

Drainage Statement



Project	Waterford Gardens, Climping
Project Number	23078

By Steve Burgess

Date March 2019

The Civil Engineering Practice
11 Tungsten Building
George Street
Fishersgate
Sussex
BN41 1RA

1 Proposed Development

- 1.1 The proposed development comprises the construction of two semi-detached houses with parking and access on land to the south of Horsemere Green Lane, Climping, Littlehampton, West Sussex BN17 5PQ.
- 1.2 The site location plan and existing site layout are attached in Appendix 1 at the rear of this report.

2 Design Criteria

- 2.1 The surface water drainage system has been designed in accordance with the National Planning Policy Framework (NPPF), its accompanying Guidance and Technical Standards for SuDS. It also complies with the requirements under Building Regulations Part H.
- 2.2 The surface water drainage system and storage/infiltration have been designed to accept the discharge from a 100 year return period pluvial event with a further 40% allowance for future climate change.
- 2.3 In accordance with CIRIA SuDS Manual 2015 (Report C753), NPPF and Building Regulations Part H surface water drainage design follows a discharge destination hierarchy ranging from infiltration to ground as first priority before consideration for discharging to a watercourse and as a last resort discharging to a public sewer.
- 2.4 The foul drainage system has been designed to Sewers for Adoption 7th Edition to the proposed private waste water treatment system.



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3 Surface Water Drainage

- 3.1 The proposed surface water drainage comprises drained areas of roof and hard standing totalling 213m². A proposed site layout plan indicating the impermeable areas is attached in Appendix 2 at the rear of this report.
- 3.2 Site investigation was carried out as part of the original design work in 2001 when development in this location was first proposed but not constructed. From that site investigation an infiltration rate of 2.03x10⁻⁶ m/s was recorded which has been used to design the infiltration system as part of this design.
- 3.3 Surface water from the roofs and driveway will discharge to a 95% voided crate storage and soakaway facility.
- 3.4 Surface water runoff will be intercepted such that it cannot leave the site during any rainfall event up to the 100 year plus 40% rainfall event. A drainage channel located across the site entrance will ensure no surface water from the site enters the public highway.
- 3.5 A plan detailing the proposed drainage scheme is attached in Appendix 3 at the rear of this report.
- 3.6 Full Micro Drainage calculations are attached in Appendix 4 at the rear of this report.

4 Water Quality

- 4.1 The proposed development is for residential use. In accordance with CIRIA SuDS Manual 2015 (Report C753), the pollution hazard level for this type of development is between very low and low depending on the use/area of the site. Where surface water runoff is to be discharged to ground within a ground water protection zone the SuDS components are only required to control potential contaminants for the frequent low intensity rainfall events as the natural high volume of flows within the receiving water body during a high intensity rainfall event is likely to dilute any contaminants within the water body.
- 4.2 The surface water scheme will include mitigation to ensure water before the discharge point will be treated and any pollution risk will be mitigated prior to its discharge to ground.
- 4.3 Table 26.2 in Chapter 26 of CIRIA report C753 The SuDS Manual provides Pollution Hazard Indices for varying land types and uses and defines runoff from residential roofs to be at very low risk potential for

pollution. Runoff from individual property driveways and residential car parks are considered to be at low risk potential for pollution

Residential Areas	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydro-carbons
Residential Roofs	Very Low	0.20	0.20	0.05
Individual property driveways, residential car park, low traffic roads	Low	0.50	0.40	0.40

Pollution Hazard Indices

- 4.4 Where multiple drainage components are used in series the individual mitigation index of secondary and tertiary components are lowered due to reduced performance associated with primary treatment.

SuDS Type	Total suspended solids (TSS)	Metals	Hydro-carbons
Permeable Paving	0.7	0.6	0.7
Soakaway with 300mm minimum depth underlying soil drainage media	0.4	0.4	0.4

Mitigation Indices

- 4.5 The proposed use of permeable paving meets the target treatment level required for runoff with low risk of pollution potential thus demonstrating that the surface water drainage system for the private driveways adequately mitigates against the risk of pollution.
- 4.6 The soakaway provides sufficient mitigation against the risk of pollution from the very low risk residential roof water.

5 Foul Water

- 5.1 It is proposed to discharge foul water by gravity into the public foul sewer adjacent to the site. The connection will be made across Horsemere Green Lane via a new manhole constructed over the sewer.
- 5.2 A plan detailing the proposed drainage scheme are attached in Appendix 3 at the rear of this report.

6 Flood Routing for Exceedance Flows and Risk to Others

- 6.1 The proposed surface water drainage system has been designed to current standards incorporating SuDS elements providing treatment, attenuation and storage which will minimise runoff leaving the site during times of heavy rain.
- 6.2 Allowance has been made for 40% increase in rainfall intensities which accords with the latest figures published by the Environment Agency and in accordance with the requirements under the National Planning Policy Framework.
- 6.3 The likelihood of a storm event exceeding the 100 year +40% event is extremely low and the risk of surface water flooding to others due to the development proposals is negligible.
- 6.4 In the extremely unlikely event that the future 1:100 year design storm is exceeded the additional surface water would flow overland to the north of the site where it would be intercepted by the existing watercourse (ditch) along the northern site boundary following the route of any exceedance flow from the existing site.

7 Indicative Schedule of Maintenance

- 7.1 Once appointed the Contractor will prepare a site-specific method statement for the control of silt and other pollutants during construction. Ciria Report C532, Control of water pollution from construction sites, provides further guidance on this.
- 7.2 The Contractor will maintain the proposed drainage system during construction and until the handing over of the site. Upon completion the maintenance of the drainage elements will be passed on to Waterford Properties and/or the individual homeowners within their privately demised areas.
- 7.3 The attached maintenance schedule details the typical tasks to be undertaken at different intervals.

Indicative Schedule of Maintenance for the Proposed Drainage System:

Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Remove sediment and debris from silt trap chambers, gullies and inlet chambers	6 monthly
	Litter and debris removal – above ground	Monthly or as required
	Litter and debris removal – Catch Pits and flow control system	Monthly or as required
	Surface and Foul water pipe work – jetting / rodding	Every 2 years or as required
	Manage other vegetation and remove nuisance plants – aesthetics	As required
	Visual Inspection of permeable driveway for defects and settlement	Annually
	Sweeping/ brushing of permeable driveway	Twice Annually
Irregular Maintenance	Remove debris / blockages to silt traps/ gullies and flow control manhole	As required
Corrective Maintenance	Repairs to access chambers / MH covers	As required
	Replace any broken permeable blocks/surface, remedial works to any depressions or rutting	As required
	Inspect inlet, outlet from downpipe and gullies for blockages, standing water and clear	As required

Waterford Gardens, Climping

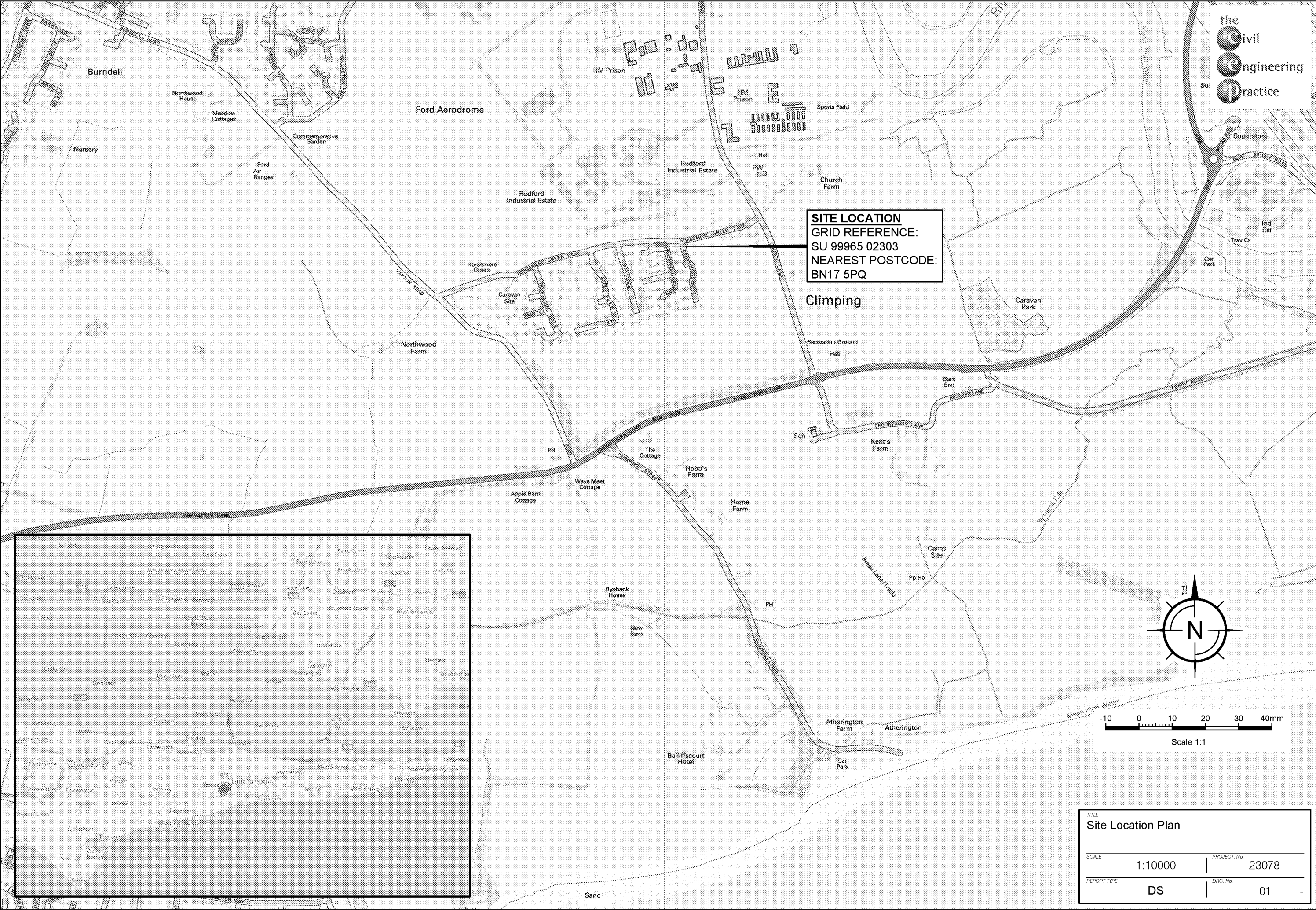
Drainage System Maintenance Summary Sheet:

