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Flood Risk Assessment

For
Camp Road, Upper Heyford
Village Centre (South)

Rev 2

May 2016

Contents

Appendices

1.0 Introduction

1.1 Woods Hardwick Infrastructure LLP have been appointed by Dorchester Group to undertake a Flood Risk Assessment in respect of the Village Centre South proposals at the Upper Heyford development site.

1.2 The wider development site comprises of approximately 76 hectares and has outline planning consent for residential and commercial use.

1.3 A Flood Risk Assessment was prepared and approved in support of the outline application. The report was produced by Waterman in October 2010.

1.4 The site is currently live and a number of development parcels have received reserved matters consent. These parcels have been supported by individual Flood Risk Assessment Compliance Notes to demonstrate that the detailed drainage design accords with those principles approved at the outline stage.

1.5 The purpose of this report is to support a new planning application in support of the development known as the Village Centre South.

1.6 This report does not seek to undo the principles of the approved Flood Risk Assessment but to clarify them within a self-contained Flood Risk Assessment.

1.7 A copy of the parcel Plan is contained within **Appendix A.**

2.0 Overview of Approved FRA

2.1 The entire site is located within Flood Zone 1.

2.2 The FRA sets out a detailed approach to attenuation across the Upper Heyford site which comprises of areas identified for retention, areas for refurbishment and areas for redevelopment to provide new residential dwellings.

2.3 The Environment Agency (EA) has confirmed that areas identified solely for retention and refurbishment do not require attenuation of existing surface water discharge.

2.4 The fundamental principle of the FRA is that runoff from proposed areas of redevelopment should be attenuated to existing 1 in 100 year flows with a 30% allowance for climate change.

2.5 Attenuation is to be provided through the use of balancing ponds, permeable paving and attenuation tanks where necessary. Swales will be incorporated through the site where appropriate.

2.6 The FRA splits the development into four main catchment areas and provides a series of calculations for each.

2.7 The FRA also requires a 10% betterment of existing flows entering the eastern tributary of the Gallos Brook.

3.0 Existing Site

3.1 Site Description

3.1.1 The "Village Centre South" development is located to the south of Camp Road and consists of approximately 0.8 hectares of land to the east of the Phase 5 bus route and 0.83 hectares of land to the west of the Phase 5 bus route.

3.1.2 The eastern area of the development discharges into Outfall 1 via the Eastern Drainage Diversion network and the western area of the development discharges into Outfall 2 via the Phase 5 and Central Diversion network.

3.2 Ground Conditions

3.2.1 Extensive intrusive site investigations have been undertaken which covered the entire site.

3.2.2 The general ground conditions comprise of layers of silt and clay. This is underlain by weathered limestone bedrock at an average depth of 1.5m.

3.3 Hydrology

3.3.1 The wider site includes a number of watercourses and tributaries.

3.3.2 A tributary of the Gallos Brook runs to the east of the development.

3.3.4 There is anecdotal evidence of flooding associated with this tributary at the caravan park to the south of the proposed development parcel

3.3.3 The Gallos Brook joins the River Ray approximately 11km to the south of the site. The River Cherwell is the nearest Main River and is some 1.2km to the west of the site.

4.0 Proposed Development

4.1 Refer to **Appendix B** for the proposed site layout.

5.0 Flood Risk Assessment

5.1 Background

5.1.1 The purpose of this section of the report is to identify the risk of flooding to and by the development.

5.1.2 Following the increased frequency of flooding during recent years, much work has been undertaken at a national level to assess the relationship between new development and flood risk. This work resulted in the publication of Planning Policy Statement 25 (PPS25) in early 2007 with an update being released in March 2010.

5.1.3 Alongside the release of the NPPF in March 2012 the TGNPPF was released serving as a flood risk based addendum to the national planning guidance. These documents replace PPS25; however, many of the principles set out in PPS25 remain relevant. The TGNPPF was withdrawn in late 2014 and replaced with the online Planning Practice Guidance (PPG) albeit much of the advice relating to flood risk remains unchanged

5.1.4 Table 1 of PPG: Flood Risk and Coastal Change seeks to define different flood risk Zones where: Zone 1 is considered to be low risk since it is outside of the area which is likely to suffer inundation from a 0.1% probability rainfall event; Zone 2 is considered to be medium risk lying between the 0.1% probability flood contour and the 1% or 100 year flood area; Zone 3 is divided into 2 categories with Zone 3A having a >1% annual probability of river flooding or a >0.5% probability of flooding from the sea and Zone 3B being the functional floodplain. This guidance reaffirms the guidance and categorisation included within PPS25.

5.1.5 The Environment Agency's (EA) flood map demonstrates that this site lies within Flood Zone 1 and is therefore at low risk.

5.1.6 Table 2 of the PPG: Flood Risk and Coastal Change seeks to classify the vulnerability of different land uses. The residential dwellings fall under the More Vulnerable classification.

5.1.7 Finally Table 3 of the PPG: Flood Risk and Coastal Change brings Table 1 and 2 together to provide a matrix defining the level of Flood Risk Assessment required based on the flood zone and vulnerability class of a development.

5.1.8 Table 3 of the PPG: Flood Risk and Coastal Change therefore demonstrates that this land use is appropriate for the site given the flood zone and vulnerability class.

5.2 Risk of Flooding to the Development from Known Sources

5.2.1 Presented below is an analysis and summary of the potential for the site to flood from known sources.

Flooding from Rivers

5.2.2 The Environment Agency's (EA) flood map demonstrates that the site lies within Flood Zone 1.

Flooding from the Sea

5.2.3 Given the site's location some 100km inland there is considered to be no risk of flooding from this source.

Flooding from Land

5.2.4 The EA's surface water flood map demonstrates areas that are at risk of surface water flooding should there be an accumulation at ground level. The map demonstrates that the proposed development is not at risk of surface water flooding.

Flooding from Groundwater

5.2.5 The EA's groundwater flood risk maps demonstrate areas that are at risk of flooding from high groundwater. The site is noted as not at risk.

5.2.6 This is also confirmed on site and via ground water monitoring which noted ground water level some 1.2m below ground level.

Flooding from Sewers

5.2.7 There are no public sewers within the site and all sewers are currently privately owned. There are no reported incidents of flooding from these private sewers.

Flooding from Reservoirs, Canals and Other Artificial Sources

5.2.8 There are no man made features within the vicinity of the development site.

5.3 Risk of Flooding Caused by the Development

5.3.1 Presented below is a summary and analysis of the potential for the site to exacerbate the risk of flooding to third parties both upstream and downstream.

Encroachment onto Floodplain

5.3.2 The entirety of the site lies outside of the floodplain, there is therefore no risk of encroachment.

Impedance of Flood Flows

5.3.3 As the site lies outside of the flood plain there is no risk of the site impeding flood flows.

Contribution to Flood Flows by Development Drainage

5.3.4 The approved FRA produced in support of the outline condition states in Paragraph 3.20: "In accordance with PPS25, local policy and EA guidance the rate of surface water runoff from new development would be controlled so that it does not increase over the existing situation for the 1 in 100 year even, while taking climate change into account".

5.3.7 It is proposed to maintain the existing drainage regime of the site. This will require flows from the proposed development to be restricted to provide the level of improvement required by the EA.

5.3.8 It is proposed to maintain the existing catchments and watershed with the site.

5.3.9 Restriction of proposed surface water runoff and attenuation will ensure the risk to others, and within the development is mitigated.

5.3.10 The detailed drainage strategy is described in more detail in **Section 6** of this report.

5.4 Climate Change

5.4.1 There is an increasing body of scientific evidence that suggests that the global climate is changing as a result of human activity. Past, present and future emissions of greenhouse gases are expected to cause significant climate change during this century.

5.4.2 The nature of climate change will vary: for the UK, projections of future climate change indicate that more frequent short-duration, high-intensity rainfall and more frequent periods of long-duration rainfall can be expected. These kinds of changes will have implications on river-flooding and also localised flash flooding.

5.4.3 The PPG requires developments to consider the potential impacts of climate change; as such this assessment makes a 30% allowance for climatic change.

6. Surface Water Disposal

6.1 Principles

6.1.1 In addition to ensuring that the development is not at risk of flooding from external sources, it is also important to ensure that the scheme itself does not exacerbate flood risk for others or within the proposed development. It is therefore essential that the arrangements for storm water disposal are fully assessed to guarantee that the effects are mitigated and that there will be no impact on the existing land drainage regime.

6.1.2 All of the recent guidance on the arrangements for storm water disposal from new developments has encouraged the application of a hierarchy for surface water disposal. This has now been formalised in the Building Regulations Part H.

6.1.3 The first choice for surface water disposal which should be pursued is via infiltration and only where it has been determined that the ground conditions are not suitable should the second choice of disposal to a ditch or watercourse be considered. If there is no alternative the third and last choice of disposal to public sewer can be considered.

6.2 Discharge Strategy

6.2.1 Paragraph 3.20 of the FRA states: “In accordance with PPS25, local policy and EA guidance the rate of surface water runoff from new development would be controlled so that it does not increase over the existing situation for the 1 in 100 year event, while taking climate change into account”.

6.2.2 Paragraph 3.21 requires a 10% betterment of residential parcel flows discharging to the east of the site (into outfall 1).

6.2.3 Soakaway tests at suitable depths have not been undertaken due to rock/ stone being encountered at 1.2m in borehole BHNSA 38 located on the eastern boundary of this parcel.

6.2.4 It is proposed to connect the Village Centre South network, attenuation and flow controls to the surrounding drainage network known as the Eastern Diversion at three locations and connect the western section of parking to the Central Diversion via Phase 5’s proposed drainage.

6.2.5 Although this scheme is not residential, the Village Centre South catchment enters the existing system at the following heavily restricted rates to ensure the betterment created within the network as part of the previous phases is not affected:

- Manhole SE116’s outflow is controlled by a 20mm orifice
- Manhole SE119’s outflow is controlled by a 20mm orifice
- Manhole SE115 is an existing flow control with is constructed with a 55mm orifice

6.2.6 The existing Eastern Diversion network downstream then discharges into the existing watercourse to the east of the site which is a tributary of Gallos Brook.

6.2.7 Phase 5 has previously been modelled with a full unrestricted allowance into the system from the proposed parking area and an allowance for the future phase beyond. The flow controls upstream of the connection into Central Diversion have previously been approved under the Phase 4/ 5b and Phase 5 applications.

6.2.8 The existing Central Diversion network downstream then discharges into the existing ditch.

6.3 Attenuation Strategy

6.3.1 This phase contains attenuation in the form of underground tanks and oversized pipes within the application boundary.

6.3.2 Both the proposed underground storage tanks and oversized pipes will either be maintained by the Water Company or a management company.

6.3.3 Living roofs have been discounted as they are not in keeping with the strict urban planning requirements within a conservation area. Rain water harvesting has also been discounted due to ongoing maintenance issues.

7.0 Hydraulic Performance

7.1 Modelling

7.1.1 A detailed Microdrainage model has been constructed to simulate the 1 in 100 year (plus climate change) storm for the full network including the Village Centre South system.

7.1.2 The proposed Microdrainage models for the entire of the Eastern Diversion and Central Diversion (see **Appendix D**) demonstrates that the proposed 1 in 100 year (plus climate change) does not result in flooding within this phase, does not increase flooding downstream and does not increase the discharge rate at the outfall from the development.

7.1.3 The existing Microdrainage models are contained within **Appendix C.**

7.2 Exceedance

7.2.1 During storms in excess of the designated storm, there is the potential for the storage structures and drainage system to be overwhelmed, leading to flooding. External levels have been designed so that during these periods, flood water will be directed away from the proposed building entrances and into the roads and soft landscaping areas.

7.3 Pollution prevention

7.3.1 As the parking areas are smaller than 800m sq, PPG3 states that trapped gullies will provide suitable protection against contamination.

7.3.2 It is noted that the Eastern Diversion and Central Diversion sewers pass through petrol interceptors before discharging offsite which meets the requirements of PPG3.

7.4 Maintenance

7.4.1 Refer to “SUDS Maintenance Regime” report dated May 2016 which covers the Village Centre South

8.0 Summary and Conclusions

8.1 This Flood Risk Assessment has been prepared in support of the planning application for the Village Centre South at the Upper Heyford Development.

8.2 This FRA has been produced maintaining the same principles as the approved FRA attached to the outline planning consent.

8.3 The scheme has been assessed and is deemed not to be at risk of flooding and is also located within Flood Zone 1.

8.4 The FRA requires surface water runoff from new development to be restricted to existing 1 in 100 year runoff rates, and flows attenuated including a 30% allowance for climate change.

8.5 Microdrainage models have been created and the results demonstrate:

- No on parcel flooding
- The development does not increase flooding downstream
- The development does not increase the discharge rate at the outfall
- There is significant betterment to flood volumes created by the drainage installed as part of the overall development in comparison to the existing Upper Heyford drainage systems.

APPENDIX A

Parcel Plan

N

OUTFALL 4

D5d

TC

D5b

B4b

D3b

D2b

B4a

VILLAGE CENTRE NORTH

B3

D2d

B1

B2a

B2b

B6

D2c

D1c

D2e

D1a

D1b

SCHOOL

VILLAGE GREEN

VILLAGE CENTRE SOUTH

OUTFALL 3

B5b

B5a

D4b

D2a

D3a

D4a

OUTFALL 1

OUTFALL 2

N.T.S.

APPENDIX B

Proposed drainage layout

KEY

- Constructed or approved FW drainage
- Constructed or approved SW drainage
- Proposed village centre FW drainage
- Proposed village centre SW drainage
- Proposed change to eastern diversion SW drainage

NOTES

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SE131
Flow control
IL 121.650
FE132
IL 121.200
1500
SE87
IL 121.180
F36
IL 120.730
375Ø
150Ø
1500
SE88
IL 120.700
F37
CL 122.670
IL 120.050
SE115
IL 120.640
26.000
300Ø
FE120
IL 120.910
FE119
IL 121.060
S20 (PH 5)
IL 121.360
SW tank
76m sq tank
0.5 deep
FE118
IL 121.710
FE116
IL 120.950
FE117
IL 120.820
SE117
IL 120.200
FE115
IL 121.600
3000
S22 (PH5)
IL 120.470
1500
SE118
IL 120.050
27.000
300Ø
SW tank
104m sq tank
1.2 deep
SE119
With 20mm
Orifice MH
IL 119.890
27.001
300Ø
SE116
With 20mm
Orifice MH
IL 120.160
26.001
300Ø
SW tank
108.5m sq tank
1.2 deep
525Ø 1:66
Twin 600 1/130
SE12
IL 120.235 (375Ø)
IL 120.010
SE12b
IL 119.810
FE122
IL 120.450
FE123
IL 119.900
SE121
IL 119.660
28.001
300Ø
F38
1500
F57 (eastern diversion)
IL 119.770 (150Ø)
fil 120.11
sil 120.40
P105
P106
C103
C104
FGL
121.450
108
TYPE1A
FFL
121.150
FE121
IL 120.550
SW tank
60m sq tank
0.8 deep
28.000
300Ø
SE120
IL 119.960
SE12a (control)
IL 119.625
3000
x3
Twin 600 1/147
525 1/147
SE13
CL 121.710
IL 119.550
F2
CL 121.070
IL 118.970
fil 120.25
sil 120.25
fil 120.40
1500
525Ø 1/150
SW tank
420.5m sq tank
1.2 deep

Eastern flying field diversion primary surface water storage tank reshaped and SE12a position revised from that shown on drawing 441 to suit latest village centre proposals

Future phase spur
29.000
225Ø 1:79
S19
CL 123.400
IL 121.570
29.001
300Ø 1:210
FE120
IL 120.910
S20 (PH 5)
IL 121.360

REVISION	DESCRIPTION	DRAWN	CHECKED	DATE
E	EASTERN PARKING AREA AMENDED TO SUIT LATEST SITE LAYOUT	AT	JF	25.05.16
D	ADDITIONAL PARKING AREA TO THE WEST ADDED	AT	JF	23.05.16
C	SURFACE WATER TANKS RESHAPED	AT	JF	26.04.16
B	LATEST SITE LAYOUT SHOWN	AT	JF	22.04.16
A	REVISED TO SUIT LATEST SITE LAYOUT	AT	JF	14.04.16

PRELIMINARY ■ INFORMATION □ TENDER □ CONSTRUCTION □ AS BUILT □

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TITLE UPPER HEYFORD
VILLAGE CENTRE (SOUTH)

DETAILS INDICATIVE DRAINAGE LAYOUT AND EASTERN FLYING FIELD DIVERSION ALTERATIONS

SCALE: 1:200 @ A1 DATE: DECEMBER 2015 DRAWN: AT CHK: JF

HEYF-5-219 E

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APPENDIX C

Existing Microdrainage Calculations

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for 20.08.13.SWS

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	2
Site Location	GB 450500 225250 SP 50500 25250
C (1km)	-0.023
D1 (1km)	0.328
D2 (1km)	0.309
D3 (1km)	0.264
E (1km)	0.292
F (1km)	2.461
Maximum Rainfall (mm/hr)	0
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.000
Maximum Backdrop Height (m)	0.000
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

Network Design Table for 20.08.13.SWS

- Indicates pipe length does not match coordinates

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.000	46.310	0.699	66.3	0.462	5.00	0.0	0.600	o	225	
1.001	27.589	0.287	96.1	0.090	0.00	0.0	0.600	o	225	
1.002	19.709	0.161	122.4	0.084	0.00	0.0	0.600	o	225	
1.003	54.656	0.602	90.8	0.024	0.00	0.0	0.600	o	225	
1.004	48.308	0.537	90.0	0.000	0.00	0.0	0.600	o	300	

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	5.48	125.633	0.462	0.0	0.0	0.0	1.61	64.0	0.0
1.001	0.00	5.82	124.934	0.552	0.0	0.0	0.0	1.33	53.0	0.0
1.002	0.00	6.10	124.647	0.636	0.0	0.0	0.0	1.18	46.9	0.0
1.003	0.00	6.77	124.486	0.660	0.0	0.0	0.0	1.37	54.6	0.0
1.004	0.00	7.25	123.809	0.660	0.0	0.0	0.0	1.66	117.2	0.0

Network Design Table for 20.08.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.005	11.396	0.122	93.4	0.000	0.00	0.0	0.600	o	300	
2.000	9.477	0.311	30.5	0.100	5.00	0.0	0.600	o	150	
2.001	22.265	0.731	30.5	0.049	0.00	0.0	0.600	o	150	
2.002	38.145#	0.302	126.3	0.109	0.00	0.0	0.600	o	150	
2.003	7.222#	0.675	10.7	0.000	0.00	0.0	0.600	o	225	
1.006	59.849	0.160	374.1	0.145	0.00	0.0	0.600	o	450	
3.000	26.967	0.234	115.2	0.105	5.00	0.0	0.600	o	150	
3.001	46.625	0.520	89.7	0.090	0.00	0.0	0.600	o	150	
3.002	4.363	0.018	242.4	0.130	0.00	0.0	0.600	o	150	
3.003	22.819	0.169	135.0	0.076	0.00	0.0	0.600	o	150	
3.004	21.320#	0.119	179.2	0.060	0.00	0.0	0.600	o	150	
4.000	71.622	0.359	199.5	0.175	5.00	0.0	0.600	o	150	
3.005	27.060#	0.185	146.3	0.000	0.00	0.0	0.600	o	450	
5.000	8.420#	0.093	90.5	0.057	5.00	0.0	0.600	o	150	
3.006	40.137	0.227	176.8	0.057	0.00	0.0	0.600	o	450	

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)
1.005	0.00	7.37	123.272	0.660	0.0	0.0	0.0	1.63	115.0	0.0
2.000	0.00	5.09	125.319	0.100	0.0	0.0	0.0	1.83	32.3	0.0
2.001	0.00	5.29	125.008	0.149	0.0	0.0	0.0	1.83	32.4	0.0
2.002	0.00	6.00	124.277	0.258	0.0	0.0	0.0	0.89	15.8	0.0
2.003	0.00	6.03	123.900	0.258	0.0	0.0	0.0	4.02	160.0	0.0
1.006	0.00	8.32	123.000	1.063	0.0	0.0	0.0	1.05	166.2	0.0
3.000	0.00	5.48	126.002	0.105	0.0	0.0	0.0	0.94	16.5	0.0
3.001	0.00	6.21	125.768	0.195	0.0	0.0	0.0	1.06	18.8	0.0
3.002	0.00	6.33	125.248	0.325	0.0	0.0	0.0	0.64	11.3	0.0
3.003	0.00	6.77	125.230	0.401	0.0	0.0	0.0	0.86	15.3	0.0
3.004	0.00	7.24	125.061	0.461	0.0	0.0	0.0	0.75	13.2	0.0
4.000	0.00	6.69	125.351	0.175	0.0	0.0	0.0	0.71	12.5	0.0
3.005	0.00	7.51	124.892	0.636	0.0	0.0	0.0	1.68	267.0	0.0
5.000	0.00	5.13	125.100	0.057	0.0	0.0	0.0	1.06	18.7	0.0
3.006	0.00	7.95	124.707	0.750	0.0	0.0	0.0	1.53	242.7	0.0

Network Design Table for 20.08.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
3.007	20.544	0.085	241.7	0.074	0.00	0.0	0.600	o	450	
3.008	7.935	1.330	6.0	0.000	0.00	0.0	0.600	o	225	
6.000	8.698	0.037	235.1	0.000	5.00	0.0	0.600	o	300	
6.001	24.347	0.063	386.5	0.000	0.00	0.0	0.600	o	450	
1.007	37.392	0.253	147.8	0.069	0.00	0.0	0.600	o	150	
7.000	12.065#	0.453	26.6	0.036	5.00	0.0	0.600	o	100	
7.001	33.946#	0.418	81.2	0.060	0.00	0.0	0.600	o	100	
7.002	24.933	0.375	66.5	0.042	0.00	0.0	0.600	o	150	
7.003	12.230	0.045	271.8	0.045	0.00	0.0	0.600	o	150	
8.000	11.634	0.383	30.4	0.061	5.00	0.0	0.600	o	100	
7.004	48.302	0.600	80.5	0.055	0.00	0.0	0.600	o	150	
7.005	39.390	0.653	60.3	0.000	0.00	0.0	0.600	o	150	
1.008	13.653	0.092	148.4	0.000	0.00	0.0	0.600	o	150	
1.009	29.758	0.157	189.5	0.000	0.00	0.0	0.600	o	225	
9.000	49.037	0.490	100.1	0.102	5.00	0.0	0.600	o	300	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
3.007	0.00	8.21	124.480	0.824	0.0	0.0	0.0	1.30	207.3	0.0
3.008	0.00	8.24	124.395	0.824	0.0	0.0	0.0	5.39	214.4	0.0
6.000	0.00	5.14	122.940	0.000	0.0	0.0	0.0	1.02	72.2	0.0
6.001	0.00	5.54	122.903	0.000	0.0	0.0	0.0	1.03	163.5	0.0
1.007	0.00	9.08	122.840	1.956	0.0	0.0	0.0	0.82	14.6	0.0
7.000	0.00	5.13	125.181	0.036	0.0	0.0	0.0	1.50	11.8	0.0
7.001	0.00	5.80	124.728	0.096	0.0	0.0	0.0	0.85	6.7	0.0
7.002	0.00	6.13	124.260	0.138	0.0	0.0	0.0	1.24	21.8	0.0
7.003	0.00	6.47	123.885	0.183	0.0	0.0	0.0	0.60	10.7	0.0
8.000	0.00	5.14	124.273	0.061	0.0	0.0	0.0	1.41	11.0	0.0
7.004	0.00	7.19	123.840	0.299	0.0	0.0	0.0	1.12	19.8	0.0
7.005	0.00	7.69	123.240	0.299	0.0	0.0	0.0	1.30	22.9	0.0
1.008	0.00	9.36	122.587	2.255	0.0	0.0	0.0	0.82	14.5	0.0
1.009	0.00	9.88	122.420	2.255	0.0	0.0	0.0	0.95	37.6	0.0
9.000	0.00	5.52	122.870	0.102	0.0	0.0	0.0	1.57	111.1	0.0

Network Design Table for 20.08.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
9.001	3.625	0.042	86.3	0.000	0.00	0.0	0.600	o	150	
1.010	23.462	0.160	146.6	0.030	0.00	0.0	0.600	o	225	
1.011	14.060	0.079	178.0	0.000	0.00	0.0	0.600	o	225	
1.012	74.443	1.113	66.9	0.046	0.00	0.0	0.600	o	225	
1.013	38.178	0.321	118.9	0.021	0.00	0.0	0.600	o	225	
1.014	39.956	0.269	148.5	0.012	0.00	0.0	0.600	oo	-1	
1.015	14.126	0.079	178.8	0.015	0.00	0.0	0.600	oo	-1	
10.000	16.816	0.095	177.0	0.000	5.00	0.0	0.600	o	300	
10.001	23.092	0.066	349.9	0.070	0.00	0.0	0.600	o	300	
11.000	7.219	0.024	300.8	0.080	5.00	0.0	0.600	o	300	
10.002	37.034	0.553	67.0	0.020	0.00	0.0	0.600	o	450	
10.003	22.412	0.230	97.4	0.080	0.00	0.0	0.600	o	450	
10.004	12.749	0.110	115.9	0.000	0.00	0.0	0.600	o	300	
10.005	21.721	0.325	66.8	0.027	0.00	0.0	0.600	o	300	
12.000	30.605	0.313	97.8	0.020	5.00	0.0	0.600	o	150	
13.000	52.101	0.591	88.2	0.040	5.00	0.0	0.600	o	100	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
9.001	0.00	5.58	122.380	0.102	0.0	0.0	0.0	1.08	19.1	0.0
1.010	0.00	10.24	122.263	2.387	0.0	0.0	0.0	1.08	42.8	0.0
1.011	0.00	10.48	122.103	2.387	0.0	0.0	0.0	0.98	38.8	0.0
1.012	0.00	11.26	122.024	2.433	0.0	0.0	0.0	1.60	63.7	0.0
1.013	0.00	11.79	120.911	2.454	0.0	0.0	0.0	1.20	47.6	0.0
1.014	0.00	12.41	120.590	2.466	0.0	0.0	0.0	1.07	85.6	0.0
1.015	0.00	12.65	120.321	2.481	0.0	0.0	0.0	0.97	78.0	0.0
10.000	0.00	5.24	122.676	0.000	0.0	0.0	0.0	1.18	83.3	0.0
10.001	0.00	5.70	122.581	0.070	0.0	0.0	0.0	0.83	59.0	0.0
11.000	0.00	5.13	122.539	0.080	0.0	0.0	0.0	0.90	63.7	0.0
10.002	0.00	5.95	122.515	0.170	0.0	0.0	0.0	2.49	395.6	0.0
10.003	0.00	6.13	121.962	0.250	0.0	0.0	0.0	2.06	327.6	0.0
10.004	0.00	6.27	121.732	0.250	0.0	0.0	0.0	1.46	103.2	0.0
10.005	0.00	6.46	121.622	0.277	0.0	0.0	0.0	1.93	136.1	0.0
12.000	0.00	5.50	121.610	0.020	0.0	0.0	0.0	1.02	18.0	0.0
13.000	0.00	6.06	122.246	0.040	0.0	0.0	0.0	0.82	6.4	0.0

Network Design Table for 20.08.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
13.001	27.999	0.358	78.2	0.056	0.00	0.0	0.600	o	150	
10.006	17.974	1.055	17.0	0.010	0.00	0.0	0.600	o	225	
1.016	27.337	0.141	193.9	0.047	0.00	0.0	0.600	oo	-1	
1.017	8.947	0.284	31.5	0.000	0.00	0.0	0.600	oo	-1	
1.018	66.119	0.710	93.1	0.066	0.00	0.0	0.600	o	225	
1.019	47.865	0.330	145.0	0.066	0.00	0.0	0.600	o	225	
1.020	8.672	0.025	346.9	0.000	0.00	0.0	0.600	o	225	
1.021	14.635	0.213	68.7	0.000	0.00	0.0	0.600	o	300	
14.000	27.683	0.135	205.1	0.042	5.00	0.0	0.600	o	100	
1.022	78.854	0.348	226.6	0.000	0.00	0.0	0.600	o	300	
1.023	20.664	0.861	24.0	0.000	0.00	0.0	0.600	o	300	
1.024	22.191	0.107	207.4	0.000	0.00	0.0	0.600	o	300	
15.000	21.772	0.370	58.8	0.000	5.00	0.0	0.600	o	150	
15.001	28.601	0.630	45.4	0.000	0.00	0.0	0.600	o	150	
15.002	27.782	0.366	75.9	0.000	0.00	0.0	0.600	o	150	
15.003	37.742	0.277	136.3	0.067	0.00	0.0	0.600	o	150	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
13.001	0.00	6.47	121.655	0.096	0.0	0.0	0.0	1.14	20.1	0.0
10.006	0.00	6.56	121.297	0.403	0.0	0.0	0.0	3.19	126.7	0.0
1.016	0.00	13.14	120.242	2.931	0.0	0.0	0.0	0.94	74.8	0.0
1.017	0.00	13.20	120.101	2.931	0.0	0.0	0.0	2.34	187.1	0.0
1.018	0.00	14.02	119.817	2.997	0.0	0.0	0.0	1.36	53.9	0.0
1.019	0.00	14.75	119.107	3.063	0.0	0.0	0.0	1.08	43.1	0.0
1.020	0.00	14.96	118.777	3.063	0.0	0.0	0.0	0.70	27.7	0.0
1.021	0.00	15.09	118.752	3.063	0.0	0.0	0.0	1.90	134.3	0.0
14.000	0.00	5.87	118.874	0.042	0.0	0.0	0.0	0.53	4.2	0.0
1.022	0.00	16.35	118.539	3.105	0.0	0.0	0.0	1.04	73.5	0.0
1.023	0.00	16.46	118.191	3.105	0.0	0.0	0.0	3.22	227.8	0.0
1.024	0.00	16.80	117.330	3.105	0.0	0.0	0.0	1.09	76.9	0.0
15.000	0.00	5.28	119.570	0.000	0.0	0.0	0.0	1.31	23.2	0.0
15.001	0.00	5.59	119.200	0.000	0.0	0.0	0.0	1.50	26.5	0.0
15.002	0.00	6.00	118.570	0.000	0.0	0.0	0.0	1.16	20.4	0.0
15.003	0.00	6.73	118.204	0.067	0.0	0.0	0.0	0.86	15.2	0.0

Network Design Table for 20.08.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
16.000	19.832	0.319	62.2	0.166	5.00	0.0	0.600	o	150	
16.001	25.385	0.352	72.1	0.000	0.00	0.0	0.600	o	150	
15.004	19.179	0.504	38.1	0.000	0.00	0.0	0.600	o	225	
1.025	54.442	0.256	212.7	0.000	0.00	0.0	0.600	o	300	
17.000	22.755	0.136	167.3	0.020	5.00	0.0	0.600	o	225	
17.001	11.129	0.197	56.5	0.000	0.00	0.0	0.600	o	225	
1.026	8.542	0.146	58.5	0.000	0.00	0.0	0.600	o	300	
1.027	12.733	0.171	74.5	0.000	0.00	0.0	0.600	o	300	
1.028	13.272#	0.080	165.9	0.032	0.00	0.0	0.600	o	300	
18.000	52.498	0.823	63.8	0.087	5.00	0.0	0.600	o	150	
19.000	45.667	0.402	113.6	0.021	5.00	0.0	0.600	o	150	
20.000	20.060	0.199	100.8	0.000	5.00	0.0	0.600	o	150	
19.001	19.282	0.262	73.6	0.118	0.00	0.0	0.600	o	225	
19.002	21.801	0.175	124.6	0.000	0.00	0.0	0.600	o	300	

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)
16.000	0.00	5.26	118.598	0.166	0.0	0.0	0.0	1.28	22.6	0.0
16.001	0.00	5.62	118.279	0.166	0.0	0.0	0.0	1.19	20.9	0.0
15.004	0.00	6.88	117.927	0.233	0.0	0.0	0.0	2.13	84.6	0.0
1.025	0.00	17.64	117.223	3.338	0.0	0.0	0.0	1.07	75.9	0.0
17.000	0.00	5.38	117.200	0.020	0.0	0.0	0.0	1.01	40.1	0.0
17.001	0.00	5.48	117.064	0.020	0.0	0.0	0.0	1.74	69.3	0.0
1.026	0.00	17.71	116.867	3.358	0.0	0.0	0.0	2.06	145.6	0.0
1.027	0.00	17.83	116.721	3.358	0.0	0.0	0.0	1.82	128.9	0.0
1.028	0.00	18.01	116.550	3.390	0.0	0.0	0.0	1.22	86.1	0.0
18.000	0.00	5.69	117.313	0.087	0.0	0.0	0.0	1.26	22.3	0.0
19.000	0.00	5.81	118.556	0.021	0.0	0.0	0.0	0.94	16.6	0.0
20.000	0.00	5.33	118.353	0.000	0.0	0.0	0.0	1.00	17.7	0.0
19.001	0.00	6.02	118.154	0.139	0.0	0.0	0.0	1.53	60.7	0.0
19.002	0.00	6.28	117.892	0.139	0.0	0.0	0.0	1.41	99.5	0.0

Network Design Table for 20.08.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
21.000	23.008	0.164	140.3	0.075	5.00	0.0	0.600	o	150	
21.001	13.760	0.194	70.9	0.000	0.00	0.0	0.600	o	150	
21.002	13.711	0.278	49.3	0.021	0.00	0.0	0.600	o	150	
19.003	24.117	0.211	114.3	0.000	0.00	0.0	0.600	o	225	
22.000	3.531	0.043	82.1	0.020	5.00	0.0	0.600	o	100	
22.001	32.662	0.650	50.2	0.020	0.00	0.0	0.600	o	100	
22.002	20.297	0.151	134.4	0.063	0.00	0.0	0.600	o	150	
19.004	21.134	0.518	40.8	0.000	0.00	0.0	0.600	o	300	
23.000	22.705	1.303	17.4	0.034	5.00	0.0	0.600	o	150	
23.001	14.241	0.088	161.8	0.045	0.00	0.0	0.600	o	150	
23.002	11.996	0.334	35.9	0.035	0.00	0.0	0.600	o	150	
19.005	41.699	0.273	152.7	0.020	0.00	0.0	0.600	o	225	
24.000	30.734	0.288	106.7	0.084	5.00	0.0	0.600	o	225	
24.001	43.456	1.150	37.8	0.113	0.00	0.0	0.600	o	225	

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)
21.000	0.00	5.45	118.353	0.075	0.0	0.0	0.0	0.85	15.0	0.0
21.001	0.00	5.64	118.189	0.075	0.0	0.0	0.0	1.20	21.1	0.0
21.002	0.00	5.80	117.995	0.096	0.0	0.0	0.0	1.44	25.4	0.0
19.003	0.00	6.61	117.717	0.235	0.0	0.0	0.0	1.22	48.6	0.0
22.000	0.00	5.07	118.350	0.020	0.0	0.0	0.0	0.85	6.7	0.0
22.001	0.00	5.57	118.307	0.040	0.0	0.0	0.0	1.09	8.6	0.0
22.002	0.00	5.96	117.657	0.103	0.0	0.0	0.0	0.87	15.3	0.0
19.004	0.00	6.75	117.506	0.338	0.0	0.0	0.0	2.47	174.5	0.0
23.000	0.00	5.16	118.713	0.034	0.0	0.0	0.0	2.42	42.8	0.0
23.001	0.00	5.46	117.410	0.079	0.0	0.0	0.0	0.79	13.9	0.0
23.002	0.00	5.58	117.322	0.114	0.0	0.0	0.0	1.69	29.8	0.0
19.005	0.00	7.41	116.988	0.472	0.0	0.0	0.0	1.06	42.0	0.0
24.000	0.00	5.40	118.153	0.084	0.0	0.0	0.0	1.27	50.3	0.0
24.001	0.00	5.74	117.865	0.197	0.0	0.0	0.0	2.13	84.9	0.0

