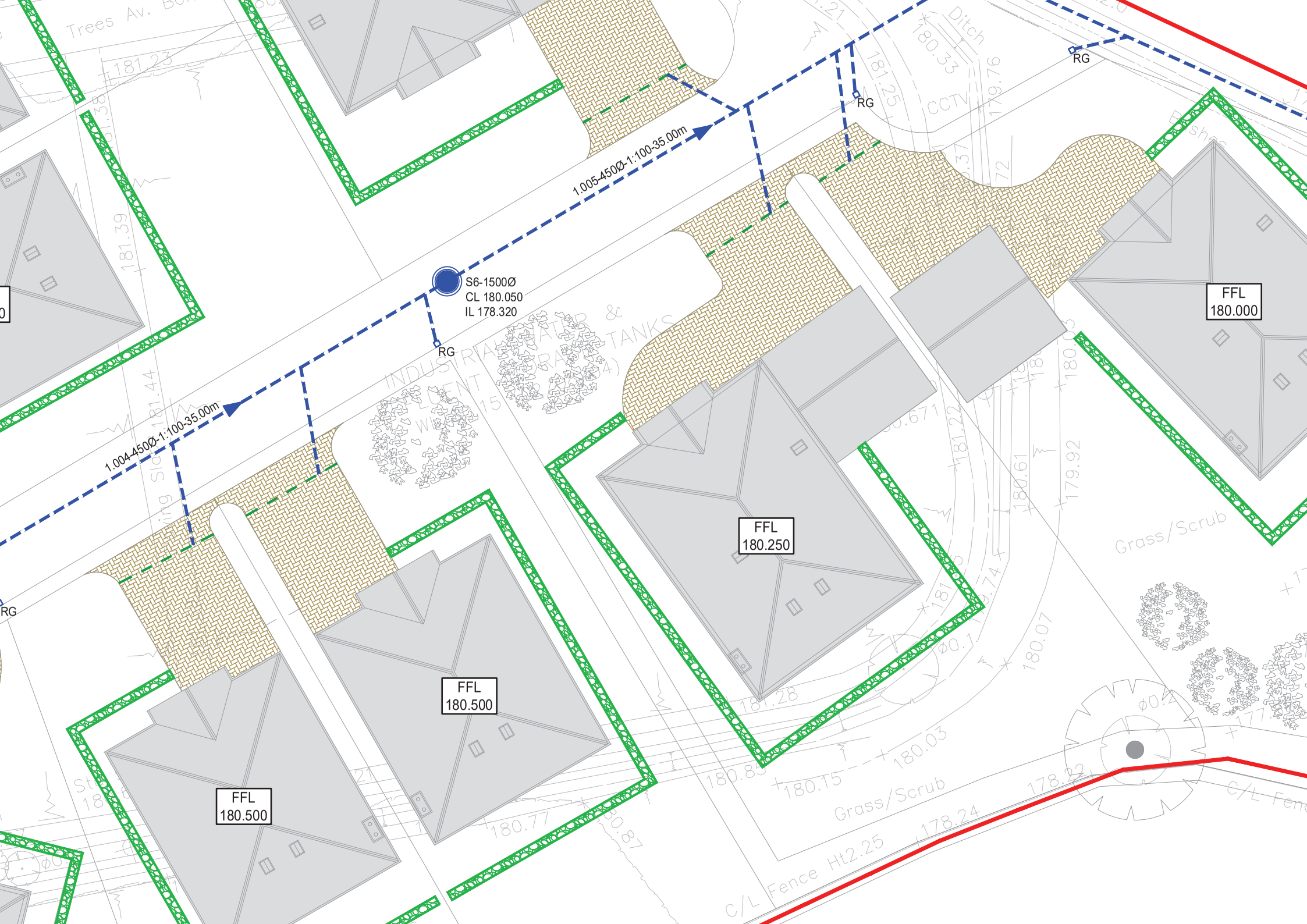
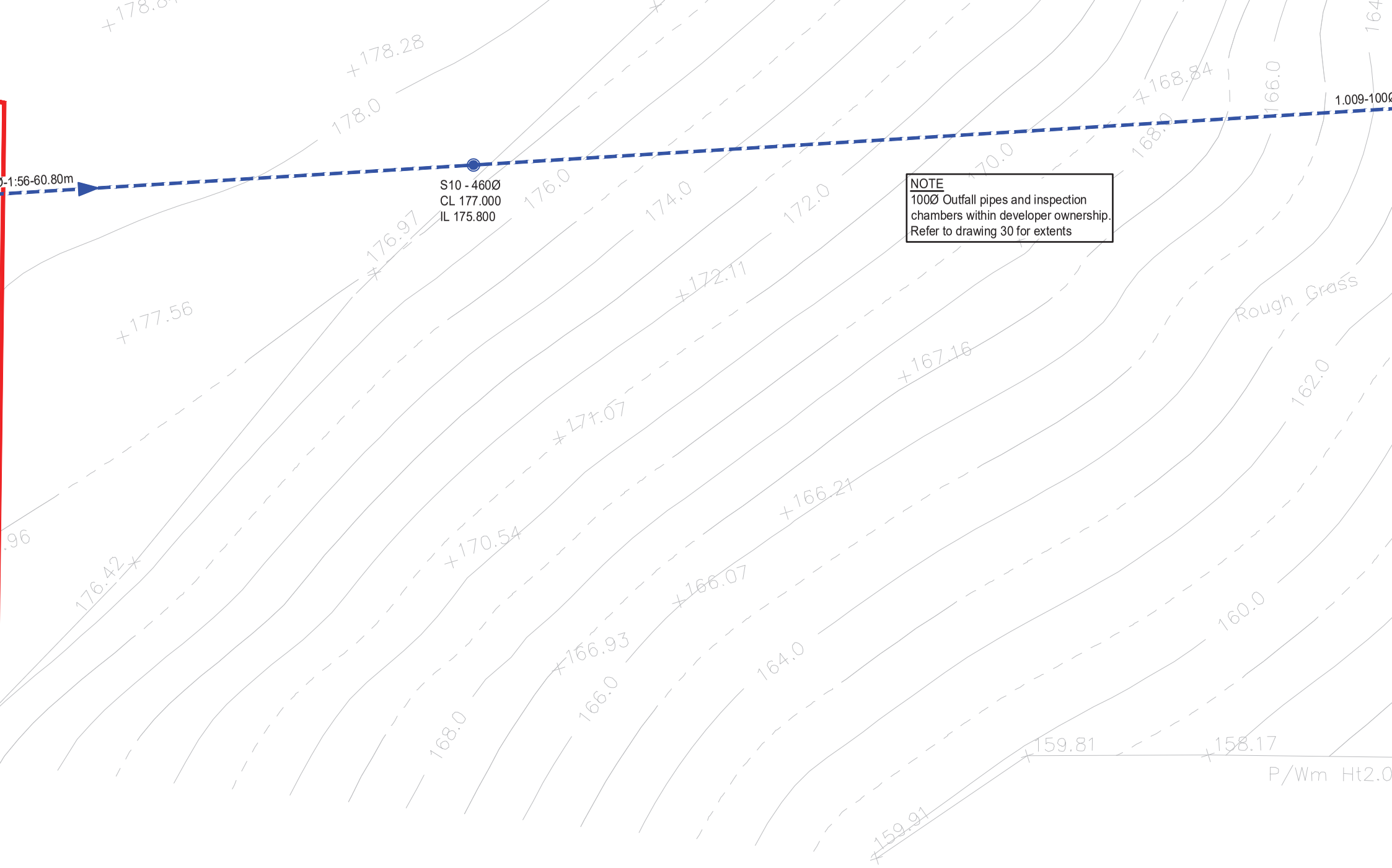