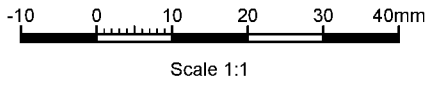
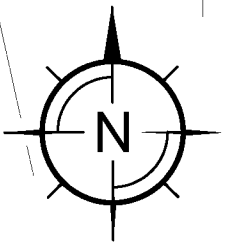
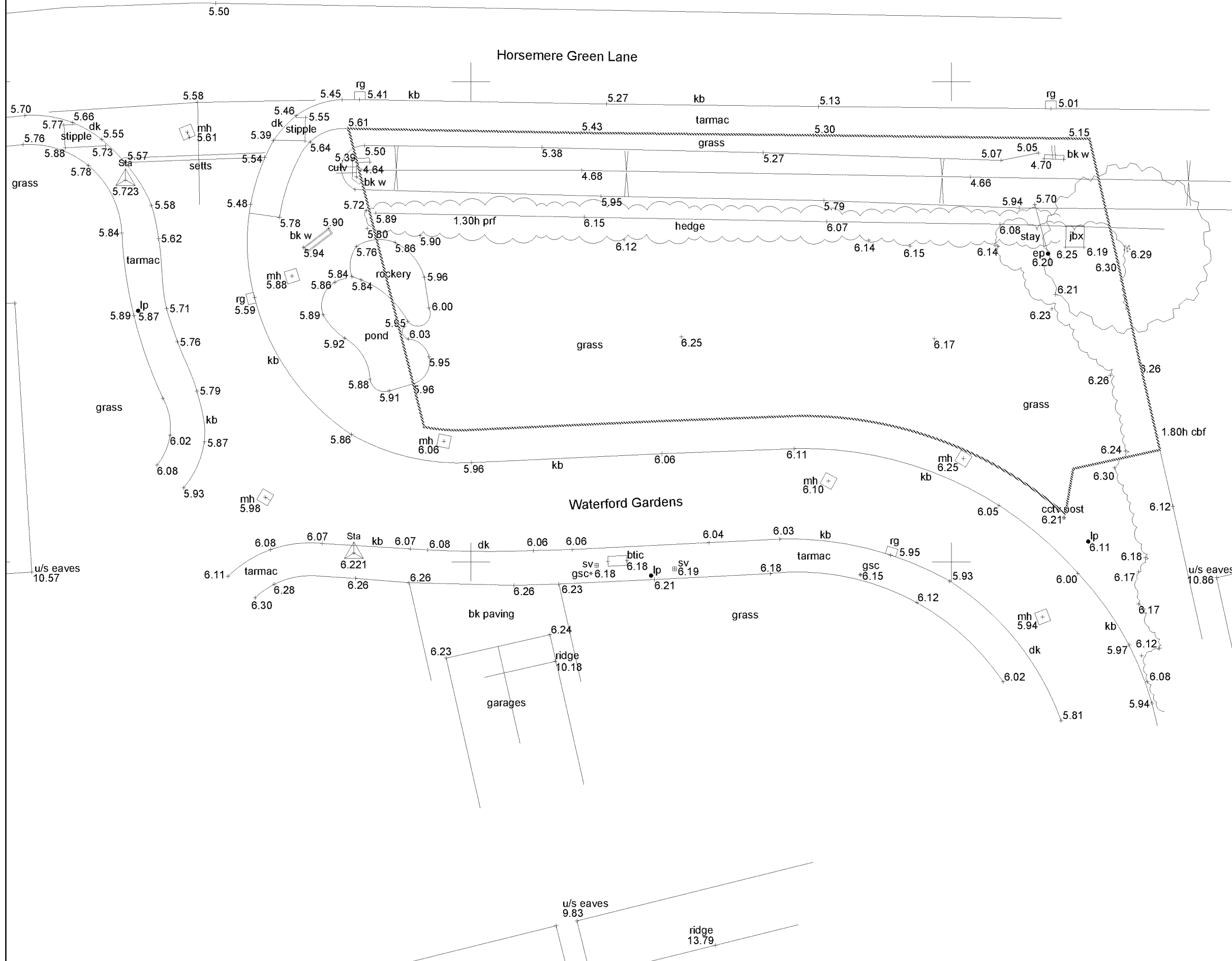
For Maintenance Management Company and Property Owners

Inspection/ Action Required	Gutters	Gullies	Catchpits/ Silt Traps/ Flow Control	Surface/ Foul Water Pipework	Permeable Surface
After leaf fall in Autumn	✓	✓	✓		✓
6 Months	✓	✓	✓		
1 Year					✓
2 Years				✓	

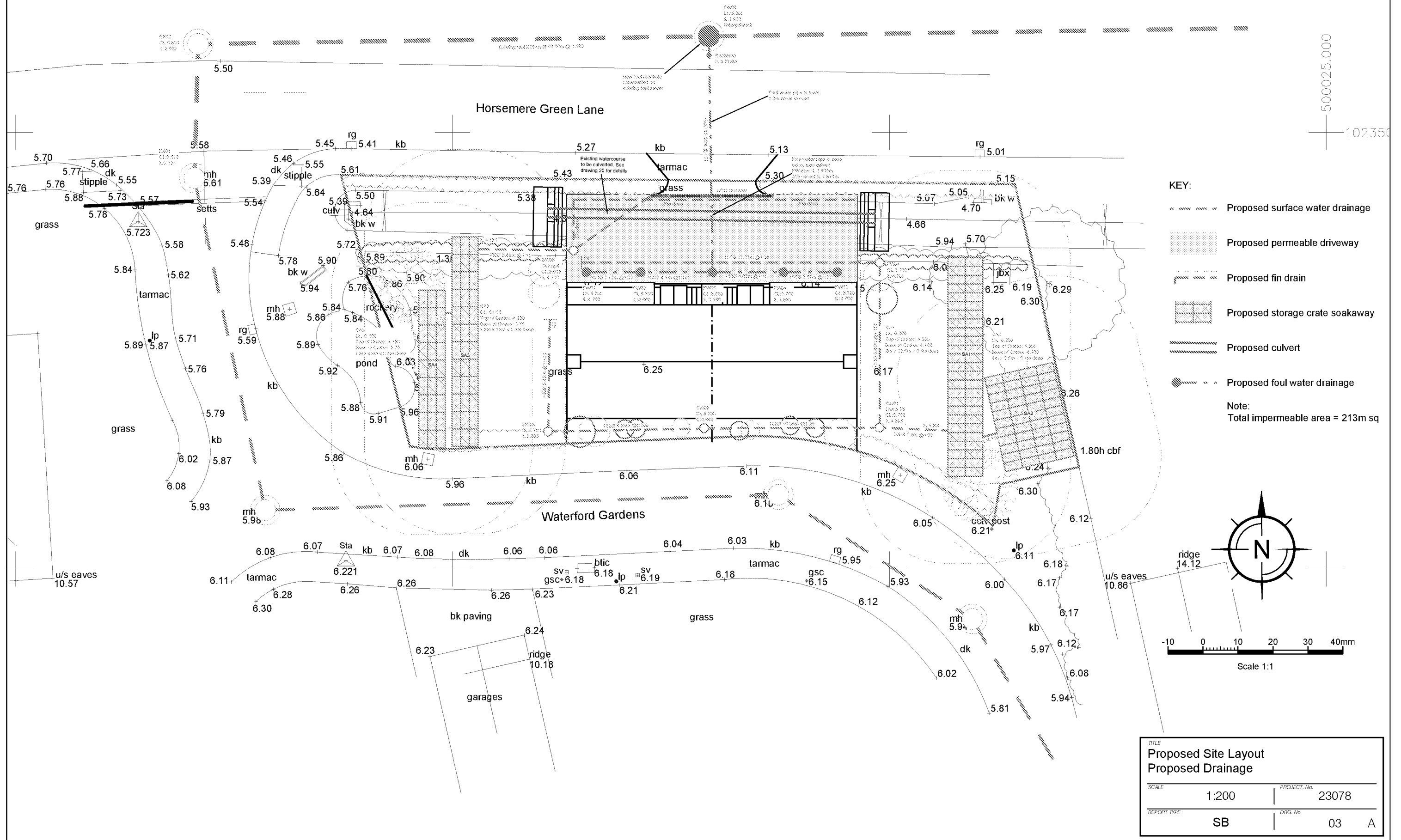
List of Appendices

Appendix 1	Site Location Plan and Existing Site Layout Plan
Appendix 2	Proposed Site Layout Plan
Appendix 3	Drainage Calculations





TITLE Existing Site Layout	
SCALE 1:200	PROJECT No. 23078
REPORT TYPE DS	DWG. No. 02



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<u>Summary of Results for 100 year Return Period (+40%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	4.702	0.102	0.0	2.4	O K
60 min Winter	4.730	0.130	0.0	3.1	O K
120 min Winter	4.759	0.159	0.0	3.8	O K
180 min Winter	4.775	0.175	0.0	4.2	O K
240 min Winter	4.786	0.186	0.0	4.4	O K
360 min Winter	4.799	0.199	0.0	4.7	O K
480 min Winter	4.808	0.208	0.0	4.9	O K
600 min Winter	4.814	0.214	0.0	5.1	O K
720 min Winter	4.818	0.218	0.0	5.2	O K
840 min Winter	4.822	0.222	0.0	5.3	O K
1440 min Winter	4.822	0.222	0.0	5.3	O K
2160 min Winter	4.815	0.215	0.0	5.1	O K
2880 min Winter	4.807	0.207	0.0	4.9	O K
4320 min Winter	4.786	0.186	0.0	4.4	O K
5760 min Winter	4.765	0.165	0.0	3.9	O K
7200 min Winter	4.745	0.145	0.0	3.4	O K
8640 min Winter	4.727	0.127	0.0	3.0	O K
10080 min Winter	4.710	0.110	0.0	2.6	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	83.660	0.0	37		
60 min Winter	53.779	0.0	66		
120 min Winter	33.385	0.0	124		
180 min Winter	24.885	0.0	184		
240 min Winter	20.056	0.0	242		
360 min Winter	14.756	0.0	358		
480 min Winter	11.864	0.0	474		
600 min Winter	10.008	0.0	590		
720 min Winter	8.705	0.0	704		
840 min Winter	6.978	0.0	828		
1440 min Winter	5.100	0.0	1356		
2160 min Winter	3.719	0.0	1688		
2880 min Winter	2.969	0.0	2140		
4320 min Winter	2.157	0.0	3068		
5760 min Winter	1.717	0.0	3920		
7200 min Winter	1.438	0.0	4752		
8640 min Winter	1.246	0.0	5536		
10080 min Winter	1.103	0.0	6264		
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Date 18/10/2018 File Crate Soakaway SA1.srcx	Designed by S Burgess Checked by SRM	
XP Solutions Source Control 2017.1.2		