Network Design Table for 20.08.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
19.006	23.208	0.181	128.2	0.000	0.00	0.0	0.600	o	375	
19.007	6.386#	0.045	141.9	0.000	0.00	0.0	0.600	o	375	
19.008	5.090#	0.019	267.9	0.000	0.00	0.0	0.600	o	375	
1.029	8.579#	0.135	63.5	0.000	0.00	0.0	0.600	o	375	
1.030	28.710#	0.160	179.4	0.000	0.00	0.0	0.600	o	450	
1.031	5.466#	0.210	26.0	0.000	0.00	0.0	0.600	o	450	

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)
19.006	0.00	7.65	116.715	0.669	0.0	0.0	0.0	1.60	176.6	0.0
19.007	0.00	7.72	116.534	0.669	0.0	0.0	0.0	1.52	167.8	0.0
19.008	0.00	7.80	116.489	0.669	0.0	0.0	0.0	1.10	121.7	0.0
1.029	0.00	18.07	116.470	4.146	0.0	0.0	0.0	2.28	251.4	0.0
1.030	0.00	18.39	116.260	4.146	0.0	0.0	0.0	1.51	240.9	0.0
1.031	0.00	18.41	116.010	4.146	0.0	0.0	0.0	4.00	635.8	0.0

Free Flowing Outfall Details for 20.08.13.SWS

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.031	Outfall	116.600	115.800	121.405	0	0

Simulation Criteria for 20.08.13.SWS

Volumetric Runoff Coeff	0.840	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	1.000
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 Storage Structures	2
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
Return Period (years)	30
Site Location GB 450500 225250 SP 50500 25250	
C (1km)	-0.023

Synthetic Rainfall Details

D1 (1km)	0.328
D2 (1km)	0.309
D3 (1km)	0.264
E (1km)	0.292
F (1km)	2.461
Summer Storms	No
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Storm Duration (mins)	15

Online Controls for 20.08.13.SWS

Hydro-Brake® Manhole: SC6, DS/PN: 1.007, Volume (m³): 26.3

Design Head (m) 1.200 Hydro-Brake® Type Md6 SW Only Invert Level (m) 122.840
Design Flow (l/s) 10.0 Diameter (mm) 126

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	4.1	1.200	9.9	3.000	15.7	7.000	24.0
0.200	8.0	1.400	10.7	3.500	16.9	7.500	24.8
0.300	8.5	1.600	11.5	4.000	18.1	8.000	25.6
0.400	8.1	1.800	12.2	4.500	19.2	8.500	26.4
0.500	7.8	2.000	12.8	5.000	20.3	9.000	27.2
0.600	7.8	2.200	13.4	5.500	21.2	9.500	27.9
0.800	8.3	2.400	14.0	6.000	22.2		
1.000	9.1	2.600	14.6	6.500	23.1		

Storage Structures for 20.08.13.SWS

Tank or Pond Manhole: TANK, DS/PN: 6.000

Invert Level (m) 122.940

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	470.0	1.200	470.0	1.201	0.0

Tank or Pond Manhole: 0011, DS/PN: 1.018

Invert Level (m) 119.830

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	133.0	0.800	133.0	0.801	0.0

Summary of Critical Results by Maximum Level (Rank 1) for 20.08.13.SWS

Simulation Criteria

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

Number of Input Hydrographs	0	Number of Storage Structures	2
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
Site Location GB 450500 225250 SP 50500 25250	
C (1km)	-0.023
D1 (1km)	0.328
D2 (1km)	0.309
D3 (1km)	0.264
E (1km)	0.292
F (1km)	2.461
Cv (Summer)	0.750
Cv (Winter)	0.840

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

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

PN	Storm	Return Period	Climate Change	First X Surcharge	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
1.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			8
1.001	30 Winter	100	0%	100/15 Summer	100/15 Summer			9
1.002	15 Winter	100	0%	100/15 Summer				
1.003	15 Winter	100	0%	100/15 Summer	100/15 Summer			6
1.004	120 Winter	100	0%	100/15 Summer				
1.005	120 Winter	100	0%	100/15 Summer	100/120 Winter			4
2.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			6
2.001	15 Summer	100	0%	100/15 Summer				
2.002	480 Winter	100	0%	100/15 Summer	100/15 Summer			18
2.003	360 Winter	100	0%	100/15 Summer	100/60 Winter			13
1.006	240 Winter	100	0%	100/15 Summer				
3.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			6
3.001	30 Winter	100	0%	100/15 Summer	100/15 Summer			11
3.002	15 Winter	100	0%	100/15 Summer	100/15 Summer			11
3.003	15 Winter	100	0%	100/15 Summer				

Summary of Critical Results by Maximum Level (Rank 1) for 20.08.13.SWS

PN	Storm	Return Period	Climate Change	First X Surcharge	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
3.004	15 Winter	100	0%	100/15 Summer	100/15 Summer			2
4.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			7
3.005	15 Winter	100	0%	100/15 Summer				
5.000	15 Winter	100	0%	100/15 Summer				
3.006	15 Winter	100	0%	100/15 Summer				
3.007	240 Winter	100	0%	100/15 Summer				
3.008	240 Winter	100	0%	100/15 Summer	100/240 Winter			3
6.000	240 Winter	100	0%	100/15 Summer				
6.001	240 Winter	100	0%	100/15 Summer				
1.007	240 Winter	100	0%	100/15 Summer	100/120 Summer			9
7.000	30 Winter	100	0%	100/15 Summer	100/15 Summer			6
7.001	15 Winter	100	0%	100/15 Summer	100/15 Summer			7
7.002	30 Winter	100	0%	100/15 Summer	100/15 Summer			9
7.003	15 Winter	100	0%	100/15 Summer				
8.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			6
7.004	15 Winter	100	0%	100/15 Summer	100/15 Summer			3
7.005	15 Winter	100	0%	100/15 Summer				
1.008	15 Winter	100	0%	100/15 Summer				
1.009	15 Winter	100	0%	100/15 Summer				
9.000	15 Winter	100	0%	100/15 Summer				
9.001	15 Winter	100	0%	100/15 Summer				
1.010	15 Winter	100	0%	100/15 Summer				
1.011	15 Winter	100	0%	100/15 Summer				
1.012	15 Winter	100	0%	100/15 Summer				
1.013	15 Winter	100	0%	100/15 Summer				
1.014	30 Winter	100	0%	100/15 Summer	100/15 Winter			3
1.015	30 Winter	100	0%	100/15 Summer				
10.000	15 Winter	100	0%					
10.001	15 Winter	100	0%	100/15 Winter				
11.000	15 Winter	100	0%	100/15 Winter				
10.002	15 Winter	100	0%					
10.003	15 Winter	100	0%	100/15 Summer	100/15 Winter			1
10.004	15 Winter	100	0%	100/15 Summer				
10.005	15 Winter	100	0%	100/15 Summer				
12.000	15 Winter	100	0%	100/15 Summer				
13.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			6
13.001	15 Winter	100	0%	100/15 Summer	100/15 Summer			5
10.006	15 Winter	100	0%	100/15 Summer	100/15 Winter			1
1.016	30 Winter	100	0%	100/15 Summer				
1.017	60 Winter	100	0%	100/15 Summer	100/15 Summer			10
1.018	60 Winter	100	0%	100/15 Summer	100/15 Summer			8
1.019	120 Winter	100	0%	100/15 Summer	100/15 Summer			10
1.020	120 Winter	100	0%	100/15 Summer				
1.021	120 Winter	100	0%					
14.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			5
1.022	30 Winter	100	0%					
1.023	30 Winter	100	0%					
1.024	30 Winter	100	0%	100/15 Summer				
15.000	60 Winter	100	0%					
15.001	60 Winter	100	0%					
15.002	15 Winter	100	0%	100/15 Summer				

Summary of Critical Results by Maximum Level (Rank 1) for 20.08.13.SWS

PN	Storm	Return Period	Climate Change	First X Surcharge	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
15.003	15 Winter	100	0%	100/15 Summer				
16.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			6
16.001	15 Winter	100	0%	100/15 Summer				
15.004	30 Winter	100	0%	100/15 Summer				
1.025	30 Winter	100	0%	100/15 Summer				
17.000	30 Winter	100	0%	100/15 Summer				
17.001	30 Winter	100	0%	100/15 Summer				
1.026	30 Winter	100	0%	100/15 Summer				
1.027	30 Winter	100	0%	100/15 Summer				
1.028	30 Winter	100	0%	100/15 Summer	100/15 Summer			6
18.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			4
19.000	15 Winter	100	0%	100/15 Summer				
20.000	15 Winter	100	0%	100/15 Summer				
19.001	15 Winter	100	0%	100/15 Summer	100/15 Winter			1
19.002	15 Winter	100	0%	100/15 Summer				
21.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			4
21.001	15 Winter	100	0%	100/15 Summer	100/15 Summer			4
21.002	15 Winter	100	0%	100/15 Summer	100/15 Summer			4
19.003	15 Winter	100	0%	100/15 Summer				
22.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			4
22.001	15 Winter	100	0%	100/15 Summer	100/15 Summer			4
22.002	15 Winter	100	0%	100/15 Summer	100/15 Summer			4
19.004	15 Winter	100	0%	100/15 Summer				
23.000	15 Winter	100	0%	100/15 Summer				
23.001	15 Winter	100	0%	100/15 Summer	100/15 Summer			4
23.002	15 Winter	100	0%	100/15 Summer	100/15 Summer			4
19.005	15 Winter	100	0%	100/15 Summer				
24.000	15 Winter	100	0%	100/15 Summer				
24.001	15 Winter	100	0%	100/15 Summer	100/15 Winter			1
19.006	15 Winter	100	0%	100/15 Summer				
19.007	15 Winter	100	0%	100/15 Summer				
19.008	15 Winter	100	0%	100/15 Summer				
1.029	15 Winter	100	0%	100/15 Summer				
1.030	15 Winter	100	0%	100/15 Summer				
1.031	15 Winter	100	0%					

PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m^3)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	0542	126.651	0.793	72.125	0.97	0.0	59.0	FLOOD
1.001	0648	126.111	0.952	35.073	1.27	0.0	62.6	FLOOD
1.002	Ex MH	126.066	1.194	0.000	1.75	0.0	74.4	FLOOD RISK
1.003	0579	125.646	0.935	5.637	1.34	0.0	70.5	FLOOD
1.004	SC1	125.341	1.232	0.000	0.57	0.0	62.6	SURCHARGED
1.005	SC2	125.221	1.649	15.192	0.71	0.0	61.8	FLOOD
2.000	0580	125.963	0.494	14.373	0.94	0.0	26.9	FLOOD
2.001	EX MH	125.949	0.791	0.000	1.08	0.0	33.1	FLOOD RISK
2.002	1015	125.174	0.747	92.609	0.89	0.0	13.6	FLOOD
2.003	SC3	125.200	1.075	100.394	0.22	0.0	25.1	FLOOD
1.006	SC4	125.216	1.766	0.000	0.54	0.0	83.3	FLOOD RISK

Summary of Critical Results by Maximum Level (Rank 1) for 20.08.13.SWS

PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
3.000	0613	126.890	0.738	12.232	1.24	0.0	19.6	FLOOD
3.001	0615	126.548	0.630	39.111	0.71	0.0	13.0	FLOOD
3.002	0610	126.434	1.036	43.269	2.86	0.0	27.1	FLOOD
3.003	0611	126.662	1.282	0.000	1.88	0.0	27.1	FLOOD RISK
3.004	0532	126.430	1.219	2.294	3.35	0.0	41.8	FLOOD
4.000	1032	126.866	1.365	23.674	2.19	0.0	26.9	FLOOD
3.005	0608	125.599	0.257	0.000	0.30	0.0	67.3	SURCHARGED
5.000	GY	125.649	0.399	0.000	1.86	0.0	30.4	FLOOD RISK
3.006	0530	125.463	0.306	0.000	0.52	0.0	111.9	SURCHARGED
3.007	0544	125.344	0.414	0.000	0.37	0.0	62.6	FLOOD RISK
3.008	0529	125.244	0.624	10.811	0.39	0.0	62.6	FLOOD
6.000	TANK	125.220	1.980	0.000	0.02	0.0	1.2	FLOOD RISK
6.001	SC5	125.220	1.867	0.000	0.02	0.0	2.3	FLOOD RISK
1.007	SC6	125.220	2.230	56.487	0.95	0.0	13.4	FLOOD
7.000	0842	126.174	0.893	8.268	0.75	0.0	8.4	FLOOD
7.001	0772	126.186	1.358	5.887	1.53	0.0	10.0	FLOOD
7.002	EX MH	125.229	0.819	29.263	1.05	0.0	21.9	FLOOD
7.003	0535	125.670	1.635	0.000	2.26	0.0	22.0	SURCHARGED
8.000	0533	125.770	1.397	7.576	1.30	0.0	13.5	FLOOD
7.004	0524	125.643	1.653	1.924	1.66	0.0	32.1	FLOOD
7.005	SC19	124.942	1.552	0.000	1.08	0.0	24.1	SURCHARGED
1.008	SC7	124.358	1.621	0.000	2.49	0.0	33.2	SURCHARGED
1.009	SC8	124.011	1.366	0.000	0.99	0.0	34.7	SURCHARGED
9.000	SC9	124.218	1.048	0.000	0.49	0.0	50.8	SURCHARGED
9.001	SC10	124.119	1.589	0.000	2.71	0.0	34.8	SURCHARGED
1.010	SC11	123.933	1.445	0.000	1.43	0.0	56.1	SURCHARGED
1.011	SC12	123.614	1.286	0.000	1.63	0.0	55.4	SURCHARGED
1.012	SC13	123.406	1.157	0.000	0.99	0.0	61.0	SURCHARGED
1.013	SC14	122.315	1.179	0.000	1.41	0.0	63.4	FLOOD RISK
1.014	SC15	121.679	0.864	4.212	0.90	0.0	73.3	FLOOD
1.015	SC16	121.576	1.030	0.000	1.07	0.0	73.1	SURCHARGED
10.000	0015	122.886	-0.090	0.000	0.03	0.0	2.0	OK
10.001	0014	122.886	0.005	0.000	0.80	0.0	42.1	SURCHARGED
11.000	0005	122.878	0.039	0.000	0.99	0.0	46.1	SURCHARGED
10.002	0004	122.836	-0.129	0.000	0.28	0.0	98.2	OK
10.003	0454	122.743	0.331	0.793	0.44	0.0	119.6	FLOOD
10.004	0326	122.632	0.600	0.000	1.11	0.0	92.2	FLOOD RISK
10.005	0323	122.515	0.593	0.000	0.81	0.0	97.1	FLOOD RISK
12.000	0455	122.366	0.606	0.000	0.50	0.0	8.7	FLOOD RISK
13.000	0460	122.820	0.474	4.303	1.11	0.0	7.1	FLOOD
13.001	0459	122.206	0.401	10.750	1.46	0.0	28.0	FLOOD
10.006	0373	122.287	0.765	0.019	0.94	0.0	106.9	FLOOD
1.016	0009	121.497	1.030	0.000	2.32	0.0	161.1	SURCHARGED
1.017	0010	120.991	0.665	64.833	0.93	0.0	140.1	FLOOD
1.018	0011	120.888	0.846	8.465	1.22	0.0	63.5	FLOOD
1.019	0480	119.843	0.511	15.999	1.45	0.0	59.9	FLOOD
1.020	0526	119.146	0.144	0.000	2.85	0.0	59.9	FLOOD RISK
1.021	0643	118.908	-0.144	0.000	0.53	0.0	59.9	OK
14.000	0497	119.697	0.723	3.004	2.53	0.0	10.3	FLOOD
1.022	0029	118.800	-0.039	0.000	0.98	0.0	69.7	OK

Summary of Critical Results by Maximum Level (Rank 1) for 20.08.13.SWS

PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.023	0288	118.469	-0.022	0.000	0.37	0.0	73.5	FLOOD RISK
1.024	SC17	118.290	0.660	0.000	1.09	0.0	73.9	FLOOD RISK
15.000	EX MH	119.570	-0.150	0.000	0.00	0.0	0.0	OK
15.001	EX MH	119.200	-0.150	0.000	0.00	0.0	0.0	OK
15.002	EX MH	119.150	0.430	0.000	0.26	0.0	5.2	SURCHARGED
15.003	0376	119.186	0.832	0.000	1.95	0.0	28.7	FLOOD RISK
16.000	0250	119.328	0.580	20.445	1.45	0.0	30.7	FLOOD
16.001	0248	118.890	0.461	0.000	1.40	0.0	28.0	FLOOD RISK
15.004	0375	118.344	0.192	0.000	0.65	0.0	49.5	SURCHARGED
1.025	SC18	118.194	0.671	0.000	1.46	0.0	105.2	FLOOD RISK
17.000	0274	117.654	0.229	0.000	0.20	0.0	7.2	SURCHARGED
17.001	0272	117.648	0.359	0.000	0.10	0.0	6.2	SURCHARGED
1.026	0271	117.643	0.476	0.000	1.13	0.0	108.5	SURCHARGED
1.027	0269	117.456	0.435	0.000	1.06	0.0	109.6	SURCHARGED
1.028	0270	117.270	0.420	12.263	1.90	0.0	134.2	FLOOD
18.000	0465	118.536	1.073	3.170	1.34	0.0	29.1	FLOOD
19.000	0162	119.600	0.894	0.000	0.48	0.0	7.7	FLOOD RISK
20.000	0471	119.477	0.974	0.000	0.18	0.0	3.0	FLOOD RISK
19.001	0163	119.477	1.098	0.470	0.97	0.0	53.2	FLOOD
19.002	0182	119.313	1.121	0.000	0.49	0.0	43.3	SURCHARGED
21.000	0469	119.537	1.034	4.082	1.72	0.0	24.4	FLOOD
21.001	0395	119.320	0.981	1.421	0.97	0.0	18.7	FLOOD
21.002	0394	119.218	1.073	3.366	1.21	0.0	28.2	FLOOD
19.003	0393	119.194	1.252	0.000	1.11	0.0	49.5	FLOOD RISK
22.000	0464	119.386	0.936	0.849	0.80	0.0	4.5	FLOOD
22.001	0179	119.358	0.951	1.461	0.97	0.0	8.1	FLOOD
22.002	0180	119.061	1.254	4.470	1.66	0.0	23.8	FLOOD
19.004	0181	118.940	1.134	0.000	0.41	0.0	63.2	FLOOD RISK
23.000	0266	119.228	0.365	0.000	0.44	0.0	17.8	FLOOD RISK
23.001	0264	118.964	1.404	4.051	1.64	0.0	21.0	FLOOD
23.002	0386	118.760	1.288	8.137	1.13	0.0	30.4	FLOOD
19.005	0263	118.732	1.519	0.000	2.10	0.0	83.9	FLOOD RISK
24.000	0234	119.222	0.844	0.000	0.88	0.0	41.2	FLOOD RISK
24.001	0254	118.975	0.885	0.296	1.08	0.0	87.7	FLOOD
19.006	0257	117.728	0.638	0.000	1.07	0.0	161.7	SURCHARGED
19.007	0258	117.528	0.619	0.000	1.50	0.0	160.5	SURCHARGED
19.008	0378	117.361	0.497	0.000	2.09	0.0	159.8	SURCHARGED
1.029	Ex MH	117.192	0.347	0.000	1.77	0.0	253.9	FLOOD RISK
1.030	Ex MH	116.771	0.061	0.000	1.23	0.0	253.7	SURCHARGED
1.031	PI	116.365	-0.095	0.000	0.98	0.0	253.6	OK

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for SW EAST EXISTING 15.07.13.SWS

Pipe Sizes SW EAST EXISTING 15.07.13 Manhole Sizes SW EAST EXISTING 15.07.13

FEH Rainfall Model	
Return Period (years)	2
Site Location	GB 450500 225250 SP 50500 25250
C (1km)	-0.023
D1 (1km)	0.328
D2 (1km)	0.309
D3 (1km)	0.264
E (1km)	0.292
F (1km)	2.461
Maximum Rainfall (mm/hr)	0
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.000
Maximum Backdrop Height (m)	0.000
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	0.75
Min Slope for Optimisation (1:X)	500

Designed with Level Inverts

Network Design Table for SW EAST EXISTING 15.07.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.000	48.114	0.442	108.9	0.075	5.00	0.0	0.600	o	150	
1.001	22.970	0.291	78.9	0.086	0.00	0.0	0.600	o	225	
1.002	37.335	0.452	82.6	0.100	0.00	0.0	0.600	o	225	
1.003	22.125	0.316	70.0	0.063	0.00	0.0	0.600	o	225	
1.004	51.854	0.429	120.9	0.159	0.00	0.0	0.600	o	225	
2.000	41.092	0.280	146.8	0.048	5.00	0.0	0.600	o	150	

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	5.83	126.100	0.075	0.0	0.0	0.0	0.96	17.0	0.0
1.001	0.00	6.09	125.583	0.161	0.0	0.0	0.0	1.47	58.6	0.0
1.002	0.00	6.53	125.292	0.261	0.0	0.0	0.0	1.44	57.2	0.0
1.003	0.00	6.76	124.840	0.324	0.0	0.0	0.0	1.56	62.2	0.0
1.004	0.00	7.49	124.524	0.483	0.0	0.0	0.0	1.19	47.2	0.0
2.000	0.00	5.83	124.970	0.048	0.0	0.0	0.0	0.83	14.6	0.0

Network Design Table for SW EAST EXISTING 15.07.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
2.001	8.985	0.108	83.2	0.000	0.00	0.0	0.600	o	150	
3.000	13.687	0.339	40.4	0.063	5.00	0.0	0.600	o	150	
3.001	22.832	0.195	117.1	0.039	0.00	0.0	0.600	o	150	
4.000	22.194	0.312	71.1	0.049	5.00	0.0	0.600	o	150	
2.002	16.307	0.123	132.6	0.055	0.00	0.0	0.600	o	225	
2.003	4.596	0.099	46.4	0.014	0.00	0.0	0.600	o	225	
2.004	20.712	0.228	90.8	0.000	0.00	0.0	0.600	o	225	
2.005	6.464	0.009	718.2	0.010	0.00	0.0	0.600	o	225	
5.000	20.917	0.101	207.1	0.060	5.00	0.0	0.600	o	150	
2.006	10.070	0.028	359.6	0.000	0.00	0.0	0.600	o	225	
1.005	48.316	0.508	95.1	0.066	0.00	0.0	0.600	o	300	
6.000	13.216	0.281	47.0	0.014	5.00	0.0	0.600	o	150	
6.001	26.709	0.461	57.9	0.010	0.00	0.0	0.600	o	150	
6.002	17.803	0.096	185.4	0.112	0.00	0.0	0.600	o	150	

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)
2.001	0.00	5.96	124.690	0.048	0.0	0.0	0.0	1.10	19.5	0.0
3.000	0.00	5.14	125.041	0.063	0.0	0.0	0.0	1.59	28.1	0.0
3.001	0.00	5.55	124.702	0.102	0.0	0.0	0.0	0.93	16.4	0.0
4.000	0.00	5.31	124.894	0.049	0.0	0.0	0.0	1.19	21.1	0.0
2.002	0.00	6.20	124.507	0.254	0.0	0.0	0.0	1.13	45.1	0.0
2.003	0.00	6.24	124.384	0.268	0.0	0.0	0.0	1.92	76.5	0.0
2.004	0.00	6.49	124.285	0.268	0.0	0.0	0.0	1.37	54.6	0.0
2.005	0.00	6.72	124.057	0.278	0.0	0.0	0.0	0.48	19.1	0.0
5.000	0.00	5.50	124.149	0.060	0.0	0.0	0.0	0.69	12.3	0.0
2.006	0.00	6.96	124.048	0.338	0.0	0.0	0.0	0.68	27.2	0.0
1.005	0.00	7.99	124.020	0.887	0.0	0.0	0.0	1.61	114.0	0.0
6.000	0.00	5.15	124.500	0.014	0.0	0.0	0.0	1.47	26.0	0.0
6.001	0.00	5.49	124.219	0.024	0.0	0.0	0.0	1.32	23.4	0.0
6.002	0.00	5.89	123.758	0.136	0.0	0.0	0.0	0.73	13.0	0.0

Network Design Table for SW EAST EXISTING 15.07.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.006	133.089	1.669	79.7	0.839	0.00	0.0	0.600	o	300	
7.000	66.402	0.334	198.8	0.112	5.00	0.0	0.600	o	225	
7.001	6.897	0.063	109.5	0.041	0.00	0.0	0.600	o	225	
7.002	48.291	0.423	114.2	0.064	0.00	0.0	0.600	o	225	
8.000	13.342	0.130	102.6	0.050	5.00	0.0	0.600	o	150	
8.001	5.774	0.295	19.6	0.030	0.00	0.0	0.600	o	150	
7.003	46.691	0.513	91.0	0.120	0.00	0.0	0.600	o	300	
9.000	22.722	0.189	120.2	0.050	5.00	0.0	0.600	o	150	
7.004	54.310	0.597	91.0	0.147	0.00	0.0	0.600	o	300	
7.005	9.580	0.101	94.9	0.059	0.00	0.0	0.600	o	300	
10.000	9.171	0.230	39.9	0.020	5.00	0.0	0.600	o	100	
11.000	8.009	0.100	80.1	0.020	5.00	0.0	0.600	o	100	
10.001	23.752	0.480	49.5	0.020	0.00	0.0	0.600	o	100	
10.002	3.094	0.166	18.6	0.021	0.00	0.0	0.600	o	100	

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)
1.006	0.00	9.25	123.512	1.862	0.0	0.0	0.0	1.76	124.6	0.0
7.000	0.00	6.20	124.910	0.112	0.0	0.0	0.0	0.92	36.7	0.0
7.001	0.00	6.29	124.576	0.153	0.0	0.0	0.0	1.25	49.7	0.0
7.002	0.00	6.95	124.513	0.217	0.0	0.0	0.0	1.22	48.6	0.0
8.000	0.00	5.22	124.590	0.050	0.0	0.0	0.0	0.99	17.5	0.0
8.001	0.00	5.27	124.460	0.080	0.0	0.0	0.0	2.29	40.4	0.0
7.003	0.00	7.42	124.015	0.417	0.0	0.0	0.0	1.65	116.5	0.0
9.000	0.00	5.41	123.691	0.050	0.0	0.0	0.0	0.92	16.2	0.0
7.004	0.00	7.97	123.502	0.614	0.0	0.0	0.0	1.65	116.6	0.0
7.005	0.00	8.07	122.905	0.673	0.0	0.0	0.0	1.61	114.1	0.0
10.000	0.00	5.12	123.880	0.020	0.0	0.0	0.0	1.22	9.6	0.0
11.000	0.00	5.16	123.750	0.020	0.0	0.0	0.0	0.86	6.8	0.0
10.001	0.00	5.52	123.650	0.060	0.0	0.0	0.0	1.10	8.6	0.0
10.002	0.00	5.54	123.170	0.081	0.0	0.0	0.0	1.80	14.1	0.0

Network Design Table for SW EAST EXISTING 15.07.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
7.006	45.650	0.483	94.5	0.009	0.00	0.0	0.600	o	300	
12.000	17.829	0.122	146.1	0.052	5.00	0.0	0.600	o	150	
12.001	15.689	0.099	158.5	0.020	0.00	0.0	0.600	o	150	
12.002	6.484	0.025	259.4	0.020	0.00	0.0	0.600	o	150	
12.003	44.989	0.268	167.9	0.041	0.00	0.0	0.600	o	150	
7.007	10.421	0.081	128.7	0.000	0.00	0.0	0.600	o	300	
13.000	12.628	0.130	97.1	0.082	5.00	0.0	0.600	o	150	
13.001	15.328	0.160	95.8	0.017	0.00	0.0	0.600	o	150	
7.008	38.158	0.397	96.1	0.036	0.00	0.0	0.600	o	300	
14.000	84.361	1.449	58.2	0.153	5.00	0.0	0.600	o	150	
1.007	35.645	0.308	115.7	0.051	0.00	0.0	0.600	o	300	
1.008	28.048	0.140	200.3	0.153	0.00	0.0	0.600	o	375	
15.000	19.183	0.220	87.2	0.182	5.00	0.0	0.600	o	150	

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)
7.006	0.00	8.54	122.804	0.763	0.0	0.0	0.0	1.62	114.3	0.0
12.000	0.00	5.36	122.985	0.052	0.0	0.0	0.0	0.83	14.7	0.0
12.001	0.00	5.69	122.863	0.072	0.0	0.0	0.0	0.80	14.1	0.0
12.002	0.00	5.86	122.764	0.092	0.0	0.0	0.0	0.62	10.9	0.0
12.003	0.00	6.83	122.739	0.133	0.0	0.0	0.0	0.77	13.7	0.0
7.007	0.00	8.66	122.321	0.896	0.0	0.0	0.0	1.38	97.9	0.0
13.000	0.00	5.21	122.530	0.082	0.0	0.0	0.0	1.02	18.0	0.0
13.001	0.00	5.46	122.400	0.099	0.0	0.0	0.0	1.03	18.1	0.0
7.008	0.00	9.06	122.240	1.031	0.0	0.0	0.0	1.60	113.4	0.0
14.000	0.00	6.06	123.442	0.153	0.0	0.0	0.0	1.32	23.3	0.0
1.007	0.00	9.65	121.843	3.097	0.0	0.0	0.0	1.46	103.2	0.0
1.008	0.00	10.02	121.460	3.250	0.0	0.0	0.0	1.28	141.0	0.0
15.000	0.00	5.30	121.540	0.182	0.0	0.0	0.0	1.08	19.0	0.0

Network Design Table for SW EAST EXISTING 15.07.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.009	101.240	1.201	84.3	0.510	0.00	0.0	0.600	o	375	
16.000	3.306	0.040	82.7	0.050	5.00	0.0	0.600	o	100	
16.001	7.073	0.090	78.6	0.050	0.00	0.0	0.600	o	100	
16.002	16.487	0.586	28.1	0.047	0.00	0.0	0.600	o	150	
17.000	10.073	0.206	48.9	0.030	5.00	0.0	0.600	o	100	
17.001	21.491	0.456	47.1	0.000	0.00	0.0	0.600	o	150	
16.003	23.505	0.394	59.7	0.149	0.00	0.0	0.600	o	150	
16.004	5.586	0.100	55.9	0.055	0.00	0.0	0.600	o	150	
16.005	23.006	0.380	60.5	0.000	0.00	0.0	0.600	o	150	
16.006	13.064	0.235	55.6	0.064	0.00	0.0	0.600	o	150	
16.007	19.115	0.171	111.8	0.022	0.00	0.0	0.600	o	150	
16.008	29.054	0.290	100.2	0.116	0.00	0.0	0.600	o	225	
18.000	56.247	0.904	62.2	0.037	5.00	0.0	0.600	o	100	
18.001	14.193	0.186	76.3	0.044	0.00	0.0	0.600	o	150	
16.009	133.341	0.379	351.8	0.058	0.00	0.0	0.600	o	225	
19.000	44.110	0.482	91.5	0.138	5.00	0.0	0.600	o	100	

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)
1.009	0.00	10.87	121.320	3.942	0.0	0.0	0.0	1.97	218.1	0.0
16.000	0.00	5.07	124.690	0.050	0.0	0.0	0.0	0.85	6.7	0.0
16.001	0.00	5.20	124.650	0.100	0.0	0.0	0.0	0.87	6.8	0.0
16.002	0.00	5.34	124.560	0.147	0.0	0.0	0.0	1.91	33.7	0.0
17.000	0.00	5.15	124.636	0.030	0.0	0.0	0.0	1.10	8.7	0.0
17.001	0.00	5.40	124.380	0.030	0.0	0.0	0.0	1.47	26.0	0.0
16.003	0.00	5.70	123.924	0.326	0.0	0.0	0.0	1.30	23.1	0.0
16.004	0.00	5.77	123.530	0.381	0.0	0.0	0.0	1.35	23.8	0.0
16.005	0.00	6.06	123.430	0.381	0.0	0.0	0.0	1.29	22.9	0.0
16.006	0.00	6.22	123.050	0.445	0.0	0.0	0.0	1.35	23.9	0.0
16.007	0.00	6.56	122.815	0.467	0.0	0.0	0.0	0.95	16.8	0.0
16.008	0.00	6.93	122.569	0.583	0.0	0.0	0.0	1.31	51.9	0.0
18.000	0.00	5.96	123.494	0.037	0.0	0.0	0.0	0.98	7.7	0.0
18.001	0.00	6.16	122.540	0.081	0.0	0.0	0.0	1.15	20.4	0.0
16.009	0.00	10.14	122.279	0.722	0.0	0.0	0.0	0.69	27.5	0.0
19.000	0.00	5.91	122.818	0.138	0.0	0.0	0.0	0.80	6.3	0.0

Network Design Table for SW EAST EXISTING 15.07.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
19.001	9.009	0.044	204.8	0.160	0.00	0.0	0.600	o	150	
19.002	19.171	0.167	114.8	0.010	0.00	0.0	0.600	o	150	
16.010	38.490	0.523	73.6	0.065	0.00	0.0	0.600	o	375	
16.011	13.701	0.266	51.5	0.356	0.00	0.0	0.600	o	150	
16.012	42.116	0.506	83.2	0.077	0.00	0.0	0.600	o	375	
16.013	27.671	0.416	66.5	0.018	0.00	0.0	0.600	oo	-2	
20.000	58.512	0.694	84.3	0.102	5.00	0.0	0.600	o	150	
1.010	24.359	0.530	46.0	0.000	0.00	0.0	0.600	o	375	
1.011	13.573	0.264	51.4	0.102	0.00	0.0	0.600	o	375	
21.000	50.350	0.840	59.9	0.015	5.00	0.0	0.600	\/	-3	
21.001	4.328	0.270	16.0	0.000	0.00	0.0	0.600	o	300	
21.002	8.059	0.260	31.0	0.000	0.00	0.0	0.600	\/	-3	
21.003	28.676	0.990	29.0	0.018	0.00	0.0	0.600	[]	-4	
1.012	66.057	1.350	48.9	0.045	0.00	0.0	0.600	[]	-4	
22.000	10.056	0.081	124.1	0.010	5.00	0.0	0.600	o	225	

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)
19.001	0.00	6.13	122.336	0.298	0.0	0.0	0.0	0.70	12.3	0.0
19.002	0.00	6.47	122.292	0.308	0.0	0.0	0.0	0.94	16.6	0.0
16.010	0.00	10.45	121.900	1.095	0.0	0.0	0.0	2.11	233.5	0.0
16.011	0.00	10.61	121.377	1.451	0.0	0.0	0.0	1.40	24.8	0.0
16.012	0.00	10.96	121.111	1.528	0.0	0.0	0.0	1.99	219.5	0.0
16.013	0.00	11.25	120.535	1.546	0.0	0.0	0.0	1.61	128.5	0.0
20.000	0.00	5.89	120.813	0.102	0.0	0.0	0.0	1.10	19.4	0.0
1.010	0.00	11.40	120.119	5.590	0.0	0.0	0.0	2.68	295.9	0.0
1.011	0.00	11.49	119.589	5.692	0.0	0.0	0.0	2.53	279.7	0.0
21.000	0.00	5.18	121.460	0.015	0.0	0.0	0.0	4.78	3562.4	0.0
21.001	0.00	5.19	120.620	0.015	0.0	0.0	0.0	3.95	278.9	0.0
21.002	0.00	5.21	120.350	0.015	0.0	0.0	0.0	6.65	4957.8	0.0
21.003	0.00	5.31	120.090	0.033	0.0	0.0	0.0	5.21	3126.8	0.0
1.012	0.00	11.76	119.100	5.770	0.0	0.0	0.0	4.01	2403.9	0.0
22.000	0.00	5.14	118.131	0.010	0.0	0.0	0.0	1.17	46.6	0.0

