1.500	83.556	82.083	1.473	36.6	150
4.000	1-F11	1-F12	17.294	1.500	82.335	82.220	0.115	150.4	150
4.001	1-F12	1-F14	20.567	1.500	82.220	82.083	0.137	150.1	150
5.000	1-F14B	1-F14	11.982	1.500	81.947	81.867	0.080	149.8	375
6.000	1-F14A	1-F14	10.553	1.500	82.088	82.017	0.071	148.6	225
2.002	1-F14	1-F17	50.547	1.500	81.858	81.569	0.289	174.9	375
7.000	1-F15	1-F16	15.862	1.500	82.984	82.484	0.500	31.7	150
7.001	1-F16	1-F17	9.168	1.500	82.484	81.803	0.681	13.5	150
2.003	1-F17	1-F18	22.771	1.500	81.569	81.439	0.130	175.2	375
1.006	1-F18	1-F28	82.626	1.500	81.439	80.967	0.472	175.1	375
8.000	1-F19	1-F20	25.820	1.500	85.378	85.120	0.258	100.1	150
8.001	1-F20	1-F22	22.790	1.500	85.120	84.404	0.716	31.8	150
9.000	1-F21	1-F22	45.297	1.500	85.423	84.404	1.019	44.5	150
8.002	1-F22	1-F23	26.260	1.500	84.404	83.883	0.521	50.4	150
8.003	1-F23	1-F27	32.927	1.500	83.883	81.990	1.893	17.4	150
10.000	1-F26	1-F27	51.136	1.500	82.679	82.040	0.639	80.0	100

Name	Pro Vel @ 1/3 Q (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Dwellings (ha)	Σ Units (ha)	Σ Add Inflow (ha)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	0.258	0.744	5.8	0.3	1.250	2.124	0.000	6	0.0	0.0	15	0.373
1.001	0.234	0.714	12.6	0.5	2.124	2.133	0.000	10	0.0	0.0	20	0.335
1.002	0.250	0.715	12.6	0.6	2.133	1.508	0.000	12	0.0	0.0	22	0.355
1.003	0.425	1.387	24.5	0.7	1.508	1.272	0.000	15	0.0	0.0	18	0.602
1.004	0.505	1.788	31.6	0.7	1.289	1.357	0.000	15	0.0	0.0	16	0.706
1.005	0.604	2.049	36.2	0.9	1.357	2.249	0.000	20	0.0	0.0	17	0.850
2.000	0.330	1.090	8.6	0.3	1.648	2.191	0.000	6	0.0	0.0	13	0.489
3.000	0.239	0.738	5.8	0.2	1.019	2.191	0.000	5	0.0	0.0	14	0.344
2.001	0.461	1.451	25.6	0.8	2.191	1.405	0.000	18	0.0	0.0	19	0.657
4.000	0.152	0.713	12.6	0.1	0.862	1.257	0.000	3	0.0	0.0	11	0.225
4.001	0.152	0.714	12.6	0.1	1.257	1.405	0.000	3	0.0	0.0	11	0.225
5.000						1.396						
6.000	0.815	0.940	37.4	32.9	1.182	1.396	0.000	0	0.0	32.9	164	1.060
2.002	0.741	1.211	133.8	33.9	1.405	2.251	0.000	21	0.0	32.9	129	1.014
7.000	0.314	1.559	27.5	0.2	1.199	1.800	0.000	5	0.0	0.0	10	0.459
7.001	0.448	2.396	42.3	0.3	1.800	2.242	0.000	6	0.0	0.0	9	0.648
2.003	0.741	1.210	133.7	34.2	2.251	2.249	0.000	27	0.0	32.9	129	1.016
1.006	0.750	1.211	133.7	35.1	2.249	1.970	0.000	47	0.0	32.9	131	1.022
8.000	0.234	0.875	15.5	0.3	1.200	1.345	0.000	7	0.0	0.0	16	0.344
8.001	0.419	1.556	27.5	0.6	1.345	1.654	0.000	12	0.0	0.0	15	0.598
9.000	0.387	1.316	23.3	0.6	1.303	1.654	0.000	13	0.0	0.0	17	0.545
8.002	0.474	1.236	21.8	1.3	1.654	1.262	0.000	29	0.0	0.0	25	0.677
8.003	0.720	2.107	37.2	1.5	1.262	1.584	0.000	33	0.0	0.0	21	1.013
10.000	0.206	0.744	5.8	0.1	1.616	1.584	0.000	3	0.0	0.0	11	0.304

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)
11.000	1-F24	1-F25	15.696	1.500	82.567	82.370	0.197	79.7	100
11.001	1-F25	1-F27	26.455	1.500	82.370	82.040	0.330	80.2	100
8.004	1-F27	1-F28	11.802	1.500	81.990	81.192	0.798	14.8	150
12.000	1-F35	1-F28	16.062	1.500	81.477	81.117	0.360	44.6	225
1.007	1-F28	1-F29	31.843	1.500	80.967	80.785	0.182	175.0	375
1.008	1-F29	1-F30	26.706	1.500	80.785	80.632	0.153	174.5	375
1.009	1-F30	1-F34	27.953	1.500	80.632	80.472	0.160	174.7	375
13.000	1-F31	1-F32	24.255	1.500	85.503	84.217	1.286	18.9	100
13.001	1-F32	1-F33	29.601	1.500	84.217	83.255	0.962	30.8	100
13.002	1-F33	1-F34	32.439	1.500	83.255	80.747	2.508	12.9	100
1.010	1-F34	F43	16.543	1.500	80.472	80.412	0.060	275.7	375

Name	Pro Vel @ 1/3 Q (m/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Dwellings (ha)	Σ Units (ha)	Σ Add Inflow (ha)	Pro Depth (mm)	Pro Velocity (m/s)
11.000	0.242	0.745	5.9	0.2	0.850	1.230	0.000	5	0.0	0.0	14	0.347
11.001	0.241	0.743	5.8	0.2	1.230	1.584	0.000	5	0.0	0.0	14	0.346
8.004	0.806	2.286	40.4	1.9	1.584	1.970	0.000	41	0.0	0.0	23	1.159
12.000	0.000	1.721	68.4	0.0	1.292	1.970	0.000	0	0.0	0.0	0	0.000
1.007	0.758	1.211	133.7	37.0	1.970	1.748	0.000	88	0.0	32.9	134	1.037
1.008	0.759	1.212	133.9	37.0	1.748	1.958	0.000	88	0.0	32.9	134	1.038
1.009	0.759	1.212	133.8	37.0	1.958	2.422	0.000	88	0.0	32.9	134	1.038
13.000	0.350	1.537	12.1	0.1	1.676	1.755	0.000	3	0.0	0.0	8	0.502
13.001	0.335	1.203	9.4	0.2	1.755	1.475	0.000	5	0.0	0.0	11	0.494
13.002	0.519	1.858	14.6	0.3	1.475	2.422	0.000	7	0.0	0.0	11	0.727
1.010	0.646	0.964	106.4	37.3	2.422	2.499	0.000	95	0.0	32.9	153	0.881

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	45.548	80.0	100	Circular	89.256	87.906	1.250	89.561	87.337	2.124
1.001	46.669	150.1	150	Circular	89.561	87.287	2.124	89.259	86.976	2.133
1.002	32.149	149.5	150	Circular	89.259	86.976	2.133	88.419	86.761	1.508
1.003	26.132	40.0	150	Circular	88.419	86.761	1.508	87.530	86.108	1.272
1.004	27.523	24.1	150	Circular	87.530	86.091	1.289	86.457	84.950	1.357
1.005	60.430	18.4	150	Circular	86.457	84.950	1.357	84.063	81.664	2.249
2.000	36.100	37.4	100	Circular	86.319	84.571	1.648	85.897	83.606	2.191
3.000	34.843	81.2	100	Circular	85.154	84.035	1.019	85.897	83.606	2.191
2.001	53.940	36.6	150	Circular	85.897	83.556	2.191	83.638	82.083	1.405