Model Details

Storage is Online Cover Level (m) 6.320

Cellular Storage Structure

Invert Level (m) 4.600 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00731 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00731

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	25.0	25.0	0.401	0.0	36.6
0.400	25.0	36.6			

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<u>Summary of Results for 100 year Return Period</u> Half Drain Time : 1032 minutes. <table><thead><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Summer</td><td>4.648</td><td>0.048</td><td>0.0</td><td>1.1</td><td>O K</td></tr><tr><td>30 min Summer</td><td>4.665</td><td>0.065</td><td>0.0</td><td>1.5</td><td>O K</td></tr><tr><td>60 min Summer</td><td>4.682</td><td>0.082</td><td>0.0</td><td>1.9</td><td>O K</td></tr><tr><td>120 min Summer</td><td>4.700</td><td>0.100</td><td>0.0</td><td>2.4</td><td>O K</td></tr><tr><td>180 min Summer</td><td>4.709</td><td>0.109</td><td>0.0</td><td>2.6</td><td>O K</td></tr><tr><td>240 min Summer</td><td>4.715</td><td>0.115</td><td>0.0</td><td>2.7</td><td>O K</td></tr><tr><td>360 min Summer</td><td>4.722</td><td>0.122</td><td>0.0</td><td>2.9</td><td>O K</td></tr><tr><td>480 min Summer</td><td>4.726</td><td>0.126</td><td>0.0</td><td>3.0</td><td>O K</td></tr><tr><td>600 min Summer</td><td>4.728</td><td>0.128</td><td>0.0</td><td>3.1</td><td>O K</td></tr><tr><td>720 min Summer</td><td>4.729</td><td>0.129</td><td>0.0</td><td>3.1</td><td>O K</td></tr><tr><td>960 min Summer</td><td>4.730</td><td>0.130</td><td>0.0</td><td>3.1</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>4.728</td><td>0.128</td><td>0.0</td><td>3.0</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>4.724</td><td>0.124</td><td>0.0</td><td>2.9</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>4.718</td><td>0.118</td><td>0.0</td><td>2.8</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>4.706</td><td>0.106</td><td>0.0</td><td>2.5</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>4.694</td><td>0.094</td><td>0.0</td><td>2.2</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>4.684</td><td>0.084</td><td>0.0</td><td>2.0</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>4.675</td><td>0.075</td><td>0.0</td><td>1.8</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>4.667</td><td>0.067</td><td>0.0</td><td>1.6</td><td>O K</td></tr><tr><td>15 min Winter</td><td>4.654</td><td>0.054</td><td>0.0</td><td>1.3</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>88.756</td><td>0.0</td><td>23</td></tr><tr><td>30 min Summer</td><td>59.757</td><td>0.0</td><td>37</td></tr><tr><td>60 min Summer</td><td>38.413</td><td>0.0</td><td>66</td></tr><tr><td>120 min Summer</td><td>23.846</td><td>0.0</td><td>126</td></tr><tr><td>180 min Summer</td><td>17.775</td><td>0.0</td><td>186</td></tr><tr><td>240 min Summer</td><td>14.326</td><td>0.0</td><td>246</td></tr><tr><td>360 min Summer</td><td>10.540</td><td>0.0</td><td>364</td></tr><tr><td>480 min Summer</td><td>8.474</td><td>0.0</td><td>482</td></tr><tr><td>600 min Summer</td><td>7.149</td><td>0.0</td><td>602</td></tr><tr><td>720 min Summer</td><td>6.218</td><td>0.0</td><td>720</td></tr><tr><td>960 min Summer</td><td>4.985</td><td>0.0</td><td>822</td></tr><tr><td>1440 min Summer</td><td>3.643</td><td>0.0</td><td>1070</td></tr><tr><td>2160 min Summer</td><td>2.657</td><td>0.0</td><td>1472</td></tr><tr><td>2880 min Summer</td><td>2.121</td><td>0.0</td><td>1876</td></tr><tr><td>4320 min Summer</td><td>1.541</td><td>0.0</td><td>2684</td></tr><tr><td>5760 min Summer</td><td>1.227</td><td>0.0</td><td>3464</td></tr><tr><td>7200 min Summer</td><td>1.027</td><td>0.0</td><td>4248</td></tr><tr><td>8640 min Summer</td><td>0.890</td><td>0.0</td><td>4936</td></tr><tr><td>10080 min Summer</td><td>0.788</td><td>0.0</td><td>5648</td></tr><tr><td>15 min Winter</td><td>88.756</td><td>0.0</td><td>22</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	4.648	0.048	0.0	1.1	O K	30 min Summer	4.665	0.065	0.0	1.5	O K	60 min Summer	4.682	0.082	0.0	1.9	O K	120 min Summer	4.700	0.100	0.0	2.4	O K	180 min Summer	4.709	0.109	0.0	2.6	O K	240 min Summer	4.715	0.115	0.0	2.7	O K	360 min Summer	4.722	0.122	0.0	2.9	O K	480 min Summer	4.726	0.126	0.0	3.0	O K	600 min Summer	4.728	0.128	0.0	3.1	O K	720 min Summer	4.729	0.129	0.0	3.1	O K	960 min Summer	4.730	0.130	0.0	3.1	O K	1440 min Summer	4.728	0.128	0.0	3.0	O K	2160 min Summer	4.724	0.124	0.0	2.9	O K	2880 min Summer	4.718	0.118	0.0	2.8	O K	4320 min Summer	4.706	0.106	0.0	2.5	O K	5760 min Summer	4.694	0.094	0.0	2.2	O K	7200 min Summer	4.684	0.084	0.0	2.0	O K	8640 min Summer	4.675	0.075	0.0	1.8	O K	10080 min Summer	4.667	0.067	0.0	1.6	O K	15 min Winter	4.654	0.054	0.0	1.3	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	88.756	0.0	23	30 min Summer	59.757	0.0	37	60 min Summer	38.413	0.0	66	120 min Summer	23.846	0.0	126	180 min Summer	17.775	0.0	186	240 min Summer	14.326	0.0	246	360 min Summer	10.540	0.0	364	480 min Summer	8.474	0.0	482	600 min Summer	7.149	0.0	602	720 min Summer	6.218	0.0	720	960 min Summer	4.985	0.0	822	1440 min Summer	3.643	0.0	1070	2160 min Summer	2.657	0.0	1472	2880 min Summer	2.121	0.0	1876	4320 min Summer	1.541	0.0	2684	5760 min Summer	1.227	0.0	3464	7200 min Summer	1.027	0.0	4248	8640 min Summer	0.890	0.0	4936	10080 min Summer	0.788	0.0	5648	15 min Winter	88.756	0.0	22
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Date 18/10/2018 File Crate Soakaway SA1.srcx		Designed by S Burgess Checked by SRM			
XP Solutions		Source Control 2017.1.2			
<u>Summary of Results for 100 year Return Period</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	4.673	0.073	0.0	1.7	O K
60 min Winter	4.692	0.092	0.0	2.2	O K
120 min Winter	4.712	0.112	0.0	2.7	O K
180 min Winter	4.723	0.123	0.0	2.9	O K
240 min Winter	4.730	0.130	0.0	3.1	O K
360 min Winter	4.739	0.139	0.0	3.3	O K
480 min Winter	4.744	0.144	0.0	3.4	O K
600 min Winter	4.747	0.147	0.0	3.5	O K
720 min Winter	4.748	0.148	0.0	3.5	O K
840 min Winter	4.748	0.148	0.0	3.5	O K
960 min Winter	4.746	0.146	0.0	3.5	O K
1440 min Winter	4.746	0.146	0.0	3.5	O K
2160 min Winter	4.739	0.139	0.0	3.3	O K
2880 min Winter	4.731	0.131	0.0	3.1	O K
4320 min Winter	4.712	0.112	0.0	2.7	O K
5760 min Winter	4.694	0.094	0.0	2.2	O K
7200 min Winter	4.678	0.078	0.0	1.9	O K
8640 min Winter	4.665	0.065	0.0	1.6	O K
10080 min Winter	4.655	0.055	0.0	1.3	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	59.757	0.0	37		
60 min Winter	38.413	0.0	66		
120 min Winter	23.846	0.0	124		
180 min Winter	17.775	0.0	182		
240 min Winter	14.326	0.0	240		
360 min Winter	10.540	0.0	356		
480 min Winter	8.474	0.0	472		
600 min Winter	7.149	0.0	584		
720 min Winter	6.218	0.0	696		
840 min Winter	4.985	0.0	810		
960 min Winter	3.643	0.0	1142		
1440 min Winter	2.657	0.0	1600		
2160 min Winter	2.121	0.0	2048		
4320 min Winter	1.541	0.0	2900		
5760 min Winter	1.227	0.0	3696		
7200 min Winter	1.027	0.0	4464		
8640 min Winter	0.890	0.0	5112		
10080 min Winter	0.788	0.0	5752		
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11 Tungsten Building George Street Fishersgate BN41 1RA	Waterford Gardens Climping	
Date 18/10/2018 File Crate Soakaway SA1.srcx	Designed by S Burgess Checked by SRM	
XP Solutions Source Control 2017.1.2		

Model Details

Storage is Online Cover Level (m) 6.320

Cellular Storage Structure

Invert Level (m) 4.600 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00731 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00731

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	25.0	25.0	0.401	0.0	36.6
0.400	25.0	36.6			

