

## Appendix E Flood Maps for Planning Extracts

## Get data for your location

Add or edit a location boundary

Hide

Add polygon

Add square

Edit shape

Delete shape

## Datasets

Flood zones 2 and 3

Show

## Climate change

Present day

Show

## Map features

Water storage, Flood defence, Main Rivers

Hide

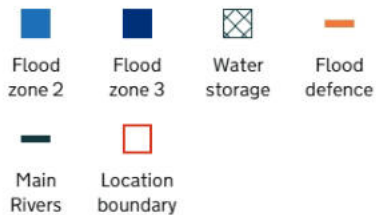
☒ Water storage

☒ Flood defence

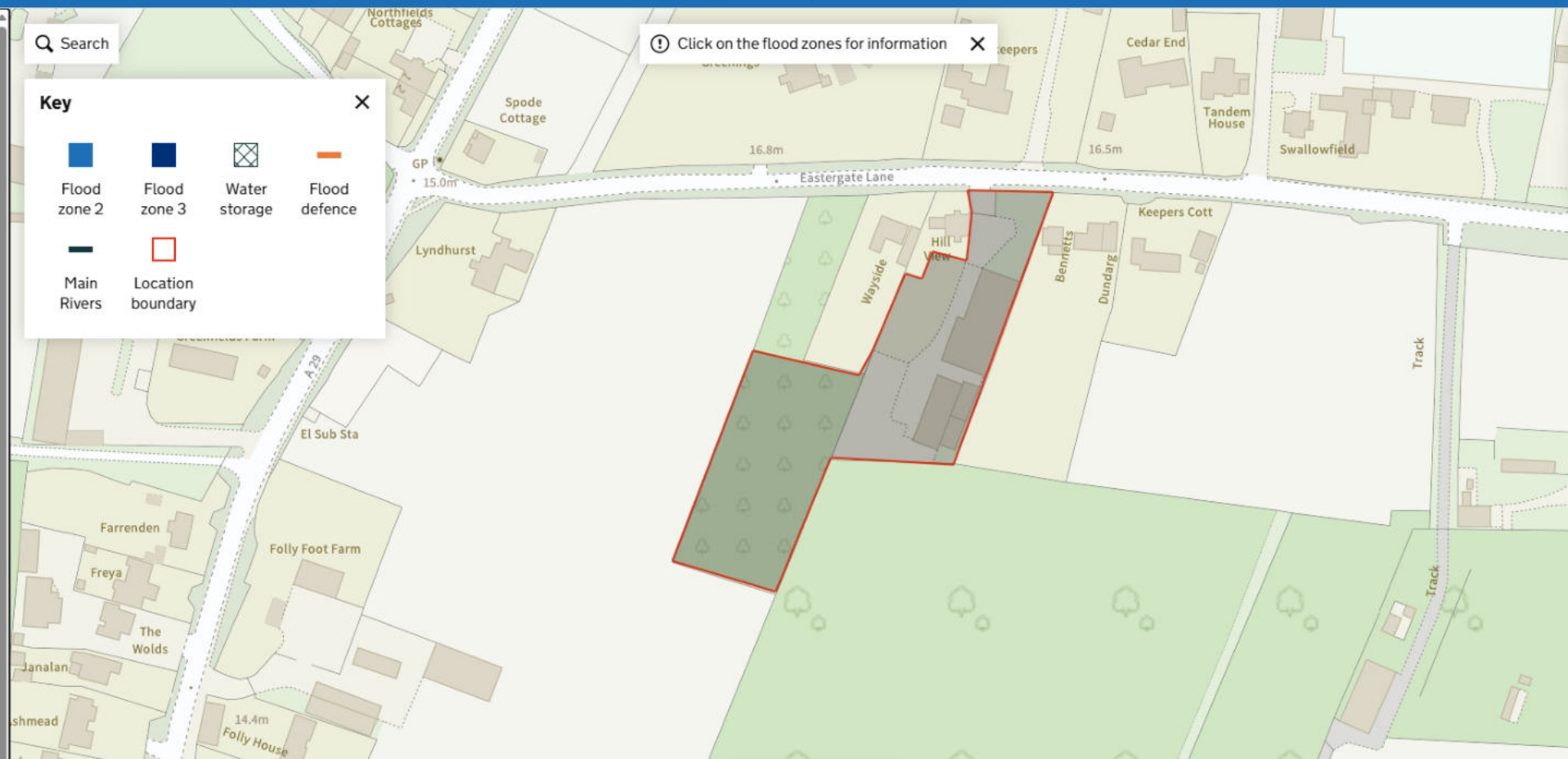
☒ Main Rivers

Search

### Key



Click on the flood zones for information



## Get data for your location

Add or edit a location boundary

[Hide](#)

☐ Add polygon

☐ Add square

☐ Edit shape

☐ Delete shape

## Datasets

Flood zones 2 and 3

[Show](#)

## Climate change

2070 to 2125

[Show](#)

## Map features

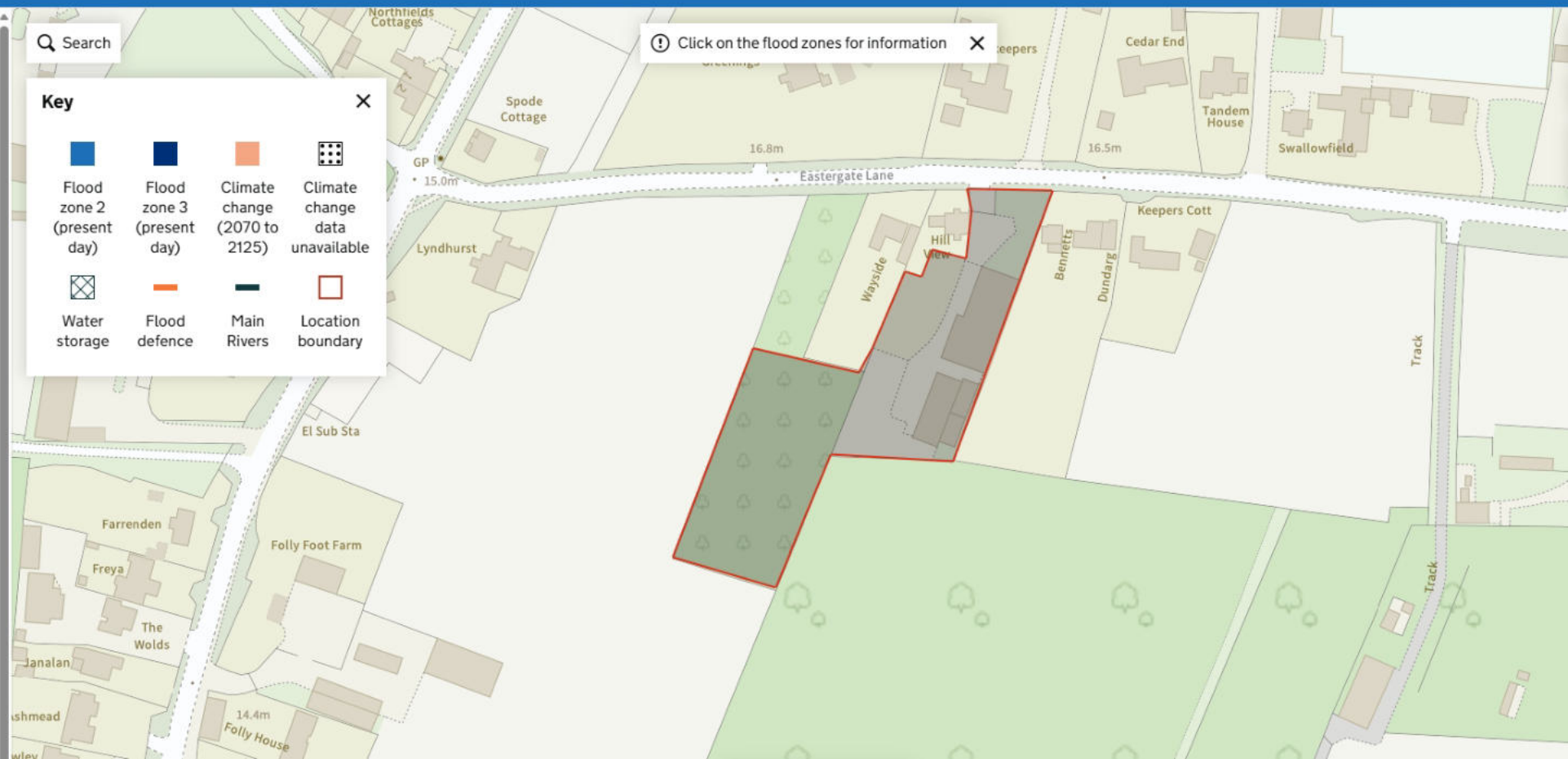
Water storage, Flood defence, Main Rivers

[Hide](#)

☒ Water storage

☒ Flood defence

☒ Main Rivers



## Get data for your location

Add or edit a location boundary

[Show](#)

## Datasets

Surface water

[Show](#)

## Annual likelihood of flooding

1 in 30

[Show](#)

## Map features

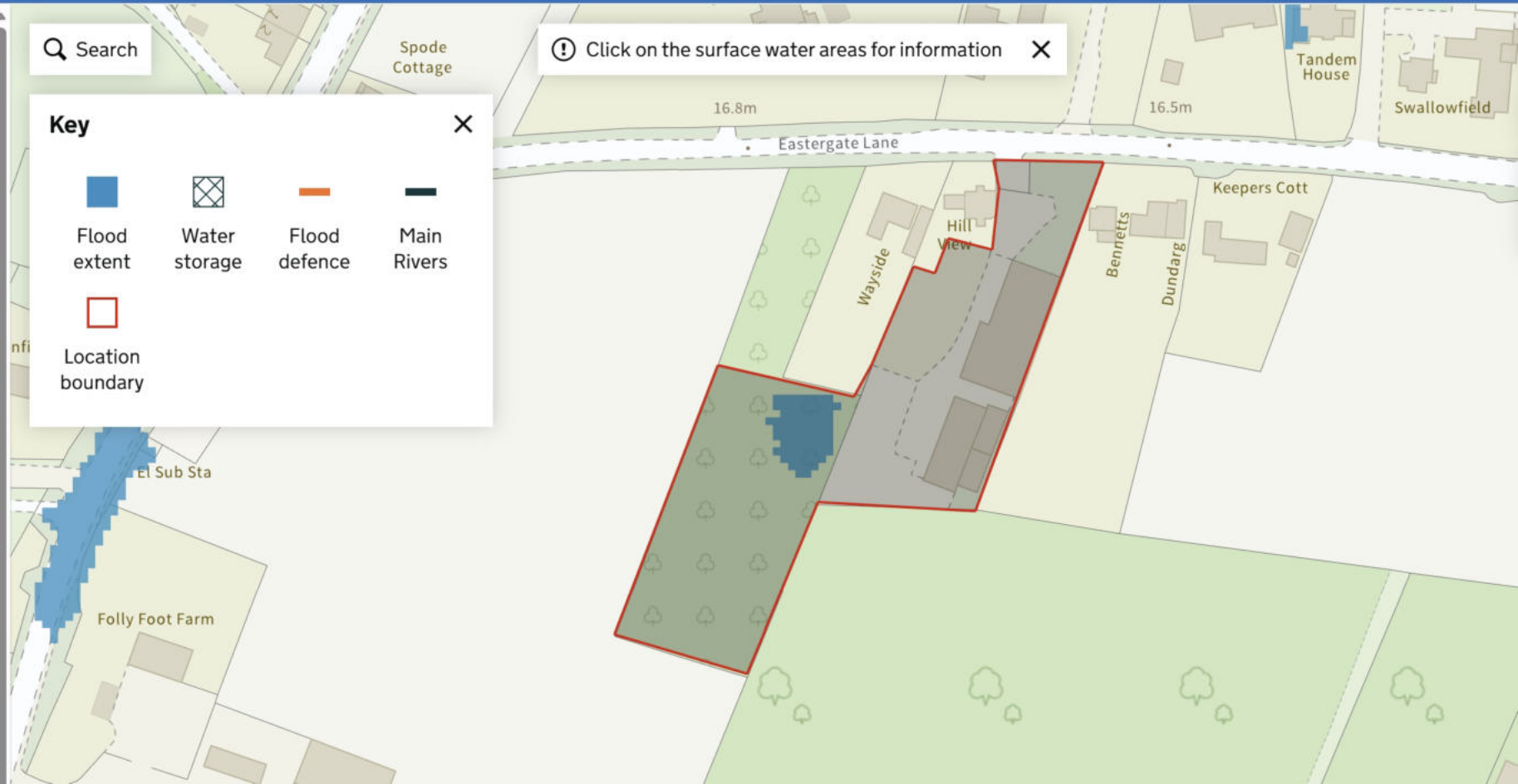
Water storage, Flood defence,  
Main Rivers