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1-F1	1350	Manhole	Adoptable	1-F2	1200	Manhole	Adoptable
1.001	1-F2	1200	Manhole	Adoptable	1-F3	1200	Manhole	Adoptable
1.002	1-F3	1200	Manhole	Adoptable	1-F4	1350	Manhole	Adoptable
1.003	1-F4	1350	Manhole	Adoptable	1-F5	1350	Manhole	Adoptable
1.004	1-F5	1350	Manhole	Adoptable	1-F6	1350	Manhole	Adoptable
1.005	1-F6	1350	Manhole	Adoptable	1-F18	1350	Manhole	Adoptable
2.000	1-F8	1200	Manhole	Adoptable	1-F10	1200	Manhole	Adoptable
3.000	1-F9	1350	Manhole	Adoptable	1-F10	1200	Manhole	Adoptable
2.001	1-F10	1200	Manhole	Adoptable	1-F14	1350	Manhole	Adoptable

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
4.000	17.294	150.4	150	Circular	83.347	82.335	0.862	83.627	82.220	1.257
4.001	20.567	150.1	150	Circular	83.627	82.220	1.257	83.638	82.083	1.405
5.000	11.982	149.8	375			81.947		83.638	81.867	1.396
6.000	10.553	148.6	225	Circular	83.495	82.088	1.182	83.638	82.017	1.396
2.002	50.547	174.9	375	Circular	83.638	81.858	1.405	84.195	81.569	2.251
7.000	15.862	31.7	150	Circular	84.333	82.984	1.199	84.434	82.484	1.800
7.001	9.168	13.5	150	Circular	84.434	82.484	1.800	84.195	81.803	2.242
2.003	22.771	175.2	375	Circular	84.195	81.569	2.251	84.063	81.439	2.249
1.006	82.626	175.1	375	Circular	84.063	81.439	2.249	83.312	80.967	1.970
8.000	25.820	100.1	150	Circular	86.728	85.378	1.200	86.615	85.120	1.345
8.001	22.790	31.8	150	Circular	86.615	85.120	1.345	86.208	84.404	1.654
9.000	45.297	44.5	150	Circular	86.876	85.423	1.303	86.208	84.404	1.654
8.002	26.260	50.4	150	Circular	86.208	84.404	1.654	85.295	83.883	1.262
8.003	32.927	17.4	150	Circular	85.295	83.883	1.262	83.724	81.990	1.584
10.000	51.136	80.0	100	Circular	84.395	82.679	1.616	83.724	82.040	1.584
11.000	15.696	79.7	100	Circular	83.517	82.567	0.850	83.700	82.370	1.230
11.001	26.455	80.2	100	Circular	83.700	82.370	1.230	83.724	82.040	1.584
8.004	11.802	14.8	150	Circular	83.724	81.990	1.584	83.312	81.192	1.970
12.000	16.062	44.6	225	Circular	82.994	81.477	1.292	83.312	81.117	1.970
1.007	31.843	175.0	375	Circular	83.312	80.967	1.970	82.908	80.785	1.748
1.008	26.706	174.5	375	Circular	82.908	80.785	1.748	82.965	80.632	1.958
1.009	27.953	174.7	375	Circular	82.965	80.632	1.958	83.269	80.472	2.422
13.000	24.255	18.9	100	Circular	87.279	85.503	1.676	86.072	84.217	1.755
13.001	29.601	30.8	100	Circular	86.072	84.217	1.755	84.830	83.255	1.475
13.002	32.439	12.9	100	Circular	84.830	83.255	1.475	83.269	80.747	2.422

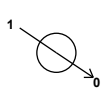
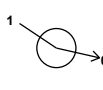
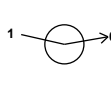
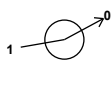
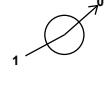
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4.000	1-F11	1350	Manhole	Adoptable	1-F12	1350	Manhole	Adoptable
4.001	1-F12	1350	Manhole	Adoptable	1-F14	1350	Manhole	Adoptable
5.000					1-F14	1350	Manhole	Adoptable
6.000	1-F14A	1350	Manhole	Adoptable	1-F14	1350	Manhole	Adoptable
2.002	1-F14	1350	Manhole	Adoptable	1-F17	1350	Manhole	Adoptable
7.000	1-F15	1350	Manhole	Adoptable	1-F16	1200	Manhole	Adoptable
7.001	1-F16	1200	Manhole	Adoptable	1-F17	1350	Manhole	Adoptable
2.003	1-F17	1350	Manhole	Adoptable	1-F18	1350	Manhole	Adoptable
1.006	1-F18	1350	Manhole	Adoptable	1-F28	1350	Manhole	Adoptable
8.000	1-F19	1350	Manhole	Adoptable	1-F20	1350	Manhole	Adoptable
8.001	1-F20	1350	Manhole	Adoptable	1-F22	1200	Manhole	Adoptable
9.000	1-F21	1350	Manhole	Adoptable	1-F22	1200	Manhole	Adoptable
8.002	1-F22	1200	Manhole	Adoptable	1-F23	1350	Manhole	Adoptable
8.003	1-F23	1350	Manhole	Adoptable	1-F27	1200	Manhole	Adoptable
10.000	1-F26	1200	Manhole	Adoptable	1-F27	1200	Manhole	Adoptable
11.000	1-F24	1350	Manhole	Adoptable	1-F25	1350	Manhole	Adoptable
11.001	1-F25	1350	Manhole	Adoptable	1-F27	1200	Manhole	Adoptable
8.004	1-F27	1200	Manhole	Adoptable	1-F28	1350	Manhole	Adoptable
12.000	1-F35	1350	Manhole	Adoptable	1-F28	1350	Manhole	Adoptable
1.007	1-F28	1350	Manhole	Adoptable	1-F29	1200	Manhole	Adoptable
1.008	1-F29	1200	Manhole	Adoptable	1-F30	1350	Manhole	Adoptable
1.009	1-F30	1350	Manhole	Adoptable	1-F34	1350	Manhole	Adoptable
13.000	1-F31	1350	Manhole	Adoptable	1-F32	1200	Manhole	Adoptable
13.001	1-F32	1200	Manhole	Adoptable	1-F33	1350	Manhole	Adoptable
13.002	1-F33	1350	Manhole	Adoptable	1-F34	1350	Manhole	Adoptable

Pipeline Schedule

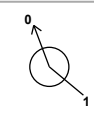
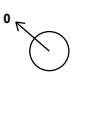
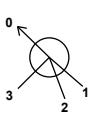
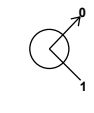
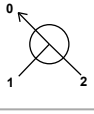
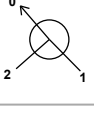
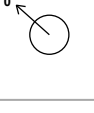
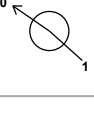
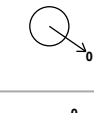
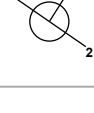
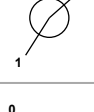
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.010	16.543	275.7	375	Circular	83.269	80.472	2.422	83.286	80.412	2.499

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.010	1-F34	1350	Manhole	Adoptable	F43	1350	Manhole	Adoptable