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<u>Summary of Results for 100 year Return Period (+40%)</u> Half Drain Time : 1488 minutes. <table><thead><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Summer</td><td>4.666</td><td>0.066</td><td>0.0</td><td>1.4</td><td>O K</td></tr><tr><td>30 min Summer</td><td>4.688</td><td>0.088</td><td>0.0</td><td>1.8</td><td>O K</td></tr><tr><td>60 min Summer</td><td>4.713</td><td>0.113</td><td>0.0</td><td>2.4</td><td>O K</td></tr><tr><td>120 min Summer</td><td>4.738</td><td>0.138</td><td>0.0</td><td>2.9</td><td>O K</td></tr><tr><td>180 min Summer</td><td>4.752</td><td>0.152</td><td>0.0</td><td>3.2</td><td>O K</td></tr><tr><td>240 min Summer</td><td>4.761</td><td>0.161</td><td>0.0</td><td>3.4</td><td>O K</td></tr><tr><td>360 min Summer</td><td>4.772</td><td>0.172</td><td>0.0</td><td>3.6</td><td>O K</td></tr><tr><td>480 min Summer</td><td>4.779</td><td>0.179</td><td>0.0</td><td>3.7</td><td>O K</td></tr><tr><td>600 min Summer</td><td>4.784</td><td>0.184</td><td>0.0</td><td>3.8</td><td>O K</td></tr><tr><td>720 min Summer</td><td>4.787</td><td>0.187</td><td>0.0</td><td>3.9</td><td>O K</td></tr><tr><td>960 min Summer</td><td>4.789</td><td>0.189</td><td>0.0</td><td>4.0</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>4.788</td><td>0.188</td><td>0.0</td><td>3.9</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>4.784</td><td>0.184</td><td>0.0</td><td>3.9</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>4.779</td><td>0.179</td><td>0.0</td><td>3.7</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>4.765</td><td>0.165</td><td>0.0</td><td>3.5</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>4.752</td><td>0.152</td><td>0.0</td><td>3.2</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>4.738</td><td>0.138</td><td>0.0</td><td>2.9</td><td>O K</td></tr><tr><td>8640 min 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Summer</td><td>10.008</td><td>0.0</td><td>602</td></tr><tr><td>720 min Summer</td><td>8.705</td><td>0.0</td><td>722</td></tr><tr><td>960 min Summer</td><td>6.978</td><td>0.0</td><td>960</td></tr><tr><td>1440 min Summer</td><td>5.100</td><td>0.0</td><td>1226</td></tr><tr><td>2160 min Summer</td><td>3.719</td><td>0.0</td><td>1600</td></tr><tr><td>2880 min Summer</td><td>2.969</td><td>0.0</td><td>1992</td></tr><tr><td>4320 min Summer</td><td>2.157</td><td>0.0</td><td>2812</td></tr><tr><td>5760 min Summer</td><td>1.717</td><td>0.0</td><td>3632</td></tr><tr><td>7200 min Summer</td><td>1.438</td><td>0.0</td><td>4400</td></tr><tr><td>8640 min Summer</td><td>1.246</td><td>0.0</td><td>5192</td></tr><tr><td>10080 min Summer</td><td>1.103</td><td>0.0</td><td>5952</td></tr><tr><td>15 min Winter</td><td>124.258</td><td>0.0</td><td>23</td></tr></tbody></table>							Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	4.666	0.066	0.0	1.4	O K	30 min Summer	4.688	0.088	0.0	1.8	O K	60 min Summer	4.713	0.113	0.0	2.4	O K	120 min Summer	4.738	0.138	0.0	2.9	O K	180 min Summer	4.752	0.152	0.0	3.2	O K	240 min Summer	4.761	0.161	0.0	3.4	O K	360 min Summer	4.772	0.172	0.0	3.6	O K	480 min Summer	4.779	0.179	0.0	3.7	O K	600 min Summer	4.784	0.184	0.0	3.8	O K	720 min Summer	4.787	0.187	0.0	3.9	O K	960 min Summer	4.789	0.189	0.0	4.0	O K	1440 min Summer	4.788	0.188	0.0	3.9	O K	2160 min Summer	4.784	0.184	0.0	3.9	O K	2880 min Summer	4.779	0.179	0.0	3.7	O K	4320 min Summer	4.765	0.165	0.0	3.5	O K	5760 min Summer	4.752	0.152	0.0	3.2	O K	7200 min Summer	4.738	0.138	0.0	2.9	O K	8640 min Summer	4.726	0.126	0.0	2.6	O K	10080 min Summer	4.715	0.115	0.0	2.4	O K	15 min Winter	4.674	0.074	0.0	1.5	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	124.258	0.0	23	30 min Summer	83.660	0.0	37	60 min Summer	53.779	0.0	68	120 min Summer	33.385	0.0	126	180 min Summer	24.885	0.0	186	240 min Summer	20.056	0.0	246	360 min Summer	14.756	0.0	364	480 min Summer	11.864	0.0	484	600 min Summer	10.008	0.0	602	720 min Summer	8.705	0.0	722	960 min Summer	6.978	0.0	960	1440 min Summer	5.100	0.0	1226	2160 min Summer	3.719	0.0	1600	2880 min Summer	2.969	0.0	1992	4320 min Summer	2.157	0.0	2812	5760 min Summer	1.717	0.0	3632	7200 min Summer	1.438	0.0	4400	8640 min Summer	1.246	0.0	5192	10080 min Summer	1.103	0.0	5952	15 min Winter	124.258	0.0	23
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XP Solutions		Source Control 2017.1.2					
<u>Summary of Results for 100 year Return Period (+40%)</u>							
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status		
30 min Winter	4.699	0.099	0.0	2.1	O K		
60 min Winter	4.727	0.127	0.0	2.6	O K		
120 min Winter	4.755	0.155	0.0	3.2	O K		
180 min Winter	4.771	0.171	0.0	3.6	O K		
240 min Winter	4.781	0.181	0.0	3.8	O K		
360 min Winter	4.794	0.194	0.0	4.1	O K		
480 min Winter	4.803	0.203	0.0	4.2	O K		
600 min Winter	4.809	0.209	0.0	4.4	O K		
720 min Winter	4.813	0.213	0.0	4.4	O K		
840 min Winter	4.817	0.217	0.0	4.5	O K		
960 min Winter	4.817	0.217	0.0	4.5	O K		
1080 min Winter	4.817	0.217	0.0	4.5	O K		
1200 min Winter	4.811	0.211	0.0	4.4	O K		
1320 min Winter	4.803	0.203	0.0	4.2	O K		
1440 min Winter	4.783	0.183	0.0	3.8	O K		
1560 min Winter	4.762	0.162	0.0	3.4	O K		
1680 min Winter	4.742	0.142	0.0	3.0	O K		
1800 min Winter	4.724	0.124	0.0	2.6	O K		
1920 min Winter	4.708	0.108	0.0	2.2	O K		
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2280 min Winter							
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Model Details

Storage is Online Cover Level (m) 6.320

Cellular Storage Structure

Invert Level (m) 4.600 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00731 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00731

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	22.0	22.0	0.401	0.0	29.6
0.400	22.0	29.6			

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<u>Summary of Results for 100 year Return Period</u> Half Drain Time : 1041 minutes. <table><thead><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Summer</td><td>4.647</td><td>0.047</td><td>0.0</td><td>1.0</td><td>O K</td></tr><tr><td>30 min Summer</td><td>4.663</td><td>0.063</td><td>0.0</td><td>1.3</td><td>O K</td></tr><tr><td>60 min Summer</td><td>4.680</td><td>0.080</td><td>0.0</td><td>1.7</td><td>O K</td></tr><tr><td>120 min Summer</td><td>4.697</td><td>0.097</td><td>0.0</td><td>2.0</td><td>O K</td></tr><tr><td>180 min Summer</td><td>4.707</td><td>0.107</td><td>0.0</td><td>2.2</td><td>O K</td></tr><tr><td>240 min Summer</td><td>4.712</td><td>0.112</td><td>0.0</td><td>2.3</td><td>O K</td></tr><tr><td>360 min Summer</td><td>4.719</td><td>0.119</td><td>0.0</td><td>2.5</td><td>O K</td></tr><tr><td>480 min 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Summer</td><td>4.673</td><td>0.073</td><td>0.0</td><td>1.5</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>4.665</td><td>0.065</td><td>0.0</td><td>1.4</td><td>O K</td></tr><tr><td>15 min Winter</td><td>4.653</td><td>0.053</td><td>0.0</td><td>1.1</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>88.756</td><td>0.0</td><td>23</td></tr><tr><td>30 min Summer</td><td>59.757</td><td>0.0</td><td>37</td></tr><tr><td>60 min Summer</td><td>38.413</td><td>0.0</td><td>66</td></tr><tr><td>120 min Summer</td><td>23.846</td><td>0.0</td><td>126</td></tr><tr><td>180 min Summer</td><td>17.775</td><td>0.0</td><td>186</td></tr><tr><td>240 min Summer</td><td>14.326</td><td>0.0</td><td>244</td></tr><tr><td>360 min Summer</td><td>10.540</td><td>0.0</td><td>364</td></tr><tr><td>480 min Summer</td><td>8.474</td><td>0.0</td><td>482</td></tr><tr><td>600 min Summer</td><td>7.149</td><td>0.0</td><td>602</td></tr><tr><td>720 min Summer</td><td>6.218</td><td>0.0</td><td>720</td></tr><tr><td>960 min Summer</td><td>4.985</td><td>0.0</td><td>828</td></tr><tr><td>1440 min Summer</td><td>3.643</td><td>0.0</td><td>1072</td></tr><tr><td>2160 min Summer</td><td>2.657</td><td>0.0</td><td>1472</td></tr><tr><td>2880 min Summer</td><td>2.121</td><td>0.0</td><td>1880</td></tr><tr><td>4320 min Summer</td><td>1.541</td><td>0.0</td><td>2684</td></tr><tr><td>5760 min Summer</td><td>1.227</td><td>0.0</td><td>3464</td></tr><tr><td>7200 min Summer</td><td>1.027</td><td>0.0</td><td>4248</td></tr><tr><td>8640 min Summer</td><td>0.890</td><td>0.0</td><td>4936</td></tr><tr><td>10080 min Summer</td><td>0.788</td><td>0.0</td><td>5648</td></tr><tr><td>15 min Winter</td><td>88.756</td><td>0.0</td><td>22</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	4.647	0.047	0.0	1.0	O K	30 min Summer	4.663	0.063	0.0	1.3	O K	60 min Summer	4.680	0.080	0.0	1.7	O K	120 min Summer	4.697	0.097	0.0	2.0	O K	180 min Summer	4.707	0.107	0.0	2.2	O K	240 min Summer	4.712	0.112	0.0	2.3	O K	360 min Summer	4.719	0.119	0.0	2.5	O K	480 min Summer	4.723	0.123	0.0	2.6	O K	600 min Summer	4.725	0.125	0.0	2.6	O K	720 min Summer	4.726	0.126	0.0	2.6	O K	960 min Summer	4.726	0.126	0.0	2.6	O K	1440 min Summer	4.725	0.125	0.0	2.6	O K	2160 min Summer	4.721	0.121	0.0	2.5	O K	2880 min Summer	4.716	0.116	0.0	2.4	O K	4320 min Summer	4.704	0.104	0.0	2.2	O K	5760 min Summer	4.692	0.092	0.0	1.9	O K	7200 min Summer	4.682	0.082	0.0	1.7	O K	8640 min Summer	4.673	0.073	0.0	1.5	O K	10080 min Summer	4.665	0.065	0.0	1.4	O K	15 min Winter	4.653	0.053	0.0	1.1	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	88.756	0.0	23	30 min Summer	59.757	0.0	37	60 min Summer	38.413	0.0	66	120 min Summer	23.846	0.0	126	180 min Summer	17.775	0.0	186	240 min Summer	14.326	0.0	244	360 min Summer	10.540	0.0	364	480 min Summer	8.474	0.0	482	600 min Summer	7.149	0.0	602	720 min Summer	6.218	0.0	720	960 min Summer	4.985	0.0	828	1440 min Summer	3.643	0.0	1072	2160 min Summer	2.657	0.0	1472	2880 min Summer	2.121	0.0	1880	4320 min Summer	1.541	0.0	2684	5760 min Summer	1.227	0.0	3464	7200 min Summer	1.027	0.0	4248	8640 min Summer	0.890	0.0	4936	10080 min Summer	0.788	0.0	5648	15 min Winter	88.756	0.0	22
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Date 18/10/2018 File Crate Soakaway SA2.srcx		Designed by S Burgess Checked by SRM			
XP Solutions		Source Control 2017.1.2			
<u>Summary of Results for 100 year Return Period</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	4.671	0.071	0.0	1.5	O K
60 min Winter	4.690	0.090	0.0	1.9	O K
120 min Winter	4.709	0.109	0.0	2.3	O K
180 min Winter	4.720	0.120	0.0	2.5	O K
240 min Winter	4.727	0.127	0.0	2.6	O K
360 min Winter	4.735	0.135	0.0	2.8	O K
480 min Winter	4.740	0.140	0.0	2.9	O K
600 min Winter	4.743	0.143	0.0	3.0	O K
720 min Winter	4.745	0.145	0.0	3.0	O K
840 min Winter	4.745	0.145	0.0	3.0	O K
1440 min Winter	4.742	0.142	0.0	3.0	O K
2160 min Winter	4.736	0.136	0.0	2.8	O K
2880 min Winter	4.728	0.128	0.0	2.7	O K
4320 min Winter	4.709	0.109	0.0	2.3	O K
5760 min Winter	4.692	0.092	0.0	1.9	O K
7200 min Winter	4.676	0.076	0.0	1.6	O K
8640 min Winter	4.664	0.064	0.0	1.3	O K
10080 min Winter	4.654	0.054	0.0	1.1	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	59.757	0.0	37		
60 min Winter	38.413	0.0	66		
120 min Winter	23.846	0.0	124		
180 min Winter	17.775	0.0	182		
240 min Winter	14.326	0.0	240		
360 min Winter	10.540	0.0	356		
480 min Winter	8.474	0.0	472		
600 min Winter	7.149	0.0	584		
720 min Winter	6.218	0.0	696		
840 min Winter	4.985	0.0	812		
960 min Winter	4.985	0.0	812		
1440 min Winter	3.643	0.0	1144		
2160 min Winter	2.657	0.0	1604		
2880 min Winter	2.121	0.0	2052		
4320 min Winter	1.541	0.0	2900		
5760 min Winter	1.227	0.0	3696		
7200 min Winter	1.027	0.0	4464		
8640 min Winter	0.890	0.0	5104		
10080 min Winter	0.788	0.0	5752		
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11 Tungsten Building George Street Fishersgate BN41 1RA	Waterford Gardens Climping	
Date 18/10/2018 File Crate Soakaway SA2.srcx	Designed by S Burgess Checked by SRM	
XP Solutions Source Control 2017.1.2		