[Hide](#)

☒ Water storage

☒ Flood defence

☒ Main Rivers



**Get data for your location**

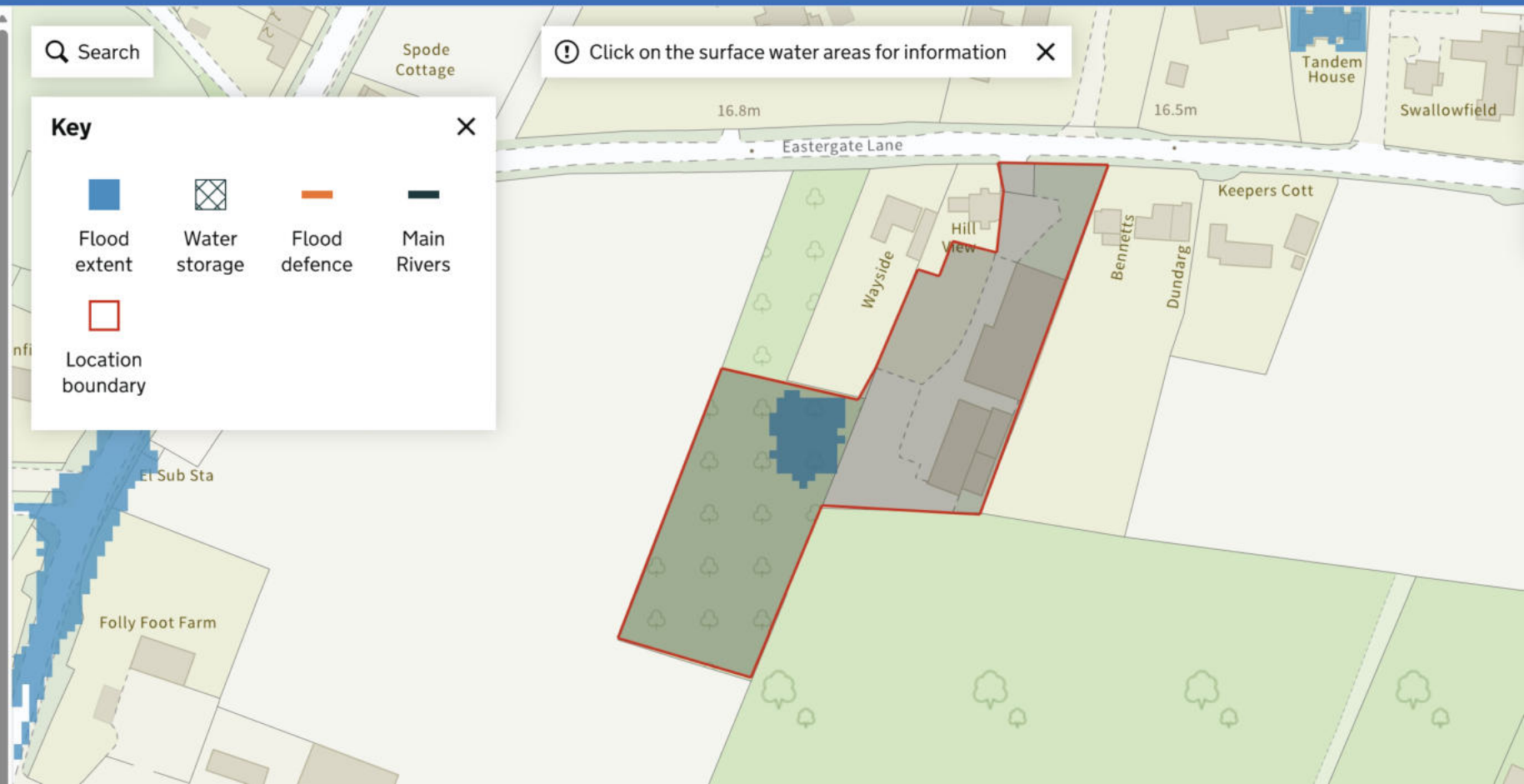
Add or edit a location boundary

[Show](#)**Datasets**

Surface water

[Show](#)**Annual likelihood of flooding**

1 in 100

[Show](#)**Map features**Water storage, Flood defence,  
Main Rivers[Hide](#)☒ Water storage☒ Flood defence☒ Main Rivers

## Get data for your location

Add or edit a location boundary

[Show](#)

## Datasets

Surface water

[Show](#)

## Annual likelihood of flooding

1 in 1000

[Show](#)

## Map features

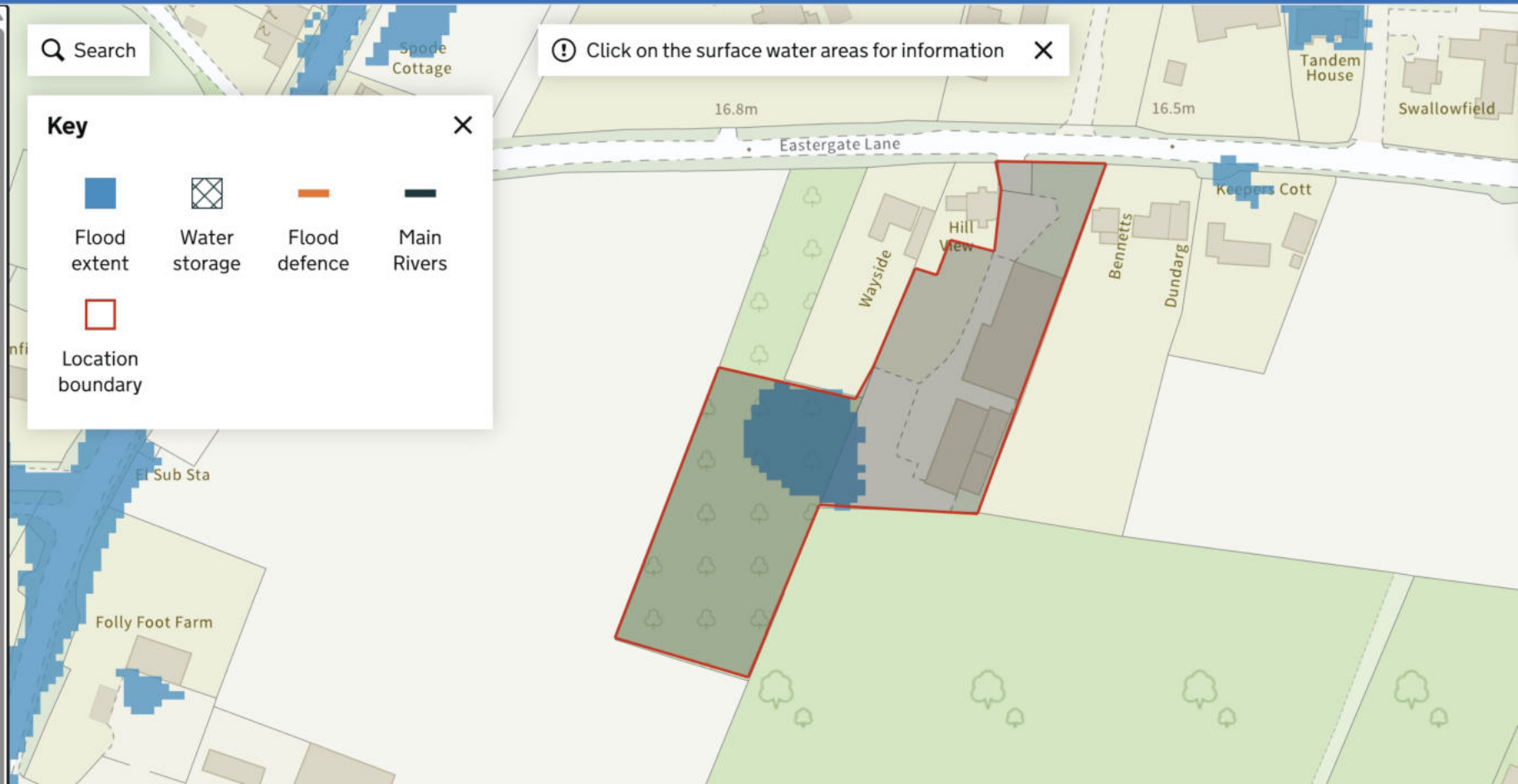
Water storage, Flood defence, Main Rivers

[Hide](#)

☒ Water storage

☒ Flood defence

☒ Main Rivers



## Appendix F Wallingford Greenfield Run-off Calculations

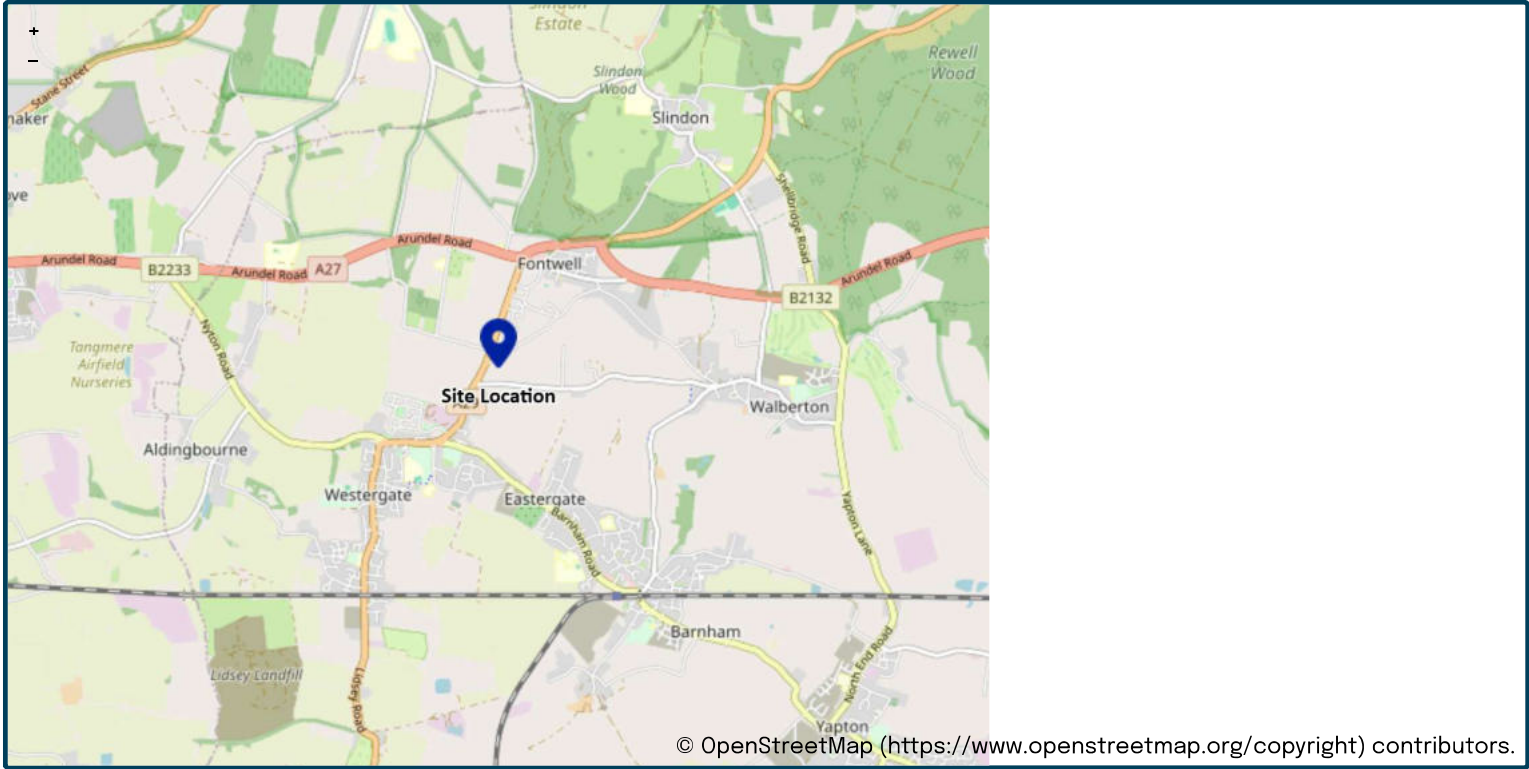
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