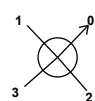
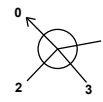
Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
1-F1	568603.135	245745.287	89.256	1.350	1350		0	1.000	87.906	100
1-F2	568640.847	245719.744	89.561	2.274	1200		1	1.000	87.337	100
							0	1.001	87.287	150
1-F3	568679.667	245693.840	89.259	2.283	1200		1	1.001	86.976	150
							0	1.002	86.976	150
1-F4	568711.023	245686.742	88.419	1.658	1350		1	1.002	86.761	150
							0	1.003	86.761	150
1-F5	568736.771	245691.204	87.530	1.439	1350		1	1.003	86.108	150
							0	1.004	86.091	150
1-F6	568761.001	245704.259	86.457	1.507	1350		1	1.004	84.950	150
							0	1.005	84.950	150
1-F8	568795.281	245680.814	86.319	1.748	1200		0	2.000	84.571	100
1-F9	568843.836	245629.097	85.154	1.119	1350		0	3.000	84.035	100
1-F10	568820.286	245654.777	85.897	2.341	1200		1	3.000	83.606	100
							2	2.000	83.606	100
							0	2.001	83.556	150
1-F11	568879.082	245662.494	83.347	1.012	1350		0	4.000	82.335	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections		Link	IL (m)	Dia (mm)	
1-F12	568865.779	245673.545	83.627	1.407	1350		1	4.000	82.220	150	
							0	4.001	82.220	150	
1-F14A	568866.522	245685.888	83.495	1.407	1350						
							0	6.000	82.088	225	
1-F14	568858.547	245692.799	83.638	1.780	1350		1	6.000	82.017	225	
							2	4.001	82.083	150	
							3	2.001	82.083	150	
							0	2.002	81.858	375	
1-F15	568827.162	245710.164	84.333	1.349	1350						
							0	7.000	82.984	150	
1-F16	568815.946	245721.380	84.434	1.950	1200		1	7.000	82.484	150	
							0	7.001	82.484	150	
1-F17	568822.280	245728.008	84.195	2.626	1350		1	7.001	81.803	150	
							2	2.002	81.569	375	
							0	2.003	81.569	375	
1-F18	568806.312	245744.242	84.063	2.624	1350		1	2.003	81.439	375	
							2	1.005	81.664	150	
							0	1.006	81.439	375	
1-F19	568743.386	245724.181	86.728	1.350	1350						
							0	8.000	85.378	150	
1-F20	568724.136	245741.389	86.615	1.495	1350		1	8.000	85.120	150	
							0	8.001	85.120	150	
1-F21	568668.109	245780.076	86.876	1.453	1350						
							0	9.000	85.423	150	
1-F22	568705.371	245754.321	86.208	1.804	1200		1	9.000	84.404	150	
							2	8.001	84.404	150	
							0	8.002	84.404	150	
1-F23	568719.435	245776.497	85.295	1.412	1350		1	8.002	83.883	150	
							0	8.003	83.883	150	
1-F26	568777.886	245759.817	84.395	1.716	1200						
							0	10.000	82.679	100	

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
1-F24	568713.143	245826.550	83.517	0.950	1350		0	11.000	82.567	100
1-F25	568725.881	245817.379	83.700	1.330	1350		1	11.000	82.370	100
						0	11.001	82.370	100	
1-F27	568744.154	245798.249	83.724	1.734	1200		1	11.001	82.040	100
						2	10.000	82.040	100	
						3	8.003	81.990	150	
						0	8.004	81.990	150	
1-F35	568768.109	245809.678	82.994	1.517	1350		0	12.000	81.477	225
1-F28	568752.311	245806.779	83.312	2.345	1350		1	12.000	81.117	225
						2	8.004	81.192	150	
						3	1.006	80.967	375	
						0	1.007	80.967	375	
1-F29	568729.853	245829.354	82.908	2.123	1200		1	1.007	80.785	375
						0	1.008	80.785	375	
1-F30	568708.328	245845.162	82.965	2.333	1350		1	1.008	80.632	375
						0	1.009	80.632	375	
1-F31	568627.877	245795.460	87.279	1.776	1350		0	13.000	85.503	100
1-F32	568645.895	245811.698	86.072	1.855	1200		1	13.000	84.217	100
						0	13.001	84.217	100	
1-F33	568667.455	245831.981	84.830	1.575	1350		1	13.001	83.255	100
						0	13.002	83.255	100	
1-F34	568684.413	245859.635	83.269	2.797	1350		1	13.002	80.747	100
						2	1.009	80.472	375	
						0	1.010	80.472	375	
F43	568668.666	245864.706	83.286	2.874	1350		1	1.010	80.412	375

Simulation Settings

Analysis Speed	Normal	Drain Down Time (mins)
Skip Steady State	x	Foul Event Duration (mins)

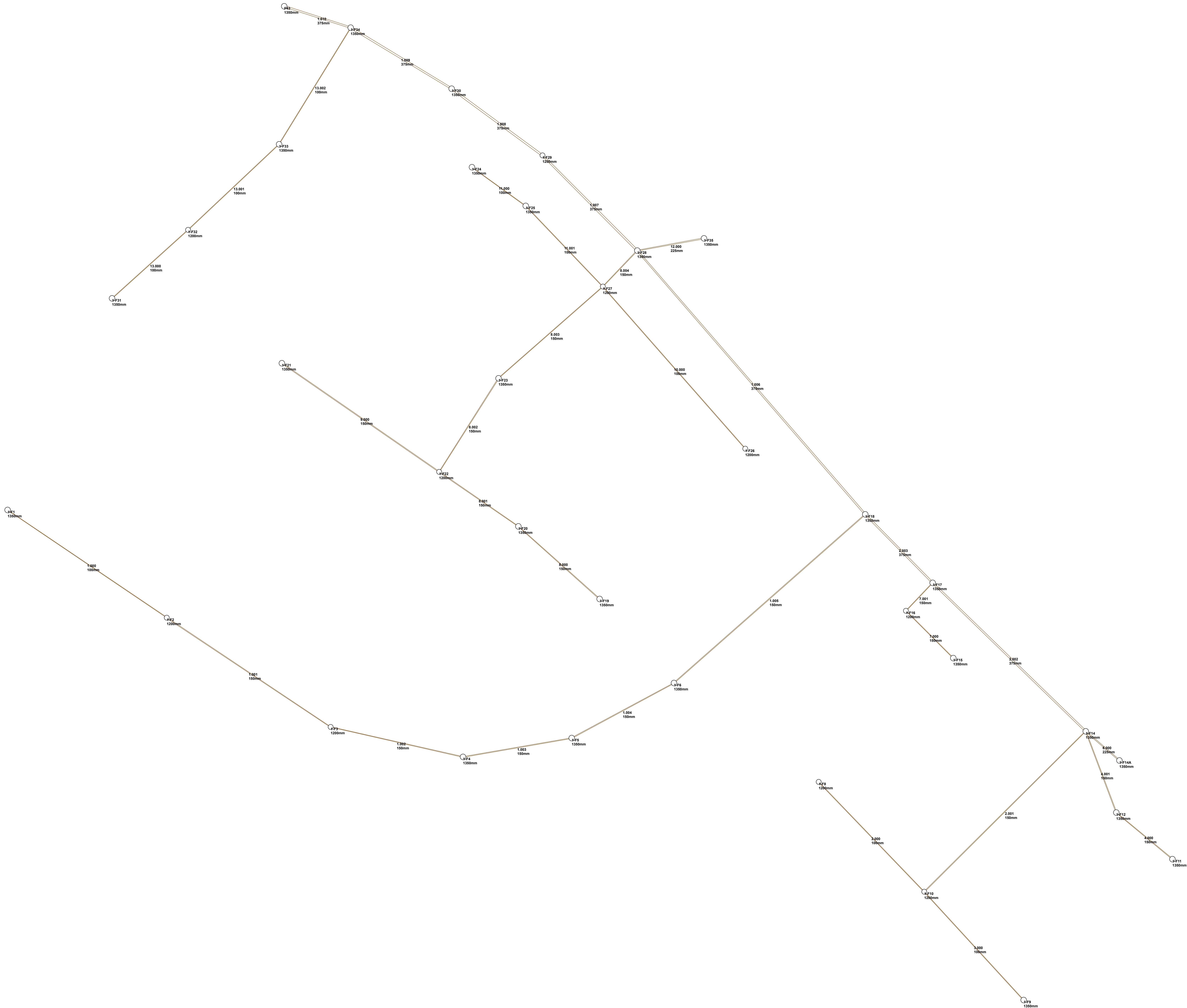
Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Node 1-S51HB Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	0.000
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

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)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	470.0	0.0	0.500	733.8	0.0	1.000	1233.5	0.0	1.500	1565.3	0.0
0.100	520.0	0.0	0.600	789.8	0.0	1.100	1297.9	0.0	1.600	2040.1	0.0
0.200	571.9	0.0	0.700	1046.4	0.0	1.200	1363.2	0.0	1.613	2135.2	0.0
0.300	624.9	0.0	0.800	1107.8	0.0	1.300	1429.6	0.0			
0.400	678.8	0.0	0.900	1170.1	0.0	1.400	1496.9	0.0			



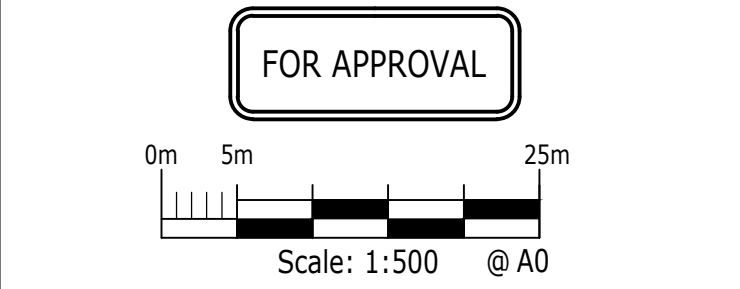
Appendix I

Levels Strategy Drawing



- GENERAL NOTES:
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELATED DRAWINGS ISSUED BY THE ENGINEER.
 2. DO NOT SCALE FROM THIS DRAWING. WORK FROM FIGURED DIMENSIONS ONLY.
 3. ALL LEVELS AND DIMENSIONS SHOWN ON THIS DRAWING ARE IN METRES UNLESS OTHERWISE STATED.
 4. THIS DRAWING HAS BEEN BASED UPON TOPOGRAPHICAL SURVEY BY INTERLOCK SURVEYS DRAWING NO. 141025 SHEET 1 TO 77, DATED FEBRUARY 2015.
 5. THIS DRAWING IS BASED UPON CLIENT'S PLANNING LAYOUT DRAWING NO. EA232-PD-001 Rev D, DATED MAY 2025.