Model Details

Storage is Online Cover Level (m) 6.320

Cellular Storage Structure

Invert Level (m) 4.600 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00731 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00731

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	22.0	22.0	0.401	0.0	29.6
0.400	22.0	29.6			

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Summer</td><td>4.781</td><td>0.181</td><td>0.0</td><td>3.1</td><td>O K</td></tr><tr><td>600 min Summer</td><td>4.785</td><td>0.185</td><td>0.0</td><td>3.2</td><td>O K</td></tr><tr><td>720 min Summer</td><td>4.788</td><td>0.188</td><td>0.0</td><td>3.2</td><td>O K</td></tr><tr><td>960 min Summer</td><td>4.790</td><td>0.190</td><td>0.0</td><td>3.2</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>4.789</td><td>0.189</td><td>0.0</td><td>3.2</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>4.784</td><td>0.184</td><td>0.0</td><td>3.2</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>4.778</td><td>0.178</td><td>0.0</td><td>3.0</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>4.764</td><td>0.164</td><td>0.0</td><td>2.8</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>4.750</td><td>0.150</td><td>0.0</td><td>2.6</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>4.737</td><td>0.137</td><td>0.0</td><td>2.3</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>4.724</td><td>0.124</td><td>0.0</td><td>2.1</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>4.713</td><td>0.113</td><td>0.0</td><td>1.9</td><td>O K</td></tr><tr><td>15 min Winter</td><td>4.675</td><td>0.075</td><td>0.0</td><td>1.3</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>124.258</td><td>0.0</td><td>23</td></tr><tr><td>30 min Summer</td><td>83.660</td><td>0.0</td><td>38</td></tr><tr><td>60 min Summer</td><td>53.779</td><td>0.0</td><td>68</td></tr><tr><td>120 min Summer</td><td>33.385</td><td>0.0</td><td>126</td></tr><tr><td>180 min Summer</td><td>24.885</td><td>0.0</td><td>186</td></tr><tr><td>240 min Summer</td><td>20.056</td><td>0.0</td><td>246</td></tr><tr><td>360 min Summer</td><td>14.756</td><td>0.0</td><td>364</td></tr><tr><td>480 min Summer</td><td>11.864</td><td>0.0</td><td>484</td></tr><tr><td>600 min Summer</td><td>10.008</td><td>0.0</td><td>602</td></tr><tr><td>720 min Summer</td><td>8.705</td><td>0.0</td><td>722</td></tr><tr><td>960 min Summer</td><td>6.978</td><td>0.0</td><td>956</td></tr><tr><td>1440 min Summer</td><td>5.100</td><td>0.0</td><td>1174</td></tr><tr><td>2160 min Summer</td><td>3.719</td><td>0.0</td><td>1556</td></tr><tr><td>2880 min Summer</td><td>2.969</td><td>0.0</td><td>1964</td></tr><tr><td>4320 min Summer</td><td>2.157</td><td>0.0</td><td>2772</td></tr><tr><td>5760 min Summer</td><td>1.717</td><td>0.0</td><td>3584</td></tr><tr><td>7200 min Summer</td><td>1.438</td><td>0.0</td><td>4392</td></tr><tr><td>8640 min Summer</td><td>1.246</td><td>0.0</td><td>5184</td></tr><tr><td>10080 min Summer</td><td>1.103</td><td>0.0</td><td>5944</td></tr><tr><td>15 min Winter</td><td>124.258</td><td>0.0</td><td>23</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	4.667	0.067	0.0	1.1	O K	30 min Summer	4.690	0.090	0.0	1.5	O K	60 min Summer	4.715	0.115	0.0	2.0	O K	120 min Summer	4.740	0.140	0.0	2.4	O K	180 min Summer	4.754	0.154	0.0	2.6	O K	240 min Summer	4.763	0.163	0.0	2.8	O K	360 min Summer	4.774	0.174	0.0	3.0	O K	480 min Summer	4.781	0.181	0.0	3.1	O K	600 min Summer	4.785	0.185	0.0	3.2	O K	720 min Summer	4.788	0.188	0.0	3.2	O K	960 min Summer	4.790	0.190	0.0	3.2	O K	1440 min Summer	4.789	0.189	0.0	3.2	O K	2160 min Summer	4.784	0.184	0.0	3.2	O K	2880 min Summer	4.778	0.178	0.0	3.0	O K	4320 min Summer	4.764	0.164	0.0	2.8	O K	5760 min Summer	4.750	0.150	0.0	2.6	O K	7200 min Summer	4.737	0.137	0.0	2.3	O K	8640 min Summer	4.724	0.124	0.0	2.1	O K	10080 min Summer	4.713	0.113	0.0	1.9	O K	15 min Winter	4.675	0.075	0.0	1.3	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	124.258	0.0	23	30 min Summer	83.660	0.0	38	60 min Summer	53.779	0.0	68	120 min Summer	33.385	0.0	126	180 min Summer	24.885	0.0	186	240 min Summer	20.056	0.0	246	360 min Summer	14.756	0.0	364	480 min Summer	11.864	0.0	484	600 min Summer	10.008	0.0	602	720 min Summer	8.705	0.0	722	960 min Summer	6.978	0.0	956	1440 min Summer	5.100	0.0	1174	2160 min Summer	3.719	0.0	1556	2880 min Summer	2.969	0.0	1964	4320 min Summer	2.157	0.0	2772	5760 min Summer	1.717	0.0	3584	7200 min Summer	1.438	0.0	4392	8640 min Summer	1.246	0.0	5184	10080 min Summer	1.103	0.0	5944	15 min Winter	124.258	0.0	23
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The Civil Engineering Practice				Page 2	
11 Tungsten Building George Street Fishersgate BN41 1RA					
Date 22/10/2018 17:22		Designed by Steve Burgess			
File Crate Soakaway SA3.srcx		Checked by			
XP Solutions		Source Control 2017.1.2			
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	4.701	0.101	0.0	1.7	O K
60 min Winter	4.729	0.129	0.0	2.2	O K
120 min Winter	4.757	0.157	0.0	2.7	O K
180 min Winter	4.773	0.173	0.0	3.0	O K
240 min Winter	4.784	0.184	0.0	3.1	O K
360 min Winter	4.797	0.197	0.0	3.4	O K
480 min Winter	4.805	0.205	0.0	3.5	O K
600 min Winter	4.811	0.211	0.0	3.6	O K
720 min Winter	4.814	0.214	0.0	3.7	O K
840 min Winter	4.818	0.218	0.0	3.7	O K
960 min Winter	4.816	0.216	0.0	3.7	O K
1080 min Winter	4.810	0.210	0.0	3.6	O K
1200 min Winter	4.801	0.201	0.0	3.4	O K
1320 min Winter	4.780	0.180	0.0	3.1	O K
1440 min Winter	4.759	0.159	0.0	2.7	O K
1560 min Winter	4.739	0.139	0.0	2.4	O K
1680 min Winter	4.721	0.121	0.0	2.1	O K
1800 min Winter	4.705	0.105	0.0	1.8	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	83.660	0.0	37		
60 min Winter	53.779	0.0	66		
120 min Winter	33.385	0.0	124		
180 min Winter	24.885	0.0	184		
240 min Winter	20.056	0.0	242		
360 min Winter	14.756	0.0	358		
480 min Winter	11.864	0.0	474		
600 min Winter	10.008	0.0	590		
720 min Winter	8.705	0.0	704		
840 min Winter	6.978	0.0	826		
960 min Winter	5.100	0.0	1342		
1080 min Winter	3.719	0.0	1668		
1200 min Winter	2.969	0.0	2132		
1320 min Winter	2.157	0.0	3028		
1440 min Winter	1.717	0.0	3872		
1560 min Winter	1.438	0.0	4688		
1680 min Winter	1.246	0.0	5456		
1800 min Winter	1.103	0.0	6248		
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11 Tungsten Building
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Fishersgate BN41 1RA

