

Project name	Salt Box, Bognor Regis		
Design note title	Phase 2 Units 4,5 and 8 Drainage Strategy		
Document reference	SAL-HYD-PH2-ZZ-RP-C-0020		
Author	D.Gallimore		
Revision	01		
Date	24 February 2020	Approved	✓

Introduction

This document has been prepared by Hydrock Consultants Limited on behalf of our Landlink Estates, to be submitted to be Arun District Council for discharge following conditions of planning FULL permission BE135/18.

BE135/18

"Hybrid application comprising a) Full planning application for erection of Class B8 warehouse with fuel island and car parking; 2 No Class B1/B8 employment units with associated parking and servicing; Class A1 retail food store with car parking and servicing; 2 No drive thru units with car parking and servicing; car showroom, workshops (including MOT testing) vehicle storage, external display areas, service areas and parking; together with access roads, associated ground and engineering works, landscaping and ancillary works; and b) Outline planning application for the development of employment units, parking and servicing areas, landscaping and associated works."

Condition 12: Development shall not commence, other than works of site survey and investigation, until full details of the proposed surface water drainage scheme substantially in accordance with "Salt Box, Bognor Regis: Foul & Surface Water Drainage Strategy (for Landlink Estates), 17th October 2019, prepared by Hydrock, (Doc. Ref: SAL-HYD-XX-ZZ-RP-C-0001)" and Drawing No. "SAL-HYD-00-ZZ-DR-C-7000 Rev. P03 – Site Drainage Strategy" have been submitted to and approved in writing by the Local Planning Authority. The design should follow the hierarchy of preference for different types of surface water drainage disposal systems as set out in Approved Document H of the Building Regulations, and the recommendations of the SuDS Manual produced by CIRIA. Winter groundwater monitoring to establish highest annual ground water levels and winter Percolation testing to BRE 365, or similar approved, will be required to support the design of any Infiltration drainage. No unit shall be occupied until the complete surface water drainage system serving the unit has been implemented in accordance with the agreed details and the details so agreed shall be maintained in good working order in perpetuity.

To ensure that the proposed development is satisfactorily drained in accordance with policies W SP1, W DM1, W DM2 and W DM3 of the Arun Local Plan. This is required to be a pre-commencement condition because it is necessary to implement the surface water drainage system prior to commencing any building works.

Condition 13: The development shall not proceed until details have been submitted to and approved in writing by the Local Planning Authority for any proposals: to discharge flows to watercourses; or for the culverting, diversion, infilling or obstruction of any watercourse on or adjacent to the site. Any discharge to a watercourse

must be at a rate no greater than the pre-development run-off values. No construction is permitted, which will restrict current and future land owners from undertaking their riparian maintenance responsibilities in respect to any watercourse or culvert on or adjacent to the site.

To ensure that the proposed development is satisfactorily drained in accordance with policies W DM1, W DM2 and W DM3 of the Arun Local Plan, and to ensure that the duties and responsibilities, as required under the Land Drainage Act 1991, and amended by the Flood and Water Management Act 2010, can be fulfilled without additional impediment following the development completion. It is considered necessary for this to be a pre-commencement condition to protect existing watercourses prior to the construction commencing.

Condition 14: *Development shall not commence until full details of the maintenance and management of the surface water drainage system is set out in a site-specific maintenance manual and submitted to, and approved in writing, by the Local Planning Authority. The manual is to include details of financial management and arrangements for the replacement of major components at the end of the manufacturer's recommended design life. Upon completed construction of the surface water drainage system, the owner or management company shall strictly adhere to and implement the recommendations contained within the manual.*

To ensure that the proposed development is satisfactorily drained in accordance with policies W DM1, W DM2 and W DM3 of the Arun Local Plan. It is considered necessary for this to be a pre-commencement condition to ensure that the future maintenance and funding arrangements for the surface water disposal scheme are agreed before construction commences.

Condition 16: *Prior to the commencement of construction works details of a proposed foul drainage system shall be submitted to and approved in writing by the Local Planning Authority, in consultation with Southern Water (including details of its siting, design, phasing and subsequent management / maintenance); and no Unit shall be occupied until works for the disposal of sewage have been fully implemented in accordance with the approved details.*

To ensure that the proposed development has a satisfactory means of disposing of foul sewerage in accordance with policies W DM1 and W DM3 of the Arun Local Plan. It is considered necessary for this to be a pre-commencement condition because the site drainage needs to be approved and implemented before any Unit is built and occupied.

1. REFERENCE DOCUMENTS

This technical design note should be read in conjunction with the following information:

Drawings:

- SAL-HYD-PH2-ZZ-DR-C-7010 Unit 4,5 and 8 Drainage Layout
- SAL-HYD-PH2-ZZ-DR-C-7011 Unit 1 and 9 Drainage Link Layout Sheet 1
- SAL-HYD-PH2-ZZ-DR-C-7012 Unit 1 and 9 Drainage Link Layout Sheet 2
- SAL-HYD-PH2-ZZ-DR-C-7100 Drainage Details Sheet 1
- SAL-HYD-PH2-ZZ-DR-C-7101 Drainage Details Sheet 2
- SAL-HYD-PH2-ZZ-DR-C-7102 Drainage Details Sheet 3
- SAL-HYD-PH2-ZZ-DR-C-7103 Drainage Details Sheet 4
- SAL-HYD-PH2-ZZ-DR-C-7200 Unit 4,5 and 8 External Works
- SAL-HYD-PH2-ZZ-DR-C-7300 Unit 4,5 and 8 External Details

Calculations:

- SAL-HYD-PH2-ZZ-CA-C-0001 Phase 2 SW Network
- SAL-HYD-00-ZZ-CA-C-0003 Network 3

Reports:

- SAL-HYD-XX-ZZ-RP-C-0011 Phase 2 Drainage O&M

2. SURFACE WATER DRAINAGE

2.1 Surface water run-off discharge destinations

The discharge of surface water run-off has been considered in accordance with the hierarchical approach:

- Infiltration
- Surface Water Body
- To dedicated surface water sewer (public, highways or otherwise)
- To a combined sewer
- To a foul sewer

Infiltration testing was carried out during both the Phase 2 Geo-Environmental Assessment and Supplementary Ground Investigation (both by EPS).

Due to the low permeability values recorded across the site, and the presence of high groundwater, infiltration to ground is not considered to be viable as the primary method of surface water disposal for this development.

Surface water run-off from the pre-developed site currently discharges into the ditch / watercourse on the western boundary during the more extreme storm events when the ground becomes saturated. Therefore, in order to mimic the existing situation, discharge to a surface water body is the preferred method of surface water disposal for the new development.

Note: Whilst infiltration to ground is not considered to be suitable as the primary method of surface water disposal from this phase of the development, it is anticipated that a small amount of infiltration could potentially be achieved when seasonal ground water levels are low or during smaller more frequent rain fall events which would reduce the impact of surface water run-off on the watercourse. The cellular attenuation tank and the porous paving sub-base located within Units 4,5 and 8 have been specified with a permeable membrane.

For the purpose of the calculations, no infiltration rate has been taken into consideration due to the variability of rates from seasonally high groundwater.

2.2 Catchment

The surface water drainage for the wider development has been split into 3 no. networks. The discharge of the condition relates to Surface Water Network 1 for Units 4,5 and 8.

Surface Water Network 1
Units 4,5 and 8
Description: Units 4,5 and 8 will connect into Surface Water Network 1 on the western side of each of their respective plots (Phase 1). A carrier drain will then take flows northwards within the estate road, across the top of Unit 2, before out falling into the existing watercourse on the western boundary of the development. Unit 2 surface water will connect into Surface Water Network 1 at a location upstream of the outfall.
- Unit 6 - Unit 7
Description: Units 6-7 will not be constructed as part of these works. However, the surface water drainage system which serves all units within the Unit 4 to 8 catchment has been designed with an allowance for Units 6 and 7 without restriction. When Units 6 and 7 are constructed attenuation storage will need to be installed to the requirements noted on drawing SAL-HYD-PH2-ZZ-DR-C-7010.
Surface Water Network 3 (Link Only)
- Unit 1 - Unit 9
Description: Surface Water Network 3 collects run-off from Unit 9 into a carrier drain which runs along the south of Unit 1 before out falling into the existing watercourse/ditch on the western boundary. Only the drainage link will be constructed as part of this phase of works.

The following table indicates the catchments for each surface water network based on the individual unit plots being 100% impermeable as noted above.

Network Ref:	Catchment (ha)
Surface Water Network 1	
Unit 4,5 and 8 (With allowance for 6 and 7)	1.22
Surface Water Network 3	
Unit 1 +9	1.09

Document Ref: SAL-HYD-00-ZZ-SK-C-7702 Proposed Catchment Area located in Appendix A.

2.3 Post-development run-off rates

In accordance with current guidance the peak runoff rate from the development for the 1 in 1-year rainfall event and the 1 in 100-year rainfall event should be restricted to a rate which is as close as reasonably practicable to the greenfield runoff rate from the development for the same rainfall event.

However, due to the increase in impermeable area it is expected that the volume of surface water run-off discharging from Unit 4-8 catchment will increase from the pre-developed situation. And as such, flows are to be restricted to a rate which does not adversely affect flood risk, this is considered to be QBAR.

The Kirk Saunders Flood Risk Assessment indicates that the Greenfield QBAR rate for this development is **2.90 ltr/sec/ha**.

Based on the QBAR rate for this development the following post-development flow rates for each catchment is noted in the following table.

Network Ref:	Post-development flow rate (l/s)
Phase 2 Surface Water Network	
Unit 4,5 and 8 (With allowance for 6 and 7)	3.01
Surface Water Network 3	
Unit 1 + 9	10.87

2.4 Surface Water Drainage Strategy

The surface water drainage for both Units 4,5 and 8 as well as the Unit 1 and 9 Link has been designed to ensure that:

- No flooding will occur during the 1 in 100-year rainfall event in any part of the building, or in any utility plant susceptible to water.
- Surface water for the 100-year rainfall event is contained within each catchment boundary.
- An allowance for **40%** climate change is applied to the 100-year rainfall event and incorporated into the surface water drainage design in accordance with local and national planning policy.

Document Ref: **MicroDrainage Surface Water Calculations** located in **Appendix B**.

2.5 Post-Development Exceedance routes

Should rainfall exceed the 1 in 100-year storm event or the system failure through lack of maintenance, surface water run-off is to be directed via designated exceedance routes away buildings and/or critical infrastructure.

Document Ref: **SAL-HYD-PH2-ZZ-SK-C-7700 Unit 4,5 and 8 Exceedance route** located in **Appendix C**

2.6 Water Quality

Due to the higher risk of pollution from Units 4,5 and 8 Class I Full Retention interceptor have been specified and sized in accordance with Environment Agency Document PPG3 (withdrawn but still referenced).

Porous paving has been utilised within the Units 4,5 and 8 car park to provide treatment of surface water run-off.

Heavy Metals held within the suspended solids in the surface water run-off will be captured by silt traps, catchpits and gully pots which are to be checked and sediment removed as part of a site-specific maintenance regime and disposed of in accordance with current regulatory requirements.

3. FOUL WATER DRAINAGE

Foul water drainage from each unit plot will discharge into a new sewer located within the estate roads. Flows will be directed towards the north of the development where they will then be pumped from a new foul pumping station offsite via a rising main into the Southern Water Foul Sewer at Manhole ref 8801 to the north east in Shripney Road.

Details of the foul drainage system for Units 4,5 and 8 have been shown on drawings:

- SAL-HYD-PH2-ZZ-DR-C-7010 Unit 4,5 and 8 Drainage layout Sheet 1

3.1 Management / Maintenance

The foul drainage which serves Units 4,5 and 8 will be maintained by the owner / occupier where the drainage solely serves a defined unit. Drainage which is 'communal' and serves more than one unit will be maintained as part of the site wide facility management.

Document Ref: **SAL-HYD-PH2-ZZ-RP-C-0011 Phase 2 Drainage O&M**

Appendix A



KEY PLAN

NOTES

ISSUED FOR INFORMATION					
PO1					
R.HUNT	11/10/19	M.GRIFFIN	11/10/19	M.GRIFFIN	11/10/19
REVISION NOTES/COMMENTS					
DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE



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CLIENT

LANDLINK ESTATES

PROJECT

SALTBOX
BOGNOR REGIS

TITLE

POST DEVELOPMENT
UNIT PLOT CATCHMENT AREAS

HYDROCK PROJECT NO. C-13319-C	SCALE @ A1 NTS
STATUS DESCRIPTION INFORMATION	STATUS S2
DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER) SAL-HYD-00-ZZ-SK-C-7702	REVISION P01

Appendix B

- Phase 2 surface water calcs (SAL-HYD-PH2-ZZ-CA-C-0001)
- Network 3 Calcs (Unit 1 +9) (SAL-HYD-00-ZZ-CA-C-0003)