- DRAWING KEY
- PLANNING APPLICATION BOUNDARY
 - FUTURE PHASE OF WORKS SUBJECT TO A SEPARATE RESERVED MATTERS APPLICATION
 - REQUIREMENT FOR RETAINING WALL WITH APPROXIMATE RETAINED HEIGHT SHOWN IN MILLIMETERS, I.E. 800mm
 - REQUIREMENT FOR USE OF GRAVEL BOARD(S) UNDER PLOT BOUNDARY FENCE, I.E. A NEED TO RETAIN A HEIGHT OF EITHER MIN. 150mm, 300mm AND UP TO A MAXIMUM OF 450mm ON ONE SIDE.
 - INDICATES REQUIRED NUMBER OF PART M COMPLAINT EXTERNAL STEPS WITH 150mm RISER HEIGHT (NUMBER IN BRACKETS)
 - EXISTING MAJOR GROUND LEVELS CONTOUR (0.5m) TRANSCRIBED FROM TOPOGRAPHIC SURVEY
 - EXISTING MINOR GROUND LEVELS CONTOUR
 - PROPOSED INDICATIVE FINISHED FLOOR LEVEL OF DWELLING OR GARAGE
 - PROPOSED INDICATIVE MINOR LEVELS CONTOURS (0.05m)
 - PROPOSED INDICATIVE MAJOR LEVELS CONTOURS (0.25m)
 - PROPOSED BASIN MINOR LEVELS CONTOURS (0.10m)
 - PROPOSED INDICATIVE BASIN MAJOR LEVELS CONTOURS (0.50m)
 - PROPOSED APPROXIMATE EXTERNAL GRADIENT
 - PROPOSED THRESHOLD LEVEL TO DWELLING FRONT ACCESS
 - PROPOSED EXTERNAL LEVEL TO DWELLING AT REAR VIA PATIO
 - PROPOSED EXTERNAL LEVEL AT GARAGE ENTRANCE
 - PROPOSED SURFACE WATER FLOOD MITIGATION SWALE BY HYDROSOLUTIONS
 - PROPOSED SURFACE WATER FLOOD MITIGATION BUND BY HYDROSOLUTIONS
 - EXISTING TREE AND ROOT PROTECTION AREA TRANSCRIBED FROM HAYDEN'S AGRICULTURAL CONSULTANTS DRG NO. 11497-D-AIA DATED AUGUST 2025
 - EXISTING TREE AND VETERAN TREE BUFFER TRANSCRIBED FROM HAYDEN'S AGRICULTURAL CONSULTANTS DRG NO. 11497-D-AIA DATED AUGUST 2025
 - INDICATIVE TREE LOCATIONS. REFER TO LANDSCAPING DRAWINGS FOR EXACT LOCATIONS



PD	ISSUED FOR PLANNING APPROVAL	IK	IK	SDB	18.10.2025
PI	ISSUED FOR PLANNING APPROVAL	IK	IK	SDB	28.10.2025
Rev	DESCRIPTION	IK	IK	SDB	18.10.2025
Rev	Description	Drn	Chk	App	Date

Purpose: PRELIMINARY Status: -

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SSIP

Client: BLOOR HOMES

Project Title: GREAT WILSEY PARK, HAVERHILL

Drawing Title: PARCEL A9 LEVELS STRATEGY

Drawn by: IK Checked by: IK Approved by: SDB Revision: P2
Scale: 1:500 @ A0 Date: OCT 2025
Drawing Number: 2503710_A-ACE-XX-XX-DR-C-0611

Appendix J

Hydrobrake and Attenuation Tank Maintenance Guide

Hydro International Warranty, Maintenance and COSHH Statement

This statement covers all Hydro International Hydro-Brake® Optimum, Hydro-Brake® and S-Type Vortex Flow Control units (hereafter referred to as “Flow Control”).

Defects Liability Period Warranty

The standard Hydro International warranty covers products for one year from date of purchase and will only be considered for those defects or faults reported directly to Hydro International in writing. Warranties will not be considered for defects or faults caused by accident, acts of vandalism or unauthorised repair/rectification. Please Contact Hydro International for product specific details.

Maintenance

Normally, little maintenance is required as there are no moving parts within the Flow Control. Experience has shown that if blockages occur they do so at the intake, and the cause on such occasions has been due to a lack of attention to engineering detail such as approach velocities being too low, inadequate benching, or the use of units below the minimum recommended size. The Flow Control (where applicable) is fitted with a pivoting bypass door, which allows the manhole chamber to be drained down should blockage occur. The smaller conical units, below the minimum recommended size, are also supplied with rodding facilities or vortex suppressor pipes as standard.

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. After the system is made live, and assuming that the chamber design is satisfactory, it is recommended that each unit be inspected monthly for three months and thereafter at six monthly intervals with hose down if required. If problems are experienced, please do not hesitate to contact the company so that an investigation may be made.

All Flow Control units are typically manufactured from grade 304 Stainless Steel, and if required they can also be manufactured in grade 316 Stainless Steel. Both materials have an estimated life span in excess of the design life of drainage systems.

COSHH

Flow Control units are manufactured from Stainless Steel, which is not regarded as hazardous to health and exhibits no chemical hazard when used under normal circumstances for the stated applications.

Manual Handling

The handling of Flow Control units should be in accordance with the current legislation and regulations:

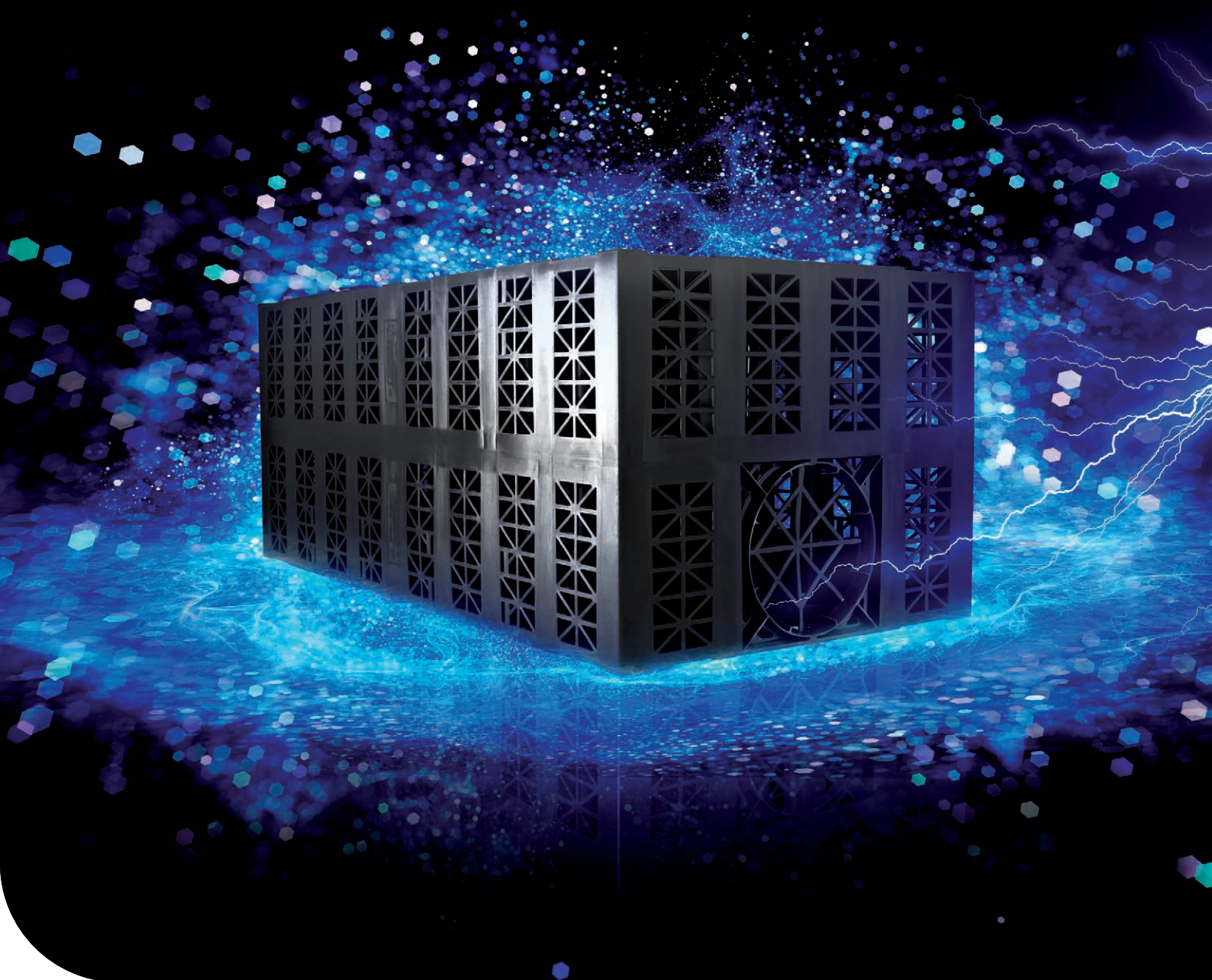
- The Health and Safety at Work Act 1972
- The Management of Health and Safety at Work Regulations 1999
- The Manual Handling Operations Regulations 1992

All published and printed by the Health and Safety Executive.

STORMWATER MANAGEMENT

AquaCell systems

Operation and maintenance guide



Storming performance

Thank you for choosing the AquaCell range of geocellular systems – the tried and tested solution to the effective management of excessive rainfall, whether through attenuation or infiltration.

All AquaCell units are engineered from reformulated, recycled material, so as concern grows over the effects of climate change and the challenges of increasing urbanisation, AquaCell continues to rain supreme as the cost-effective, proven and versatile stormwater solution.

The AquaCell range can be used as either a temporary storage tank or soakaway, and is suitable for applications including:

- ④ Landscaped areas
- ④ Parks
- ④ Domestic gardens
- ④ Residential developments
- ④ Car parks and roads
- ④ Industrial/Commercial areas

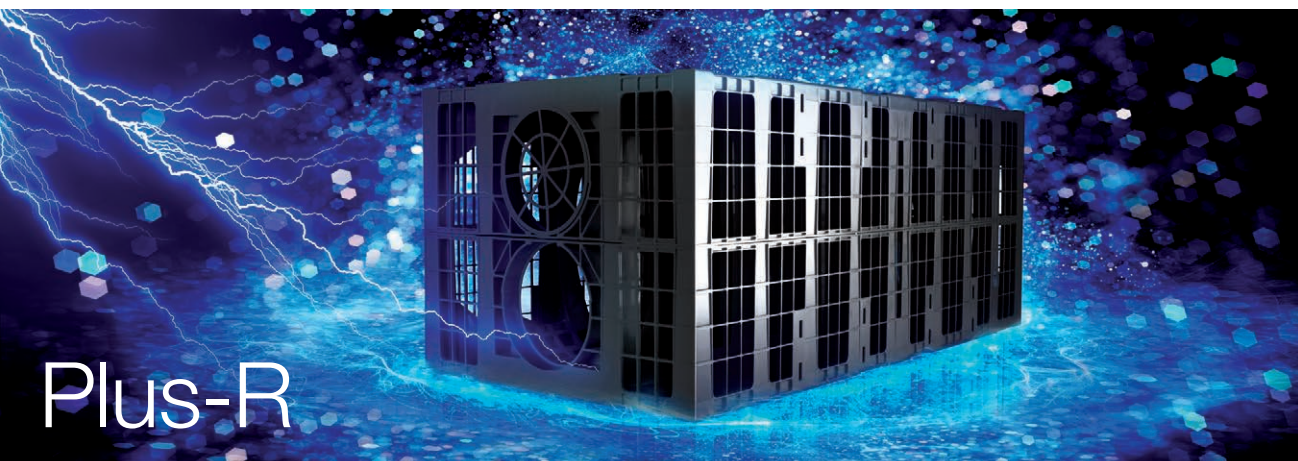
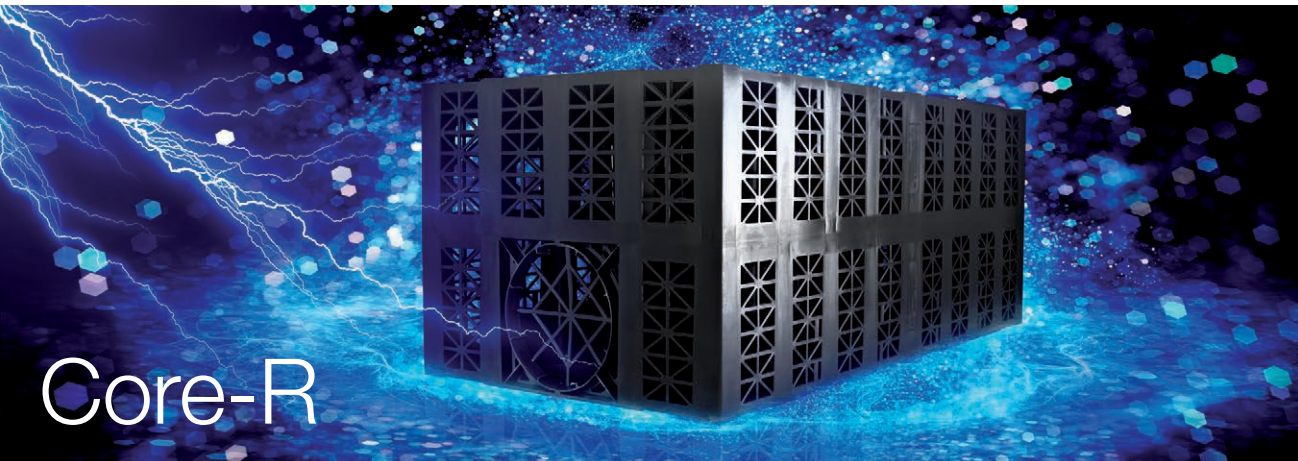
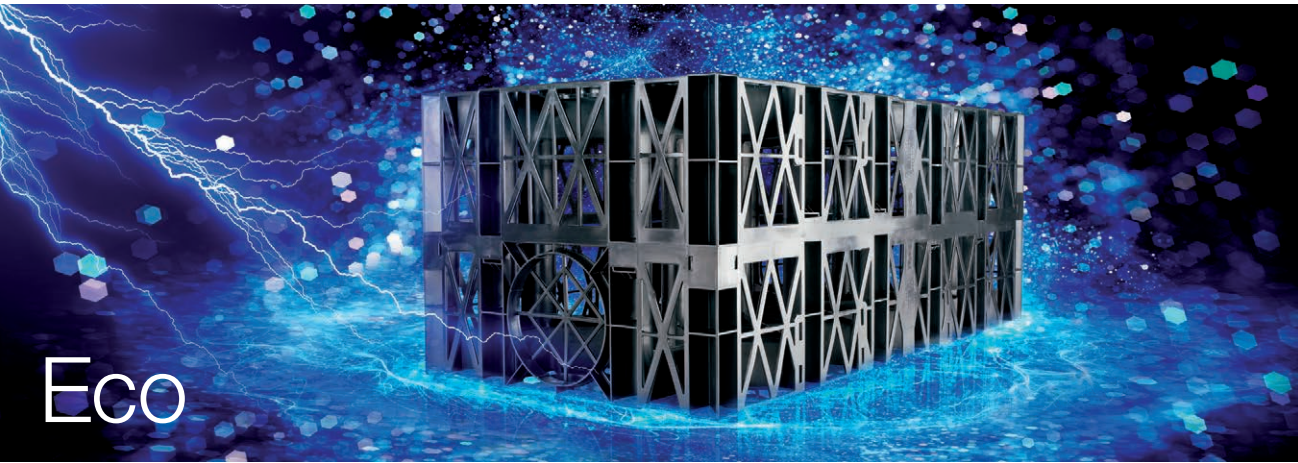
Each of the three AquaCell units can be used as a standalone system, or different unit types can be mixed and matched together in layers to value engineer the most cost effective solution.