Network Design Table for SW EAST EXISTING 15.07.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.013	27.320	0.560	48.8	0.020	0.00	0.0	0.600	[]	-4	
23.000	12.568	0.171	73.5	0.041	5.00	0.0	0.600	o	150	
23.001	5.619	0.081	69.4	0.028	0.00	0.0	0.600	o	150	
23.002	15.043	0.245	61.4	0.022	0.00	0.0	0.600	o	150	
24.000	33.006	0.550	60.0	0.064	5.00	0.0	0.600	o	150	
24.001	3.821	0.180	21.2	0.028	0.00	0.0	0.600	o	150	
23.003	3.739	0.011	339.9	0.000	0.00	0.0	0.600	o	150	
23.004	5.210	0.015	347.3	0.000	0.00	0.0	0.600	o	150	
23.005	4.702	0.040	117.6	0.000	0.00	0.0	0.600	o	150	
23.006	32.817	0.366	89.7	0.000	0.00	0.0	0.600	o	150	
23.007	16.363	0.001	16363.0	0.000	0.00	0.0	0.600	o	150	
23.008	54.209	0.001	54209.0	0.013	0.00	0.0	0.600	o	150	
25.000	14.445	0.172	84.0	0.015	5.00	0.0	0.600	o	100	
23.009	19.229	0.400	48.1	0.015	0.00	0.0	0.600	o	150	
26.000	9.115	0.067	136.0	0.082	5.00	0.0	0.600	o	225	
26.001	17.163	0.130	132.0	0.021	0.00	0.0	0.600	o	225	

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)
1.013	0.00	11.88	117.750	5.800	0.0	0.0	0.0	4.01	2407.5	0.0
23.000	0.00	5.18	123.172	0.041	0.0	0.0	0.0	1.17	20.7	0.0
23.001	0.00	5.26	123.001	0.069	0.0	0.0	0.0	1.21	21.4	0.0
23.002	0.00	5.45	122.920	0.091	0.0	0.0	0.0	1.29	22.7	0.0
24.000	0.00	5.42	123.405	0.064	0.0	0.0	0.0	1.30	23.0	0.0
24.001	0.00	5.45	122.855	0.092	0.0	0.0	0.0	2.20	38.8	0.0
23.003	0.00	5.57	122.675	0.183	0.0	0.0	0.0	0.54	9.5	0.0
23.004	0.00	5.73	122.664	0.183	0.0	0.0	0.0	0.53	9.4	0.0
23.005	0.00	5.81	122.649	0.183	0.0	0.0	0.0	0.93	16.4	0.0
23.006	0.00	6.33	122.609	0.183	0.0	0.0	0.0	1.06	18.8	0.0
23.007	0.00	10.19	122.243	0.183	0.0	0.0	0.0	0.07	1.2	0.0
23.008	0.00	30.00	122.242	0.196	0.0	0.0	0.0	0.04	0.6	0.0
25.000	0.00	5.29	122.464	0.015	0.0	0.0	0.0	0.84	6.6	0.0
23.009	0.00	30.00	122.241	0.226	0.0	0.0	0.0	1.45	25.7	0.0
26.000	0.00	5.14	122.435	0.082	0.0	0.0	0.0	1.12	44.5	0.0
26.001	0.00	5.39	122.368	0.103	0.0	0.0	0.0	1.14	45.2	0.0

Network Design Table for SW EAST EXISTING 15.07.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
26.002	2.578	0.020	128.9	0.036	0.00	0.0	0.600	o	225	
26.003	33.041	0.376	87.9	0.141	0.00	0.0	0.600	o	225	
23.010	50.072	0.867	57.8	0.109	0.00	0.0	0.600	o	225	
23.011	3.561	0.040	89.0	0.024	0.00	0.0	0.600	o	150	
23.012	2.515	0.052	48.4	0.000	0.00	0.0	0.600	o	225	
27.000	21.823	0.950	23.0	0.138	5.00	0.0	0.600	o	150	
28.000	24.032	0.210	114.4	0.023	5.00	0.0	0.600	o	100	
28.001	13.759	0.119	115.6	0.018	0.00	0.0	0.600	o	150	
28.002	27.912	0.668	41.8	0.000	0.00	0.0	0.600	o	150	
23.013	42.090	0.133	316.5	0.266	0.00	0.0	0.600	o	225	
29.000	29.924	0.395	75.8	0.108	5.00	0.0	0.600	o	150	
29.001	28.247	0.250	113.0	0.037	0.00	0.0	0.600	o	150	
29.002	14.421	0.195	74.0	0.047	0.00	0.0	0.600	o	150	
23.014	12.664	0.555	22.8	0.048	0.00	0.0	0.600	o	225	
23.015	10.374	0.110	94.3	0.062	0.00	0.0	0.600	o	225	
23.016	27.326	0.029	942.3	0.069	0.00	0.0	0.600	o	300	

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)
26.002	0.00	5.42	122.238	0.139	0.0	0.0	0.0	1.15	45.7	0.0
26.003	0.00	5.82	122.218	0.280	0.0	0.0	0.0	1.40	55.5	0.0
23.010	0.00	30.00	121.841	0.615	0.0	0.0	0.0	1.72	68.6	0.0
23.011	0.00	30.00	120.974	0.639	0.0	0.0	0.0	1.07	18.8	0.0
23.012	0.00	30.00	120.934	0.639	0.0	0.0	0.0	1.89	75.0	0.0
27.000	0.00	5.17	121.918	0.138	0.0	0.0	0.0	2.11	37.3	0.0
28.000	0.00	5.56	121.880	0.023	0.0	0.0	0.0	0.72	5.6	0.0
28.001	0.00	5.80	121.670	0.041	0.0	0.0	0.0	0.93	16.5	0.0
28.002	0.00	6.10	121.551	0.041	0.0	0.0	0.0	1.56	27.6	0.0
23.013	0.00	30.00	120.882	1.084	0.0	0.0	0.0	0.73	29.0	0.0
29.000	0.00	5.43	121.665	0.108	0.0	0.0	0.0	1.16	20.4	0.0
29.001	0.00	5.93	121.270	0.145	0.0	0.0	0.0	0.94	16.7	0.0
29.002	0.00	6.14	121.020	0.192	0.0	0.0	0.0	1.17	20.7	0.0
23.014	0.00	30.00	120.749	1.324	0.0	0.0	0.0	2.75	109.4	0.0
23.015	0.00	30.00	120.194	1.386	0.0	0.0	0.0	1.35	53.5	0.0
23.016	0.00	30.00	120.084	1.455	0.0	0.0	0.0	0.50	35.6	0.0

Network Design Table for SW EAST EXISTING 15.07.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
30.000	43.403	0.550	78.9	0.030	5.00	0.0	0.600	o	100	
30.001	15.654	0.110	142.3	0.012	0.00	0.0	0.600	o	150	
30.002	25.507	0.170	150.0	0.066	0.00	0.0	0.600	o	150	
30.003	14.388	0.100	143.9	0.043	0.00	0.0	0.600	o	150	
31.000	42.765	0.540	79.2	0.017	5.00	0.0	0.600	o	100	
31.001	7.338	0.050	146.8	0.036	0.00	0.0	0.600	o	150	
31.002	42.417	0.290	146.3	0.000	0.00	0.0	0.600	o	150	
30.004	16.920	0.120	141.0	0.088	0.00	0.0	0.600	o	150	
30.005	29.021	0.200	145.1	0.180	0.00	0.0	0.600	o	150	
30.006	29.194	0.200	146.0	0.037	0.00	0.0	0.600	o	150	
30.007	4.919	0.038	129.4	0.047	0.00	0.0	0.600	o	150	
30.008	4.903	0.038	129.0	0.002	0.00	0.0	0.600	o	150	
32.000	21.931	0.327	67.1	0.019	5.00	0.0	0.600	o	100	
32.001	20.176	0.324	62.3	0.012	0.00	0.0	0.600	o	150	
32.002	14.181	0.226	62.7	0.012	0.00	0.0	0.600	o	150	
32.003	22.288	0.800	27.9	0.000	0.00	0.0	0.600	o	150	
30.009	17.544	0.118	148.7	0.020	0.00	0.0	0.600	o	150	

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)
30.000	0.00	5.83	121.700	0.030	0.0	0.0	0.0	0.87	6.8	0.0
30.001	0.00	6.14	121.150	0.042	0.0	0.0	0.0	0.84	14.8	0.0
30.002	0.00	6.66	121.040	0.108	0.0	0.0	0.0	0.82	14.5	0.0
30.003	0.00	6.95	120.870	0.151	0.0	0.0	0.0	0.84	14.8	0.0
31.000	0.00	5.82	121.650	0.017	0.0	0.0	0.0	0.87	6.8	0.0
31.001	0.00	5.97	121.110	0.053	0.0	0.0	0.0	0.83	14.6	0.0
31.002	0.00	6.82	121.060	0.053	0.0	0.0	0.0	0.83	14.6	0.0
30.004	0.00	7.29	120.770	0.292	0.0	0.0	0.0	0.84	14.9	0.0
30.005	0.00	7.87	120.650	0.472	0.0	0.0	0.0	0.83	14.7	0.0
30.006	0.00	8.45	120.450	0.509	0.0	0.0	0.0	0.83	14.7	0.0
30.007	0.00	8.55	120.250	0.556	0.0	0.0	0.0	0.88	15.6	0.0
30.008	0.00	8.64	120.212	0.558	0.0	0.0	0.0	0.88	15.6	0.0
32.000	0.00	5.39	121.851	0.019	0.0	0.0	0.0	0.94	7.4	0.0
32.001	0.00	5.65	121.524	0.031	0.0	0.0	0.0	1.28	22.6	0.0
32.002	0.00	5.84	121.200	0.043	0.0	0.0	0.0	1.27	22.5	0.0
32.003	0.00	6.03	120.974	0.043	0.0	0.0	0.0	1.91	33.8	0.0
30.009	0.00	8.99	120.174	0.621	0.0	0.0	0.0	0.82	14.5	0.0

Network Design Table for SW EAST EXISTING 15.07.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
23.017	24.198	0.169	143.2	0.066	0.00	0.0	0.600	o	300	
23.018	115.386	1.937	59.6	0.218	0.00	0.0	0.600	o	300	
23.019	11.635	0.560	20.8	0.051	0.00	0.0	0.600	o	300	
1.014	42.400	0.140	302.9	0.072	0.00	0.0	0.600	[]	-4	
33.000	179.697	1.930	93.1	0.170	5.00	0.0	0.600	o	225	
33.001	9.494	0.955	9.9	0.100	0.00	0.0	0.600	o	225	
1.015	109.761	0.900	122.0	0.086	0.00	0.0	0.600	o	400	
34.000	103.884	0.570	182.3	0.083	5.00	0.0	0.600	o	225	
34.001	114.526	0.520	220.2	0.155	0.00	0.0	0.600	o	300	
34.002	23.331	0.111	210.2	0.016	0.00	0.0	0.600	o	300	
35.000	42.073	0.233	180.6	0.030	5.00	0.0	0.600	o	100	
34.003	19.661	1.999	9.8	0.005	0.00	0.0	0.600	o	300	
1.016	139.907	1.157	120.9	0.107	0.00	0.0	0.600	o	450	
1.017	21.139	0.303	69.8	0.000	0.00	0.0	0.600	o	450	

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)
23.017	0.00	30.00	120.055	2.142	0.0	0.0	0.0	1.31	92.7	0.0
23.018	0.00	30.00	119.886	2.360	0.0	0.0	0.0	2.04	144.3	0.0
23.019	0.00	30.00	117.949	2.411	0.0	0.0	0.0	3.46	244.9	0.0
1.014	0.00	30.00	117.190	8.283	0.0	0.0	0.0	1.60	961.7	0.0
33.000	0.00	7.21	120.110	0.170	0.0	0.0	0.0	1.36	53.9	0.0
33.001	0.00	7.25	118.180	0.270	0.0	0.0	0.0	4.17	166.0	0.0
1.015	0.00	30.00	117.050	8.639	0.0	0.0	0.0	1.71	214.6	0.0
34.000	0.00	6.79	119.350	0.083	0.0	0.0	0.0	0.97	38.4	0.0
34.001	0.00	8.60	118.780	0.238	0.0	0.0	0.0	1.06	74.6	0.0
34.002	0.00	8.96	118.260	0.254	0.0	0.0	0.0	1.08	76.4	0.0
35.000	0.00	6.23	118.382	0.030	0.0	0.0	0.0	0.57	4.5	0.0
34.003	0.00	9.03	118.149	0.289	0.0	0.0	0.0	5.04	356.4	0.0
1.016	0.00	30.00	116.150	9.035	0.0	0.0	0.0	1.85	293.9	0.0
1.017	0.00	30.00	114.663	9.035	0.0	0.0	0.0	2.44	387.5	0.0

Network Design Table for SW EAST EXISTING 15.07.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.018	6.800	0.360	18.9	0.000	0.00	0.0	0.600	o	450	

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)
1.018	0.00	30.00	114.360	9.035	0.0	0.0	0.0	4.69	746.7	0.0

Free Flowing Outfall Details for SW EAST EXISTING 15.07.13.SWS

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.018	Outfall	115.550	114.000	113.550	0	0

Simulation Criteria for SW EAST EXISTING 15.07.13.SWS

Volumetric Runoff Coeff	0.840	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	1.000
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)	480
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	4

Number of Input Hydrographs	0	Number of Storage Structures	0
Number of Online Controls	0	Number of Time/Area Diagrams	0
Number of Offline Controls	2	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
Site Location GB 450500 225250 SP 50500 25250	
C (1km)	-0.023
D1 (1km)	0.328
D2 (1km)	0.309
D3 (1km)	0.264
E (1km)	0.292
F (1km)	2.461
Summer Storms	No
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Storm Duration (mins)	240

Offline Controls for SW EAST EXISTING 15.07.13.SWS

Pipe Manhole: MH0100, DS/PN: 1.011, Loop to PN: 22.000

Diameter (m)	0.225	Roughness k (mm)	0.600
Section Type	Pipe/Conduit	Entry Loss Coefficient	0.500
Slope (1:X)	50.0	Coefficient of Contraction	0.600
Length (m)	77.412	Upstream Invert Level (m)	119.689

Pipe Manhole: MH0099, DS/PN: 22.000, Loop to PN: 23.019

Diameter (m)	0.225	Roughness k (mm)	0.600
Section Type	Pipe/Conduit	Entry Loss Coefficient	0.500
Slope (1:X)	194.0	Coefficient of Contraction	0.600
Length (m)	19.350	Upstream Invert Level (m)	118.131

Summary of Critical Results by Maximum Level (Rank 1) for SW EAST EXISTING 15.07.13.SWS

Simulation Criteria

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

Number of Input Hydrographs	0	Number of Storage Structures	0
Number of Online Controls	0	Number of Time/Area Diagrams	0
Number of Offline Controls	2	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
Site Location	GB 450500 225250 SP 50500 25250
C (1km)	-0.023
D1 (1km)	0.328
D2 (1km)	0.309
D3 (1km)	0.264
E (1km)	0.292
F (1km)	2.461
Cv (Summer)	0.750
Cv (Winter)	0.840

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

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

PN	Storm	Return Period	Climate Change	First X Surcharge	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
1.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			6
1.001	15 Winter	100	0%	100/15 Summer	100/15 Summer			3
1.002	15 Winter	100	0%	100/15 Summer	100/15 Summer			6
1.003	15 Winter	100	0%	100/15 Summer	100/15 Summer			8
1.004	15 Summer	100	0%	100/15 Summer				
2.000	30 Winter	100	0%	100/15 Summer	100/15 Summer			8
2.001	15 Winter	100	0%	100/15 Summer	100/15 Summer			6
3.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			8
3.001	15 Winter	100	0%	100/15 Summer	100/15 Summer			5
4.000	15 Winter	100	0%	100/15 Summer	100/15 Winter			1
2.002	15 Winter	100	0%	100/15 Summer	100/15 Summer			2
2.003	15 Winter	100	0%	100/15 Summer				
2.004	15 Winter	100	0%	100/15 Summer				
2.005	15 Winter	100	0%	100/15 Summer				

Summary of Critical Results by Maximum Level (Rank 1) for SW EAST EXISTING 15.07.13.SWS

PN	Storm	Return Period	Climate Change	First X Surcharge	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
5.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			8
2.006	60 Winter	100	0%	100/15 Summer	100/15 Summer			6
1.005	60 Winter	100	0%	100/15 Summer	100/15 Summer			11
6.000	15 Winter	100	0%	100/15 Summer				
6.001	30 Winter	100	0%	100/15 Summer	100/15 Summer			8
6.002	15 Winter	100	0%	100/15 Summer	100/15 Summer			5
1.006	15 Winter	100	0%	100/15 Summer	100/15 Summer			10
7.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			6
7.001	15 Summer	100	0%	100/15 Summer	100/15 Summer			5
7.002	15 Winter	100	0%	100/15 Summer	100/15 Summer			5
8.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			5
8.001	15 Winter	100	0%	100/15 Summer	100/15 Summer			5
7.003	15 Winter	100	0%	100/15 Summer	100/15 Summer			4
9.000	30 Winter	100	0%	100/15 Summer	100/15 Summer			6
7.004	120 Winter	100	0%					
7.005	15 Winter	100	0%	100/15 Summer	100/15 Summer			2
10.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			6
11.000	30 Winter	100	0%	100/15 Summer	100/15 Summer			7
10.001	15 Summer	100	0%	100/15 Summer				
10.002	15 Winter	100	0%	100/15 Summer	100/15 Summer			2
7.006	15 Winter	100	0%					
12.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			6
12.001	15 Winter	100	0%	100/15 Summer	100/15 Summer			4
12.002	15 Winter	100	0%	100/15 Summer	100/15 Summer			2
12.003	60 Winter	100	0%	100/15 Summer	100/15 Summer			9
7.007	15 Winter	100	0%	100/15 Summer	100/15 Summer			6
13.000	120 Winter	100	0%	100/15 Summer	100/15 Summer			13
13.001	120 Winter	100	0%	100/15 Summer	100/15 Summer			13
7.008	60 Winter	100	0%	100/15 Summer	100/15 Summer			6
14.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			8
1.007	60 Winter	100	0%	100/15 Summer	100/15 Summer			13
1.008	15 Winter	100	0%	100/15 Summer				
15.000	30 Winter	100	0%	100/15 Summer	100/15 Summer			9
1.009	15 Winter	100	0%	100/15 Summer	100/15 Summer			7
16.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			9
16.001	15 Winter	100	0%	100/15 Summer	100/15 Summer			2
16.002	15 Winter	100	0%	100/15 Summer	100/15 Summer			6
17.000	15 Winter	100	0%	100/15 Summer				
17.001	15 Winter	100	0%	100/15 Summer				
16.003	60 Winter	100	0%	100/15 Summer	100/15 Summer			13
16.004	60 Winter	100	0%	100/15 Summer	100/15 Summer			11
16.005	30 Winter	100	0%	100/15 Summer	100/15 Summer			7
16.006	15 Winter	100	0%	100/15 Summer	100/15 Summer			7
16.007	60 Winter	100	0%	100/15 Summer	100/15 Summer			9
16.008	15 Winter	100	0%	100/15 Summer	100/15 Summer			8
18.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			6
18.001	15 Winter	100	0%	100/15 Summer	100/15 Summer			5
16.009	15 Summer	100	0%	100/15 Summer	100/15 Summer			4
19.000	30 Winter	100	0%	100/15 Summer	100/15 Summer			13
19.001	30 Winter	100	0%	100/15 Summer	100/15 Summer			12

Summary of Critical Results by Maximum Level (Rank 1) for SW EAST EXISTING 15.07.13.SWS

PN	Storm	Return Period	Climate Change	First X Surcharge	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
19.002	120 Winter	100	0%	100/15 Summer				
16.010	120 Winter	100	0%	100/15 Summer				
16.011	120 Winter	100	0%	100/15 Summer	100/15 Summer			15
16.012	15 Winter	100	0%					
16.013	15 Winter	100	0%	100/15 Summer				
20.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			6
1.010	15 Winter	100	0%	100/15 Summer	100/15 Summer			4
1.011	15 Winter	100	0%	100/15 Summer		100/15 Summer	18	
21.000	15 Winter	100	0%					
21.001	15 Winter	100	0%					
21.002	15 Winter	100	0%					
21.003	15 Winter	100	0%					
1.012	15 Winter	100	0%					
22.000	240 Winter	100	0%	100/15 Summer	100/15 Summer	100/15 Summer	18	15
1.013	60 Winter	100	0%					
23.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			4
23.001	15 Winter	100	0%	100/15 Summer	100/15 Summer			6
23.002	15 Winter	100	0%	100/15 Summer	100/15 Summer			6
24.000	30 Winter	100	0%	100/15 Summer	100/15 Summer			8
24.001	15 Winter	100	0%	100/15 Summer	100/15 Summer			3
23.003	30 Winter	100	0%	100/15 Summer				
23.004	15 Winter	100	0%	100/15 Summer	100/15 Winter			2
23.005	15 Winter	100	0%	100/15 Summer				
23.006	15 Winter	100	0%	100/15 Summer				
23.007	15 Winter	100	0%	100/15 Summer				
23.008	30 Winter	100	0%	100/15 Summer	100/15 Winter			2
25.000	15 Winter	100	0%	100/15 Summer				
23.009	30 Winter	100	0%	100/15 Summer	100/15 Summer			6
26.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			8
26.001	15 Winter	100	0%	100/15 Summer				
26.002	15 Summer	100	0%	100/15 Summer				
26.003	15 Winter	100	0%	100/15 Summer	100/15 Summer			3
23.010	15 Winter	100	0%	100/15 Summer	100/15 Summer			7
23.011	120 Winter	100	0%	100/15 Summer	100/15 Summer			13
23.012	60 Winter	100	0%	100/15 Summer				
27.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			6
28.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			4
28.001	15 Winter	100	0%	100/15 Summer				
28.002	15 Winter	100	0%	100/15 Summer				
23.013	30 Winter	100	0%	100/15 Summer	100/15 Summer			10
29.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			6
29.001	30 Winter	100	0%	100/15 Summer	100/15 Summer			8
29.002	30 Winter	100	0%	100/15 Summer	100/15 Summer			8
23.014	15 Winter	100	0%	100/15 Summer	100/15 Summer			2
23.015	60 Winter	100	0%	100/15 Summer	100/15 Summer			11
23.016	30 Winter	100	0%	100/15 Summer	100/15 Summer			11
30.000	120 Winter	100	0%	100/15 Summer	100/15 Summer			14
30.001	60 Winter	100	0%	100/15 Summer	100/15 Summer			11
30.002	30 Winter	100	0%	100/15 Summer	100/15 Summer			9
30.003	15 Winter	100	0%	100/15 Summer	100/15 Summer			5

Summary of Critical Results by Maximum Level (Rank 1) for SW EAST EXISTING 15.07.13.SWS

PN	Storm	Return Period	Climate Change	First X Surcharge	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
31.000	120 Winter	100	0%	100/15 Summer	100/15 Summer			13
31.001	60 Winter	100	0%	100/15 Summer	100/15 Summer			13
31.002	30 Winter	100	0%	100/15 Summer				
30.004	15 Winter	100	0%	100/15 Summer	100/15 Summer			6
30.005	60 Winter	100	0%	100/15 Summer	100/15 Summer			13
30.006	30 Winter	100	0%	100/15 Summer	100/15 Summer			11
30.007	15 Winter	100	0%	100/15 Summer	100/15 Summer			6
30.008	30 Winter	100	0%	100/15 Summer	100/15 Summer			9
32.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			2
32.001	15 Winter	100	0%	100/15 Summer				
32.002	15 Winter	100	0%	100/15 Summer				
32.003	15 Winter	100	0%	100/15 Summer				
30.009	15 Winter	100	0%	100/15 Summer	100/15 Summer			4
23.017	15 Summer	100	0%	100/15 Summer				
23.018	15 Summer	100	0%	100/15 Summer	100/15 Summer			2
23.019	120 Winter	100	0%	100/15 Summer	100/15 Summer			15
1.014	60 Winter	100	0%					
33.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			4
33.001	15 Winter	100	0%	100/15 Summer	100/15 Summer			5
1.015	60 Winter	100	0%	100/15 Summer				
34.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			2
34.001	15 Winter	100	0%	100/15 Summer				
34.002	15 Winter	100	0%	100/15 Summer				
35.000	15 Winter	100	0%	100/15 Summer	100/15 Summer			2
34.003	15 Winter	100	0%					
1.016	60 Winter	100	0%					
1.017	15 Winter	100	0%	100/15 Summer				
1.018	15 Winter	100	0%	100/15 Summer				

PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	MH	127.109	0.859	9.236	1.11	0.0	18.4	FLOOD
1.001	0883	126.926	1.118	2.858	0.91	0.0	49.1	FLOOD
1.002	0810	126.691	1.174	17.112	0.93	0.0	50.4	FLOOD
1.003	0923	126.307	1.242	33.333	1.04	0.0	59.1	FLOOD
1.004	0822	126.423	1.674	0.000	1.66	0.0	75.1	FLOOD RISK
2.000	0961	125.679	0.559	9.225	0.68	0.0	9.6	FLOOD
2.001	0859	125.668	0.828	5.581	0.89	0.0	15.2	FLOOD
3.000	0799	125.727	0.536	16.044	0.54	0.0	14.0	FLOOD
3.001	0797	125.764	0.912	5.006	1.04	0.0	16.2	FLOOD
4.000	0860	126.362	1.318	0.100	1.35	0.0	27.0	FLOOD
2.002	0805	125.812	1.080	0.107	0.96	0.0	38.5	FLOOD
2.003	0825	125.736	1.127	0.000	0.96	0.0	42.6	FLOOD RISK
2.004	0824	125.632	1.122	0.000	0.87	0.0	42.9	FLOOD RISK
2.005	0804	125.450	1.168	0.000	2.33	0.0	49.7	FLOOD RISK
5.000	0863	125.329	1.030	10.109	0.74	0.0	8.6	FLOOD
2.006	0865	125.318	1.045	5.353	2.13	0.0	44.1	FLOOD
1.005	0816	125.293	0.973	136.809	0.91	0.0	97.1	FLOOD

Summary of Critical Results by Maximum Level (Rank 1) for SW EAST EXISTING 15.07.13.SWS

PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
6.000	0852	125.465	0.815	0.000	0.35	0.0	8.4	FLOOD RISK
6.001	0818	125.400	1.031	11.271	0.55	0.0	12.2	FLOOD
6.002	0915	125.482	1.574	8.837	1.94	0.0	23.5	FLOOD
1.006	0908	125.216	1.404	132.000	1.10	0.0	133.4	FLOOD
7.000	MH	125.730	0.595	20.369	1.24	0.0	44.1	FLOOD
7.001	0991	125.742	0.941	1.352	1.27	0.0	44.8	FLOOD
7.002	0992	125.700	0.962	6.744	1.04	0.0	48.6	FLOOD
8.000	MH	125.594	0.854	4.031	1.00	0.0	16.0	FLOOD
8.001	MH	125.531	0.921	10.781	1.36	0.0	45.5	FLOOD
7.003	MH0662	125.536	1.221	10.266	0.79	0.0	86.9	FLOOD
9.000	MH0801	124.986	1.145	17.356	1.95	0.0	29.8	FLOOD
7.004	MH	123.802	0.000	0.000	0.72	0.0	83.7	SURCHARGED*
7.005	MH0823	124.963	1.758	0.635	1.75	0.0	139.0	FLOOD
10.000	MH0912	124.882	0.902	2.472	0.77	0.0	6.8	FLOOD
11.000	MH0913	124.756	0.906	5.808	1.43	0.0	8.9	FLOOD
10.001	MH0914	124.958	1.208	0.000	1.10	0.0	9.2	FLOOD RISK
10.002	MH0880	124.887	1.617	0.174	1.17	0.0	13.3	FLOOD
7.006	Blind	123.104	0.000	0.000	1.36	0.0	155.6	SURCHARGED*
12.000	MH0930	124.081	0.946	5.609	1.12	0.0	15.3	FLOOD
12.001	MH0931	124.031	1.018	1.058	1.39	0.0	18.0	FLOOD
12.002	MH0963	123.899	0.985	0.173	2.82	0.0	26.1	FLOOD
12.003	MH0927	123.731	0.842	36.519	1.25	0.0	16.6	FLOOD
7.007	MH0870	123.770	1.149	10.730	1.63	0.0	116.5	FLOOD
13.000	MH	123.273	0.593	43.126	1.82	0.0	29.8	FLOOD
13.001	MH0872	123.299	0.749	58.517	2.35	0.0	39.5	FLOOD
7.008	MH0871	123.560	1.020	8.314	0.96	0.0	100.8	FLOOD
14.000	MH0904	124.344	0.752	21.598	0.90	0.0	20.7	FLOOD
1.007	MH0867	123.349	1.206	221.284	1.99	0.0	189.5	FLOOD
1.008	S8	122.813	0.978	0.000	1.60	0.0	197.8	FLOOD RISK
15.000	MH0841	122.354	0.664	65.666	1.55	0.0	27.7	FLOOD
1.009	MH0868	122.493	0.798	68.069	1.15	0.0	241.0	FLOOD
16.000	MH0786	125.275	0.485	15.485	1.65	0.0	9.1	FLOOD
16.001	MH0785	125.356	0.606	0.882	1.80	0.0	11.1	FLOOD
16.002	MH0875	125.065	0.355	7.445	0.54	0.0	16.8	FLOOD
17.000	MH0874	125.338	0.602	0.000	1.31	0.0	10.6	FLOOD RISK
17.001	MH0885	125.000	0.470	0.000	0.43	0.0	10.6	FLOOD RISK
16.003	MH0837	124.933	0.859	53.702	1.14	0.0	25.0	FLOOD
16.004	MH0886	124.749	1.069	16.428	1.39	0.0	27.3	FLOOD
16.005	MH0877	124.696	1.116	1.475	0.92	0.0	20.0	FLOOD
16.006	S62	124.570	1.370	7.441	1.26	0.0	27.5	FLOOD
16.007	S63	124.289	1.324	17.264	2.24	0.0	35.3	FLOOD
16.008	MH1050	124.103	1.309	23.442	0.96	0.0	46.3	FLOOD
18.000	MH1054	124.716	1.122	3.850	0.95	0.0	7.2	FLOOD
18.001	S61	124.190	1.500	4.121	1.08	0.0	20.1	FLOOD
16.009	MH0056	124.079	1.575	0.328	1.96	0.0	52.9	FLOOD
19.000	MH1060	123.488	0.570	29.415	1.17	0.0	7.3	FLOOD
19.001	MH1064	122.831	0.345	33.355	1.88	0.0	20.4	FLOOD
19.002	MH1048	122.754	0.312	0.000	1.20	0.0	18.7	FLOOD RISK
16.010	MH0057	122.626	0.351	0.000	0.37	0.0	79.3	SURCHARGED

Summary of Critical Results by Maximum Level (Rank 1) for SW EAST EXISTING 15.07.13.SWS

PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
16.011	MH0104	122.448	0.921	210.745	2.12	0.0	48.2	FLOOD
16.012	MH0103	121.422	-0.064	0.000	0.45	0.0	89.3	OK
16.013	MH0102	121.318	0.558	0.000	0.75	0.0	89.8	SURCHARGED
20.000	MH1038	121.682	0.719	11.231	1.08	0.0	20.5	FLOOD
1.010	MH0101	121.072	0.578	3.039	1.30	0.0	330.3	FLOOD
1.011	MH0100	120.288	0.324	0.000	1.50	67.6	301.4	FLOOD RISK
21.000	Ditch	121.466	-0.444	0.000	0.00	0.0	8.9	OK
21.001	Pipe	120.672	-0.248	0.000	0.07	0.0	8.8	OK
21.002	Ditch	120.355	-0.445	0.000	0.01	0.0	8.8	OK
21.003	Culvert	120.099	-0.591	0.000	0.01	0.0	20.0	OK
1.012	Culvert	119.426	-0.274	0.000	0.16	0.0	333.2	OK
22.000	MH0099	119.226	0.870	344.965	2.88	32.7	111.7	FLOOD
1.013	Culvert	118.350	0.000	0.000	0.14	0.0	222.9	SURCHARGED*
23.000	MH0666	124.568	1.246	0.903	0.92	0.0	17.4	FLOOD
23.001	MH0668	124.425	1.274	4.813	0.83	0.0	14.6	FLOOD
23.002	MH0667	124.377	1.307	1.917	0.90	0.0	18.8	FLOOD
24.000	MH0686	124.096	0.541	21.075	0.66	0.0	14.6	FLOOD
24.001	MH0929	124.235	1.230	0.273	0.76	0.0	20.2	FLOOD
23.003	MH0928	124.245	1.420	0.000	2.50	0.0	24.8	FLOOD RISK
23.004	MH0665	124.198	1.384	0.048	2.74	0.0	24.4	FLOOD
23.005	MH0669	124.157	1.358	0.000	1.50	0.0	18.8	FLOOD RISK
23.006	MH0673	124.113	1.354	0.000	0.88	0.0	15.9	FLOOD RISK
23.007	MH0926	123.910	1.517	0.000	3.59	0.0	16.2	FLOOD RISK
23.008	MH0674	123.792	1.400	0.146	3.03	0.0	16.2	FLOOD
25.000	MH0974	123.356	0.792	0.000	0.67	0.0	4.2	FLOOD RISK
23.009	MH0688	123.293	0.902	1.051	0.86	0.0	20.8	FLOOD
26.000	MH0693	123.109	0.449	34.268	0.79	0.0	29.0	FLOOD
26.001	S11.1	123.208	0.615	0.000	0.72	0.0	29.0	FLOOD RISK
26.002	MH0690	123.326	0.863	0.000	1.05	0.0	29.2	FLOOD RISK
26.003	S113	123.327	0.884	6.472	0.95	0.0	49.3	FLOOD
23.010	S92	123.004	0.938	23.061	0.95	0.0	62.7	FLOOD
23.011	MH1193	122.317	1.193	127.522	4.13	0.0	51.7	FLOOD
23.012	MH1194	122.216	1.057	0.000	1.61	0.0	51.8	FLOOD RISK
27.000	MH1198	122.512	0.444	18.640	0.61	0.0	21.4	FLOOD
28.000	MH0937	122.632	0.652	1.791	1.31	0.0	7.2	FLOOD
28.001	MH0938	122.497	0.677	0.000	1.00	0.0	15.1	FLOOD RISK
28.002	MH1192	122.373	0.672	0.000	0.56	0.0	14.8	SURCHARGED
23.013	MH1195	122.187	1.080	58.666	2.18	0.0	60.1	FLOOD
29.000	MH0698	122.638	0.823	11.734	1.07	0.0	20.9	FLOOD
29.001	MH1202	122.191	0.771	12.128	1.12	0.0	18.0	FLOOD
29.002	MH1201	121.876	0.706	10.620	1.11	0.0	21.1	FLOOD
23.014	MH0998	121.704	0.730	1.925	0.90	0.0	84.9	FLOOD
23.015	MH0939	121.269	0.850	23.525	1.80	0.0	80.6	FLOOD
23.016	MH0994	120.950	0.566	60.043	3.73	0.0	91.4	FLOOD
30.000	RE	122.318	0.518	18.311	1.39	0.0	9.3	FLOOD
30.001	MH0704	122.411	1.111	11.011	0.51	0.0	7.0	FLOOD
30.002	MH	122.464	1.274	14.409	0.72	0.0	9.9	FLOOD
30.003	MH1222	122.523	1.503	3.018	0.69	0.0	9.4	FLOOD
31.000	RE	122.355	0.605	4.917	1.00	0.0	6.7	FLOOD

Summary of Critical Results by Maximum Level (Rank 1) for SW EAST EXISTING 15.07.13.SWS

PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
31.001	MH0.28	122.357	1.097	16.999	0.50	0.0	6.3	FLOOD
31.002	MH0947	122.402	1.192	0.000	0.24	0.0	3.4	FLOOD RISK
30.004	MH0703	122.489	1.569	9.223	1.44	0.0	20.1	FLOOD
30.005	MH1223	122.270	1.470	49.814	1.75	0.0	24.6	FLOOD
30.006	MH0702	121.960	1.360	10.235	1.71	0.0	24.0	FLOOD
30.007	MH0701	121.694	1.294	4.384	2.29	0.0	28.0	FLOOD
30.008	MH0700	121.512	1.150	12.439	2.42	0.0	29.5	FLOOD
32.000	MH0944	122.281	0.330	0.364	1.14	0.0	8.1	FLOOD
32.001	MH0943	122.015	0.341	0.000	0.58	0.0	12.3	FLOOD RISK
32.002	MH0940	121.905	0.555	0.000	0.85	0.0	17.7	FLOOD RISK
32.003	MH0706	121.729	0.605	0.000	0.55	0.0	17.7	SURCHARGED
30.009	MH	121.482	1.158	1.961	2.48	0.0	33.7	FLOOD
23.017	MH0995	121.142	0.787	0.000	1.46	0.0	120.8	FLOOD RISK
23.018	MH0993	121.107	0.921	0.720	1.09	0.0	152.8	FLOOD
23.019	MH0097	119.183	0.934	399.856	0.82	0.0	153.5	FLOOD
1.014	Culvert	117.790	0.000	0.000	0.40	0.0	320.5	SURCHARGED*
33.000	132	121.118	0.783	8.155	1.01	0.0	53.8	FLOOD
33.001	133	119.128	0.723	8.473	0.59	0.0	81.4	FLOOD
1.015	Pipe	117.650	0.200	0.000	1.49	0.0	319.9	SURCHARGED*
34.000	MH	120.251	0.676	1.329	1.03	0.0	38.8	FLOOD
34.001	MH	119.893	0.813	0.000	1.37	0.0	99.4	FLOOD RISK
34.002	MH	118.684	0.124	0.000	1.49	0.0	101.0	FLOOD RISK
35.000	MH1053	119.487	1.005	0.918	2.28	0.0	10.0	FLOOD
34.003	MH0098	118.274	-0.175	0.000	0.36	0.0	112.1	OK
1.016	Pipe	116.600	0.000	0.000	1.28	0.0	375.4	SURCHARGED*
1.017	MH0498	115.402	0.289	0.000	1.27	0.0	393.1	SURCHARGED
1.018	PI	114.915	0.105	0.000	1.16	0.0	393.3	SURCHARGED

APPENDIX D

Proposed Microdrainage Calculations

Note:

The calculations include the entire network including existing areas upstream and areas downstream of this phase. The runs numbers which relate to the Village Centre South (in the order shown in the calculations) are:
Central diversion pipe ref 29.000 29.001 **Eastern diversion pipe ref** 26.000 26.001 27.000 27.001 28.000 28.001

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for SWS

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	2
Site Location	GB 450500 225250 SP 50500 25250
C (1km)	-0.023
D1 (1km)	0.328
D2 (1km)	0.309
D3 (1km)	0.264
E (1km)	0.292
F (1km)	2.461
Maximum Rainfall (mm/hr)	0
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.000
Maximum Backdrop Height (m)	0.000
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

Network Design Table for SWS

- Indicates pipe length does not match coordinates

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.000	46.310	0.699	66.3	0.462	5.00	0.0	0.600	o	225	
1.001	27.589	0.287	96.1	0.090	0.00	0.0	0.600	o	225	
1.002	19.709	0.161	122.4	0.084	0.00	0.0	0.600	o	225	
1.003	54.656	0.602	90.8	0.024	0.00	0.0	0.600	o	225	
1.004	48.308	0.537	90.0	0.000	0.00	0.0	0.600	o	300	

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	5.48	125.633	0.462	0.0	0.0	0.0	1.61	64.0	0.0
1.001	0.00	5.82	124.934	0.552	0.0	0.0	0.0	1.33	53.0	0.0
1.002	0.00	6.10	124.647	0.636	0.0	0.0	0.0	1.18	46.9	0.0
1.003	0.00	6.77	124.486	0.660	0.0	0.0	0.0	1.37	54.6	0.0
1.004	0.00	7.25	123.809	0.660	0.0	0.0	0.0	1.66	117.2	0.0

Network Design Table for SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.005	11.396	0.122	93.4	0.000	0.00	0.0	0.600	o	300	
2.000	9.477	0.311	30.5	0.100	5.00	0.0	0.600	o	150	
2.001	22.265	0.731	30.5	0.049	0.00	0.0	0.600	o	150	
2.002	38.145#	0.302	126.3	0.109	0.00	0.0	0.600	o	150	
2.003	7.222#	0.675	10.7	0.000	0.00	0.0	0.600	o	225	
1.006	59.849	0.160	374.1	0.145	0.00	0.0	0.600	o	450	
3.000	26.967	0.234	115.2	0.105	5.00	0.0	0.600	o	150	
3.001	46.625	0.520	89.7	0.090	0.00	0.0	0.600	o	150	
3.002	4.363	0.018	242.4	0.130	0.00	0.0	0.600	o	150	
3.003	22.819	0.169	135.0	0.076	0.00	0.0	0.600	o	150	
3.004	21.320#	0.119	179.2	0.060	0.00	0.0	0.600	o	150	
4.000	71.622	0.359	199.5	0.175	5.00	0.0	0.600	o	150	
3.005	27.060#	0.185	146.3	0.000	0.00	0.0	0.600	o	450	
5.000	8.420#	0.093	90.5	0.057	5.00	0.0	0.600	o	150	
3.006	40.137	0.227	176.8	0.057	0.00	0.0	0.600	o	450	

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)
1.005	0.00	7.37	123.272	0.660	0.0	0.0	0.0	1.63	115.0	0.0
2.000	0.00	5.09	125.319	0.100	0.0	0.0	0.0	1.83	32.3	0.0
2.001	0.00	5.29	125.008	0.149	0.0	0.0	0.0	1.83	32.4	0.0
2.002	0.00	6.00	124.277	0.258	0.0	0.0	0.0	0.89	15.8	0.0
2.003	0.00	6.03	123.900	0.258	0.0	0.0	0.0	4.02	160.0	0.0
1.006	0.00	8.32	123.000	1.063	0.0	0.0	0.0	1.05	166.2	0.0
3.000	0.00	5.48	126.002	0.105	0.0	0.0	0.0	0.94	16.5	0.0
3.001	0.00	6.21	125.768	0.195	0.0	0.0	0.0	1.06	18.8	0.0
3.002	0.00	6.33	125.248	0.325	0.0	0.0	0.0	0.64	11.3	0.0
3.003	0.00	6.77	125.230	0.401	0.0	0.0	0.0	0.86	15.3	0.0
3.004	0.00	7.24	125.061	0.461	0.0	0.0	0.0	0.75	13.2	0.0
4.000	0.00	6.69	125.351	0.175	0.0	0.0	0.0	0.71	12.5	0.0
3.005	0.00	7.51	124.892	0.636	0.0	0.0	0.0	1.68	267.0	0.0
5.000	0.00	5.13	125.100	0.057	0.0	0.0	0.0	1.06	18.7	0.0
3.006	0.00	7.95	124.707	0.750	0.0	0.0	0.0	1.53	242.7	0.0

Network Design Table for SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
3.007	20.544	0.085	241.7	0.074	0.00	0.0	0.600	o	450	
3.008	7.935	1.330	6.0	0.000	0.00	0.0	0.600	o	225	
6.000	8.698	0.037	235.1	0.000	5.00	0.0	0.600	o	300	
6.001	24.347	0.063	386.5	0.000	0.00	0.0	0.600	o	450	
1.007	37.392	0.253	147.8	0.069	0.00	0.0	0.600	o	150	
7.000	12.065#	0.453	26.6	0.036	5.00	0.0	0.600	o	100	
7.001	33.946#	0.418	81.2	0.060	0.00	0.0	0.600	o	100	
7.002	24.933	0.375	66.5	0.042	0.00	0.0	0.600	o	150	
7.003	12.230	0.045	271.8	0.045	0.00	0.0	0.600	o	150	
8.000	11.634	0.383	30.4	0.061	5.00	0.0	0.600	o	100	
7.004	48.302	0.600	80.5	0.055	0.00	0.0	0.600	o	150	
7.005	39.390	0.653	60.3	0.000	0.00	0.0	0.600	o	150	
1.008	13.653	0.092	148.4	0.000	0.00	0.0	0.600	o	150	
1.009	29.758	0.157	189.5	0.000	0.00	0.0	0.600	o	225	
9.000	49.037	0.490	100.1	0.102	5.00	0.0	0.600	o	300	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
3.007	0.00	8.21	124.480	0.824	0.0	0.0	0.0	1.30	207.3	0.0
3.008	0.00	8.24	124.395	0.824	0.0	0.0	0.0	5.39	214.4	0.0
6.000	0.00	5.14	122.940	0.000	0.0	0.0	0.0	1.02	72.2	0.0
6.001	0.00	5.54	122.903	0.000	0.0	0.0	0.0	1.03	163.5	0.0
1.007	0.00	9.08	122.840	1.956	0.0	0.0	0.0	0.82	14.6	0.0
7.000	0.00	5.13	125.181	0.036	0.0	0.0	0.0	1.50	11.8	0.0
7.001	0.00	5.80	124.728	0.096	0.0	0.0	0.0	0.85	6.7	0.0
7.002	0.00	6.13	124.260	0.138	0.0	0.0	0.0	1.24	21.8	0.0
7.003	0.00	6.47	123.885	0.183	0.0	0.0	0.0	0.60	10.7	0.0
8.000	0.00	5.14	124.273	0.061	0.0	0.0	0.0	1.41	11.0	0.0
7.004	0.00	7.19	123.840	0.299	0.0	0.0	0.0	1.12	19.8	0.0
7.005	0.00	7.69	123.240	0.299	0.0	0.0	0.0	1.30	22.9	0.0
1.008	0.00	9.36	122.587	2.255	0.0	0.0	0.0	0.82	14.5	0.0
1.009	0.00	9.88	122.420	2.255	0.0	0.0	0.0	0.95	37.6	0.0
9.000	0.00	5.52	122.870	0.102	0.0	0.0	0.0	1.57	111.1	0.0

Network Design Table for SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
9.001	3.625	0.042	86.3	0.000	0.00	0.0	0.600	o	150	
1.010	23.462	0.160	146.6	0.030	0.00	0.0	0.600	o	225	
10.000	15.760	0.100	157.6	0.030	5.00	0.0	0.600	o	225	
10.001	13.900	0.090	154.4	0.030	0.00	0.0	0.600	o	225	
10.002	26.250	0.160	164.1	0.030	0.00	0.0	0.600	o	225	
10.003	23.160	0.140	165.4	0.037	0.00	0.0	0.600	o	225	
10.004	21.300	0.130	163.8	0.030	0.00	0.0	0.600	o	225	
10.005	12.120	0.075	161.6	0.000	0.00	0.0	0.600	o	225	
10.006	16.610	0.090	184.6	0.030	0.00	0.0	0.600	o	300	
11.000	9.110	0.050	182.2	0.035	5.00	0.0	0.600	o	300	
10.007	6.510	0.030	217.0	0.000	0.00	0.0	0.600	o	300	
10.008	12.600	0.060	210.0	0.030	0.00	0.0	0.600	o	300	
10.009	28.830	0.130	221.8	0.010	0.00	0.0	0.600	o	300	
10.010	23.380	0.110	212.5	0.038	0.00	0.0	0.600	o	300	
10.011	9.000	0.102	88.2	0.000	0.00	0.0	0.600	o	150	
1.011	14.060	0.079	178.0	0.000	0.00	0.0	0.600	o	225	
1.012	74.443	1.113	66.9	0.046	0.00	0.0	0.600	o	225	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
9.001	0.00	5.58	122.380	0.102	0.0	0.0	0.0	1.08	19.1	0.0
1.010	0.00	10.24	122.263	2.387	0.0	0.0	0.0	1.08	42.8	0.0
10.000	0.00	5.25	123.470	0.030	0.0	0.0	0.0	1.04	41.3	0.0
10.001	0.00	5.47	123.370	0.060	0.0	0.0	0.0	1.05	41.7	0.0
10.002	0.00	5.90	123.280	0.090	0.0	0.0	0.0	1.02	40.5	0.0
10.003	0.00	6.28	123.120	0.127	0.0	0.0	0.0	1.01	40.3	0.0
10.004	0.00	6.63	122.980	0.157	0.0	0.0	0.0	1.02	40.5	0.0
10.005	0.00	6.83	122.850	0.157	0.0	0.0	0.0	1.03	40.8	0.0
10.006	0.00	7.07	122.700	0.187	0.0	0.0	0.0	1.15	81.6	0.0
11.000	0.00	5.13	122.660	0.035	0.0	0.0	0.0	1.16	82.1	0.0
10.007	0.00	7.17	122.610	0.222	0.0	0.0	0.0	1.06	75.2	0.0
10.008	0.00	7.37	122.580	0.252	0.0	0.0	0.0	1.08	76.4	0.0
10.009	0.00	7.82	122.520	0.262	0.0	0.0	0.0	1.05	74.3	0.0
10.010	0.00	8.19	122.390	0.300	0.0	0.0	0.0	1.07	76.0	0.0
10.011	0.00	8.33	122.280	0.300	0.0	0.0	0.0	1.07	18.9	0.0
1.011	0.00	10.48	122.103	2.687	0.0	0.0	0.0	0.98	38.8	0.0
1.012	0.00	11.26	122.024	2.733	0.0	0.0	0.0	1.60	63.7	0.0

Network Design Table for SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
12.000	1.770	0.180	9.8	0.037	5.00	0.0	0.600	o	150	
12.001	8.180	0.760	10.8	0.000	0.00	0.0	0.600	o	150	
13.000	1.000	0.010	100.0	0.016	5.00	0.0	0.600	o	150	
13.001	6.940	0.454	15.3	0.000	0.00	0.0	0.600	o	150	
1.013	38.178	0.321	118.9	0.021	0.00	0.0	0.600	o	225	
1.014	39.956	0.269	148.5	0.012	0.00	0.0	0.600	oo	-1	
1.015	14.126	0.079	178.8	0.015	0.00	0.0	0.600	oo	-1	
14.000	16.816	0.095	177.0	0.000	5.00	0.0	0.600	o	300	
14.001	23.092	0.066	349.9	0.070	0.00	0.0	0.600	o	300	
15.000	7.219	0.024	300.8	0.080	5.00	0.0	0.600	o	300	
14.002	37.034	0.553	67.0	0.020	0.00	0.0	0.600	o	450	
14.003	22.412	0.230	97.4	0.080	0.00	0.0	0.600	o	450	
14.004	12.749	0.110	115.9	0.000	0.00	0.0	0.600	o	300	
14.005	21.721	0.325	66.8	0.027	0.00	0.0	0.600	o	300	
16.000	30.605	0.313	97.8	0.020	5.00	0.0	0.600	o	150	

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)
12.000	0.00	5.01	122.510	0.037	0.0	0.0	0.0	3.23	57.1	0.0
12.001	0.00	5.05	122.330	0.037	0.0	0.0	0.0	3.09	54.6	0.0
13.000	0.00	5.02	121.450	0.016	0.0	0.0	0.0	1.00	17.8	0.0
13.001	0.00	5.06	121.440	0.016	0.0	0.0	0.0	2.59	45.8	0.0
1.013	0.00	11.79	120.911	2.807	0.0	0.0	0.0	1.20	47.6	0.0
1.014	0.00	12.41	120.590	2.819	0.0	0.0	0.0	1.07	85.6	0.0
1.015	0.00	12.65	120.321	2.834	0.0	0.0	0.0	0.97	78.0	0.0
14.000	0.00	5.24	122.676	0.000	0.0	0.0	0.0	1.18	83.3	0.0
14.001	0.00	5.70	122.581	0.070	0.0	0.0	0.0	0.83	59.0	0.0
15.000	0.00	5.13	122.539	0.080	0.0	0.0	0.0	0.90	63.7	0.0
14.002	0.00	5.95	122.515	0.170	0.0	0.0	0.0	2.49	395.6	0.0
14.003	0.00	6.13	121.962	0.250	0.0	0.0	0.0	2.06	327.6	0.0
14.004	0.00	6.27	121.732	0.250	0.0	0.0	0.0	1.46	103.2	0.0
14.005	0.00	6.46	121.622	0.277	0.0	0.0	0.0	1.93	136.1	0.0
16.000	0.00	5.50	121.610	0.020	0.0	0.0	0.0	1.02	18.0	0.0

Network Design Table for SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
17.000	52.101	0.591	88.2	0.040	5.00	0.0	0.600	o	100	
17.001	27.999	0.358	78.2	0.056	0.00	0.0	0.600	o	150	
14.006	17.974	1.055	17.0	0.010	0.00	0.0	0.600	o	225	
1.016	27.337	0.141	193.9	0.047	0.00	0.0	0.600	oo	-1	
1.017	8.947	0.284	31.5	0.000	0.00	0.0	0.600	oo	-1	
1.018	66.119	0.710	93.1	0.066	0.00	0.0	0.600	o	225	
1.019	47.865	0.330	145.0	0.066	0.00	0.0	0.600	o	225	
1.020	8.672	0.025	346.9	0.000	0.00	0.0	0.600	o	225	
1.021	14.635	0.213	68.7	0.000	0.00	0.0	0.600	o	300	
18.000	27.683	0.135	205.1	0.042	5.00	0.0	0.600	o	100	
1.022	22.832	0.217	105.2	0.084	0.00	0.0	0.600	o	300	
1.023	26.267	0.872	30.1	0.000	0.00	0.0	0.600	o	300	
1.024	29.755	0.125	238.0	0.000	0.00	0.0	0.600	o	300	
1.025	18.085#	0.075	241.1	0.000	0.00	0.0	0.600	o	300	
19.000	11.820#	0.210	56.3	0.037	5.00	0.0	0.600	o	225	

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)
17.000	0.00	6.06	122.246	0.040	0.0	0.0	0.0	0.82	6.4	0.0
17.001	0.00	6.47	121.655	0.096	0.0	0.0	0.0	1.14	20.1	0.0
14.006	0.00	6.56	121.297	0.403	0.0	0.0	0.0	3.19	126.7	0.0
1.016	0.00	13.14	120.242	3.284	0.0	0.0	0.0	0.94	74.8	0.0
1.017	0.00	13.20	120.101	3.284	0.0	0.0	0.0	2.34	187.1	0.0
1.018	0.00	14.02	119.817	3.350	0.0	0.0	0.0	1.36	53.9	0.0
1.019	0.00	14.75	119.107	3.416	0.0	0.0	0.0	1.08	43.1	0.0
1.020	0.00	14.96	118.777	3.416	0.0	0.0	0.0	0.70	27.7	0.0
1.021	0.00	15.09	118.752	3.416	0.0	0.0	0.0	1.90	134.3	0.0
18.000	0.00	5.87	118.874	0.042	0.0	0.0	0.0	0.53	4.2	0.0
1.022	0.00	15.34	118.539	3.542	0.0	0.0	0.0	1.53	108.3	0.0
1.023	0.00	15.49	118.322	3.542	0.0	0.0	0.0	2.88	203.2	0.0
1.024	0.00	15.98	117.450	3.542	0.0	0.0	0.0	1.01	71.7	0.0
1.025	0.00	16.28	117.325	3.542	0.0	0.0	0.0	1.01	71.3	0.0
19.000	0.00	5.11	117.975	0.037	0.0	0.0	0.0	1.75	69.5	0.0

Network Design Table for SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
20.000	88.500#	0.970	91.2	0.114	5.00	0.0	0.600	o	225	
20.001	18.920#	0.200	94.6	0.000	0.00	0.0	0.600	o	225	
20.002	36.550#	1.255	29.1	0.020	0.00	0.0	0.600	o	225	
20.003	23.948#	0.310	77.3	0.051	0.00	0.0	0.600	o	225	
19.001	24.910#	0.160	155.7	0.032	0.00	0.0	0.600	o	300	
19.002	46.775#	0.280	167.1	0.039	0.00	0.0	0.600	o	300	
1.026	23.505#	0.100	235.1	0.000	0.00	0.0	0.600	o	300	
1.027	21.756#	0.100	217.6	0.000	0.00	0.0	0.600	o	300	
1.028	10.222#	0.050	204.4	0.000	0.00	0.0	0.600	o	300	
1.029	18.779#	0.102	184.1	0.000	0.00	0.0	0.600	o	300	
21.000	45.191#	0.190	237.8	0.090	5.00	0.0	0.600	o	300	
22.000	8.916#	0.050	178.3	0.100	5.00	0.0	0.600	o	300	
22.001	14.955#	0.070	213.6	0.100	0.00	0.0	0.600	o	300	
22.002	31.564#	0.140	225.5	0.119	0.00	0.0	0.600	oo	43	
22.003	12.952#	0.050	259.0	0.000	0.00	0.0	0.600	o	300	
21.001	75.871#	0.270	281.0	0.074	0.00	0.0	0.600	o	450	

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)
20.000	0.00	6.08	120.500	0.114	0.0	0.0	0.0	1.37	54.4	0.0
20.001	0.00	6.31	119.530	0.114	0.0	0.0	0.0	1.34	53.5	0.0
20.002	0.00	6.56	119.330	0.134	0.0	0.0	0.0	2.43	96.8	0.0
20.003	0.00	6.83	118.075	0.185	0.0	0.0	0.0	1.49	59.2	0.0
19.001	0.00	7.16	117.690	0.254	0.0	0.0	0.0	1.26	88.9	0.0
19.002	0.00	7.80	117.530	0.293	0.0	0.0	0.0	1.21	85.8	0.0
1.026	0.00	16.66	117.250	3.835	0.0	0.0	0.0	1.02	72.2	0.0
1.027	0.00	17.00	117.150	3.835	0.0	0.0	0.0	1.06	75.1	0.0
1.028	0.00	17.16	117.050	3.835	0.0	0.0	0.0	1.10	77.5	0.0
1.029	0.00	17.43	117.000	3.835	0.0	0.0	0.0	1.16	81.7	0.0
21.000	0.00	5.74	119.100	0.090	0.0	0.0	0.0	1.02	71.8	0.0
22.000	0.00	5.13	119.370	0.100	0.0	0.0	0.0	1.17	83.0	0.0
22.001	0.00	5.36	119.320	0.200	0.0	0.0	0.0	1.07	75.8	0.0
22.002	0.00	5.75	119.100	0.319	0.0	0.0	0.0	1.35	429.2	0.0
22.003	0.00	5.97	118.960	0.319	0.0	0.0	0.0	0.97	68.7	0.0
21.001	0.00	7.02	118.760	0.483	0.0	0.0	0.0	1.21	192.1	0.0

Network Design Table for SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
23.000	14.667#	0.090	163.0	0.100	5.00	0.0	0.600	o	225	
23.001	7.980#	0.050	159.6	0.100	0.00	0.0	0.600	o	300	
23.002	35.000#	0.180	194.4	0.121	0.00	0.0	0.600	oo	42	
23.003	14.500#	0.080	181.3	0.000	0.00	0.0	0.600	o	300	
21.002	25.245#	0.090	280.5	0.000	0.00	0.0	0.600	o	450	
21.003	16.985#	0.060	283.1	0.046	0.00	0.0	0.600	o	450	
21.004	3.977#	0.015	265.1	0.000	0.00	0.0	0.600	o	450	
24.000	15.528#	0.300	51.8	0.064	5.00	0.0	0.600	o	300	
24.001	37.970#	0.690	55.0	0.057	0.00	0.0	0.600	o	300	
25.000	8.500#	0.050	170.0	0.047	5.00	0.0	0.600	oo	41	
24.002	12.474#	0.050	249.5	0.112	0.00	0.0	0.600	o	600	
24.003	8.990#	0.060	149.8	0.000	0.00	0.0	0.600	o	375	
21.005	26.290#	0.095	276.7	0.000	0.00	0.0	0.600	o	450	
21.006	16.985#	0.075	226.5	0.000	0.00	0.0	0.600	o	450	
21.007	15.017#	0.035	429.1	0.052	0.00	0.0	0.600	o	600	
26.000	16.432#	0.100	164.3	0.082	5.00	0.0	0.600	o	225	

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)
23.000	0.00	5.24	119.190	0.100	0.0	0.0	0.0	1.02	40.6	0.0
23.001	0.00	5.35	119.025	0.200	0.0	0.0	0.0	1.24	87.8	0.0
23.002	0.00	5.80	118.900	0.321	0.0	0.0	0.0	1.30	286.5	0.0
23.003	0.00	6.00	118.720	0.321	0.0	0.0	0.0	1.16	82.3	0.0
21.002	0.00	7.37	118.490	0.804	0.0	0.0	0.0	1.21	192.3	0.0
21.003	0.00	7.60	118.400	0.850	0.0	0.0	0.0	1.20	191.4	0.0
21.004	0.00	7.65	118.340	0.850	0.0	0.0	0.0	1.24	197.8	0.0
24.000	0.00	5.12	119.800	0.064	0.0	0.0	0.0	2.19	154.8	0.0
24.001	0.00	5.42	119.500	0.121	0.0	0.0	0.0	2.12	150.1	0.0
25.000	0.00	5.12	118.860	0.047	0.0	0.0	0.0	1.20	169.3	0.0
24.002	0.00	5.55	118.510	0.280	0.0	0.0	0.0	1.54	434.6	0.0
24.003	0.00	5.65	118.460	0.280	0.0	0.0	0.0	1.48	163.2	0.0
21.005	0.00	8.01	118.325	1.130	0.0	0.0	0.0	1.22	193.6	0.0
21.006	0.00	8.22	118.230	1.130	0.0	0.0	0.0	1.35	214.2	0.0
21.007	0.00	8.44	118.005	1.182	0.0	0.0	0.0	1.17	330.6	0.0
26.000	0.00	5.27	118.535	0.082	0.0	0.0	0.0	1.02	40.4	0.0

Network Design Table for SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
26.001	29.945#	0.060	499.1	0.100	0.00	0.0	0.600	o	600	
27.000	24.172#	0.060	402.9	0.056	5.00	0.0	0.600	o	600	
26.002	14.980#	0.030	499.3	0.000	0.00	0.0	0.600	o	750	
21.008	67.596#	0.104	650.0	0.067	0.00	0.0	0.600	o	750	
28.000	4.430#	0.014	316.4	0.111	5.00	0.0	0.600	o	525	
21.009	33.583#	0.051	658.5	0.109	0.00	0.0	0.600	o	750	
21.010	18.617#	0.030	620.6	0.132	0.00	0.0	0.600	o	750	
29.000	8.280#	0.105	78.9	0.071	5.00	0.0	0.600	o	225	
29.001	43.660#	0.210	207.9	0.062	0.00	0.0	0.600	o	300	
29.002	35.845#	0.160	224.0	0.020	0.00	0.0	0.600	o	300	
29.003	17.110#	0.670	25.5	0.088	0.00	0.0	0.600	o	300	
30.000	27.055#	0.080	338.2	0.130	5.00	0.0	0.600	o	750	
31.000	19.140#	0.040	478.5	0.076	5.00	0.0	0.600	o	750	

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)
26.001	0.00	5.73	118.060	0.182	0.0	0.0	0.0	1.08	306.3	0.0
27.000	0.00	5.33	118.060	0.056	0.0	0.0	0.0	1.21	341.3	0.0
26.002	0.00	5.93	117.850	0.238	0.0	0.0	0.0	1.25	550.2	0.0
21.008	0.00	9.47	117.820	1.487	0.0	0.0	0.0	1.09	481.6	0.0
28.000	0.00	5.06	117.955	0.111	0.0	0.0	0.0	1.25	271.4	0.0
21.009	0.00	9.99	117.716	1.707	0.0	0.0	0.0	1.08	478.4	0.0
21.010	0.00	10.27	117.665	1.839	0.0	0.0	0.0	1.12	493.0	0.0
29.000	0.00	5.09	121.750	0.071	0.0	0.0	0.0	1.47	58.6	0.0
29.001	0.00	5.76	121.570	0.133	0.0	0.0	0.0	1.09	76.8	0.0
29.002	0.00	6.33	121.360	0.153	0.0	0.0	0.0	1.05	74.0	0.0
29.003	0.00	6.43	121.200	0.241	0.0	0.0	0.0	3.12	220.8	0.0
30.000	0.00	5.30	120.800	0.130	0.0	0.0	0.0	1.52	669.8	0.0
31.000	0.00	5.25	120.760	0.076	0.0	0.0	0.0	1.27	562.2	0.0

Network Design Table for SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
30.001	45.605#	0.080	570.1	0.063	0.00	0.0	0.600	o	750	
30.002	7.091#	0.110	64.5	0.000	0.00	0.0	0.600	o	300	
29.004	19.900#	0.090	221.1	0.030	0.00	0.0	0.600	o	300	
29.005	29.530#	0.130	227.2	0.030	0.00	0.0	0.600	o	300	
32.000	20.790#	0.060	346.5	0.178	5.00	0.0	0.600	o	450	
32.001	44.268#	0.080	553.4	0.069	0.00	0.0	0.600	o	600	
32.002	6.932#	0.350	19.8	0.000	0.00	0.0	0.600	o	300	
29.006	68.040#	0.470	144.8	0.093	0.00	0.0	0.600	o	375	
29.007	37.480#	0.560	66.9	0.132	0.00	0.0	0.600	o	375	
29.008	11.948#	0.190	62.9	0.128	0.00	0.0	0.600	o	450	
33.000	3.600#	0.030	120.0	0.050	5.00	0.0	0.600	o	300	
33.001	11.654#	0.540	21.6	0.000	0.00	0.0	0.600	o	150	
29.009	65.185#	0.940	69.3	0.050	0.00	0.0	0.600	o	450	
34.000	51.632#	0.360	143.4	0.132	5.00	0.0	0.600	o	300	
34.001	4.880#	0.050	97.6	0.050	0.00	0.0	0.600	o	300	

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)
30.001	0.00	5.95	120.720	0.269	0.0	0.0	0.0	1.16	514.6	0.0
30.002	0.00	6.01	120.640	0.269	0.0	0.0	0.0	1.96	138.6	0.0
29.004	0.00	6.74	120.530	0.540	0.0	0.0	0.0	1.05	74.5	0.0
29.005	0.00	7.21	120.440	0.570	0.0	0.0	0.0	1.04	73.4	0.0
32.000	0.00	5.32	120.950	0.178	0.0	0.0	0.0	1.09	172.8	0.0
32.001	0.00	6.04	120.740	0.247	0.0	0.0	0.0	1.03	290.7	0.0
32.002	0.00	6.07	120.660	0.247	0.0	0.0	0.0	3.55	250.9	0.0
29.006	0.00	7.97	120.235	0.910	0.0	0.0	0.0	1.50	166.1	0.0
29.007	0.00	8.25	119.765	1.042	0.0	0.0	0.0	2.22	244.9	0.0
29.008	0.00	8.33	119.130	1.170	0.0	0.0	0.0	2.57	408.3	0.0
33.000	0.00	5.04	119.810	0.050	0.0	0.0	0.0	1.43	101.4	0.0
33.001	0.00	5.13	119.780	0.050	0.0	0.0	0.0	2.18	38.5	0.0
29.009	0.00	8.77	118.940	1.270	0.0	0.0	0.0	2.44	388.7	0.0
34.000	0.00	5.66	119.200	0.132	0.0	0.0	0.0	1.31	92.7	0.0
34.001	0.00	5.71	118.840	0.182	0.0	0.0	0.0	1.59	112.5	0.0

Network Design Table for SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
35.000	16.273#	0.080	203.4	0.030	5.00	0.0	0.600	o	375	
34.002	17.330#	0.100	173.3	0.083	0.00	0.0	0.600	o	600	
34.003	25.500#	0.090	283.3	0.056	0.00	0.0	0.600	o	600	
34.004	6.480#	0.150	43.2	0.000	0.00	0.0	0.600	o	300	
29.010	29.819#	0.065	458.8	0.047	0.00	0.0	0.600	o	600	
36.000	18.144#	0.120	151.2	0.034	5.00	0.0	0.600	o	375	
36.001	18.124#	0.295	61.4	0.034	0.00	0.0	0.600	o	300	
21.011	23.889#	0.040	597.2	0.076	0.00	0.0	0.600	o	750	
21.012	7.756#	0.035	221.6	0.000	0.00	0.0	0.600	o	750	
37.000	17.551#	0.090	195.0	0.035	5.00	0.0	0.600	o	300	
37.001	17.392#	0.085	204.6	0.038	0.00	0.0	0.600	o	300	
37.002	16.123#	0.065	248.0	0.038	0.00	0.0	0.600	o	300	
37.003	13.713#	0.050	274.3	0.000	0.00	0.0	0.600	o	300	
38.000	52.116#	0.670	77.8	0.100	5.00	0.0	0.600	o	300	
21.013	33.095#	0.065	509.2	0.000	0.00	0.0	0.600	o	750	

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)
35.000	0.00	5.21	118.795	0.030	0.0	0.0	0.0	1.27	139.9	0.0
34.002	0.00	5.86	118.490	0.295	0.0	0.0	0.0	1.85	522.2	0.0
34.003	0.00	6.16	118.390	0.351	0.0	0.0	0.0	1.44	407.6	0.0
34.004	0.00	6.20	118.300	0.351	0.0	0.0	0.0	2.40	169.6	0.0
29.010	0.00	9.21	117.850	1.668	0.0	0.0	0.0	1.13	319.6	0.0
36.000	0.00	5.21	118.500	0.034	0.0	0.0	0.0	1.47	162.5	0.0
36.001	0.00	5.36	118.380	0.068	0.0	0.0	0.0	2.01	142.0	0.0
21.011	0.00	10.62	117.635	3.651	0.0	0.0	0.0	1.14	502.7	0.0
21.012	0.00	10.69	117.595	3.651	0.0	0.0	0.0	1.88	828.7	0.0
37.000	0.00	5.26	118.300	0.035	0.0	0.0	0.0	1.12	79.3	0.0
37.001	0.00	5.53	118.210	0.073	0.0	0.0	0.0	1.10	77.4	0.0
37.002	0.00	5.80	118.125	0.111	0.0	0.0	0.0	0.99	70.2	0.0
37.003	0.00	6.04	118.060	0.111	0.0	0.0	0.0	0.94	66.8	0.0
38.000	0.00	5.49	118.230	0.100	0.0	0.0	0.0	1.78	126.1	0.0
21.013	0.00	11.13	117.560	3.862	0.0	0.0	0.0	1.23	544.9	0.0

Network Design Table for SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
39.000	36.503#	0.085	429.4	0.069	5.00	0.0	0.600	o	900	
21.014	18.722#	0.095	197.1	0.015	0.00	0.0	0.600	o	900	
40.000	15.090#	0.030	503.0	0.090	5.00	0.0	0.600	o	900	
21.015	23.110#	0.030	770.3	0.020	0.00	0.0	0.600	o	900	
21.016	13.416#	0.030	447.2	0.040	0.00	0.0	0.600	o	900	
21.017	14.567#	0.030	485.6	0.040	0.00	0.0	0.600	o	900	
21.018	6.492#	0.030	216.4	0.046	0.00	0.0	0.600	o	900	
41.000	14.400#	0.050	288.0	0.040	5.00	0.0	0.600	o	450	
21.019	18.010#	0.095	189.6	0.000	0.00	0.0	0.600	o	375	
21.020	9.500#	0.137	69.3	0.044	0.00	0.0	0.600	o	375	
42.000	8.382#	0.077	108.9	0.040	5.00	0.0	0.600	o	150	
1.030	8.406#	0.081	103.8	0.030	0.00	0.0	0.600	o	375	
1.031	21.272	0.239	89.0	0.000	0.00	0.0	0.600	o	375	
1.032	9.900	0.108	91.7	0.032	0.00	0.0	0.600	o	375	