## Project details

|               |                                                            |
|---------------|------------------------------------------------------------|
| Date          | <input type="text" value="15/08/2025"/>                    |
| Calculated by | <input type="text" value="S Burnett"/>                     |
| Reference     | <input type="text" value="D2380 Wayside &amp; Hill View"/> |
| Model version | <input type="text" value="2.1.2"/>                         |

## Location

|               |                                                            |
|---------------|------------------------------------------------------------|
| Site name     | <input type="text" value="D2380 Wayside &amp; Hill View"/> |
| Site location | <input type="text"/>                                       |



|                                       |                                     |
|---------------------------------------|-------------------------------------|
| Site easting (British National Grid)  | <input type="text" value="494867"/> |
| Site northing (British National Grid) | <input type="text" value="106024"/> |

## Site details

|                      |                                  |    |
|----------------------|----------------------------------|----|
| Total site area (ha) | <input type="text" value="0.7"/> | ha |
|----------------------|----------------------------------|----|

# Greenfield runoff

## Method

|                            |                           |                       |                  |
|----------------------------|---------------------------|-----------------------|------------------|
| Method                     | <div>IH124</div>          |                       |                  |
|                            |                           |                       |                  |
|                            | <u>My value</u>           | <input type="radio"/> | <u>Map value</u> |
| SAAR (mm)                  | <div>778mm</div>          |                       | <div>778</div>   |
| How should SPR be derived? | <div>WRAP soil type</div> |                       |                  |
| WRAP soil type             | <div>2</div>              | <input type="radio"/> | <div>2</div>     |
| SPR                        | <div>0.3</div>            |                       |                  |
| QBar (IH124) (l/s)         | <div>1.44l/s</div>        |                       |                  |

## Growth curve factors

|                        |                 |                       |                  |
|------------------------|-----------------|-----------------------|------------------|
|                        | <u>My value</u> | <input type="radio"/> | <u>Map value</u> |
| Hydrological region    | <div>7</div>    |                       | <div>7</div>     |
| 1 year growth factor   | <div>0.85</div> |                       |                  |
| 2 year growth factor   | <div>0.88</div> |                       |                  |
| 10 year growth factor  | <div>1.62</div> |                       |                  |
| 30 year growth factor  | <div>2.3</div>  |                       |                  |
| 100 year growth factor | <div>3.19</div> |                       |                  |
| 200 year growth factor | <div>3.74</div> |                       |                  |

## Results

|                           |                   |
|---------------------------|-------------------|
| Method                    | <div>IH124</div>  |
| Flow rate 1 year (l/s)    | <div>1.2l/s</div> |
| Flow rate 2 year (l/s)    | <div>1.3l/s</div> |
| Flow rate 10 years (l/s)  | <div>2.3l/s</div> |
| Flow rate 30 years (l/s)  | <div>3.3l/s</div> |
| Flow rate 100 years (l/s) | <div>4.6l/s</div> |
| Flow rate 200 years (l/s) | <div>5.4l/s</div> |

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent ‘zero’ figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

### Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.1.2) developed by HR Wallingford and available at uksuds.com (<https://www.uksuds.com/>). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at uksuds.com/terms-conditions (<https://www.uksuds.com/terms-conditions>). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

## Appendix G Site 3D Proposed Surface Water Drainage Calculations

## PLOT 1 CALCULATIONS

## Network Details

### Manhole Schedule

| Manhole | Catchment Area (ha) | Size (mm) | Type    | CL (m) | IL (m) | Depth To Soffit (m) | Easting (m) | Northing (m) |
|---------|---------------------|-----------|---------|--------|--------|---------------------|-------------|--------------|
| S1      | 0.000               | 100       | Unknown | 16.850 | 16.150 | 0.600               | 494850.735  | 106059.962   |
| S2      | 0.000               | 450       | Unknown | 16.850 | 16.075 | 0.675               | 494850.735  | 106054.895   |
| S3      | 0.000               | 450       | Unknown | 16.850 | 16.000 | 0.750               | 494852.410  | 106048.522   |
| S6      | 0.000               | 100       | Unknown | 16.850 | 16.150 | 0.600               | 494862.625  | 106059.962   |
| S7      | 0.000               | 450       | Unknown | 16.850 | 16.000 | 0.750               | 494862.625  | 106048.522   |
| S4      | 0.009               | 450       | Unknown | 16.850 | 15.850 | 0.850               | 494857.706  | 106048.522   |
| S5      | 0.000               | 150       | Unknown | 16.850 | 15.800 | 0.900               | 494857.706  | 106043.522   |

### Pipe Schedule

| Pipe Number | US Manhole | US IL (m) | DS Manhole | DS IL (m) | Shape | Dimension (mm) | Length (m) | Gradient (1:x) | Roughness (mm) | US Depth To Soffit (m) | DS Depth To Soffit (m) |
|-------------|------------|-----------|------------|-----------|-------|----------------|------------|----------------|----------------|------------------------|------------------------|
| 1.000       | S1         | 16.150    | S2         | 16.075    | Circ  | 100            | 5.067      | 68             | 0.600          | 0.600                  | 0.675                  |
| 1.001       | S2         | 16.075    | S3         | 16.000    | Circ  | 100            | 6.590      | 88             | 0.600          | 0.675                  | 0.750                  |
| 1.002       | S3         | 16.000    | S4         | 15.900    | Circ  | 100            | 5.297      | 53             | 0.600          | 0.750                  | 0.850                  |
| 2.000       | S6         | 16.150    | S7         | 16.000    | Circ  | 100            | 11.440     | 76             | 0.600          | 0.600                  | 0.750                  |
| 2.001       | S7         | 16.000    | S4         | 15.900    | Circ  | 100            | 4.918      | 49             | 0.600          | 0.750                  | 0.850                  |
| 1.003       | S4         | 15.850    | S5         | 15.800    | Circ  | 150            | 5.000      | 100            | 0.600          | 0.850                  | 0.900                  |

## Outfall Details

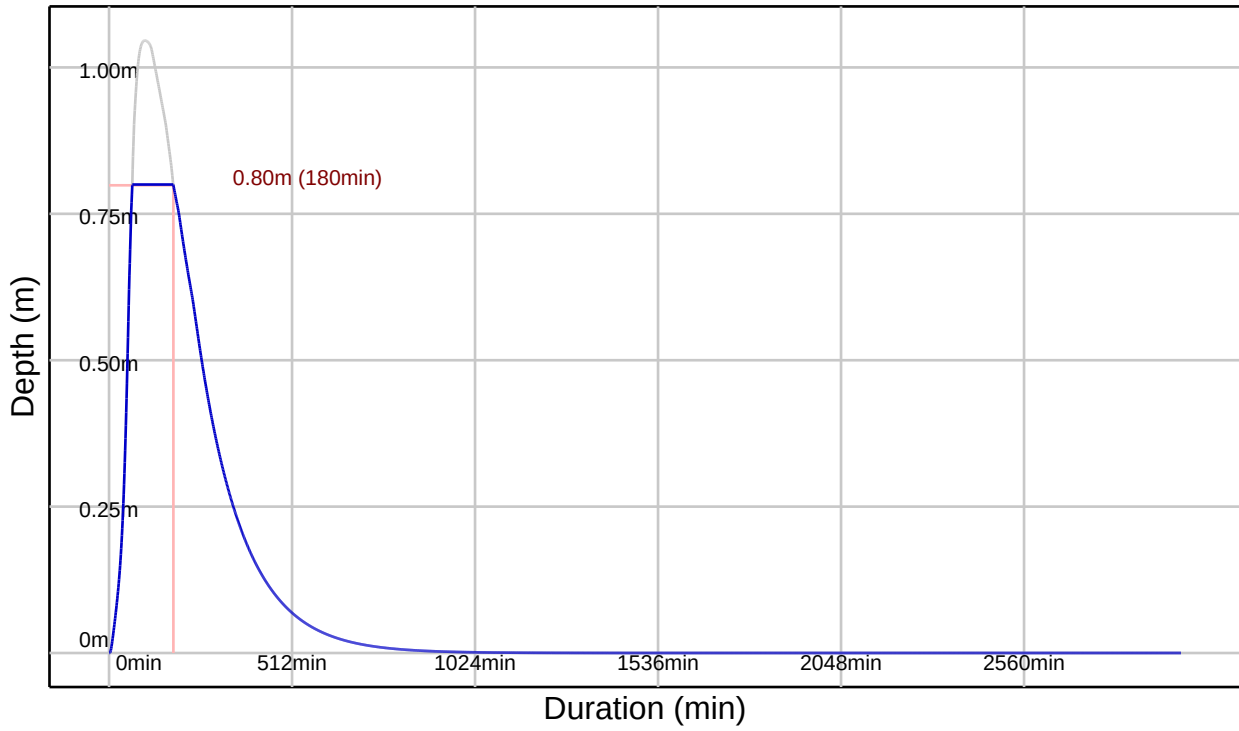
Outfall Manhole S5 : Infiltration Tank

## Flow Control Details

### Tank Structure at Manhole S5

| Tank Invert (m) | Tank Height (m) | Porosity Ratio (%) | Area (m2) | Effective Area (m2)<br>Area x Porosity Ratio | Max Storage (m3)<br>Effective Area x Height | Infil Base (m/hr) | Infil Side (m/hr) | Safety Factor |
|-----------------|-----------------|--------------------|-----------|----------------------------------------------|---------------------------------------------|-------------------|-------------------|---------------|
| 15.250          | 0.800           | 95.00              | 3.999     | 3.799                                        | 3.039                                       | 0.00000000        | 0.36000000        | 2.00          |

## Plot 1 Soakaway at S5 (100Yr+45% 120Min Winter)



## Simulation Settings

FEH2022 (point): Filename=FEH\_Point\_Descriptors\_494846\_106034\_v5\_0\_1.xml

Summer (Cv: 1.00), Winter (Cv: 1.00)

Global Time of Entry: 5.0 mins

Durations (mins): 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080

Return Periods (yrs) + Climate Change: (2, +0%), (10, +0%), (30, +0%), (30, +40%), (100, +0%), (100, +45%)