All AquaCell units have identical dimensions (1m x 0.5m x 0.4m), but they are manufactured to perform differently. The type of unit, or combination of units required depends on factors such as the load application, overall installation depth and site conditions.

This guide provides information on typical installation methods and construction loads, as well as guidance on how to inspect and maintain your AquaCell tank to ensure its ongoing optimum performance.

Discover more online at: **wavin.co.uk/aquacell**

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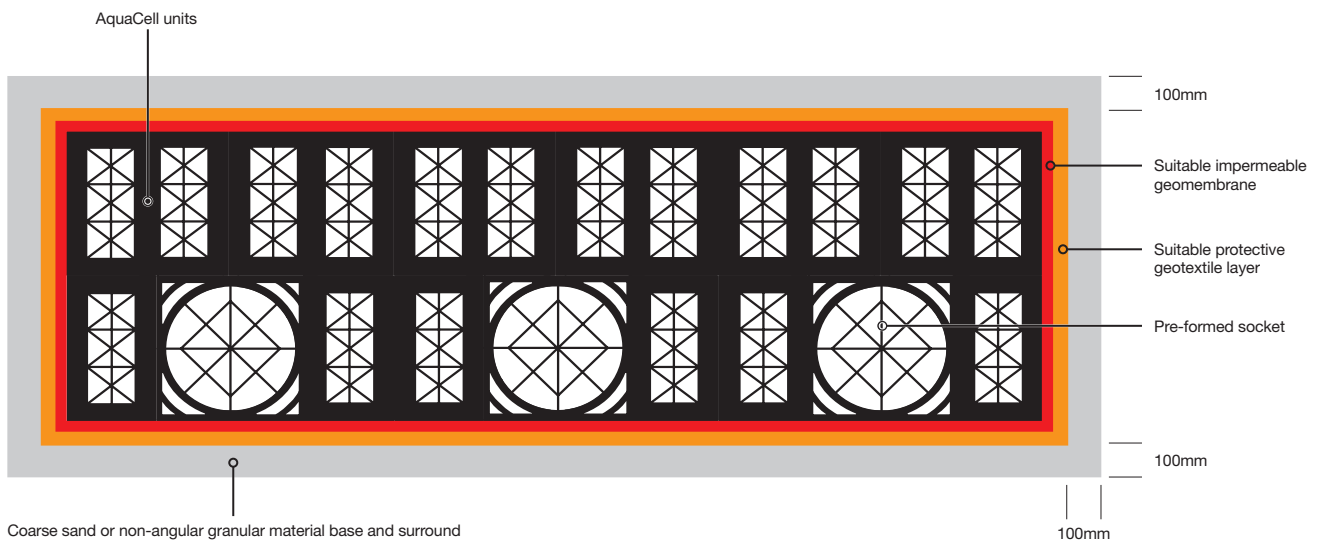
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Installation

Typical storage tank installation method

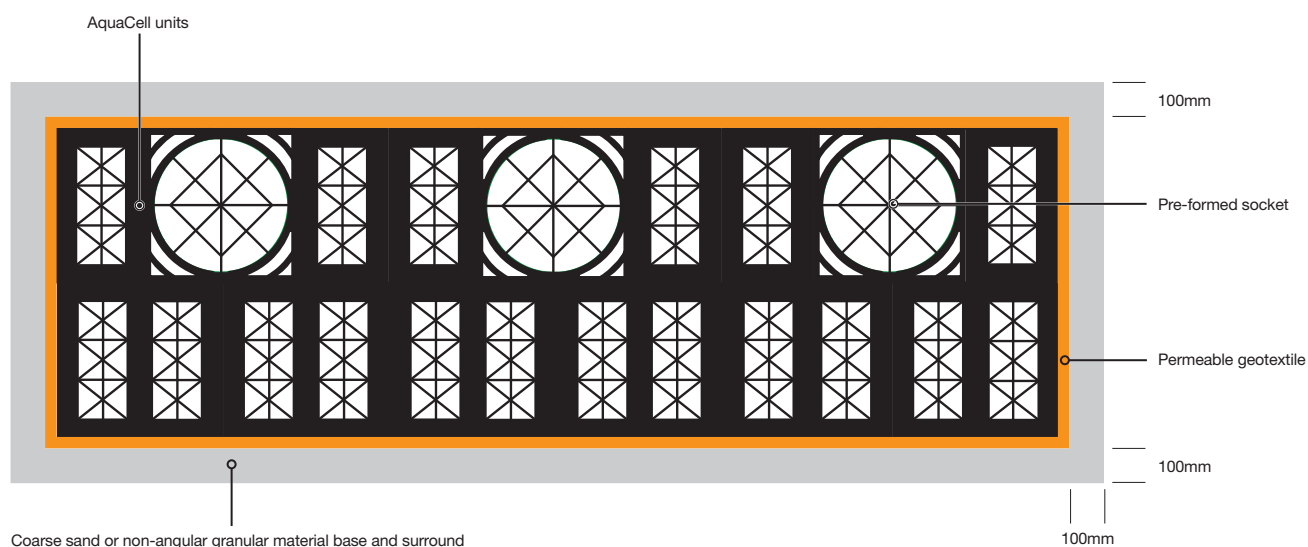
1. Excavate the trench to the required depth ensuring that the plan area is slightly greater than that of the AquaCell units.
2. Lay 100mm bed of coarse sand or non-angular granular material, then level and compact.
3. Lay the geotextile over the base and up the sides of the trench.
4. Lay the geomembrane on top of the geotextile over the base and up the sides of the trench.
5. Lay the AquaCell units parallel with each other. In multiple layer applications, wherever possible, continuous vertical joints should be avoided. AquaCell units can be laid in a 'brick bonded' formation (i.e. to overlap the joints below). For single layer applications use the AquaCell Clips, and for multiple layers use the AquaCell Clips and the AquaCell Shear Connectors (vertical rods).
6. Wrap the geomembrane around the AquaCell structure and seal to manufacturer's recommendations.
7. If side connections into the AquaCell units are required, (other than the preformed socket), use the appropriate Flange Adaptor (6LB104 or 6LB106). Fix the flange adaptor to the unit using self-tapping screws. Drill a hole through the flange adaptor and connect the pipework. (6LB106 should not be used with AquaCell Eco).
8. In order to prevent silt from entering the tank, clogging inlet pipework and reducing storage capacity, it is recommended that a silt trap is installed prior to the inlet pipework.
9. Wrap and overlap the geotextile, covering the entire AquaCell structure to protect the geomembrane.
10. Lay 100mm of coarse sand or non-angular granular material between the trench walls and the AquaCell structure and compact.
11. Lay 100mm of coarse sand or non-angular granular material over the geotextile/geomembrane and compact.
12. Backfill with suitable material.

NB: A storage tank must be vented, and it is recommended that one 110mm diameter vent pipe is provided per 7,500m² of impermeable catchment area on site.



Typical soakaway installation method

1. Excavate the trench to the required depth ensuring that the plan area is slightly greater than that of the AquaCell units.
2. Lay 100mm bed of coarse sand or non-angular granular material, then level and compact.
3. Lay the geotextile over the base and up the sides of the trench.
4. Lay the AquaCell units parallel with each other. In multiple layer applications, wherever possible, continuous vertical joints should be avoided. AquaCell units can be laid in a 'brick bonded' formation (i.e. to overlap the joints below). For single layer applications use the AquaCell Clips, and for multiple layers use the AquaCell Clips and the AquaCell Shear Connectors (vertical rods).
5. Fix the Adaptors to the AquaCell units as required and connect pipework.
6. In order to prevent silt from entering the tank, clogging inlet pipework and reducing storage capacity, it is recommended that a silt trap is installed prior to the inlet pipework.
7. Wrap and overlap the geotextile, covering the entire AquaCell structure.
8. Lay 100mm of coarse sand or non-angular granular material between the trench walls and the AquaCell structure and compact.
9. Lay 100mm of coarse sand or non-angular granular material over the geotextile and compact.
10. Backfill with suitable material.
11. Rainwater from roof areas may discharge directly into the soakaway, but rainwater from car parks must discharge through a catchpit manhole and/or a petrol interceptor.