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)
39.000	0.00	5.40	117.430	0.069	0.0	0.0	0.0	1.51	957.8	0.0
21.014	0.00	11.27	117.345	3.946	0.0	0.0	0.0	2.23	1417.7	0.0
40.000	0.00	5.18	117.280	0.090	0.0	0.0	0.0	1.39	884.4	0.0
21.015	0.00	11.62	117.250	4.056	0.0	0.0	0.0	1.12	713.1	0.0
21.016	0.00	11.77	117.220	4.096	0.0	0.0	0.0	1.48	938.4	0.0
21.017	0.00	11.94	117.190	4.136	0.0	0.0	0.0	1.42	900.3	0.0
21.018	0.00	11.99	117.160	4.182	0.0	0.0	0.0	2.13	1352.5	0.0
41.000	0.00	5.20	117.180	0.040	0.0	0.0	0.0	1.19	189.7	0.0
21.019	0.00	12.22	117.130	4.222	0.0	0.0	0.0	1.31	145.0	0.0
21.020	0.00	12.29	117.035	4.266	0.0	0.0	0.0	2.18	240.6	0.0
42.000	0.00	5.15	117.200	0.040	0.0	0.0	0.0	0.96	17.0	0.0
1.030	0.00	17.51	116.898	8.171	0.0	0.0	0.0	1.78	196.4	0.0
1.031	0.00	17.69	116.817	8.171	0.0	0.0	0.0	1.92	212.2	0.0
1.032	0.00	17.78	116.578	8.203	0.0	0.0	0.0	1.89	209.1	0.0

Network Design Table for SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
43.000	33.338#	0.200	166.7	0.119	5.00	0.0	0.600	o	300	
43.001	37.692#	0.160	235.6	0.100	0.00	0.0	0.600	o	300	
43.002	26.668#	0.110	242.4	0.039	0.00	0.0	0.600	o	300	
43.003	13.050	0.055	237.3	0.071	0.00	0.0	0.600	o	300	
44.000	8.820	0.100	88.2	0.010	5.00	0.0	0.600	o	225	
44.001	1.000	0.010	100.0	0.000	0.00	0.0	0.600	\/	-3	
45.000	35.000#	0.110	318.2	0.098	5.00	0.0	0.600	o	375	
45.001	8.580	0.030	286.0	0.051	0.00	0.0	0.600	o	375	
45.002	14.670	0.040	366.8	0.100	0.00	0.0	0.600	o	375	
44.002	30.540#	0.080	381.8	0.000	0.00	0.0	0.600	\/	-3	
44.003	21.500#	0.180	119.4	0.000	0.00	0.0	0.600	o	150	
44.004	10.000	0.090	111.1	0.000	0.00	0.0	0.600	o	150	
44.005	91.800#	0.600	153.0	0.000	0.00	0.0	0.600	\/	-3	
44.006	5.700	1.060	5.4	0.000	0.00	0.0	0.600	o	150	
43.004	31.768#	0.120	264.7	0.000	0.00	0.0	0.600	o	375	
43.005	4.489	0.025	179.6	0.000	0.00	0.0	0.600	o	375	

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)
43.000	0.00	5.46	117.140	0.119	0.0	0.0	0.0	1.21	85.9	0.0
43.001	0.00	6.07	116.940	0.219	0.0	0.0	0.0	1.02	72.1	0.0
43.002	0.00	6.52	116.780	0.258	0.0	0.0	0.0	1.01	71.1	0.0
43.003	0.00	6.73	116.670	0.329	0.0	0.0	0.0	1.02	71.8	0.0
44.000	0.00	5.11	119.000	0.010	0.0	0.0	0.0	1.39	55.4	0.0
44.001	0.00	5.11	118.900	0.010	0.0	0.0	0.0	3.38	4689.2	0.0
45.000	0.00	5.58	119.030	0.098	0.0	0.0	0.0	1.01	111.6	0.0
45.001	0.00	5.71	118.920	0.149	0.0	0.0	0.0	1.07	117.8	0.0
45.002	0.00	5.97	118.890	0.249	0.0	0.0	0.0	0.94	103.8	0.0
44.002	0.00	6.27	118.850	0.259	0.0	0.0	0.0	1.73	2391.3	0.0
44.003	0.00	6.66	118.770	0.259	0.0	0.0	0.0	0.92	16.2	0.0
44.004	0.00	6.83	118.590	0.259	0.0	0.0	0.0	0.95	16.8	0.0
44.005	0.00	7.39	118.500	0.259	0.0	0.0	0.0	2.73	3787.6	0.0
44.006	0.00	7.41	117.900	0.259	0.0	0.0	0.0	4.38	77.3	0.0
43.004	0.00	7.89	116.615	0.588	0.0	0.0	0.0	1.11	122.5	0.0
43.005	0.00	7.95	116.495	0.588	0.0	0.0	0.0	1.35	149.0	0.0

Network Design Table for SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.033	8.579	0.135	63.5	0.000	0.00	0.0	0.600	o	375	
1.034	28.710#	0.160	179.4	0.000	0.00	0.0	0.600	o	450	
1.035	5.466#	0.210	26.0	0.000	0.00	0.0	0.600	o	450	

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)
1.033	0.00	17.84	116.470	8.791	0.0	0.0	0.0	2.28	251.4	0.0
1.034	0.00	18.16	116.260	8.791	0.0	0.0	0.0	1.51	240.9	0.0
1.035	0.00	18.18	116.010	8.791	0.0	0.0	0.0	4.00	635.8	0.0

Free Flowing Outfall Details for SWS

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.035	Outfall	116.600	115.800	121.405	0	0

Simulation Criteria for SWS

Volumetric Runoff Coeff	0.840	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	1.000
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 Storage Structures	36
Number of Online Controls	18	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
Site Location GB 450500 225250 SP 50500 25250	
C (1km)	-0.023
D1 (1km)	0.328
D2 (1km)	0.309
D3 (1km)	0.264
E (1km)	0.292
F (1km)	2.461
Summer Storms	No
Winter Storms	Yes
Cv (Summer)	0.750

Synthetic Rainfall Details

Cv (Winter)	0.840
Storm Duration (mins)	15

Online Controls for SWS

Hydro-Brake® Manhole: SC6, DS/PN: 1.007, Volume (m³): 26.3

Design Head (m) 1.200 Hydro-Brake® Type Md6 SW Only Invert Level (m) 122.840
Design Flow (l/s) 10.0 Diameter (mm) 126

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	4.1	1.200	9.9	3.000	15.7	7.000	24.0
0.200	8.0	1.400	10.7	3.500	16.9	7.500	24.8
0.300	8.5	1.600	11.5	4.000	18.1	8.000	25.6
0.400	8.1	1.800	12.2	4.500	19.2	8.500	26.4
0.500	7.8	2.000	12.8	5.000	20.3	9.000	27.2
0.600	7.8	2.200	13.4	5.500	21.2	9.500	27.9
0.800	8.3	2.400	14.0	6.000	22.2		
1.000	9.1	2.600	14.6	6.500	23.1		

Orifice Manhole: 12 (B6), DS/PN: 10.011, Volume (m³): 5.3

Diameter (m) 0.046 Discharge Coefficient 0.600 Invert Level (m) 122.280

Orifice Manhole: 13 (B6), DS/PN: 12.001, Volume (m³): 2.2

Diameter (m) 0.027 Discharge Coefficient 0.600 Invert Level (m) 122.330

Orifice Manhole: 14 (B6), DS/PN: 13.001, Volume (m³): 3.1

Diameter (m) 0.030 Discharge Coefficient 0.600 Invert Level (m) 121.440

Hydro-Brake® Manhole: 70 (D4b), DS/PN: 19.002, Volume (m³): 4.7

Design Head (m) 0.900 Hydro-Brake® Type Md6 SW Only Invert Level (m) 117.530
Design Flow (l/s) 26.0 Diameter (mm) 203

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	6.8	1.200	26.9	3.000	40.7	7.000	62.2
0.200	17.6	1.400	28.4	3.500	44.0	7.500	64.4
0.300	25.5	1.600	30.0	4.000	47.0	8.000	66.5
0.400	27.8	1.800	31.7	4.500	49.9	8.500	68.5
0.500	27.9	2.000	33.3	5.000	52.6	9.000	70.5
0.600	27.2	2.200	34.9	5.500	55.1	9.500	72.5
0.800	25.9	2.400	36.4	6.000	57.6		
1.000	25.9	2.600	37.9	6.500	59.9		

Pre-initialised control selected, excessive flows may result.

Hydro-Brake® Manhole: 3 (D2a), DS/PN: 22.003, Volume (m³): 16.0

Design Head (m) 1.000 Hydro-Brake® Type Md6 SW Only Invert Level (m) 118.960
Design Flow (l/s) 63.0 Diameter (mm) 287

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	9.4	1.200	61.2	3.000	81.5	7.000	124.3
0.200	26.7	1.400	61.5	3.500	87.9	7.500	128.7
0.300	44.6	1.600	62.9	4.000	94.0	8.000	132.9
0.400	58.4	1.800	65.1	4.500	99.7	8.500	137.0
0.500	64.8	2.000	67.7	5.000	105.1	9.000	141.0
0.600	66.4	2.200	70.4	5.500	110.2	9.500	144.8
0.800	65.3	2.400	73.2	6.000	115.1		
1.000	62.6	2.600	76.0	6.500	119.8		

Pre-initialised control selected, excessive flows may result.

Hydro-Brake® Manhole: 6 (D2a), DS/PN: 23.003, Volume (m³): 12.2

Design Head (m) 1.000 Hydro-Brake® Type Md6 SW Only Invert Level (m) 118.720
Design Flow (l/s) 63.0 Diameter (mm) 287

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	9.4	1.200	61.2	3.000	81.5	7.000	124.3
0.200	26.7	1.400	61.5	3.500	87.9	7.500	128.7
0.300	44.6	1.600	62.9	4.000	94.0	8.000	132.9
0.400	58.4	1.800	65.1	4.500	99.7	8.500	137.0
0.500	64.8	2.000	67.7	5.000	105.1	9.000	141.0
0.600	66.4	2.200	70.4	5.500	110.2	9.500	144.8
0.800	65.3	2.400	73.2	6.000	115.1		
1.000	62.6	2.600	76.0	6.500	119.8		

Pre-initialised control selected, excessive flows may result.

Hydro-Brake® Manhole: 83 (D4b), DS/PN: 24.003, Volume (m³): 10.7

Design Head (m) 1.000 Hydro-Brake® Type Md6 SW Only Invert Level (m) 118.460
Design Flow (l/s) 30.0 Diameter (mm) 215

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	7.2	1.200	30.6	3.000	45.7	7.000	69.8
0.200	18.9	1.400	32.0	3.500	49.3	7.500	72.2
0.300	28.4	1.600	33.8	4.000	52.7	8.000	74.6
0.400	31.9	1.800	35.6	4.500	55.9	8.500	76.9
0.500	32.3	2.000	37.4	5.000	59.0	9.000	79.1
0.600	31.7	2.200	39.2	5.500	61.9	9.500	81.3
0.800	30.1	2.400	40.9	6.000	64.6		
1.000	29.7	2.600	42.5	6.500	67.2		

Pre-initialised control selected, excessive flows may result.

Hydro-Brake® Manhole: 18 (D3a), DS/PN: 21.010, Volume (m³): 25.3

Design Head (m) 2.000 Hydro-Brake® Type Md6 SW Only Invert Level (m) 117.665
Design Flow (l/s) 185.0 Diameter (mm) 446

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	13.7	1.200	197.7	3.000	200.9	7.000	300.3
0.200	42.0	1.400	192.4	3.500	214.1	7.500	310.8
0.300	76.5	1.600	187.5	4.000	227.7	8.000	321.0
0.400	112.2	1.800	184.7	4.500	241.1	8.500	330.9
0.500	144.9	2.000	184.0	5.000	253.9	9.000	340.5
0.600	171.3	2.200	185.3	5.500	266.2	9.500	349.8
0.800	196.4	2.400	187.9	6.000	278.0		
1.000	200.3	2.600	191.6	6.500	289.3		

Pre-initialised control selected, excessive flows may result.

Hydro-Brake Optimum® Manhole: 22 (D6a), DS/PN: 30.002, Volume (m³): 24.8

Unit Reference	MD-SHE-0235-3140-1500-3140
Design Head (m)	1.500
Design Flow (l/s)	31.4
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Diameter (mm)	235
Invert Level (m)	120.640
Minimum Outlet Pipe Diameter (mm)	300
Suggested Manhole Diameter (mm)	1800

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.500	31.3
Flush-Flo™	0.465	31.3
Kick-Flo®	1.020	26.1
Mean Flow over Head Range	-	26.8

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	7.8	1.200	28.2	3.000	43.7	7.000	65.9
0.200	23.7	1.400	30.3	3.500	47.1	7.500	68.2
0.300	30.3	1.600	32.3	4.000	50.3	8.000	70.3
0.400	31.2	1.800	34.2	4.500	53.2	8.500	72.5
0.500	31.3	2.000	36.0	5.000	56.0	9.000	74.5
0.600	31.0	2.200	37.7	5.500	58.6	9.500	76.5
0.800	29.9	2.400	39.3	6.000	61.2		
1.000	26.7	2.600	40.8	6.500	63.6		

Hydro-Brake Optimum® Manhole: 27 (D6a), DS/PN: 32.002, Volume (m³): 15.5

Unit Reference	MD-SHE-0294-5000-1000-5000
Design Head (m)	1.000
Design Flow (l/s)	50.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Diameter (mm)	294
Invert Level (m)	120.660
Minimum Outlet Pipe Diameter (mm)	375
Suggested Manhole Diameter (mm)	1800

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	49.9
Flush-Flo™	0.444	49.9
Kick-Flo®	0.783	44.4
Mean Flow over Head Range	-	40.1

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	9.1	1.200	54.5	3.000	85.0	7.000	128.5
0.200	30.3	1.400	58.7	3.500	91.6	7.500	132.9
0.300	48.4	1.600	62.6	4.000	97.7	8.000	137.1
0.400	49.8	1.800	66.3	4.500	103.5	8.500	141.3
0.500	49.8	2.000	69.8	5.000	109.0	9.000	145.3
0.600	48.9	2.200	73.1	5.500	114.2	9.500	149.2
0.800	44.9	2.400	76.2	6.000	119.1		
1.000	49.9	2.600	79.3	6.500	123.9		

Orifice Manhole: 31 (D4b), DS/PN: 33.001, Volume (m³): 4.6

Diameter (m) 0.053 Discharge Coefficient 0.600 Invert Level (m) 119.780

Hydro-Brake® Manhole: 39 (D6a), DS/PN: 34.004, Volume (m³): 13.0

Design Head (m) 1.000 Hydro-Brake® Type Md6 SW Only Invert Level (m) 118.300
Design Flow (l/s) 30.0 Diameter (mm) 215

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	7.2	1.200	30.6	3.000	45.7	7.000	69.8
0.200	18.9	1.400	32.0	3.500	49.3	7.500	72.2
0.300	28.4	1.600	33.8	4.000	52.7	8.000	74.6
0.400	31.9	1.800	35.6	4.500	55.9	8.500	76.9
0.500	32.3	2.000	37.4	5.000	59.0	9.000	79.1
0.600	31.7	2.200	39.2	5.500	61.9	9.500	81.3
0.800	30.1	2.400	40.9	6.000	64.6		
1.000	29.7	2.600	42.5	6.500	67.2		

Hydro-Brake® Manhole: 39 (D6a), DS/PN: 34.004, Volume (m³): 13.0

Pre-initialised control selected, excessive flows may result.

Orifice Manhole: 42 (D4b), DS/PN: 36.001, Volume (m³): 5.0

Diameter (m) 0.053 Discharge Coefficient 0.600 Invert Level (m) 118.380

Orifice Manhole: 46 (D4a), DS/PN: 37.003, Volume (m³): 4.5

Diameter (m) 0.100 Discharge Coefficient 0.600 Invert Level (m) 118.060

Hydro-Brake Optimum® Manhole: 47 (D3a), DS/PN: 21.013, Volume (m³): 13.2

Unit Reference	MD-SHE-0410-1180-2000-1180
Design Head (m)	2.000
Design Flow (l/s)	118.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Diameter (mm)	410
Invert Level (m)	117.560
Minimum Outlet Pipe Diameter (mm)	450
Suggested Manhole Diameter (mm)	Site Specific Design (Contact Hydro International)

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.000	117.7
Flush-Flo™	0.700	117.4
Kick-Flo®	1.438	100.3
Mean Flow over Head Range	-	98.8

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	11.2	1.200	111.2	3.000	143.4	7.000	217.0
0.200	40.1	1.400	103.0	3.500	154.6	7.500	224.5
0.300	78.0	1.600	105.6	4.000	165.0	8.000	231.7
0.400	111.3	1.800	111.8	4.500	174.8	8.500	238.7
0.500	115.1	2.000	117.7	5.000	184.0	9.000	245.5
0.600	116.9	2.200	123.3	5.500	192.8	9.500	252.1
0.800	117.1	2.400	128.6	6.000	201.2		
1.000	115.0	2.600	133.7	6.500	209.3		

Hydro-Brake® Manhole: 56 (D3a), DS/PN: 21.019, Volume (m³): 10.3

Design Head (m) 1.300 Hydro-Brake® Type Md6 SW Only Invert Level (m) 117.130
Design Flow (l/s) 112.0 Diameter (mm) 362

Hydro-Brake® Manhole: 56 (D3a), DS/PN: 21.019, Volume (m³): 10.3

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	11.5	1.200	113.0	3.000	130.3	7.000	197.8
0.200	34.2	1.400	110.1	3.500	140.1	7.500	204.8
0.300	60.2	1.600	109.2	4.000	149.6	8.000	211.5
0.400	84.7	1.800	110.1	4.500	158.6	8.500	218.0
0.500	103.7	2.000	112.2	5.000	167.2	9.000	224.3
0.600	114.3	2.200	115.1	5.500	175.3	9.500	230.4
0.800	118.9	2.400	118.6	6.000	183.1		
1.000	116.9	2.600	122.4	6.500	190.6		

Pre-initialised control selected, excessive flows may result.

Hydro-Brake® Manhole: 67 (D3a), DS/PN: 43.004, Volume (m³): 5.4

Design Head (m) 1.000 Hydro-Brake® Type Md6 SW Only Invert Level (m) 116.615
Design Flow (l/s) 95.0 Diameter (mm) 334

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	10.7	1.200	91.0	3.000	110.6	7.000	168.4
0.200	31.4	1.400	89.4	3.500	119.2	7.500	174.3
0.300	54.5	1.600	89.6	4.000	127.3	8.000	180.0
0.400	75.1	1.800	91.2	4.500	135.0	8.500	185.6
0.500	89.4	2.000	93.7	5.000	142.3	9.000	190.9
0.600	95.4	2.200	96.8	5.500	149.3	9.500	196.2
0.800	97.0	2.400	100.1	6.000	155.9		
1.000	94.3	2.600	103.6	6.500	162.3		

Pre-initialised control selected, excessive flows may result.

Storage Structures for SWS

Tank or Pond Manhole: TANK, DS/PN: 6.000

Invert Level (m) 122.940

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	470.0	1.200	470.0	1.201	0.0

Porous Car Park Manhole: 1 (B6), DS/PN: 10.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	5.3
Membrane Percolation (mm/hr)	1000	Length (m)	18.0
Max Percolation (l/s)	26.5	Slope (1:X)	500.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	123.600	Cap Volume Depth (m)	0.000

Porous Car Park Manhole: 2 (B6), DS/PN: 10.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	3.0
Membrane Percolation (mm/hr)	1000	Length (m)	40.0
Max Percolation (l/s)	33.3	Slope (1:X)	500.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	123.600	Cap Volume Depth (m)	0.000

Porous Car Park Manhole: 3 (B6), DS/PN: 10.002

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	3.0
Membrane Percolation (mm/hr)	1000	Length (m)	39.0
Max Percolation (l/s)	32.5	Slope (1:X)	500.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	123.750	Cap Volume Depth (m)	0.000

Porous Car Park Manhole: 4 (B6), DS/PN: 10.003

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	3.0
Membrane Percolation (mm/hr)	1000	Length (m)	60.0
Max Percolation (l/s)	50.0	Slope (1:X)	500.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	123.750	Cap Volume Depth (m)	0.000

Porous Car Park Manhole: 5 (B6), DS/PN: 10.004

Infiltration Coefficient Base (m/hr)	0.00000	Safety Factor	2.0
Membrane Percolation (mm/hr)	1000	Porosity	0.30
Max Percolation (l/s)	45.0	Invert Level (m)	123.750

Porous Car Park Manhole: 5 (B6), DS/PN: 10.004

Width (m)	3.0	Depression Storage (mm)	5
Length (m)	54.0	Evaporation (mm/day)	3
Slope (1:X)	500.0	Cap Volume Depth (m)	0.000

Tank or Pond Manhole: Tank (B6), DS/PN: 11.000

Invert Level (m) 122.660

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	143.0	0.800	143.0	0.801	0.0

Porous Car Park Manhole: PP (B6), DS/PN: 12.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	5.0
Membrane Percolation (mm/hr)	1000	Length (m)	117.0
Max Percolation (l/s)	162.5	Slope (1:X)	300.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	122.580	Cap Volume Depth (m)	0.000

Tank or Pond Manhole: 14 (B6), DS/PN: 13.001

Invert Level (m) 121.440

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	20.0	0.400	20.0	0.401	0.0

Tank or Pond Manhole: 0011, DS/PN: 1.018

Invert Level (m) 119.830

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	133.0	0.800	133.0	0.801	0.0

Tank or Pond Manhole: 70 (D4b), DS/PN: 19.002

Invert Level (m) 117.600

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	167.0	0.400	167.0	0.401	0.0

Tank or Pond Manhole: 2b (D2a), DS/PN: 22.002

Invert Level (m) 119.100

Tank or Pond Manhole: 2b (D2a), DS/PN: 22.002

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	98.0	0.800	98.0	0.801	0.0

Tank or Pond Manhole: 6 (D2a), DS/PN: 23.003

Invert Level (m) 118.720

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	63.0	0.800	63.0	0.801	0.0

Tank or Pond Manhole: Tank (D4b), DS/PN: 25.000

Invert Level (m) 118.860

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	60.0	0.800	60.0	0.801	0.0

Tank or Pond Manhole: 14 (D2a), DS/PN: 26.001

Invert Level (m) 118.210

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	175.0	0.800	175.0	0.801	0.0

Complex Manhole: 85 (D4b), DS/PN: 28.000

Tank or Pond

Invert Level (m) 118.040

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	165.0	1.200	165.0	1.201	0.0

Porous Car Park

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	15.0
Membrane Percolation (mm/hr)	1000	Length (m)	25.0
Max Percolation (l/s)	104.2	Slope (1:X)	500.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	119.900	Cap Volume Depth (m)	0.000

Tank or Pond Manhole: 17a (D3a), DS/PN: 21.009

Invert Level (m) 117.733

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	175.0	1.600	175.0	1.601	0.0

Tank or Pond Manhole: 18 (D3a), DS/PN: 21.010

Invert Level (m) 117.685

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	146.5	1.200	146.5	1.201	0.0

Tank or Pond Manhole: 21a (D6a), DS/PN: 31.000

Invert Level (m) 120.760

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	63.0	0.800	63.0	0.801	0.0

Tank or Pond Manhole: 25 (D6a), DS/PN: 32.000

Invert Level (m) 120.950

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	90.0	0.800	90.0	0.801	0.0

Tank or Pond Manhole: 31 (D4b), DS/PN: 33.001

Invert Level (m) 119.830

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	14.0	0.400	14.0	0.401	0.0

Tank or Pond Manhole: 36 (D6a), DS/PN: 35.000

Invert Level (m) 118.900

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	144.0	1.200	144.0	1.201	0.0

Tank or Pond Manhole: 41 (D4b), DS/PN: 36.000

Invert Level (m) 118.500

Tank or Pond Manhole: 41 (D4b), DS/PN: 36.000

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	44.0	0.800	44.0	0.801	0.0

Tank or Pond Manhole: 45 (D4a), DS/PN: 37.000

Invert Level (m) 118.300

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	36.0	0.800	36.0	0.801	0.0

Tank or Pond Manhole: 45a (D4a), DS/PN: 37.001

Invert Level (m) 118.210

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	36.0	0.800	36.0	0.801	0.0

Tank or Pond Manhole: 45b (D4a), DS/PN: 37.002

Invert Level (m) 118.125

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	36.0	0.800	36.0	0.801	0.0

Tank or Pond Manhole: 47a (D3a), DS/PN: 38.000

Invert Level (m) 118.230

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	76.5	0.400	76.5	0.401	0.0

Tank or Pond Manhole: 49 (D3a), DS/PN: 39.000

Invert Level (m) 117.430

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	71.0	0.800	71.0	0.801	0.0

Tank or Pond Manhole: 52 (D3a), DS/PN: 21.015

Invert Level (m) 117.250

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	56.0	0.800	56.0	0.801	0.0

Tank or Pond Manhole: 53 (D3a), DS/PN: 21.016

Invert Level (m) 117.220

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	72.0	0.800	72.0	0.801	0.0

Tank or Pond Manhole: 54 (D3a), DS/PN: 21.018

Invert Level (m) 117.160

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	65.0	0.800	65.0	0.801	0.0

Tank or Pond Manhole: 55 (D3a), DS/PN: 41.000

Invert Level (m) 117.180

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	324.0	0.800	324.0	0.801	0.0

Tank or Pond Manhole: SC18c, DS/PN: 1.030

Invert Level (m) 116.998

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	85.7	0.400	85.7	0.401	0.0

Tank or Pond Manhole: Swale (D3a), DS/PN: 44.001

Invert Level (m) 118.900

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	28.4	0.500	81.7	0.501	0.0

Tank or Pond Manhole: Pipe (D3a), DS/PN: 44.006

Invert Level (m) 117.900

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	22.8	0.500	61.8	0.501	0.0

Tank or Pond Manhole: 67 (D3a), DS/PN: 43.004

Invert Level (m) 116.650

Tank or Pond Manhole: 67 (D3a), DS/PN: 43.004

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	73.0	0.800	73.0	0.801	0.0

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

Simulation Criteria

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

Number of Input Hydrographs	0	Number of Storage Structures	36
Number of Online Controls	18	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
Site Location GB 450500 225250 SP 50500 25250	
C (1km)	-0.023
D1 (1km)	0.328
D2 (1km)	0.309
D3 (1km)	0.264
E (1km)	0.292
F (1km)	2.461
Cv (Summer)	0.750
Cv (Winter)	0.840

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

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

PN	Storm	Return Period	Climate Change	First X Surcharge	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
1.000	15 Winter	100	+30%	100/15 Summer	100/15 Summer			9
1.001	120 Winter	100	+30%	100/15 Summer	100/15 Summer			12
1.002	15 Winter	100	+30%	100/15 Summer				
1.003	240 Winter	100	+30%	100/15 Summer	100/15 Summer			14
1.004	240 Winter	100	+30%	100/15 Summer				
1.005	360 Winter	100	+30%	100/15 Summer	100/60 Summer			14
2.000	15 Winter	100	+30%	100/15 Summer	100/15 Summer			7
2.001	15 Winter	100	+30%	100/15 Summer	100/15 Summer			2
2.002	960 Winter	100	+30%	100/15 Summer	100/15 Summer			18
2.003	480 Winter	100	+30%	100/15 Summer	100/60 Summer			14
1.006	360 Winter	100	+30%	100/15 Summer				
3.000	15 Winter	100	+30%	100/15 Summer	100/15 Summer			7
3.001	60 Winter	100	+30%	100/15 Summer	100/15 Summer			14
3.002	30 Winter	100	+30%	100/15 Summer	100/15 Summer			14
3.003	15 Winter	100	+30%	100/15 Summer				

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

PN	Storm	Return Period	Climate Change	First X Surcharge	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
3.004	15 Winter	100	+30%	100/15 Summer	100/15 Summer			4
4.000	15 Winter	100	+30%	100/15 Summer	100/15 Summer			8
3.005	240 Winter	100	+30%	100/15 Summer				
5.000	15 Winter	100	+30%	100/15 Summer	100/15 Summer			4
3.006	360 Winter	100	+30%	100/15 Summer				
3.007	480 Winter	100	+30%	100/15 Summer				
3.008	360 Winter	100	+30%	100/15 Summer	100/15 Summer			15
6.000	360 Winter	100	+30%	100/15 Summer				
6.001	360 Winter	100	+30%	100/15 Summer				
1.007	360 Winter	100	+30%	100/15 Summer	100/60 Summer			14
7.000	60 Winter	100	+30%	100/15 Summer	100/15 Summer			8
7.001	15 Winter	100	+30%	100/15 Summer	100/15 Summer			8
7.002	60 Winter	100	+30%	100/15 Summer	100/15 Summer			11
7.003	15 Summer	100	+30%	100/15 Summer				
8.000	15 Winter	100	+30%	100/15 Summer	100/15 Summer			8
7.004	15 Winter	100	+30%	100/15 Summer	100/15 Summer			4
7.005	15 Winter	100	+30%	100/15 Summer				
1.008	15 Winter	100	+30%	100/15 Summer				
1.009	15 Winter	100	+30%	100/15 Summer				
9.000	15 Winter	100	+30%	100/15 Summer	100/15 Winter			1
9.001	15 Winter	100	+30%	100/15 Summer				
1.010	15 Winter	100	+30%	100/15 Summer				
10.000	15 Winter	100	+30%	100/15 Summer				
10.001	15 Winter	100	+30%	100/15 Summer				
10.002	15 Winter	100	+30%	100/15 Summer				
10.003	15 Summer	100	+30%	100/15 Summer				
10.004	15 Summer	100	+30%	100/15 Summer				
10.005	120 Winter	100	+30%	100/15 Summer				
10.006	120 Winter	100	+30%	100/15 Summer				
11.000	120 Winter	100	+30%	100/15 Summer				
10.007	120 Winter	100	+30%	100/15 Summer				
10.008	120 Winter	100	+30%	100/15 Summer				
10.009	120 Winter	100	+30%	100/15 Summer				
10.010	120 Winter	100	+30%	100/15 Summer				
10.011	120 Winter	100	+30%	100/15 Summer				
1.011	15 Winter	100	+30%	100/15 Summer				
1.012	15 Winter	100	+30%	100/15 Summer				
12.000	120 Winter	100	+30%	100/15 Summer				
12.001	120 Winter	100	+30%	100/15 Summer				
13.000	60 Winter	100	+30%	100/15 Summer				
13.001	60 Winter	100	+30%	100/15 Summer				
1.013	30 Winter	100	+30%	100/15 Summer	100/15 Summer			5
1.014	30 Winter	100	+30%	100/15 Summer	100/15 Summer			8
1.015	15 Winter	100	+30%	100/15 Summer				
14.000	15 Winter	100	+30%					
14.001	15 Winter	100	+30%	100/15 Summer				
15.000	15 Winter	100	+30%	100/15 Summer				
14.002	15 Winter	100	+30%					
14.003	15 Winter	100	+30%	100/15 Summer	100/15 Summer			4
14.004	15 Summer	100	+30%	100/15 Summer	100/15 Summer			2
14.005	15 Summer	100	+30%	100/15 Summer				

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

PN	Storm	Return Period	Climate Change	First X Surcharge	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
16.000	15 Winter	100	+30%	100/15 Summer				
17.000	15 Winter	100	+30%	100/15 Summer	100/15 Summer			7
17.001	15 Winter	100	+30%	100/15 Summer	100/15 Summer			7
14.006	15 Winter	100	+30%	100/15 Summer	100/15 Summer			4
1.016	15 Winter	100	+30%	100/15 Summer				
1.017	120 Winter	100	+30%	100/15 Summer	100/15 Summer			14
1.018	60 Winter	100	+30%	100/15 Summer	100/15 Summer			13
1.019	120 Winter	100	+30%	100/15 Summer	100/15 Summer			14
1.020	60 Winter	100	+30%	100/15 Summer				
1.021	60 Winter	100	+30%	100/15 Summer				
18.000	15 Winter	100	+30%	100/15 Summer	100/15 Summer			6
1.022	60 Winter	100	+30%	100/15 Summer				
1.023	60 Winter	100	+30%	100/15 Summer				
1.024	60 Winter	100	+30%	100/15 Summer				
1.025	60 Winter	100	+30%	100/15 Summer				
19.000	60 Winter	100	+30%	100/15 Summer	100/15 Winter			6
20.000	15 Winter	100	+30%	100/15 Summer	100/15 Summer			2
20.001	15 Winter	100	+30%	100/15 Summer				
20.002	15 Winter	100	+30%	100/15 Summer				
20.003	15 Winter	100	+30%	100/15 Summer				
19.001	30 Winter	100	+30%	100/15 Summer				
19.002	30 Winter	100	+30%	100/15 Summer	100/15 Summer			8
1.026	60 Winter	100	+30%	100/15 Summer	100/30 Winter			4
1.027	360 Winter	100	+30%	100/15 Summer				
1.028	360 Winter	100	+30%	100/15 Summer				
1.029	360 Winter	100	+30%	100/15 Summer				
21.000	120 Winter	100	+30%	100/15 Winter				
22.000	15 Winter	100	+30%	100/15 Summer				
22.001	15 Winter	100	+30%	100/15 Summer				
22.002	15 Winter	100	+30%	100/15 Summer				
22.003	15 Winter	100	+30%	100/15 Summer				
21.001	120 Winter	100	+30%	100/15 Summer				
23.000	15 Winter	100	+30%	100/15 Summer	100/15 Winter			1
23.001	15 Winter	100	+30%	100/15 Summer	100/15 Winter			1
23.002	15 Winter	100	+30%	100/15 Summer				
23.003	15 Winter	100	+30%	100/15 Summer				
21.002	120 Winter	100	+30%	100/15 Summer				
21.003	120 Winter	100	+30%	100/15 Summer				
21.004	120 Winter	100	+30%	100/15 Summer				
24.000	15 Winter	100	+30%	100/15 Winter				
24.001	15 Winter	100	+30%	100/15 Winter				
25.000	15 Winter	100	+30%	100/15 Summer				
24.002	15 Winter	100	+30%	100/15 Summer				
24.003	15 Winter	100	+30%	100/15 Summer				
21.005	120 Winter	100	+30%	100/15 Summer				
21.006	120 Winter	100	+30%	100/15 Summer				
21.007	120 Winter	100	+30%	100/15 Summer				
26.000	120 Winter	100	+30%	100/15 Summer				
26.001	120 Winter	100	+30%	100/15 Summer				
27.000	120 Winter	100	+30%	100/15 Summer				
26.002	120 Winter	100	+30%	100/15 Summer				

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

PN	Storm	Return Period	Climate Change	First X Surcharge	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
21.008	120 Winter	100	+30%	100/15 Summer				
28.000	120 Winter	100	+30%	100/15 Summer				
21.009	120 Winter	100	+30%	100/15 Summer				
21.010	120 Winter	100	+30%	100/15 Summer				
29.000	15 Winter	100	+30%	100/15 Summer	100/15 Winter			1
29.001	15 Winter	100	+30%	100/15 Summer	100/15 Winter			
29.002	15 Winter	100	+30%	100/15 Summer				
29.003	15 Winter	100	+30%	100/15 Summer				
30.000	15 Winter	100	+30%	100/15 Winter				
31.000	15 Winter	100	+30%	100/15 Winter				
30.001	15 Winter	100	+30%	100/15 Summer				
30.002	15 Winter	100	+30%	100/15 Summer				
29.004	15 Winter	100	+30%	100/15 Summer				
29.005	15 Winter	100	+30%	100/15 Summer				
32.000	15 Winter	100	+30%	100/15 Summer				
32.001	15 Summer	100	+30%	100/15 Summer				
32.002	15 Summer	100	+30%	100/15 Summer				
29.006	15 Winter	100	+30%	100/15 Summer				
29.007	15 Winter	100	+30%	100/15 Summer				
29.008	15 Winter	100	+30%	100/15 Summer				
33.000	15 Winter	100	+30%					
33.001	15 Winter	100	+30%	100/15 Summer				
29.009	15 Winter	100	+30%	100/15 Summer				
34.000	15 Winter	100	+30%	100/15 Summer				
34.001	15 Winter	100	+30%	100/15 Summer				
35.000	60 Winter	100	+30%	100/15 Summer				
34.002	60 Winter	100	+30%	100/15 Summer				
34.003	60 Winter	100	+30%	100/15 Summer				
34.004	60 Winter	100	+30%	100/15 Summer				
29.010	15 Winter	100	+30%	100/15 Summer				
36.000	120 Winter	100	+30%	100/15 Summer				
36.001	120 Winter	100	+30%	100/15 Summer				
21.011	15 Winter	100	+30%	100/15 Summer				
21.012	15 Winter	100	+30%	100/15 Summer				
37.000	120 Winter	100	+30%	100/15 Summer				
37.001	120 Winter	100	+30%	100/15 Summer				
37.002	120 Winter	100	+30%	100/15 Summer				
37.003	120 Winter	100	+30%	100/15 Summer				
38.000	15 Winter	100	+30%	100/15 Summer	100/15 Winter			4
21.013	15 Winter	100	+30%	100/15 Summer				
39.000	240 Winter	100	+30%	100/120 Winter				
21.014	240 Winter	100	+30%	100/120 Winter				
40.000	240 Winter	100	+30%	100/120 Winter				
21.015	240 Winter	100	+30%	100/120 Winter				
21.016	240 Winter	100	+30%	100/120 Summer				
21.017	240 Winter	100	+30%	100/120 Summer				
21.018	240 Winter	100	+30%	100/120 Summer				
41.000	240 Winter	100	+30%	100/15 Summer				
21.019	240 Winter	100	+30%	100/15 Summer				
21.020	240 Winter	100	+30%	100/15 Summer				
42.000	240 Winter	100	+30%	100/15 Summer				