Hydrock Consultants Ltd			Page 1																																																																																													
		SALTBOX BOGNOR REGIS		Micro Drainage																																																																																												
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Innovyze		Network 2018.1.1																																																																																														
STORM SEWER DESIGN by the Modified Rational Method Design Criteria for Storm Pipe Sizes STANDARD Manhole Sizes STANDARD FSR Rainfall Model - England and Wales <table><tr><td>Return Period (years)</td><td>100</td><td>PIMP (%)</td><td>100</td></tr><tr><td>M5-60 (mm)</td><td>19.000</td><td>Add Flow / Climate Change (%)</td><td>40</td></tr><tr><td>Ratio R</td><td>0.350</td><td>Minimum Backdrop Height (m)</td><td>0.200</td></tr><tr><td>Maximum Rainfall (mm/hr)</td><td>50</td><td>Maximum Backdrop Height (m)</td><td>1.500</td></tr><tr><td>Maximum Time of Concentration (mins)</td><td>30</td><td>Min Design Depth for Optimisation (m)</td><td>1.200</td></tr><tr><td>Foul Sewage (l/s/ha)</td><td>0.000</td><td>Min Vel for Auto Design only (m/s)</td><td>1.00</td></tr><tr><td>Volumetric Runoff Coeff.</td><td>0.750</td><td>Min Slope for Optimisation (1:X)</td><td>500</td></tr></table> Designed with Level Soffits Time Area Diagram for Storm <table><tr><td>Time (mins)</td><td>Area (ha)</td><td>Time (mins)</td><td>Area (ha)</td><td>Time (mins)</td><td>Area (ha)</td><td>Time (mins)</td><td>Area (ha)</td></tr><tr><td>0-4</td><td>0.520</td><td>4-8</td><td>0.196</td><td>8-12</td><td>0.409</td><td>12-16</td><td>0.097</td></tr></table> Total Area Contributing (ha) = 1.222 Total Pipe Volume (m³) = 50.637					Return Period (years)	100	PIMP (%)	100	M5-60 (mm)	19.000	Add Flow / Climate Change (%)	40	Ratio R	0.350	Minimum Backdrop Height (m)	0.200	Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500	Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200	Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00	Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	0-4	0.520	4-8	0.196	8-12	0.409	12-16	0.097																																																
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Hydrock Consultants Ltd										Page 2		
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PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section	Type	Auto Design
S3.000	15.495	0.105	147.6	0.028	5.00	0.0	0.600	o	225	Pipe/Conduit		
S1.002	15.867	0.080	198.3	0.022	0.00	0.0	0.600	o	450	Pipe/Conduit		
S4.000	22.852	0.150	152.3	0.067	5.00	0.0	0.600	o	225	Pipe/Conduit		
S1.003	17.558	0.110	159.6	0.026	0.00	0.0	0.600	o	450	Pipe/Conduit		
S5.000	38.080	0.250	152.3	0.076	5.00	0.0	0.600	o	225	Pipe/Conduit		
S1.004	14.511	0.005	2902.2	0.017	0.00	0.0	0.600	o	450	Pipe/Conduit		
S6.000	7.465	0.070	106.6	0.032	5.00	0.0	0.600	o	225	Pipe/Conduit		
S6.001	31.897	0.095	335.8	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit		
S7.000	14.440	0.340	42.5	0.028	5.00	0.0	0.600	o	225	Pipe/Conduit		
S6.002	5.277	0.050	105.5	0.021	0.00	0.0	0.600	o	225	Pipe/Conduit		
S6.003	45.292	0.005	9058.4	0.050	0.00	0.0	0.600	o	450	Pipe/Conduit		
S1.005	34.217	0.001	34217.2	0.171	0.00	0.0	0.600	o	450	Pipe/Conduit		
<u>Network Results Table</u>												
PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)		
S3.000	50.00	5.24	1.905	0.028	0.0	0.0	1.5	1.07	42.7	5.3		
S1.002	50.00	5.56	1.575	0.139	0.0	0.0	7.5	1.44	229.0	26.3		
S4.000	50.00	5.36	1.870	0.067	0.0	0.0	3.6	1.06	42.0	12.7		
S1.003	50.00	5.74	1.495	0.231	0.0	0.0	12.5	1.61	255.5	43.8		
S5.000	50.00	5.60	1.640	0.076	0.0	0.0	4.1	1.06	42.0	14.3		
S1.004	50.00	6.40	1.385	0.324	0.0	0.0	17.5	0.37	58.5	61.4		
S6.000	50.00	5.10	1.825	0.032	0.0	0.0	1.8	1.27	50.3	6.1		
S6.001	50.00	5.85	1.755	0.032	0.0	0.0	1.8	0.71	28.2	6.1		
S7.000	50.00	5.12	2.000	0.028	0.0	0.0	1.5	2.01	80.0	5.3		
S6.002	50.00	5.92	1.660	0.082	0.0	0.0	4.4	1.27	50.6	15.5		
S6.003	50.00	9.62	1.385	0.132	0.0	0.0	7.1	0.20	32.5	24.9		
S1.005	50.00	15.25	1.380	0.627	0.0	0.0	33.9	0.10	16.1	118.8		
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Network Design Table for Storm <table><tr><th>PN</th><th>Length (m)</th><th>Fall (m)</th><th>Slope (1:X)</th><th>I.Area (ha)</th><th>T.E. (mins)</th><th>Base Flow (l/s)</th><th>k (mm)</th><th>HYD SECT</th><th>DIA (mm)</th><th>Section Type</th><th>Auto Design</th></tr><tr><td>S8.000</td><td>29.464</td><td>0.504</td><td>58.5</td><td>0.036</td><td>5.00</td><td>0.0</td><td>0.600</td><td>o</td><td>225</td><td>Pipe/Conduit</td><td></td></tr><tr><td>S8.001</td><td>16.641</td><td>0.285</td><td>58.4</td><td>0.032</td><td>0.00</td><td>0.0</td><td>0.600</td><td>o</td><td>225</td><td>Pipe/Conduit</td><td></td></tr><tr><td>S1.006</td><td>8.979</td><td>0.154</td><td>58.3</td><td>0.052</td><td>0.00</td><td>0.0</td><td>0.600</td><td>o</td><td>450</td><td>Pipe/Conduit</td><td></td></tr><tr><td>S9.000</td><td>24.940</td><td>0.140</td><td>178.1</td><td>0.023</td><td>5.00</td><td>0.0</td><td>0.600</td><td>o</td><td>225</td><td>Pipe/Conduit</td><td></td></tr><tr><td>S1.007</td><td>4.587</td><td>0.078</td><td>58.8</td><td>0.014</td><td>0.00</td><td>0.0</td><td>0.600</td><td>o</td><td>450</td><td>Pipe/Conduit</td><td></td></tr><tr><td>S1.008</td><td>41.169</td><td>0.705</td><td>58.4</td><td>0.077</td><td>0.00</td><td>0.0</td><td>0.600</td><td>o</td><td>450</td><td>Pipe/Conduit</td><td></td></tr><tr><td>S10.000</td><td>5.243</td><td>0.090</td><td>58.3</td><td>0.013</td><td>5.00</td><td>0.0</td><td>0.600</td><td>o</td><td>300</td><td>Pipe/Conduit</td><td></td></tr><tr><td>S10.001</td><td>17.299</td><td>0.190</td><td>91.0</td><td>0.010</td><td>0.00</td><td>0.0</td><td>0.600</td><td>o</td><td>300</td><td>Pipe/Conduit</td><td></td></tr><tr><td>S10.002</td><td>39.201</td><td>0.155</td><td>252.9</td><td>0.009</td><td>0.00</td><td>0.0</td><td>0.600</td><td>o</td><td>300</td><td>Pipe/Conduit</td><td></td></tr><tr><td>S1.009</td><td>17.223</td><td>0.294</td><td>58.6</td><td>0.214</td><td>0.00</td><td>0.0</td><td>0.600</td><td>o</td><td>450</td><td>Pipe/Conduit</td><td></td></tr><tr><td>S1.010</td><td>9.698</td><td>0.166</td><td>58.4</td><td>0.116</td><td>0.00</td><td>0.0</td><td>0.600</td><td>o</td><td>450</td><td>Pipe/Conduit</td><td></td></tr><tr><td>S1.011</td><td>7.592</td><td>0.130</td><td>58.4</td><td>0.000</td><td>0.00</td><td>0.0</td><td>0.600</td><td>o</td><td>225</td><td>Pipe/Conduit</td><td></td></tr></table> Network Results Table <table><tr><th>PN</th><th>Rain (mm/hr)</th><th>T.C. (mins)</th><th>US/IL (m)</th><th>Σ I.Area (ha)</th><th>Σ Base Flow (l/s)</th><th>Foul (l/s)</th><th>Add Flow (l/s)</th><th>Vel (m/s)</th><th>Cap (l/s)</th><th>Flow (l/s)</th></tr><tr><td>S8.000</td><td>50.00</td><td>5.29</td><td>1.915</td><td>0.036</td><td>0.0</td><td>0.0</td><td>1.9</td><td>1.71</td><td>68.1</td><td>6.8</td></tr><tr><td>S8.001</td><td>50.00</td><td>5.45</td><td>1.720</td><td>0.068</td><td>0.0</td><td>0.0</td><td>3.7</td><td>1.71</td><td>68.2</td><td>12.9</td></tr><tr><td>S1.006</td><td>50.00</td><td>15.31</td><td>1.380</td><td>0.747</td><td>0.0</td><td>0.0</td><td>40.4</td><td>2.67</td><td>424.1</td><td>141.5</td></tr><tr><td>S9.000</td><td>50.00</td><td>5.43</td><td>1.700</td><td>0.023</td><td>0.0</td><td>0.0</td><td>1.2</td><td>0.98</td><td>38.8</td><td>4.3</td></tr><tr><td>S1.007</td><td>50.00</td><td>15.34</td><td>1.335</td><td>0.784</td><td>0.0</td><td>0.0</td><td>42.4</td><td>2.66</td><td>422.3</td><td>148.6</td></tr><tr><td>S1.008</td><td>50.00</td><td>15.59</td><td>1.320</td><td>0.860</td><td>0.0</td><td>0.0</td><td>46.6</td><td>2.66</td><td>423.8</td><td>163.1</td></tr><tr><td>S10.000</td><td>50.00</td><td>5.04</td><td>1.740</td><td>0.013</td><td>0.0</td><td>0.0</td><td>0.7</td><td>2.06</td><td>145.9</td><td>2.4</td></tr><tr><td>S10.001</td><td>50.00</td><td>5.22</td><td>1.700</td><td>0.023</td><td>0.0</td><td>0.0</td><td>1.3</td><td>1.65</td><td>116.5</td><td>4.4</td></tr><tr><td>S10.002</td><td>50.00</td><td>5.88</td><td>1.510</td><td>0.032</td><td>0.0</td><td>0.0</td><td>1.7</td><td>0.98</td><td>69.6</td><td>6.1</td></tr><tr><td>S1.009</td><td>50.00</td><td>15.70</td><td>1.130</td><td>1.107</td><td>0.0</td><td>0.0</td><td>59.9</td><td>2.66</td><td>423.1</td><td>209.8</td></tr><tr><td>S1.010</td><td>50.00</td><td>15.76</td><td>1.095</td><td>1.222</td><td>0.0</td><td>0.0</td><td>66.2</td><td>2.66</td><td>423.7</td><td>231.7</td></tr><tr><td>S1.011</td><td>50.00</td><td>15.84</td><td>1.075</td><td>1.222</td><td>0.0</td><td>0.0</td><td>66.2</td><td>1.71</td><td>68.2«</td><td>231.7</td></tr></table>												PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design	S8.000	29.464	0.504	58.5	0.036	5.00	0.0	0.600	o	225	Pipe/Conduit		S8.001	16.641	0.285	58.4	0.032	0.00	0.0	0.600	o	225	Pipe/Conduit		S1.006	8.979	0.154	58.3	0.052	0.00	0.0	0.600	o	450	Pipe/Conduit		S9.000	24.940	0.140	178.1	0.023	5.00	0.0	0.600	o	225	Pipe/Conduit		S1.007	4.587	0.078	58.8	0.014	0.00	0.0	0.600	o	450	Pipe/Conduit		S1.008	41.169	0.705	58.4	0.077	0.00	0.0	0.600	o	450	Pipe/Conduit		S10.000	5.243	0.090	58.3	0.013	5.00	0.0	0.600	o	300	Pipe/Conduit		S10.001	17.299	0.190	91.0	0.010	0.00	0.0	0.600	o	300	Pipe/Conduit		S10.002	39.201	0.155	252.9	0.009	0.00	0.0	0.600	o	300	Pipe/Conduit		S1.009	17.223	0.294	58.6	0.214	0.00	0.0	0.600	o	450	Pipe/Conduit		S1.010	9.698	0.166	58.4	0.116	0.00	0.0	0.600	o	450	Pipe/Conduit		S1.011	7.592	0.130	58.4	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit		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)	S8.000	50.00	5.29	1.915	0.036	0.0	0.0	1.9	1.71	68.1	6.8	S8.001	50.00	5.45	1.720	0.068	0.0	0.0	3.7	1.71	68.2	12.9	S1.006	50.00	15.31	1.380	0.747	0.0	0.0	40.4	2.67	424.1	141.5	S9.000	50.00	5.43	1.700	0.023	0.0	0.0	1.2	0.98	38.8	4.3	S1.007	50.00	15.34	1.335	0.784	0.0	0.0	42.4	2.66	422.3	148.6	S1.008	50.00	15.59	1.320	0.860	0.0	0.0	46.6	2.66	423.8	163.1	S10.000	50.00	5.04	1.740	0.013	0.0	0.0	0.7	2.06	145.9	2.4	S10.001	50.00	5.22	1.700	0.023	0.0	0.0	1.3	1.65	116.5	4.4	S10.002	50.00	5.88	1.510	0.032	0.0	0.0	1.7	0.98	69.6	6.1	S1.009	50.00	15.70	1.130	1.107	0.0	0.0	59.9	2.66	423.1	209.8	S1.010	50.00	15.76	1.095	1.222	0.0	0.0	66.2	2.66	423.7	231.7	S1.011	50.00	15.84	1.075	1.222	0.0	0.0	66.2	1.71	68.2«	231.7
PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design																																																																																																																																																																																																																																																																																																											
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S9.000	24.940	0.140	178.1	0.023	5.00	0.0	0.600	o	225	Pipe/Conduit																																																																																																																																																																																																																																																																																																												
S1.007	4.587	0.078	58.8	0.014	0.00	0.0	0.600	o	450	Pipe/Conduit																																																																																																																																																																																																																																																																																																												
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S10.001	17.299	0.190	91.0	0.010	0.00	0.0	0.600	o	300	Pipe/Conduit																																																																																																																																																																																																																																																																																																												
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S10.001	50.00	5.22	1.700	0.023	0.0	0.0	1.3	1.65	116.5	4.4																																																																																																																																																																																																																																																																																																												
S10.002	50.00	5.88	1.510	0.032	0.0	0.0	1.7	0.98	69.6	6.1																																																																																																																																																																																																																																																																																																												
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S1.010	50.00	15.76	1.095	1.222	0.0	0.0	66.2	2.66	423.7	231.7																																																																																																																																																																																																																																																																																																												
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Innovyze				Network 2018.1.1						
Manhole Schedules for Storm										
MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)
S1	2.620	0.920	Open Manhole	1350	S1.000	1.700	450			
S2	2.900	0.935	Open Manhole	1200	S2.000	1.965	225			
S2	2.620	0.970	Open Manhole	1350	S1.001	1.650	450	S1.000	1.650	
								S2.000	1.875	
S4	2.830	0.925	Open Manhole	1200	S3.000	1.905	225			
S3	2.580	1.005	Open Manhole	1350	S1.002	1.575	450	S1.001	1.575	
								S3.000	1.800	
S6	2.830	0.960	Open Manhole	1200	S4.000	1.870	225			
S4	2.590	1.095	Open Manhole	1350	S1.003	1.495	450	S1.002	1.495	
								S4.000	1.720	
S8	2.870	1.230	Open Manhole	1200	S5.000	1.640	225			
S5	2.690	1.305	Open Manhole	1350	S1.004	1.385	450	S1.003	1.385	
								S5.000	1.390	
S10	2.600	0.775	Open Manhole	1200	S6.000	1.825	225			
S11	2.620	0.865	Open Manhole	1200	S6.001	1.755	225	S6.000	1.755	
S12	2.750	0.750	Open Manhole	1200	S7.000	2.000	225			
S12	2.750	1.090	Open Manhole	1200	S6.002	1.660	225	S6.001	1.660	
								S7.000	1.660	
S13	2.660	1.275	Open Manhole	1350	S6.003	1.385	450	S6.002	1.610	
S6	2.670	1.290	Open Manhole	1350	S1.005	1.380	450	S1.004	1.380	
								S6.003	1.380	
S16	2.980	1.065	Open Manhole	1200	S8.000	1.915	225			
S17	2.690	1.279	Open Manhole	1200	S8.001	1.720	225	S8.000	1.411	
S7	2.620	1.241	Open Manhole	1350	S1.006	1.380	450	S1.005	1.379	
								S8.001	1.435	
S19	2.540	0.840	Open Manhole	1200	S9.000	1.700	225			
S8	2.530	1.304	Open Manhole	1350	S1.007	1.335	450	S1.006	1.226	
								S9.000	1.560	
S9	2.590	1.333	Open Manhole	1350	S1.008	1.320	450	S1.007	1.257	
S22	2.340	0.600	Open Manhole	1200	S10.000	1.740	300			
S23	2.590	0.940	Open Manhole	1200	S10.001	1.700	300	S10.000	1.650	
S24	2.560	1.050	Open Manhole	1200	S10.002	1.510	300	S10.001	1.510	
S10	2.630	2.015	Open Manhole	1350	S1.009	1.130	450	S1.008	0.615	
								S10.002	1.355	
S11	2.700	1.864	Open Manhole	1350	S1.010	1.095	450	S1.009	0.836	
S12	2.700	1.771	Open Manhole	1350	S1.011	1.075	225	S1.010	0.929	
S	2.870	1.925	Open Manhole	0		OUTFALL		S1.011	0.945	
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Innovyze			Network 2018.1.1			
Area Summary for Storm						
Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	User	-	100	0.007	0.007	0.007
	User	-	100	0.016	0.016	0.023
2.000	User	-	100	0.014	0.014	0.014
	User	-	100	0.005	0.005	0.020
1.001	User	-	100	0.046	0.046	0.046
3.000	User	-	100	0.012	0.012	0.012
	User	-	100	0.005	0.005	0.017
	User	-	100	0.011	0.011	0.028
1.002	User	-	100	0.022	0.022	0.022
4.000	User	-	100	0.015	0.015	0.015
	User	-	100	0.011	0.011	0.026
	User	-	100	0.011	0.011	0.037
	User	-	100	0.030	0.030	0.067
1.003	User	-	100	0.026	0.026	0.026
5.000	User	-	100	0.003	0.003	0.003
	User	-	100	0.020	0.020	0.023
	User	-	100	0.053	0.053	0.076
1.004	User	-	100	0.017	0.017	0.017
6.000	User	-	100	0.032	0.032	0.032
6.001	-	-	100	0.000	0.000	0.000
7.000	User	-	100	0.028	0.028	0.028
6.002	User	-	100	0.012	0.012	0.012
	User	-	100	0.009	0.009	0.021
6.003	User	-	100	0.008	0.008	0.008
	User	-	100	0.015	0.015	0.022
	User	-	100	0.027	0.027	0.050
1.005	User	-	100	0.023	0.023	0.023
	User	-	100	0.022	0.022	0.044
	User	-	100	0.036	0.036	0.081
	User	-	100	0.007	0.007	0.088
	User	-	100	0.084	0.084	0.171
8.000	User	-	100	0.015	0.015	0.015
	User	-	100	0.020	0.020	0.036
8.001	User	-	100	0.020	0.020	0.020
	User	-	100	0.013	0.013	0.032
1.006	User	-	100	0.039	0.039	0.039
	User	-	100	0.008	0.008	0.047
	User	-	100	0.005	0.005	0.052
9.000	User	-	100	0.023	0.023	0.023
1.007	User	-	100	0.014	0.014	0.014
1.008	User	-	100	0.018	0.018	0.018
	User	-	100	0.039	0.039	0.057
	User	-	100	0.020	0.020	0.077
10.000	User	-	100	0.013	0.013	0.013
10.001	User	-	100	0.010	0.010	0.010
10.002	User	-	100	0.009	0.009	0.009
1.009	User	-	100	0.109	0.109	0.109
	User	-	100	0.006	0.006	0.115
	User	-	100	0.012	0.012	0.127
	User	-	100	0.016	0.016	0.142
	User	-	100	0.034	0.034	0.176
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Hydrock Consultants Ltd		Page 6
. . .	SALTBOX BOGNOR REGIS	
Date 11/10/2019 File Phase 2 SW Network 1 DG...	Designed by D. Gallimore Checked by M. Griffin	
Innovyze	Network 2018.1.1	

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
	User	-	100	0.038	0.038	0.214
1.010	User	-	100	0.116	0.116	0.116
1.011	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				1.222	1.222	1.222

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.011	S	2.870	0.945	0.000	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start (mins)	0	Inlet Coefficient	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
Number of Online Controls		1	Number of Time/Area Diagrams
Number of Offline Controls		0	Number of Real Time Controls

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Storm Duration (mins)	30
Ratio R	0.350		

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Hydrock Consultants Ltd		Page 7
. . .	SALTBOX BOGNOR REGIS	
Date 11/10/2019 File Phase 2 SW Network 1 DG...	Designed by D. Gallimore Checked by M. Griffin	
Innovyze Network 2018.1.1		

Storage Structures for Storm

Cellular Storage Manhole: S1, DS/PN: S1.000

Invert Level (m) 2.075 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.30
 Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	72.0	0.0	0.276	0.0	0.0
0.275	72.0	0.0			

Cellular Storage Manhole: S2, DS/PN: S2.000

Invert Level (m) 2.075 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.30
 Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	100.0	0.0	0.276	0.0	0.0
0.275	100.0	0.0			

Cellular Storage Manhole: S4, DS/PN: S3.000

Invert Level (m) 2.075 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.30
 Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	208.0	0.0	0.276	0.0	0.0
0.275	208.0	0.0			

