



Drainage Planning Report

for

Mixed Use Development ~ Plot G
Estuary View, Wraik Hill
Whitstable
Kent

on behalf of

George Wilson Developments Ltd

Document Control Sheet

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Estuary View, Wraik Hill, Whitstable

Document Title Drainage Planning Report

Job No. EMC-2017-203

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1.0 STATUS

- 1.1 This Report is prepared for the sole use of George Wilson Developments Ltd and their agents in connection with the forthcoming planning application. No responsibility can be assumed for the Report if used by others.
- 1.2 For the purposes of the Contracts (Rights of Third Parties) Act 1999, nothing in this Report shall confer on any third party any right to enforce or benefit from any terms of this Report

2.0 INTRODUCTION Background

- 2.1 Tridax Ltd have been commissioned by George Wilson Developments Ltd and requested to update the surface water strategy for the revised proposals for Plot G.
- 2.2 This Report is in accordance with the Kent County Council Local Flood Risk Management Strategy ~ Guidance on Consultation; as the application is for a major development and KCC as the lead SUDS Authority will be consulted on the application.

Site Location

- 2.3 The site, Plot G part of the Estuary View Business Park (EVBP), is located South of Seasalter near Whitstable, bounded to the South by the Thanet Way, to the North by the Old Thanet Way, East by the recently constructed retail area of the EVBP and to the East by The Chaucer Business Park.
- 2.4 The site is the remaining area of the EVBP to be developed.

Background

- 2.5 The drainage of the recently constructed retail area of the EVBP immediately to the West of Plot G was designed to allow for both the surface water and foul water flows from this remaining area of the overall development. The surface water system for the EVBP comprises two networks which discharge via attenuated below ground surface water storage facilities, within the recently constructed retail area, to the storage pond on the previously constructed area of the EVBP to the West of the retail area. From this pond is a restricted outfall to an existing stream. The foul water system from the recently constructed retail area also passes through the EVBP and to the public sewer system. The drawings 0014/012/12/SKC01/P2 and SKC02/P2, previously produced for the overall drainage design of the EVBP, show the above drainage networks.
- 2.6 A copy of the original PHT Consulting Engineers design Information is included within Appendix C.

3.0 FOUL WATER DRAINAGE

Proposed Discharge

- 3.1 Manhole reference F106 was provided as part of the recently constructed retail area for the connection of the foul water drainage to serve Plot G. The revised application for Plot G has a similar foul water discharge from the 2No retail units allowed within the original design and therefore adequate.

Consents

- 3.2 A Section 106 Water Industry Act application to connect to the public sewer at F106 will be required to be made to and approved by Southern Water Services.


4.0 SURFACE WATER DRAINAGE

Existing Discharge

- 4.1 Manhole reference S107 was provided as part of the recently constructed retail area for the connection of the surface water drainage to serve Plot G.
- 4.2 From inspection of the original design information supplied by PHT Consulting Ltd the following details were assumed for Plot G.

Proposed Impermeable Area 3,000m² (0.3ha)
 FSR 19.70mm

- 4.3 The peak discharge for a 100 year return at S107 is **146.7l/s**. Refer to PHT MicroDrainage results included within Appendix C and extract as frame 1 below;

PHT Consulting Limited		Page 11					
Woodthorpe, The Drive Maresfield Park Maresfield, TN22 2HE	Estuary View Whitstable						
Date Oct 2012	Designed by PHT						
File Sim prop 30+151...	Checked by						
Micro Drainage	Network W.12.6.1						
<u>Summary of Critical Results by Maximum Level (Rank 1) for Existing</u>							
	Water	Flooded	Pipe				
US/MH	Level	Surch'd	Volume	Flow / O'flow	Flow	Status	
FN	Name	(m)	Depth (m)	(m ³)	Cap. (l/s)	(l/s)	(l/s)
1.000	S107	53.430	0.930	0.000	1.78	0.0	146.7 FLOOD RISK

Frame 1

Proposed Discharge

- 4.4 The revised proposals for Plot G increase the impermeable area to discharge at S107 to 4,330m² (0.43ha). The requirements of Kent County Council as the lead SUDS Authority have also seen an increase since the construction of the infra-structure for EVBP and now require the FSR rainfall to be manually increased to 26.25mm.

Proposed Impermeable Area	4,330m ² (0.43ha)
FSR	26.25mm

- 4.5 Included with Appendix B are MicroDrainage Simulation results for proposed surface water network for Plot G. From the network results it can be noted a below ground cellular storage structure is required to provide 88m³ of attenuation. The additional storage is required to cater for the increase in impermeable area and the increase in modelling criteria whilst maintaining the same discharge to S107 as previously allowed. Downstream of S107 is not affected by the revised proposal for Plot G with the discharge remaining as previously consented.
- 4.6 An updated surface water management strategy drawing is included within Appendix A as drawing EMC-2017-203-01.

Consents

- 4.7 A Section 106 Water Industry Act application to connect to the public surface water sewer at S107 will be required to be made to and approved by Southern Water Services.

5.0 OPERATION & MAINTENANCE STATEMENT

5.1 The surface water system as indicated on drawing EMC-2017-203-01 is a private Sustainable Urban Drainage System (SUDS) and the owners of the properties (Management Company) will be responsible for the inspection and maintenance for this system.

5.2 It is recommended that the chambers, catch pits, and the attenuation structure are inspected as part of the general planned inspection and maintenance regime for the development, but certainly at no greater intervals than once a year.