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

PN	Storm	Return Period	Climate Change	First X Surcharge	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
1.030	240 Winter	100	+30%	100/15 Summer				
1.031	240 Winter	100	+30%	100/15 Summer				
1.032	360 Winter	100	+30%	100/15 Summer	100/240 Winter			2
43.000	15 Winter	100	+30%	100/15 Summer				
43.001	15 Winter	100	+30%	100/15 Summer				
43.002	15 Winter	100	+30%	100/15 Summer				
43.003	15 Winter	100	+30%	100/15 Summer				
44.000	30 Winter	100	+30%	100/15 Summer				
44.001	30 Winter	100	+30%					
45.000	15 Winter	100	+30%	100/15 Summer				
45.001	15 Winter	100	+30%	100/15 Summer				
45.002	15 Winter	100	+30%	100/15 Summer				
44.002	30 Winter	100	+30%	100/15 Winter				
44.003	30 Winter	100	+30%	100/15 Summer				
44.004	30 Winter	100	+30%	100/15 Summer				
44.005	30 Winter	100	+30%					
44.006	15 Winter	100	+30%					
43.004	15 Winter	100	+30%	100/15 Summer				
43.005	60 Winter	100	+30%	100/15 Summer				
1.033	60 Winter	100	+30%	100/15 Summer				
1.034	60 Winter	100	+30%	100/30 Winter				
1.035	60 Winter	100	+30%					

PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	0542	126.686	0.828	107.399	0.95	0.0	58.2	FLOOD
1.001	0648	126.133	0.974	56.912	1.13	0.0	55.6	FLOOD
1.002	Ex MH	126.096	1.224	0.000	1.73	0.0	73.5	FLOOD RISK
1.003	0579	125.676	0.965	35.815	1.13	0.0	59.4	FLOOD
1.004	SC1	125.386	1.277	0.000	0.53	0.0	58.7	FLOOD RISK
1.005	SC2	125.290	1.718	83.612	0.56	0.0	49.0	FLOOD
2.000	0580	125.973	0.504	24.401	0.94	0.0	26.9	FLOOD
2.001	EX MH	125.958	0.800	1.371	1.08	0.0	33.2	FLOOD
2.002	1015	125.259	0.832	177.687	0.79	0.0	12.1	FLOOD
2.003	SC3	125.271	1.146	171.024	0.16	0.0	18.3	FLOOD
1.006	SC4	125.284	1.834	0.000	0.52	0.0	79.2	FLOOD RISK
3.000	0613	126.898	0.746	19.754	1.24	0.0	19.6	FLOOD
3.001	0615	126.569	0.651	59.557	0.90	0.0	16.5	FLOOD
3.002	0610	126.456	1.058	64.742	2.88	0.0	27.3	FLOOD
3.003	0611	126.836	1.456	0.000	1.89	0.0	27.3	FLOOD RISK
3.004	0532	126.435	1.224	7.482	3.35	0.0	41.8	FLOOD
4.000	1032	126.879	1.378	37.165	2.19	0.0	27.0	FLOOD
3.005	0608	125.622	0.280	0.000	0.23	0.0	51.5	SURCHARGED
5.000	GY	125.653	0.403	2.927	2.01	0.0	32.7	FLOOD
3.006	0530	125.508	0.351	0.000	0.25	0.0	54.8	FLOOD RISK
3.007	0544	125.400	0.470	0.000	0.32	0.0	53.1	FLOOD RISK
3.008	0529	125.306	0.686	72.960	0.37	0.0	59.3	FLOOD
6.000	TANK	125.285	2.045	0.000	0.00	0.0	0.0	FLOOD RISK
6.001	SC5	125.285	1.932	0.000	0.00	0.0	0.0	FLOOD RISK

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

PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m^3)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.007	SC6	125.285	2.295	121.343	0.95	0.0	13.4	FLOOD
7.000	0842	126.179	0.898	12.629	0.75	0.0	8.3	FLOOD
7.001	0772	126.190	1.362	10.220	1.53	0.0	10.0	FLOOD
7.002	EX MH	125.248	0.838	47.695	1.04	0.0	21.5	FLOOD
7.003	0535	125.732	1.697	0.000	2.26	0.0	22.0	FLOOD RISK
8.000	0533	125.774	1.401	12.477	1.31	0.0	13.6	FLOOD
7.004	0524	125.648	1.658	7.409	1.69	0.0	32.6	FLOOD
7.005	SC19	125.164	1.774	0.000	1.08	0.0	23.9	FLOOD RISK
1.008	SC7	124.734	1.997	0.000	2.50	0.0	33.2	SURCHARGED
1.009	SC8	124.561	1.916	0.000	0.97	0.0	34.2	SURCHARGED
9.000	SC9	125.066	1.896	0.394	0.53	0.0	55.2	FLOOD
9.001	SC10	124.931	2.401	0.000	3.47	0.0	44.6	FLOOD RISK
1.010	SC11	124.515	2.027	0.000	1.66	0.0	65.1	SURCHARGED
10.000	1 (B6)	123.870	0.175	0.000	0.37	0.0	13.4	SURCHARGED
10.001	2 (B6)	123.854	0.259	0.000	0.79	0.0	28.7	SURCHARGED
10.002	3 (B6)	123.835	0.330	0.000	0.81	0.0	30.4	SURCHARGED
10.003	4 (B6)	123.816	0.471	0.000	1.04	0.0	38.3	SURCHARGED
10.004	5 (B6)	123.752	0.547	0.000	1.37	0.0	50.5	SURCHARGED
10.005	6 (B6)	123.738	0.663	0.000	0.75	0.0	26.4	SURCHARGED
10.006	7 (B6)	123.737	0.737	0.000	0.46	0.0	31.8	SURCHARGED
11.000	Tank (B6)	123.736	0.776	0.000	0.27	0.0	16.8	FLOOD RISK
10.007	8 (B6)	123.735	0.825	0.000	0.33	0.0	17.5	FLOOD RISK
10.008	9 (B6)	123.734	0.854	0.000	0.27	0.0	16.6	SURCHARGED
10.009	10 (B6)	123.731	0.911	0.000	0.19	0.0	12.7	SURCHARGED
10.010	11 (B6)	123.727	1.037	0.000	0.14	0.0	9.4	FLOOD RISK
10.011	12 (B6)	123.722	1.292	0.000	0.30	0.0	5.0	FLOOD RISK
1.011	SC12	124.082	1.754	0.000	1.80	0.0	61.1	FLOOD RISK
1.012	SC13	123.833	1.584	0.000	1.14	0.0	70.6	SURCHARGED
12.000	PP (B6)	122.812	0.152	0.000	0.12	0.0	3.1	SURCHARGED
12.001	13 (B6)	122.811	0.331	0.000	0.02	0.0	1.0	SURCHARGED
13.000	PP (B6)	122.016	0.416	0.000	0.49	0.0	5.3	SURCHARGED
13.001	14 (B6)	122.016	0.426	0.000	0.02	0.0	1.0	SURCHARGED
1.013	SC14	122.365	1.229	3.090	1.46	0.0	65.7	FLOOD
1.014	SC15	121.695	0.880	19.954	0.96	0.0	78.4	FLOOD
1.015	SC16	121.639	1.093	0.000	1.14	0.0	77.8	SURCHARGED
14.000	0015	122.918	-0.058	0.000	0.02	0.0	1.3	OK
14.001	0014	122.919	0.038	0.000	0.95	0.0	49.6	SURCHARGED
15.000	0005	122.908	0.069	0.000	1.30	0.0	60.2	SURCHARGED
14.002	0004	122.851	-0.114	0.000	0.35	0.0	121.4	OK
14.003	0454	122.755	0.343	13.125	0.46	0.0	124.6	FLOOD
14.004	0326	122.712	0.680	0.090	1.13	0.0	94.2	FLOOD
14.005	0323	122.599	0.677	0.000	0.93	0.0	111.3	FLOOD RISK
16.000	0455	122.489	0.729	0.000	0.76	0.0	13.1	FLOOD RISK
17.000	0460	122.823	0.477	7.284	1.03	0.0	6.5	FLOOD
17.001	0459	122.214	0.409	19.419	1.46	0.0	28.1	FLOOD
14.006	0373	122.292	0.770	4.754	0.94	0.0	107.0	FLOOD
1.016	0009	121.563	1.096	0.000	2.58	0.0	179.0	SURCHARGED
1.017	0010	121.052	0.726	126.071	0.83	0.0	125.5	FLOOD
1.018	0011	120.920	0.878	26.832	1.23	0.0	64.0	FLOOD
1.019	0480	119.864	0.532	36.741	1.47	0.0	60.6	FLOOD

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

PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.020	0526	119.279	0.277	0.000	2.89	0.0	60.5	FLOOD RISK
1.021	0643	119.133	0.081	0.000	0.55	0.0	61.3	FLOOD RISK
18.000	0497	119.700	0.726	6.017	2.52	0.0	10.3	FLOOD
1.022	0029	118.981	0.142	0.000	1.00	0.0	95.8	FLOOD RISK
1.023	SC20	118.834	0.212	0.000	0.51	0.0	93.5	SURCHARGED
1.024	SC21	118.586	0.836	0.000	1.40	0.0	91.4	SURCHARGED
1.025	0288	118.404	0.779	0.000	1.48	0.0	90.5	FLOOD RISK
19.000	72 (D4b)	118.811	0.611	10.747	0.35	0.0	20.7	FLOOD
20.000	76 (D4b)	121.632	0.907	1.748	1.27	0.0	67.3	FLOOD
20.001	75 (D4b)	120.269	0.514	0.000	1.37	0.0	66.2	SURCHARGED
20.002	74 (D4b)	119.941	0.386	0.000	0.78	0.0	71.3	SURCHARGED
20.003	73 (D4b)	119.301	1.001	0.000	1.72	0.0	93.5	FLOOD RISK
19.001	71 (D4b)	118.868	0.878	0.000	1.44	0.0	114.4	FLOOD RISK
19.002	70 (D4b)	118.766	0.936	6.417	0.35	0.0	27.8	FLOOD
1.026	SC17	118.283	0.733	3.005	1.61	0.0	102.9	FLOOD
1.027	SC18	118.130	0.680	0.000	1.30	0.0	85.9	FLOOD RISK
1.028	SC18a	117.992	0.642	0.000	1.41	0.0	85.9	SURCHARGED
1.029	SC18b	117.896	0.596	0.000	1.22	0.0	85.9	SURCHARGED
21.000	1 (D2a)	119.624	0.224	0.000	0.27	0.0	17.9	SURCHARGED
22.000	2 (D2a)	120.074	0.404	0.000	1.24	0.0	76.3	SURCHARGED
22.001	2a (D2a)	119.978	0.358	0.000	2.45	0.0	155.7	SURCHARGED
22.002	2b (D2a)	119.796	0.246	0.000	0.21	0.0	78.9	SURCHARGED
22.003	3 (D2a)	119.809	0.549	0.000	0.91	0.0	51.3	SURCHARGED
21.001	4 (D2a)	119.620	0.410	0.000	0.41	0.0	74.1	SURCHARGED
23.000	5 (D2a)	120.525	1.110	5.491	1.98	0.0	70.5	FLOOD
23.001	5a (D2a)	120.585	1.260	0.630	2.36	0.0	144.8	FLOOD
23.002	5b (D2a)	120.592	1.317	0.000	0.89	0.0	229.9	FLOOD RISK
23.003	6 (D2a)	120.505	1.485	0.000	0.97	0.0	66.3	FLOOD RISK
21.002	7 (D2a)	119.613	0.673	0.000	0.67	0.0	107.5	SURCHARGED
21.003	8 (D2a)	119.604	0.754	0.000	0.76	0.0	114.4	SURCHARGED
21.004	9 (D2a)	119.596	0.806	0.000	0.95	0.0	113.0	SURCHARGED
24.000	80 (D4b)	120.634	0.534	0.000	0.38	0.0	49.4	SURCHARGED
24.001	81 (D4b)	120.625	0.825	0.000	0.66	0.0	92.0	SURCHARGED
25.000	Tank (D4b)	120.607	1.447	0.000	0.22	0.0	26.8	SURCHARGED
24.002	82 (D4b)	120.605	1.495	0.000	0.20	0.0	58.2	FLOOD RISK
24.003	83 (D4b)	120.600	1.765	0.000	0.32	0.0	34.6	FLOOD RISK
21.005	84 (D4b)	119.593	0.818	0.000	0.86	0.0	140.7	SURCHARGED
21.006	12 (D2a)	119.547	0.867	0.000	0.80	0.0	133.6	SURCHARGED
21.007	13 (D2a)	119.537	0.932	0.000	0.71	0.0	139.2	SURCHARGED
26.000	14a (D2a)	119.538	0.778	0.000	0.45	0.0	16.3	FLOOD RISK
26.001	14 (D2a)	119.534	0.874	0.000	0.09	0.0	21.8	SURCHARGED
27.000	15 (D3a)	119.533	0.873	0.000	0.04	0.0	11.2	SURCHARGED
26.002	16 (D2a)	119.533	0.933	0.000	0.08	0.0	22.4	FLOOD RISK
21.008	17 (D2a)	119.532	0.962	0.000	0.27	0.0	115.4	SURCHARGED
28.000	85 (D4b)	119.527	1.047	0.000	0.17	0.0	27.3	SURCHARGED
21.009	17a (D3a)	119.526	1.060	0.000	0.24	0.0	89.6	SURCHARGED
21.010	18 (D3a)	119.521	1.106	0.000	0.32	0.0	84.4	SURCHARGED
29.000	Spur (D2e)	123.450	1.475	0.412	1.05	0.0	48.1	FLOOD
29.001	19 (D6a)	123.394	1.524	0.005	1.15	0.0	82.2	FLOOD
29.002	20 (D6a)	123.151	1.491	0.000	1.31	0.0	89.5	SURCHARGED

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

PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
29.003	23a (D6a)	122.908	1.408	0.000	0.72	0.0	136.0	FLOOD RISK
30.000	21 (D6a)	121.812	0.262	0.000	0.18	0.0	92.6	SURCHARGED
31.000	21a (D6a)	121.810	0.300	0.000	0.08	0.0	28.2	SURCHARGED
30.001	21b (D6a)	121.809	0.339	0.000	0.10	0.0	44.2	SURCHARGED
30.002	22 (D6a)	121.805	0.865	0.000	0.38	0.0	31.2	SURCHARGED
29.004	23 (D6a)	122.577	1.747	0.000	1.88	0.0	121.6	SURCHARGED
29.005	24 (D6a)	122.295	1.555	0.000	2.08	0.0	138.6	SURCHARGED
32.000	25 (D6a)	121.564	0.164	0.000	0.48	0.0	67.3	SURCHARGED
32.001	26 (D6a)	121.646	0.306	0.000	0.34	0.0	85.0	SURCHARGED
32.002	27 (D6a)	121.690	0.730	0.000	0.34	0.0	49.7	SURCHARGED
29.006	28 (D6a)	121.815	1.205	0.000	1.15	0.0	180.9	SURCHARGED
29.007	29 (D6a)	121.166	1.026	0.000	1.14	0.0	252.6	SURCHARGED
29.008	32 (D6a)	120.382	0.802	0.000	1.32	0.0	323.5	SURCHARGED
33.000	Tank (D4b)	120.110	0.000	0.000	0.56	0.0	34.6	SURCHARGED*
33.001	31 (D4b)	121.266	1.336	0.000	0.20	0.0	7.1	FLOOD RISK
29.009	33 (D6a)	120.147	0.757	0.000	0.99	0.0	357.4	SURCHARGED
34.000	34 (D6a)	120.234	0.734	0.000	1.11	0.0	97.1	SURCHARGED
34.001	35 (D6a)	119.783	0.643	0.000	2.19	0.0	134.5	SURCHARGED
35.000	36 (D6a)	119.498	0.328	0.000	0.21	0.0	23.4	SURCHARGED
34.002	37 (D6a)	119.521	0.431	0.000	0.14	0.0	49.5	SURCHARGED
34.003	38 (D6a)	119.524	0.534	0.000	0.15	0.0	48.1	SURCHARGED
34.004	39 (D6a)	119.523	0.923	0.000	0.33	0.0	32.3	SURCHARGED
29.010	40 (D6a)	119.579	1.129	0.000	1.47	0.0	381.8	SURCHARGED
36.000	41 (D4b)	119.264	0.389	0.000	0.03	0.0	3.8	SURCHARGED
36.001	42 (D4b)	119.264	0.584	0.000	0.03	0.0	3.9	SURCHARGED
21.011	43 (D3a)	119.488	1.103	0.000	0.68	0.0	224.3	SURCHARGED
21.012	44 (D3a)	119.469	1.124	0.000	0.49	0.0	213.5	SURCHARGED
37.000	45 (D4a)	119.313	0.713	0.000	0.12	0.0	7.9	FLOOD RISK
37.001	45a (D4a)	119.312	0.802	0.000	0.14	0.0	9.3	FLOOD RISK
37.002	45b (D4a)	119.311	0.886	0.000	0.16	0.0	9.7	FLOOD RISK
37.003	46 (D4a)	119.309	0.949	0.000	0.18	0.0	9.9	SURCHARGED
38.000	47a (D3a)	119.326	0.796	6.559	0.34	0.0	40.3	FLOOD
21.013	47 (D3a)	119.457	1.147	0.000	0.27	0.0	117.3	SURCHARGED
39.000	49 (D3a)	118.642	0.312	0.000	0.02	0.0	16.7	SURCHARGED
21.014	50 (D3a)	118.642	0.397	0.000	0.13	0.0	121.4	SURCHARGED
40.000	51 (D3a)	118.634	0.454	0.000	0.02	0.0	10.1	SURCHARGED
21.015	52 (D3a)	118.634	0.484	0.000	0.34	0.0	129.0	SURCHARGED
21.016	53 (D3a)	118.626	0.506	0.000	0.28	0.0	128.4	SURCHARGED
21.017	53a (D3a)	118.618	0.528	0.000	0.31	0.0	131.4	SURCHARGED
21.018	54 (D3a)	118.610	0.550	0.000	0.22	0.0	132.3	FLOOD RISK
41.000	55 (D3a)	118.606	0.976	0.000	0.12	0.0	18.0	FLOOD RISK
21.019	56 (D3a)	118.606	1.101	0.000	0.97	0.0	115.6	FLOOD RISK
21.020	57 (D3a)	117.906	0.496	0.000	0.81	0.0	116.9	FLOOD RISK
42.000	58 (D3a)	117.783	0.433	0.000	0.30	0.0	4.5	SURCHARGED
1.030	SC18c	117.779	0.506	0.000	1.73	0.0	193.0	FLOOD RISK
1.031	0271	117.536	0.344	0.000	1.08	0.0	193.0	FLOOD RISK
1.032	0270	117.262	0.309	4.347	1.50	0.0	192.6	FLOOD
43.000	59 (D3a)	119.162	1.722	0.000	0.95	0.0	75.0	SURCHARGED
43.001	60 (D3a)	118.984	1.744	0.000	1.93	0.0	129.0	FLOOD RISK
43.002	61 (D3a)	118.381	1.301	0.000	2.33	0.0	148.5	SURCHARGED

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

PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
43.003	62 (D3a)	118.135	1.165	0.000	3.14	0.0	185.1	SURCHARGED
44.000	69 (D3a)	119.398	0.173	0.000	0.10	0.0	4.4	SURCHARGED
44.001	Swale (D3a)	119.396	-0.004	0.000	0.01	0.0	17.3	FLOOD RISK
45.000	63 (D3a)	119.622	0.217	0.000	0.73	0.0	73.2	SURCHARGED
45.001	64 (D3a)	119.537	0.242	0.000	1.32	0.0	110.5	SURCHARGED
45.002	65 (D3a)	119.452	0.187	0.000	2.48	0.0	185.5	SURCHARGED
44.002	Swale (D3a)	119.397	0.047	0.000	0.06	0.0	87.5	FLOOD RISK
44.003	Pipe (D3a)	119.326	0.406	0.000	1.58	0.0	24.2	FLOOD RISK
44.004	66 (D3a)	118.877	0.137	0.000	1.61	0.0	24.2	SURCHARGED
44.005	Swale (D3a)	118.556	-0.444	0.000	0.01	0.0	24.2	OK
44.006	Pipe (D3a)	118.011	-0.039	0.000	0.57	0.0	36.4	OK
43.004	67 (D3a)	117.988	0.998	0.000	0.89	0.0	96.8	SURCHARGED
43.005	68 (D3a)	117.162	0.292	0.000	1.04	0.0	91.1	FLOOD RISK
1.033	EX MH A	117.086	0.241	0.000	1.62	0.0	232.4	FLOOD RISK
1.034	EX MH	116.732	0.022	0.000	1.13	0.0	232.5	SURCHARGED
1.035	PI	116.343	-0.117	0.000	0.90	0.0	232.4	OK

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for SW EAST PROPOSED 23.07.13.SWS

Pipe Sizes SW WEST DEVELOPMENT Manhole Sizes SW WEST DEVELOPMENT

FEH Rainfall Model

Return Period (years)	2
Site Location	GB 450500 225250 SP 50500 25250
C (1km)	-0.023
D1 (1km)	0.328
D2 (1km)	0.309
D3 (1km)	0.264
E (1km)	0.292
F (1km)	2.461
Maximum Rainfall (mm/hr)	0
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.000
Maximum Backdrop Height (m)	0.000
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

Network Design Table for SW EAST PROPOSED 23.07.13.SWS

- Indicates pipe length does not match coordinates

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.000	48.425	0.442	109.6	0.075	5.00	0.0	0.600	o	150	
1.001	22.970	0.291	78.9	0.086	0.00	0.0	0.600	o	225	
1.002	37.335	0.452	82.6	0.100	0.00	0.0	0.600	o	225	
1.003	22.125	0.316	70.0	0.063	0.00	0.0	0.600	o	225	
1.004	51.854	0.429	120.9	0.142	0.00	0.0	0.600	o	225	

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	5.84	126.100	0.075	0.0	0.0	0.0	0.96	17.0	0.0
1.001	0.00	6.10	125.583	0.161	0.0	0.0	0.0	1.47	58.6	0.0
1.002	0.00	6.53	125.292	0.261	0.0	0.0	0.0	1.44	57.2	0.0
1.003	0.00	6.77	124.840	0.324	0.0	0.0	0.0	1.56	62.2	0.0
1.004	0.00	7.50	124.524	0.466	0.0	0.0	0.0	1.19	47.2	0.0

Network Design Table for SW EAST PROPOSED 23.07.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
2.000	41.092	0.280	146.8	0.048	5.00	0.0	0.600	o	150	
2.001	8.985	0.108	83.2	0.000	0.00	0.0	0.600	o	150	
3.000	13.687	0.339	40.4	0.063	5.00	0.0	0.600	o	150	
3.001	22.832	0.195	117.1	0.039	0.00	0.0	0.600	o	150	
4.000	22.194	0.312	71.1	0.049	5.00	0.0	0.600	o	150	
2.002	16.307	0.123	132.6	0.055	0.00	0.0	0.600	o	225	
2.003	4.596	0.099	46.4	0.014	0.00	0.0	0.600	o	225	
2.004	20.705	0.228	90.8	0.000	0.00	0.0	0.600	o	225	
2.005	6.475	0.009	719.4	0.010	0.00	0.0	0.600	o	225	
5.000	20.917	0.226	92.6	0.060	5.00	0.0	0.600	o	150	
2.006	10.070	0.028	359.6	0.000	0.00	0.0	0.600	o	225	
1.005	48.316	0.433	111.6	0.066	0.00	0.0	0.600	o	225	
1.006	70.328#	0.872	80.7	0.393	0.00	0.0	0.600	o	300	
6.000	13.630#	0.100	136.3	0.080	5.00	0.0	0.600	o	300	

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)
2.000	0.00	5.83	124.970	0.048	0.0	0.0	0.0	0.83	14.6	0.0
2.001	0.00	5.96	124.690	0.048	0.0	0.0	0.0	1.10	19.5	0.0
3.000	0.00	5.14	125.041	0.063	0.0	0.0	0.0	1.59	28.1	0.0
3.001	0.00	5.55	124.702	0.102	0.0	0.0	0.0	0.93	16.4	0.0
4.000	0.00	5.31	124.894	0.049	0.0	0.0	0.0	1.19	21.1	0.0
2.002	0.00	6.20	124.507	0.254	0.0	0.0	0.0	1.13	45.1	0.0
2.003	0.00	6.24	124.384	0.268	0.0	0.0	0.0	1.92	76.5	0.0
2.004	0.00	6.49	124.285	0.268	0.0	0.0	0.0	1.37	54.6	0.0
2.005	0.00	6.72	124.057	0.278	0.0	0.0	0.0	0.48	19.1	0.0
5.000	0.00	5.33	124.349	0.060	0.0	0.0	0.0	1.04	18.5	0.0
2.006	0.00	6.96	124.048	0.338	0.0	0.0	0.0	0.68	27.2	0.0
1.005	0.00	8.15	124.020	0.870	0.0	0.0	0.0	1.24	49.2	0.0
1.006	0.00	8.82	123.512	1.263	0.0	0.0	0.0	1.75	123.9	0.0
6.000	0.00	5.17	123.100	0.080	0.0	0.0	0.0	1.34	95.1	0.0

Network Design Table for SW EAST PROPOSED 23.07.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
6.001	6.990#	0.360	19.4	0.000	0.00	0.0	0.600	o	300	
1.007	37.795#	0.840	45.0	0.000	0.00	0.0	0.600	o	450	
7.000	1.000	0.010	100.0	0.000	5.00	0.0	0.600	o	300	
7.001	9.685#	0.140	69.2	0.085	0.00	0.0	0.600	o	150	
1.008	15.594#	0.385	40.5	0.000	0.00	0.0	0.600	o	450	
8.000	66.397	0.579	114.7	0.112	5.00	0.0	0.600	o	150	
8.001	6.889	0.063	109.3	0.041	0.00	0.0	0.600	o	225	
8.002	48.289	0.423	114.2	0.064	0.00	0.0	0.600	o	225	
9.000	13.342	0.130	102.6	0.050	5.00	0.0	0.600	o	150	
9.001	5.771	0.295	19.6	0.030	0.00	0.0	0.600	o	150	
8.003	44.670#	0.550	81.2	0.120	0.00	0.0	0.600	o	225	
10.000	22.661#	0.151	150.1	0.050	5.00	0.0	0.600	o	150	
8.004	9.590#	0.055	174.4	0.000	0.00	0.0	0.600	o	225	
8.005	46.800#	0.430	108.8	0.147	0.00	0.0	0.600	o	300	

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)
6.001	0.00	5.20	123.000	0.080	0.0	0.0	0.0	3.58	253.4	0.0
1.007	0.00	9.02	122.490	1.343	0.0	0.0	0.0	3.04	483.1	0.0
7.000	0.00	5.01	122.100	0.000	0.0	0.0	0.0	1.57	111.1	0.0
7.001	0.00	5.14	122.090	0.085	0.0	0.0	0.0	1.21	21.4	0.0
1.008	0.00	9.10	121.650	1.428	0.0	0.0	0.0	3.20	509.3	0.0
8.000	0.00	6.18	125.230	0.112	0.0	0.0	0.0	0.94	16.6	0.0
8.001	0.00	6.27	124.576	0.153	0.0	0.0	0.0	1.25	49.7	0.0
8.002	0.00	6.93	124.513	0.217	0.0	0.0	0.0	1.22	48.6	0.0
9.000	0.00	5.22	124.590	0.050	0.0	0.0	0.0	0.99	17.5	0.0
9.001	0.00	5.27	124.460	0.080	0.0	0.0	0.0	2.29	40.4	0.0
8.003	0.00	7.44	124.015	0.417	0.0	0.0	0.0	1.45	57.7	0.0
10.000	0.00	5.46	123.691	0.050	0.0	0.0	0.0	0.82	14.5	0.0
8.004	0.00	7.60	123.465	0.467	0.0	0.0	0.0	0.99	39.2	0.0
8.005	0.00	8.12	123.335	0.614	0.0	0.0	0.0	1.51	106.5	0.0

Network Design Table for SW EAST PROPOSED 23.07.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
8.006	3.585#	0.353	10.2	0.059	0.00	0.0	0.600	o	300	
11.000	10.000	0.100	100.0	0.324	5.00	0.0	0.600	o	300	
11.001	12.723	0.210	60.6	0.000	0.00	0.0	0.600	o	300	
11.002	89.250#	0.438	203.8	0.041	0.00	0.0	0.600	o	300	
8.007	22.990#	0.402	57.2	0.000	0.00	0.0	0.600	o	300	
12.000	12.568	0.171	73.5	0.041	5.00	0.0	0.600	o	150	
12.001	5.616	0.030	187.2	0.048	0.00	0.0	0.600	o	150	
12.002	12.180#	0.076	160.3	0.044	0.00	0.0	0.600	o	150	
12.003	17.830#	0.032	557.2	0.052	0.00	0.0	0.600	o	150	
12.004	15.688#	0.099	158.5	0.050	0.00	0.0	0.600	o	150	
12.005	6.480#	0.371	17.5	0.030	0.00	0.0	0.600	o	150	
13.000	17.960	0.502	35.8	0.020	5.00	0.0	0.600	o	150	
14.000	1.000	0.517	1.9	0.020	5.00	0.0	0.600	o	150	
13.001	40.380	0.227	177.9	0.000	0.00	0.0	0.600	o	300	
12.006	26.051	0.093	280.1	0.057	0.00	0.0	0.600	o	300	

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)
8.006	0.00	8.13	122.905	0.673	0.0	0.0	0.0	4.96	350.7	0.0
11.000	0.00	5.11	123.300	0.324	0.0	0.0	0.0	1.57	111.1	0.0
11.001	0.00	5.21	123.200	0.324	0.0	0.0	0.0	2.02	143.0	0.0
11.002	0.00	6.57	122.990	0.365	0.0	0.0	0.0	1.10	77.6	0.0
8.007	0.00	8.32	122.552	1.038	0.0	0.0	0.0	2.08	147.3	0.0
12.000	0.00	5.18	123.172	0.041	0.0	0.0	0.0	1.17	20.7	0.0
12.001	0.00	5.31	123.001	0.089	0.0	0.0	0.0	0.73	12.9	0.0
12.002	0.00	5.56	122.971	0.133	0.0	0.0	0.0	0.79	14.0	0.0
12.003	0.00	6.27	122.895	0.185	0.0	0.0	0.0	0.42	7.4	0.0
12.004	0.00	6.60	122.863	0.235	0.0	0.0	0.0	0.80	14.1	0.0
12.005	0.00	6.65	122.764	0.265	0.0	0.0	0.0	2.42	42.8	0.0
13.000	0.00	5.18	123.122	0.020	0.0	0.0	0.0	1.69	29.8	0.0
14.000	0.00	5.00	123.145	0.020	0.0	0.0	0.0	7.30	129.1	0.0
13.001	0.00	5.75	122.470	0.040	0.0	0.0	0.0	1.18	83.1	0.0
12.006	0.00	7.11	122.243	0.362	0.0	0.0	0.0	0.93	66.1	0.0

Network Design Table for SW EAST PROPOSED 23.07.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
8.008	56.214#	0.695	80.9	0.036	0.00	0.0	0.600	o	450	
15.000	18.666#	0.100	186.7	0.060	5.00	0.0	0.600	o	300	
15.001	5.606#	0.030	186.9	0.060	0.00	0.0	0.600	o	300	
15.002	25.784#	0.110	234.4	0.050	0.00	0.0	0.600	o	300	
15.003	7.630#	0.040	190.8	0.050	0.00	0.0	0.600	o	300	
15.004	12.974#	0.030	432.5	0.060	0.00	0.0	0.600	o	600	
16.000	14.093#	0.060	234.9	0.020	5.00	0.0	0.600	o	300	
15.005	39.671#	0.090	440.8	0.050	0.00	0.0	0.600	o	600	
15.006	31.681#	0.070	452.6	0.050	0.00	0.0	0.600	o	600	
17.000	17.303#	0.220	78.7	0.030	5.00	0.0	0.600	o	300	
15.007	5.047#	0.020	252.4	0.028	0.00	0.0	0.600	o	600	
15.008	14.888#	0.055	270.7	0.060	0.00	0.0	0.600	o	450	
1.009	41.647#	0.150	277.6	0.000	0.00	0.0	0.600	o	525	
1.010	67.139	0.250	268.6	0.067	0.00	0.0	0.600	o	525	

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)
8.008	0.00	8.73	122.000	1.436	0.0	0.0	0.0	2.26	359.8	0.0
15.000	0.00	5.27	122.150	0.060	0.0	0.0	0.0	1.15	81.1	0.0
15.001	0.00	5.35	122.050	0.120	0.0	0.0	0.0	1.15	81.1	0.0
15.002	0.00	5.77	122.020	0.170	0.0	0.0	0.0	1.02	72.3	0.0
15.003	0.00	5.88	121.910	0.220	0.0	0.0	0.0	1.13	80.2	0.0
15.004	0.00	6.07	121.570	0.280	0.0	0.0	0.0	1.16	329.3	0.0
16.000	0.00	5.23	121.900	0.020	0.0	0.0	0.0	1.02	72.2	0.0
15.005	0.00	6.64	121.540	0.350	0.0	0.0	0.0	1.15	326.1	0.0
15.006	0.00	7.11	121.450	0.400	0.0	0.0	0.0	1.14	321.8	0.0
17.000	0.00	5.16	121.900	0.030	0.0	0.0	0.0	1.77	125.4	0.0
15.007	0.00	7.16	121.380	0.458	0.0	0.0	0.0	1.53	432.1	0.0
15.008	0.00	7.36	121.360	0.518	0.0	0.0	0.0	1.23	195.8	0.0
1.009	0.00	9.62	121.230	3.382	0.0	0.0	0.0	1.34	289.9	0.0
1.010	0.00	10.44	121.080	3.449	0.0	0.0	0.0	1.36	294.8	0.0

Network Design Table for SW EAST PROPOSED 23.07.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
18.000	3.269	0.040	81.7	0.050	5.00	0.0	0.600	o	100	
18.001	7.073	0.188	37.6	0.050	0.00	0.0	0.600	o	100	
18.002	16.487#	0.488	33.8	0.047	0.00	0.0	0.600	o	100	
19.000	10.073#	0.108	93.3	0.030	5.00	0.0	0.600	o	100	
19.001	21.491#	0.554	38.8	0.000	0.00	0.0	0.600	o	150	
18.003	28.600#	0.494	57.9	0.000	0.00	0.0	0.600	o	150	
18.004	33.124#	0.480	69.0	0.106	0.00	0.0	0.600	o	225	
18.005	70.423#	1.380	51.0	0.000	0.00	0.0	0.600	o	225	
20.000	10.000	0.070	142.9	0.200	5.00	0.0	0.600	o	450	
20.001	10.821	0.050	216.4	0.056	0.00	0.0	0.600	o	300	
18.006	80.000	0.365	219.2	0.118	0.00	0.0	0.600	o	300	
21.000	30.000	0.300	100.0	0.253	5.00	0.0	0.600	o	375	
21.001	21.575#	0.210	102.7	0.100	0.00	0.0	0.600	o	300	
21.002	53.884	0.400	134.7	0.074	0.00	0.0	0.600	o	300	
22.000	10.000	0.080	125.0	0.079	5.00	0.0	0.600	o	375	
22.001	12.515	0.130	96.3	0.050	0.00	0.0	0.600	o	300	