Cellular Storage Manhole: S3, DS/PN: S1.002

Invert Level (m) 2.075 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.30
 Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	136.0	0.0	0.276	0.0	0.0
0.275	136.0	0.0			

Cellular Storage Manhole: S6, DS/PN: S4.000

Invert Level (m) 2.075 Safety Factor 2.0
 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.30
 Infiltration Coefficient Side (m/hr) 0.00000

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Hydrock Consultants Ltd		Page 8																																																																																										
.	SALTBOX																																																																																											
.	BOGNOR REGIS																																																																																											
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Date 11/10/2019	Designed by D. Gallimore																																																																																											
File Phase 2 SW Network 1 DG...	Checked by M. Griffin																																																																																											
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Cellular Storage Manhole: S6, DS/PN: S4.000 <table><thead><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr></thead><tbody><tr><td>0.000</td><td>402.0</td><td>0.0</td><td>0.276</td><td>0.0</td><td>0.0</td></tr><tr><td>0.275</td><td>402.0</td><td>0.0</td><td></td><td></td><td></td></tr></tbody></table> Cellular Storage Manhole: S8, DS/PN: S5.000 Invert Level (m) 2.075 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.30 Infiltration Coefficient Side (m/hr) 0.00000 <table><thead><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr></thead><tbody><tr><td>0.000</td><td>383.0</td><td>0.0</td><td>0.276</td><td>0.0</td><td>0.0</td></tr><tr><td>0.275</td><td>383.0</td><td>0.0</td><td></td><td></td><td></td></tr></tbody></table> Cellular Storage Manhole: S5, DS/PN: S1.004 Invert Level (m) 2.075 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.30 Infiltration Coefficient Side (m/hr) 0.00000 <table><thead><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr></thead><tbody><tr><td>0.000</td><td>396.0</td><td>0.0</td><td>0.276</td><td>0.0</td><td>0.0</td></tr><tr><td>0.275</td><td>396.0</td><td>0.0</td><td></td><td></td><td></td></tr></tbody></table> Cellular Storage Manhole: S10, DS/PN: S6.000 Invert Level (m) 2.075 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.30 Infiltration Coefficient Side (m/hr) 0.00000 <table><thead><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr></thead><tbody><tr><td>0.000</td><td>116.0</td><td>0.0</td><td>0.276</td><td>0.0</td><td>0.0</td></tr><tr><td>0.275</td><td>116.0</td><td>0.0</td><td></td><td></td><td></td></tr></tbody></table> Cellular Storage Manhole: S6, DS/PN: S1.005 Invert Level (m) 1.380 Safety Factor 5.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><thead><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr></thead><tbody><tr><td>0.000</td><td>950.0</td><td>0.0</td><td>0.751</td><td>0.0</td><td>0.0</td></tr><tr><td>0.750</td><td>950.0</td><td>0.0</td><td></td><td></td><td></td></tr></tbody></table>			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	402.0	0.0	0.276	0.0	0.0	0.275	402.0	0.0				Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	383.0	0.0	0.276	0.0	0.0	0.275	383.0	0.0				Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	396.0	0.0	0.276	0.0	0.0	0.275	396.0	0.0				Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	116.0	0.0	0.276	0.0	0.0	0.275	116.0	0.0				Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	950.0	0.0	0.751	0.0	0.0	0.750	950.0	0.0			
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)																																																																																							
0.000	402.0	0.0	0.276	0.0	0.0																																																																																							
0.275	402.0	0.0																																																																																										
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)																																																																																							
0.000	383.0	0.0	0.276	0.0	0.0																																																																																							
0.275	383.0	0.0																																																																																										
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)																																																																																							
0.000	396.0	0.0	0.276	0.0	0.0																																																																																							
0.275	396.0	0.0																																																																																										
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)																																																																																							
0.000	116.0	0.0	0.276	0.0	0.0																																																																																							
0.275	116.0	0.0																																																																																										
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)																																																																																							
0.000	950.0	0.0	0.751	0.0	0.0																																																																																							
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Hydrock Consultants Ltd		Page 9																																				
.	SALTBOX																																					
.	BOGNOR REGIS																																					
.																																						
Date 11/10/2019	Designed by D. Gallimore																																					
File Phase 2 SW Network 1 DG...	Checked by M. Griffin																																					
Innovyze	Network 2018.1.1																																					
Cellular Storage Manhole: S16, DS/PN: S8.000 Invert Level (m) 2.075 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.30 Infiltration Coefficient Side (m/hr) 0.00000 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr><tr><td>0.000</td><td>406.0</td><td>0.0</td><td>0.276</td><td>0.0</td><td>0.0</td></tr><tr><td>0.275</td><td>406.0</td><td>0.0</td><td></td><td></td><td></td></tr></table> Cellular Storage Manhole: S11, DS/PN: S1.010 Invert Level (m) 1.095 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr><tr><td>0.000</td><td>400.0</td><td>0.0</td><td>0.751</td><td>0.0</td><td>0.0</td></tr><tr><td>0.750</td><td>400.0</td><td>0.0</td><td></td><td></td><td></td></tr></table>			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	406.0	0.0	0.276	0.0	0.0	0.275	406.0	0.0				Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	400.0	0.0	0.751	0.0	0.0	0.750	400.0	0.0			
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)																																	
0.000	406.0	0.0	0.276	0.0	0.0																																	
0.275	406.0	0.0																																				
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)																																	
0.000	400.0	0.0	0.751	0.0	0.0																																	
0.750	400.0	0.0																																				
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Hydrock Consultants Ltd					Page 10									
.					SALTBOX									
.					BOGNOR REGIS									
.														
Date 11/10/2019					Designed by D. Gallimore									
File Phase 2 SW Network 1 DG...					Checked by M. Griffin									
Innovyze					Network 2018.1.1									
<u>2 year Return Period Summary of Critical Results by Maximum Level (Rank 1)</u> <u>for Storm</u>														
Simulation Criteria														
Areal Reduction Factor 1.000					Additional Flow - % of Total Flow 0.000									
Hot Start (mins) 0					MADD Factor * 10m³/ha Storage 2.000									
Hot Start Level (mm) 0					Inlet Coefficient 0.800									
Manhole Headloss Coeff (Global) 0.500					Flow per Person per Day (l/per/day) 0.000									
Foul Sewage per hectare (l/s) 0.000														
Number of Input Hydrographs 0					Number of Storage Structures 11									
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					FSR					Ratio R 0.350				
Region England and Wales Cv (Summer)					0.750									
M5-60 (mm)					19.100 Cv (Winter)					0.840				
Margin for Flood Risk Warning (mm)					300.0									
Analysis Timestep 2.5 Second Increment (Extended)														
DTS Status					ON									
DVD Status					OFF									
Inertia Status					OFF									
Profile(s)					Summer and Winter									
Duration(s) (mins)					15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080									
Return Period(s) (years)					2, 30, 100									
Climate Change (%)					0, 0, 40									
US/MH														
PN Name Storm Return Period Climate Change First (X) Surge First (Y) Flood First (Z) Overflow Overflow Act.														
S1.000 S1 15 Winter 2 +0%														
S2.000 S2 15 Winter 2 +0%														
S1.001 S2 15 Winter 2 +0% 100/1440 Winter														
S3.000 S4 15 Winter 2 +0%														
S1.002 S3 15 Winter 2 +0% 100/600 Winter														
S4.000 S6 15 Winter 2 +0% 100/1440 Winter														
S1.003 S4 15 Winter 2 +0% 100/480 Winter														
S5.000 S8 15 Winter 2 +0% 30/15 Summer														
S1.004 S5 15 Winter 2 +0% 30/15 Summer														
S6.000 S10 15 Winter 2 +0% 100/720 Winter														
S6.001 S11 15 Winter 2 +0% 100/480 Winter														
S7.000 S12 15 Winter 2 +0%														
S6.002 S12 15 Winter 2 +0% 100/15 Summer														
S6.003 S13 15 Winter 2 +0% 100/240 Winter														
S1.005 S6 1440 Winter 2 +0% 100/240 Winter														
S8.000 S16 15 Winter 2 +0%														
S8.001 S17 15 Winter 2 +0% 100/480 Winter														
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Hydrock Consultants Ltd							Page 11		
.			SALTBOX						
.			BOGNOR REGIS						
.									
Date 11/10/2019			Designed by D. Gallimore						
File Phase 2 SW Network 1 DG...			Checked by M. Griffin						
Innovyze			Network 2018.1.1						
<u>2 year Return Period Summary of Critical Results by Maximum Level (Rank 1)</u> <u>for Storm</u>									

Hydrock Consultants Ltd						Page 12			
.				SALTBOX					
.				BOGNOR REGIS					
.									
Date 11/10/2019				Designed by D. Gallimore					
File Phase 2 SW Network 1 DG...				Checked by M. Griffin					
Innovyze				Network 2018.1.1					
<u>2 year Return Period Summary of Critical Results by Maximum Level (Rank 1)</u> <u>for Storm</u>									
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	
S1.006	S7	1440 Winter	2	+0%	100/180 Winter				
S9.000	S19	15 Winter	2	+0%	100/360 Winter				
S1.007	S8	1440 Winter	2	+0%	100/180 Winter				
S1.008	S9	1440 Winter	2	+0%	100/120 Winter				
S10.000	S22	15 Winter	2	+0%	100/720 Winter				
S10.001	S23	15 Winter	2	+0%	100/600 Winter				
S10.002	S24	15 Winter	2	+0%	100/180 Winter				
S1.009	S10	1440 Winter	2	+0%	30/180 Winter				
S1.010	S11	1440 Winter	2	+0%	30/120 Winter				
S1.011	S12	960 Winter	2	+0%	2/120 Winter	100/960 Summer			
PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.006	S7	1.483	-0.347	0.000	0.03		5.7	OK	
S9.000	S19	1.748	-0.177	0.000	0.10		3.7	OK	
S1.007	S8	1.483	-0.302	0.000	0.04		6.0	OK	
S1.008	S9	1.483	-0.287	0.000	0.02		6.6	OK	
S10.000	S22	1.773	-0.267	0.000	0.03		2.1	OK	
S10.001	S23	1.737	-0.263	0.000	0.04		3.5	OK	
S10.002	S24	1.564	-0.246	0.000	0.07		4.8	OK	
S1.009	S10	1.482	-0.098	0.000	0.03		8.6	OK	
S1.010	S11	1.482	-0.063	0.000	0.04		8.7	OK	
S1.011	S12	1.713	0.413	0.000	0.06		3.0	SURCHARGED	
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Hydrock Consultants Ltd			Page 13					
.			SALTBOX					
.			BOGNOR REGIS					
.								
Date 11/10/2019			Designed by D. Gallimore					
File Phase 2 SW Network 1 DG...			Checked by M. Griffin					
Innovyze			Network 2018.1.1					
30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)								
for Storm								
Simulation Criteria								
Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000								
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000								
Hot Start Level (mm) 0 Inlet Coefficient 0.800								
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000								
Foul Sewage per hectare (l/s) 0.000								
Number of Input Hydrographs 0 Number of Storage Structures 11								
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 FSR Ratio R 0.350								
Region England and Wales Cv (Summer) 0.750								
M5-60 (mm) 19.100 Cv (Winter) 0.840								
Margin for Flood Risk Warning (mm) 300.0								
Analysis Timestep 2.5 Second Increment (Extended)								
DTS Status ON								
DVD Status OFF								
Inertia Status OFF								
Profile(s) Summer and Winter								
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080								
Return Period(s) (years) 2, 30, 100								
Climate Change (%) 0, 0, 40								
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.000	S1	15 Winter	30	+0%				
S2.000	S2	15 Winter	30	+0%				
S1.001	S2	15 Winter	30	+0%	100/1440 Winter			
S3.000	S4	15 Winter	30	+0%				
S1.002	S3	15 Winter	30	+0%	100/600 Winter			
S4.000	S6	15 Winter	30	+0%	100/1440 Winter			
S1.003	S4	15 Winter	30	+0%	100/480 Winter			
S5.000	S8	15 Winter	30	+0%	30/15 Summer			
S1.004	S5	15 Winter	30	+0%	30/15 Summer			
S6.000	S10	15 Winter	30	+0%	100/720 Winter			
S6.001	S11	15 Winter	30	+0%	100/480 Winter			
S7.000	S12	15 Winter	30	+0%				
S6.002	S12	15 Winter	30	+0%	100/15 Summer			
S6.003	S13	1440 Winter	30	+0%	100/240 Winter			
S1.005	S6	1440 Winter	30	+0%	100/240 Winter			
S8.000	S16	15 Winter	30	+0%				
S8.001	S17	15 Winter	30	+0%	100/480 Winter			
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Hydrock Consultants Ltd							Page 14			
.			SALTBOX							
.			BOGNOR REGIS							
.										
Date 11/10/2019			Designed by D. Gallimore							
File Phase 2 SW Network 1 DG...			Checked by M. Griffin							
Innovyze			Network 2018.1.1							
30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm										

Hydrock Consultants Ltd						Page 15			
.				SALTBOX					
.				BOGNOR REGIS					
.									
Date 11/10/2019				Designed by D. Gallimore					
File Phase 2 SW Network 1 DG...				Checked by M. Griffin					
Innovyze				Network 2018.1.1					
30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm									
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	
S1.006	S7	1440 Winter	30	+0%	100/180 Winter				
S9.000	S19	15 Winter	30	+0%	100/360 Winter				
S1.007	S8	1440 Winter	30	+0%	100/180 Winter				
S1.008	S9	1440 Winter	30	+0%	100/120 Winter				
S10.000	S22	15 Winter	30	+0%	100/720 Winter				
S10.001	S23	15 Winter	30	+0%	100/600 Winter				
S10.002	S24	1440 Winter	30	+0%	100/180 Winter				
S1.009	S10	1440 Winter	30	+0%	30/180 Winter				
S1.010	S11	1440 Winter	30	+0%	30/120 Winter				
S1.011	S12	1440 Winter	30	+0%	2/120 Winter	100/960 Summer			
PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.006	S7	1.676	-0.154	0.000	0.04		8.1	OK	
S9.000	S19	1.768	-0.157	0.000	0.19		7.0	OK	
S1.007	S8	1.676	-0.109	0.000	0.05		8.6	OK	
S1.008	S9	1.676	-0.094	0.000	0.03		9.7	OK	
S10.000	S22	1.784	-0.256	0.000	0.05		4.0	OK	
S10.001	S23	1.754	-0.246	0.000	0.07		7.4	OK	
S10.002	S24	1.675	-0.135	0.000	0.01		0.5	OK	
S1.009	S10	1.675	0.095	0.000	0.04		13.3	SURCHARGED	
S1.010	S11	1.675	0.130	0.000	0.04		8.6	SURCHARGED	
S1.011	S12	1.875	0.575	0.000	0.06		3.0	SURCHARGED	