5.3 Annual Inspection to include;

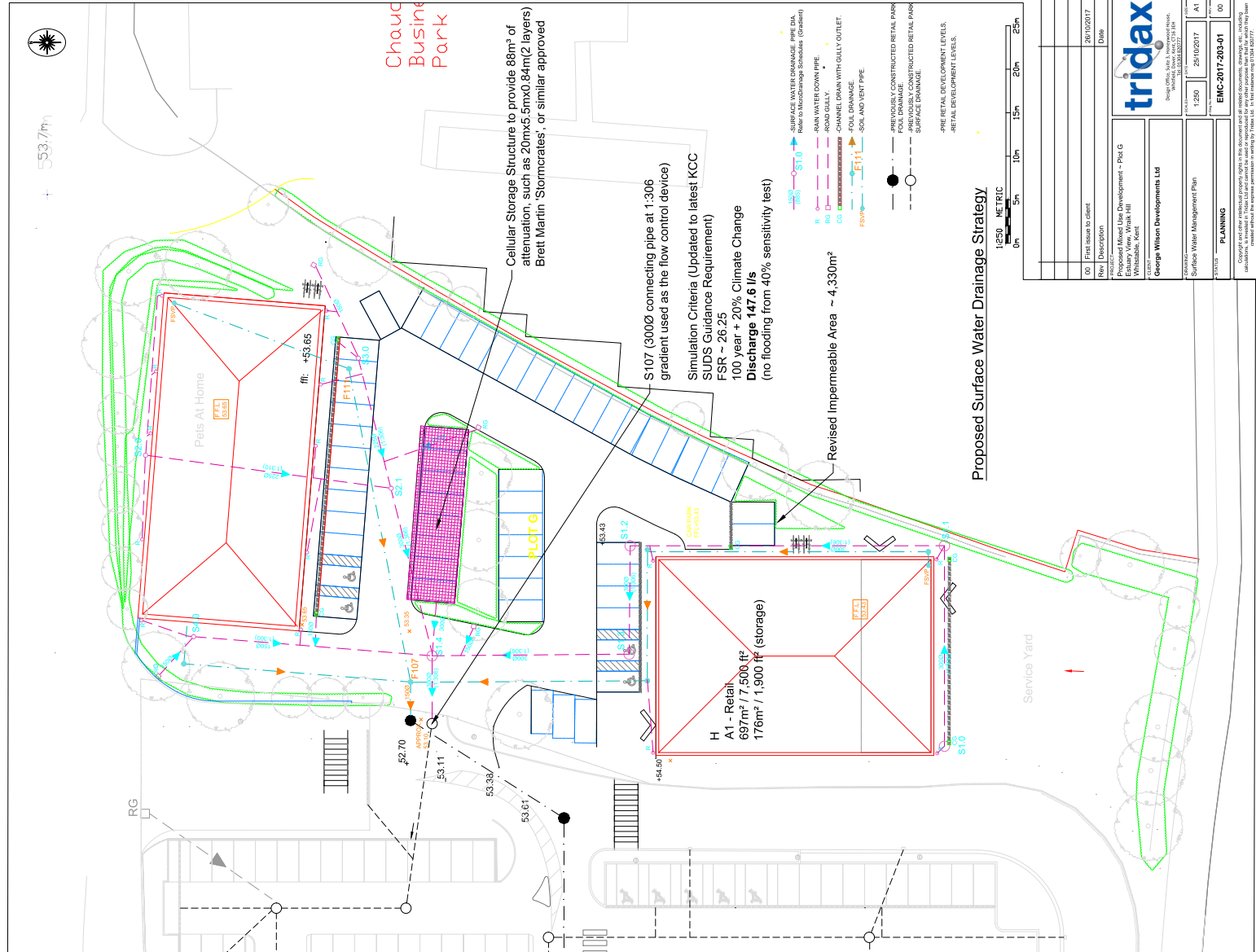
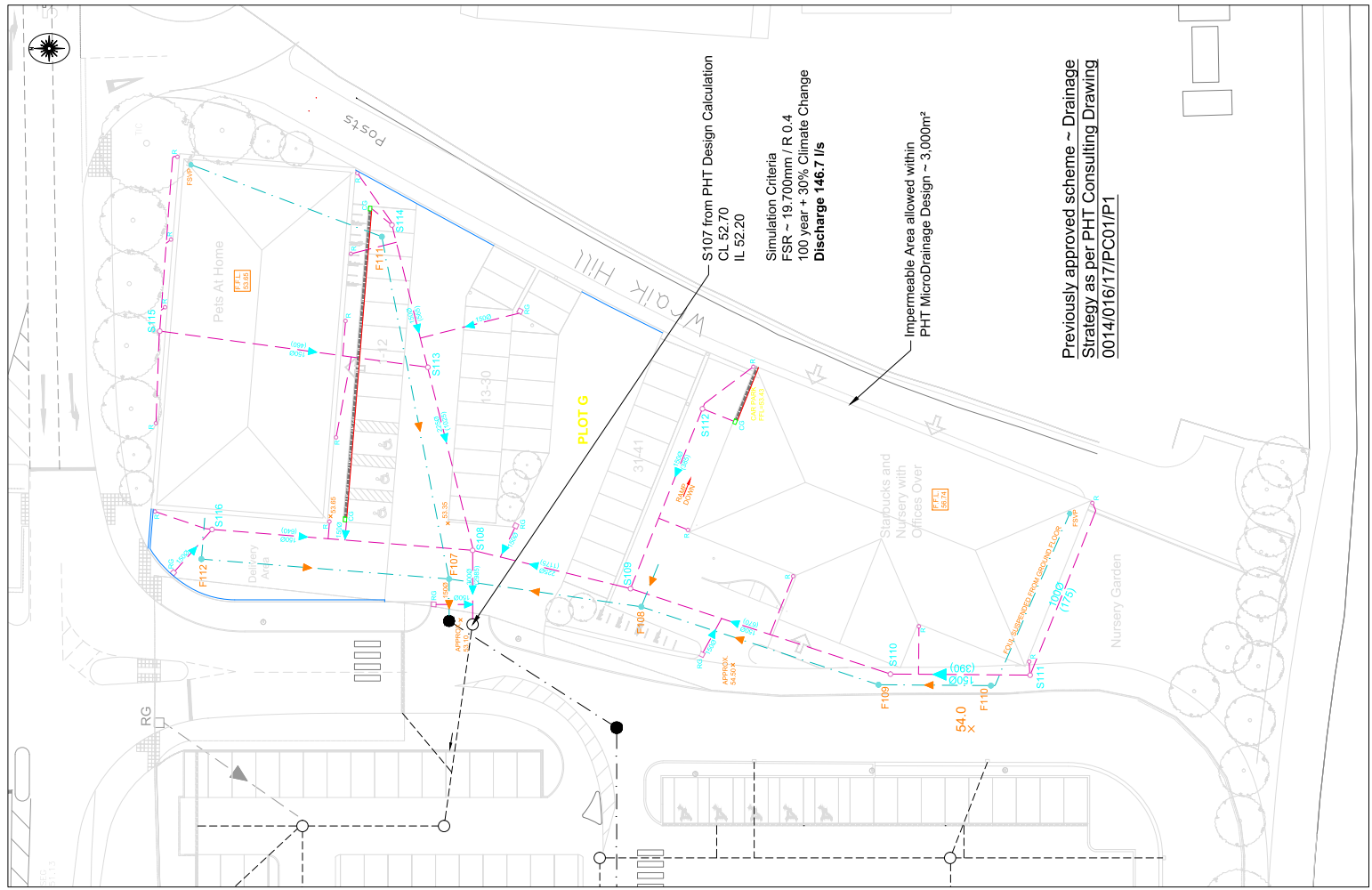
- Lift manhole covers to the catch pits and check general condition
- Note that the chambers are constructed as catch-pits and from the construction detail it can be seen that there is a 600mm sump for silt collection below the standing water that will need to be dipped and empty as required. by licensed carrier
- Review quantities of silt removed and consider whether inspections should be increased or possibly reduced to every two years.
- Carry out works as identified from inspection.

5.4 Five year Inspection / Five Year Anniversary

- Rod and flush all pipe work to ensure no blockages and free flow of water to the catch pits and to check overall integrity and remove any silt.
- Carry out a rapid 'Flush' through of the system (works during a dry period), note that attenuation structure has access chambers to enable rapid flush.