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Date 22/10/2018 17:22
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Designed by Steve Burgess

Checked by _____



XP Solutions

Source Control 2017.1.2

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Shortest Storm (mins)	15
Ratio R	0.347	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.005

Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)
0 4	0.002	4 8	0.003

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Date 22/10/2018 17:22 File Crate Soakaway SA3.srcx	Designed by Steve Burgess Checked by	
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Model Details

Storage is Online Cover Level (m) 6.320

Cellular Storage Structure

Invert Level (m) 4.600 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00731 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00731

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	18.0	18.0	0.401	0.0	28.8
0.400	18.0	28.8			

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<u>Summary of Results for 100 year Return Period</u> Half Drain Time : 982 minutes. <table><thead><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Summer</td><td>4.648</td><td>0.048</td><td>0.0</td><td>0.8</td><td>O K</td></tr><tr><td>30 min Summer</td><td>4.664</td><td>0.064</td><td>0.0</td><td>1.1</td><td>O K</td></tr><tr><td>60 min Summer</td><td>4.681</td><td>0.081</td><td>0.0</td><td>1.4</td><td>O K</td></tr><tr><td>120 min Summer</td><td>4.699</td><td>0.099</td><td>0.0</td><td>1.7</td><td>O K</td></tr><tr><td>180 min Summer</td><td>4.708</td><td>0.108</td><td>0.0</td><td>1.9</td><td>O K</td></tr><tr><td>240 min Summer</td><td>4.714</td><td>0.114</td><td>0.0</td><td>1.9</td><td>O K</td></tr><tr><td>360 min Summer</td><td>4.721</td><td>0.121</td><td>0.0</td><td>2.1</td><td>O K</td></tr><tr><td>480 min Summer</td><td>4.725</td><td>0.125</td><td>0.0</td><td>2.1</td><td>O K</td></tr><tr><td>600 min Summer</td><td>4.726</td><td>0.126</td><td>0.0</td><td>2.2</td><td>O K</td></tr><tr><td>720 min Summer</td><td>4.727</td><td>0.127</td><td>0.0</td><td>2.2</td><td>O K</td></tr><tr><td>960 min Summer</td><td>4.727</td><td>0.127</td><td>0.0</td><td>2.2</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>4.726</td><td>0.126</td><td>0.0</td><td>2.2</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>4.722</td><td>0.122</td><td>0.0</td><td>2.1</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>4.716</td><td>0.116</td><td>0.0</td><td>2.0</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>4.703</td><td>0.103</td><td>0.0</td><td>1.8</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>4.692</td><td>0.092</td><td>0.0</td><td>1.6</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>4.681</td><td>0.081</td><td>0.0</td><td>1.4</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>4.672</td><td>0.072</td><td>0.0</td><td>1.2</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>4.665</td><td>0.065</td><td>0.0</td><td>1.1</td><td>O K</td></tr><tr><td>15 min Winter</td><td>4.654</td><td>0.054</td><td>0.0</td><td>0.9</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>88.756</td><td>0.0</td><td>23</td></tr><tr><td>30 min Summer</td><td>59.757</td><td>0.0</td><td>37</td></tr><tr><td>60 min Summer</td><td>38.413</td><td>0.0</td><td>66</td></tr><tr><td>120 min Summer</td><td>23.846</td><td>0.0</td><td>126</td></tr><tr><td>180 min Summer</td><td>17.775</td><td>0.0</td><td>186</td></tr><tr><td>240 min Summer</td><td>14.326</td><td>0.0</td><td>246</td></tr><tr><td>360 min Summer</td><td>10.540</td><td>0.0</td><td>364</td></tr><tr><td>480 min Summer</td><td>8.474</td><td>0.0</td><td>482</td></tr><tr><td>600 min Summer</td><td>7.149</td><td>0.0</td><td>600</td></tr><tr><td>720 min Summer</td><td>6.218</td><td>0.0</td><td>702</td></tr><tr><td>960 min Summer</td><td>4.985</td><td>0.0</td><td>808</td></tr><tr><td>1440 min Summer</td><td>3.643</td><td>0.0</td><td>1054</td></tr><tr><td>2160 min Summer</td><td>2.657</td><td>0.0</td><td>1456</td></tr><tr><td>2880 min Summer</td><td>2.121</td><td>0.0</td><td>1876</td></tr><tr><td>4320 min Summer</td><td>1.541</td><td>0.0</td><td>2680</td></tr><tr><td>5760 min Summer</td><td>1.227</td><td>0.0</td><td>3456</td></tr><tr><td>7200 min Summer</td><td>1.027</td><td>0.0</td><td>4184</td></tr><tr><td>8640 min Summer</td><td>0.890</td><td>0.0</td><td>4928</td></tr><tr><td>10080 min Summer</td><td>0.788</td><td>0.0</td><td>5648</td></tr><tr><td>15 min Winter</td><td>88.756</td><td>0.0</td><td>22</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	4.648	0.048	0.0	0.8	O K	30 min Summer	4.664	0.064	0.0	1.1	O K	60 min Summer	4.681	0.081	0.0	1.4	O K	120 min Summer	4.699	0.099	0.0	1.7	O K	180 min Summer	4.708	0.108	0.0	1.9	O K	240 min Summer	4.714	0.114	0.0	1.9	O K	360 min Summer	4.721	0.121	0.0	2.1	O K	480 min Summer	4.725	0.125	0.0	2.1	O K	600 min Summer	4.726	0.126	0.0	2.2	O K	720 min Summer	4.727	0.127	0.0	2.2	O K	960 min Summer	4.727	0.127	0.0	2.2	O K	1440 min Summer	4.726	0.126	0.0	2.2	O K	2160 min Summer	4.722	0.122	0.0	2.1	O K	2880 min Summer	4.716	0.116	0.0	2.0	O K	4320 min Summer	4.703	0.103	0.0	1.8	O K	5760 min Summer	4.692	0.092	0.0	1.6	O K	7200 min Summer	4.681	0.081	0.0	1.4	O K	8640 min Summer	4.672	0.072	0.0	1.2	O K	10080 min Summer	4.665	0.065	0.0	1.1	O K	15 min Winter	4.654	0.054	0.0	0.9	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	88.756	0.0	23	30 min Summer	59.757	0.0	37	60 min Summer	38.413	0.0	66	120 min Summer	23.846	0.0	126	180 min Summer	17.775	0.0	186	240 min Summer	14.326	0.0	246	360 min Summer	10.540	0.0	364	480 min Summer	8.474	0.0	482	600 min Summer	7.149	0.0	600	720 min Summer	6.218	0.0	702	960 min Summer	4.985	0.0	808	1440 min Summer	3.643	0.0	1054	2160 min Summer	2.657	0.0	1456	2880 min Summer	2.121	0.0	1876	4320 min Summer	1.541	0.0	2680	5760 min Summer	1.227	0.0	3456	7200 min Summer	1.027	0.0	4184	8640 min Summer	0.890	0.0	4928	10080 min Summer	0.788	0.0	5648	15 min Winter	88.756	0.0	22
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status																																																																																																																																																																																																																		
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180 min Summer	4.708	0.108	0.0	1.9	O K																																																																																																																																																																																																																		
240 min Summer	4.714	0.114	0.0	1.9	O K																																																																																																																																																																																																																		
360 min Summer	4.721	0.121	0.0	2.1	O K																																																																																																																																																																																																																		
480 min Summer	4.725	0.125	0.0	2.1	O K																																																																																																																																																																																																																		
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11 Tungsten Building George Street Fishersgate BN41 1RA					
Date 22/10/2018 17:22		Designed by Steve Burgess			
File Crate Soakaway SA3.srcx		Checked by			
XP Solutions		Source Control 2017.1.2			
<u>Summary of Results for 100 year Return Period</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	4.672	0.072	0.0	1.2	O K
60 min Winter	4.691	0.091	0.0	1.6	O K
120 min Winter	4.711	0.111	0.0	1.9	O K
180 min Winter	4.722	0.122	0.0	2.1	O K
240 min Winter	4.729	0.129	0.0	2.2	O K
360 min Winter	4.737	0.137	0.0	2.3	O K
480 min Winter	4.742	0.142	0.0	2.4	O K
600 min Winter	4.744	0.144	0.0	2.5	O K
720 min Winter	4.746	0.146	0.0	2.5	O K
960 min Winter	4.746	0.146	0.0	2.5	O K
1440 min Winter	4.743	0.143	0.0	2.4	O K
2160 min Winter	4.736	0.136	0.0	2.3	O K
2880 min Winter	4.727	0.127	0.0	2.2	O K
4320 min Winter	4.708	0.108	0.0	1.9	O K
5760 min Winter	4.691	0.091	0.0	1.5	O K
7200 min Winter	4.675	0.075	0.0	1.3	O K
8640 min Winter	4.663	0.063	0.0	1.1	O K
10080 min Winter	4.653	0.053	0.0	0.9	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	59.757	0.0	37		
60 min Winter	38.413	0.0	66		
120 min Winter	23.846	0.0	124		
180 min Winter	17.775	0.0	182		
240 min Winter	14.326	0.0	240		
360 min Winter	10.540	0.0	356		
480 min Winter	8.474	0.0	472		
600 min Winter	7.149	0.0	584		
720 min Winter	6.218	0.0	694		
960 min Winter	4.985	0.0	906		
1440 min Winter	3.643	0.0	1128		
2160 min Winter	2.657	0.0	1584		
2880 min Winter	2.121	0.0	2044		
4320 min Winter	1.541	0.0	2896		
5760 min Winter	1.227	0.0	3688		
7200 min Winter	1.027	0.0	4400		
8640 min Winter	0.890	0.0	5104		
10080 min Winter	0.788	0.0	5744		
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11 Tungsten Building George Street Fishersgate BN41 1RA		
Date 22/10/2018 17:22 File Crate Soakaway SA3.srcx	Designed by Steve Burgess Checked by	
XP Solutions Source Control 2017.1.2		