Hydrock Consultants Ltd				Page 16							
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Innovyze				Network 2018.1.1							
<u>100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm</u>											
Simulation Criteria											
Areal Reduction Factor 1.000				Additional Flow - % of Total Flow 0.000							
Hot Start (mins) 0				MADD Factor * 10m³/ha Storage 2.000							
Hot Start Level (mm) 0				Inlet Coefficient 0.800							
Manhole Headloss Coeff (Global) 0.500				Flow per Person per Day (l/per/day) 0.000							
Foul Sewage per hectare (l/s) 0.000											
Number of Input Hydrographs 0				Number of Storage Structures 11							
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				FSR				Ratio R 0.350			
Region England and Wales Cv (Summer)				0.750							
M5-60 (mm)				19.100 Cv (Winter)				0.840			
Margin for Flood Risk Warning (mm)				300.0							
Analysis Timestep 2.5 Second Increment (Extended)											
DTS Status				ON							
DVD Status				OFF							
Inertia Status				OFF							
Profile(s)				Summer and Winter							
Duration(s) (mins)				15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080							
Return Period(s) (years)				2, 30, 100							
Climate Change (%)				0, 0, 40							
US/MH Return Climate First (X) First (Y) First (Z) Overflow											
PN Name Storm Period Change Surge Flood Overflow Act.											
S1.000 S1 2160 Winter 100 +40%											
S2.000 S2 2160 Winter 100 +40%											
S1.001 S2 2160 Winter 100 +40% 100/1440 Winter											
S3.000 S4 2160 Winter 100 +40%											
S1.002 S3 2160 Winter 100 +40% 100/600 Winter											
S4.000 S6 2160 Winter 100 +40% 100/1440 Winter											
S1.003 S4 2160 Winter 100 +40% 100/480 Winter											
S5.000 S8 2160 Winter 100 +40% 30/15 Summer											
S1.004 S5 2160 Winter 100 +40% 30/15 Summer											
S6.000 S10 2160 Winter 100 +40% 100/720 Winter											
S6.001 S11 2160 Winter 100 +40% 100/480 Winter											
S7.000 S12 2160 Winter 100 +40%											
S6.002 S12 2160 Winter 100 +40% 100/15 Summer											
S6.003 S13 2160 Winter 100 +40% 100/240 Winter											
S1.005 S6 2160 Winter 100 +40% 100/240 Winter											
S8.000 S16 2160 Winter 100 +40%											
S8.001 S17 2160 Winter 100 +40% 100/480 Winter											
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Hydrock Consultants Ltd							Page 17	
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Innovyze			Network 2018.1.1					
100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm								
PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Overflow Cap. (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	2.119	-0.031	0.000	0.00	0.5	OK	
S2.000	S2	2.119	-0.071	0.000	0.01	0.4	OK	
S1.001	S2	2.119	0.019	0.000	0.01	1.9	SURCHARGED	
S3.000	S4	2.119	-0.011	0.000	0.02	0.6	OK	
S1.002	S3	2.119	0.094	0.000	0.02	2.9	SURCHARGED	
S4.000	S6	2.119	0.024	0.000	0.04	1.5	SURCHARGED	
S1.003	S4	2.119	0.174	0.000	0.03	4.8	SURCHARGED	
S5.000	S8	2.120	0.255	0.000	0.04	1.6	SURCHARGED	
S1.004	S5	2.120	0.285	0.000	0.11	6.6	SURCHARGED	
S6.000	S10	2.119	0.069	0.000	0.02	0.7	SURCHARGED	
S6.001	S11	2.120	0.140	0.000	0.03	0.7	SURCHARGED	
S7.000	S12	2.120	-0.105	0.000	0.01	0.6	OK	
S6.002	S12	2.120	0.235	0.000	0.06	1.8	SURCHARGED	
S6.003	S13	2.119	0.284	0.000	0.03	2.8	SURCHARGED	
S1.005	S6	2.120	0.290	0.000	0.10	7.3	SURCHARGED	
S8.000	S16	2.119	-0.021	0.000	0.02	1.2	OK	
S8.001	S17	2.123	0.178	0.000	0.02	1.5	SURCHARGED	
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Hydrock Consultants Ltd							Page 18	
.				SALTBOX				
.				BOGNOR REGIS				
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Innovyze				Network 2018.1.1				
<u>100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm</u>								
PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.006	S7	2160 Winter	100	+40%	100/180 Winter			
S9.000	S19	2160 Winter	100	+40%	100/360 Winter			
S1.007	S8	2160 Winter	100	+40%	100/180 Winter			
S1.008	S9	2160 Winter	100	+40%	100/120 Winter			
S10.000	S22	2160 Winter	100	+40%	100/720 Winter			
S10.001	S23	2160 Winter	100	+40%	100/600 Winter			
S10.002	S24	2160 Winter	100	+40%	100/180 Winter			
S1.009	S10	2160 Winter	100	+40%	30/180 Winter			
S1.010	S11	2160 Winter	100	+40%	30/120 Winter			
S1.011	S12	600 Summer	100	+40%	2/120 Winter	100/960 Summer		
PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Overflow Cap. (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.006	S7	2.125	0.295	0.000	0.03	7.3	SURCHARGED	
S9.000	S19	2.126	0.201	0.000	0.01	0.5	SURCHARGED	
S1.007	S8	2.126	0.341	0.000	0.04	7.2	SURCHARGED	
S1.008	S9	2.126	0.356	0.000	0.02	8.1	SURCHARGED	
S10.000	S22	2.123	0.083	0.000	0.01	0.4	FLOOD RISK	
S10.001	S23	2.124	0.124	0.000	0.01	0.8	SURCHARGED	
S10.002	S24	2.124	0.314	0.000	0.01	0.8	SURCHARGED	
S1.009	S10	2.126	0.546	0.000	0.04	11.2	SURCHARGED	
S1.010	S11	2.126	0.581	0.000	0.04	10.1	SURCHARGED	
S1.011	S12	2.446	1.146	0.000	0.06	3.0	FLOOD RISK	
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<u>STORM SEWER DESIGN by the Modified Rational Method</u> <u>Design Criteria for Storm</u> Pipe Sizes STANDARD Manhole Sizes STANDARD FSR Rainfall Model - England and Wales <table><tr><td>Return Period (years)</td><td>100</td><td>PIMP (%)</td><td>100</td></tr><tr><td>M5-60 (mm)</td><td>19.000</td><td>Add Flow / Climate Change (%)</td><td>0</td></tr><tr><td>Ratio R</td><td>0.350</td><td>Minimum Backdrop Height (m)</td><td>0.200</td></tr><tr><td>Maximum Rainfall (mm/hr)</td><td>50</td><td>Maximum Backdrop Height (m)</td><td>1.500</td></tr><tr><td>Maximum Time of Concentration (mins)</td><td>30</td><td>Min Design Depth for Optimisation (m)</td><td>1.200</td></tr><tr><td>Foul Sewage (l/s/ha)</td><td>0.000</td><td>Min Vel for Auto Design only (m/s)</td><td>1.00</td></tr><tr><td>Volumetric Runoff Coeff.</td><td>0.750</td><td>Min Slope for Optimisation (1:X)</td><td>500</td></tr></table> Designed with Level Soffits <u>Time Area Diagram for Storm</u> <table><tr><td>Time (mins)</td><td>Area (ha)</td><td>Time (mins)</td><td>Area (ha)</td><td>Time (mins)</td><td>Area (ha)</td></tr><tr><td>0-4</td><td>1.690</td><td>4-8</td><td>1.729</td><td>8-12</td><td>0.327</td></tr></table> Total Area Contributing (ha) = 3.746 Total Pipe Volume (m³) = 52.208												Return Period (years)	100	PIMP (%)	100	M5-60 (mm)	19.000	Add Flow / Climate Change (%)	0	Ratio R	0.350	Minimum Backdrop Height (m)	0.200	Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500	Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200	Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00	Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	0-4	1.690	4-8	1.729	8-12	0.327																																																																																																		
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<u>Network Design Table for Storm</u> « - Indicates pipe capacity < flow <table><tr><th>PN</th><th>Length (m)</th><th>Fall (m)</th><th>Slope (1:X)</th><th>I.Area (ha)</th><th>T.E. (mins)</th><th>Base Flow (l/s)</th><th>k (mm)</th><th>HYD SECT</th><th>DIA (mm)</th><th>Section Type</th><th>Auto Design</th></tr><tr><td>S1.000</td><td>13.163</td><td>0.050</td><td>263.3</td><td>0.856</td><td>5.00</td><td>0.0</td><td>0.600</td><td>o</td><td>225</td><td>Pipe/Conduit</td><td></td></tr><tr><td>S1.001</td><td>21.638</td><td>0.040</td><td>540.9</td><td>0.000</td><td>0.00</td><td>0.0</td><td>0.600</td><td>o</td><td>450</td><td>Pipe/Conduit</td><td></td></tr><tr><td>S1.002</td><td>98.328</td><td>0.330</td><td>298.0</td><td>0.000</td><td>0.00</td><td>0.0</td><td>0.600</td><td>o</td><td>450</td><td>Pipe/Conduit</td><td></td></tr><tr><td>S1.003</td><td>113.301</td><td>0.395</td><td>286.8</td><td>0.000</td><td>0.00</td><td>0.0</td><td>0.600</td><td>o</td><td>450</td><td>Pipe/Conduit</td><td></td></tr><tr><td>S1.004</td><td>60.921</td><td>0.220</td><td>276.9</td><td>0.000</td><td>0.00</td><td>0.0</td><td>0.600</td><td>o</td><td>450</td><td>Pipe/Conduit</td><td></td></tr></table> <u>Network Results Table</u> <table><tr><th>PN</th><th>Rain (mm/hr)</th><th>T.C. (mins)</th><th>US/IL (m)</th><th>Σ I.Area (ha)</th><th>Σ Base Flow (l/s)</th><th>Foul (l/s)</th><th>Add Flow (l/s)</th><th>Vel (m/s)</th><th>Cap (l/s)</th><th>Flow (l/s)</th></tr><tr><td>S1.000</td><td>50.00</td><td>5.27</td><td>1.300</td><td>0.856</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.80</td><td>31.9«</td><td>115.9</td></tr><tr><td>S1.001</td><td>50.00</td><td>5.69</td><td>1.250</td><td>0.856</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.87</td><td>137.9</td><td>115.9</td></tr><tr><td>S1.002</td><td>50.00</td><td>7.09</td><td>1.210</td><td>0.856</td><td>0.0</td><td>0.0</td><td>0.0</td><td>1.17</td><td>186.5</td><td>115.9</td></tr><tr><td>S1.003</td><td>50.00</td><td>8.67</td><td>0.880</td><td>0.856</td><td>0.0</td><td>0.0</td><td>0.0</td><td>1.20</td><td>190.1</td><td>115.9</td></tr><tr><td>S1.004</td><td>50.00</td><td>9.50</td><td>0.485</td><td>0.856</td><td>0.0</td><td>0.0</td><td>0.0</td><td>1.22</td><td>193.5</td><td>115.9</td></tr></table> ©1982-2018 Innovyze												PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design	S1.000	13.163	0.050	263.3	0.856	5.00	0.0	0.600	o	225	Pipe/Conduit		S1.001	21.638	0.040	540.9	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit		S1.002	98.328	0.330	298.0	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit		S1.003	113.301	0.395	286.8	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit		S1.004	60.921	0.220	276.9	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit		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)	S1.000	50.00	5.27	1.300	0.856	0.0	0.0	0.0	0.80	31.9«	115.9	S1.001	50.00	5.69	1.250	0.856	0.0	0.0	0.0	0.87	137.9	115.9	S1.002	50.00	7.09	1.210	0.856	0.0	0.0	0.0	1.17	186.5	115.9	S1.003	50.00	8.67	0.880	0.856	0.0	0.0	0.0	1.20	190.1	115.9	S1.004	50.00	9.50	0.485	0.856	0.0	0.0	0.0	1.22	193.5	115.9
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Hydrock Consultants Ltd										Page 2																																																																																																																				
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Network Design Table for Storm <table><tr><th>PN</th><th>Length (m)</th><th>Fall (m)</th><th>Slope (1:X)</th><th>I.Area (ha)</th><th>T.E. (mins)</th><th>Base Flow (l/s)</th><th>k (mm)</th><th>HYD SECT</th><th>DIA (mm)</th><th>Section Type</th><th>Auto Design</th></tr><tr><td>S2.000</td><td>4.245</td><td>0.020</td><td>212.2</td><td>2.890</td><td>5.00</td><td>0.0</td><td>0.600</td><td>o</td><td>225</td><td>Pipe/Conduit</td><td></td></tr><tr><td>S2.001</td><td>27.631</td><td>0.100</td><td>276.3</td><td>0.000</td><td>0.00</td><td>0.0</td><td>0.600</td><td>o</td><td>225</td><td>Pipe/Conduit</td><td></td></tr><tr><td>S1.005</td><td>19.234</td><td>0.035</td><td>549.5</td><td>0.000</td><td>0.00</td><td>0.0</td><td>0.600</td><td>o</td><td>450</td><td>Pipe/Conduit</td><td></td></tr><tr><td>S1.006</td><td>3.581</td><td>0.025</td><td>143.2</td><td>0.000</td><td>0.00</td><td>0.0</td><td>0.600</td><td>o</td><td>450</td><td>Pipe/Conduit</td><td></td></tr></table> Network Results Table <table><tr><th>PN</th><th>Rain (mm/hr)</th><th>T.C. (mins)</th><th>US/IL (m)</th><th>Σ I.Area (ha)</th><th>Σ Base Flow (l/s)</th><th>Foul (l/s)</th><th>Add Flow (l/s)</th><th>Vel (m/s)</th><th>Cap (l/s)</th><th>Flow (l/s)</th></tr><tr><td>S2.000</td><td>50.00</td><td>5.08</td><td>0.385</td><td>2.890</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.89</td><td>35.5«</td><td>391.3</td></tr><tr><td>S2.001</td><td>50.00</td><td>5.67</td><td>0.365</td><td>2.890</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.78</td><td>31.1«</td><td>391.3</td></tr><tr><td>S1.005</td><td>50.00</td><td>9.87</td><td>0.265</td><td>3.746</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.86</td><td>136.8«</td><td>507.3</td></tr><tr><td>S1.006</td><td>50.00</td><td>9.91</td><td>0.230</td><td>3.746</td><td>0.0</td><td>0.0</td><td>0.0</td><td>1.70</td><td>269.8«</td><td>507.3</td></tr></table>												PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design	S2.000	4.245	0.020	212.2	2.890	5.00	0.0	0.600	o	225	Pipe/Conduit		S2.001	27.631	0.100	276.3	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit		S1.005	19.234	0.035	549.5	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit		S1.006	3.581	0.025	143.2	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit		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)	S2.000	50.00	5.08	0.385	2.890	0.0	0.0	0.0	0.89	35.5«	391.3	S2.001	50.00	5.67	0.365	2.890	0.0	0.0	0.0	0.78	31.1«	391.3	S1.005	50.00	9.87	0.265	3.746	0.0	0.0	0.0	0.86	136.8«	507.3	S1.006	50.00	9.91	0.230	3.746	0.0	0.0	0.0	1.70	269.8«	507.3
PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design																																																																																																																			
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Date 11/10/2019				Designed by D. Gallimore						
File Network 3 (Unit 1-9).mdx				Checked by M. Griffin						
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Manhole Schedules for Storm										
MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)
S1	2.700	1.400	Open Manhole	1200	S1.000	1.300	225			
S2	2.650	1.400	Open Manhole	1350	S1.001	1.250	450	S1.000	1.250	
S3	2.900	1.690	Open Manhole	1350	S1.002	1.210	450	S1.001	1.210	
S4	2.900	2.020	Open Manhole	1350	S1.003	0.880	450	S1.002	0.880	
S5	2.150	1.665	Open Manhole	1350	S1.004	0.485	450	S1.003	0.485	
S6	2.500	2.115	Open Manhole	1200	S2.000	0.385	225			
S7	2.500	2.135	Open Manhole	1200	S2.001	0.365	225	S2.000	0.365	
S6	1.850	1.585	Open Manhole	1350	S1.005	0.265	450	S1.004	0.265	
								S2.001	0.265	
S7	1.900	1.670	Open Manhole	1350	S1.006	0.230	450	S1.005	0.230	
S	2.010	1.805	Open Manhole	0		OUTFALL		S1.006	0.205	
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.		SALTBOX						
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Innovyze		Network 2018.1						
PIPELINE SCHEDULES for Storm								
Upstream Manhole								
PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	o	225	S1	2.700	1.300	1.175	Open Manhole	1200
S1.001	o	450	S2	2.650	1.250	0.950	Open Manhole	1350
S1.002	o	450	S3	2.900	1.210	1.240	Open Manhole	1350
S1.003	o	450	S4	2.900	0.880	1.570	Open Manhole	1350
S1.004	o	450	S5	2.150	0.485	1.215	Open Manhole	1350
S2.000	o	225	S6	2.500	0.385	1.890	Open Manhole	1200
S2.001	o	225	S7	2.500	0.365	1.910	Open Manhole	1200
S1.005	o	450	S6	1.850	0.265	1.135	Open Manhole	1350
S1.006	o	450	S7	1.900	0.230	1.220	Open Manhole	1350
Downstream Manhole								
PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	13.163	263.3	S2	2.650	1.250	1.175	Open Manhole	1350
S1.001	21.638	540.9	S3	2.900	1.210	1.240	Open Manhole	1350
S1.002	98.328	298.0	S4	2.900	0.880	1.570	Open Manhole	1350
S1.003	113.301	286.8	S5	2.150	0.485	1.215	Open Manhole	1350
S1.004	60.921	276.9	S6	1.850	0.265	1.135	Open Manhole	1350
S2.000	4.245	212.2	S7	2.500	0.365	1.910	Open Manhole	1200
S2.001	27.631	276.3	S6	1.850	0.265	1.360	Open Manhole	1350
S1.005	19.234	549.5	S7	1.900	0.230	1.220	Open Manhole	1350
S1.006	3.581	143.2	S	2.010	0.205	1.355	Open Manhole	0
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Innovyze				Network 2018.1																																																																																							
<u>Area Summary for Storm</u> <table><tr><th>Pipe Number</th><th>PIMP Type</th><th>PIMP Name</th><th>PIMP (%)</th><th>Gross Area (ha)</th><th>Imp. Area (ha)</th><th>Pipe Total (ha)</th></tr><tr><td>1.000</td><td>-</td><td>-</td><td>100</td><td>0.856</td><td>0.856</td><td>0.856</td></tr><tr><td>1.001</td><td>-</td><td>-</td><td>100</td><td>0.000</td><td>0.000</td><td>0.000</td></tr><tr><td>1.002</td><td>-</td><td>-</td><td>100</td><td>0.000</td><td>0.000</td><td>0.000</td></tr><tr><td>1.003</td><td>-</td><td>-</td><td>100</td><td>0.000</td><td>0.000</td><td>0.000</td></tr><tr><td>1.004</td><td>-</td><td>-</td><td>100</td><td>0.000</td><td>0.000</td><td>0.000</td></tr><tr><td>2.000</td><td>-</td><td>-</td><td>100</td><td>2.890</td><td>2.890</td><td>2.890</td></tr><tr><td>2.001</td><td>-</td><td>-</td><td>100</td><td>0.000</td><td>0.000</td><td>0.000</td></tr><tr><td>1.005</td><td>-</td><td>-</td><td>100</td><td>0.000</td><td>0.000</td><td>0.000</td></tr><tr><td>1.006</td><td>-</td><td>-</td><td>100</td><td>0.000</td><td>0.000</td><td>0.000</td></tr><tr><td colspan="4"></td><td>Total</td><td>Total</td><td>Total</td></tr><tr><td colspan="4"></td><td>3.746</td><td>3.746</td><td>3.746</td></tr></table>								Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)	1.000	-	-	100	0.856	0.856	0.856	1.001	-	-	100	0.000	0.000	0.000	1.002	-	-	100	0.000	0.000	0.000	1.003	-	-	100	0.000	0.000	0.000	1.004	-	-	100	0.000	0.000	0.000	2.000	-	-	100	2.890	2.890	2.890	2.001	-	-	100	0.000	0.000	0.000	1.005	-	-	100	0.000	0.000	0.000	1.006	-	-	100	0.000	0.000	0.000					Total	Total	Total					3.746	3.746	3.746
Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)																																																																																					
1.000	-	-	100	0.856	0.856	0.856																																																																																					
1.001	-	-	100	0.000	0.000	0.000																																																																																					
1.002	-	-	100	0.000	0.000	0.000																																																																																					