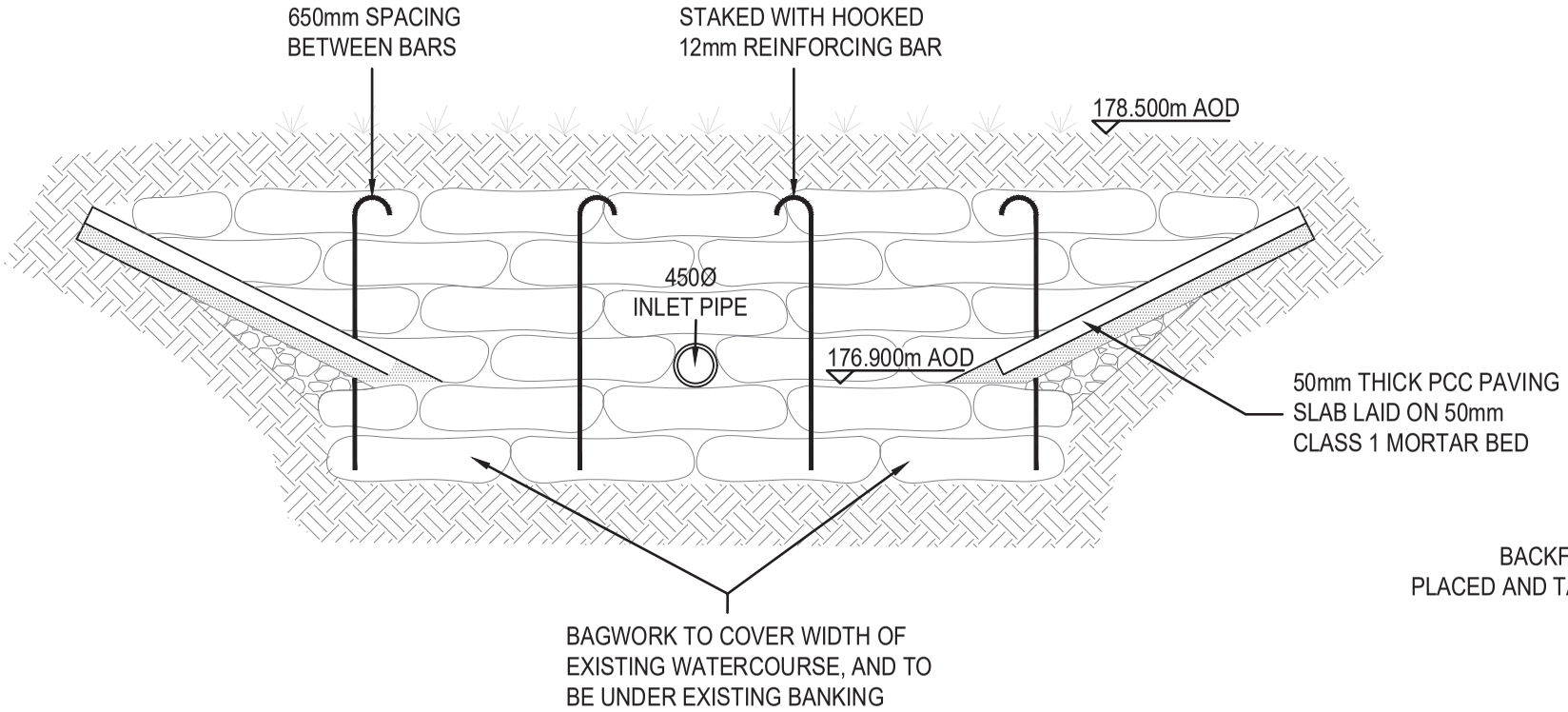
Appendix G Surface Water Management Layout and Details