Construction loads

AquaCell Core-R and Plus-R: Construction loads

Construction plant such as excavators can impose significant loads on any AquaCell unit. The following guidelines should be observed:

- ⦿ Tracked excavators (not exceeding 21 tonnes in weight) should be used to place fill over the AquaCell units when the geotextile or geomembrane wrapping has been completed.
- ⦿ At least 300mm of fill should be placed before the excavators or trucks delivering the backfill are allowed to traffic over the installed units.
- ⦿ Compaction plant used over the AquaCell units should not exceed 2,300kg/m width. This will allow the compaction of Type 1 sub-base in 150mm layers over the units in accordance with the Specification for Highways Works.
- ⦿ All other construction plant should be prevented from trafficking over the system once it is installed and surfacing completed, unless a site-specific assessment demonstrates that it is acceptable.
- ⦿ In particular, cranes should not be used, or place their outriggers, over the system.

AquaCell Eco: Construction loads

As AquaCell Eco is designed for landscaped and non-loaded applications, certain precautions are recommended on site to prevent damage to the units through excess loading.

Manual assembly

Whilst assembling the tank, it may be necessary to walk on top of previously laid AquaCell units. Therefore, care should be taken not to damage the edges of the units.

Backfilling

When backfilling AquaCell Eco installations:

- ⦿ Machines placing the material must be located OFF the units.
- ⦿ Only light compaction should be applied to the material.
- ⦿ Backfill with suitable, stone-free, as-dug material.
- ⦿ First layer should be 300mm thick before using any compaction plant.
- ⦿ NO vibratory mechanism should be used for compacting this first layer.
- ⦿ Compaction plant must not exceed 2,300kg/m width.

Construction traffic on site

Once backfilled, if construction plant (e.g. excavators or loaders) are likely to run over the installation, ensure that:

- ⦿ MINIMUM protective cover should be 500mm well-compacted granular material.
- ⦿ Only tracked excavators can be used and MUST NOT weigh more than 14 tonnes.
- ⦿ HGVs MUST NOT run over installed AquaCell Eco units.

Inspection and maintenance

AquaCell Plus-R: for inspectability

By aligning AquaCell Plus-R units end-to-end, full length viewing channels can be created – allowing for CCTV inspection, if required. These are created in the bottom layer of an AquaCell tank installation.

The units can be used in combination with AquaCell Core-R (and with Eco if there is at least one layer of AquaCell Core-R in between the Plus-R and Eco layer).

NOTE: For any AquaCell Plus-R units on the perimeter of a structure that are NOT required for inspection access, the open ends of the integral inspection tunnels should be fitted with the end caps provided.

Inspection chambers

An inspection chamber should precede the inlet pipework for the AquaCell structure.

A silt trap or hydro-dynamic separator prior to the inspection chamber is also recommended.

For on-line installations the following Chambers are recommended:

- ⦿ Down to 3m: Wavin Non-Entry Inspection Chambers
- ⦿ Down to 5m: Wavin Range 600 Inspection Chambers, or a traditional manhole*

**Where inlet pipework is replaced by AquaCell units acting as flow conduit.*

For off-line installations:

- ⦿ Manhole with in-built flow control

Recommendation: If installing any Wavin Non-Entry Inspection Chamber, deeper than 1.2m, ensure that the cover and frame includes a 350mm restrictor to prevent man entry.

Inspection and maintenance

CCTV inspection at every inspection point is recommended:

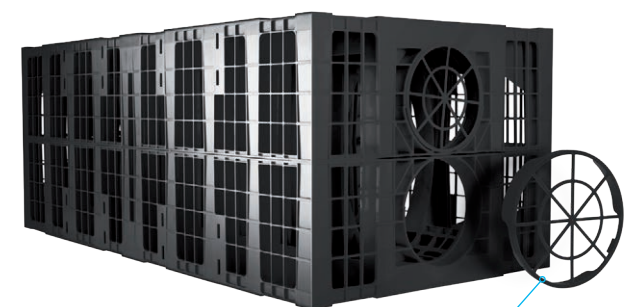
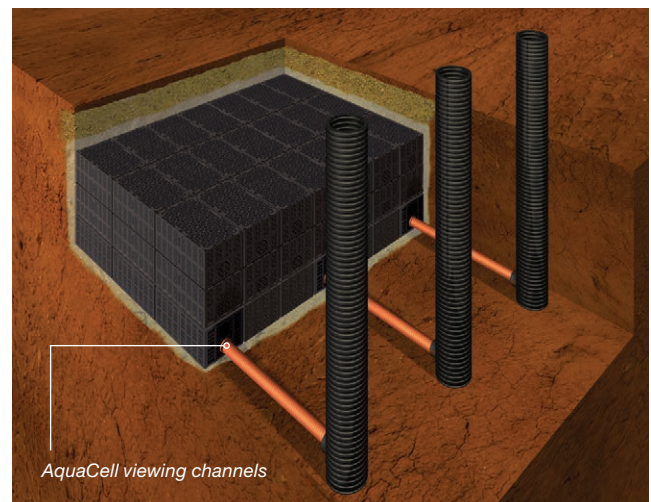
- ⦿ after every major storm
- ⦿ at regular intervals according to the specific maintenance plan for the site

Silt traps prior to inlet pipework should be routinely inspected and cleaned out to minimise debris reaching the tank. It is important to prevent construction silt from entering the AquaCell structure.

AquaCell Plus-R viewing channel



Tank installation with inspection chambers



End cap for when an inspection channel is not required

Maintenance schedule

The below guidance is taken from CIRIA C753: The SuDS Manual.

Regular inspection and maintenance is required to ensure the effective long-term operation of below ground storage systems and soakaways. Maintenance responsibility for systems should be placed with a responsible organisation. The below tables provide guidance on the type of operational and maintenance requirements that may be appropriate. The list of actions is not exhaustive, and some actions may not always be required.

Maintenance plans and schedules should be developed during the design phase, and will be specific to the type of tank or soakaway that is adopted. Specific maintenance needs of the system should be monitored and maintenance schedules adjusted to suit requirements.

Operation and maintenance requirements for attenuation storage tanks

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risk 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 pre-treatment 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, vents and overflows to ensure that they are in good condition and operating as designed.	Annually
	Survey inside of tank for sediment build-up and remove if necessary.	Every 5 years, or as required

Operation and maintenance requirements for soakaways

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Inspect for sediment and debris in pre-treatment components and floor of inspection tube or chamber.	Annually
	Cleaning of any gutters and filters on downpipes.	Annually, or as required
	Trimming any roots that may be causing blockages.	Annually, or as required
Occasional maintenance	Remove sediment and debris from pre-treatment components and floor of inspection tube or chamber.	As required, based on inspections
Remedial actions	Reconstruct soakaway and/or replace or clean void if performance deteriorates or failure occurs.	As required
	Replacement of clogged geotextile (will require reconstruction of soakaway).	As required
Monitoring	Inspect silt traps and note rate of sediment accumulation.	Monthly in the first year and then annually
	Check soakaway to ensure emptying is occurring.	Annually

Maintenance will usually be carried out manually, although a suction tanker can be used for sediment/debris removal for large systems. If maintenance is not undertaken for long periods, deposits can become hard-packed and require considerable effort to remove.