1.003	-	-	100	0.000	0.000	0.000																																																																																					
1.004	-	-	100	0.000	0.000	0.000																																																																																					
2.000	-	-	100	2.890	2.890	2.890																																																																																					
2.001	-	-	100	0.000	0.000	0.000																																																																																					
1.005	-	-	100	0.000	0.000	0.000																																																																																					
1.006	-	-	100	0.000	0.000	0.000																																																																																					
				Total	Total	Total																																																																																					
				3.746	3.746	3.746																																																																																					
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Date 11/10/2019					Designed by D. Gallimore						
File Network 3 (Unit 1-9).mdx					Checked by M. Griffin						
Innovyze					Network 2018.1						
Network Classifications for Storm											
PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type		
S1.000	S1	225	1.175	1.175	Unclassified	1200	0	1.175	Unclassified		
S1.001	S2	450	0.950	1.240	Unclassified	1350	0	0.950	Unclassified		
S1.002	S3	450	1.240	1.570	Unclassified	1350	0	1.240	Unclassified		
S1.003	S4	450	1.215	1.570	Unclassified	1350	0	1.570	Unclassified		
S1.004	S5	450	1.135	1.215	Unclassified	1350	0	1.215	Unclassified		
S2.000	S6	225	1.890	1.910	Unclassified	1200	0	1.890	Unclassified		
S2.001	S7	225	1.360	1.910	Unclassified	1200	0	1.910	Unclassified		
S1.005	S6	450	1.135	1.220	Unclassified	1350	0	1.135	Unclassified		
S1.006	S7	450	1.220	1.355	Unclassified	1350	0	1.220	Unclassified		
Surcharged Outfall Details for Storm											
Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)					
S1.006	S	2.010	0.205	0.000	0	0					
Datum (m) 0.000 Offset (mins) 0											
Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
1	1.800	25	1.800	49	1.800	73	1.800	97	1.800	121	1.800
2	1.800	26	1.800	50	1.800	74	1.800	98	1.800	122	1.800
3	1.800	27	1.800	51	1.800	75	1.800	99	1.800	123	1.800
4	1.800	28	1.800	52	1.800	76	1.800	100	1.800	124	1.800
5	1.800	29	1.800	53	1.800	77	1.800	101	1.800	125	1.800
6	1.800	30	1.800	54	1.800	78	1.800	102	1.800	126	1.800
7	1.800	31	1.800	55	1.800	79	1.800	103	1.800	127	1.800
8	1.800	32	1.800	56	1.800	80	1.800	104	1.800	128	1.800
9	1.800	33	1.800	57	1.800	81	1.800	105	1.800	129	1.800
10	1.800	34	1.800	58	1.800	82	1.800	106	1.800	130	1.800
11	1.800	35	1.800	59	1.800	83	1.800	107	1.800	131	1.800
12	1.800	36	1.800	60	1.800	84	1.800	108	1.800	132	1.800
13	1.800	37	1.800	61	1.800	85	1.800	109	1.800	133	1.800
14	1.800	38	1.800	62	1.800	86	1.800	110	1.800	134	1.800
15	1.800	39	1.800	63	1.800	87	1.800	111	1.800	135	1.800
16	1.800	40	1.800	64	1.800	88	1.800	112	1.800	136	1.800
17	1.800	41	1.800	65	1.800	89	1.800	113	1.800	137	1.800
18	1.800	42	1.800	66	1.800	90	1.800	114	1.800	138	1.800
19	1.800	43	1.800	67	1.800	91	1.800	115	1.800	139	1.800
20	1.800	44	1.800	68	1.800	92	1.800	116	1.800	140	1.800
21	1.800	45	1.800	69	1.800	93	1.800	117	1.800	141	1.800
22	1.800	46	1.800	70	1.800	94	1.800	118	1.800	142	1.800
23	1.800	47	1.800	71	1.800	95	1.800	119	1.800	143	1.800
24	1.800	48	1.800	72	1.800	96	1.800	120	1.800	144	1.800
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Date 11/10/2019				Designed by D. Gallimore											
File Network 3 (Unit 1-9).mdx				Checked by M. Griffin											
Innovyze				Network 2018.1											
Surcharged Outfall Details for Storm															
Time (mins)		Depth (m)		Time (mins)		Depth (m)		Time (mins)		Depth (m)		Time (mins)		Depth (m)	
145		1.800		195		1.800		245		1.800		295		1.800	
146		1.800		196		1.800		246		1.800		296		1.800	
147		1.800		197		1.800		247		1.800		297		1.800	
148		1.800		198		1.800		248		1.800		298		1.800	
149		1.800		199		1.800		249		1.800		299		1.800	
150		1.800		200		1.800		250		1.800		300		1.800	
151		1.800		201		1.800		251		1.800		301		1.800	
152		1.800		202		1.800		252		1.800		302		1.800	
153		1.800		203		1.800		253		1.800		303		1.800	
154		1.800		204		1.800		254		1.800		304		1.800	
155		1.800		205		1.800		255		1.800		305		1.800	
156		1.800		206		1.800		256		1.800		306		1.800	
157		1.800		207		1.800		257		1.800		307		1.800	
158		1.800		208		1.800		258		1.800		308		1.800	
159		1.800		209		1.800		259		1.800		309		1.800	
160		1.800		210		1.800		260		1.800		310		1.800	
161		1.800		211		1.800		261		1.800		311		1.800	
162		1.800		212		1.800		262		1.800		312		1.800	
163		1.800		213		1.800		263		1.800		313		1.800	
164		1.800		214		1.800		264		1.800		314		1.800	
165		1.800		215		1.800		265		1.800		315		1.800	
166		1.800		216		1.800		266		1.800		316		1.800	
167		1.800		217		1.800		267		1.800		317		1.800	
168		1.800		218		1.800		268		1.800		318		1.800	
169		1.800		219		1.800		269		1.800		319		1.800	
170		1.800		220		1.800		270		1.800		320		1.800	
171		1.800		221		1.800		271		1.800		321		1.800	
172		1.800		222		1.800		272		1.800		322		1.800	
173		1.800		223		1.800		273		1.800		323		1.800	
174		1.800		224		1.800		274		1.800		324		1.800	
175		1.800		225		1.800		275		1.800		325		1.800	
176		1.800		226		1.800		276		1.800		326		1.800	
177		1.800		227		1.800		277		1.800		327		1.800	
178		1.800		228		1.800		278		1.800		328		1.800	
179		1.800		229		1.800		279		1.800		329		1.800	
180		1.800		230		1.800		280		1.800		330		1.800	
181		1.800		231		1.800		281		1.800		331		1.800	
182		1.800		232		1.800		282		1.800		332		1.800	
183		1.800		233		1.800		283		1.800		333		1.800	
184		1.800		234		1.800		284		1.800		334		1.800	
185		1.800		235		1.800		285		1.800		335		1.800	
186		1.800		236		1.800		286		1.800		336		1.800	
187		1.800		237		1.800		287		1.800		337		1.800	
188		1.800		238		1.800		288		1.800		338		1.800	
189		1.800		239		1.800		289		1.800		339		1.800	
190		1.800		240		1.800		290		1.800		340		1.800	
191		1.800		241		1.800		291		1.800		341		1.800	
192		1.800		242		1.800		292		1.800		342		1.800	
193		1.800		243		1.800		293		1.800		343		1.800	
194		1.800		244		1.800		294		1.800		344		1.800	
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Hydrock Consultants Ltd				Page 8							
.				SALTBOX BOGNOR REGIS Micro Drainage							
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Date 11/10/2019				Designed by D. Gallimore							
File Network 3 (Unit 1-9).mdx				Checked by M. Griffin							
Innovyze				Network 2018.1							
Surcharged Outfall Details for Storm											
Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
445	1.800	495	1.800	545	1.800	595	1.800	645	1.800	695	1.800
446	1.800	496	1.800	546	1.800	596	1.800	646	1.800	696	1.800
447	1.800	497	1.800	547	1.800	597	1.800	647	1.800	697	1.800
448	1.800	498	1.800	548	1.800	598	1.800	648	1.800	698	1.800
449	1.800	499	1.800	549	1.800	599	1.800	649	1.800	699	1.800
450	1.800	500	1.800	550	1.800	600	1.800	650	1.800	700	1.800
451	1.800	501	1.800	551	1.800	601	1.800	651	1.800	701	1.800
452	1.800	502	1.800	552	1.800	602	1.800	652	1.800	702	1.800
453	1.800	503	1.800	553	1.800	603	1.800	653	1.800	703	1.800
454	1.800	504	1.800	554	1.800	604	1.800	654	1.800	704	1.800
455	1.800	505	1.800	555	1.800	605	1.800	655	1.800	705	1.800
456	1.800	506	1.800	556	1.800	606	1.800	656	1.800	706	1.800
457	1.800	507	1.800	557	1.800	607	1.800	657	1.800	707	1.800
458	1.800	508	1.800	558	1.800	608	1.800	658	1.800	708	1.800
459	1.800	509	1.800	559	1.800	609	1.800	659	1.800	709	1.800
460	1.800	510	1.800	560	1.800	610	1.800	660	1.800	710	1.800
461	1.800	511	1.800	561	1.800	611	1.800	661	1.800	711	1.800
462	1.800	512	1.800	562	1.800	612	1.800	662	1.800	712	1.800
463	1.800	513	1.800	563	1.800	613	1.800	663	1.800	713	1.800
464	1.800	514	1.800	564	1.800	614	1.800	664	1.800	714	1.800
465	1.800	515	1.800	565	1.800	615	1.800	665	1.800	715	1.800
466	1.800	516	1.800	566	1.800	616	1.800	666	1.800	716	1.800
467	1.800	517	1.800	567	1.800	617	1.800	667	1.800	717	1.800
468	1.800	518	1.800	568	1.800	618	1.800	668	1.800	718	1.800
469	1.800	519	1.800	569	1.800	619	1.800	669	1.800	719	1.800
470	1.800	520	1.800	570	1.800	620	1.800	670	1.800	720	1.800
471	1.800	521	1.800	571	1.800	621	1.800	671	1.800	721	1.800
472	1.800	522	1.800	572	1.800	622	1.800	672	1.800	722	1.800
473	1.800	523	1.800	573	1.800	623	1.800	673	1.800	723	1.800
474	1.800	524	1.800	574	1.800	624	1.800	674	1.800	724	1.800
475	1.800	525	1.800	575	1.800	625	1.800	675	1.800	725	1.800
476	1.800	526	1.800	576	1.800	626	1.800	676	1.800	726	1.800
477	1.800	527	1.800	577	1.800	627	1.800	677	1.800	727	1.800
478	1.800	528	1.800	578	1.800	628	1.800	678	1.800	728	1.800
479	1.800	529	1.800	579	1.800	629	1.800	679	1.800	729	1.800
480	1.800	530	1.800	580	1.800	630	1.800	680	1.800	730	1.800
481	1.800	531	1.800	581	1.800	631	1.800	681	1.800	731	1.800
482	1.800	532	1.800	582	1.800	632	1.800	682	1.800	732	1.800
483	1.800	533	1.800	583	1.800	633	1.800	683	1.800	733	1.800
484	1.800	534	1.800	584	1.800	634	1.800	684	1.800	734	1.800
485	1.800	535	1.800	585	1.800	635	1.800	685	1.800	735	1.800
486	1.800	536	1.800	586	1.800	636	1.800	686	1.800	736	1.800
487	1.800	537	1.800	587	1.800	637	1.800	687	1.800	737	1.800
488	1.800	538	1.800	588	1.800	638	1.800	688	1.800	738	1.800
489	1.800	539	1.800	589	1.800	639	1.800	689	1.800	739	1.800
490	1.800	540	1.800	590	1.800	640	1.800	690	1.800	740	1.800
491	1.800	541	1.800	591	1.800	641	1.800	691	1.800	741	1.800
492	1.800	542	1.800	592	1.800	642	1.800	692	1.800	742	1.800
493	1.800	543	1.800	593	1.800	643	1.800	693	1.800	743	1.800
494	1.800	544	1.800	594	1.800	644	1.800	694	1.800	744	1.800
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Hydrock Consultants Ltd						Page 9					
.				SALTBOX							
.				BOGNOR REGIS							
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Date 11/10/2019				Designed by D. Gallimore							
File Network 3 (Unit 1-9).mdx				Checked by M. Griffin							
Innovyze				Network 2018.1							
Surcharged Outfall Details for Storm											
Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
745	1.800	795	1.800	845	1.800	895	1.800	945	1.800	995	1.800
746	1.800	796	1.800	846	1.800	896	1.800	946	1.800	996	1.800
747	1.800	797	1.800	847	1.800	897	1.800	947	1.800	997	1.800
748	1.800	798	1.800	848	1.800	898	1.800	948	1.800	998	1.800
749	1.800	799	1.800	849	1.800	899	1.800	949	1.800	999	1.800
750	1.800	800	1.800	850	1.800	900	1.800	950	1.800	1000	1.800
751	1.800	801	1.800	851	1.800	901	1.800	951	1.800	1001	1.800
752	1.800	802	1.800	852	1.800	902	1.800	952	1.800	1002	1.800
753	1.800	803	1.800	853	1.800	903	1.800	953	1.800	1003	1.800
754	1.800	804	1.800	854	1.800	904	1.800	954	1.800	1004	1.800
755	1.800	805	1.800	855	1.800	905	1.800	955	1.800	1005	1.800
756	1.800	806	1.800	856	1.800	906	1.800	956	1.800	1006	1.800
757	1.800	807	1.800	857	1.800	907	1.800	957	1.800	1007	1.800
758	1.800	808	1.800	858	1.800	908	1.800	958	1.800	1008	1.800
759	1.800	809	1.800	859	1.800	909	1.800	959	1.800	1009	1.800
760	1.800	810	1.800	860	1.800	910	1.800	960	1.800	1010	1.800
761	1.800	811	1.800	861	1.800	911	1.800	961	1.800	1011	1.800
762	1.800	812	1.800	862	1.800	912	1.800	962	1.800	1012	1.800
763	1.800	813	1.800	863	1.800	913	1.800	963	1.800	1013	1.800
764	1.800	814	1.800	864	1.800	914	1.800	964	1.800	1014	1.800
765	1.800	815	1.800	865	1.800	915	1.800	965	1.800	1015	1.800
766	1.800	816	1.800	866	1.800	916	1.800	966	1.800	1016	1.800
767	1.800	817	1.800	867	1.800	917	1.800	967	1.800	1017	1.800
768	1.800	818	1.800	868	1.800	918	1.800	968	1.800	1018	1.800
769	1.800	819	1.800	869	1.800	919	1.800	969	1.800	1019	1.800
770	1.800	820	1.800	870	1.800	920	1.800	970	1.800	1020	1.800
771	1.800	821	1.800	871	1.800	921	1.800	971	1.800	1021	1.800
772	1.800	822	1.800	872	1.800	922	1.800	972	1.800	1022	1.800
773	1.800	823	1.800	873	1.800	923	1.800	973	1.800	1023	1.800
774	1.800	824	1.800	874	1.800	924	1.800	974	1.800	1024	1.800
775	1.800	825	1.800	875	1.800	925	1.800	975	1.800	1025	1.800
776	1.800	826	1.800	876	1.800	926	1.800	976	1.800	1026	1.800
777	1.800	827	1.800	877	1.800	927	1.800	977	1.800	1027	1.800
778	1.800	828	1.800	878	1.800	928	1.800	978	1.800	1028	1.800
779	1.800	829	1.800	879	1.800	929	1.800	979	1.800	1029	1.800
780	1.800	830	1.800	880	1.800	930	1.800	980	1.800	1030	1.800
781	1.800	831	1.800	881	1.800	931	1.800	981	1.800	1031	1.800
782	1.800	832	1.800	882	1.800	932	1.800	982	1.800	1032	1.800
783	1.800	833	1.800	883	1.800	933	1.800	983	1.800	1033	1.800
784	1.800	834	1.800	884	1.800	934	1.800	984	1.800	1034	1.800
785	1.800	835	1.800	885	1.800	935	1.800	985	1.800	1035	1.800
786	1.800	836	1.800	886	1.800	936	1.800	986	1.800	1036	1.800
787	1.800	837	1.800	887	1.800	937	1.800	987	1.800	1037	1.800
788	1.800	838	1.800	888	1.800	938	1.800	988	1.800	1038	1.800
789	1.800	839	1.800	889	1.800	939	1.800	989	1.800	1039	1.800
790	1.800	840	1.800	890	1.800	940	1.800	990	1.800	1040	1.800
791	1.800	841	1.800	891	1.800	941	1.800	991	1.800	1041	1.800
792	1.800	842	1.800	892	1.800	942	1.800	992	1.800	1042	1.800
793	1.800	843	1.800	893	1.800	943	1.800	993	1.800	1043	1.800
794	1.800	844	1.800	894	1.800	944	1.800	994	1.800	1044	1.800
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Hydrock Consultants Ltd								Page 10			
.				SALTBOX							
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Date 11/10/2019				Designed by D. Gallimore							
File Network 3 (Unit 1-9).mdx				Checked by M. Griffin							
Innovyze				Network 2018.1							
Surcharged Outfall Details for Storm											
Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
1045	1.800	1095	1.800	1145	1.800	1195	1.800	1245	1.800	1295	1.800
1046	1.800	1096	1.800	1146	1.800	1196	1.800	1246	1.800	1296	1.800
1047	1.800	1097	1.800	1147	1.800	1197	1.800	1247	1.800	1297	1.800
1048	1.800	1098	1.800	1148	1.800	1198	1.800	1248	1.800	1298	1.800
1049	1.800	1099	1.800	1149	1.800	1199	1.800	1249	1.800	1299	1.800
1050	1.800	1100	1.800	1150	1.800	1200	1.800	1250	1.800	1300	1.800
1051	1.800	1101	1.800	1151	1.800	1201	1.800	1251	1.800	1301	1.800
1052	1.800	1102	1.800	1152	1.800	1202	1.800	1252	1.800	1302	1.800
1053	1.800	1103	1.800	1153	1.800	1203	1.800	1253	1.800	1303	1.800
1054	1.800	1104	1.800	1154	1.800	1204	1.800	1254	1.800	1304	1.800
1055	1.800	1105	1.800	1155	1.800	1205	1.800	1255	1.800	1305	1.800
1056	1.800	1106	1.800	1156	1.800	1206	1.800	1256	1.800	1306	1.800
1057	1.800	1107	1.800	1157	1.800	1207	1.800	1257	1.800	1307	1.800
1058	1.800	1108	1.800	1158	1.800	1208	1.800	1258	1.800	1308	1.800
1059	1.800	1109	1.800	1159	1.800	1209	1.800	1259	1.800	1309	1.800
1060	1.800	1110	1.800	1160	1.800	1210	1.800	1260	1.800	1310	1.800
1061	1.800	1111	1.800	1161	1.800	1211	1.800	1261	1.800	1311	1.800
1062	1.800	1112	1.800	1162	1.800	1212	1.800	1262	1.800	1312	1.800
1063	1.800	1113	1.800	1163	1.800	1213	1.800	1263	1.800	1313	1.800
1064	1.800	1114	1.800	1164	1.800	1214	1.800	1264	1.800	1314	1.800
1065	1.800	1115	1.800	1165	1.800	1215	1.800	1265	1.800	1315	1.800
1066	1.800	1116	1.800	1166	1.800	1216	1.800	1266	1.800	1316	1.800
1067	1.800	1117	1.800	1167	1.800	1217	1.800	1267	1.800	1317	1.800
1068	1.800	1118	1.800	1168	1.800	1218	1.800	1268	1.800	1318	1.800
1069	1.800	1119	1.800	1169	1.800	1219	1.800	1269	1.800	1319	1.800
1070	1.800	1120	1.800	1170	1.800	1220	1.800	1270	1.800	1320	1.800
1071	1.800	1121	1.800	1171	1.800	1221	1.800	1271	1.800	1321	1.800
1072	1.800	1122	1.800	1172	1.800	1222	1.800	1272	1.800	1322	1.800
1073	1.800	1123	1.800	1173	1.800	1223	1.800	1273	1.800	1323	1.800
1074	1.800	1124	1.800	1174	1.800	1224	1.800	1274	1.800	1324	1.800
1075	1.800	1125	1.800	1175	1.800	1225	1.800	1275	1.800	1325	1.800
1076	1.800	1126	1.800	1176	1.800	1226	1.800	1276	1.800	1326	1.800
1077	1.800	1127	1.800	1177	1.800	1227	1.800	1277	1.800	1327	1.800
1078	1.800	1128	1.800	1178	1.800	1228	1.800	1278	1.800	1328	1.800
1079	1.800	1129	1.800	1179	1.800	1229	1.800	1279	1.800	1329	1.800
1080	1.800	1130	1.800	1180	1.800	1230	1.800	1280	1.800	1330	1.800
1081	1.800	1131	1.800	1181	1.800	1231	1.800	1281	1.800	1331	1.800
1082	1.800	1132	1.800	1182	1.800	1232	1.800	1282	1.800	1332	1.800
1083	1.800	1133	1.800	1183	1.800	1233	1.800	1283	1.800	1333	1.800
1084	1.800	1134	1.800	1184	1.800	1234	1.800	1284	1.800	1334	1.800
1085	1.800	1135	1.800	1185	1.800	1235	1.800	1285	1.800	1335	1.800
1086	1.800	1136	1.800	1186	1.800	1236	1.800	1286	1.800	1336	1.800
1087	1.800	1137	1.800	1187	1.800	1237	1.800	1287	1.800	1337	1.800
1088	1.800	1138	1.800	1188	1.800	1238	1.800	1288	1.800	1338	1.800
1089	1.800	1139	1.800	1189	1.800	1239	1.800	1289	1.800	1339	1.800
1090	1.800	1140	1.800	1190	1.800	1240	1.800	1290	1.800	1340	1.800
1091	1.800	1141	1.800	1191	1.800	1241	1.800	1291	1.800	1341	1.800
1092	1.800	1142	1.800	1192	1.800	1242	1.800	1292	1.800	1342	1.800
1093	1.800	1143	1.800	1193	1.800	1243	1.800	1293	1.800	1343	1.800
1094	1.800	1144	1.800	1194	1.800	1244	1.800	1294	1.800	1344	1.800
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Hydrock Consultants Ltd						Page 11					
.				SALTBOX							
.				BOGNOR REGIS							
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Date 11/10/2019				Designed by D. Gallimore							
File Network 3 (Unit 1-9).mdx				Checked by M. Griffin							
Innovyze				Network 2018.1							
Surcharged Outfall Details for Storm											
Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
1345	1.800	1395	1.800	1445	1.800	1495	1.800	1545	1.800	1595	1.800
1346	1.800	1396	1.800	1446	1.800	1496	1.800	1546	1.800	1596	1.800