Model Details

Storage is Online Cover Level (m) 6.320

Cellular Storage Structure

Invert Level (m) 4.600 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00731 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00731

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	18.0	18.0	0.401	0.0	28.8
0.400	18.0	28.8			

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Summary of Results for 100 year Return Period (+40%) Half Drain Time : 1440 minutes. <table><thead><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Summer</td><td>4.672</td><td>0.072</td><td>0.0</td><td>0.9</td><td>O K</td></tr><tr><td>30 min Summer</td><td>4.696</td><td>0.096</td><td>0.0</td><td>1.2</td><td>O K</td></tr><tr><td>60 min Summer</td><td>4.723</td><td>0.123</td><td>0.0</td><td>1.6</td><td>O K</td></tr><tr><td>120 min Summer</td><td>4.750</td><td>0.150</td><td>0.0</td><td>1.9</td><td>O K</td></tr><tr><td>180 min Summer</td><td>4.765</td><td>0.165</td><td>0.0</td><td>2.1</td><td>O K</td></tr><tr><td>240 min Summer</td><td>4.774</td><td>0.174</td><td>0.0</td><td>2.2</td><td>O K</td></tr><tr><td>360 min Summer</td><td>4.787</td><td>0.187</td><td>0.0</td><td>2.4</td><td>O K</td></tr><tr><td>480 min Summer</td><td>4.794</td><td>0.194</td><td>0.0</td><td>2.5</td><td>O K</td></tr><tr><td>600 min Summer</td><td>4.799</td><td>0.199</td><td>0.0</td><td>2.6</td><td>O K</td></tr><tr><td>720 min Summer</td><td>4.802</td><td>0.202</td><td>0.0</td><td>2.6</td><td>O K</td></tr><tr><td>960 min Summer</td><td>4.804</td><td>0.204</td><td>0.0</td><td>2.6</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>4.803</td><td>0.203</td><td>0.0</td><td>2.6</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>4.799</td><td>0.199</td><td>0.0</td><td>2.6</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>4.793</td><td>0.193</td><td>0.0</td><td>2.5</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>4.779</td><td>0.179</td><td>0.0</td><td>2.3</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>4.764</td><td>0.164</td><td>0.0</td><td>2.1</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>4.750</td><td>0.150</td><td>0.0</td><td>1.9</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>4.737</td><td>0.137</td><td>0.0</td><td>1.8</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>4.726</td><td>0.126</td><td>0.0</td><td>1.6</td><td>O K</td></tr><tr><td>15 min Winter</td><td>4.680</td><td>0.080</td><td>0.0</td><td>1.0</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>124.258</td><td>0.0</td><td>23</td></tr><tr><td>30 min Summer</td><td>83.660</td><td>0.0</td><td>37</td></tr><tr><td>60 min Summer</td><td>53.779</td><td>0.0</td><td>68</td></tr><tr><td>120 min Summer</td><td>33.385</td><td>0.0</td><td>126</td></tr><tr><td>180 min Summer</td><td>24.885</td><td>0.0</td><td>186</td></tr><tr><td>240 min Summer</td><td>20.056</td><td>0.0</td><td>246</td></tr><tr><td>360 min Summer</td><td>14.756</td><td>0.0</td><td>364</td></tr><tr><td>480 min Summer</td><td>11.864</td><td>0.0</td><td>484</td></tr><tr><td>600 min Summer</td><td>10.008</td><td>0.0</td><td>602</td></tr><tr><td>720 min Summer</td><td>8.705</td><td>0.0</td><td>722</td></tr><tr><td>960 min Summer</td><td>6.978</td><td>0.0</td><td>960</td></tr><tr><td>1440 min Summer</td><td>5.100</td><td>0.0</td><td>1200</td></tr><tr><td>2160 min Summer</td><td>3.719</td><td>0.0</td><td>1576</td></tr><tr><td>2880 min Summer</td><td>2.969</td><td>0.0</td><td>1968</td></tr><tr><td>4320 min Summer</td><td>2.157</td><td>0.0</td><td>2808</td></tr><tr><td>5760 min Summer</td><td>1.717</td><td>0.0</td><td>3632</td></tr><tr><td>7200 min Summer</td><td>1.438</td><td>0.0</td><td>4400</td></tr><tr><td>8640 min Summer</td><td>1.246</td><td>0.0</td><td>5192</td></tr><tr><td>10080 min Summer</td><td>1.103</td><td>0.0</td><td>5952</td></tr><tr><td>15 min Winter</td><td>124.258</td><td>0.0</td><td>23</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	4.672	0.072	0.0	0.9	O K	30 min 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Summer	14.756	0.0	364	480 min Summer	11.864	0.0	484	600 min Summer	10.008	0.0	602	720 min Summer	8.705	0.0	722	960 min Summer	6.978	0.0	960	1440 min Summer	5.100	0.0	1200	2160 min Summer	3.719	0.0	1576	2880 min Summer	2.969	0.0	1968	4320 min Summer	2.157	0.0	2808	5760 min Summer	1.717	0.0	3632	7200 min Summer	1.438	0.0	4400	8640 min Summer	1.246	0.0	5192	10080 min Summer	1.103	0.0	5952	15 min Winter	124.258	0.0	23
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180 min Summer	4.765	0.165	0.0	2.1	O K																																																																																																																																																																																																																		
240 min Summer	4.774	0.174	0.0	2.2	O K																																																																																																																																																																																																																		
360 min Summer	4.787	0.187	0.0	2.4	O K																																																																																																																																																																																																																		
480 min Summer	4.794	0.194	0.0	2.5	O K																																																																																																																																																																																																																		
600 min Summer	4.799	0.199	0.0	2.6	O K																																																																																																																																																																																																																		
720 min Summer	4.802	0.202	0.0	2.6	O K																																																																																																																																																																																																																		
960 min Summer	4.804	0.204	0.0	2.6	O K																																																																																																																																																																																																																		
1440 min Summer	4.803	0.203	0.0	2.6	O K																																																																																																																																																																																																																		
2160 min Summer	4.799	0.199	0.0	2.6	O K																																																																																																																																																																																																																		
2880 min Summer	4.793	0.193	0.0	2.5	O K																																																																																																																																																																																																																		
4320 min Summer	4.779	0.179	0.0	2.3	O K																																																																																																																																																																																																																		
5760 min Summer	4.764	0.164	0.0	2.1	O K																																																																																																																																																																																																																		
7200 min Summer	4.750	0.150	0.0	1.9	O K																																																																																																																																																																																																																		
8640 min Summer	4.737	0.137	0.0	1.8	O K																																																																																																																																																																																																																		
10080 min Summer	4.726	0.126	0.0	1.6	O K																																																																																																																																																																																																																		
15 min Winter	4.680	0.080	0.0	1.0	O K																																																																																																																																																																																																																		
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)																																																																																																																																																																																																																				
15 min Summer	124.258	0.0	23																																																																																																																																																																																																																				
30 min Summer	83.660	0.0	37																																																																																																																																																																																																																				
60 min Summer	53.779	0.0	68																																																																																																																																																																																																																				
120 min Summer	33.385	0.0	126																																																																																																																																																																																																																				
180 min Summer	24.885	0.0	186																																																																																																																																																																																																																				
240 min Summer	20.056	0.0	246																																																																																																																																																																																																																				
360 min Summer	14.756	0.0	364																																																																																																																																																																																																																				
480 min Summer	11.864	0.0	484																																																																																																																																																																																																																				
600 min Summer	10.008	0.0	602																																																																																																																																																																																																																				
720 min Summer	8.705	0.0	722																																																																																																																																																																																																																				
960 min Summer	6.978	0.0	960																																																																																																																																																																																																																				
1440 min Summer	5.100	0.0	1200																																																																																																																																																																																																																				
2160 min Summer	3.719	0.0	1576																																																																																																																																																																																																																				
2880 min Summer	2.969	0.0	1968																																																																																																																																																																																																																				
4320 min Summer	2.157	0.0	2808																																																																																																																																																																																																																				
5760 min Summer	1.717	0.0	3632																																																																																																																																																																																																																				
7200 min Summer	1.438	0.0	4400																																																																																																																																																																																																																				
8640 min Summer	1.246	0.0	5192																																																																																																																																																																																																																				
10080 min Summer	1.103	0.0	5952																																																																																																																																																																																																																				
15 min Winter	124.258	0.0	23																																																																																																																																																																																																																				
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11 Tungsten Building George Street Fishersgate BN41 1RA					
Date 22/10/2018 17:23		Designed by Steve Burgess			
File Crate Soakaway SA4.srcx		Checked by			
XP Solutions		Source Control 2017.1.2			
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	4.708	0.108	0.0	1.4	O K
60 min Winter	4.738	0.138	0.0	1.8	O K
120 min Winter	4.768	0.168	0.0	2.2	O K
180 min Winter	4.785	0.185	0.0	2.4	O K
240 min Winter	4.796	0.196	0.0	2.5	O K
360 min Winter	4.811	0.211	0.0	2.7	O K
480 min Winter	4.820	0.220	0.0	2.8	O K
600 min Winter	4.826	0.226	0.0	2.9	O K
720 min Winter	4.830	0.230	0.0	3.0	O K
960 min Winter	4.834	0.234	0.0	3.0	O K
1440 min Winter	4.834	0.234	0.0	3.0	O K
2160 min Winter	4.827	0.227	0.0	2.9	O K
2880 min Winter	4.818	0.218	0.0	2.8	O K
4320 min Winter	4.797	0.197	0.0	2.5	O K
5760 min Winter	4.775	0.175	0.0	2.2	O K
7200 min Winter	4.754	0.154	0.0	2.0	O K
8640 min Winter	4.736	0.136	0.0	1.7	O K
10080 min Winter	4.719	0.119	0.0	1.5	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	83.660	0.0	37		
60 min Winter	53.779	0.0	66		
120 min Winter	33.385	0.0	124		
180 min Winter	24.885	0.0	182		
240 min Winter	20.056	0.0	242		
360 min Winter	14.756	0.0	358		
480 min Winter	11.864	0.0	474		
600 min Winter	10.008	0.0	590		
720 min Winter	8.705	0.0	704		
960 min Winter	6.978	0.0	928		
1440 min Winter	5.100	0.0	1348		
2160 min Winter	3.719	0.0	1684		
2880 min Winter	2.969	0.0	2136		
4320 min Winter	2.157	0.0	3032		
5760 min Winter	1.717	0.0	3920		
7200 min Winter	1.438	0.0	4752		
8640 min Winter	1.246	0.0	5536		
10080 min Winter	1.103	0.0	6344		
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Date 22/10/2018 17:23 File Crate Soakaway SA4.srcx	Designed by Steve Burgess Checked by	
XP Solutions Source Control 2017.1.2		