Manhole Flood Risk Freeboard: 0.300m

## Simulated Rainfall Events

| Storm               | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % | Storm                    | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % |
|---------------------|---------------------------|---------------------|-------------------|--------------------------|---------------------------|---------------------|-------------------|
| 2Yr 15Min Winter    | 32.749                    | 0.00                | 0.00              | 30Yr+40% 15Min Summer    | 115.400                   | 0.00                | 0.00              |
| 2Yr 15Min Summer    | 32.749                    | 0.00                | 0.00              | 30Yr+40% 15Min Winter    | 115.400                   | 0.00                | 0.00              |
| 2Yr 30Min Winter    | 21.400                    | 0.00                | 0.00              | 30Yr+40% 30Min Summer    | 76.723                    | 0.00                | 0.00              |
| 2Yr 30Min Summer    | 21.400                    | 0.00                | 0.00              | 30Yr+40% 30Min Winter    | 76.723                    | 0.00                | 0.00              |
| 2Yr 60Min Winter    | 13.587                    | 0.00                | 0.00              | 30Yr+40% 60Min Summer    | 48.813                    | 0.00                | 0.00              |
| 2Yr 60Min Summer    | 13.587                    | 0.00                | 0.00              | 30Yr+40% 60Min Winter    | 48.813                    | 0.00                | 0.00              |
| 2Yr 120Min Summer   | 9.453                     | 0.00                | 0.00              | 30Yr+40% 120Min Summer   | 29.821                    | 0.00                | 0.00              |
| 2Yr 120Min Winter   | 9.453                     | 0.00                | 0.00              | 30Yr+40% 120Min Winter   | 29.821                    | 0.00                | 0.00              |
| 2Yr 180Min Winter   | 7.477                     | 0.00                | 0.00              | 30Yr+40% 180Min Summer   | 22.101                    | 0.00                | 0.00              |
| 2Yr 180Min Summer   | 7.477                     | 0.00                | 0.00              | 30Yr+40% 180Min Winter   | 22.101                    | 0.00                | 0.00              |
| 2Yr 240Min Summer   | 6.107                     | 0.00                | 0.00              | 30Yr+40% 240Min Summer   | 17.734                    | 0.00                | 0.00              |
| 2Yr 240Min Winter   | 6.107                     | 0.00                | 0.00              | 30Yr+40% 240Min Winter   | 17.734                    | 0.00                | 0.00              |
| 2Yr 360Min Summer   | 4.586                     | 0.00                | 0.00              | 30Yr+40% 360Min Summer   | 12.872                    | 0.00                | 0.00              |
| 2Yr 360Min Winter   | 4.586                     | 0.00                | 0.00              | 30Yr+40% 360Min Winter   | 12.872                    | 0.00                | 0.00              |
| 2Yr 480Min Summer   | 3.720                     | 0.00                | 0.00              | 30Yr+40% 480Min Summer   | 10.214                    | 0.00                | 0.00              |
| 2Yr 480Min Winter   | 3.720                     | 0.00                | 0.00              | 30Yr+40% 480Min Winter   | 10.214                    | 0.00                | 0.00              |
| 2Yr 600Min Summer   | 3.134                     | 0.00                | 0.00              | 30Yr+40% 600Min Summer   | 8.511                     | 0.00                | 0.00              |
| 2Yr 600Min Winter   | 3.134                     | 0.00                | 0.00              | 30Yr+40% 600Min Winter   | 8.511                     | 0.00                | 0.00              |
| 2Yr 720Min Summer   | 2.713                     | 0.00                | 0.00              | 30Yr+40% 720Min Summer   | 7.317                     | 0.00                | 0.00              |
| 2Yr 720Min Winter   | 2.713                     | 0.00                | 0.00              | 30Yr+40% 720Min Winter   | 7.317                     | 0.00                | 0.00              |
| 2Yr 960Min Summer   | 2.169                     | 0.00                | 0.00              | 30Yr+40% 960Min Summer   | 5.758                     | 0.00                | 0.00              |
| 2Yr 960Min Winter   | 2.169                     | 0.00                | 0.00              | 30Yr+40% 960Min Winter   | 5.758                     | 0.00                | 0.00              |
| 2Yr 1440Min Winter  | 1.591                     | 0.00                | 0.00              | 30Yr+40% 1440Min Summer  | 4.120                     | 0.00                | 0.00              |
| 2Yr 1440Min Summer  | 1.591                     | 0.00                | 0.00              | 30Yr+40% 1440Min Winter  | 4.120                     | 0.00                | 0.00              |
| 2Yr 2160Min Summer  | 1.178                     | 0.00                | 0.00              | 30Yr+40% 2160Min Summer  | 2.968                     | 0.00                | 0.00              |
| 2Yr 2160Min Winter  | 1.178                     | 0.00                | 0.00              | 30Yr+40% 2160Min Winter  | 2.968                     | 0.00                | 0.00              |
| 2Yr 2880Min Summer  | 0.962                     | 0.00                | 0.00              | 30Yr+40% 2880Min Summer  | 2.364                     | 0.00                | 0.00              |
| 2Yr 2880Min Winter  | 0.962                     | 0.00                | 0.00              | 30Yr+40% 2880Min Winter  | 2.364                     | 0.00                | 0.00              |
| 2Yr 4320Min Summer  | 0.740                     | 0.00                | 0.00              | 30Yr+40% 4320Min Summer  | 1.748                     | 0.00                | 0.00              |
| 2Yr 4320Min Winter  | 0.740                     | 0.00                | 0.00              | 30Yr+40% 4320Min Winter  | 1.748                     | 0.00                | 0.00              |
| 2Yr 5760Min Summer  | 0.627                     | 0.00                | 0.00              | 30Yr+40% 5760Min Summer  | 1.434                     | 0.00                | 0.00              |
| 2Yr 5760Min Winter  | 0.627                     | 0.00                | 0.00              | 30Yr+40% 5760Min Winter  | 1.434                     | 0.00                | 0.00              |
| 2Yr 7200Min Summer  | 0.558                     | 0.00                | 0.00              | 30Yr+40% 7200Min Summer  | 1.242                     | 0.00                | 0.00              |
| 2Yr 7200Min Winter  | 0.558                     | 0.00                | 0.00              | 30Yr+40% 7200Min Winter  | 1.242                     | 0.00                | 0.00              |
| 2Yr 8640Min Summer  | 0.510                     | 0.00                | 0.00              | 30Yr+40% 8640Min Summer  | 1.111                     | 0.00                | 0.00              |
| 2Yr 8640Min Winter  | 0.510                     | 0.00                | 0.00              | 30Yr+40% 8640Min Winter  | 1.111                     | 0.00                | 0.00              |
| 2Yr 10080Min Summer | 0.475                     | 0.00                | 0.00              | 30Yr+40% 10080Min Summer | 1.016                     | 0.00                | 0.00              |
| 2Yr 10080Min Winter | 0.475                     | 0.00                | 0.00              | 30Yr+40% 10080Min Winter | 1.016                     | 0.00                | 0.00              |
| 10Yr 15Min Summer   | 63.472                    | 0.00                | 0.00              | 100Yr 15Min Summer       | 103.039                   | 0.00                | 0.00              |
| 10Yr 15Min Winter   | 63.472                    | 0.00                | 0.00              | 100Yr 15Min Winter       | 103.039                   | 0.00                | 0.00              |
| 10Yr 30Min Summer   | 41.975                    | 0.00                | 0.00              | 100Yr 30Min Summer       | 69.133                    | 0.00                | 0.00              |
| 10Yr 30Min Winter   | 41.975                    | 0.00                | 0.00              | 100Yr 30Min Winter       | 69.133                    | 0.00                | 0.00              |
| 10Yr 60Min Summer   | 26.518                    | 0.00                | 0.00              | 100Yr 60Min Summer       | 44.424                    | 0.00                | 0.00              |
| 10Yr 60Min Winter   | 26.518                    | 0.00                | 0.00              | 100Yr 60Min Winter       | 44.424                    | 0.00                | 0.00              |
| 10Yr 120Min Summer  | 16.678                    | 0.00                | 0.00              | 100Yr 120Min Summer      | 26.631                    | 0.00                | 0.00              |
| 10Yr 120Min Winter  | 16.678                    | 0.00                | 0.00              | 100Yr 120Min Winter      | 26.631                    | 0.00                | 0.00              |
| 10Yr 180Min Summer  | 12.547                    | 0.00                | 0.00              | 100Yr 180Min Summer      | 19.524                    | 0.00                | 0.00              |
| 10Yr 180Min Winter  | 12.547                    | 0.00                | 0.00              | 100Yr 180Min Winter      | 19.524                    | 0.00                | 0.00              |
| 10Yr 240Min Summer  | 10.114                    | 0.00                | 0.00              | 100Yr 240Min Summer      | 15.695                    | 0.00                | 0.00              |
| 10Yr 240Min Winter  | 10.114                    | 0.00                | 0.00              | 100Yr 240Min Winter      | 15.695                    | 0.00                | 0.00              |
| 10Yr 360Min Summer  | 7.394                     | 0.00                | 0.00              | 100Yr 360Min Summer      | 11.386                    | 0.00                | 0.00              |
| 10Yr 360Min Winter  | 7.394                     | 0.00                | 0.00              | 100Yr 360Min Winter      | 11.386                    | 0.00                | 0.00              |
| 10Yr 480Min Summer  | 5.892                     | 0.00                | 0.00              | 100Yr 480Min Summer      | 9.035                     | 0.00                | 0.00              |
| 10Yr 480Min Winter  | 5.892                     | 0.00                | 0.00              | 100Yr 480Min Winter      | 9.035                     | 0.00                | 0.00              |