APPENDIX A

Tridax Drawings
EMC-2017-203-01 – Surface Water Management Plan



Rev	Description	Date
00	Final Issue to Client	26/10/2017

Prepared by: Michael Wainwright - PHT G
 Checked by: Euan Wainwright - PHT G
 Drawn by: Euan Wainwright - PHT G
 Project: Euan Wainwright, Wainwright Hill
 Whitstable, Kent


Client:
 George Wilson Developments Ltd
 12500
 25/10/2017
 Surface Water Management Plan

PROJECT: PLANNING
 REF: EMC-2017-203-01
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APPENDIX B

Proposed Surface Water Network Simulation Results
40% Sensitivity Test Simulation Results

Tridax Ltd		Page 1
Honeywood House Whitfield Kent CT16 3EH	Plot G Estuary View Wraik Hill, Whitstable	
Date 26/10/2017 16:58 File C-2017-203 Plot G SW Ne...	Designed by PRL Checked by	
XP Solutions	Network 2017.1.2	

Existing Network Details for Storm


* - Indicates pipe has been modified outside of System 1

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	k (mm)	HYD SECT	DIA (mm)	Section Type
* 1.000	23.047	0.075	307.3	0.045	5.00	0.600	o	300	Pipe/Conduit
* 1.001	36.125	0.118	306.1	0.051	0.00	0.600	o	300	Pipe/Conduit
* 1.002	12.452	0.040	311.3	0.058	0.00	0.600	o	300	Pipe/Conduit
* 1.003	22.652	0.074	306.1	0.072	0.00	0.600	o	300	Pipe/Conduit
* 2.000	27.971	0.090	310.8	0.035	5.00	0.600	o	225	Pipe/Conduit
* 3.000	14.933	0.050	298.7	0.028	5.00	0.600	o	225	Pipe/Conduit
* 2.001	13.529	0.045	300.6	0.110	0.00	0.600	o	300	Pipe/Conduit
* 4.000	27.000	0.090	300.0	0.035	5.00	0.600	o	150	Pipe/Conduit
* 1.004	6.940	0.022	315.5	0.000	0.00	0.600	o	300	Pipe/Conduit

PN	US/MH Name	US/CL (m)	US/IL (m)	US C.Depth (m)	DS/CL (m)	DS/IL (m)	DS C.Depth (m)	Ctrl	US/MH (mm)
* 1.000	S1.0	53.430	52.529	0.601	53.430	52.454	0.676		1500
* 1.001	S1.1	53.430	52.454	0.676	53.430	52.336	0.794		1500
* 1.002	S1.2	53.430	52.336	0.794	53.430	52.296	0.834		1500
* 1.003	S1.3	53.430	52.296	0.834	53.540	52.222	1.018		1500
* 2.000	S2.0	53.650	52.540	0.885	53.540	52.450	0.865		1500
* 3.000	S3.0	53.540	52.375	0.940	53.540	52.325	0.990		1200
* 2.001	S2.1	53.540	52.325	0.915	53.540	52.280	0.960		1200
* 4.000	S4.0	53.650	52.462	1.038	53.540	52.372	1.018		1200
* 1.004	S1.4	53.540	52.222	1.018	53.700	52.200	1.200		1500

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)
1.004	S107	53.700	52.200	52.200	1200	0


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Honeywood House Whitfield Kent CT16 3EH	Plot G Estuary View Wraik Hill, Whitstable	
Date 26/10/2017 16:58 File C-2017-203 Plot G SW Ne...	Designed by PRL Checked by	
XP Solutions	Network 2017.1.2	

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /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 0 Number of Storage Structures 1 Number of Real Time Controls 0			

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	26.250	Storm Duration (mins)	30
Ratio R	0.400		

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Honeywood House Whitfield Kent CT16 3EH	Plot G Estuary View Wraik Hill, Whitstable	
Date 26/10/2017 16:58 File C-2017-203 Plot G SW Ne...	Designed by PRL Checked by	
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Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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


Synthetic Rainfall Details

Rainfall Model	FSR M5-60 (mm)	26.250	Cv (Summer)	0.750	
Region	England and Wales	Ratio R	0.400	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	100.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	2, 30, 100
Climate Change (%)	0, 0, 20

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Flooded Volume (m ³)	Discharge Vol (m ³)	Pipe Flow (l/s)	Status
1.000	S1.0	30 minute 100 year Summer I+20%	53.430	53.244	0.000	17.438	22.4	SURCHARGED
1.001	S1.1	30 minute 100 year Summer I+20%	53.430	53.195	0.000	37.207	46.7	SURCHARGED
1.002	S1.2	30 minute 100 year Summer I+20%	53.430	53.120	0.000	59.690	75.4	SURCHARGED
1.003	S1.3	30 minute 100 year Winter I+20%	53.430	53.038	0.000	98.076	105.8	SURCHARGED
2.000	S2.0	30 minute 100 year Winter I+20%	53.650	52.933	0.000	15.188	17.1	SURCHARGED
3.000	S3.0	30 minute 100 year Winter I+20%	53.540	52.921	0.000	12.150	13.9	SURCHARGED
2.001	S2.1	30 minute 100 year Winter I+20%	53.540	52.905	0.000	75.089	88.6	SURCHARGED
4.000	S4.0	30 minute 100 year Summer I+20%	53.650	53.069	0.000	13.563	18.6	SURCHARGED
1.004	S1.4	30 minute 100 year Winter I+20%	53.540	52.833	0.000	180.727	147.6	SURCHARGED

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Honeywood House Whitfield Kent CT16 3EH	Plot G Estuary View Wraik Hill, Whitstable	
Date 26/10/2017 17:00 File C-2017-203 Plot G SW Ne...	Designed by PRL Checked by	
XP Solutions	Network 2017.1.2	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

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

Synthetic Rainfall Details

Rainfall Model	FSR M5-60 (mm)	26.250	Cv (Summer)	0.750	
Region	England and Wales	Ratio R	0.400	Cv (Winter)	0.840


Margin for Flood Risk Warning (mm)	100.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	2, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Event	US/CL (m)	Water Level (m)	Flooded Volume (m ³)	Discharge Vol (m ³)	Pipe Flow (l/s)	Status
1.000	S1.0	30 minute 100 year Summer I+40%	53.430	53.429	0.000	20.347	27.6	FLOOD RISK
1.001	S1.1	30 minute 100 year Summer I+40%	53.430	53.412	0.000	43.410	53.1	FLOOD RISK
1.002	S1.2	30 minute 100 year Summer I+40%	53.430	53.319	0.000	69.634	86.8	SURCHARGED
1.003	S1.3	30 minute 100 year Winter I+40%	53.430	53.210	0.000	114.401	122.5	SURCHARGED
2.000	S2.0	30 minute 100 year Winter I+40%	53.650	53.061	0.000	17.720	20.0	SURCHARGED
3.000	S3.0	30 minute 100 year Winter I+40%	53.540	53.044	0.000	14.175	16.3	SURCHARGED
2.001	S2.1	30 minute 100 year Winter I+40%	53.540	53.017	0.000	87.598	103.4	SURCHARGED
4.000	S4.0	30 minute 100 year Summer I+40%	53.650	53.259	0.000	15.824	21.4	SURCHARGED
1.004	S1.4	30 minute 100 year Winter I+40%	53.540	52.935	0.000	211.619	168.0	SURCHARGED