References: Woods Ballard, B., Wilson, S., Udale-Clarke, H., Illman, S., Scott, T., Ashley, R., Kellagher, R., CIRIA C753 (2015) The SuDs Manual, CIRIA, London, UK (ISBN: 978-0-86017-760-9)

Always on hand to help

If you have any questions about the inspection, maintenance or overall performance of your AquaCell tank during its lifetime, the Wavin Technical Team are always on hand during office hours to offer advice and guidance:

Technical Centre

T 0844 856 5165

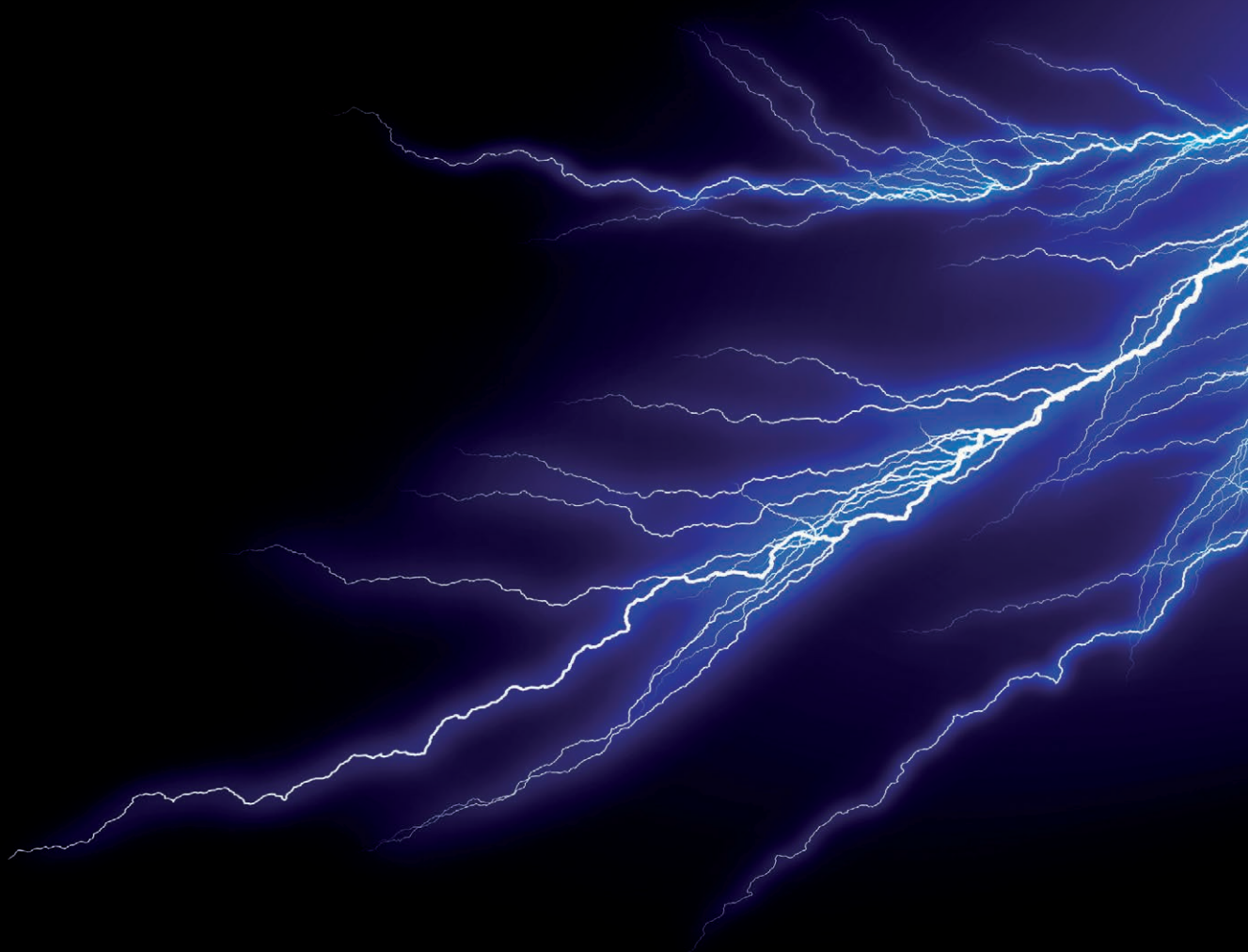
E technical.design@wavin.co.uk

Discover more online at: wavin.co.uk/aquacell

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Appendix K

SCC SuDS Proforma

DO NOT PRINT... Appropriate parts of sheet 1 and all of sheet 2 to be completed, starting at top left of sheet1. Yellow cells to be completed by applicant or agent. Most cells have drop down boxes and guidance. Required data will vary, depending on previous answers. Amber cells warn of possible error, lack of required information, non compliance with policies or standards or where special considerations/information may be required. Red cells indicate missing information required for detailed applications. Purple Cells indicate missing information required for outline or detailed applications.

Form completed for Developer/applicant by (name)	Iris Kalaci	Date	13.11.2025	Contact email or telephone	ikalaci@ardent-ce.co.uk
Form checked for LPA by		Date		Ref No.	
Form checked for SCC Floods by		Date			

District council	West Suffolk – (Forest Heath & St Edmundsbury)	Site Name	Parcel A9 Great Wilsey Park, Haverhill
Total Site area (ha)	3.869	Catchment A	Address
Number of homes	95		Road
Commercial area (ha)	0.00		Town
Commercial built area (ha)	0		County
Area of POS (ha)			When was the last pre-app discussion with SCC Floods team?
Existing land status	Green Field		Is a complete FRA included in the application?
Highest Ground level (m AOD)	89.00		EA Flood Zone(s)
Lowest ground level (m AOD)	78.43		Does adjacent existing highway drain into the site?
			Is site at risk of SW flooding?

Carry on filling in form. SCC Floods team will be consulted

RUNOFF DESTINATION (where proposed SW drainage from site will discharge to)					
	Sea or Estuary	Ground (Infiltration)	SW Body	Existing SWS, highway drain or another drainage system	Existing Combined Sewer
Is Site next to Estuary or coast?	Neither	Fill in cells in this column below			
Will the site be drained directly to sea or estuary?	No				
SOIL TYPE			3		
Have on site ground investigations been undertaken?		Yes			
Is a ground investigation report included in application?		Yes			
Recommendation from GI Report regarding soakaways - Are conditions suitable?		2. No - Infiltration < 10mm/Hr			
Number of test pits that soakage tests were undertaken in.		9			
Number of test pits with completed test to BRE365		9			
Are field sheets, test results and calculations included in application?		Yes			
Min Infiltration rate from tests (mm/Hr)		0			
Max infiltration rate from tests (mm/Hr)		0			
Is infiltration type drainage proposed?		No			

Go to next column

Name / Location of SW Body	Unnamed Watercourse
Reasons (if any) for not draining to a surface water body	
Will SW be discharged to a surface water body?	Yes
Type of existing SW piped drainage system	
Description / Location of SW drainage system	
Reason 1 for not draining to SWS, highway drain	
Reason 2 for not draining to SWS, highway drain	
Will SW be discharged to an existing piped SW drainage system?	

Carry on down column

Existing impermeable area	0.00
Proposed Impermeable area	2.23
Method for calculating allowable discharges, existing or Green field flows	IH124 using SOIL
Peak discharge rate to destination	
100 Year return period allowable discharge to SW or combined sewer agreed by AW or SCC (l/sec)	
1 year return period Existing (l/sec)	9.47
Proposed with CC & creep (l/sec)	10.9
100 year return period Existing (l/sec)	38.7
Proposed with CC & creep (l/sec)	10.9
Proposed per ha (l/sec/ha)	
Critical duration (minutes)	600
Proposed minimum throttle(s) aperture (mm)	149
Attenuation storage provided to limit peak flow (at critical duration)	1564

Volume control Required if proposed discharge > 2 l/sec/ha in 100 Yr RP (see BS8582 5.2.2.4)	
Volume of runoff in 6 Hr duration event (cubic metres)	
100 Year RP existing	
100 Year RP + CC+creep proposed	
Additional capacity provided in SUDs to control volume	
Water quality (WQ)	
Reasons (if any) for not following best practise for WQ:	
During construction period	
Permanent	
Proposed permanent WQ SUDs:	
Volume of proposed treatment pond (Vt) expressed as mm of rain over the impermeable areas on the site.	
Depth of rain intercepted (refer to SUDS manual) expressed as mm of rain over the impermeable areas on the site	
Volume intercepted (cubic metres)	

Capacity of proposed attenuation & volume control SuDs (can be reduced by interception volume)	
Area of site taken up by proposed SuDs	
Are calculations and drawings included demonstrating there is sufficient and appropriate space for the proposed SUDS volume within the layout?	

Go to Sheet 2