## Simulated Rainfall Events

| Storm                | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % | Storm                     | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % |
|----------------------|---------------------------|---------------------|-------------------|---------------------------|---------------------------|---------------------|-------------------|
| 10Yr 600Min Summer   | 4.919                     | 0.00                | 0.00              | 100Yr 600Min Summer       | 7.544                     | 0.00                | 0.00              |
| 10Yr 600Min Winter   | 4.919                     | 0.00                | 0.00              | 100Yr 600Min Winter       | 7.544                     | 0.00                | 0.00              |
| 10Yr 720Min Summer   | 4.233                     | 0.00                | 0.00              | 100Yr 720Min Summer       | 6.499                     | 0.00                | 0.00              |
| 10Yr 720Min Winter   | 4.233                     | 0.00                | 0.00              | 100Yr 720Min Winter       | 6.499                     | 0.00                | 0.00              |
| 10Yr 960Min Summer   | 3.341                     | 0.00                | 0.00              | 100Yr 960Min Summer       | 5.119                     | 0.00                | 0.00              |
| 10Yr 960Min Winter   | 3.341                     | 0.00                | 0.00              | 100Yr 960Min Winter       | 5.119                     | 0.00                | 0.00              |
| 10Yr 1440Min Summer  | 2.405                     | 0.00                | 0.00              | 100Yr 1440Min Summer      | 3.659                     | 0.00                | 0.00              |
| 10Yr 1440Min Winter  | 2.405                     | 0.00                | 0.00              | 100Yr 1440Min Winter      | 3.659                     | 0.00                | 0.00              |
| 10Yr 2160Min Summer  | 1.746                     | 0.00                | 0.00              | 100Yr 2160Min Summer      | 2.624                     | 0.00                | 0.00              |
| 10Yr 2160Min Winter  | 1.746                     | 0.00                | 0.00              | 100Yr 2160Min Winter      | 2.624                     | 0.00                | 0.00              |
| 10Yr 2880Min Summer  | 1.400                     | 0.00                | 0.00              | 100Yr 2880Min Summer      | 2.074                     | 0.00                | 0.00              |
| 10Yr 2880Min Winter  | 1.400                     | 0.00                | 0.00              | 100Yr 2880Min Winter      | 2.074                     | 0.00                | 0.00              |
| 10Yr 4320Min Summer  | 1.048                     | 0.00                | 0.00              | 100Yr 4320Min Summer      | 1.512                     | 0.00                | 0.00              |
| 10Yr 4320Min Winter  | 1.048                     | 0.00                | 0.00              | 100Yr 4320Min Winter      | 1.512                     | 0.00                | 0.00              |
| 10Yr 5760Min Summer  | 0.869                     | 0.00                | 0.00              | 100Yr 5760Min Summer      | 1.226                     | 0.00                | 0.00              |
| 10Yr 5760Min Winter  | 0.869                     | 0.00                | 0.00              | 100Yr 5760Min Winter      | 1.226                     | 0.00                | 0.00              |
| 10Yr 7200Min Summer  | 0.760                     | 0.00                | 0.00              | 100Yr 7200Min Summer      | 1.051                     | 0.00                | 0.00              |
| 10Yr 7200Min Winter  | 0.760                     | 0.00                | 0.00              | 100Yr 7200Min Winter      | 1.051                     | 0.00                | 0.00              |
| 10Yr 8640Min Summer  | 0.685                     | 0.00                | 0.00              | 100Yr 8640Min Summer      | 0.933                     | 0.00                | 0.00              |
| 10Yr 8640Min Winter  | 0.685                     | 0.00                | 0.00              | 100Yr 8640Min Winter      | 0.933                     | 0.00                | 0.00              |
| 10Yr 10080Min Summer | 0.630                     | 0.00                | 0.00              | 100Yr 10080Min Summer     | 0.846                     | 0.00                | 0.00              |
| 10Yr 10080Min Winter | 0.630                     | 0.00                | 0.00              | 100Yr 10080Min Winter     | 0.846                     | 0.00                | 0.00              |
| 30Yr 15Min Summer    | 82.428                    | 0.00                | 0.00              | 100Yr+45% 15Min Summer    | 149.406                   | 0.00                | 0.00              |
| 30Yr 15Min Winter    | 82.428                    | 0.00                | 0.00              | 100Yr+45% 15Min Winter    | 149.406                   | 0.00                | 0.00              |
| 30Yr 30Min Summer    | 54.802                    | 0.00                | 0.00              | 100Yr+45% 30Min Summer    | 100.242                   | 0.00                | 0.00              |
| 30Yr 30Min Winter    | 54.802                    | 0.00                | 0.00              | 100Yr+45% 30Min Winter    | 100.242                   | 0.00                | 0.00              |
| 30Yr 60Min Summer    | 34.866                    | 0.00                | 0.00              | 100Yr+45% 60Min Summer    | 64.415                    | 0.00                | -0.76             |
| 30Yr 60Min Winter    | 34.866                    | 0.00                | 0.00              | 100Yr+45% 60Min Winter    | 64.415                    | 0.00                | -0.60             |
| 30Yr 120Min Summer   | 21.301                    | 0.00                | 0.00              | 100Yr+45% 120Min Summer   | 38.616                    | 0.00                | -0.51             |
| 30Yr 120Min Winter   | 21.301                    | 0.00                | 0.00              | 100Yr+45% 120Min Winter   | 38.616                    | 0.00                | 0.00              |
| 30Yr 180Min Summer   | 15.787                    | 0.00                | 0.00              | 100Yr+45% 180Min Summer   | 28.310                    | 0.00                | 0.00              |
| 30Yr 180Min Winter   | 15.787                    | 0.00                | 0.00              | 100Yr+45% 180Min Winter   | 28.310                    | 0.00                | 0.00              |
| 30Yr 240Min Summer   | 12.667                    | 0.00                | 0.00              | 100Yr+45% 240Min Summer   | 22.758                    | 0.00                | 0.00              |
| 30Yr 240Min Winter   | 12.667                    | 0.00                | 0.00              | 100Yr+45% 240Min Winter   | 22.758                    | 0.00                | 0.00              |
| 30Yr 360Min Summer   | 9.194                     | 0.00                | 0.00              | 100Yr+45% 360Min Summer   | 16.509                    | 0.00                | 0.00              |
| 30Yr 360Min Winter   | 9.194                     | 0.00                | 0.00              | 100Yr+45% 360Min Winter   | 16.509                    | 0.00                | 0.00              |
| 30Yr 480Min Summer   | 7.295                     | 0.00                | 0.00              | 100Yr+45% 480Min Summer   | 13.100                    | 0.00                | 0.00              |
| 30Yr 480Min Winter   | 7.295                     | 0.00                | 0.00              | 100Yr+45% 480Min Winter   | 13.100                    | 0.00                | 0.00              |
| 30Yr 600Min Summer   | 6.080                     | 0.00                | 0.00              | 100Yr+45% 600Min Summer   | 10.939                    | 0.00                | 0.00              |
| 30Yr 600Min Winter   | 6.080                     | 0.00                | 0.00              | 100Yr+45% 600Min Winter   | 10.939                    | 0.00                | 0.00              |
| 30Yr 720Min Summer   | 5.227                     | 0.00                | 0.00              | 100Yr+45% 720Min Summer   | 9.424                     | 0.00                | 0.00              |
| 30Yr 720Min Winter   | 5.227                     | 0.00                | 0.00              | 100Yr+45% 720Min Winter   | 9.424                     | 0.00                | 0.00              |
| 30Yr 960Min Summer   | 4.113                     | 0.00                | 0.00              | 100Yr+45% 960Min Summer   | 7.423                     | 0.00                | 0.00              |
| 30Yr 960Min Winter   | 4.113                     | 0.00                | 0.00              | 100Yr+45% 960Min Winter   | 7.423                     | 0.00                | 0.00              |
| 30Yr 1440Min Summer  | 2.943                     | 0.00                | 0.00              | 100Yr+45% 1440Min Summer  | 5.305                     | 0.00                | 0.00              |
| 30Yr 1440Min Winter  | 2.943                     | 0.00                | 0.00              | 100Yr+45% 1440Min Winter  | 5.305                     | 0.00                | 0.00              |
| 30Yr 2160Min Summer  | 2.120                     | 0.00                | 0.00              | 100Yr+45% 2160Min Summer  | 3.805                     | 0.00                | 0.00              |
| 30Yr 2160Min Winter  | 2.120                     | 0.00                | 0.00              | 100Yr+45% 2160Min Winter  | 3.805                     | 0.00                | 0.00              |
| 30Yr 2880Min Summer  | 1.689                     | 0.00                | 0.00              | 100Yr+45% 2880Min Summer  | 3.008                     | 0.00                | 0.00              |
| 30Yr 2880Min Winter  | 1.689                     | 0.00                | 0.00              | 100Yr+45% 2880Min Winter  | 3.008                     | 0.00                | 0.00              |
| 30Yr 4320Min Summer  | 1.248                     | 0.00                | 0.00              | 100Yr+45% 4320Min Summer  | 2.193                     | 0.00                | 0.00              |
| 30Yr 4320Min Winter  | 1.248                     | 0.00                | 0.00              | 100Yr+45% 4320Min Winter  | 2.193                     | 0.00                | 0.00              |
| 30Yr 5760Min Summer  | 1.024                     | 0.00                | 0.00              | 100Yr+45% 5760Min Summer  | 1.778                     | 0.00                | 0.00              |
| 30Yr 5760Min Winter  | 1.024                     | 0.00                | 0.00              | 100Yr+45% 5760Min Winter  | 1.778                     | 0.00                | 0.00              |
| 30Yr 7200Min Summer  | 0.887                     | 0.00                | 0.00              | 100Yr+45% 7200Min Summer  | 1.524                     | 0.00                | 0.00              |
| 30Yr 7200Min Winter  | 0.887                     | 0.00                | 0.00              | 100Yr+45% 7200Min Winter  | 1.524                     | 0.00                | 0.00              |
| 30Yr 8640Min Summer  | 0.794                     | 0.00                | 0.00              | 100Yr+45% 8640Min Summer  | 1.353                     | 0.00                | 0.00              |
| 30Yr 8640Min Winter  | 0.794                     | 0.00                | 0.00              | 100Yr+45% 8640Min Winter  | 1.353                     | 0.00                | 0.00              |
| 30Yr 10080Min Summer | 0.726                     | 0.00                | 0.00              | 100Yr+45% 10080Min Summer | 1.227                     | 0.00                | 0.00              |
| 30Yr 10080Min Winter | 0.726                     | 0.00                | 0.00              | 100Yr+45% 10080Min Winter | 1.227                     | 0.00                | 0.00              |

## Simulation Results

Return Period (yrs) + Climate Change (%):  
2yr+0%

### Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status |
|---------|----------------|-------------|-----------|-----------|--------------|------------|--------|
| S1      | 15 min Winter  | 0           | 16.150    | 0.000     | 0.000        |            | OK     |
| S2      | 15 min Winter  | 0           | 16.075    | 0.000     | 0.000        |            | OK     |
| S3      | 15 min Winter  | 0           | 16.000    | 0.000     | 0.000        |            | OK     |
| S6      | 15 min Winter  | 0           | 16.150    | 0.000     | 0.000        |            | OK     |
| S7      | 15 min Winter  | 0           | 16.000    | 0.000     | 0.000        |            | OK     |
| S4      | 15 min Summer  | 8           | 15.882    | 0.032     | 1.693        |            | OK     |
| S5      | 240 min Summer | 154         | 15.573    | 0.323     | 0.161        |            | OK     |

### Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 15 min Winter  | 0           | S1         | S2         | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 1.001    | 15 min Winter  | 0           | S2         | S3         | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 1.002    | 15 min Winter  | 0           | S3         | S4         | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 2.000    | 15 min Winter  | 0           | S6         | S7         | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 2.001    | 15 min Winter  | 0           | S7         | S4         | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 1.003    | 15 min Summer  | 8           | S4         | S5         | 0.031          | 0.624              | 1.679          | 0.095           | OK     |

Return Period (yrs) + Climate Change (%):

10yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status |
|---------|----------------|-------------|-----------|-----------|--------------|------------|--------|
| S1      | 15 min Summer  | 0           | 16.150    | 0.000     | 0.000        |            | OK     |
| S2      | 15 min Summer  | 0           | 16.075    | 0.000     | 0.000        |            | OK     |
| S3      | 15 min Summer  | 0           | 16.000    | 0.000     | 0.000        |            | OK     |
| S6      | 15 min Summer  | 0           | 16.150    | 0.000     | 0.000        |            | OK     |
| S7      | 15 min Summer  | 0           | 16.000    | 0.000     | 0.000        |            | OK     |
| S4      | 15 min Summer  | 8           | 15.896    | 0.046     | 3.284        |            | OK     |
| S5      | 180 min Summer | 120         | 15.790    | 0.540     | 0.266        |            | OK     |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 15 min Summer  | 0           | S1         | S2         | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 1.001    | 15 min Summer  | 0           | S2         | S3         | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 1.002    | 15 min Summer  | 0           | S3         | S4         | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 2.000    | 15 min Summer  | 0           | S6         | S7         | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 2.001    | 15 min Summer  | 0           | S7         | S4         | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 1.003    | 15 min Summer  | 8           | S4         | S5         | 0.044          | 0.745              | 3.262          | 0.184           | OK     |

Return Period (yrs) + Climate Change (%):

30yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status |
|---------|----------------|-------------|-----------|-----------|--------------|------------|--------|
| S1      | 15 min Summer  | 0           | 16.150    | 0.000     | 0.000        |            | OK     |
| S2      | 15 min Summer  | 0           | 16.075    | 0.000     | 0.000        |            | OK     |
| S3      | 15 min Summer  | 0           | 16.000    | 0.000     | 0.000        |            | OK     |
| S6      | 15 min Summer  | 0           | 16.150    | 0.000     | 0.000        |            | OK     |
| S7      | 15 min Summer  | 0           | 16.000    | 0.000     | 0.000        |            | OK     |
| S4      | 180 min Summer | 121         | 15.910    | 0.060     | 0.314        |            | OK     |
| S5      | 180 min Summer | 120         | 15.910    | 0.660     | 0.243        |            | OK     |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 15 min Summer  | 0           | S1         | S2         | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 1.001    | 15 min Summer  | 0           | S2         | S3         | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 1.002    | 180 min Summer | 121         | S3         | S4         | 0.005          | 0.000              | 0.000          | 0.000           | OK     |
| 2.000    | 15 min Summer  | 0           | S6         | S7         | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 2.001    | 180 min Summer | 121         | S7         | S4         | 0.005          | 0.000              | 0.000          | 0.000           | OK     |
| 1.003    | 180 min Summer | 121         | S4         | S5         | 0.085          | 0.602              | 1.464          | 0.083           | OK     |

Return Period (yrs) + Climate Change (%):

30yr+40%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S1      | 15 min Summer  | 0           | 16.150    | 0.000     | 0.000        |            | OK         |
| S2      | 180 min Summer | 123         | 16.110    | 0.035     | 0.014        |            | OK         |
| S3      | 180 min Summer | 123         | 16.110    | 0.110     | 0.000        |            | Surcharged |
| S6      | 15 min Summer  | 0           | 16.150    | 0.000     | 0.000        |            | OK         |
| S7      | 180 min Summer | 122         | 16.110    | 0.110     | 0.003        |            | Surcharged |
| S4      | 180 min Summer | 123         | 16.110    | 0.260     | 0.413        |            | Surcharged |
| S5      | 180 min Summer | 123         | 16.110    | 0.860     | 0.398        |            | Surcharged |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 180 min Summer | 123         | S1         | S2         | 0.018          | 0.000              | 0.000          | 0.000           | OK         |
| 1.001    | 180 min Summer | 127         | S2         | S3         | 0.068          | 0.011              | 0.040          | 0.006           | OK         |
| 1.002    | 120 min Winter | 120         | S3         | S4         | 0.100          | 0.020              | 0.113          | 0.014           | Surcharged |
| 2.000    | 120 min Summer | 85          | S6         | S7         | 0.050          | 0.000              | 0.000          | 0.000           | OK         |
| 2.001    | 120 min Winter | 120         | S7         | S4         | 0.100          | 0.018              | 0.109          | 0.013           | Surcharged |
| 1.003    | 60 min Winter  | 40          | S4         | S5         | 0.150          | 0.721              | 2.871          | 0.162           | Surcharged |

Return Period (yrs) + Climate Change (%):

100yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S1      | 15 min Summer  | 0           | 16.150    | 0.000     | 0.000        |            | OK         |
| S2      | 15 min Summer  | 0           | 16.075    | 0.000     | 0.000        |            | OK         |
| S3      | 120 min Winter | 92          | 16.025    | 0.025     | 0.001        |            | OK         |
| S6      | 15 min Summer  | 0           | 16.150    | 0.000     | 0.000        |            | OK         |
| S7      | 120 min Winter | 92          | 16.025    | 0.025     | 0.001        |            | OK         |
| S4      | 120 min Winter | 92          | 16.025    | 0.175     | 0.397        |            | Surcharged |
| S5      | 120 min Winter | 92          | 16.025    | 0.775     | 0.393        |            | OK         |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 15 min Summer  | 0           | S1         | S2         | 0.000          | 0.000              | 0.000          | 0.000           | OK         |
| 1.001    | 120 min Winter | 92          | S2         | S3         | 0.013          | 0.000              | 0.000          | 0.000           | OK         |
| 1.002    | 120 min Winter | 114         | S3         | S4         | 0.063          | 0.007              | 0.029          | 0.004           | OK         |
| 2.000    | 120 min Winter | 92          | S6         | S7         | 0.013          | 0.000              | 0.000          | 0.000           | OK         |
| 2.001    | 120 min Winter | 114         | S7         | S4         | 0.063          | 0.007              | 0.030          | 0.003           | OK         |
| 1.003    | 60 min Winter  | 47          | S4         | S5         | 0.150          | 0.704              | 2.613          | 0.147           | Surcharged |

Return Period (yrs) + Climate Change (%):

100yr+45%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S1      | 120 min Winter | 102         | 16.296    | 0.146     | 0.000        |            | Surcharged |
| S2      | 120 min Winter | 102         | 16.296    | 0.221     | 0.012        |            | Surcharged |
| S3      | 120 min Winter | 100         | 16.296    | 0.296     | 0.003        |            | Surcharged |
| S6      | 120 min Winter | 101         | 16.296    | 0.146     | 0.006        |            | Surcharged |
| S7      | 120 min Winter | 101         | 16.296    | 0.296     | 0.009        |            | Surcharged |
| S4      | 120 min Winter | 101         | 16.296    | 0.446     | 0.416        |            | Surcharged |
| S5      | 120 min Winter | 102         | 16.296    | 1.046     | 0.403        |            | Surcharged |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 120 min Summer | 126         | S1         | S2         | 0.100          | 0.018              | 0.073          | 0.010           | Surcharged |
| 1.001    | 120 min Summer | 126         | S2         | S3         | 0.100          | 0.025              | 0.141          | 0.022           | Surcharged |
| 1.002    | 240 min Summer | 266         | S3         | S4         | 0.100          | 0.027              | 0.211          | 0.025           | Surcharged |
| 2.000    | 120 min Summer | 125         | S6         | S7         | 0.100          | 0.015              | 0.079          | 0.011           | Surcharged |
| 2.001    | 120 min Summer | 125         | S7         | S4         | 0.100          | 0.019              | 0.141          | 0.016           | Surcharged |
| 1.003    | 30 min Summer  | 19          | S4         | S5         | 0.150          | 0.902              | 6.930          | 0.391           | Surcharged |

## PLOT 2 CALCULATIONS

## Network Details

### Manhole Schedule

| Manhole | Catchment Area (ha) | Size (mm) | Type    | CL (m) | IL (m) | Depth To Soffit (m) | Easting (m) | Northing (m) |
|---------|---------------------|-----------|---------|--------|--------|---------------------|-------------|--------------|
| S26     | 0.001               | 100       | Unknown | 16.825 | 16.125 | 0.600               | 494834.722  | 106021.972   |
| S27     | 0.000               | 450       | Unknown | 16.916 | 16.025 | 0.791               | 494837.962  | 106030.379   |
| S28     | 0.004               | 450       | Unknown | 16.700 | 15.925 | 0.675               | 494829.807  | 106033.522   |
| S29     | 0.006               | 450       | Unknown | 16.683 | 15.750 | 0.783               | 494828.018  | 106028.881   |
| S30     | 0.000               | 150       | Unknown | 16.700 | 15.700 | 0.850               | 494823.352  | 106030.679   |

### Pipe Schedule

| Pipe Number | US Manhole | US IL (m) | DS Manhole | DS IL (m) | Shape | Dimension (mm) | Length (m) | Gradient (1:x) | Roughness (mm) | US Depth To Soffit (m) | DS Depth To Soffit (m) |
|-------------|------------|-----------|------------|-----------|-------|----------------|------------|----------------|----------------|------------------------|------------------------|
| 1.000       | S26        | 16.125    | S27        | 16.025    | Circ  | 100            | 9.009      | 90             | 0.600          | 0.600                  | 0.791                  |
| 1.001       | S27        | 16.025    | S28        | 15.925    | Circ  | 100            | 8.740      | 87             | 0.600          | 0.791                  | 0.675                  |
| 1.002       | S28        | 15.925    | S29        | 15.800    | Circ  | 100            | 4.974      | 40             | 0.600          | 0.675                  | 0.783                  |
| 1.003       | S29        | 15.750    | S30        | 15.700    | Circ  | 150            | 5.000      | 100            | 0.600          | 0.783                  | 0.850                  |

## Outfall Details

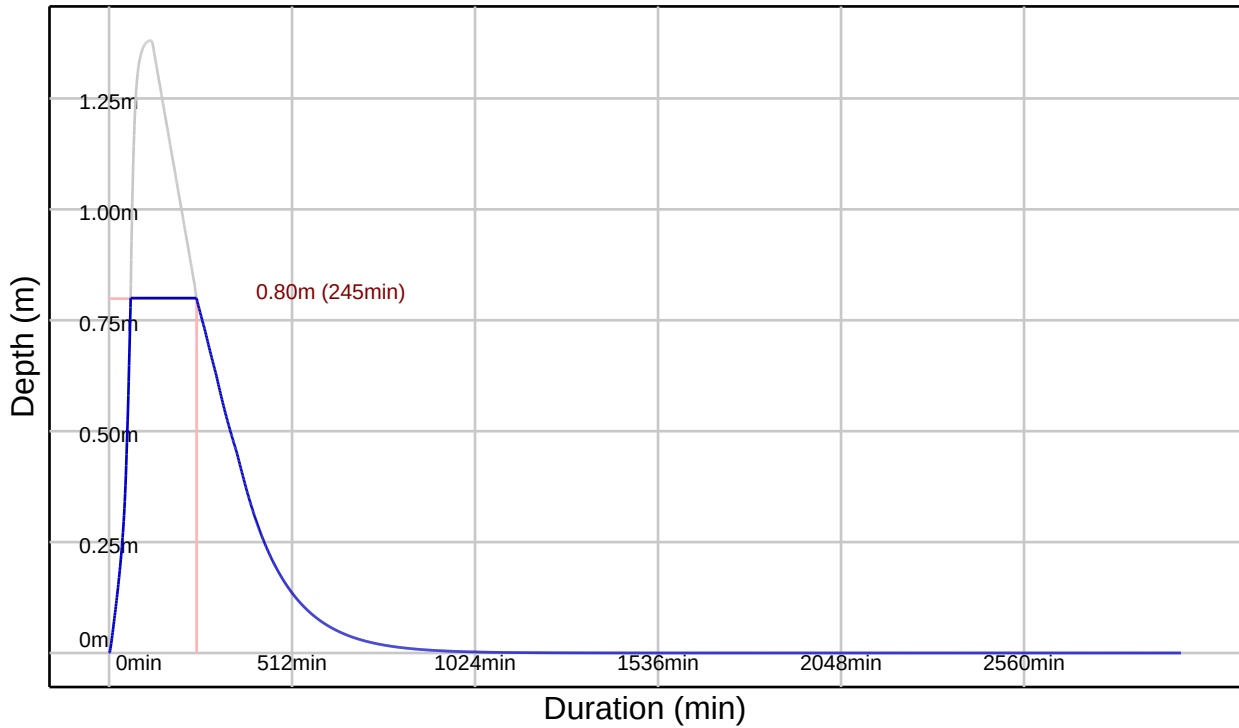
Outfall Manhole S30 : Infiltration Tank

## Flow Control Details

### Tank Structure at Manhole S30

| Tank Invert (m) | Tank Height (m) | Porosity Ratio (%) | Area (m2) | Effective Area (m2)<br>Area x Porosity Ratio | Max Storage (m3)<br>Effective Area x Height | Infil Base (m/hr) | Infil Side (m/hr) | Safety Factor |
|-----------------|-----------------|--------------------|-----------|----------------------------------------------|---------------------------------------------|-------------------|-------------------|---------------|
| 15.300          | 0.800           | 95.00              | 4.000     | 3.800                                        | 3.040                                       | 0.00000000        | 0.36000000        | 2.00          |

## Plot 2 Soakaway at S30 (100Yr+45% 120Min Summer)



## Simulation Settings

FEH2022 (point): Filename=FEH\_Point\_Descriptors\_494846\_106034\_v5\_0\_1.xml

Summer (Cv: 1.00), Winter (Cv: 1.00)

Global Time of Entry: 5.0 mins

Durations (mins): 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080

Return Periods (yrs) + Climate Change: (2, +0%), (10, +0%), (30, +0%), (30, +40%), (100, +0%), (100, +45%)