APPENDIX C

Original PHT Design Information

Woodthorpe, The Drive Maresfield Park Maresfield, TN22 2HE	Estuary View Whitstable	
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Date Oct 2012	Designed by PHT	
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Micro Drainage	Network W.12.6.1
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Existing Network Details for Existing

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)
1.000	30.000	0.200	150.0	0.300	5.00	0.0	0.600	o	300
1.001	15.000	0.200	75.0	0.000	0.00	0.0	0.600	o	300
1.002	25.000	0.200	125.0	0.060	0.00	0.0	0.600	o	300
1.003	30.000	0.120	250.0	0.200	0.00	0.0	0.600	o	375
1.004	60.000	0.240	250.0	0.180	0.00	0.0	0.600	o	450
1.005	15.000	0.100	150.0	0.360	0.00	0.0	0.600	o	300
1.006	15.000	0.150	100.0	0.000	0.00	0.0	0.600	o	300
1.007	22.000	1.070	20.6	0.000	0.00	0.0	0.600	o	300
1.008	11.000	0.150	73.3	0.065	0.00	0.0	0.600	o	300
1.009	16.000	0.260	61.5	0.084	0.00	0.0	0.600	o	300
1.010	22.000	2.130	10.3	0.255	0.00	0.0	0.600	o	300
1.011	17.000	0.840	20.2	0.010	0.00	0.0	0.600	o	300
1.012	19.000	0.740	25.7	0.029	0.00	0.0	0.600	o	300
1.013	9.000	0.080	112.5	0.071	0.00	0.0	0.600	o	375
1.014	17.000	0.240	70.8	0.020	0.00	0.0	0.600	o	375
1.015	19.000	0.720	26.4	0.013	0.00	0.0	0.600	o	375
1.016	11.000	0.380	28.9	0.013	0.00	0.0	0.600	o	375
1.017	24.000	0.110	218.2	0.013	0.00	0.0	0.600	o	450
1.018	13.000	1.180	11.0	0.023	0.00	0.0	0.600	o	450
1.019	25.000	0.170	147.1	0.030	0.00	0.0	0.600	o	450
1.020	20.000	0.140	142.9	0.240	0.00	0.0	0.600	o	450
1.021	12.000	3.090	3.9	0.010	0.00	0.0	0.600	o	450

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
1.000	52.200	0.300	0.0	1.28	90.6
1.001	52.000	0.300	0.0	1.82	128.5
1.002	51.000	0.360	0.0	1.40	99.3
1.003	50.720	0.560	0.0	1.14	126.1
1.004	49.600	0.740	0.0	1.28	203.8
1.005	49.360	1.100	0.0	1.28	90.6
1.006	47.600	1.100	0.0	1.57	111.1
1.007	47.450	1.100	0.0	3.48	246.2
1.008	46.380	1.165	0.0	1.84	129.9
1.009	46.230	1.249	0.0	2.01	141.9
1.010	44.530	1.504	0.0	4.92	347.7
1.011	42.400	1.514	0.0	3.51	248.2
1.012	41.560	1.543	0.0	3.12	220.2
1.013	40.740	1.614	0.0	1.71	188.6
1.014	40.660	1.634	0.0	2.16	238.0
1.015	40.420	1.647	0.0	3.54	390.9
1.016	39.700	1.660	0.0	3.38	373.2
1.017	39.240	1.673	0.0	1.37	218.3
1.018	39.130	1.696	0.0	6.15	978.4
1.019	37.950	1.726	0.0	1.67	266.3
1.020	37.780	1.966	0.0	1.70	270.2
1.021	37.640	1.976	0.0	10.37	1649.3

Woodthorpe, The Drive Maresfield Park Maresfield, TN22 2HE	Estuary View Whitstable	
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Date Oct 2012 File Sim prop 30+151...	Designed by PHT Checked by	
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Micro Drainage	Network W.12.6.1
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Existing Network Details for Existing

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)
2.000	60.000	0.300	200.0	0.160	5.00	0.0	0.600	o	225
2.001	15.000	0.100	150.0	0.290	0.00	0.0	0.600	o	375
2.002	35.000	0.150	233.3	0.065	0.00	0.0	0.600	o	450
2.003	25.000	1.800	13.9	0.130	0.00	0.0	0.600	o	225
2.004	25.000	0.450	55.6	0.000	0.00	0.0	0.600	o	300
2.005	18.000	1.810	9.9	0.155	0.00	0.0	0.600	o	300
2.006	27.000	0.640	42.2	0.085	0.00	0.0	0.600	o	300
2.007	36.000	2.370	15.2	0.195	0.00	0.0	0.600	o	300
2.008	30.000	1.250	24.0	0.049	0.00	0.0	0.600	o	300
2.009	12.000	0.460	26.1	0.017	0.00	0.0	0.600	o	300
2.010	37.000	1.330	27.8	0.020	0.00	0.0	0.600	o	375
2.011	25.000	0.980	25.5	0.337	0.00	0.0	0.600	o	375
2.012	15.000	0.300	50.0	0.172	0.00	0.0	0.600	o	375
2.013	16.000	1.850	8.6	0.049	0.00	0.0	0.600	o	375
1.022	25.000	1.000	25.0	0.000	0.00	0.0	0.600	o	450

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
2.000	52.600	0.160	0.0	0.92	36.6
2.001	52.150	0.450	0.0	1.48	163.1
2.002	51.050	0.515	0.0	1.33	211.0
2.003	50.900	0.645	0.0	3.53	140.3
2.004	49.100	0.645	0.0	2.11	149.4
2.005	48.650	0.800	0.0	5.01	354.4
2.006	46.840	0.885	0.0	2.43	171.6
2.007	46.200	1.080	0.0	4.05	286.6
2.008	43.830	1.129	0.0	3.22	227.8
2.009	42.580	1.146	0.0	3.09	218.5
2.010	42.040	1.166	0.0	3.45	380.7
2.011	40.710	1.503	0.0	3.60	397.6
2.012	39.730	1.675	0.0	2.57	283.6
2.013	36.400	1.724	0.0	6.19	683.9
1.022	33.900	3.700	0.0	4.08	648.8

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Manhole Schedules for Existing