Model Details

Storage is Online Cover Level (m) 6.320

Cellular Storage Structure

Invert Level (m) 4.600 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00731 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00731

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	13.5	13.5	0.401	0.0	21.9
0.400	13.5	21.9			

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11 Tungsten Building George Street Fishersgate BN41 1RA																																																																																																																																																																																																																							
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XP Solutions		Source Control 2017.1.2																																																																																																																																																																																																																					
<u>Summary of Results for 100 year Return Period</u> Half Drain Time : 1042 minutes. <table><thead><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Summer</td><td>4.651</td><td>0.051</td><td>0.0</td><td>0.7</td><td>O K</td></tr><tr><td>30 min Summer</td><td>4.668</td><td>0.068</td><td>0.0</td><td>0.9</td><td>O K</td></tr><tr><td>60 min Summer</td><td>4.687</td><td>0.087</td><td>0.0</td><td>1.1</td><td>O K</td></tr><tr><td>120 min Summer</td><td>4.706</td><td>0.106</td><td>0.0</td><td>1.4</td><td>O K</td></tr><tr><td>180 min Summer</td><td>4.716</td><td>0.116</td><td>0.0</td><td>1.5</td><td>O K</td></tr><tr><td>240 min Summer</td><td>4.722</td><td>0.122</td><td>0.0</td><td>1.6</td><td>O K</td></tr><tr><td>360 min Summer</td><td>4.730</td><td>0.130</td><td>0.0</td><td>1.7</td><td>O K</td></tr><tr><td>480 min Summer</td><td>4.734</td><td>0.134</td><td>0.0</td><td>1.7</td><td>O K</td></tr><tr><td>600 min Summer</td><td>4.736</td><td>0.136</td><td>0.0</td><td>1.7</td><td>O K</td></tr><tr><td>720 min Summer</td><td>4.737</td><td>0.137</td><td>0.0</td><td>1.8</td><td>O K</td></tr><tr><td>960 min Summer</td><td>4.737</td><td>0.137</td><td>0.0</td><td>1.8</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>4.736</td><td>0.136</td><td>0.0</td><td>1.7</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>4.732</td><td>0.132</td><td>0.0</td><td>1.7</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>4.726</td><td>0.126</td><td>0.0</td><td>1.6</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>4.713</td><td>0.113</td><td>0.0</td><td>1.4</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>4.701</td><td>0.101</td><td>0.0</td><td>1.3</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>4.689</td><td>0.089</td><td>0.0</td><td>1.1</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>4.680</td><td>0.080</td><td>0.0</td><td>1.0</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>4.671</td><td>0.071</td><td>0.0</td><td>0.9</td><td>O K</td></tr><tr><td>15 min Winter</td><td>4.657</td><td>0.057</td><td>0.0</td><td>0.7</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>88.756</td><td>0.0</td><td>23</td></tr><tr><td>30 min Summer</td><td>59.757</td><td>0.0</td><td>37</td></tr><tr><td>60 min Summer</td><td>38.413</td><td>0.0</td><td>66</td></tr><tr><td>120 min Summer</td><td>23.846</td><td>0.0</td><td>126</td></tr><tr><td>180 min Summer</td><td>17.775</td><td>0.0</td><td>186</td></tr><tr><td>240 min Summer</td><td>14.326</td><td>0.0</td><td>244</td></tr><tr><td>360 min Summer</td><td>10.540</td><td>0.0</td><td>364</td></tr><tr><td>480 min Summer</td><td>8.474</td><td>0.0</td><td>482</td></tr><tr><td>600 min Summer</td><td>7.149</td><td>0.0</td><td>602</td></tr><tr><td>720 min Summer</td><td>6.218</td><td>0.0</td><td>720</td></tr><tr><td>960 min Summer</td><td>4.985</td><td>0.0</td><td>824</td></tr><tr><td>1440 min Summer</td><td>3.643</td><td>0.0</td><td>1070</td></tr><tr><td>2160 min Summer</td><td>2.657</td><td>0.0</td><td>1472</td></tr><tr><td>2880 min Summer</td><td>2.121</td><td>0.0</td><td>1880</td></tr><tr><td>4320 min Summer</td><td>1.541</td><td>0.0</td><td>2684</td></tr><tr><td>5760 min Summer</td><td>1.227</td><td>0.0</td><td>3464</td></tr><tr><td>7200 min Summer</td><td>1.027</td><td>0.0</td><td>4248</td></tr><tr><td>8640 min Summer</td><td>0.890</td><td>0.0</td><td>5008</td></tr><tr><td>10080 min Summer</td><td>0.788</td><td>0.0</td><td>5656</td></tr><tr><td>15 min Winter</td><td>88.756</td><td>0.0</td><td>22</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	4.651	0.051	0.0	0.7	O K	30 min Summer	4.668	0.068	0.0	0.9	O K	60 min Summer	4.687	0.087	0.0	1.1	O K	120 min Summer	4.706	0.106	0.0	1.4	O K	180 min Summer	4.716	0.116	0.0	1.5	O K	240 min Summer	4.722	0.122	0.0	1.6	O K	360 min Summer	4.730	0.130	0.0	1.7	O K	480 min Summer	4.734	0.134	0.0	1.7	O K	600 min Summer	4.736	0.136	0.0	1.7	O K	720 min Summer	4.737	0.137	0.0	1.8	O K	960 min Summer	4.737	0.137	0.0	1.8	O K	1440 min Summer	4.736	0.136	0.0	1.7	O K	2160 min Summer	4.732	0.132	0.0	1.7	O K	2880 min Summer	4.726	0.126	0.0	1.6	O K	4320 min Summer	4.713	0.113	0.0	1.4	O K	5760 min Summer	4.701	0.101	0.0	1.3	O K	7200 min Summer	4.689	0.089	0.0	1.1	O K	8640 min Summer	4.680	0.080	0.0	1.0	O K	10080 min Summer	4.671	0.071	0.0	0.9	O K	15 min Winter	4.657	0.057	0.0	0.7	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	88.756	0.0	23	30 min Summer	59.757	0.0	37	60 min Summer	38.413	0.0	66	120 min Summer	23.846	0.0	126	180 min Summer	17.775	0.0	186	240 min Summer	14.326	0.0	244	360 min Summer	10.540	0.0	364	480 min Summer	8.474	0.0	482	600 min Summer	7.149	0.0	602	720 min Summer	6.218	0.0	720	960 min Summer	4.985	0.0	824	1440 min Summer	3.643	0.0	1070	2160 min Summer	2.657	0.0	1472	2880 min Summer	2.121	0.0	1880	4320 min Summer	1.541	0.0	2684	5760 min Summer	1.227	0.0	3464	7200 min Summer	1.027	0.0	4248	8640 min Summer	0.890	0.0	5008	10080 min Summer	0.788	0.0	5656	15 min Winter	88.756	0.0	22
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status																																																																																																																																																																																																																		
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8640 min Summer	0.890	0.0	5008																																																																																																																																																																																																																				
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XP Solutions		Source Control 2017.1.2			
<u>Summary of Results for 100 year Return Period</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	4.677	0.077	0.0	1.0	O K
60 min Winter	4.698	0.098	0.0	1.3	O K
120 min Winter	4.719	0.119	0.0	1.5	O K
180 min Winter	4.730	0.130	0.0	1.7	O K
240 min Winter	4.738	0.138	0.0	1.8	O K
360 min Winter	4.747	0.147	0.0	1.9	O K
480 min Winter	4.752	0.152	0.0	2.0	O K
600 min Winter	4.755	0.155	0.0	2.0	O K
720 min Winter	4.757	0.157	0.0	2.0	O K
960 min Winter	4.757	0.157	0.0	2.0	O K
1440 min Winter	4.754	0.154	0.0	2.0	O K
2160 min Winter	4.748	0.148	0.0	1.9	O K
2880 min Winter	4.739	0.139	0.0	1.8	O K
4320 min Winter	4.719	0.119	0.0	1.5	O K
5760 min Winter	4.701	0.101	0.0	1.3	O K
7200 min Winter	4.684	0.084	0.0	1.1	O K
8640 min Winter	4.671	0.071	0.0	0.9	O K
10080 min Winter	4.660	0.060	0.0	0.8	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	59.757	0.0	37		
60 min Winter	38.413	0.0	66		
120 min Winter	23.846	0.0	124		
180 min Winter	17.775	0.0	182		
240 min Winter	14.326	0.0	240		
360 min Winter	10.540	0.0	356		
480 min Winter	8.474	0.0	472		
600 min Winter	7.149	0.0	584		
720 min Winter	6.218	0.0	696		
960 min Winter	4.985	0.0	910		
1440 min Winter	3.643	0.0	1142		
2160 min Winter	2.657	0.0	1600		
2880 min Winter	2.121	0.0	2048		
4320 min Winter	1.541	0.0	2900		
5760 min Winter	1.227	0.0	3744		
7200 min Winter	1.027	0.0	4472		
8640 min Winter	0.890	0.0	5184		
10080 min Winter	0.788	0.0	5848		
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Designed by Steve Burgess
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Source Control 2017.1.2

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Shortest Storm (mins)	15
Ratio R	0.347	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+0

Time Area Diagram

Total Area (ha) 0.004

Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)
0 4	0.002	4 8	0.002

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Model Details

Storage is Online Cover Level (m) 6.320

Cellular Storage Structure

Invert Level (m) 4.600 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00731 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00731

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	13.5	13.5	0.401	0.0	21.9
0.400	13.5	21.9			

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