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)
18.000	0.00	5.06	124.690	0.050	0.0	0.0	0.0	0.85	6.7	0.0
18.001	0.00	5.16	124.650	0.100	0.0	0.0	0.0	1.26	9.9	0.0
18.002	0.00	5.36	124.462	0.147	0.0	0.0	0.0	1.33	10.5	0.0
19.000	0.00	5.21	124.636	0.030	0.0	0.0	0.0	0.80	6.3	0.0
19.001	0.00	5.43	124.478	0.030	0.0	0.0	0.0	1.62	28.6	0.0
18.003	0.00	5.79	123.924	0.177	0.0	0.0	0.0	1.32	23.4	0.0
18.004	0.00	6.14	123.355	0.283	0.0	0.0	0.0	1.58	62.7	0.0
18.005	0.00	6.78	122.875	0.283	0.0	0.0	0.0	1.84	73.0	0.0
20.000	0.00	5.10	121.540	0.200	0.0	0.0	0.0	1.70	270.2	0.0
20.001	0.00	5.27	121.470	0.256	0.0	0.0	0.0	1.06	75.3	0.0
18.006	0.00	8.04	121.420	0.657	0.0	0.0	0.0	1.06	74.8	0.0
21.000	0.00	5.28	122.400	0.253	0.0	0.0	0.0	1.81	200.1	0.0
21.001	0.00	5.51	122.100	0.353	0.0	0.0	0.0	1.55	109.6	0.0
21.002	0.00	6.17	121.890	0.427	0.0	0.0	0.0	1.35	95.6	0.0
22.000	0.00	5.10	121.700	0.079	0.0	0.0	0.0	1.62	178.8	0.0
22.001	0.00	5.23	121.620	0.129	0.0	0.0	0.0	1.60	113.3	0.0

Network Design Table for SW EAST PROPOSED 23.07.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
21.003	50.998	0.435	117.2	0.071	0.00	0.0	0.600	o	300	
1.011	54.472#	0.820	66.4	0.237	0.00	0.0	0.600	o	525	
23.000	17.445#	0.840	20.8	0.000	5.00	0.0	0.600	o	375	
23.001	14.193	0.186	76.3	0.044	0.00	0.0	0.600	o	375	
23.002	3.120#	0.119	26.2	0.000	0.00	0.0	0.600	o	375	
23.003	58.196#	1.055	55.2	0.058	0.00	0.0	0.600	o	375	
24.000	3.280#	0.045	72.9	0.332	5.00	0.0	0.600	o	300	
24.001	19.867#	0.220	90.3	0.000	0.00	0.0	0.600	o	150	
23.004	72.000#	0.480	150.0	0.037	0.00	0.0	0.600	o	375	
25.000	25.142#	0.125	201.1	0.200	5.00	0.0	0.600	o	300	
25.001	15.181#	0.240	63.3	0.000	0.00	0.0	0.600	o	150	
23.005	29.329#	0.465	63.1	0.000	0.00	0.0	0.600	o	375	
1.012	25.940	0.200	129.7	0.077	0.00	0.0	0.600	oo	45	

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)
21.003	0.00	6.76	121.490	0.627	0.0	0.0	0.0	1.45	102.6	0.0
1.011	0.00	10.77	120.830	4.970	0.0	0.0	0.0	2.75	595.6	0.0
23.000	0.00	5.07	123.380	0.000	0.0	0.0	0.0	3.99	440.8	0.0
23.001	0.00	5.19	122.540	0.044	0.0	0.0	0.0	2.08	229.3	0.0
23.002	0.00	5.20	122.354	0.044	0.0	0.0	0.0	3.55	392.2	0.0
23.003	0.00	5.60	122.235	0.102	0.0	0.0	0.0	2.44	269.9	0.0
24.000	0.00	5.03	121.670	0.332	0.0	0.0	0.0	1.84	130.3	0.0
24.001	0.00	5.34	121.625	0.332	0.0	0.0	0.0	1.06	18.7	0.0
23.004	0.00	6.41	121.180	0.471	0.0	0.0	0.0	1.48	163.1	0.0
25.000	0.00	5.38	121.290	0.200	0.0	0.0	0.0	1.10	78.1	0.0
25.001	0.00	5.58	121.165	0.200	0.0	0.0	0.0	1.27	22.4	0.0
23.005	0.00	6.62	120.700	0.671	0.0	0.0	0.0	2.28	252.3	0.0
1.012	0.00	10.98	120.010	5.718	0.0	0.0	0.0	2.14	1206.7	0.0

Network Design Table for SW EAST PROPOSED 23.07.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
26.000	29.000	0.480	60.4	0.180	5.00	0.0	0.600	o	300	
26.001	5.000	0.050	100.0	0.000	0.00	0.0	0.600	o	300	
1.013	24.091	0.185	130.2	0.000	0.00	0.0	0.600	oo	45	
27.000	36.380	0.160	227.4	0.180	5.00	0.0	0.600	o	300	
27.001	2.210	0.040	55.3	0.000	0.00	0.0	0.600	o	300	
1.014	11.037	0.075	147.2	0.000	0.00	0.0	0.600	o	525	
1.015	67.455#	0.450	149.9	0.016	0.00	0.0	0.600	o	525	
1.016	11.110#	0.080	138.9	0.000	0.00	0.0	0.600	o	525	
1.017	35.286#	0.180	196.0	0.000	0.00	0.0	0.600	o	525	
28.000	29.177#	0.300	97.3	0.047	5.00	0.0	0.600	o	300	
28.001	10.806#	0.370	29.2	0.100	0.00	0.0	0.600	o	300	
28.002	7.249#	0.075	96.7	0.062	0.00	0.0	0.600	o	150	
1.018	24.253#	0.080	303.2	0.010	0.00	0.0	0.600	o	525	
1.019	14.210#	0.050	284.2	0.000	0.00	0.0	0.600	o	525	
29.000	58.534#	0.240	243.9	0.020	5.00	0.0	0.600	o	300	

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)
26.000	0.00	5.24	120.640	0.180	0.0	0.0	0.0	2.03	143.2	0.0
26.001	0.00	5.29	120.160	0.180	0.0	0.0	0.0	1.57	111.1	0.0
1.013	0.00	11.17	119.810	5.898	0.0	0.0	0.0	2.13	1204.2	0.0
27.000	0.00	5.58	120.050	0.180	0.0	0.0	0.0	1.04	73.4	0.0
27.001	0.00	5.60	119.890	0.180	0.0	0.0	0.0	2.12	149.8	0.0
1.014	0.00	11.27	119.625	6.078	0.0	0.0	0.0	1.84	399.2	0.0
1.015	0.00	11.88	119.550	6.094	0.0	0.0	0.0	1.83	395.6	0.0
1.016	0.00	11.98	119.100	6.094	0.0	0.0	0.0	1.90	411.1	0.0
1.017	0.00	12.35	119.020	6.094	0.0	0.0	0.0	1.60	345.5	0.0
28.000	0.00	5.30	119.960	0.047	0.0	0.0	0.0	1.59	112.7	0.0
28.001	0.00	5.37	119.660	0.147	0.0	0.0	0.0	2.92	206.4	0.0
28.002	0.00	5.48	119.290	0.209	0.0	0.0	0.0	1.02	18.1	0.0
1.018	0.00	12.66	118.840	6.313	0.0	0.0	0.0	1.28	277.3	0.0
1.019	0.00	12.84	118.760	6.313	0.0	0.0	0.0	1.32	286.5	0.0
29.000	0.00	5.97	120.500	0.020	0.0	0.0	0.0	1.00	70.8	0.0

Network Design Table for SW EAST PROPOSED 23.07.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
30.000	1.000#	0.020	50.0	0.000	5.00	0.0	0.600	o	100	
30.001	6.850#	0.640	10.7	0.086	0.00	0.0	0.600	o	150	
29.001	15.239#	0.070	217.7	0.000	0.00	0.0	0.600	o	300	
29.002	39.100#	0.270	144.8	0.030	0.00	0.0	0.600	o	300	
29.003	51.933#	0.355	146.3	0.068	0.00	0.0	0.600	o	300	
31.000	10.000	0.040	250.0	0.066	5.00	0.0	0.600	o	300	
31.001	3.130	0.029	107.9	0.000	0.00	0.0	0.600	o	225	
31.002	42.106	0.506	83.2	0.018	0.00	0.0	0.600	o	375	
31.003	27.683	0.835	33.2	0.000	0.00	0.0	0.600	oo	-3	
32.000	37.040#	0.170	217.9	0.053	5.00	0.0	0.600	o	225	
32.001	11.190#	0.165	67.8	0.000	0.00	0.0	0.600	o	300	
29.004	20.452#	0.630	32.5	0.020	0.00	0.0	0.600	o	375	
1.020	11.100#	0.250	44.4	0.070	0.00	0.0	0.600	o	525	
33.000	16.507#	0.829	19.9	0.050	5.00	0.0	0.600	o	225	
1.021	65.237#	1.440	45.3	0.000	0.00	0.0	0.600	o	525	

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)
30.000	0.00	5.02	121.120	0.000	0.0	0.0	0.0	1.09	8.6	0.0
30.001	0.00	5.05	121.050	0.086	0.0	0.0	0.0	3.10	54.7	0.0
29.001	0.00	6.21	120.260	0.106	0.0	0.0	0.0	1.06	75.0	0.0
29.002	0.00	6.71	120.190	0.136	0.0	0.0	0.0	1.30	92.2	0.0
29.003	0.00	7.38	119.920	0.204	0.0	0.0	0.0	1.30	91.7	0.0
31.000	0.00	5.17	121.200	0.066	0.0	0.0	0.0	0.99	70.0	0.0
31.001	0.00	5.21	121.160	0.066	0.0	0.0	0.0	1.26	50.0	0.0
31.002	0.00	5.56	120.981	0.084	0.0	0.0	0.0	1.99	219.5	0.0
31.003	0.00	5.77	120.475	0.084	0.0	0.0	0.0	2.28	182.4	0.0
32.000	0.00	5.70	119.900	0.053	0.0	0.0	0.0	0.88	35.1	0.0
32.001	0.00	5.80	119.655	0.053	0.0	0.0	0.0	1.91	135.1	0.0
29.004	0.00	7.49	119.490	0.361	0.0	0.0	0.0	3.19	352.3	0.0
1.020	0.00	12.90	118.710	6.744	0.0	0.0	0.0	3.37	729.1	0.0
33.000	0.00	5.09	119.589	0.050	0.0	0.0	0.0	2.95	117.1	0.0
1.021	0.00	13.22	118.460	6.794	0.0	0.0	0.0	3.33	721.8	0.0

Network Design Table for SW EAST PROPOSED 23.07.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.022	7.970#	0.030	265.7	0.033	0.00	0.0	0.600	o	525	
1.023	49.110#	0.190	258.5	0.000	0.00	0.0	0.600	o	600	
34.000	43.403#	0.550	78.9	0.030	5.00	0.0	0.600	o	100	
34.001	15.654#	0.110	142.3	0.012	0.00	0.0	0.600	o	150	
34.002	25.507#	0.170	150.0	0.066	0.00	0.0	0.600	o	150	
34.003	14.388#	0.100	143.9	0.043	0.00	0.0	0.600	o	150	
35.000	32.387#	0.217	149.2	0.017	5.00	0.0	0.600	o	150	
35.001	14.350#	0.096	149.5	0.036	0.00	0.0	0.600	o	150	
35.002	42.417#	1.167	36.3	0.000	0.00	0.0	0.600	o	150	
34.004	16.920#	0.120	141.0	0.088	0.00	0.0	0.600	o	150	
34.005	29.021#	0.200	145.1	0.180	0.00	0.0	0.600	o	150	
34.006	29.194#	0.200	146.0	0.037	0.00	0.0	0.600	o	150	
34.007	4.919#	0.038	129.4	0.047	0.00	0.0	0.600	o	150	
34.008	4.903#	0.038	129.0	0.002	0.00	0.0	0.600	o	150	
36.000	21.931#	0.327	67.1	0.019	5.00	0.0	0.600	o	100	
36.001	20.176#	0.324	62.3	0.012	0.00	0.0	0.600	o	150	
36.002	14.181#	0.226	62.7	0.012	0.00	0.0	0.600	o	150	
36.003	22.288#	0.800	27.9	0.000	0.00	0.0	0.600	o	150	

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)
1.022	0.00	13.32	117.020	6.827	0.0	0.0	0.0	1.37	296.4	0.0
1.023	0.00	13.86	115.470	6.827	0.0	0.0	0.0	1.51	426.9	0.0
34.000	0.00	5.83	121.700	0.030	0.0	0.0	0.0	0.87	6.8	0.0
34.001	0.00	6.14	121.150	0.042	0.0	0.0	0.0	0.84	14.8	0.0
34.002	0.00	6.66	121.040	0.108	0.0	0.0	0.0	0.82	14.5	0.0
34.003	0.00	6.95	120.870	0.151	0.0	0.0	0.0	0.84	14.8	0.0
35.000	0.00	5.66	122.250	0.017	0.0	0.0	0.0	0.82	14.5	0.0
35.001	0.00	5.95	122.033	0.053	0.0	0.0	0.0	0.82	14.5	0.0
35.002	0.00	6.37	121.937	0.053	0.0	0.0	0.0	1.67	29.6	0.0
34.004	0.00	7.29	120.770	0.292	0.0	0.0	0.0	0.84	14.9	0.0
34.005	0.00	7.87	120.650	0.472	0.0	0.0	0.0	0.83	14.7	0.0
34.006	0.00	8.45	120.450	0.509	0.0	0.0	0.0	0.83	14.7	0.0
34.007	0.00	8.55	120.250	0.556	0.0	0.0	0.0	0.88	15.6	0.0
34.008	0.00	8.64	120.212	0.558	0.0	0.0	0.0	0.88	15.6	0.0
36.000	0.00	5.39	121.851	0.019	0.0	0.0	0.0	0.94	7.4	0.0
36.001	0.00	5.65	121.524	0.031	0.0	0.0	0.0	1.28	22.6	0.0
36.002	0.00	5.84	121.200	0.043	0.0	0.0	0.0	1.27	22.5	0.0
36.003	0.00	6.03	120.974	0.043	0.0	0.0	0.0	1.91	33.8	0.0

Network Design Table for SW EAST PROPOSED 23.07.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
34.009	17.551#	0.119	147.5	0.020	0.00	0.0	0.600	o	150	
37.000	29.924#	0.395	75.8	0.108	5.00	0.0	0.600	o	150	
37.001	28.247#	0.250	113.0	0.037	0.00	0.0	0.600	o	150	
37.002	14.417#	0.195	73.9	0.017	0.00	0.0	0.600	o	150	
38.000	37.779#	0.329	114.8	0.023	5.00	0.0	0.600	o	100	
38.001	27.973#	0.669	41.8	0.018	0.00	0.0	0.600	o	150	
38.002	42.507#	0.133	319.6	0.266	0.00	0.0	0.600	o	225	
37.003	12.673#	0.555	22.8	0.048	0.00	0.0	0.600	o	225	
37.004	10.364#	0.110	94.2	0.062	0.00	0.0	0.600	o	225	
37.005	27.312#	0.029	941.8	0.069	0.00	0.0	0.600	o	300	
34.010	24.204#	0.169	143.2	0.066	0.00	0.0	0.600	o	300	
39.000	13.405#	0.060	223.4	0.060	5.00	0.0	0.600	o	300	
39.001	13.405#	0.050	268.1	0.000	0.00	0.0	0.600	o	300	
39.002	35.413#	0.140	253.0	0.000	0.00	0.0	0.600	o	300	
39.003	11.912#	0.050	238.2	0.000	0.00	0.0	0.600	o	300	
39.004	17.270#	0.064	269.8	0.000	0.00	0.0	0.600	o	300	

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)
34.009	0.00	8.99	120.174	0.621	0.0	0.0	0.0	0.83	14.6	0.0
37.000	0.00	5.43	121.665	0.108	0.0	0.0	0.0	1.16	20.4	0.0
37.001	0.00	5.93	121.270	0.145	0.0	0.0	0.0	0.94	16.7	0.0
37.002	0.00	6.13	121.020	0.162	0.0	0.0	0.0	1.17	20.7	0.0
38.000	0.00	5.88	121.880	0.023	0.0	0.0	0.0	0.72	5.6	0.0
38.001	0.00	6.18	121.551	0.041	0.0	0.0	0.0	1.56	27.6	0.0
38.002	0.00	7.15	120.882	0.307	0.0	0.0	0.0	0.73	28.9	0.0
37.003	0.00	7.23	120.749	0.517	0.0	0.0	0.0	2.75	109.3	0.0
37.004	0.00	7.36	120.194	0.579	0.0	0.0	0.0	1.35	53.6	0.0
37.005	0.00	8.26	120.084	0.648	0.0	0.0	0.0	0.50	35.6	0.0
34.010	0.00	9.30	120.055	1.335	0.0	0.0	0.0	1.31	92.7	0.0
39.000	0.00	5.21	120.250	0.060	0.0	0.0	0.0	1.05	74.1	0.0
39.001	0.00	5.45	120.190	0.060	0.0	0.0	0.0	0.96	67.5	0.0
39.002	0.00	6.05	120.140	0.060	0.0	0.0	0.0	0.98	69.6	0.0
39.003	0.00	6.24	120.000	0.060	0.0	0.0	0.0	1.01	71.7	0.0
39.004	0.00	6.54	119.950	0.060	0.0	0.0	0.0	0.95	67.3	0.0

Network Design Table for SW EAST PROPOSED 23.07.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
34.011	115.388#	2.913	39.6	0.208	0.00	0.0	0.600	o	300	
34.012	3.690#	0.303	12.2	0.050	0.00	0.0	0.600	o	300	
40.000	77.000#	1.680	45.8	0.094	5.00	0.0	0.600	o	225	
34.013	25.956#	1.090	23.8	0.000	0.00	0.0	0.600	o	300	
1.024	34.847#	0.120	290.4	0.036	0.00	0.0	0.600	o	600	
41.000	24.960#	0.060	416.0	0.074	5.00	0.0	0.600	o	525	
41.001	18.620#	0.050	372.4	0.038	0.00	0.0	0.600	o	525	
41.002	8.190#	0.020	409.5	0.080	0.00	0.0	0.600	o	525	
42.000	13.685#	0.140	97.8	0.028	5.00	0.0	0.600	o	150	
42.001	13.515#	0.185	73.1	0.030	0.00	0.0	0.600	o	150	
42.002	32.988#	0.400	82.5	0.013	0.00	0.0	0.600	o	225	
42.003	7.171#	0.050	143.4	0.000	0.00	0.0	0.600	o	225	
42.004	15.504#	0.150	103.4	0.010	0.00	0.0	0.600	o	225	
42.005	12.485#	0.120	104.0	0.005	0.00	0.0	0.600	o	225	
42.006	18.239#	0.170	107.3	0.005	0.00	0.0	0.600	o	225	
42.007	31.070#	1.190	26.1	0.040	0.00	0.0	0.600	o	225	

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)
34.011	0.00	10.07	119.886	1.603	0.0	0.0	0.0	2.51	177.1	0.0
34.012	0.00	10.08	116.973	1.653	0.0	0.0	0.0	4.53	320.2	0.0
40.000	0.00	5.66	118.425	0.094	0.0	0.0	0.0	1.94	77.0	0.0
34.013	0.00	10.22	116.670	1.747	0.0	0.0	0.0	3.24	228.7	0.0
1.024	0.00	14.27	115.280	8.610	0.0	0.0	0.0	1.42	402.6	0.0
41.000	0.00	5.38	115.420	0.074	0.0	0.0	0.0	1.09	236.4	0.0
41.001	0.00	5.65	115.360	0.112	0.0	0.0	0.0	1.15	250.0	0.0
41.002	0.00	5.77	115.310	0.192	0.0	0.0	0.0	1.10	238.3	0.0
42.000	0.00	5.22	119.600	0.028	0.0	0.0	0.0	1.02	18.0	0.0
42.001	0.00	5.42	119.460	0.058	0.0	0.0	0.0	1.18	20.8	0.0
42.002	0.00	5.80	119.200	0.071	0.0	0.0	0.0	1.44	57.3	0.0
42.003	0.00	5.91	118.800	0.071	0.0	0.0	0.0	1.09	43.3	0.0
42.004	0.00	6.11	118.750	0.081	0.0	0.0	0.0	1.29	51.1	0.0
42.005	0.00	6.27	118.600	0.086	0.0	0.0	0.0	1.28	51.0	0.0
42.006	0.00	6.51	118.480	0.091	0.0	0.0	0.0	1.26	50.2	0.0
42.007	0.00	6.71	118.310	0.131	0.0	0.0	0.0	2.57	102.2	0.0

Network Design Table for SW EAST PROPOSED 23.07.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
42.008	4.394#	0.445	9.9	0.030	0.00	0.0	0.600	o	225	
43.000	12.990#	0.125	103.9	0.018	5.00	0.0	0.600	o	225	
44.000	14.165#	0.750	18.9	0.050	5.00	0.0	0.600	o	150	
42.009	20.164#	0.200	100.8	0.025	0.00	0.0	0.600	o	300	
42.010	17.357#	0.325	53.4	0.010	0.00	0.0	0.600	o	300	
42.011	8.051#	0.050	161.0	0.014	0.00	0.0	0.600	o	525	
42.012	22.785#	0.280	81.4	0.017	0.00	0.0	0.600	o	525	
42.013	19.464#	0.230	84.6	0.017	0.00	0.0	0.600	o	525	
41.003	17.590#	0.050	351.8	0.040	0.00	0.0	0.600	o	525	
41.004	2.690#	0.080	33.6	0.018	0.00	0.0	0.600	o	300	
45.000	10.459#	0.935	11.2	0.000	5.00	0.0	0.600	o	225	
46.000	89.850#	1.360	66.1	0.100	5.00	0.0	0.600	o	225	
46.001	78.149#	1.195	65.4	0.047	0.00	0.0	0.600	o	225	
45.001	21.683#	1.660	13.1	0.011	0.00	0.0	0.600	o	225	

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)
42.008	0.00	6.73	117.120	0.161	0.0	0.0	0.0	4.19	166.5	0.0
43.000	0.00	5.17	116.800	0.018	0.0	0.0	0.0	1.28	51.0	0.0
44.000	0.00	5.10	117.500	0.050	0.0	0.0	0.0	2.33	41.1	0.0
42.009	0.00	6.94	116.600	0.254	0.0	0.0	0.0	1.57	110.7	0.0
42.010	0.00	7.08	116.400	0.264	0.0	0.0	0.0	2.16	152.4	0.0
42.011	0.00	7.15	115.850	0.278	0.0	0.0	0.0	1.76	381.6	0.0
42.012	0.00	7.31	115.800	0.295	0.0	0.0	0.0	2.48	537.8	0.0
42.013	0.00	7.44	115.520	0.312	0.0	0.0	0.0	2.44	527.4	0.0
41.003	0.00	7.69	115.290	0.544	0.0	0.0	0.0	1.19	257.3	0.0
41.004	0.00	7.70	115.240	0.562	0.0	0.0	0.0	2.72	192.3	0.0
45.000	0.00	5.04	118.130	0.000	0.0	0.0	0.0	3.93	156.4	0.0
46.000	0.00	5.93	119.750	0.100	0.0	0.0	0.0	1.61	64.1	0.0
46.001	0.00	6.73	118.390	0.147	0.0	0.0	0.0	1.62	64.4	0.0
45.001	0.00	6.83	117.195	0.158	0.0	0.0	0.0	3.64	144.7	0.0

Network Design Table for SW EAST PROPOSED 23.07.13.SWS

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.025	66.440#	0.130	511.1	0.036	0.00	0.0	0.600	o	600	
47.000	16.000#	0.970	16.5	0.009	5.00	0.0	0.600	o	150	
1.026	18.703#	0.030	623.4	0.021	0.00	0.0	0.600	o	750	
48.000	103.884#	0.570	182.3	0.083	5.00	0.0	0.600	o	225	
48.001	114.526#	0.520	220.2	0.155	0.00	0.0	0.600	o	300	
48.002	23.331#	0.111	210.2	0.046	0.00	0.0	0.600	o	300	
48.003	11.890#	2.624	4.5	0.005	0.00	0.0	0.600	o	300	
1.027	143.569#	0.270	532.0	0.030	0.00	0.0	0.600	o	750	
1.028	15.344#	0.040	383.6	0.000	0.00	0.0	0.600	oo	44	
1.029	2.088#	0.070	29.8	0.000	0.00	0.0	0.600	o	450	
1.030	3.000	0.030	100.0	0.000	0.00	0.0	0.600	o	450	
1.031	8.282	0.110	75.3	0.000	0.00	0.0	0.600	o	450	

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)
1.025	0.00	15.30	115.160	9.366	0.0	0.0	0.0	1.07	302.6	0.0
47.000	0.00	5.11	118.000	0.009	0.0	0.0	0.0	2.49	44.0	0.0
1.026	0.00	15.58	115.030	9.396	0.0	0.0	0.0	1.11	491.9	0.0
48.000	0.00	6.79	119.350	0.083	0.0	0.0	0.0	0.97	38.4	0.0
48.001	0.00	8.60	118.705	0.238	0.0	0.0	0.0	1.06	74.6	0.0
48.002	0.00	8.96	118.185	0.284	0.0	0.0	0.0	1.08	76.4	0.0
48.003	0.00	8.99	118.074	0.289	0.0	0.0	0.0	7.43	525.5	0.0
1.027	0.00	17.57	115.000	9.715	0.0	0.0	0.0	1.21	532.9	0.0
1.028	0.00	17.79	114.730	9.715	0.0	0.0	0.0	1.14	492.6	0.0
1.029	0.00	17.80	114.590	9.715	0.0	0.0	0.0	3.73	593.8	0.0
1.030	0.00	17.83	114.520	9.715	0.0	0.0	0.0	2.03	323.4	0.0
1.031	0.00	17.88	114.290	9.715	0.0	0.0	0.0	2.35	373.0	0.0

Free Flowing Outfall Details for SW EAST PROPOSED 23.07.13.SWS

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.031	27	115.000	114.180	0.000	0	0

Simulation Criteria for SW EAST PROPOSED 23.07.13.SWS

Volumetric Runoff Coeff	0.840	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	1.000
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 Storage Structures	27
Number of Online Controls	17	Number of Time/Area Diagrams	0
Number of Offline Controls	1	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
Site Location GB 450500 225250 SP 50500 25250	
C (1km)	-0.023
D1 (1km)	0.328
D2 (1km)	0.309
D3 (1km)	0.264
E (1km)	0.292
F (1km)	2.461
Summer Storms	No
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Storm Duration (mins)	15

Online Controls for SW EAST PROPOSED 23.07.13.SWS

Orifice Manhole: 314 (D2b), DS/PN: 6.001, Volume (m³): 5.7

Diameter (m) 0.059 Discharge Coefficient 0.600 Invert Level (m) 123.000

Orifice Manhole: 319 (D2b), DS/PN: 7.001, Volume (m³): 4.8

Diameter (m) 0.020 Discharge Coefficient 0.600 Invert Level (m) 122.090

Orifice Manhole: 47 (B4b), DS/PN: 11.001, Volume (m³): 6.2

Diameter (m) 0.160 Discharge Coefficient 0.600 Invert Level (m) 123.200

Hydro-Brake® Manhole: 311 (D3b), DS/PN: 15.008, Volume (m³): 6.4

Design Head (m) 1.700 Hydro-Brake® Type Md6 SW Only Invert Level (m) 121.360
Design Flow (l/s) 80.7 Diameter (mm) 318

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	10.3	1.200	79.9	3.000	100.2	7.000	152.6
0.200	29.8	1.400	79.0	3.500	108.0	7.500	158.0
0.300	51.2	1.600	79.7	4.000	115.4	8.000	163.2
0.400	69.5	1.800	81.6	4.500	122.4	8.500	168.2
0.500	81.0	2.000	84.2	5.000	129.0	9.000	173.1
0.600	85.0	2.200	87.2	5.500	135.3	9.500	177.8
0.800	85.5	2.400	90.4	6.000	141.3		
1.000	82.6	2.600	93.6	6.500	147.1		

Pre-initialised control selected, excessive flows may result.

Orifice Manhole: 76 (B4a), DS/PN: 20.001, Volume (m³): 7.3

Diameter (m) 0.150 Discharge Coefficient 0.600 Invert Level (m) 121.470

Orifice Manhole: 78 (B4a), DS/PN: 21.001, Volume (m³): 8.6

Diameter (m) 0.147 Discharge Coefficient 0.600 Invert Level (m) 122.100

Orifice Manhole: 320 (D2b), DS/PN: 22.001, Volume (m³): 4.7

Diameter (m) 0.130 Discharge Coefficient 0.600 Invert Level (m) 121.620

Orifice Manhole: 91 (D2c), DS/PN: 24.001, Volume (m³): 5.9

Diameter (m) 0.079 Discharge Coefficient 0.600 Invert Level (m) 121.625

Orifice Manhole: 94 (D2c), DS/PN: 25.001, Volume (m³): 6.8

Diameter (m) 0.069 Discharge Coefficient 0.600 Invert Level (m) 121.165

Orifice Manhole: 116, DS/PN: 26.001, Volume (m³): 7.4

Diameter (m) 0.020 Discharge Coefficient 0.600 Invert Level (m) 120.160

Orifice Manhole: 119, DS/PN: 27.001, Volume (m³): 8.3

Diameter (m) 0.020 Discharge Coefficient 0.600 Invert Level (m) 119.890

Hydro-Brake® Manhole: 12a, DS/PN: 1.014, Volume (m³): 24.2

Design Head (m) 1.450 Hydro-Brake® Type Md10 Invert Level (m) 119.625
Design Flow (l/s) 440.0 Diameter (mm) 511

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	19.4	1.200	394.8	3.000	630.9	7.000	963.8
0.200	49.9	1.400	431.0	3.500	681.5	7.500	997.6
0.300	85.4	1.600	460.8	4.000	728.5	8.000	1030.3
0.400	123.5	1.800	488.7	4.500	772.7	8.500	1062.0
0.500	162.6	2.000	515.2	5.000	814.5	9.000	1092.8
0.600	201.7	2.200	540.3	5.500	854.3	9.500	1122.8
0.800	276.5	2.400	564.3	6.000	892.3		
1.000	342.3	2.600	587.4	6.500	928.7		

Orifice Manhole: 115 (D1a), DS/PN: 28.002, Volume (m³): 6.0

Diameter (m) 0.055 Discharge Coefficient 0.600 Invert Level (m) 119.290

Orifice Manhole: Private (D3b), DS/PN: 30.001, Volume (m³): 0.3

Diameter (m) 0.020 Discharge Coefficient 0.600 Invert Level (m) 121.050

Orifice Manhole: 99b (D1c), DS/PN: 31.001, Volume (m³): 3.0

Diameter (m) 0.050 Discharge Coefficient 0.600 Invert Level (m) 121.160

Orifice Manhole: 97 (D1c), DS/PN: 32.001, Volume (m³): 4.0

Diameter (m) 0.050 Discharge Coefficient 0.600 Invert Level (m) 119.730

Hydro-Brake® Manhole: 16 (D1b), DS/PN: 41.004, Volume (m³): 14.1

Design Head (m) 1.200 Hydro-Brake® Type Md6 SW Only Invert Level (m) 115.240
Design Flow (l/s) 69.0 Diameter (mm) 300

Hydro-Brake® Manhole: 16 (D1b), DS/PN: 41.004, Volume (m³): 14.1

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	9.8	1.200	68.6	3.000	89.1	7.000	135.9
0.200	28.0	1.400	68.4	3.500	96.1	7.500	140.6
0.300	47.4	1.600	69.6	4.000	102.7	8.000	145.2
0.400	63.1	1.800	71.7	4.500	108.9	8.500	149.7
0.500	71.6	2.000	74.3	5.000	114.8	9.000	154.0
0.600	74.0	2.200	77.2	5.500	120.4	9.500	158.3
0.800	73.5	2.400	80.1	6.000	125.8		
1.000	70.5	2.600	83.2	6.500	130.9		

Pre-initialised control selected, excessive flows may result.