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
S107	53.700	1.500	Open Manhole	1200	1.000	52.200	300				
S106	53.700	1.700	Open Manhole	1200	1.001	52.000	300	1.000	52.000	300	
S105	53.350	2.350	Open Manhole	1200	1.002	51.000	300	1.001	51.800	300	800
S104	53.350	2.630	Open Manhole	1350	1.003	50.720	375	1.002	50.800	300	5
S103	53.350	3.750	Open Manhole	1500	1.004	49.600	450	1.003	50.600	375	925
S102	53.350	3.990	Open Manhole	1500	1.005	49.360	300	1.004	49.360	450	
S101	53.100	5.500	Open Manhole	1200	1.006	47.600	300	1.005	49.260	300	1660
S1	49.100	1.650	Open Manhole	1200	1.007	47.450	300	1.006	47.450	300	
S132	48.260	1.880	Open Manhole	1200	1.008	46.380	300	1.007	46.380	300	
S131	47.780	1.550	Open Manhole	1200	1.009	46.230	300	1.008	46.230	300	
S130	47.520	2.990	Open Manhole	1200	1.010	44.530	300	1.009	45.970	300	1440
S129A	43.850	1.450	Open Manhole	1200	1.011	42.400	300	1.010	42.400	300	
S129	43.580	2.020	Open Manhole	1200	1.012	41.560	300	1.011	41.560	300	
S128	42.550	1.810	Open Manhole	1200	1.013	40.740	375	1.012	40.820	300	5
S27	42.290	1.630	Open Manhole	1200	1.014	40.660	375	1.013	40.660	375	
S26	42.300	1.880	Open Manhole	1200	1.015	40.420	375	1.014	40.420	375	
S25	41.000	1.300	Open Manhole	1200	1.016	39.700	375	1.015	39.700	375	
S24	40.600	1.360	Open Manhole	1200	1.017	39.240	450	1.016	39.320	375	5
S23	39.900	0.770	Open Manhole	1200	1.018	39.130	450	1.017	39.130	450	
S23a	39.000	1.050	Open Manhole	1200	1.019	37.950	450	1.018	37.950	450	
S23b	42.400	4.620	Open Manhole	1200	1.020	37.780	450	1.019	37.780	450	
S23c	39.100	1.460	Open Manhole	1200	1.021	37.640	450	1.020	37.640	450	
S204	54.000	1.400	Open Manhole	1200	2.000	52.600	225				
S203	54.000	1.850	Open Manhole	1350	2.001	52.150	375	2.000	52.300	225	
S202	54.000	2.950	Open Manhole	1500	2.002	51.050	450	2.001	52.050	375	925
S201	54.000	3.100	Open Manhole	1500	2.003	50.900	225	2.002	50.900	450	
S2	51.930	2.830	Open Manhole	1200	2.004	49.100	300	2.003	49.100	225	
S8	50.150	1.500	Open Manhole	1200	2.005	48.650	300	2.004	48.650	300	
S7	48.340	1.500	Open Manhole	1200	2.006	46.840	300	2.005	46.840	300	
S6	47.720	1.520	Open Manhole	1200	2.007	46.200	300	2.006	46.200	300	
S5	45.380	1.550	Open Manhole	1200	2.008	43.830	300	2.007	43.830	300	
S4	44.130	1.550	Open Manhole	1200	2.009	42.580	300	2.008	42.580	300	
S3A	43.740	1.700	Open Manhole	1200	2.010	42.040	375	2.009	42.120	300	5
S3	42.550	1.840	Open Manhole	1200	2.011	40.710	375	2.010	40.710	375	
S2	41.310	1.580	Open Manhole	1200	2.012	39.730	375	2.011	39.730	375	
S1	41.000	4.600	Open Manhole	1200	2.013	36.400	375	2.012	39.430	375	3030
OFF	36.000	2.100	Open Manhole	1200	1.022	33.900	450	1.021	34.550	450	650
								2.013	34.550	375	575
SOF1	34.100	1.200	Open Manhole	0		OUTFALL		1.022	32.900	450	

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PIPELINE SCHEDULES for Existing

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	300	S107	53.700	52.200	1.200	Open Manhole	1200
1.001	o	300	S106	53.700	52.000	1.400	Open Manhole	1200
1.002	o	300	S105	53.350	51.000	2.050	Open Manhole	1200
1.003	o	375	S104	53.350	50.720	2.255	Open Manhole	1350
1.004	o	450	S103	53.350	49.600	3.300	Open Manhole	1500
1.005	o	300	S102	53.350	49.360	3.690	Open Manhole	1500
1.006	o	300	S101	53.100	47.600	5.200	Open Manhole	1200
1.007	o	300	S1	49.100	47.450	1.350	Open Manhole	1200
1.008	o	300	S132	48.260	46.380	1.580	Open Manhole	1200
1.009	o	300	S131	47.780	46.230	1.250	Open Manhole	1200
1.010	o	300	S130	47.520	44.530	2.690	Open Manhole	1200
1.011	o	300	S129A	43.850	42.400	1.150	Open Manhole	1200
1.012	o	300	S129	43.580	41.560	1.720	Open Manhole	1200
1.013	o	375	S128	42.550	40.740	1.435	Open Manhole	1200
1.014	o	375	S27	42.290	40.660	1.255	Open Manhole	1200
1.015	o	375	S26	42.300	40.420	1.505	Open Manhole	1200
1.016	o	375	S25	41.000	39.700	0.925	Open Manhole	1200
1.017	o	450	S24	40.600	39.240	0.910	Open Manhole	1200
1.018	o	450	S23	39.900	39.130	0.320	Open Manhole	1200
1.019	o	450	S23a	39.000	37.950	0.600	Open Manhole	1200
1.020	o	450	S23b	42.400	37.780	4.170	Open Manhole	1200
1.021	o	450	S23c	39.100	37.640	1.010	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	30.000	150.0	S106	53.700	52.000	1.400	Open Manhole	1200
1.001	15.000	75.0	S105	53.350	51.800	1.250	Open Manhole	1200
1.002	25.000	125.0	S104	53.350	50.800	2.250	Open Manhole	1350
1.003	30.000	250.0	S103	53.350	50.600	2.375	Open Manhole	1500
1.004	60.000	250.0	S102	53.350	49.360	3.540	Open Manhole	1500
1.005	15.000	150.0	S101	53.100	49.260	3.540	Open Manhole	1200
1.006	15.000	100.0	S1	49.100	47.450	1.350	Open Manhole	1200
1.007	22.000	20.6	S132	48.260	46.380	1.580	Open Manhole	1200
1.008	11.000	73.3	S131	47.780	46.230	1.250	Open Manhole	1200
1.009	16.000	61.5	S130	47.520	45.970	1.250	Open Manhole	1200
1.010	22.000	10.3	S129A	43.850	42.400	1.150	Open Manhole	1200
1.011	17.000	20.2	S129	43.580	41.560	1.720	Open Manhole	1200
1.012	19.000	25.7	S128	42.550	40.820	1.430	Open Manhole	1200
1.013	9.000	112.5	S27	42.290	40.660	1.255	Open Manhole	1200
1.014	17.000	70.8	S26	42.300	40.420	1.505	Open Manhole	1200
1.015	19.000	26.4	S25	41.000	39.700	0.925	Open Manhole	1200
1.016	11.000	28.9	S24	40.600	39.320	0.905	Open Manhole	1200
1.017	24.000	218.2	S23	39.900	39.130	0.320	Open Manhole	1200
1.018	13.000	11.0	S23a	39.000	37.950	0.600	Open Manhole	1200
1.019	25.000	147.1	S23b	42.400	37.780	4.170	Open Manhole	1200
1.020	20.000	142.9	S23c	39.100	37.640	1.010	Open Manhole	1200
1.021	12.000	3.9	OFF	36.000	34.550	1.000	Open Manhole	1200