1.005-450Ø-1:100-35.00m
1.004-450Ø-1:100-35.00m
S6-1500Ø
CL 180.050
IL 178.320
RG
RG
RG
RG
FFL
180.000
FFL
180.250
FFL
180.500
FFL
180.500
Grass/Scrub
Grass/Scrub
C/L Fence Ht2.25
CCTV
Ditch
181.23
181.39
181.44
180.33
181.25
179.76
180.61
179.92
180.07
181.28
180.03
180.15
178.24
178.22
180.77


1:56-60.80m
S10 - 460Ø
CL 177.000
IL 175.800
1.009-100Ø
NOTE
100Ø Outfall pipes and inspection chambers within developer ownership.
Refer to drawing 30 for extents
178.28
178.0
176.97
177.56
176.42
176.0
174.0
172.0
172.11
171.07
170.54
170.0
168.84
168.0
167.16
166.21
166.07
166.93
166.0
164.0
162.0
160.0
159.81
158.17
159.91
Rough Grass
P/Wm Ht2.0

R PRIORA
T

S AREAS)
RSHALLS



BACKFILL BEHIND BAGW
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Appendix H Surface Water Management Calculations

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model	
Return Period (years)	1
FEH Rainfall Version	1999
Site Location	GB 397350 357150 SJ 97350 57150
C (1km)	-0.028
D1 (1km)	0.409
D2 (1km)	0.318
D3 (1km)	0.322
E (1km)	0.306
F (1km)	2.323
Maximum Rainfall (mm/hr)	0
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.200
Maximum Backdrop Height (m)	1.500
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.178	4-8	0.358	8-12	0.001

Total Area Contributing (ha) = 0.537

Total Pipe Volume (m³) = 34.934

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design

Network Results Table

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Network Design Table for Storm

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)

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Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	17.450	0.175	99.7	0.028	5.00	0.0	0.600	o	450	Pipe/Conduit	
1.001	31.550	0.315	100.2	0.065	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.002	21.650	0.215	100.7	0.140	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.003	7.500	0.075	100.0	0.030	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.004	35.000	0.350	100.0	0.125	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.005	35.000	0.350	100.0	0.131	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.006	59.750	1.050	56.9	0.018	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.007	4.000	0.040	100.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
1.008	60.800	1.080	56.3	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit	
1.009	79.400	23.520	3.4	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit	
1.010	16.800	0.210	80.0	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	0.00	5.14	179.450	0.028	0.0	0.0	0.0	2.04	323.8	0.0
1.001	0.00	5.40	179.275	0.093	0.0	0.0	0.0	2.03	323.1	0.0
1.002	0.00	5.58	178.960	0.233	0.0	0.0	0.0	2.03	322.2	0.0
1.003	0.00	5.64	178.745	0.263	0.0	0.0	0.0	2.03	323.4	0.0
1.004	0.00	5.93	178.670	0.388	0.0	0.0	0.0	2.03	323.4	0.0
1.005	0.00	6.22	178.320	0.519	0.0	0.0	0.0	2.03	323.4	0.0
1.006	0.00	6.58	177.970	0.537	0.0	0.0	0.0	2.70	429.3	0.0
1.007	0.00	6.62	176.920	0.537	0.0	0.0	0.0	2.03	323.4	0.0
1.008	0.00	7.60	176.880	0.537	0.0	0.0	0.0	1.03	8.1	0.0
1.009	0.00	7.91	175.800	0.537	0.0	0.0	0.0	4.24	33.3	0.0
1.010	0.00	8.24	152.280	0.537	0.0	0.0	0.0	0.86	6.8	0.0

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backd (mm
S1	180.650	1.200	Open Manhole	1500	1.000	179.450	450				
S2	180.600	1.325	Open Manhole	1500	1.001	179.275	450	1.000	179.275	450	
S3	180.500	1.540	Open Manhole	1500	1.002	178.960	450	1.001	178.960	450	
S4	180.475	1.730	Open Manhole	1500	1.003	178.745	450	1.002	178.745	450	
S5	180.450	1.780	Open Manhole	1500	1.004	178.670	450	1.003	178.670	450	
S6	180.050	1.730	Open Manhole	1500	1.005	178.320	450	1.004	178.320	450	
S7	179.850	1.880	Open Manhole	1500	1.006	177.970	450	1.005	177.970	450	
S8	178.500	1.580	Open Manhole	1500	1.007	176.920	450	1.006	176.920	450	
S9/FC	178.500	1.620	Open Manhole	1500	1.008	176.880	100	1.007	176.880	450	
S10	177.000	1.200	Open Manhole	460	1.009	175.800	100	1.008	175.800	100	
S11	153.000	0.720	Open Manhole	460	1.010	152.280	100	1.009	152.280	100	
EX Headwall	154.070	2.000	Open Manhole	0		OUTFALL		1.010	152.070	100	

No coordinates have been specified, layout information cannot be produced.

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	450	S1	180.650	179.450	0.750	Open Manhole	1500
1.001	o	450	S2	180.600	179.275	0.875	Open Manhole	1500
1.002	o	450	S3	180.500	178.960	1.090	Open Manhole	1500
1.003	o	450	S4	180.475	178.745	1.280	Open Manhole	1500
1.004	o	450	S5	180.450	178.670	1.330	Open Manhole	1500
1.005	o	450	S6	180.050	178.320	1.280	Open Manhole	1500
1.006	o	450	S7	179.850	177.970	1.430	Open Manhole	1500
1.007	o	450	S8	178.500	176.920	1.130	Open Manhole	1500
1.008	o	100	S9/FC	178.500	176.880	1.520	Open Manhole	1500
1.009	o	100	S10	177.000	175.800	1.100	Open Manhole	460
1.010	o	100	S11	153.000	152.280	0.620	Open Manhole	460

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	17.450	99.7	S2	180.600	179.275	0.875	Open Manhole	1500
1.001	31.550	100.2	S3	180.500	178.960	1.090	Open Manhole	1500
1.002	21.650	100.7	S4	180.475	178.745	1.280	Open Manhole	1500
1.003	7.500	100.0	S5	180.450	178.670	1.330	Open Manhole	1500
1.004	35.000	100.0	S6	180.050	178.320	1.280	Open Manhole	1500
1.005	35.000	100.0	S7	179.850	177.970	1.430	Open Manhole	1500
1.006	59.750	56.9	S8	178.500	176.920	1.130	Open Manhole	1500
1.007	4.000	100.0	S9/FC	178.500	176.880	1.170	Open Manhole	1500
1.008	60.800	56.3	S10	177.000	175.800	1.100	Open Manhole	460
1.009	79.400	3.4	S11	153.000	152.280	0.620	Open Manhole	460
1.010	16.800	80.0	EX Headwall	154.070	152.070	1.900	Open Manhole	0

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.010	EX Headwall	154.070	152.070	152.070	0	0

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Simulation Criteria for Storm