Manhole Flood Risk Freeboard: 0.300m

## Simulated Rainfall Events

| Storm               | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % | Storm                    | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % |
|---------------------|---------------------------|---------------------|-------------------|--------------------------|---------------------------|---------------------|-------------------|
| 2Yr 15Min Winter    | 32.749                    | 0.00                | 0.00              | 30Yr+40% 15Min Summer    | 115.400                   | 0.00                | 0.00              |
| 2Yr 15Min Summer    | 32.749                    | 0.00                | 0.00              | 30Yr+40% 15Min Winter    | 115.400                   | 0.00                | 0.00              |
| 2Yr 30Min Winter    | 21.400                    | 0.00                | 0.00              | 30Yr+40% 30Min Summer    | 76.723                    | 0.00                | 0.00              |
| 2Yr 30Min Summer    | 21.400                    | 0.00                | 0.00              | 30Yr+40% 30Min Winter    | 76.723                    | 0.00                | 0.00              |
| 2Yr 60Min Winter    | 13.587                    | 0.00                | 0.00              | 30Yr+40% 60Min Summer    | 48.813                    | 0.00                | 0.00              |
| 2Yr 60Min Summer    | 13.587                    | 0.00                | 0.00              | 30Yr+40% 60Min Winter    | 48.813                    | 0.00                | 0.00              |
| 2Yr 120Min Summer   | 9.453                     | 0.00                | 0.00              | 30Yr+40% 120Min Summer   | 29.821                    | 0.00                | 0.00              |
| 2Yr 120Min Winter   | 9.453                     | 0.00                | 0.00              | 30Yr+40% 120Min Winter   | 29.821                    | 0.00                | 0.00              |
| 2Yr 180Min Winter   | 7.477                     | 0.00                | 0.00              | 30Yr+40% 180Min Summer   | 22.101                    | 0.00                | 0.00              |
| 2Yr 180Min Summer   | 7.477                     | 0.00                | 0.00              | 30Yr+40% 180Min Winter   | 22.101                    | 0.00                | 0.00              |
| 2Yr 240Min Summer   | 6.107                     | 0.00                | 0.00              | 30Yr+40% 240Min Summer   | 17.734                    | 0.00                | 0.00              |
| 2Yr 240Min Winter   | 6.107                     | 0.00                | 0.00              | 30Yr+40% 240Min Winter   | 17.734                    | 0.00                | 0.00              |
| 2Yr 360Min Summer   | 4.586                     | 0.00                | 0.00              | 30Yr+40% 360Min Summer   | 12.872                    | 0.00                | 0.00              |
| 2Yr 360Min Winter   | 4.586                     | 0.00                | 0.00              | 30Yr+40% 360Min Winter   | 12.872                    | 0.00                | 0.00              |
| 2Yr 480Min Summer   | 3.720                     | 0.00                | 0.00              | 30Yr+40% 480Min Summer   | 10.214                    | 0.00                | 0.00              |
| 2Yr 480Min Winter   | 3.720                     | 0.00                | 0.00              | 30Yr+40% 480Min Winter   | 10.214                    | 0.00                | 0.00              |
| 2Yr 600Min Summer   | 3.134                     | 0.00                | 0.00              | 30Yr+40% 600Min Summer   | 8.511                     | 0.00                | 0.00              |
| 2Yr 600Min Winter   | 3.134                     | 0.00                | 0.00              | 30Yr+40% 600Min Winter   | 8.511                     | 0.00                | 0.00              |
| 2Yr 720Min Summer   | 2.713                     | 0.00                | 0.00              | 30Yr+40% 720Min Summer   | 7.317                     | 0.00                | 0.00              |
| 2Yr 720Min Winter   | 2.713                     | 0.00                | 0.00              | 30Yr+40% 720Min Winter   | 7.317                     | 0.00                | 0.00              |
| 2Yr 960Min Summer   | 2.169                     | 0.00                | 0.00              | 30Yr+40% 960Min Summer   | 5.758                     | 0.00                | 0.00              |
| 2Yr 960Min Winter   | 2.169                     | 0.00                | 0.00              | 30Yr+40% 960Min Winter   | 5.758                     | 0.00                | 0.00              |
| 2Yr 1440Min Winter  | 1.591                     | 0.00                | 0.00              | 30Yr+40% 1440Min Summer  | 4.120                     | 0.00                | 0.00              |
| 2Yr 1440Min Summer  | 1.591                     | 0.00                | 0.00              | 30Yr+40% 1440Min Winter  | 4.120                     | 0.00                | 0.00              |
| 2Yr 2160Min Summer  | 1.178                     | 0.00                | 0.00              | 30Yr+40% 2160Min Summer  | 2.968                     | 0.00                | 0.00              |
| 2Yr 2160Min Winter  | 1.178                     | 0.00                | 0.00              | 30Yr+40% 2160Min Winter  | 2.968                     | 0.00                | 0.00              |
| 2Yr 2880Min Summer  | 0.962                     | 0.00                | 0.00              | 30Yr+40% 2880Min Summer  | 2.364                     | 0.00                | 0.00              |
| 2Yr 2880Min Winter  | 0.962                     | 0.00                | 0.00              | 30Yr+40% 2880Min Winter  | 2.364                     | 0.00                | 0.00              |
| 2Yr 4320Min Summer  | 0.740                     | 0.00                | 0.00              | 30Yr+40% 4320Min Summer  | 1.748                     | 0.00                | 0.00              |
| 2Yr 4320Min Winter  | 0.740                     | 0.00                | 0.00              | 30Yr+40% 4320Min Winter  | 1.748                     | 0.00                | 0.00              |
| 2Yr 5760Min Summer  | 0.627                     | 0.00                | 0.00              | 30Yr+40% 5760Min Summer  | 1.434                     | 0.00                | 0.00              |
| 2Yr 5760Min Winter  | 0.627                     | 0.00                | 0.00              | 30Yr+40% 5760Min Winter  | 1.434                     | 0.00                | 0.00              |
| 2Yr 7200Min Summer  | 0.558                     | 0.00                | 0.00              | 30Yr+40% 7200Min Summer  | 1.242                     | 0.00                | 0.00              |
| 2Yr 7200Min Winter  | 0.558                     | 0.00                | 0.00              | 30Yr+40% 7200Min Winter  | 1.242                     | 0.00                | 0.00              |
| 2Yr 8640Min Summer  | 0.510                     | 0.00                | 0.00              | 30Yr+40% 8640Min Summer  | 1.111                     | 0.00                | 0.00              |
| 2Yr 8640Min Winter  | 0.510                     | 0.00                | 0.00              | 30Yr+40% 8640Min Winter  | 1.111                     | 0.00                | 0.00              |
| 2Yr 10080Min Summer | 0.475                     | 0.00                | 0.00              | 30Yr+40% 10080Min Summer | 1.016                     | 0.00                | 0.00              |
| 2Yr 10080Min Winter | 0.475                     | 0.00                | 0.00              | 30Yr+40% 10080Min Winter | 1.016                     | 0.00                | 0.00              |
| 10Yr 15Min Summer   | 63.472                    | 0.00                | 0.00              | 100Yr 15Min Summer       | 103.039                   | 0.00                | 0.00              |
| 10Yr 15Min Winter   | 63.472                    | 0.00                | 0.00              | 100Yr 15Min Winter       | 103.039                   | 0.00                | 0.00              |
| 10Yr 30Min Summer   | 41.975                    | 0.00                | 0.00              | 100Yr 30Min Summer       | 69.133                    | 0.00                | 0.00              |
| 10Yr 30Min Winter   | 41.975                    | 0.00                | 0.00              | 100Yr 30Min Winter       | 69.133                    | 0.00                | 0.00              |
| 10Yr 60Min Summer   | 26.518                    | 0.00                | 0.00              | 100Yr 60Min Summer       | 44.424                    | 0.00                | 0.00              |
| 10Yr 60Min Winter   | 26.518                    | 0.00                | 0.00              | 100Yr 60Min Winter       | 44.424                    | 0.00                | 0.00              |
| 10Yr 120Min Summer  | 16.678                    | 0.00                | 0.00              | 100Yr 120Min Summer      | 26.631                    | 0.00                | 0.00              |
| 10Yr 120Min Winter  | 16.678                    | 0.00                | 0.00              | 100Yr 120Min Winter      | 26.631                    | 0.00                | 0.00              |
| 10Yr 180Min Summer  | 12.547                    | 0.00                | 0.00              | 100Yr 180Min Summer      | 19.524                    | 0.00                | 0.00              |
| 10Yr 180Min Winter  | 12.547                    | 0.00                | 0.00              | 100Yr 180Min Winter      | 19.524                    | 0.00                | 0.00              |
| 10Yr 240Min Summer  | 10.114                    | 0.00                | 0.00              | 100Yr 240Min Summer      | 15.695                    | 0.00                | 0.00              |
| 10Yr 240Min Winter  | 10.114                    | 0.00                | 0.00              | 100Yr 240Min Winter      | 15.695                    | 0.00                | 0.00              |
| 10Yr 360Min Summer  | 7.394                     | 0.00                | 0.00              | 100Yr 360Min Summer      | 11.386                    | 0.00                | 0.00              |
| 10Yr 360Min Winter  | 7.394                     | 0.00                | 0.00              | 100Yr 360Min Winter      | 11.386                    | 0.00                | 0.00              |
| 10Yr 480Min Summer  | 5.892                     | 0.00                | 0.00              | 100Yr 480Min Summer      | 9.035                     | 0.00                | 0.00              |
| 10Yr 480Min Winter  | 5.892                     | 0.00                | 0.00              | 100Yr 480Min Winter      | 9.035                     | 0.00                | 0.00              |

## Simulated Rainfall Events

| Storm                | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % | Storm                     | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % |
|----------------------|---------------------------|---------------------|-------------------|---------------------------|---------------------------|---------------------|-------------------|
| 10Yr 600Min Summer   | 4.919                     | 0.00                | 0.00              | 100Yr 600Min Summer       | 7.544                     | 0.00                | 0.00              |
| 10Yr 600Min Winter   | 4.919                     | 0.00                | 0.00              | 100Yr 600Min Winter       | 7.544                     | 0.00                | 0.00              |
| 10Yr 720Min Summer   | 4.233                     | 0.00                | 0.00              | 100Yr 720Min Summer       | 6.499                     | 0.00                | 0.00              |
| 10Yr 720Min Winter   | 4.233                     | 0.00                | 0.00              | 100Yr 720Min Winter       | 6.499                     | 0.00                | 0.00              |
| 10Yr 960Min Summer   | 3.341                     | 0.00                | 0.00              | 100Yr 960Min Summer       | 5.119                     | 0.00                | 0.00              |
| 10Yr 960Min Winter   | 3.341                     | 0.00                | 0.00              | 100Yr 960Min Winter       | 5.119                     | 0.00                | 0.00              |
| 10Yr 1440Min Summer  | 2.405                     | 0.00                | 0.00              | 100Yr 1440Min Summer      | 3.659                     | 0.00                | 0.00              |
| 10Yr 1440Min Winter  | 2.405                     | 0.00                | 0.00              | 100Yr 1440Min Winter      | 3.659                     | 0.00                | 0.00              |
| 10Yr 2160Min Summer  | 1.746                     | 0.00                | 0.00              | 100Yr 2160Min Summer      | 2.624                     | 0.00                | 0.00              |
| 10Yr 2160Min Winter  | 1.746                     | 0.00                | 0.00              | 100Yr 2160Min Winter      | 2.624                     | 0.00                | 0.00              |
| 10Yr 2880Min Summer  | 1.400                     | 0.00                | 0.00              | 100Yr 2880Min Summer      | 2.074                     | 0.00                | 0.00              |
| 10Yr 2880Min Winter  | 1.400                     | 0.00                | 0.00              | 100Yr 2880Min Winter      | 2.074                     | 0.00                | 0.00              |
| 10Yr 4320Min Summer  | 1.048                     | 0.00                | 0.00              | 100Yr 4320Min Summer      | 1.512                     | 0.00                | 0.00              |
| 10Yr 4320Min Winter  | 1.048                     | 0.00                | 0.00              | 100Yr 4320Min Winter      | 1.512                     | 0.00                | 0.00              |
| 10Yr 5760Min Summer  | 0.869                     | 0.00                | 0.00              | 100Yr 5760Min Summer      | 1.226                     | 0.00                | 0.00              |
| 10Yr 5760Min Winter  | 0.869                     | 0.00                | 0.00              | 100Yr 5760Min Winter      | 1.226                     | 0.00                | 0.00              |
| 10Yr 7200Min Summer  | 0.760                     | 0.00                | 0.00              | 100Yr 7200Min Summer      | 1.051                     | 0.00                | 0.00              |
| 10Yr 7200Min Winter  | 0.760                     | 0.00                | 0.00              | 100Yr 7200Min Winter      | 1.051                     | 0.00                | 0.00              |
| 10Yr 8640Min Summer  | 0.685                     | 0.00                | 0.00              | 100Yr 8640Min Summer      | 0.933                     | 0.00                | 0.00              |
| 10Yr 8640Min Winter  | 0.685                     | 0.00                | 0.00              | 100Yr 8640Min Winter      | 0.933                     | 0.00                | 0.00              |
| 10Yr 10080Min Summer | 0.630                     | 0.00                | 0.00              | 100Yr 10080Min Summer     | 0.846                     | 0.00                | 0.00              |
| 10Yr 10080Min Winter | 0.630                     | 0.00                | 0.00              | 100Yr 10080Min Winter     | 0.846                     | 0.00                | 0.00              |
| 30Yr 15Min Summer    | 82.428                    | 0.00                | 0.00              | 100Yr+45% 15Min Summer    | 149.406                   | 0.00                | 0.00              |
| 30Yr 15Min Winter    | 82.428                    | 0.00                | 0.00              | 100Yr+45% 15Min Winter    | 149.406                   | 0.00                | 0.00              |
| 30Yr 30Min Summer    | 54.802                    | 0.00                | 0.00              | 100Yr+45% 30Min Summer    | 100.242                   | 0.00                | -1.20             |
| 30Yr 30Min Winter    | 54.802                    | 0.00                | 0.00              | 100Yr+45% 30Min Winter    | 100.242                   | 0.00                | -1.42             |
| 30Yr 60Min Summer    | 34.866                    | 0.00                | 0.00              | 100Yr+45% 60Min Summer    | 64.415                    | 0.00                | -1.63             |
| 30Yr 60Min Winter    | 34.866                    | 0.00                | 0.00              | 100Yr+45% 60Min Winter    | 64.415                    | 0.00                | -1.60             |
| 30Yr 120Min Summer   | 21.301                    | 0.00                | 0.00              | 100Yr+45% 120Min Summer   | 38.616                    | 0.00                | -1.26             |
| 30Yr 120Min Winter   | 21.301                    | 0.00                | 0.00              | 100Yr+45% 120Min Winter   | 38.616                    | 0.00                | -0.84             |
| 30Yr 180Min Summer   | 15.787                    | 0.00                | 0.00              | 100Yr+45% 180Min Summer   | 28.310                    | 0.00                | -0.77             |
| 30Yr 180Min Winter   | 15.787                    | 0.00                | 0.00              | 100Yr+45% 180Min Winter   | 28.310                    | 0.00                | 0.00              |
| 30Yr 240Min Summer   | 12.667                    | 0.00                | 0.00              | 100Yr+45% 240Min Summer   | 22.758                    | 0.00                | -0.32             |
| 30Yr 240Min Winter   | 12.667                    | 0.00                | 0.00              | 100Yr+45% 240Min Winter   | 22.758                    | 0.00                | 0.00              |
| 30Yr 360Min Summer   | 9.194                     | 0.00                | 0.00              | 100Yr+45% 360Min Summer   | 16.509                    | 0.00                | 0.00              |
| 30Yr 360Min Winter   | 9.194                     | 0.00                | 0.00              | 100Yr+45% 360Min Winter   | 16.509                    | 0.00                | 0.00              |
| 30Yr 480Min Summer   | 7.295                     | 0.00                | 0.00              | 100Yr+45% 480Min Summer   | 13.100                    | 0.00                | 0.00              |
| 30Yr 480Min Winter   | 7.295                     | 0.00                | 0.00              | 100Yr+45% 480Min Winter   | 13.100                    | 0.00                | 0.00              |
| 30Yr 600Min Summer   | 6.080                     | 0.00                | 0.00              | 100Yr+45% 600Min Summer   | 10.939                    | 0.00                | 0.00              |
| 30Yr 600Min Winter   | 6.080                     | 0.00                | 0.00              | 100Yr+45% 600Min Winter   | 10.939                    | 0.00                | 0.00              |
| 30Yr 720Min Summer   | 5.227                     | 0.00                | 0.00              | 100Yr+45% 720Min Summer   | 9.424                     | 0.00                | 0.00              |
| 30Yr 720Min Winter   | 5.227                     | 0.00                | 0.00              | 100Yr+45% 720Min Winter   | 9.424                     | 0.00                | 0.00              |
| 30Yr 960Min Summer   | 4.113                     | 0.00                | 0.00              | 100Yr+45% 960Min Summer   | 7.423                     | 0.00                | 0.00              |
| 30Yr 960Min Winter   | 4.113                     | 0.00                | 0.00              | 100Yr+45% 960Min Winter   | 7.423                     | 0.00                | 0.00              |
| 30Yr 1440Min Summer  | 2.943                     | 0.00                | 0.00              | 100Yr+45% 1440Min Summer  | 5.305                     | 0.00                | 0.00              |
| 30Yr 1440Min Winter  | 2.943                     | 0.00                | 0.00              | 100Yr+45% 1440Min Winter  | 5.305                     | 0.00                | 0.00              |
| 30Yr 2160Min Summer  | 2.120                     | 0.00                | 0.00              | 100Yr+45% 2160Min Summer  | 3.805                     | 0.00                | 0.00              |
| 30Yr 2160Min Winter  | 2.120                     | 0.00                | 0.00              | 100Yr+45% 2160Min Winter  | 3.805                     | 0.00                | 0.00              |
| 30Yr 2880Min Summer  | 1.689                     | 0.00                | 0.00              | 100Yr+45% 2880Min Summer  | 3.008                     | 0.00                | 0.00              |
| 30Yr 2880Min Winter  | 1.689                     | 0.00                | 0.00              | 100Yr+45% 2880Min Winter  | 3.008                     | 0.00                | 0.00              |
| 30Yr 4320Min Summer  | 1.248                     | 0.00                | 0.00              | 100Yr+45% 4320Min Summer  | 2.193                     | 0.00                | 0.00              |
| 30Yr 4320Min Winter  | 1.248                     | 0.00                | 0.00              | 100Yr+45% 4320Min Winter  | 2.193                     | 0.00                | 0.00              |
| 30Yr 5760Min Summer  | 1.024                     | 0.00                | 0.00              | 100Yr+45% 5760Min Summer  | 1.778                     | 0.00                | 0.00              |
| 30Yr 5760Min Winter  | 1.024                     | 0.00                | 0.00              | 100Yr+45% 5760Min Winter  | 1.778                     | 0.00                | 0.00              |
| 30Yr 7200Min Summer  | 0.887                     | 0.00                | 0.00              | 100Yr+45% 7200Min Summer  | 1.524                     | 0.00                | 0.00              |
| 30Yr 7200Min Winter  | 0.887                     | 0.00                | 0.00              | 100Yr+45% 7200Min Winter  | 1.524                     | 0.00                | 0.00              |
| 30Yr 8640Min Summer  | 0.794                     | 0.00                | 0.00              | 100Yr+45% 8640Min Summer  | 1.353                     | 0.00                | 0.00              |
| 30Yr 8640Min Winter  | 0.794                     | 0.00                | 0.00              | 100Yr+45% 8640Min Winter  | 1.353                     | 0.00                | 0.00              |
| 30Yr 10080Min Summer | 0.726                     | 0.00                | 0.00              | 100Yr+45% 10080Min Summer | 1.227                     | 0.00                | 0.00              |
| 30Yr 10080Min Winter | 0.726                     | 0.00                | 0.00              | 100Yr+45% 10080Min Winter | 1.227                     | 0.00                | 0.00              |