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PIPELINE SCHEDULES for Existing

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)
2.000	o	225	S204	54.000	52.600	1.175	Open Manhole	1200
2.001	o	375	S203	54.000	52.150	1.475	Open Manhole	1350
2.002	o	450	S202	54.000	51.050	2.500	Open Manhole	1500
2.003	o	225	S201	54.000	50.900	2.875	Open Manhole	1500
2.004	o	300	S2	51.930	49.100	2.530	Open Manhole	1200
2.005	o	300	S8	50.150	48.650	1.200	Open Manhole	1200
2.006	o	300	S7	48.340	46.840	1.200	Open Manhole	1200
2.007	o	300	S6	47.720	46.200	1.220	Open Manhole	1200
2.008	o	300	S5	45.380	43.830	1.250	Open Manhole	1200
2.009	o	300	S4	44.130	42.580	1.250	Open Manhole	1200
2.010	o	375	S3A	43.740	42.040	1.325	Open Manhole	1200
2.011	o	375	S3	42.550	40.710	1.465	Open Manhole	1200
2.012	o	375	S2	41.310	39.730	1.205	Open Manhole	1200
2.013	o	375	S1	41.000	36.400	4.225	Open Manhole	1200
1.022	o	450	OFP	36.000	33.900	1.650	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
2.000	60.000	200.0	S203	54.000	52.300	1.475	Open Manhole	1350
2.001	15.000	150.0	S202	54.000	52.050	1.575	Open Manhole	1500
2.002	35.000	233.3	S201	54.000	50.900	2.650	Open Manhole	1500
2.003	25.000	13.9	S2	51.930	49.100	2.605	Open Manhole	1200
2.004	25.000	55.6	S8	50.150	48.650	1.200	Open Manhole	1200
2.005	18.000	9.9	S7	48.340	46.840	1.200	Open Manhole	1200
2.006	27.000	42.2	S6	47.720	46.200	1.220	Open Manhole	1200
2.007	36.000	15.2	S5	45.380	43.830	1.250	Open Manhole	1200
2.008	30.000	24.0	S4	44.130	42.580	1.250	Open Manhole	1200
2.009	12.000	26.1	S3A	43.740	42.120	1.320	Open Manhole	1200
2.010	37.000	27.8	S3	42.550	40.710	1.465	Open Manhole	1200
2.011	25.000	25.5	S2	41.310	39.730	1.205	Open Manhole	1200
2.012	15.000	50.0	S1	41.000	39.430	1.195	Open Manhole	1200
2.013	16.000	8.6	OFP	36.000	34.550	1.075	Open Manhole	1200
1.022	25.000	25.0	SOF1	34.100	32.900	0.750	Open Manhole	0

Free Flowing Outfall Details for Existing

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.022	SOF1	34.100	32.900	32.900	0	0

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Simulation Criteria for Existing

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /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	3	Number of Storage Structures	3	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	1	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.700	Storm Duration (mins)	30
Ratio R	0.400		

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Online Controls for Existing

Hydro-Brake® Manhole: S102, DS/PN: 1.005, Volume (m³): 16.4

Design Head (m) 1.240 Hydro-Brake® Type Md5 SW Only Invert Level (m) 49.360
 Design Flow (l/s) 30.0 Diameter (mm) 210

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	7.5	1.200	29.3	3.000	46.0	7.000	70.2
0.200	17.6	1.400	31.5	3.500	49.7	7.500	72.7
0.300	23.4	1.600	33.6	4.000	53.1	8.000	75.1
0.400	25.2	1.800	35.6	4.500	56.3	8.500	77.4
0.500	25.3	2.000	37.5	5.000	59.3	9.000	79.6
0.600	25.0	2.200	39.4	5.500	62.2	9.500	81.8
0.800	25.6	2.400	41.1	6.000	65.0		
1.000	27.2	2.600	42.8	6.500	67.7		

Hydro-Brake® Manhole: S201, DS/PN: 2.003, Volume (m³): 10.8

Design Head (m) 1.150 Hydro-Brake® Type Md6 SW Only Invert Level (m) 50.900
 Design Flow (l/s) 15.0 Diameter (mm) 155

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.1	1.200	15.2	3.000	23.7	7.000	36.3
0.200	11.8	1.400	16.3	3.500	25.6	7.500	37.5
0.300	14.1	1.600	17.4	4.000	27.4	8.000	38.8
0.400	14.2	1.800	18.4	4.500	29.1	8.500	40.0
0.500	13.6	2.000	19.4	5.000	30.7	9.000	41.1
0.600	13.2	2.200	20.3	5.500	32.1	9.500	42.2
0.800	13.3	2.400	21.2	6.000	33.6		
1.000	14.1	2.600	22.1	6.500	34.9		

Hydro-Brake® Manhole: OFP, DS/PN: 1.022, Volume (m³): 5.7

Design Head (m) 1.600 Hydro-Brake® Type Md6 SW Only Invert Level (m) 33.900
 Design Flow (l/s) 21.0 Diameter (mm) 170

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.7	1.200	18.4	3.000	28.6	7.000	43.6
0.200	13.6	1.400	19.6	3.500	30.8	7.500	45.2
0.300	17.6	1.600	20.9	4.000	33.0	8.000	46.6
0.400	18.0	1.800	22.1	4.500	35.0	8.500	48.1
0.500	17.5	2.000	23.3	5.000	36.9	9.000	49.5
0.600	16.9	2.200	24.5	5.500	38.7	9.500	50.8
0.800	16.5	2.400	25.5	6.000	40.4		
1.000	17.2	2.600	26.6	6.500	42.0		

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Micro Drainage	Network W.12.6.1
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Storage Structures for Existing

Cellular Storage Manhole: S102, DS/PN: 1.005

Invert Level (m) 49.360 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
 Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	500.0	500.0	1.300	0.0	589.5
0.100	500.0	508.9	1.400	0.0	589.5
0.200	500.0	517.9	1.500	0.0	589.5
0.300	500.0	526.8	1.600	0.0	589.5
0.400	500.0	535.8	1.700	0.0	589.5
0.500	500.0	544.7	1.800	0.0	589.5
0.600	500.0	553.7	1.900	0.0	589.5
0.700	500.0	562.6	2.000	0.0	589.5
0.800	500.0	571.6	2.100	0.0	589.5
0.900	500.0	580.5	2.200	0.0	589.5
1.000	500.0	589.4	2.300	0.0	589.5
1.001	0.0	589.5	2.400	0.0	589.5
1.200	0.0	589.5	2.500	0.0	589.5