Volumetric Runoff Coeff	0.840	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

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

Synthetic Rainfall Details

Rainfall Model	FEH
Return Period (years)	1
FEH Rainfall Version	1999
Site Location	GB 397350 357150 SJ 97350 57150
C (1km)	-0.028
D1 (1km)	0.409
D2 (1km)	0.318
D3 (1km)	0.322
E (1km)	0.306
F (1km)	2.323
Summer Storms	No
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Storm Duration (mins)	15

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Online Controls for Storm

Hydro-Brake® Optimum Manhole: S9/FC, DS/PN: 1.008, Volume (m³): 3.3

Unit Reference	MD-SHE-0079-3100-1300-3100
Design Head (m)	1.300
Design Flow (l/s)	3.1
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	79
Invert Level (m)	176.880
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.300	3.1	Kick-Flo®	0.706	2.3
Flush-Flo™	0.345	2.9	Mean Flow over Head Range	-	2.6

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.3	1.200	3.0	3.000	4.6	7.000	6.8
0.200	2.8	1.400	3.2	3.500	4.9	7.500	7.0
0.300	2.9	1.600	3.4	4.000	5.2	8.000	7.2
0.400	2.9	1.800	3.6	4.500	5.5	8.500	7.5
0.500	2.8	2.000	3.8	5.000	5.8	9.000	7.7
0.600	2.7	2.200	4.0	5.500	6.1	9.500	7.9
0.800	2.5	2.400	4.1	6.000	6.3		
1.000	2.7	2.600	4.3	6.500	6.6		

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Storage Structures for Storm

Tank or Pond Manhole: S9/FC, DS/PN: 1.008

Invert Level (m) 176.900

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	175.0	2.800	0.0	5.600	0.0	8.400	0.0
0.400	240.0	3.200	0.0	6.000	0.0	8.800	0.0
0.800	310.0	3.600	0.0	6.400	0.0	9.200	0.0
1.200	390.0	4.000	0.0	6.800	0.0	9.600	0.0
1.600	490.0	4.400	0.0	7.200	0.0	10.000	0.0
2.000	0.0	4.800	0.0	7.600	0.0		
2.400	0.0	5.200	0.0	8.000	0.0		

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Summary of Results for 15 minute 1 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S1	179.477	-0.423	0.000	0.01			2.9	OK
1.001	S2	179.327	-0.398	0.000	0.03			8.6	OK
1.002	S3	179.045	-0.365	0.000	0.08			20.9	OK
1.003	S4	178.856	-0.339	0.000	0.14			23.6	OK
1.004	S5	178.774	-0.346	0.000	0.12			34.2	OK
1.005	S6	178.440	-0.330	0.000	0.16			44.9	OK
1.006	S7	178.073	-0.347	0.000	0.12			46.5	OK
1.007	S8	177.080	-0.290	0.000	0.28			46.5	OK
1.008	S9/FC	177.027	0.047	0.000	0.32			2.6	SURCHARGED
1.009	S10	175.819	-0.081	0.000	0.08			2.6	OK
1.010	S11	152.324	-0.056	0.000	0.40			2.6	OK

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Summary of Results for 30 minute 1 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S1	179.471	-0.429	0.000	0.01			2.3	OK
1.001	S2	179.323	-0.402	0.000	0.03			7.2	OK
1.002	S3	179.037	-0.373	0.000	0.07			17.9	OK
1.003	S4	178.848	-0.347	0.000	0.12			20.2	OK
1.004	S5	178.767	-0.353	0.000	0.10			29.7	OK
1.005	S6	178.431	-0.339	0.000	0.14			39.4	OK
1.006	S7	178.066	-0.354	0.000	0.10			40.7	OK
1.007	S8	177.069	-0.301	0.000	0.24			40.7	OK
1.008	S9/FC	177.061	0.081	0.000	0.34			2.7	SURCHARGED
1.009	S10	175.819	-0.081	0.000	0.08			2.7	OK
1.010	S11	152.325	-0.055	0.000	0.42			2.7	OK

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Summary of Results for 60 minute 1 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S1	179.465	-0.435	0.000	0.01			1.6	OK
1.001	S2	179.315	-0.410	0.000	0.02			5.3	OK
1.002	S3	179.025	-0.385	0.000	0.05			13.2	OK
1.003	S4	178.835	-0.360	0.000	0.09			14.9	OK
1.004	S5	178.753	-0.367	0.000	0.08			21.9	OK
1.005	S6	178.416	-0.354	0.000	0.10			29.2	OK
1.006	S7	178.052	-0.368	0.000	0.08			30.0	OK
1.007	S8	177.100	-0.270	0.000	0.18			30.2	OK
1.008	S9/FC	177.099	0.119	0.000	0.35			2.8	SURCHARGED
1.009	S10	175.820	-0.080	0.000	0.09			2.8	OK
1.010	S11	152.326	-0.054	0.000	0.44			2.8	OK

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Summary of Results for 120 minute 1 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S1	179.460	-0.440	0.000	0.00			1.1	OK
1.001	S2	179.303	-0.422	0.000	0.01			3.6	OK
1.002	S3	179.014	-0.396	0.000	0.03			9.1	OK
1.003	S4	178.817	-0.378	0.000	0.06			10.2	OK
1.004	S5	178.737	-0.383	0.000	0.05			15.1	OK
1.005	S6	178.399	-0.371	0.000	0.07			20.2	OK
1.006	S7	178.036	-0.384	0.000	0.05			20.8	OK
1.007	S8	177.136	-0.234	0.000	0.12			20.5	OK
1.008	S9/FC	177.136	0.156	0.000	0.36			2.9	SURCHARGED
1.009	S10	175.820	-0.080	0.000	0.09			2.9	OK
1.010	S11	152.327	-0.053	0.000	0.44			2.9	OK