1347	1.800	1397	1.800	1447	1.800	1497	1.800	1547	1.800	1597	1.800
1348	1.800	1398	1.800	1448	1.800	1498	1.800	1548	1.800	1598	1.800
1349	1.800	1399	1.800	1449	1.800	1499	1.800	1549	1.800	1599	1.800
1350	1.800	1400	1.800	1450	1.800	1500	1.800	1550	1.800	1600	1.800
1351	1.800	1401	1.800	1451	1.800	1501	1.800	1551	1.800	1601	1.800
1352	1.800	1402	1.800	1452	1.800	1502	1.800	1552	1.800	1602	1.800
1353	1.800	1403	1.800	1453	1.800	1503	1.800	1553	1.800	1603	1.800
1354	1.800	1404	1.800	1454	1.800	1504	1.800	1554	1.800	1604	1.800
1355	1.800	1405	1.800	1455	1.800	1505	1.800	1555	1.800	1605	1.800
1356	1.800	1406	1.800	1456	1.800	1506	1.800	1556	1.800	1606	1.800
1357	1.800	1407	1.800	1457	1.800	1507	1.800	1557	1.800	1607	1.800
1358	1.800	1408	1.800	1458	1.800	1508	1.800	1558	1.800	1608	1.800
1359	1.800	1409	1.800	1459	1.800	1509	1.800	1559	1.800	1609	1.800
1360	1.800	1410	1.800	1460	1.800	1510	1.800	1560	1.800	1610	1.800
1361	1.800	1411	1.800	1461	1.800	1511	1.800	1561	1.800	1611	1.800
1362	1.800	1412	1.800	1462	1.800	1512	1.800	1562	1.800	1612	1.800
1363	1.800	1413	1.800	1463	1.800	1513	1.800	1563	1.800	1613	1.800
1364	1.800	1414	1.800	1464	1.800	1514	1.800	1564	1.800	1614	1.800
1365	1.800	1415	1.800	1465	1.800	1515	1.800	1565	1.800	1615	1.800
1366	1.800	1416	1.800	1466	1.800	1516	1.800	1566	1.800	1616	1.800
1367	1.800	1417	1.800	1467	1.800	1517	1.800	1567	1.800	1617	1.800
1368	1.800	1418	1.800	1468	1.800	1518	1.800	1568	1.800	1618	1.800
1369	1.800	1419	1.800	1469	1.800	1519	1.800	1569	1.800	1619	1.800
1370	1.800	1420	1.800	1470	1.800	1520	1.800	1570	1.800	1620	1.800
1371	1.800	1421	1.800	1471	1.800	1521	1.800	1571	1.800	1621	1.800
1372	1.800	1422	1.800	1472	1.800	1522	1.800	1572	1.800	1622	1.800
1373	1.800	1423	1.800	1473	1.800	1523	1.800	1573	1.800	1623	1.800
1374	1.800	1424	1.800	1474	1.800	1524	1.800	1574	1.800	1624	1.800
1375	1.800	1425	1.800	1475	1.800	1525	1.800	1575	1.800	1625	1.800
1376	1.800	1426	1.800	1476	1.800	1526	1.800	1576	1.800	1626	1.800
1377	1.800	1427	1.800	1477	1.800	1527	1.800	1577	1.800	1627	1.800
1378	1.800	1428	1.800	1478	1.800	1528	1.800	1578	1.800	1628	1.800
1379	1.800	1429	1.800	1479	1.800	1529	1.800	1579	1.800	1629	1.800
1380	1.800	1430	1.800	1480	1.800	1530	1.800	1580	1.800	1630	1.800
1381	1.800	1431	1.800	1481	1.800	1531	1.800	1581	1.800	1631	1.800
1382	1.800	1432	1.800	1482	1.800	1532	1.800	1582	1.800	1632	1.800
1383	1.800	1433	1.800	1483	1.800	1533	1.800	1583	1.800	1633	1.800
1384	1.800	1434	1.800	1484	1.800	1534	1.800	1584	1.800	1634	1.800
1385	1.800	1435	1.800	1485	1.800	1535	1.800	1585	1.800	1635	1.800
1386	1.800	1436	1.800	1486	1.800	1536	1.800	1586	1.800	1636	1.800
1387	1.800	1437	1.800	1487	1.800	1537	1.800	1587	1.800	1637	1.800
1388	1.800	1438	1.800	1488	1.800	1538	1.800	1588	1.800	1638	1.800
1389	1.800	1439	1.800	1489	1.800	1539	1.800	1589	1.800	1639	1.800
1390	1.800	1440	1.800	1490	1.800	1540	1.800	1590	1.800	1640	1.800
1391	1.800	1441	1.800	1491	1.800	1541	1.800	1591	1.800	1641	1.800
1392	1.800	1442	1.800	1492	1.800	1542	1.800	1592	1.800	1642	1.800
1393	1.800	1443	1.800	1493	1.800	1543	1.800	1593	1.800	1643	1.800
1394	1.800	1444	1.800	1494	1.800	1544	1.800	1594	1.800	1644	1.800
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Hydrock Consultants Ltd						Page 12	
.				SALTBOX			
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Date 11/10/2019				Designed by D. Gallimore			
File Network 3 (Unit 1-9).mdx				Checked by M. Griffin			
Innovyze				Network 2018.1			
Surcharged Outfall Details for Storm							
Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
1645	1.800	1695	1.800	1745	1.800	1795	1.800
1646	1.800	1696	1.800	1746	1.800	1796	1.800
1647	1.800	1697	1.800	1747	1.800	1797	1.800
1648	1.800	1698	1.800	1748	1.800	1798	1.800
1649	1.800	1699	1.800	1749	1.800	1799	1.800
1650	1.800	1700	1.800	1750	1.800	1800	1.800
1651	1.800	1701	1.800	1751	1.800	1801	1.800
1652	1.800	1702	1.800	1752	1.800	1802	1.800
1653	1.800	1703	1.800	1753	1.800	1803	1.800
1654	1.800	1704	1.800	1754	1.800	1804	1.800
1655	1.800	1705	1.800	1755	1.800	1805	1.800
1656	1.800	1706	1.800	1756	1.800	1806	1.800
1657	1.800	1707	1.800	1757	1.800	1807	1.800
1658	1.800	1708	1.800	1758	1.800	1808	1.800
1659	1.800	1709	1.800	1759	1.800	1809	1.800
1660	1.800	1710	1.800	1760	1.800	1810	1.800
1661	1.800	1711	1.800	1761	1.800	1811	1.800
1662	1.800	1712	1.800	1762	1.800	1812	1.800
1663	1.800	1713	1.800	1763	1.800	1813	1.800
1664	1.800	1714	1.800	1764	1.800	1814	1.800
1665	1.800	1715	1.800	1765	1.800	1815	1.800
1666	1.800	1716	1.800	1766	1.800	1816	1.800
1667	1.800	1717	1.800	1767	1.800	1817	1.800
1668	1.800	1718	1.800	1768	1.800	1818	1.800
1669	1.800	1719	1.800	1769	1.800	1819	1.800
1670	1.800	1720	1.800	1770	1.800	1820	1.800
1671	1.800	1721	1.800	1771	1.800	1821	1.800
1672	1.800	1722	1.800	1772	1.800	1822	1.800
1673	1.800	1723	1.800	1773	1.800	1823	1.800
1674	1.800	1724	1.800	1774	1.800	1824	1.800
1675	1.800	1725	1.800	1775	1.800	1825	1.800
1676	1.800	1726	1.800	1776	1.800	1826	1.800
1677	1.800	1727	1.800	1777	1.800	1827	1.800
1678	1.800	1728	1.800	1778	1.800	1828	1.800
1679	1.800	1729	1.800	1779	1.800	1829	1.800
1680	1.800	1730	1.800	1780	1.800	1830	1.800
1681	1.800	1731	1.800	1781	1.800	1831	1.800
1682	1.800	1732	1.800	1782	1.800	1832	1.800
1683	1.800	1733	1.800	1783	1.800	1833	1.800
1684	1.800	1734	1.800	1784	1.800	1834	1.800
1685	1.800	1735	1.800	1785	1.800	1835	1.800
1686	1.800	1736	1.800	1786	1.800	1836	1.800
1687	1.800	1737	1.800	1787	1.800	1837	1.800
1688	1.800	1738	1.800	1788	1.800	1838	1.800
1689	1.800	1739	1.800	1789	1.800	1839	1.800
1690	1.800	1740	1.800	1790	1.800	1840	1.800
1691	1.800	1741	1.800	1791	1.800	1841	1.800
1692	1.800	1742	1.800	1792	1.800	1842	1.800
1693	1.800	1743	1.800	1793	1.800	1843	1.800
1694	1.800	1744	1.800	1794	1.800	1844	1.800
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Hydrock Consultants Ltd						Page 13					
.				SALTBOX							
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Date 11/10/2019				Designed by D. Gallimore							
File Network 3 (Unit 1-9).mdx				Checked by M. Griffin							
Innovyze				Network 2018.1							
Surcharged Outfall Details for Storm											
Time	Depth	Time	Depth	Time	Depth	Time	Depth	Time	Depth	Time	Depth
(mins)	(m)	(mins)	(m)	(mins)	(m)	(mins)	(m)	(mins)	(m)	(mins)	(m)
1945	1.800	1995	1.800	2045	1.800	2095	1.800	2145	1.800	2195	1.800
1946	1.800	1996	1.800	2046	1.800	2096	1.800	2146	1.800	2196	1.800
1947	1.800	1997	1.800	2047	1.800	2097	1.800	2147	1.800	2197	1.800
1948	1.800	1998	1.800	2048	1.800	2098	1.800	2148	1.800	2198	1.800
1949	1.800	1999	1.800	2049	1.800	2099	1.800	2149	1.800	2199	1.800
1950	1.800	2000	1.800	2050	1.800	2100	1.800	2150	1.800	2200	1.800
1951	1.800	2001	1.800	2051	1.800	2101	1.800	2151	1.800	2201	1.800
1952	1.800	2002	1.800	2052	1.800	2102	1.800	2152	1.800	2202	1.800
1953	1.800	2003	1.800	2053	1.800	2103	1.800	2153	1.800	2203	1.800
1954	1.800	2004	1.800	2054	1.800	2104	1.800	2154	1.800	2204	1.800
1955	1.800	2005	1.800	2055	1.800	2105	1.800	2155	1.800	2205	1.800
1956	1.800	2006	1.800	2056	1.800	2106	1.800	2156	1.800	2206	1.800
1957	1.800	2007	1.800	2057	1.800	2107	1.800	2157	1.800	2207	1.800
1958	1.800	2008	1.800	2058	1.800	2108	1.800	2158	1.800	2208	1.800
1959	1.800	2009	1.800	2059	1.800	2109	1.800	2159	1.800	2209	1.800
1960	1.800	2010	1.800	2060	1.800	2110	1.800	2160	1.800	2210	1.800
1961	1.800	2011	1.800	2061	1.800	2111	1.800	2161	1.800	2211	1.800
1962	1.800	2012	1.800	2062	1.800	2112	1.800	2162	1.800	2212	1.800
1963	1.800	2013	1.800	2063	1.800	2113	1.800	2163	1.800	2213	1.800
1964	1.800	2014	1.800	2064	1.800	2114	1.800	2164	1.800	2214	1.800
1965	1.800	2015	1.800	2065	1.800	2115	1.800	2165	1.800	2215	1.800
1966	1.800	2016	1.800	2066	1.800	2116	1.800	2166	1.800	2216	1.800
1967	1.800	2017	1.800	2067	1.800	2117	1.800	2167	1.800	2217	1.800
1968	1.800	2018	1.800	2068	1.800	2118	1.800	2168	1.800	2218	1.800
1969	1.800	2019	1.800	2069	1.800	2119	1.800	2169	1.800	2219	1.800
1970	1.800	2020	1.800	2070	1.800	2120	1.800	2170	1.800	2220	1.800
1971	1.800	2021	1.800	2071	1.800	2121	1.800	2171	1.800	2221	1.800
1972	1.800	2022	1.800	2072	1.800	2122	1.800	2172	1.800	2222	1.800
1973	1.800	2023	1.800	2073	1.800	2123	1.800	2173	1.800	2223	1.800
1974	1.800	2024	1.800	2074	1.800	2124	1.800	2174	1.800	2224	1.800
1975	1.800	2025	1.800	2075	1.800	2125	1.800	2175	1.800	2225	1.800
1976	1.800	2026	1.800	2076	1.800	2126	1.800	2176	1.800	2226	1.800
1977	1.800	2027	1.800	2077	1.800	2127	1.800	2177	1.800	2227	1.800
1978	1.800	2028	1.800	2078	1.800	2128	1.800	2178	1.800	2228	1.800
1979	1.800	2029	1.800	2079	1.800	2129	1.800	2179	1.800	2229	1.800
1980	1.800	2030	1.800	2080	1.800	2130	1.800	2180	1.800	2230	1.800
1981	1.800	2031	1.800	2081	1.800	2131	1.800	2181	1.800	2231	1.800
1982	1.800	2032	1.800	2082	1.800	2132	1.800	2182	1.800	2232	1.800
1983	1.800	2033	1.800	2083	1.800	2133	1.800	2183	1.800	2233	1.800
1984	1.800	2034	1.800	2084	1.800	2134	1.800	2184	1.800	2234	1.800
1985	1.800	2035	1.800	2085	1.800	2135	1.800	2185	1.800	2235	1.800
1986	1.800	2036	1.800	2086	1.800	2136	1.800	2186	1.800	2236	1.800
1987	1.800	2037	1.800	2087	1.800	2137	1.800	2187	1.800	2237	1.800
1988	1.800	2038	1.800	2088	1.800	2138	1.800	2188	1.800	2238	1.800
1989	1.800	2039	1.800	2089	1.800	2139	1.800	2189	1.800	2239	1.800
1990	1.800	2040	1.800	2090	1.800	2140	1.800	2190	1.800	2240	1.800
1991	1.800	2041	1.800	2091	1.800	2141	1.800	2191	1.800	2241	1.800
1992	1.800	2042	1.800	2092	1.800	2142	1.800	2192	1.800	2242	1.800
1993	1.800	2043	1.800	2093	1.800	2143	1.800	2193	1.800	2243	1.800
1994	1.800	2044	1.800	2094	1.800	2144	1.800	2194	1.800	2244	1.800
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Hydrock Consultants Ltd								Page 14			
.				SALTBOX							
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Date 11/10/2019				Designed by D. Gallimore							
File Network 3 (Unit 1-9).mdx				Checked by M. Griffin							
Innovyze				Network 2018.1							
Surcharged Outfall Details for Storm											
Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
2245	1.800	2295	1.800	2345	1.800	2395	1.800	2445	1.800	2495	1.800
2246	1.800	2296	1.800	2346	1.800	2396	1.800	2446	1.800	2496	1.800
2247	1.800	2297	1.800	2347	1.800	2397	1.800	2447	1.800	2497	1.800
2248	1.800	2298	1.800	2348	1.800	2398	1.800	2448	1.800	2498	1.800
2249	1.800	2299	1.800	2349	1.800	2399	1.800	2449	1.800	2499	1.800
2250	1.800	2300	1.800	2350	1.800	2400	1.800	2450	1.800	2500	1.800
2251	1.800	2301	1.800	2351	1.800	2401	1.800	2451	1.800	2501	1.800
2252	1.800	2302	1.800	2352	1.800	2402	1.800	2452	1.800	2502	1.800
2253	1.800	2303	1.800	2353	1.800	2403	1.800	2453	1.800	2503	1.800
2254	1.800	2304	1.800	2354	1.800	2404	1.800	2454	1.800	2504	1.800
2255	1.800	2305	1.800	2355	1.800	2405	1.800	2455	1.800	2505	1.800
2256	1.800	2306	1.800	2356	1.800	2406	1.800	2456	1.800	2506	1.800
2257	1.800	2307	1.800	2357	1.800	2407	1.800	2457	1.800	2507	1.800
2258	1.800	2308	1.800	2358	1.800	2408	1.800	2458	1.800	2508	1.800
2259	1.800	2309	1.800	2359	1.800	2409	1.800	2459	1.800	2509	1.800
2260	1.800	2310	1.800	2360	1.800	2410	1.800	2460	1.800	2510	1.800
2261	1.800	2311	1.800	2361	1.800	2411	1.800	2461	1.800	2511	1.800
2262	1.800	2312	1.800	2362	1.800	2412	1.800	2462	1.800	2512	1.800
2263	1.800	2313	1.800	2363	1.800	2413	1.800	2463	1.800	2513	1.800
2264	1.800	2314	1.800	2364	1.800	2414	1.800	2464	1.800	2514	1.800
2265	1.800	2315	1.800	2365	1.800	2415	1.800	2465	1.800	2515	1.800
2266	1.800	2316	1.800	2366	1.800	2416	1.800	2466	1.800	2516	1.800
2267	1.800	2317	1.800	2367	1.800	2417	1.800	2467	1.800	2517	1.800
2268	1.800	2318	1.800	2368	1.800	2418	1.800	2468	1.800	2518	1.800
2269	1.800	2319	1.800	2369	1.800	2419	1.800	2469	1.800	2519	1.800
2270	1.800	2320	1.800	2370	1.800	2420	1.800	2470	1.800	2520	1.800
2271	1.800	2321	1.800	2371	1.800	2421	1.800	2471	1.800	2521	1.800
2272	1.800	2322	1.800	2372	1.800	2422	1.800	2472	1.800	2522	1.800
2273	1.800	2323	1.800	2373	1.800	2423	1.800	2473	1.800	2523	1.800
2274	1.800	2324	1.800	2374	1.800	2424	1.800	2474	1.800	2524	1.800
2275	1.800	2325	1.800	2375	1.800	2425	1.800	2475	1.800	2525	1.800
2276	1.800	2326	1.800	2376	1.800	2426	1.800	2476	1.800	2526	1.800
2277	1.800	2327	1.800	2377	1.800	2427	1.800	2477	1.800	2527	1.800
2278	1.800	2328	1.800	2378	1.800	2428	1.800	2478	1.800	2528	1.800
2279	1.800	2329	1.800	2379	1.800	2429	1.800	2479	1.800	2529	1.800
2280	1.800	2330	1.800	2380	1.800	2430	1.800	2480	1.800	2530	1.800
2281	1.800	2331	1.800	2381	1.800	2431	1.800	2481	1.800	2531	1.800
2282	1.800	2332	1.800	2382	1.800	2432	1.800	2482	1.800	2532	1.800
2283	1.800	2333	1.800	2383	1.800	2433	1.800	2483	1.800	2533	1.800
2284	1.800	2334	1.800	2384	1.800	2434	1.800	2484	1.800	2534	1.800
2285	1.800	2335	1.800	2385	1.800	2435	1.800	2485	1.800	2535	1.800
2286	1.800	2336	1.800	2386	1.800	2436	1.800	2486	1.800	2536	1.800
2287	1.800	2337	1.800	2387	1.800	2437	1.800	2487	1.800	2537	1.800
2288	1.800	2338	1.800	2388	1.800	2438	1.800	2488	1.800	2538	1.800
2289	1.800	2339	1.800	2389	1.800	2439	1.800	2489	1.800	2539	1.800
2290	1.800	2340	1.800	2390	1.800	2440	1.800	2490	1.800	2540	1.800
2291	1.800	2341	1.800	2391	1.800	2441	1.800	2491	1.800	2541	1.800
2292	1.800	2342	1.800	2392	1.800	2442	1.800	2492	1.800	2542	1.800
2293	1.800	2343	1.800	2393	1.800	2443	1.800	2493	1.800	2543	1.800
2294	1.800	2344	1.800	2394	1.800	2444	1.800	2494	1.800	2544	1.800
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Hydrock Consultants Ltd								Page 15			
.				SALTBOX							
.				BOGNOR REGIS							
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Date 11/10/2019				Designed by D. Gallimore							
File Network 3 (Unit 1-9).mdx				Checked by M. Griffin							
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Surcharged Outfall Details for Storm											
Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
2545	1.800	2595	1.800	2645	1.800	2695	1.800	2745	1.800	2795	1.800
2546	1.800	2596	1.800	2646	1.800	2696	1.800	2746	1.800	2796	1.800
2547	1.800	2597	1.800	2647	1.800	2697	1.800	2747	1.800	2797	1.800
2548	1.800	2598	1.800	2648	1.800	2698	1.800	2748	1.800	2798	1.800
2549	1.800	2599	1.800	2649	1.800	2699	1.800	2749	1.800	2799	1.800
2550	1.800	2600	1.800	2650	1.800	2700	1.800	2750	1.800	2800	1.800
2551	1.800	2601	1.800	2651	1.800	2701	1.800	2751	1.800	2801	1.800
2552	1.800	2602	1.800	2652	1.800	2702	1.800	2752	1.800	2802	1.800
2553	1.800	2603	1.800	2653	1.800	2703	1.800	2753	1.800	2803	1.800
2554	1.800	2604	1.800	2654	1.800	2704	1.800	2754	1.800	2804	1.800
2555	1.800	2605	1.800	2655	1.800	2705	1.800	2755	1.800	2805	1.800
2556	1.800	2606	1.800	2656	1.800	2706	1.800	2756	1.800	2806	1.800
2557	1.800	2607	1.800	2657	1.800	2707	1.800	2757	1.800	2807	1.800
2558	1.800	2608	1.800	2658	1.800	2708	1.800	2758	1.800	2808	1.800
2559	1.800	2609	1.800	2659	1.800	2709	1.800	2759	1.800	2809	1.800
2560	1.800	2610	1.800	2660	1.800	2710	1.800	2760	1.800	2810	1.800
2561	1.800	2611	1.800	2661	1.800	2711	1.800	2761	1.800	2811	1.800
2562	1.800	2612	1.800	2662	1.800	2712	1.800	2762	1.800	2812	1.800
2563	1.800	2613	1.800	2663	1.800	2713	1.800	2763	1.800	2813	1.800
2564	1.800	2614	1.800	2664	1.800	2714	1.800	2764	1.800	2814	1.800
2565	1.800	2615	1.800	2665	1.800	2715	1.800	2765	1.800	2815	1.800
2566	1.800	2616	1.800	2666	1.800	2716	1.800	2766	1.800	2816	1.800
2567	1.800	2617	1.800	2667	1.800	2717	1.800	2767	1.800	2817	1.800
2568	1.800	2618	1.800	2668	1.800	2718	1.800	2768	1.800	2818	1.800
2569	1.800	2619	1.800	2669	1.800	2719	1.800	2769	1.800	2819	1.800
2570	1.800	2620	1.800	2670	1.800	2720	1.800	2770	1.800	2820	1.800
2571	1.800	2621	1.800	2671	1.800	2721	1.800	2771	1.800	2821	1.800
2572	1.800	2622	1.800	2672	1.800	2722	1.800	2772	1.800	2822	1.800
2573	1.800	2623	1.800	2673	1.800	2723	1.800	2773	1.800	2823	1.800
2574	1.800	2624	1.800	2674	1.800	2724	1.800	2774	1.800	2824	1.800
2575	1.800	2625	1.800	2675	1.800	2725	1.800	2775	1.800	2825	1.800
2576	1.800	2626	1.800	2676	1.800	2726	1.800	2776	1.800	2826	1.800
2577	1.800	2627	1.800	2677	1.800	2727	1.800	2777	1.800	2827	1.800
2578	1.800	2628	1.800	2678	1.800	2728	1.800	2778	1.800	2828	1.800
2579	1.800	2629	1.800	2679	1.800	2729	1.800	2779	1.800	2829	1.800
2580	1.800	2630	1.800	2680	1.800	2730	1.800	2780	1.800	2830	1.800
2581	1.800	2631	1.800	2681	1.800	2731	1.800	2781	1.800	2831	1.800
2582	1.800	2632	1.800	2682	1.800	2732	1.800	2782	1.800	2832	1.800
2583	1.800	2633	1.800	2683	1.800	2733	1.800	2783	1.800	2833	1.800
2584	1.800	2634	1.800	2684	1.800	2734	1.800	2784	1.800	2834	1.800
2585	1.800	2635	1.800	2685	1.800	2735	1.800	2785	1.800	2835	1.800
2586	1.800	2636	1.800	2686	1.800	2736	1.800	2786	1.800	2836	1.800
2587	1.800	2637	1.800	2687	1.800	2737	1.800	2787	1.800	2837	1.800
2588	1.800	2638	1.800	2688	1.800	2738	1.800	2788	1.800	2838	1.800
2589	1.800	2639	1.800	2689	1.800	2739	1.800	2789	1.800	2839	1.800
2590	1.800	2640	1.800	2690	1.800	2740	1.800	2790	1.800	2840	1.800
2591	1.800	2641	1.800	2691	1.800	2741	1.800	2791	1.800	2841	1.800
2592	1.800	2642	1.800	2692	1.800	2742	1.800	2792	1.800	2842	1.800
2593	1.800	2643	1.800	2693	1.800	2743	1.800	2793	1.800	2843	1.800
2594	1.800	2644	1.800	2694	1.800	2744	1.800	2794	1.800	2844	1.800
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Hydrock Consultants Ltd		Page 16
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Date 11/10/2019 File Network 3 (Unit 1-9).mdx Designed by D. Gallimore Checked by M. Griffin		
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Surcharged Outfall Details for Storm

Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
2845	1.800	2851	1.800	2857	1.800	2863	1.800	2869	1.800	2875	1.800
2846	1.800	2852	1.800	2858	1.800	2864	1.800	2870	1.800	2876	1.800
2847	1.800	2853	1.800	2859	1.800	2865	1.800	2871	1.800	2877	1.800
2848	1.800	2854	1.800	2860	1.800	2866	1.800	2872	1.800	2878	1.800
2849	1.800	2855	1.800	2861	1.800	2867	1.800	2873	1.800	2879	1.800
2850	1.800	2856	1.800	2862	1.800	2868	1.800	2874	1.800	2880	1.800

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start (mins)	0	Inlet Coefficient	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	2	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Storm Duration (mins)	30
Ratio R	0.350		

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Hydrock Consultants Ltd		Page 17
.	SALTBOX	
.	BOGNOR REGIS	
Date 11/10/2019	Designed by D. Gallimore	
File Network 3 (Unit 1-9).mdx	Checked by M. Griffin	
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Online Controls for Storm

Hydro-Brake® Optimum Manhole: S2, DS/PN: S1.001, Volume (m³): 2.5

Unit Reference	MD-SHE-0074-2500-1050-2500
Design Head (m)	1.050
Design Flow (l/s)	2.5
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	74
Invert Level (m)	1.250
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.050	2.5
Flush-Flo™	0.324	2.5
Kick-Flo®	0.657	2.0
Mean Flow over Head Range	-	2.2

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.0	1.200	2.7	3.000	4.1	7.000	6.0
0.200	2.4	1.400	2.9	3.500	4.4	7.500	6.2
0.300	2.5	1.600	3.0	4.000	4.6	8.000	6.4
0.400	2.5	1.800	3.2	4.500	4.9	8.500	6.6
0.500	2.4	2.000	3.4	5.000	5.2	9.000	6.8
0.600	2.2	2.200	3.5	5.500	5.4	9.500	7.0
0.800	2.2	2.400	3.7	6.000	5.6		
1.000	2.4	2.600	3.8	6.500	5.8		

Hydro-Brake® Optimum Manhole: S7, DS/PN: S2.001, Volume (m³): 2.5

Unit Reference	MD-SHE-0131-8400-1220-8400
Design Head (m)	1.220
Design Flow (l/s)	8.4
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	131
Invert Level (m)	0.365
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