Cellular Storage Manhole: S201, DS/PN: 2.003


Invert Level (m) 50.900 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
 Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	300.0	300.0	1.300	0.0	369.3
0.100	300.0	306.9	1.400	0.0	369.3
0.200	300.0	313.9	1.500	0.0	369.3
0.300	300.0	320.8	1.600	0.0	369.3
0.400	300.0	327.7	1.700	0.0	369.3
0.500	300.0	334.6	1.800	0.0	369.3
0.600	300.0	341.6	1.900	0.0	369.3
0.700	300.0	348.5	2.000	0.0	369.3
0.800	300.0	355.4	2.100	0.0	369.3
0.900	300.0	362.4	2.200	0.0	369.3
1.000	300.0	369.3	2.300	0.0	369.3
1.001	0.0	369.3	2.400	0.0	369.3
1.200	0.0	369.3	2.500	0.0	369.3

Tank or Pond Manhole: OFP, DS/PN: 1.022

Invert Level (m) 33.900

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	1007.0	0.300	1127.0	0.600	1247.0	0.900	1367.0
0.100	1047.0	0.400	1167.0	0.700	1287.0	1.000	1407.0
0.200	1087.0	0.500	1207.0	0.800	1327.0	1.100	1447.0

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Tank or Pond Manhole: OFP, DS/PN: 1.022

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
1.200	1487.0	1.500	1607.0	1.800	1727.0		
1.300	1527.0	1.600	1647.0	1.900	1767.0		
1.400	1567.0	1.700	1687.0	2.000	1807.0		

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Micro Drainage Network W.12.6.1

Summary of Critical Results by Maximum Level (Rank 1) for Existing

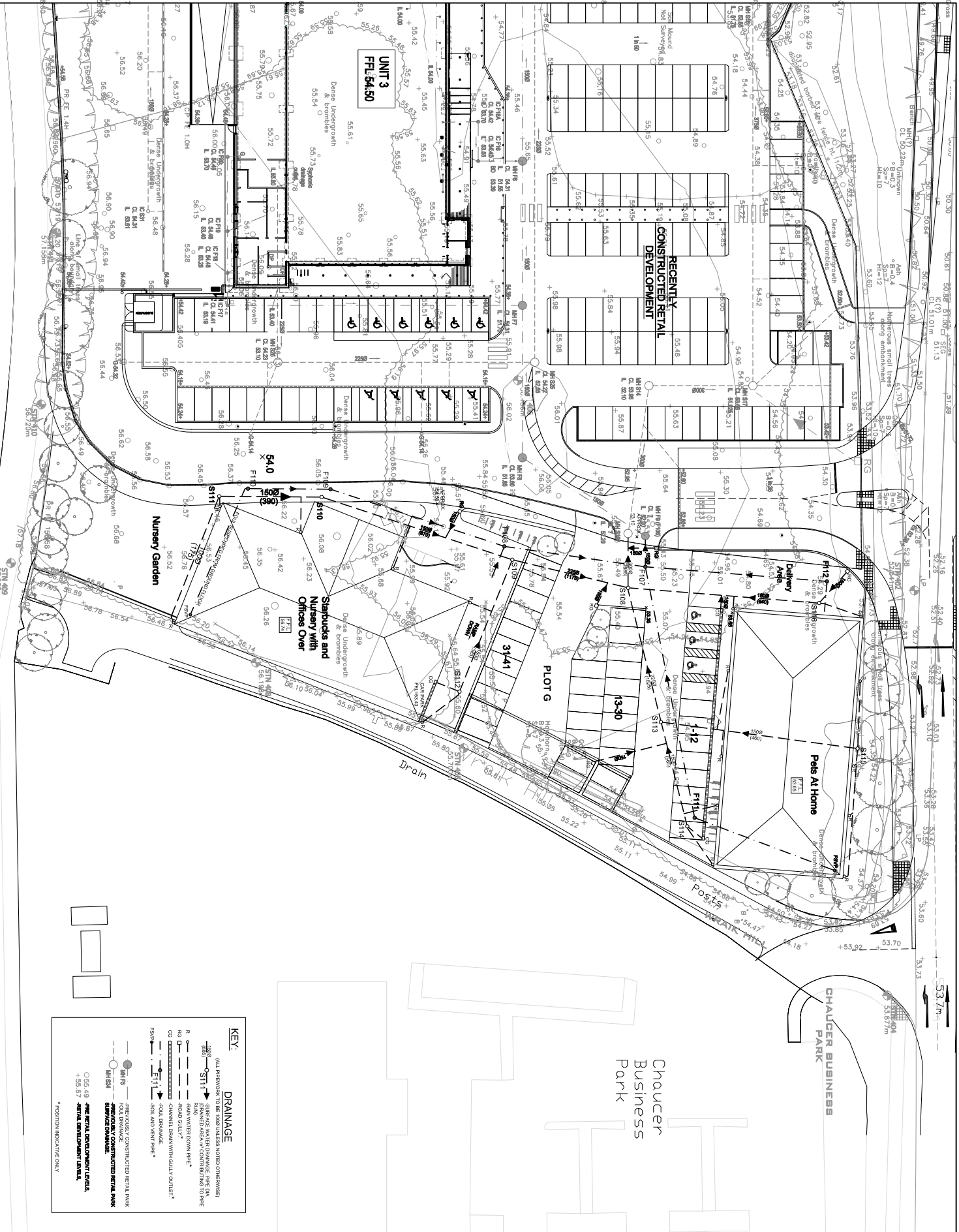
Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