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Summary of Results for 240 minute 1 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S1	179.457	-0.443	0.000	0.00			0.7	OK
1.001	S2	179.294	-0.431	0.000	0.01			2.5	OK
1.002	S3	179.007	-0.403	0.000	0.02			6.1	OK
1.003	S4	178.803	-0.392	0.000	0.04			6.9	OK
1.004	S5	178.725	-0.395	0.000	0.04			10.2	OK
1.005	S6	178.383	-0.387	0.000	0.05			13.7	OK
1.006	S7	178.025	-0.395	0.000	0.04			14.1	OK
1.007	S8	177.162	-0.208	0.000	0.08			13.9	OK
1.008	S9/FC	177.162	0.182	0.000	0.36			2.9	SURCHARGED
1.009	S10	175.820	-0.080	0.000	0.09			2.9	OK
1.010	S11	152.327	-0.053	0.000	0.45			2.9	OK

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Summary of Results for 360 minute 1 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S1	179.455	-0.445	0.000	0.00			0.6	OK
1.001	S2	179.290	-0.435	0.000	0.01			1.9	OK
1.002	S3	178.999	-0.411	0.000	0.02			4.8	OK
1.003	S4	178.797	-0.398	0.000	0.03			5.5	OK
1.004	S5	178.720	-0.400	0.000	0.03			8.0	OK
1.005	S6	178.376	-0.394	0.000	0.04			10.8	OK
1.006	S7	178.020	-0.400	0.000	0.03			11.1	OK
1.007	S8	177.174	-0.196	0.000	0.06			11.0	OK
1.008	S9/FC	177.174	0.194	0.000	0.36			2.9	SURCHARGED
1.009	S10	175.820	-0.080	0.000	0.09			2.9	OK
1.010	S11	152.327	-0.053	0.000	0.45			2.9	OK

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Summary of Results for 720 minute 1 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S1	179.453	-0.447	0.000	0.00			0.4	OK
1.001	S2	179.285	-0.440	0.000	0.00			1.3	OK
1.002	S3	178.986	-0.424	0.000	0.01			3.2	OK
1.003	S4	178.790	-0.405	0.000	0.02			3.6	OK
1.004	S5	178.710	-0.410	0.000	0.02			5.4	OK
1.005	S6	178.368	-0.402	0.000	0.03			7.2	OK
1.006	S7	178.010	-0.410	0.000	0.02			7.4	OK
1.007	S8	177.173	-0.197	0.000	0.04			7.3	OK
1.008	S9/FC	177.172	0.192	0.000	0.36			2.9	SURCHARGED
1.009	S10	175.820	-0.080	0.000	0.09			2.9	OK
1.010	S11	152.327	-0.053	0.000	0.45			2.9	OK

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Summary of Results for 1440 minute 1 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S1	179.452	-0.448	0.000	0.00			0.2	OK
1.001	S2	179.281	-0.444	0.000	0.00			0.8	OK
1.002	S3	178.976	-0.434	0.000	0.01			2.0	OK
1.003	S4	178.773	-0.422	0.000	0.01			2.3	OK
1.004	S5	178.695	-0.425	0.000	0.01			3.3	OK
1.005	S6	178.354	-0.416	0.000	0.02			4.5	OK
1.006	S7	177.995	-0.425	0.000	0.01			4.6	OK
1.007	S8	177.105	-0.265	0.000	0.03			4.6	OK
1.008	S9/FC	177.105	0.125	0.000	0.35			2.8	SURCHARGED
1.009	S10	175.820	-0.080	0.000	0.09			2.8	OK
1.010	S11	152.326	-0.054	0.000	0.44			2.8	OK

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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model	
Return Period (years)	30
FEH Rainfall Version	1999
Site Location	GB 397350 357150 SJ 97350 57150
C (1km)	-0.028
D1 (1km)	0.409
D2 (1km)	0.318
D3 (1km)	0.322
E (1km)	0.306
F (1km)	2.323
Maximum Rainfall (mm/hr)	0
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.200
Maximum Backdrop Height (m)	1.500
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.840	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

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

Synthetic Rainfall Details

Rainfall Model	FEH
Return Period (years)	30
FEH Rainfall Version	1999
Site Location	GB 397350 357150 SJ 97350 57150

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Synthetic Rainfall Details

C (1km)	-0.028
D1 (1km)	0.409
D2 (1km)	0.318
D3 (1km)	0.322
E (1km)	0.306
F (1km)	2.323
Summer Storms	No
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Storm Duration (mins)	15

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Summary of Results for 15 minute 30 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S1	179.508	-0.392	0.000	0.04			9.3	OK
1.001	S2	179.377	-0.348	0.000	0.12			32.4	OK
1.002	S3	179.133	-0.277	0.000	0.31			82.3	OK
1.003	S4	178.984	-0.211	0.000	0.54			91.8	OK
1.004	S5	178.891	-0.229	0.000	0.47			133.4	OK
1.005	S6	178.584	-0.186	0.000	0.63			177.9	OK
1.006	S7	178.186	-0.234	0.000	0.46			182.9	OK
1.007	S8	177.394	0.024	0.000	1.02			172.6	SURCHARGED
1.008	S9/FC	177.281	0.301	0.000	0.37			2.9	SURCHARGED
1.009	S10	175.820	-0.080	0.000	0.09			2.9	OK
1.010	S11	152.327	-0.053	0.000	0.45			2.9	OK

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Summary of Results for 30 minute 30 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S1	179.501	-0.399	0.000	0.03			7.0	OK
1.001	S2	179.362	-0.363	0.000	0.08			23.3	OK
1.002	S3	179.105	-0.305	0.000	0.22			58.7	OK
1.003	S4	178.941	-0.254	0.000	0.39			66.5	OK
1.004	S5	178.853	-0.267	0.000	0.35			97.9	OK
1.005	S6	178.534	-0.236	0.000	0.46			130.1	OK
1.006	S7	178.151	-0.269	0.000	0.34			133.7	OK
1.007	S8	177.354	-0.016	0.000	0.80			134.2	OK
1.008	S9/FC	177.354	0.374	0.000	0.36			2.9	SURCHARGED
1.009	S10	175.820	-0.080	0.000	0.09			2.9	OK
1.010	S11	152.327	-0.053	0.000	0.45			2.9	OK