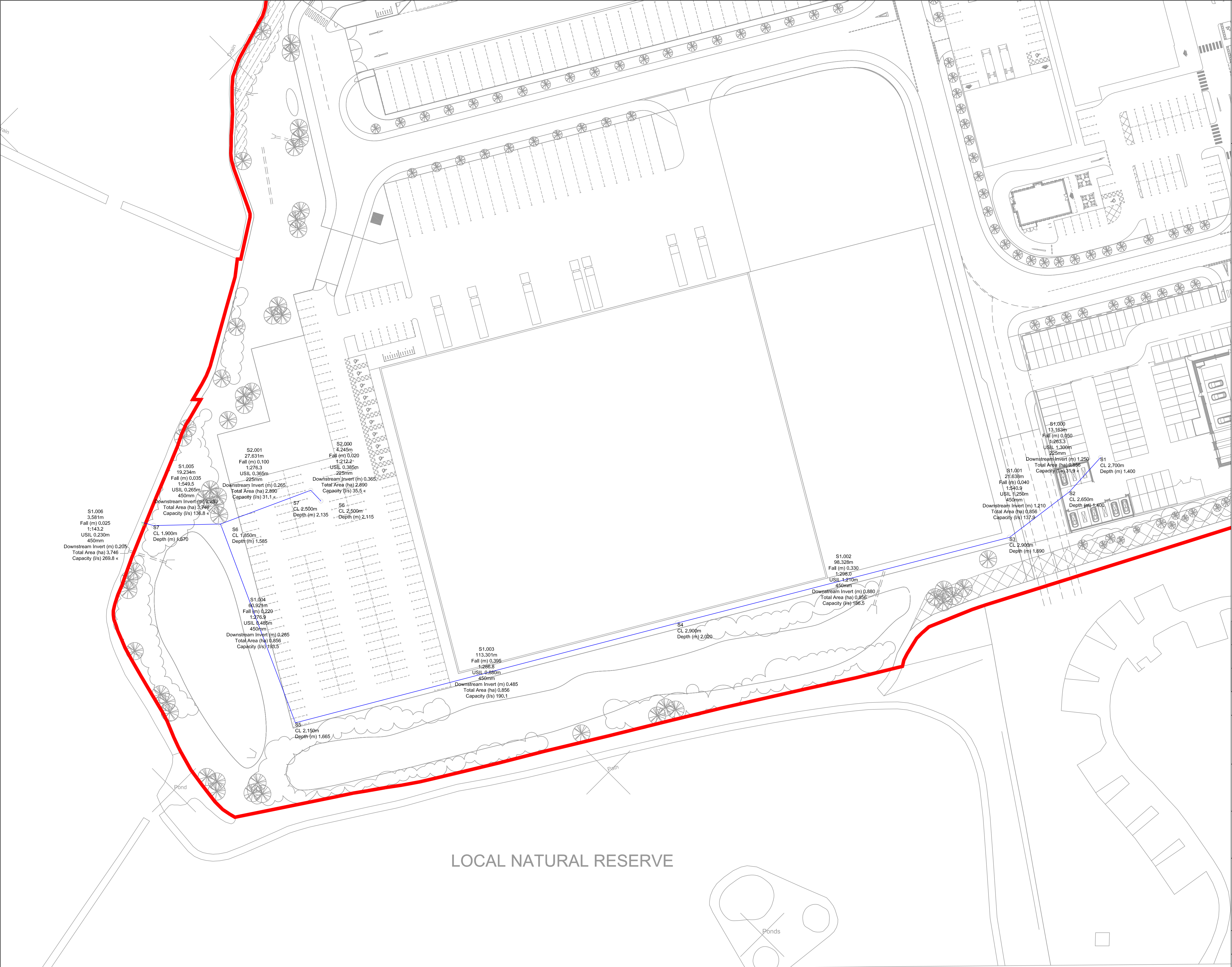
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Hydrock Consultants Ltd		Page 18																																																																																							
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<u>Hydro-Brake® Optimum Manhole: S7, DS/PN: S2.001, Volume (m³): 2.5</u> <table><thead><tr><th>Control Points</th><th>Head (m)</th><th>Flow (l/s)</th></tr></thead><tbody><tr><td>Design Point (Calculated)</td><td>1.220</td><td>8.4</td></tr><tr><td>Flush-Flo™</td><td>0.359</td><td>8.4</td></tr><tr><td>Kick-Flo®</td><td>0.774</td><td>6.8</td></tr><tr><td>Mean Flow over Head Range</td><td>-</td><td>7.3</td></tr></tbody></table> 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 <table><thead><tr><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th></tr></thead><tbody><tr><td>0.100</td><td>4.7</td><td>1.200</td><td>8.3</td><td>3.000</td><td>12.8</td><td>7.000</td><td>19.2</td></tr><tr><td>0.200</td><td>7.9</td><td>1.400</td><td>9.0</td><td>3.500</td><td>13.8</td><td>7.500</td><td>19.9</td></tr><tr><td>0.300</td><td>8.3</td><td>1.600</td><td>9.5</td><td>4.000</td><td>14.7</td><td>8.000</td><td>20.5</td></tr><tr><td>0.400</td><td>8.3</td><td>1.800</td><td>10.1</td><td>4.500</td><td>15.6</td><td>8.500</td><td>21.1</td></tr><tr><td>0.500</td><td>8.2</td><td>2.000</td><td>10.6</td><td>5.000</td><td>16.4</td><td>9.000</td><td>21.7</td></tr><tr><td>0.600</td><td>8.0</td><td>2.200</td><td>11.1</td><td>5.500</td><td>17.1</td><td>9.500</td><td>22.3</td></tr><tr><td>0.800</td><td>6.9</td><td>2.400</td><td>11.5</td><td>6.000</td><td>17.9</td><td></td><td></td></tr><tr><td>1.000</td><td>7.6</td><td>2.600</td><td>12.0</td><td>6.500</td><td>18.6</td><td></td><td></td></tr></tbody></table>			Control Points	Head (m)	Flow (l/s)	Design Point (Calculated)	1.220	8.4	Flush-Flo™	0.359	8.4	Kick-Flo®	0.774	6.8	Mean Flow over Head Range	-	7.3	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	0.100	4.7	1.200	8.3	3.000	12.8	7.000	19.2	0.200	7.9	1.400	9.0	3.500	13.8	7.500	19.9	0.300	8.3	1.600	9.5	4.000	14.7	8.000	20.5	0.400	8.3	1.800	10.1	4.500	15.6	8.500	21.1	0.500	8.2	2.000	10.6	5.000	16.4	9.000	21.7	0.600	8.0	2.200	11.1	5.500	17.1	9.500	22.3	0.800	6.9	2.400	11.5	6.000	17.9			1.000	7.6	2.600	12.0	6.500	18.6		
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Hydrock Consultants Ltd		Page 19																																				
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Storage Structures for Storm Cellular Storage Manhole: S1, DS/PN: S1.000 Invert Level (m) 1.300 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr><tr><td>0.000</td><td>750.0</td><td>0.0</td><td>1.001</td><td>0.0</td><td>0.0</td></tr><tr><td>1.000</td><td>750.0</td><td>0.0</td><td></td><td></td><td></td></tr></table> Cellular Storage Manhole: S6, DS/PN: S2.000 Invert Level (m) 0.385 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr><tr><td>0.000</td><td>3000.0</td><td>0.0</td><td>1.201</td><td>0.0</td><td>0.0</td></tr><tr><td>1.200</td><td>3000.0</td><td>0.0</td><td></td><td></td><td></td></tr></table>			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	750.0	0.0	1.001	0.0	0.0	1.000	750.0	0.0				Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	3000.0	0.0	1.201	0.0	0.0	1.200	3000.0	0.0			
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Hydrock Consultants Ltd				Page 20																																																																																																	
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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm																																																																																																					
Simulation Criteria Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000 Hot Start Level (mm) 0 Inlet Coefficient 0.800 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000 Foul Sewage per hectare (l/s) 0.000 Number of Input Hydrographs 0 Number of Storage Structures 2 Number of Online Controls 2 Number of Time/Area Diagrams 0 Number of Offline Controls 0 Number of Real Time Controls 0 Synthetic Rainfall Details Rainfall Model FSR Ratio R 0.350 Region England and Wales Cv (Summer) 0.750 M5-60 (mm) 19.100 Cv (Winter) 0.840 Margin for Flood Risk Warning (mm) 10.0 Analysis Timestep 2.5 Second Increment (Extended) DTS Status OFF DVD Status ON Inertia Status ON Profile(s) Summer and Winter Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080 Return Period(s) (years) 2, 30, 100 Climate Change (%) 0, 0, 40																																																																																																					
<table><tr><td>PN</td><td>US/MH Name</td><td>Storm</td><td>Return Period</td><td>Climate Change</td><td>First (X) Surge</td><td>First (Y) Flood</td><td>First (Z) Overflow</td><td>Overflow Act.</td></tr><tr><td>S1.000</td><td>S1</td><td>1440 Winter</td><td>100</td><td>+40%</td><td>2/600 Winter</td><td></td><td></td><td></td></tr><tr><td>S1.001</td><td>S2</td><td>2160 Winter</td><td>100</td><td>+40%</td><td>30/120 Winter</td><td></td><td></td><td></td></tr><tr><td>S1.002</td><td>S3</td><td>2880 Winter</td><td>100</td><td>+40%</td><td>100/2160 Winter</td><td></td><td></td><td></td></tr><tr><td>S1.003</td><td>S4</td><td>2880 Winter</td><td>100</td><td>+40%</td><td>100/720 Winter</td><td></td><td></td><td></td></tr><tr><td>S1.004</td><td>S5</td><td>2880 Winter</td><td>100</td><td>+40%</td><td>2/2880 Winter</td><td></td><td></td><td></td></tr><tr><td>S2.000</td><td>S6</td><td>2880 Winter</td><td>100</td><td>+40%</td><td>2/360 Summer</td><td></td><td></td><td></td></tr><tr><td>S2.001</td><td>S7</td><td>2880 Winter</td><td>100</td><td>+40%</td><td>2/180 Winter</td><td></td><td></td><td></td></tr><tr><td>S1.005</td><td>S6</td><td>2880 Winter</td><td>100</td><td>+40%</td><td>2/480 Winter</td><td></td><td></td><td></td></tr><tr><td>S1.006</td><td>S7</td><td>2880 Winter</td><td>100</td><td>+40%</td><td>2/360 Winter</td><td></td><td></td><td></td></tr></table>												PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	S1.000	S1	1440 Winter	100	+40%	2/600 Winter				S1.001	S2	2160 Winter	100	+40%	30/120 Winter				S1.002	S3	2880 Winter	100	+40%	100/2160 Winter				S1.003	S4	2880 Winter	100	+40%	100/720 Winter				S1.004	S5	2880 Winter	100	+40%	2/2880 Winter				S2.000	S6	2880 Winter	100	+40%	2/360 Summer				S2.001	S7	2880 Winter	100	+40%	2/180 Winter				S1.005	S6	2880 Winter	100	+40%	2/480 Winter				S1.006	S7	2880 Winter	100	+40%	2/360 Winter			
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S1.005	S6	2880 Winter	100	+40%	2/480 Winter																																																																																																
S1.006	S7	2880 Winter	100	+40%	2/360 Winter																																																																																																
<table><tr><td></td><td></td><td>Water Level</td><td>Surcharged Depth</td><td>Flooded Volume</td><td>Flow / Cap.</td><td>Overflow (l/s)</td><td>Pipe Flow (l/s)</td><td>Status</td><td>Level Exceeded</td></tr><tr><td>PN</td><td>US/MH Name</td><td>(m)</td><td>(m)</td><td>(m³)</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>S1.000</td><td>S1</td><td>2.266</td><td>0.741</td><td>0.000</td><td>0.11</td><td></td><td>3.0</td><td>SURCHARGED</td><td></td></tr><tr><td>S1.001</td><td>S2</td><td>2.339</td><td>0.639</td><td>0.000</td><td>0.02</td><td></td><td>2.5</td><td>SURCHARGED</td><td></td></tr></table>														Water Level	Surcharged Depth	Flooded Volume	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded	PN	US/MH Name	(m)	(m)	(m³)						S1.000	S1	2.266	0.741	0.000	0.11		3.0	SURCHARGED		S1.001	S2	2.339	0.639	0.000	0.02		2.5	SURCHARGED																																																			
		Water Level	Surcharged Depth	Flooded Volume	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded																																																																																												
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Hydrock Consultants Ltd							Page 21		
.			SALTBOX						
.			BOGNOR REGIS						
.									
Date 11/10/2019			Designed by D. Gallimore						
File Network 3 (Unit 1-9).mdx			Checked by M. Griffin						
Innovyze			Network 2018.1						
<u>100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm</u>									
PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.002	S3	1.807	0.147	0.000	0.11		18.7	SURCHARGED	
S1.003	S4	1.807	0.477	0.000	0.39		70.2	SURCHARGED	
S1.004	S5	1.807	0.872	0.000	0.55		98.7	SURCHARGED	
S2.000	S6	2.214	1.604	0.000	0.36		8.9	SURCHARGED	
S2.001	S7	2.219	1.629	0.000	0.29		8.4	SURCHARGED	
S1.005	S6	1.805	1.090	0.000	1.00		92.0	SURCHARGED	
S1.006	S7	1.801	1.121	0.000	0.68		92.0	SURCHARGED	
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KEY PLAN

NOTES

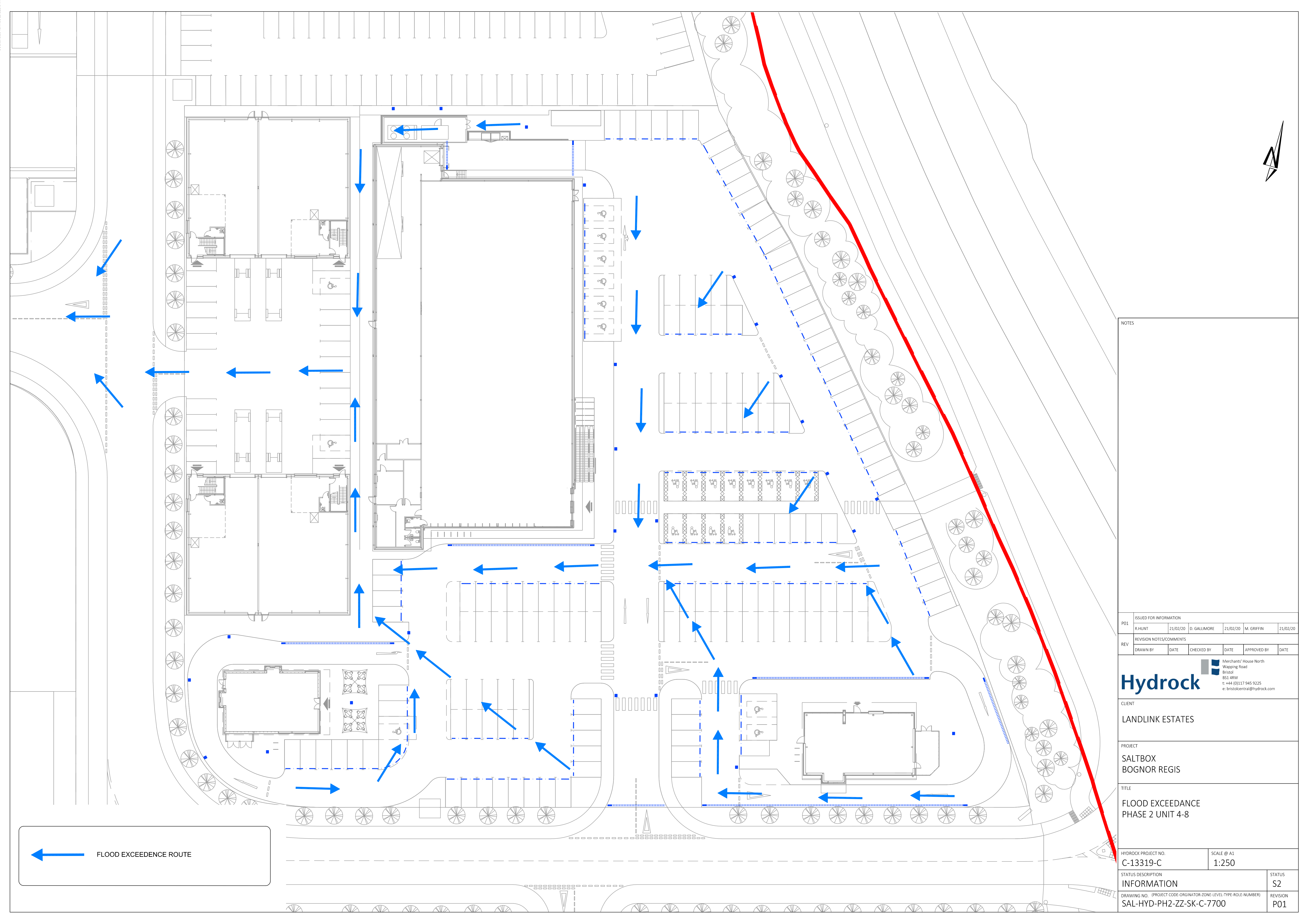
1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.

2. The DWG file is issued for the purposes of coordination only and do not represent formal drawing issue and are not to be reprinted in any form. Formal issue of drawings is via DWF, Adobe PDF files and/or hard copies and their associated information issue sheets.

3. Note that all care has been taken with the export of DWG files and their content, but we recommend that you make due dimensional checks before using any DWG file information. Any errors found are to be reported to Hydrock immediately.

P03	PRELIMINARY ISSUE	J.MAGEE	21/10/19	J.MAGEE	21/10/19	M.GRIFFIN	21/10/19																																																
P02	PRELIMINARY ISSUE	J.MAGEE	18/10/19	J.MAGEE	18/10/19	M.GRIFFIN	18/10/19																																																
P01	PRELIMINARY ISSUE	J.MAGEE	18/10/19	J.MAGEE	18/10/19	M.GRIFFIN	18/10/19																																																
REV	REVISION NOTES/COMMENTS	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE																																																
Hydrock Merchants' House North Wapping Road Bristol BS1 4RW t: +44 (0)117 945 9225 e: bristolcentral@hydrock.com CLIENT LANDLINK ESTATES PROJECT SALTBOX BOGNOR REGIS TITLE SURFACE WATER NETWORK 3 UNIT 1 & 9 <tr><td colspan="2">HYDROCK PROJECT NO.</td><td colspan="6">SCALE @ A1</td></tr> <tr><td colspan="2">C-13319-C</td><td colspan="6">1:500</td></tr> <tr><td colspan="7">STATUS DESCRIPTION</td><td>STATUS</td></tr> <tr><td colspan="7">INFORMATION</td><td>S2</td></tr> <tr><td colspan="7">DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)</td><td>REVISION</td></tr> <tr><td colspan="7">SAL-HYD-00-ZZ-SK-C-7900</td><td>P03</td></tr>								HYDROCK PROJECT NO.		SCALE @ A1						C-13319-C		1:500						STATUS DESCRIPTION							STATUS	INFORMATION							S2	DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)							REVISION	SAL-HYD-00-ZZ-SK-C-7900							P03
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SAL-HYD-00-ZZ-SK-C-7900							P03																																																

Appendix C



NOTES

PO1	ISSUED FOR INFORMATION					
	R.HUNT	21/02/20	D. GALLIMORE	21/02/20	M. GRIFFIN	21/02/20
REV	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

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CLIENT

LANDLINK ESTATES

PROJECT

SALTBOX
BOGNOR REGIS

TITLE

FLOOD EXCEEDANCE
PHASE 2 UNIT 4-8

HYDROCK PROJECT NO.	SCALE @ A1
C-13319-C	1:250
STATUS DESCRIPTION	STATUS
INFORMATION	S2
DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)	REVISION
SAL-HYD-PH2-ZZ-SK-C-7700	P01

FLOOD EXCEEDANCE ROUTE