Offline Controls for SW EAST PROPOSED 23.07.13.SWS

Pipe Manhole: Ex MH, DS/PN: 33.000, Loop to PN: None

Diameter (m)	0.225	Roughness k (mm)	0.600
Section Type	Pipe/Conduit	Entry Loss Coefficient	0.500
Slope (1:X)	50.0	Coefficient of Contraction	0.600
Length (m)	77.412	Upstream Invert Level (m)	119.589

Storage Structures for SW EAST PROPOSED 23.07.13.SWS

Tank or Pond Manhole: 314 (D2b), DS/PN: 6.001

Invert Level (m) 123.000

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	39.0	1.000	39.0	1.001	0.0

Tank or Pond Manhole: 319 (D2b), DS/PN: 7.001

Invert Level (m) 122.090

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	40.0	1.000	40.0	1.001	0.0

Tank or Pond Manhole: 47 (B4b), DS/PN: 11.001

Invert Level (m) 123.800

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	60.0	1.000	60.0	1.001	0.0

Tank or Pond Manhole: 308 (D3b), DS/PN: 15.006

Invert Level (m) 121.450

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	162.0	1.000	162.0	1.001	0.0

Tank or Pond Manhole: 311 (D3b), DS/PN: 15.008

Invert Level (m) 121.360

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	175.5	1.000	175.5	1.001	0.0

Tank or Pond Manhole: 76 (B4a), DS/PN: 20.001

Invert Level (m) 121.780

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	65.0	1.200	65.0	1.201	0.0

Porous Car Park Manhole: 77 (B4a), DS/PN: 21.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	13.6
Membrane Percolation (mm/hr)	1000	Length (m)	118.0
Max Percolation (l/s)	445.8	Slope (1:X)	200.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	5
Invert Level (m)	123.550	Cap Volume Depth (m)	0.000

Tank or Pond Manhole: 78 (B4a), DS/PN: 21.001

Invert Level (m) 122.200

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	20.0	1.000	20.0	1.001	0.0

Tank or Pond Manhole: 320 (D2b), DS/PN: 22.001

Invert Level (m) 121.620

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	238.0	0.500	238.0	0.501	0.0

Tank or Pond Manhole: 91 (D2c), DS/PN: 24.001

Invert Level (m) 121.850

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	72.0	1.200	72.0	1.201	0.0

Tank or Pond Manhole: 94a (D2c), DS/PN: 25.000

Invert Level (m) 121.490

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	18.0	0.500	18.0	0.501	0.0

Tank or Pond Manhole: 94 (D2c), DS/PN: 25.001

Invert Level (m) 121.390

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	36.0	1.200	36.0	1.201	0.0

Tank or Pond Manhole: 116, DS/PN: 26.001

Invert Level (m) 120.160

Tank or Pond Manhole: 116, DS/PN: 26.001

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	108.5	1.200	108.5	1.201	0.0

Tank or Pond Manhole: 119, DS/PN: 27.001

Invert Level (m) 119.890

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	104.0	1.200	104.0	1.201	0.0

Tank or Pond Manhole: 12a, DS/PN: 1.014

Invert Level (m) 119.690

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	420.5	1.200	420.5	1.201	0.0

Tank or Pond Manhole: 121, DS/PN: 28.001

Invert Level (m) 119.660

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	60.0	0.500	60.0	0.501	0.0

Tank or Pond Manhole: 115 (D1a), DS/PN: 28.002

Invert Level (m) 119.290

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	57.5	0.800	57.5	0.801	0.0

Porous Car Park Manhole: Private (D3b), DS/PN: 30.001

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	12.7
Membrane Percolation (mm/hr)	1000	Length (m)	30.0
Max Percolation (l/s)	105.8	Slope (1:X)	100.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	5
Invert Level (m)	121.050	Cap Volume Depth (m)	0.000

Tank or Pond Manhole: 99b (D1c), DS/PN: 31.001

Invert Level (m) 121.160

Tank or Pond Manhole: 99b (D1c), DS/PN: 31.001

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	25.0	0.500	25.0	0.501	0.0

Tank or Pond Manhole: 97 (D1c), DS/PN: 32.001

Invert Level (m) 120.080

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	102.0	0.400	102.0	0.401	0.0

Complex Manhole: 18 (D1b), DS/PN: 41.000

Tank or Pond

Invert Level (m) 115.420

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	192.0	0.801	0.0	1.350	0.0
0.800	192.0	1.349	0.0	1.470	75.0

Porous Car Park

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	8.5
Membrane Percolation (mm/hr)	1000	Length (m)	55.0
Max Percolation (l/s)	129.9	Slope (1:X)	350.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.33	Evaporation (mm/day)	5
Invert Level (m)	116.420	Cap Volume Depth (m)	0.000

Tank or Pond Manhole: 19 (D1b), DS/PN: 41.001

Invert Level (m) 115.360

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	0.0	1.440	0.0	1.560	38.0

Tank or Pond Manhole: 20 (D1b), DS/PN: 41.002

Invert Level (m) 115.310

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	70.0	0.800	70.0	0.801	0.0

Tank or Pond Manhole: 12 (D1b), DS/PN: 42.011

Invert Level (m) 115.850

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	23.0	0.800	23.0	0.801	0.0

Tank or Pond Manhole: 15 (D1b), DS/PN: 41.003

Invert Level (m) 115.290

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	25.0	0.800	25.0	0.801	0.0

Tank or Pond Manhole: 21, DS/PN: 1.026

Invert Level (m) 115.030

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	52.0	2.000	52.0	2.001	0.0

Tank or Pond Manhole: Pond, DS/PN: 1.029

Invert Level (m) 114.590

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	547.7	0.940	813.2

Summary of Critical Results by Maximum Level (Rank 1) for SW EAST PROPOSED 23.07.13.SWS

Simulation Criteria

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

Number of Input Hydrographs	0	Number of Storage Structures	27
Number of Online Controls	17	Number of Time/Area Diagrams	0
Number of Offline Controls	1	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
Site Location GB 450500 225250 SP 50500 25250	
C (1km)	-0.023
D1 (1km)	0.328
D2 (1km)	0.309
D3 (1km)	0.264
E (1km)	0.292
F (1km)	2.461
Cv (Summer)	0.750
Cv (Winter)	0.840

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

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

PN	Storm	Return Period	Climate Change	First X Surcharge	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
1.000	15 Winter	100	+30%	100/15 Summer	100/15 Summer			8
1.001	15 Winter	100	+30%	100/15 Summer	100/15 Summer			4
1.002	15 Winter	100	+30%	100/15 Summer	100/15 Summer			7
1.003	30 Winter	100	+30%	100/15 Summer	100/15 Summer			8
1.004	15 Winter	100	+30%	100/15 Summer				
2.000	30 Winter	100	+30%	100/15 Summer	100/15 Summer			9
2.001	15 Winter	100	+30%	100/15 Summer	100/15 Summer			7
3.000	30 Winter	100	+30%	100/15 Summer	100/15 Summer			10
3.001	15 Winter	100	+30%	100/15 Summer	100/15 Summer			6
4.000	15 Winter	100	+30%	100/15 Summer	100/15 Summer			3
2.002	15 Winter	100	+30%	100/15 Summer	100/15 Summer			3
2.003	15 Summer	100	+30%	100/15 Summer				
2.004	15 Winter	100	+30%	100/15 Summer				
2.005	15 Summer	100	+30%	100/15 Summer				

Summary of Critical Results by Maximum Level (Rank 1) for SW EAST PROPOSED 23.07.13.SWS

PN	Storm	Return Period	Climate Change	First X Surcharge	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
5.000	30 Winter	100	+30%	100/15 Summer	100/15 Summer			9
2.006	15 Winter	100	+30%	100/15 Summer	100/15 Summer			4
1.005	60 Winter	100	+30%	100/15 Summer	100/15 Summer			11
1.006	15 Winter	100	+30%	100/15 Summer	100/15 Summer			5
6.000	60 Winter	100	+30%	100/15 Summer				
6.001	60 Winter	100	+30%	100/15 Summer				
1.007	15 Winter	100	+30%	100/15 Summer				
7.000	360 Winter	100	+30%	100/15 Summer				
7.001	360 Winter	100	+30%	100/15 Summer				
1.008	15 Winter	100	+30%	100/15 Summer				
8.000	30 Winter	100	+30%	100/15 Summer	100/15 Summer			8
8.001	15 Winter	100	+30%	100/15 Summer	100/15 Summer			6
8.002	15 Winter	100	+30%	100/15 Summer	100/15 Summer			6
9.000	15 Winter	100	+30%	100/15 Summer	100/15 Summer			6
9.001	30 Winter	100	+30%	100/15 Summer	100/15 Summer			6
8.003	15 Winter	100	+30%	100/15 Summer	100/15 Summer			6
10.000	15 Winter	100	+30%	100/15 Summer	100/15 Summer			6
8.004	15 Winter	100	+30%	100/15 Summer	100/15 Summer			2
8.005	120 Winter	100	+30%					
8.006	15 Winter	100	+30%	100/15 Summer				
11.000	15 Winter	100	+30%	100/15 Summer	100/15 Winter			1
11.001	15 Winter	100	+30%	100/15 Summer	100/15 Winter			2
11.002	15 Winter	100	+30%	100/15 Summer				
8.007	15 Winter	100	+30%	100/15 Summer				
12.000	15 Winter	100	+30%	100/15 Summer	100/15 Summer			4
12.001	15 Winter	100	+30%	100/15 Summer	100/15 Summer			8
12.002	15 Winter	100	+30%	100/15 Summer	100/15 Summer			6
12.003	30 Winter	100	+30%	100/15 Summer	100/15 Summer			8
12.004	15 Winter	100	+30%	100/15 Summer	100/15 Summer			4
12.005	15 Winter	100	+30%	100/15 Summer	100/15 Winter			1
13.000	15 Winter	100	+30%	100/15 Summer	100/15 Summer			3
14.000	15 Winter	100	+30%	100/15 Summer	100/15 Summer			2
13.001	15 Summer	100	+30%	100/15 Summer				
12.006	15 Winter	100	+30%	100/15 Summer				
8.008	15 Winter	100	+30%	100/15 Summer				
15.000	15 Winter	100	+30%	100/15 Summer				
15.001	15 Winter	100	+30%	100/15 Summer				
15.002	120 Winter	100	+30%	100/15 Summer				
15.003	120 Winter	100	+30%	100/15 Summer				
15.004	120 Winter	100	+30%	100/30 Summer				
16.000	120 Winter	100	+30%	100/30 Winter				
15.005	120 Winter	100	+30%	100/30 Summer				
15.006	120 Winter	100	+30%	100/15 Winter				
17.000	120 Winter	100	+30%	100/30 Winter				
15.007	120 Winter	100	+30%	100/15 Summer				
15.008	120 Winter	100	+30%	100/15 Summer				
1.009	15 Winter	100	+30%	100/15 Summer				
1.010	60 Winter	100	+30%	100/15 Summer				
18.000	30 Winter	100	+30%	100/15 Summer	100/15 Summer			11
18.001	15 Winter	100	+30%	100/15 Summer	100/15 Summer			4

Summary of Critical Results by Maximum Level (Rank 1) for SW EAST PROPOSED 23.07.13.SWS

PN	Storm	Return Period	Climate Change	First X Surcharge	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
18.002	15 Winter	100	+30%	100/15 Summer	100/15 Summer			9
19.000	15 Winter	100	+30%	100/15 Summer	100/15 Winter			1
19.001	15 Winter	100	+30%	100/15 Summer				
18.003	15 Winter	100	+30%	100/15 Summer	100/15 Winter			1
18.004	15 Winter	100	+30%	100/15 Summer	100/15 Summer			2
18.005	15 Winter	100	+30%	100/15 Summer				
20.000	15 Winter	100	+30%	100/15 Summer				
20.001	15 Winter	100	+30%	100/15 Summer				
18.006	15 Winter	100	+30%	100/15 Summer				
21.000	15 Winter	100	+30%	100/15 Summer				
21.001	15 Winter	100	+30%	100/15 Summer				
21.002	15 Winter	100	+30%	100/15 Summer				
22.000	120 Winter	100	+30%	100/60 Winter				
22.001	120 Winter	100	+30%	100/30 Summer				
21.003	15 Winter	100	+30%	100/15 Summer				
1.011	120 Winter	100	+30%	100/15 Summer	100/30 Winter			5
23.000	60 Winter	100	+30%					
23.001	15 Winter	100	+30%					
23.002	15 Summer	100	+30%					
23.003	15 Summer	100	+30%					
24.000	60 Winter	100	+30%	100/15 Summer	100/15 Winter			4
24.001	60 Winter	100	+30%	100/15 Summer	100/15 Winter			5
23.004	120 Winter	100	+30%	100/15 Winter				
25.000	60 Winter	100	+30%	100/15 Summer	100/30 Winter			3
25.001	60 Winter	100	+30%	100/15 Summer				
23.005	120 Winter	100	+30%	100/15 Summer				
1.012	120 Winter	100	+30%	100/15 Summer				
26.000	960 Winter	100	+30%	100/15 Summer				
26.001	960 Winter	100	+30%	100/15 Summer				
1.013	120 Winter	100	+30%	100/15 Summer				
27.000	960 Winter	100	+30%	100/15 Summer				
27.001	960 Winter	100	+30%	100/15 Summer				
1.014	120 Winter	100	+30%	100/15 Summer	100/30 Winter			5
1.015	120 Winter	100	+30%	100/15 Summer				
1.016	120 Winter	100	+30%	100/15 Summer				
1.017	120 Winter	100	+30%	100/15 Summer				
28.000	120 Winter	100	+30%	100/60 Winter				
28.001	120 Winter	100	+30%	100/15 Summer				
28.002	120 Winter	100	+30%	100/15 Summer				
1.018	120 Winter	100	+30%	100/15 Summer				
1.019	120 Winter	100	+30%	100/15 Summer				
29.000	15 Winter	100	+30%					
30.000	480 Winter	100	+30%	100/15 Summer				
30.001	480 Winter	100	+30%	100/15 Summer				
29.001	15 Winter	100	+30%					
29.002	15 Winter	100	+30%					
29.003	15 Winter	100	+30%					
31.000	30 Winter	100	+30%	100/15 Summer	100/15 Winter			7
31.001	15 Winter	100	+30%	100/15 Summer	100/15 Winter			3
31.002	15 Winter	100	+30%					

Summary of Critical Results by Maximum Level (Rank 1) for SW EAST PROPOSED 23.07.13.SWS

PN	Storm	Return Period	Climate Change	First X Surcharge	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
31.003	15 Winter	100	+30%					
32.000	15 Winter	100	+30%	100/15 Summer				
32.001	30 Winter	100	+30%	100/15 Summer				
29.004	15 Winter	100	+30%					
1.020	120 Winter	100	+30%	100/60 Winter				
33.000	15 Winter	100	+30%			100/15 Summer	18	
1.021	120 Winter	100	+30%					
1.022	120 Winter	100	+30%	100/15 Summer				
1.023	120 Winter	100	+30%	100/15 Summer				
34.000	240 Winter	100	+30%	100/15 Summer	100/15 Summer			15
34.001	120 Winter	100	+30%	100/15 Summer	100/15 Summer			14
34.002	30 Winter	100	+30%	100/15 Summer	100/15 Summer			12
34.003	15 Winter	100	+30%	100/15 Summer	100/15 Summer			6
35.000	15 Winter	100	+30%	100/15 Summer	100/15 Summer			2
35.001	30 Winter	100	+30%	100/15 Summer	100/15 Summer			9
35.002	30 Winter	100	+30%	100/15 Summer				
34.004	30 Winter	100	+30%	100/15 Summer	100/15 Summer			9
34.005	120 Winter	100	+30%	100/15 Summer	100/15 Summer			14
34.006	60 Winter	100	+30%	100/15 Summer	100/15 Summer			11
34.007	15 Winter	100	+30%	100/15 Summer	100/15 Summer			7
34.008	30 Winter	100	+30%	100/15 Summer	100/15 Summer			9
36.000	15 Winter	100	+30%	100/15 Summer	100/15 Summer			4
36.001	15 Winter	100	+30%	100/15 Summer				
36.002	15 Winter	100	+30%	100/15 Summer				
36.003	15 Winter	100	+30%	100/15 Summer				
34.009	15 Winter	100	+30%	100/15 Summer	100/15 Summer			5
37.000	15 Winter	100	+30%	100/15 Summer	100/15 Summer			7
37.001	60 Winter	100	+30%	100/15 Summer	100/15 Summer			8
37.002	30 Winter	100	+30%	100/15 Summer	100/15 Summer			6
38.000	15 Winter	100	+30%	100/15 Summer	100/15 Summer			6
38.001	15 Winter	100	+30%	100/15 Summer				
38.002	15 Winter	100	+30%	100/15 Summer	100/15 Summer			8
37.003	15 Winter	100	+30%	100/15 Summer	100/15 Summer			4
37.004	30 Winter	100	+30%	100/15 Summer	100/15 Summer			8
37.005	15 Winter	100	+30%	100/15 Summer	100/15 Summer			8
34.010	15 Summer	100	+30%	100/15 Summer				
39.000	15 Winter	100	+30%	100/15 Summer	100/15 Summer			4
39.001	15 Summer	100	+30%	100/15 Summer	100/15 Summer			1
39.002	15 Summer	100	+30%	100/15 Summer				
39.003	15 Summer	100	+30%	100/15 Summer				
39.004	15 Winter	100	+30%	100/15 Summer				
34.011	15 Winter	100	+30%	100/15 Summer	100/15 Summer			2
34.012	15 Winter	100	+30%	100/15 Summer				
40.000	15 Winter	100	+30%	100/15 Summer				
34.013	15 Winter	100	+30%	100/15 Summer				
1.024	120 Winter	100	+30%	100/15 Summer				
41.000	120 Winter	100	+30%	100/15 Summer				
41.001	120 Winter	100	+30%	100/15 Summer				
41.002	120 Winter	100	+30%	100/15 Summer				
42.000	15 Winter	100	+30%	100/15 Summer				

Summary of Critical Results by Maximum Level (Rank 1) for SW EAST PROPOSED 23.07.13.SWS

PN	Storm	Return Period	Climate Change	First X Surcharge	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
42.001	15 Winter	100	+30%	100/15 Summer				
42.002	15 Winter	100	+30%	100/15 Summer				
42.003	15 Winter	100	+30%	100/15 Summer				
42.004	15 Winter	100	+30%	100/15 Summer				
42.005	15 Winter	100	+30%	100/15 Summer				
42.006	15 Winter	100	+30%	100/15 Summer				
42.007	15 Winter	100	+30%	100/15 Winter				
42.008	15 Winter	100	+30%	100/15 Summer				
43.000	15 Winter	100	+30%	100/15 Summer				
44.000	15 Winter	100	+30%	100/15 Summer				
42.009	15 Winter	100	+30%	100/15 Summer				
42.010	120 Winter	100	+30%	100/15 Summer				
42.011	120 Winter	100	+30%	100/15 Summer				
42.012	120 Winter	100	+30%	100/15 Summer				
42.013	120 Winter	100	+30%	100/15 Summer				
41.003	120 Winter	100	+30%	100/15 Summer				
41.004	120 Winter	100	+30%	100/15 Summer				
45.000	60 Winter	100	+30%					
46.000	15 Winter	100	+30%	100/15 Summer				
46.001	15 Winter	100	+30%	100/15 Summer				
45.001	15 Winter	100	+30%					
1.025	120 Winter	100	+30%	100/15 Summer				
47.000	15 Winter	100	+30%					
1.026	120 Winter	100	+30%	100/15 Summer				
48.000	15 Winter	100	+30%	100/15 Summer	100/15 Summer			4
48.001	15 Winter	100	+30%	100/15 Summer	100/15 Summer			2
48.002	15 Winter	100	+30%	100/15 Summer				
48.003	15 Winter	100	+30%					
1.027	120 Winter	100	+30%	100/15 Summer				
1.028	120 Winter	100	+30%	100/15 Summer				
1.029	120 Winter	100	+30%	100/15 Summer	100/15 Winter			14
1.030	240 Winter	100	+30%	100/15 Summer	100/120 Summer			6
1.031	240 Winter	100	+30%	100/15 Summer				

PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	Ex MH	127.115	0.865	14.754	1.16	0.0	19.2	FLOOD
1.001	0883	126.930	1.122	6.882	0.92	0.0	49.2	FLOOD
1.002	0810	126.700	1.183	26.246	0.93	0.0	50.4	FLOOD
1.003	0923	126.319	1.254	45.453	1.04	0.0	58.9	FLOOD
1.004	0822	126.459	1.710	0.000	1.71	0.0	77.8	FLOOD RISK
2.000	0961	125.684	0.564	13.698	0.69	0.0	9.8	FLOOD
2.001	0859	125.672	0.832	9.926	0.86	0.0	14.7	FLOOD
3.000	0799	125.736	0.545	25.358	0.50	0.0	12.9	FLOOD
3.001	0797	125.768	0.916	9.392	1.02	0.0	15.9	FLOOD
4.000	0860	126.364	1.320	1.839	1.39	0.0	27.6	FLOOD
2.002	0805	125.814	1.082	2.160	1.01	0.0	40.2	FLOOD
2.003	0825	125.741	1.132	0.000	1.02	0.0	45.4	FLOOD RISK

Summary of Critical Results by Maximum Level (Rank 1) for SW EAST PROPOSED 23.07.13.SWS

PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
2.004	0824	125.637	1.127	0.000	0.89	0.0	44.1	FLOOD RISK
2.005	0804	125.456	1.174	0.000	2.44	0.0	52.0	FLOOD RISK
5.000	0863	125.334	0.835	15.462	0.59	0.0	10.2	FLOOD
2.006	0865	125.315	1.042	1.686	2.44	0.0	50.6	FLOOD
1.005	0816	125.257	1.012	101.243	1.83	0.0	86.4	FLOOD
1.006	0908	125.117	1.305	37.207	1.58	0.0	186.8	FLOOD
6.000	Private (D2b)	123.652	0.252	0.000	0.33	0.0	26.2	SURCHARGED
6.001	314 (D2b)	123.648	0.348	0.000	0.03	0.0	5.0	SURCHARGED
1.007	8	123.317	0.377	0.000	0.45	0.0	193.4	SURCHARGED
7.000	Private (D2b)	123.974	1.574	0.000	0.00	0.0	0.1	FLOOD RISK
7.001	319 (D2b)	123.974	1.734	0.000	0.06	0.0	1.1	FLOOD RISK
1.008	8a	123.054	0.954	0.000	0.56	0.0	196.7	SURCHARGED
8.000	Ex MH	125.744	0.364	34.272	1.27	0.0	20.6	FLOOD
8.001	0991	125.744	0.943	2.892	0.75	0.0	26.4	FLOOD
8.002	0992	125.705	0.967	11.773	0.82	0.0	38.1	FLOOD
9.000	0827	125.597	0.857	7.469	1.05	0.0	16.8	FLOOD
9.001	0826	125.539	0.929	19.114	1.52	0.0	51.0	FLOOD
8.003	0662	125.546	1.306	20.597	1.41	0.0	77.4	FLOOD
10.000	0801	124.984	1.143	15.161	2.14	0.0	29.3	FLOOD
8.004	27	125.253	1.563	2.617	3.18	0.0	103.5	FLOOD
8.005	Ex blind	123.635	0.000	0.000	0.98	0.0	104.1	SURCHARGED*
8.006	0823	124.759	1.554	0.000	1.22	0.0	180.9	FLOOD RISK
11.000	46 (B4b)	125.700	2.100	0.377	2.96	0.0	234.6	FLOOD
11.001	47 (B4b)	125.441	1.941	8.355	0.57	0.0	65.5	FLOOD
11.002	48	124.486	1.196	0.000	0.90	0.0	67.1	SURCHARGED
8.007	41	124.322	1.470	0.000	1.73	0.0	225.2	SURCHARGED
12.000	0666	124.570	1.248	3.433	0.92	0.0	17.3	FLOOD
12.001	0668	124.435	1.284	15.280	2.01	0.0	21.5	FLOOD
12.002	0667	124.381	1.260	6.365	1.98	0.0	25.1	FLOOD
12.003	0930	124.103	1.058	28.019	4.43	0.0	30.7	FLOOD
12.004	0931	124.036	1.023	6.440	2.71	0.0	35.3	FLOOD
12.005	0963	123.899	0.985	0.024	1.42	0.0	51.2	FLOOD
13.000	KO	123.424	0.152	2.412	0.70	0.0	19.6	FLOOD
14.000	KO	123.447	0.152	1.800	0.43	0.0	19.4	FLOOD
13.001	56a	123.475	0.705	0.000	0.33	0.0	25.9	FLOOD RISK
12.006	56 (0927)	123.507	0.964	0.000	1.73	0.0	102.3	FLOOD RISK
8.008	42	123.382	0.932	0.000	0.98	0.0	323.5	SURCHARGED
15.000	301 (D3b)	123.141	0.691	0.000	0.64	0.0	44.6	FLOOD RISK
15.001	302 (D3b)	123.059	0.709	0.000	1.52	0.0	84.4	SURCHARGED
15.002	303 (D3b)	122.973	0.653	0.000	0.52	0.0	33.8	SURCHARGED
15.003	304 (D3b)	122.964	0.754	0.000	0.74	0.0	43.7	SURCHARGED
15.004	305 (D3b)	122.959	0.789	0.000	0.29	0.0	54.1	FLOOD RISK
16.000	306 (D3b)	122.958	0.758	0.000	0.07	0.0	4.0	FLOOD RISK
15.005	307 (D3b)	122.957	0.817	0.000	0.23	0.0	63.1	FLOOD RISK
15.006	308 (D3b)	122.954	0.904	0.000	0.18	0.0	46.6	FLOOD RISK
17.000	309 (D3b)	122.951	0.751	0.000	0.06	0.0	6.0	SURCHARGED
15.007	310 (D3b)	122.950	0.970	0.000	0.22	0.0	47.5	SURCHARGED
15.008	311 (D3b)	122.948	1.138	0.000	0.56	0.0	84.3	SURCHARGED
1.009	9	122.842	1.087	0.000	1.48	0.0	374.6	SURCHARGED

Summary of Critical Results by Maximum Level (Rank 1) for SW EAST PROPOSED 23.07.13.SWS

PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.010	10	122.661	1.056	0.000	1.28	0.0	344.7	FLOOD RISK
18.000	0786	125.283	0.493	22.977	1.30	0.0	7.2	FLOOD
18.001	0785	125.361	0.611	5.905	1.25	0.0	11.2	FLOOD
18.002	0875	125.098	0.536	15.881	1.45	0.0	14.5	FLOOD
19.000	0874	125.339	0.603	0.093	2.40	0.0	14.0	FLOOD
19.001	0885	124.975	0.347	0.000	0.62	0.0	16.9	FLOOD RISK
18.003	0837	124.879	0.805	0.143	1.49	0.0	33.4	FLOOD
18.004	70	124.856	1.276	1.285	1.36	0.0	80.3	FLOOD
18.005	71	124.235	1.135	0.000	0.98	0.0	69.3	FLOOD RISK
20.000	75 (B4a)	123.078	1.088	0.000	0.85	0.0	144.0	FLOOD RISK
20.001	76 (B4a)	123.064	1.294	0.000	0.72	0.0	43.0	SURCHARGED
18.006	72	123.001	1.281	0.000	1.60	0.0	115.2	SURCHARGED
21.000	77 (B4a)	123.900	1.125	0.000	0.66	0.0	116.0	FLOOD RISK
21.001	78 (B4a)	123.879	1.479	0.000	0.57	0.0	54.7	SURCHARGED
21.002	79	123.000	0.810	0.000	1.02	0.0	92.0	SURCHARGED
22.000	Private (D2b)	122.507	0.432	0.000	0.14	0.0	15.6	SURCHARGED
22.001	320 (D2b)	122.506	0.586	0.000	0.25	0.0	22.3	SURCHARGED
21.003	80	122.595	0.805	0.000	1.10	0.0	106.9	SURCHARGED
1.011	11	122.391	1.036	61.151	0.89	0.0	474.4	FLOOD
23.000	83	123.380	-0.375	0.000	0.00	0.0	0.0	OK
23.001	Ex MH	122.657	-0.258	0.000	0.22	0.0	36.3	OK
23.002	Ex MH	122.487	-0.242	0.000	0.27	0.0	36.4	OK
23.003	86	122.384	-0.226	0.000	0.33	0.0	83.2	OK
24.000	Spur (D2c)	124.003	2.033	3.157	1.73	0.0	106.1	FLOOD
24.001	91 (D2c)	123.955	2.180	15.251	1.06	0.0	18.6	FLOOD
23.004	87	122.265	0.710	0.000	0.26	0.0	40.6	SURCHARGED
25.000	94a (D2c)	122.887	1.297	6.943	0.85	0.0	59.3	FLOOD
25.001	94 (D2c)	122.878	1.563	0.000	0.51	0.0	10.4	SURCHARGED
23.005	88	122.161	1.086	0.000	0.18	0.0	39.9	SURCHARGED
1.012	12	122.073	1.463	0.000	0.59	0.0	524.1	SURCHARGED
26.000	115	121.333	0.393	0.000	0.05	0.0	7.0	SURCHARGED
26.001	116	121.332	0.872	0.000	0.01	0.0	0.9	SURCHARGED
1.013	12b	121.921	1.511	0.000	0.61	0.0	522.1	SURCHARGED
27.000	118	121.519	1.169	0.000	0.10	0.0	7.0	SURCHARGED
27.001	119	121.517	1.327	0.000	0.02	0.0	1.1	SURCHARGED
1.014	12a	121.774	1.624	27.632	1.52	0.0	378.1	FLOOD
1.015	13	120.640	0.565	0.000	1.02	0.0	369.6	SURCHARGED
1.016	13a	120.191	0.566	0.000	1.47	0.0	364.4	SURCHARGED
1.017	13b	119.968	0.423	0.000	1.22	0.0	362.0	SURCHARGED
28.000	120	120.949	0.689	0.000	0.09	0.0	9.4	FLOOD RISK
28.001	121	120.947	0.987	0.000	0.13	0.0	19.7	SURCHARGED
28.002	115 (D1a)	120.943	1.503	0.000	0.45	0.0	7.0	SURCHARGED
1.018	13c	119.702	0.337	0.000	1.65	0.0	369.4	SURCHARGED
1.019	14	119.476	0.191	0.000	1.78	0.0	369.4	SURCHARGED
29.000	312 (D3b)	120.597	-0.203	0.000	0.22	0.0	14.7	OK
30.000	Dummy (D3b)	121.652	0.432	0.000	0.00	0.0	0.0	SURCHARGED
30.001	Private (D3b)	121.652	0.452	0.000	0.01	0.0	0.6	SURCHARGED
29.001	313 (D3b)	120.367	-0.193	0.000	0.24	0.0	15.3	OK
29.002	96a	120.331	-0.159	0.000	0.44	0.0	37.3	OK

Summary of Critical Results by Maximum Level (Rank 1) for SW EAST PROPOSED 23.07.13.SWS

PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
29.003	96	120.193	-0.027	0.000	0.99	0.0	85.7	OK
31.000	99a (D1c)	122.104	0.604	3.730	0.60	0.0	33.0	FLOOD
31.001	99b (D1c)	122.104	0.719	0.103	0.17	0.0	5.0	FLOOD
31.002	99 (ex MH)	121.056	-0.300	0.000	0.09	0.0	17.5	OK
31.003	Ex MH	120.520	-0.180	0.000	0.10	0.0	17.3	OK
32.000	96 (D1c)	120.377	0.252	0.000	1.17	0.0	38.8	SURCHARGED
32.001	97 (D1c)	120.217	0.262	0.000	0.03	0.0	3.5	SURCHARGED
29.004	98	119.657	-0.208	0.000	0.41	0.0	120.5	OK
1.020	15	119.250	0.015	0.000	1.07	0.0	411.6	SURCHARGED
33.000	Ex MH	119.662	-0.152	0.000	0.23	14.5	24.2	OK
1.021	16	118.763	-0.222	0.000	0.63	0.0	415.8	OK
1.022	17	117.791	0.246	0.000	2.30	0.0	421.1	SURCHARGED
1.023	18	117.468	1.398	0.000	1.11	0.0	415.5	SURCHARGED
34.000	EX MH	122.331	0.531	30.600	1.40	0.0	9.3	FLOOD
34.001	0704	122.421	1.121	21.277	0.71	0.0	9.8	FLOOD
34.002	EX MH	122.471	1.281	21.465	0.50	0.0	6.9	FLOOD
34.003	1222	122.526	1.506	5.906	0.68	0.0	9.2	FLOOD
35.000	EX MH	122.700	0.300	0.196	0.81	0.0	11.3	FLOOD
35.001	EX MH	122.562	0.379	11.750	0.70	0.0	9.3	FLOOD
35.002	0947	122.541	0.454	0.000	0.31	0.0	8.9	FLOOD RISK
34.004	0703	122.501	1.581	21.339	1.45	0.0	20.1	FLOOD
34.005	1223	122.300	1.500	80.412	1.82	0.0	25.6	FLOOD
34.006	0702	121.966	1.366	15.823	2.03	0.0	28.5	FLOOD
34.007	0701	121.697	1.297	7.338	2.42	0.0	29.5	FLOOD
34.008	0700	121.517	1.155	17.311	2.57	0.0	31.4	FLOOD
36.000	0946	122.283	0.332	1.745	1.28	0.0	9.1	FLOOD
36.001	0943	122.158	0.484	0.000	0.61	0.0	12.9	FLOOD RISK
36.002	0940	122.043	0.693	0.000	1.00	0.0	20.7	FLOOD RISK
36.003	0706	121.814	0.690	0.000	0.64	0.0	20.5	FLOOD RISK
34.009	EX MH	121.485	1.161	4.617	2.62	0.0	35.7	FLOOD
37.000	0698	122.645	0.830	19.137	1.07	0.0	21.0	FLOOD
37.001	1202	122.195	0.775	16.310	1.51	0.0	24.2	FLOOD
37.002	1201	121.871	0.701	5.736	1.63	0.0	31.0	FLOOD
38.000	0937	122.633	0.653	3.475	1.14	0.0	6.3	FLOOD
38.001	0999	122.491	0.790	0.000	0.68	0.0	18.0	FLOOD RISK
38.002	1195	122.184	1.077	55.611	2.02	0.0	55.6	FLOOD
37.003	0998	121.707	0.733	5.174	0.90	0.0	84.9	FLOOD
37.004	0939	121.272	0.853	27.134	1.80	0.0	80.7	FLOOD
37.005	0994	120.959	0.575	68.993	4.30	0.0	105.3	FLOOD
34.010	0995	121.111	0.756	0.000	1.66	0.0	136.9	FLOOD RISK
39.000	S116a	121.156	0.606	5.661	0.66	0.0	40.2	FLOOD
39.001	S11b	121.150	0.660	0.021	0.70	0.0	38.7	FLOOD
39.002	S116c	121.142	0.702	0.000	0.58	0.0	37.1	SURCHARGED
39.003	S116d	121.128	0.828	0.000	0.68	0.0	39.3	SURCHARGED
39.004	S116e	121.118	0.868	0.000	0.77	0.0	44.2	SURCHARGED
34.011	S116	121.108	0.922	0.552	1.03	0.0	177.8	FLOOD
34.012	EX MH	118.669	1.396	0.000	1.38	0.0	190.0	FLOOD RISK
40.000	100	119.275	0.625	0.000	0.84	0.0	62.8	SURCHARGED
34.013	101	118.157	1.187	0.000	1.19	0.0	242.8	SURCHARGED

Summary of Critical Results by Maximum Level (Rank 1) for SW EAST PROPOSED 23.07.13.SWS

PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.024	19	117.262	1.382	0.000	1.76	0.0	592.4	SURCHARGED
41.000	18 (D1b)	116.907	0.962	0.000	0.13	0.0	25.5	FLOOD RISK
41.001	19 (D1b)	116.907	1.022	0.000	0.13	0.0	26.0	FLOOD RISK
41.002	20 (D1b)	116.909	1.074	0.000	0.21	0.0	27.2	SURCHARGED
42.000	1 (D1b)	120.479	0.729	0.000	1.21	0.0	19.9	SURCHARGED
42.001	2 (D1b)	120.282	0.672	0.000	2.09	0.0	39.7	SURCHARGED
42.002	3 (D1b)	119.493	0.068	0.000	0.86	0.0	46.4	SURCHARGED
42.003	4 (D1b)	119.226	0.201	0.000	1.43	0.0	45.0	SURCHARGED
42.004	5 (D1b)	119.128	0.153	0.000	1.09	0.0	49.0	SURCHARGED
42.005	6 (D1b)	118.950	0.125	0.000	1.17	0.0	51.3	SURCHARGED
42.006	7 (D1b)	118.790	0.085	0.000	1.20	0.0	54.0	SURCHARGED
42.007	8 (D1b)	118.579	0.044	0.000	0.79	0.0	75.4	SURCHARGED
42.008	9 (D1b)	117.862	0.517	0.000	1.00	0.0	93.6	SURCHARGED
43.000	17 (D1b)	117.439	0.414	0.000	0.30	0.0	13.0	SURCHARGED
44.000	21 (D1b)	118.080	0.430	0.000	0.92	0.0	34.7	SURCHARGED
42.009	10 (D1b)	117.418	0.518	0.000	1.62	0.0	156.6	SURCHARGED
42.010	11 (D1b)	116.925	0.225	0.000	0.40	0.0	52.4	SURCHARGED
42.011	12 (D1b)	116.917	0.542	0.000	0.19	0.0	44.9	SURCHARGED
42.012	13 (D1b)	116.915	0.590	0.000	0.11	0.0	45.5	SURCHARGED
42.013	14 (D1b)	116.913	0.868	0.000	0.13	0.0	46.6	SURCHARGED
41.003	15 (D1b)	116.910	1.095	0.000	0.17	0.0	32.4	SURCHARGED
41.004	16 (D1b)	116.909	1.369	0.000	0.46	0.0	32.9	SURCHARGED
45.000	Dummy	118.130	-0.225	0.000	0.00	0.0	0.0	OK
46.000	HWD 1	121.047	1.072	0.000	1.02	0.0	63.5	FLOOD RISK
46.001	HWD 2	119.619	1.004	0.000	1.34	0.0	84.2	SURCHARGED
45.001	99	117.331	-0.089	0.000	0.67	0.0	88.2	OK
1.025	20	116.959	1.199	0.000	2.14	0.0	583.3	SURCHARGED
47.000	Private	118.042	-0.108	0.000	0.17	0.0	7.0	OK
1.026	21	116.478	0.698	0.000	2.14	0.0	566.9	SURCHARGED
48.000	Ex MH	120.258	0.683	8.037	1.26	0.0	47.5	FLOOD
48.001	Ex MH	120.024	1.019	4.043	1.53	0.0	111.3	FLOOD
48.002	Ex MH	118.758	0.273	0.000	1.89	0.0	127.7	FLOOD RISK
48.003	Ex MH	118.190	-0.184	0.000	0.32	0.0	129.5	OK
1.027	22	116.409	0.659	0.000	1.21	0.0	602.3	SURCHARGED
1.028	23	116.159	0.904	0.000	1.85	0.0	599.9	SURCHARGED
1.029	Pond	116.102	1.062	465.559	2.49	0.0	421.5	FLOOD
1.030	26	115.581	0.611	81.498	2.60	0.0	393.3	FLOOD
1.031	PI	115.094	0.354	0.000	2.10	0.0	393.3	FLOOD RISK*