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Summary of Results for 60 minute 30 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S1	179.491	-0.409	0.000	0.02			4.5	OK
1.001	S2	179.343	-0.382	0.000	0.05			15.2	OK
1.002	S3	179.075	-0.335	0.000	0.15			38.2	OK
1.003	S4	178.900	-0.295	0.000	0.25			42.8	OK
1.004	S5	178.815	-0.305	0.000	0.22			63.3	OK
1.005	S6	178.489	-0.281	0.000	0.30			84.6	OK
1.006	S7	178.114	-0.306	0.000	0.22			87.9	OK
1.007	S8	177.434	0.064	0.000	0.51			85.4	SURCHARGED
1.008	S9/FC	177.434	0.454	0.000	0.37			2.9	SURCHARGED
1.009	S10	175.820	-0.080	0.000	0.09			2.9	OK
1.010	S11	152.327	-0.053	0.000	0.45			2.9	OK

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Summary of Results for 120 minute 30 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S1	179.476	-0.424	0.000	0.01			2.9	OK
1.001	S2	179.329	-0.396	0.000	0.03			9.6	OK
1.002	S3	179.052	-0.358	0.000	0.09			24.1	OK
1.003	S4	178.865	-0.330	0.000	0.16			27.2	OK
1.004	S5	178.782	-0.338	0.000	0.14			40.1	OK
1.005	S6	178.452	-0.318	0.000	0.19			53.6	OK
1.006	S7	178.082	-0.338	0.000	0.14			55.5	OK
1.007	S8	177.517	0.147	0.000	0.32			53.5	SURCHARGED
1.008	S9/FC	177.516	0.536	0.000	0.37			2.9	SURCHARGED
1.009	S10	175.820	-0.080	0.000	0.09			2.9	OK
1.010	S11	152.327	-0.053	0.000	0.45			2.9	OK

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Summary of Results for 240 minute 30 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S1	179.466	-0.434	0.000	0.01			1.8	OK
1.001	S2	179.320	-0.405	0.000	0.02			6.1	OK
1.002	S3	179.030	-0.380	0.000	0.06			15.2	OK
1.003	S4	178.840	-0.355	0.000	0.10			17.1	OK
1.004	S5	178.760	-0.360	0.000	0.09			25.3	OK
1.005	S6	178.423	-0.347	0.000	0.12			33.8	OK
1.006	S7	178.060	-0.360	0.000	0.09			35.0	OK
1.007	S8	177.598	0.228	0.000	0.20			33.8	SURCHARGED
1.008	S9/FC	177.598	0.618	0.000	0.37			2.9	SURCHARGED
1.009	S10	175.820	-0.080	0.000	0.09			2.9	OK
1.010	S11	152.327	-0.053	0.000	0.45			2.9	OK

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Summary of Results for 360 minute 30 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S1	179.462	-0.438	0.000	0.01			1.4	OK
1.001	S2	179.310	-0.415	0.000	0.02			4.6	OK
1.002	S3	179.020	-0.390	0.000	0.04			11.5	OK
1.003	S4	178.827	-0.368	0.000	0.08			13.0	OK
1.004	S5	178.746	-0.374	0.000	0.07			19.2	OK
1.005	S6	178.411	-0.359	0.000	0.09			25.6	OK
1.006	S7	178.046	-0.374	0.000	0.07			26.5	OK
1.007	S8	177.635	0.265	0.000	0.15			25.6	SURCHARGED
1.008	S9/FC	177.635	0.655	0.000	0.37			2.9	SURCHARGED
1.009	S10	175.820	-0.080	0.000	0.09			2.9	OK
1.010	S11	152.327	-0.053	0.000	0.45			2.9	OK

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Summary of Results for 720 minute 30 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S1	179.458	-0.442	0.000	0.00			0.9	OK
1.001	S2	179.297	-0.428	0.000	0.01			2.9	OK
1.002	S3	179.009	-0.401	0.000	0.03			7.2	OK
1.003	S4	178.808	-0.387	0.000	0.05			8.1	OK
1.004	S5	178.729	-0.391	0.000	0.04			11.9	OK
1.005	S6	178.388	-0.382	0.000	0.06			15.9	OK
1.006	S7	178.029	-0.391	0.000	0.04			16.5	OK
1.007	S8	177.662	0.292	0.000	0.09			15.9	SURCHARGED
1.008	S9/FC	177.662	0.682	0.000	0.37			2.9	SURCHARGED
1.009	S10	175.820	-0.080	0.000	0.09			2.9	OK
1.010	S11	152.327	-0.053	0.000	0.45			2.9	OK

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Summary of Results for 1440 minute 30 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S1	179.455	-0.445	0.000	0.00			0.5	OK
1.001	S2	179.288	-0.437	0.000	0.01			1.7	OK
1.002	S3	178.994	-0.416	0.000	0.02			4.2	OK
1.003	S4	178.794	-0.401	0.000	0.03			4.7	OK
1.004	S5	178.717	-0.403	0.000	0.02			7.0	OK
1.005	S6	178.373	-0.397	0.000	0.03			9.3	OK
1.006	S7	178.017	-0.403	0.000	0.02			9.6	OK
1.007	S8	177.572	0.202	0.000	0.06			9.4	SURCHARGED
1.008	S9/FC	177.572	0.592	0.000	0.37			2.9	SURCHARGED
1.009	S10	175.820	-0.080	0.000	0.09			2.9	OK
1.010	S11	152.327	-0.053	0.000	0.45			2.9	OK

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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model	
Return Period (years)	100
FEH Rainfall Version	1999
Site Location	GB 397350 357150 SJ 97350 57150
C (1km)	-0.028
D1 (1km)	0.409
D2 (1km)	0.318
D3 (1km)	0.322
E (1km)	0.306
F (1km)	2.323
Maximum Rainfall (mm/hr)	0
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
PIMP (%)	100
Add Flow / Climate Change (%)	40
Minimum Backdrop Height (m)	0.200
Maximum Backdrop Height (m)	1.500
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.840	Additional Flow - % of Total Flow	40.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

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

Synthetic Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	1999
Site Location	GB 397350 357150 SJ 97350 57150

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Synthetic Rainfall Details

C (1km)	-0.028
D1 (1km)	0.409
D2 (1km)	0.318
D3 (1km)	0.322
E (1km)	0.306
F (1km)	2.323
Summer Storms	No
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Storm Duration (mins)	15