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

PN	Storm	Return Period	Climate Change	First X Surchage	First Y Flood	First Z Overflow Act.	O/F	Lvl Exc.
1.000	15 Winter	100	+30%	30/15 Summer				
1.001	15 Winter	100	+30%	100/15 Summer				
1.002	15 Winter	100	+30%	30/15 Summer				
1.003	15 Winter	100	+30%	30/15 Summer				
1.004	15 Winter	100	+30%	30/15 Summer				
1.005	120 Winter	100	+30%	30/15 Winter				
1.006	120 Winter	100	+30%					
1.007	120 Winter	100	+30%					
1.008	15 Winter	100	+30%					
1.009	15 Winter	100	+30%					
1.010	15 Winter	100	+30%	100/15 Summer				
1.011	15 Winter	100	+30%	100/15 Summer	100/15 Summer			2
1.012	15 Winter	100	+30%	100/15 Summer				
1.013	15 Winter	100	+30%	30/15 Summer				
1.014	15 Winter	100	+30%	100/15 Summer				
1.015	15 Winter	100	+30%	100/15 Summer				
1.016	15 Winter	100	+30%	100/15 Summer				
1.017	15 Winter	100	+30%	30/15 Summer				
1.018	15 Winter	100	+30%					
1.019	15 Winter	100	+30%	30/15 Summer				
1.020	15 Winter	100	+30%	30/15 Summer				
1.021	15 Winter	100	+30%					
2.000	15 Winter	100	+30%	30/15 Summer	100/15 Summer			2
2.001	15 Winter	100	+30%	30/15 Summer				
2.002	120 Winter	100	+30%	100/15 Summer				
2.003	180 Winter	100	+30%	30/15 Summer				
2.004	240 Winter	30	0%					
2.005	15 Winter	100	+30%					
2.006	15 Winter	100	+30%	100/15 Summer				
2.007	15 Winter	100	+30%	100/15 Summer				
2.008	15 Winter	100	+30%	100/15 Summer	100/15 Summer			2
2.009	15 Winter	100	+30%	30/15 Summer				
2.010	15 Winter	100	+30%	100/15 Summer				
2.011	15 Winter	100	+30%	30/15 Summer	100/15 Summer			2
2.012	15 Winter	100	+30%	30/15 Summer				
2.013	15 Winter	100	+30%					
1.022	960 Winter	100	+30%	30/60 Summer				

Summary of Critical Results by Maximum Level (Rank 1) for Existing

PN	US/MH Name	Water	Surch'd Depth (m)	Flooded	Flow / O'flow Cap. (l/s)	Pipe	Status
		Level (m)		Volume (m³)		Flow (l/s)	
1.000	S107	53.430	0.930	0.000	1.78	0.0 146.7	FLOOD RISK
1.001	S106	52.782	0.482	0.000	1.37	0.0 147.8	SURCHARGED
1.002	S105	52.421	1.121	0.000	1.95	0.0 173.3	SURCHARGED
1.003	S104	51.672	0.577	0.000	2.39	0.0 266.4	SURCHARGED
1.004	S103	50.670	0.620	0.000	1.87	0.0 352.0	SURCHARGED
1.005	S102	50.275	0.615	0.000	0.35	0.0 26.4	SURCHARGED
1.006	S101	47.708	-0.192	0.000	0.28	0.0 26.4	OK
1.007	S1	47.519	-0.231	0.000	0.12	0.0 26.4	OK
1.008	S132	46.547	-0.133	0.000	0.57	0.0 54.9	OK
1.009	S131	46.451	-0.079	0.000	0.86	0.0 103.8	OK
1.010	S130	45.287	0.457	0.000	0.80	0.0 244.8	SURCHARGED
1.011	S129A	43.853	1.153	3.142	1.06	0.0 223.3	FLOOD
1.012	S129	42.969	1.109	0.000	1.23	0.0 234.4	SURCHARGED
1.013	S128	41.871	0.756	0.000	2.45	0.0 271.0	SURCHARGED
1.014	S27	41.404	0.369	0.000	1.46	0.0 280.8	SURCHARGED
1.015	S26	40.905	0.110	0.000	0.86	0.0 279.9	SURCHARGED
1.016	S25	40.368	0.293	0.000	1.18	0.0 285.1	SURCHARGED
1.017	S24	39.837	0.147	0.000	1.59	0.0 288.2	SURCHARGED
1.018	S23	39.352	-0.228	0.000	0.48	0.0 295.8	OK
1.019	S23a	38.942	0.542	0.000	1.39	0.0 309.7	FLOOD RISK
1.020	S23b	38.629	0.399	0.000	1.96	0.0 413.0	SURCHARGED
1.021	S23c	37.845	-0.245	0.000	0.42	0.0 416.5	OK
2.000	S204	54.001	1.176	1.151	2.09	0.0 74.0	FLOOD
2.001	S203	52.773	0.248	0.000	1.84	0.0 227.6	SURCHARGED
2.002	S202	51.814	0.314	0.000	0.50	0.0 92.3	SURCHARGED
2.003	S201	51.808	0.683	0.000	0.11	0.0 14.2	SURCHARGED
2.004	S2	49.165	-0.235	0.000	0.11	0.0 14.3	OK
2.005	S8	48.773	-0.177	0.000	0.35	0.0 105.2	OK
2.006	S7	47.670	0.530	0.000	0.90	0.0 139.4	SURCHARGED
2.007	S6	47.192	0.692	0.000	0.85	0.0 225.4	SURCHARGED
2.008	S5	45.384	1.254	3.634	1.14	0.0 236.2	FLOOD
2.009	S4	44.006	1.126	0.000	1.46	0.0 248.1	FLOOD RISK
2.010	S3A	43.189	0.774	0.000	0.76	0.0 259.4	SURCHARGED
2.011	S3	42.551	1.466	1.180	1.15	0.0 396.8	FLOOD
2.012	S2	41.293	1.188	0.000	2.23	0.0 478.1	FLOOD RISK
2.013	S1	36.688	-0.087	0.000	0.94	0.0 502.4	OK
1.022	OFF	35.499	1.149	0.000	0.04	0.0 20.9	SURCHARGED



KEY:

<p> ALL PERFORMANCES TO THE GOOD PRACTICES NOTED OTHERWISE 100% - 200% - 300% ST-1 - ST-2 - ST-3 RENOVATION/REPAIR AREA R/W - ROAD WIDTH R/G - ROAD GRADE S/W - SOLI AND VEGETATION C/S - CHANNEL DRAIN WITH GULLY OUTLET C/S - CHANNEL DRAIN WITH GULLY OUTLET* S/W - SOLI AND VEGETATION* R/W - ROAD WIDTH* R/G - ROAD GRADE* </p>	<p> DRAINAGE ALL PERFORMANCES TO THE GOOD PRACTICES NOTED OTHERWISE ST-1 - ST-2 - ST-3 RENOVATION/REPAIR AREA R/W - ROAD WIDTH R/G - ROAD GRADE S/W - SOLI AND VEGETATION C/S - CHANNEL DRAIN WITH GULLY OUTLET C/S - CHANNEL DRAIN WITH GULLY OUTLET* S/W - SOLI AND VEGETATION* R/W - ROAD WIDTH* R/G - ROAD GRADE* </p>
<p> RETAIL DEVELOPMENT LEVEL METAL DEVELOPMENT LEVEL POSITION INDICATIVE ONLY </p>	<p> METAL DEVELOPMENT LEVEL METAL DEVELOPMENT LEVEL POSITION INDICATIVE ONLY </p>

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Client: George Wilson Developments Ltd
 Project: ESTUARY VIEW
 PLOT G
 Drawn: [Signature]

Rev	Date	By	Check	Reason/Notes
01	12/20	JAM	JAM	ISSUED FOR TENDER
02	12/20	JAM	JAM	ISSUED FOR TENDER
03	12/20	JAM	JAM	ISSUED FOR TENDER