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Summary of Results for 30 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S1	179.522	-0.378	0.000	0.06			14.5	OK
1.001	S2	179.401	-0.324	0.000	0.17			48.5	OK
1.002	S3	179.178	-0.232	0.000	0.47			122.1	OK
1.003	S4	179.056	-0.139	0.000	0.82			138.3	OK
1.004	S5	178.954	-0.166	0.000	0.72			203.1	OK
1.005	S6	178.668	-0.102	0.000	0.95			269.2	OK
1.006	S7	178.250	-0.170	0.000	0.70			277.8	OK
1.007	S8	177.736	0.366	0.000	1.59			267.4	SURCHARGED
1.008	S9/FC	177.736	0.756	0.000	0.36			2.9	SURCHARGED
1.009	S10	175.820	-0.080	0.000	0.09			2.9	OK
1.010	S11	152.327	-0.053	0.000	0.45			2.9	OK

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Summary of Results for 60 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S1	179.507	-0.393	0.000	0.04			9.2	OK
1.001	S2	179.375	-0.350	0.000	0.11			31.0	OK
1.002	S3	179.128	-0.282	0.000	0.30			77.7	OK
1.003	S4	178.977	-0.218	0.000	0.51			87.1	OK
1.004	S5	178.885	-0.235	0.000	0.45			128.6	OK
1.005	S6	178.576	-0.194	0.000	0.61			171.9	OK
1.006	S7	178.183	-0.237	0.000	0.45			178.7	OK
1.007	S8	177.860	0.490	0.000	1.00			169.1	SURCHARGED
1.008	S9/FC	177.859	0.879	0.000	0.36			2.9	SURCHARGED
1.009	S10	175.820	-0.080	0.000	0.09			2.9	OK
1.010	S11	152.327	-0.053	0.000	0.45			2.9	OK

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Summary of Results for 120 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S1	179.497	-0.403	0.000	0.02			5.7	OK
1.001	S2	179.351	-0.374	0.000	0.07			19.1	OK
1.002	S3	179.089	-0.321	0.000	0.18			47.8	OK
1.003	S4	178.919	-0.276	0.000	0.32			53.9	OK
1.004	S5	178.832	-0.288	0.000	0.28			79.5	OK
1.005	S6	178.511	-0.259	0.000	0.38			106.4	OK
1.006	S7	178.131	-0.289	0.000	0.28			110.1	OK
1.007	S8	177.989	0.619	0.000	0.63			106.2	SURCHARGED
1.008	S9/FC	177.989	1.009	0.000	0.36			2.9	SURCHARGED
1.009	S10	175.820	-0.080	0.000	0.09			2.9	OK
1.010	S11	152.327	-0.053	0.000	0.45			2.9	OK

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Summary of Results for 240 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S1	179.482	-0.418	0.000	0.01			3.5	OK
1.001	S2	179.334	-0.391	0.000	0.04			11.7	OK
1.002	S3	179.060	-0.350	0.000	0.11			29.4	OK
1.003	S4	178.880	-0.315	0.000	0.20			33.2	OK
1.004	S5	178.795	-0.325	0.000	0.17			49.0	OK
1.005	S6	178.466	-0.304	0.000	0.23			65.6	OK
1.006	S7	178.118	-0.302	0.000	0.17			67.8	OK
1.007	S8	178.116	0.746	0.000	0.39			65.6	SURCHARGED
1.008	S9/FC	178.115	1.135	0.000	0.38			3.0	SURCHARGED
1.009	S10	175.820	-0.080	0.000	0.09			3.0	OK
1.010	S11	152.328	-0.052	0.000	0.47			3.0	OK

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Summary of Results for 360 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S1	179.474	-0.426	0.000	0.01			2.6	OK
1.001	S2	179.327	-0.398	0.000	0.03			8.8	OK
1.002	S3	179.047	-0.363	0.000	0.08			22.0	OK
1.003	S4	178.859	-0.336	0.000	0.15			24.8	OK
1.004	S5	178.777	-0.343	0.000	0.13			36.6	OK
1.005	S6	178.445	-0.325	0.000	0.17			49.0	OK
1.006	S7	178.184	-0.236	0.000	0.13			50.7	OK
1.007	S8	178.181	0.811	0.000	0.29			49.1	SURCHARGED
1.008	S9/FC	178.181	1.201	0.000	0.39			3.1	SURCHARGED
1.009	S10	175.821	-0.079	0.000	0.09			3.1	OK
1.010	S11	152.329	-0.051	0.000	0.48			3.1	OK

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Summary of Results for 720 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S1	179.464	-0.436	0.000	0.01			1.6	OK
1.001	S2	179.316	-0.409	0.000	0.02			5.3	OK
1.002	S3	179.025	-0.385	0.000	0.05			13.3	OK
1.003	S4	178.835	-0.360	0.000	0.09			15.1	OK
1.004	S5	178.753	-0.367	0.000	0.08			22.2	OK
1.005	S6	178.414	-0.356	0.000	0.10			27.7	OK
1.006	S7	178.189	-0.231	0.000	0.07			28.7	OK
1.007	S8	178.187	0.817	0.000	0.17			27.8	SURCHARGED
1.008	S9/FC	178.187	1.207	0.000	0.39			3.1	SURCHARGED
1.009	S10	175.821	-0.079	0.000	0.09			3.1	OK
1.010	S11	152.329	-0.051	0.000	0.48			3.1	OK

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Summary of Results for 1440 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
1.000	S1	179.458	-0.442	0.000	0.00			0.9	OK
1.001	S2	179.298	-0.427	0.000	0.01			3.0	OK
1.002	S3	179.010	-0.400	0.000	0.03			7.6	OK
1.003	S4	178.810	-0.385	0.000	0.05			8.6	OK
1.004	S5	178.731	-0.389	0.000	0.04			12.7	OK
1.005	S6	178.391	-0.379	0.000	0.06			17.0	OK
1.006	S7	178.196	-0.224	0.000	0.04			17.5	OK
1.007	S8	178.194	0.824	0.000	0.10			17.1	SURCHARGED
1.008	S9/FC	178.193	1.213	0.000	0.39			3.1	SURCHARGED
1.009	S10	175.821	-0.079	0.000	0.09			3.1	OK
1.010	S11	152.329	-0.051	0.000	0.48			3.1	OK

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Simulation Criteria for Storm

Volumetric Runoff Coeff	0.840	Additional Flow - % of Total Flow	40.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	720
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	6

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

Synthetic Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	1999
Site Location	GB 397350 357150 SJ 97350 57150
C (1km)	-0.028
D1 (1km)	0.409
D2 (1km)	0.318
D3 (1km)	0.322
E (1km)	0.306
F (1km)	2.323
Summer Storms	No
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Storm Duration (mins)	360

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Summary of Results for 360 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

PN	US/MH Name	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Discharge Vol (m³)	Pipe Flow (l/s)	Status
1.000	S1	180.650	179.474	-0.426	0.000	0.01		22.684	2.6	OK
1.001	S2	180.600	179.327	-0.398	0.000	0.03		75.354	8.8	OK
1.002	S3	180.500	179.047	-0.363	0.000	0.08		188.808	22.0	OK
1.003	S4	180.475	178.859	-0.336	0.000	0.15		213.247	24.8	OK
1.004	S5	180.450	178.777	-0.343	0.000	0.13		314.556	36.6	OK
1.005	S6	180.050	178.445	-0.325	0.000	0.17		420.768	49.0	OK
1.006	S7	179.850	178.184	-0.236	0.000	0.13		435.355	50.7	OK
1.007	S8	178.500	178.181	0.811	0.000	0.29		425.899	49.1	SURCHARGED
1.008	S9/FC	178.500	178.181	1.201	0.000	0.39		120.979	3.1	SURCHARGED
1.009	S10	177.000	175.821	-0.079	0.000	0.09		120.960	3.1	OK
1.010	S11	153.000	152.329	-0.051	0.000	0.48		120.900	3.1	OK

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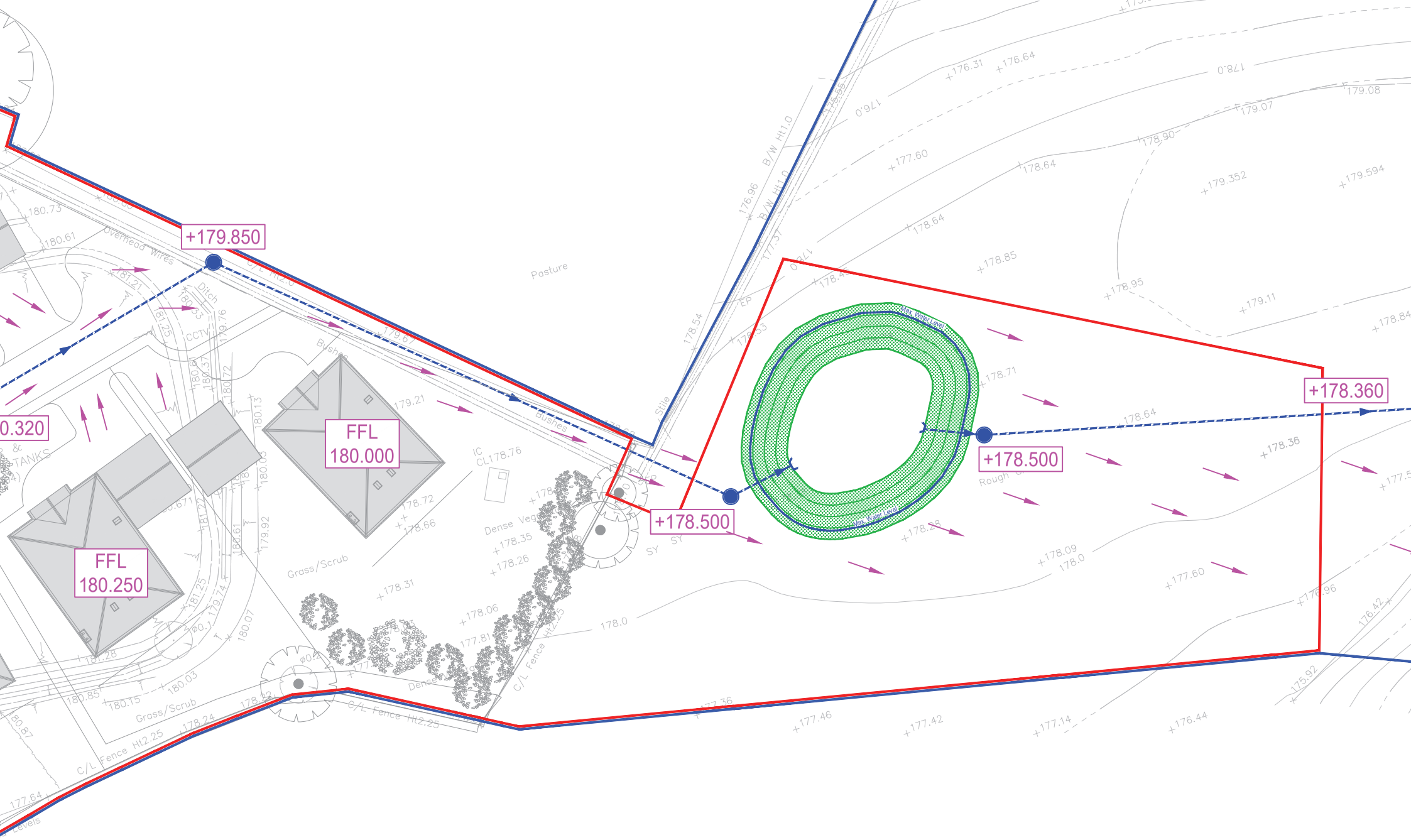
Appendix I Exceedance / Failure Plan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+178.500
+178.500
+178.360
FFL
180.000
FFL
180.250
Pasture
Overhead Wires
Ditch
Bushes
Stile
Grass/Scrub
Dense Veg
C/L Fence Ht2.25
Max Water Level
Min Water Level
Rough