## Simulation Results

Return Period (yrs) + Climate Change (%):  
2yr+0%

### Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status |
|---------|----------------|-------------|-----------|-----------|--------------|------------|--------|
| S26     | 15 min Summer  | 8           | 16.139    | 0.014     | 0.255        |            | OK     |
| S27     | 15 min Summer  | 9           | 16.038    | 0.013     | 0.251        |            | OK     |
| S28     | 15 min Summer  | 9           | 15.947    | 0.022     | 1.031        |            | OK     |
| S29     | 15 min Summer  | 8           | 15.786    | 0.036     | 2.120        |            | OK     |
| S30     | 240 min Summer | 155         | 15.711    | 0.411     | 0.203        |            | OK     |

### Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 15 min Summer  | 9           | S26        | S27        | 0.013          | 0.411              | 0.251          | 0.039           | OK     |
| 1.001    | 15 min Summer  | 9           | S27        | S28        | 0.018          | 0.277              | 0.250          | 0.039           | OK     |
| 1.002    | 15 min Summer  | 9           | S28        | S29        | 0.022          | 0.816              | 1.037          | 0.108           | OK     |
| 1.003    | 15 min Summer  | 9           | S29        | S30        | 0.035          | 0.665              | 2.101          | 0.118           | OK     |

Return Period (yrs) + Climate Change (%):

10yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S26     | 15 min Summer  | 8           | 16.144    | 0.019     | 0.495        |            | OK         |
| S27     | 15 min Summer  | 9           | 16.043    | 0.018     | 0.483        |            | OK         |
| S28     | 15 min Summer  | 8           | 15.956    | 0.031     | 2.050        |            | OK         |
| S29     | 180 min Summer | 122         | 15.932    | 0.182     | 0.313        |            | Surcharged |
| S30     | 180 min Summer | 122         | 15.932    | 0.632     | 0.314        |            | OK         |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 15 min Summer  | 9           | S26        | S27        | 0.018          | 0.491              | 0.487          | 0.077           | OK         |
| 1.001    | 15 min Summer  | 9           | S27        | S28        | 0.025          | 0.324              | 0.487          | 0.075           | OK         |
| 1.002    | 180 min Summer | 106         | S28        | S29        | 0.056          | 0.739              | 0.732          | 0.076           | OK         |
| 1.003    | 180 min Summer | 107         | S29        | S30        | 0.150          | 0.598              | 1.503          | 0.085           | Surcharged |

Return Period (yrs) + Climate Change (%):

30yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S26     | 15 min Summer  | 8           | 16.146    | 0.021     | 0.643        |            | OK         |
| S27     | 15 min Summer  | 9           | 16.046    | 0.021     | 0.626        |            | OK         |
| S28     | 180 min Summer | 122         | 16.046    | 0.121     | 0.188        |            | Surcharged |
| S29     | 180 min Summer | 123         | 16.046    | 0.296     | 0.368        |            | Surcharged |
| S30     | 180 min Summer | 123         | 16.046    | 0.746     | 0.369        |            | OK         |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 15 min Summer  | 8           | S26        | S27        | 0.021          | 0.529              | 0.634          | 0.100           | OK         |
| 1.001    | 180 min Summer | 122         | S27        | S28        | 0.060          | 0.263              | 0.220          | 0.034           | OK         |
| 1.002    | 180 min Summer | 109         | S28        | S29        | 0.100          | 0.781              | 0.923          | 0.096           | Surcharged |
| 1.003    | 30 min Winter  | 23          | S29        | S30        | 0.150          | 0.780              | 3.884          | 0.219           | Surcharged |

Return Period (yrs) + Climate Change (%):

30yr+40%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S26     | 180 min Summer | 131         | 16.334    | 0.209     | 0.047        |            | Surcharged |
| S27     | 180 min Summer | 131         | 16.334    | 0.309     | 0.048        |            | Surcharged |
| S28     | 180 min Summer | 131         | 16.334    | 0.409     | 0.199        |            | Surcharged |
| S29     | 180 min Summer | 131         | 16.334    | 0.584     | 0.402        |            | Surcharged |
| S30     | 180 min Summer | 131         | 16.334    | 1.034     | 0.402        |            | Surcharged |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 60 min Winter  | 47          | S26        | S27        | 0.100          | 0.471              | 0.433          | 0.068           | Surcharged |
| 1.001    | 60 min Winter  | 39          | S27        | S28        | 0.100          | 0.319              | 0.432          | 0.067           | Surcharged |
| 1.002    | 30 min Winter  | 21          | S28        | S29        | 0.100          | 1.059              | 2.689          | 0.280           | Surcharged |
| 1.003    | 15 min Winter  | 12          | S29        | S30        | 0.150          | 0.902              | 6.971          | 0.393           | Surcharged |

Return Period (yrs) + Climate Change (%):

100yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S26     | 120 min Winter | 97          | 16.205    | 0.080     | 0.047        |            | OK         |
| S27     | 120 min Winter | 97          | 16.205    | 0.180     | 0.058        |            | Surcharged |
| S28     | 120 min Winter | 97          | 16.205    | 0.280     | 0.209        |            | Surcharged |
| S29     | 120 min Winter | 96          | 16.205    | 0.455     | 0.406        |            | Surcharged |
| S30     | 120 min Winter | 96          | 16.205    | 0.905     | 0.404        |            | Surcharged |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 120 min Winter | 97          | S26        | S27        | 0.090          | 0.397              | 0.242          | 0.038           | OK         |
| 1.001    | 60 min Winter  | 45          | S27        | S28        | 0.100          | 0.310              | 0.393          | 0.061           | Surcharged |
| 1.002    | 30 min Winter  | 24          | S28        | S29        | 0.100          | 1.031              | 2.422          | 0.252           | Surcharged |
| 1.003    | 15 min Winter  | 13          | S29        | S30        | 0.150          | 0.877              | 6.219          | 0.351           | Surcharged |

Return Period (yrs) + Climate Change (%):

100yr+45%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S26     | 120 min Summer | 117         | 16.681    | 0.556     | 0.047        |            | Flood Risk |
| S27     | 120 min Summer | 117         | 16.681    | 0.656     | 0.047        |            | Flood Risk |
| S28     | 120 min Summer | 117         | 16.681    | 0.756     | 0.198        |            | Flood Risk |
| S29     | 120 min Summer | 117         | 16.681    | 0.931     | 0.402        |            | Flood Risk |
| S30     | 120 min Summer | 117         | 16.681    | 1.381     | 0.402        |            | Surcharged |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 30 min Winter  | 21          | S26        | S27        | 0.100          | 0.571              | 0.840          | 0.132           | Surcharged |
| 1.001    | 30 min Summer  | 19          | S27        | S28        | 0.100          | 0.377              | 1.043          | 0.162           | Surcharged |
| 1.002    | 15 min Winter  | 11          | S28        | S29        | 0.100          | 1.203              | 4.464          | 0.464           | Surcharged |
| 1.003    | 15 min Winter  | 10          | S29        | S30        | 0.150          | 0.959              | 9.041          | 0.510           | Surcharged |

## PLOT 3 CALCULATIONS

## Network Details

### Manhole Schedule

| Manhole | Catchment Area (ha) | Size (mm) | Type    | CL (m) | IL (m) | Depth To Soffit (m) | Easting (m) | Northing (m) |
|---------|---------------------|-----------|---------|--------|--------|---------------------|-------------|--------------|
| S24     | 0.003               | 450       | Unknown | 16.700 | 15.700 | 0.850               | 494825.325  | 106021.896   |
| S25     | 0.000               | 150       | Unknown | 16.700 | 15.550 | 1.000               | 494820.660  | 106023.694   |

### Pipe Schedule

| Pipe Number | US Manhole | US IL (m) | DS Manhole | DS IL (m) | Shape | Dimension (mm) | Length (m) | Gradient (1:x) | Roughness (mm) | US Depth To Soffit (m) | DS Depth To Soffit (m) |
|-------------|------------|-----------|------------|-----------|-------|----------------|------------|----------------|----------------|------------------------|------------------------|
| 1.000       | S24        | 15.700    | S25        | 15.550    | Circ  | 150            | 5.000      | 33             | 0.600          | 0.850                  | 1.000                  |

## Outfall Details

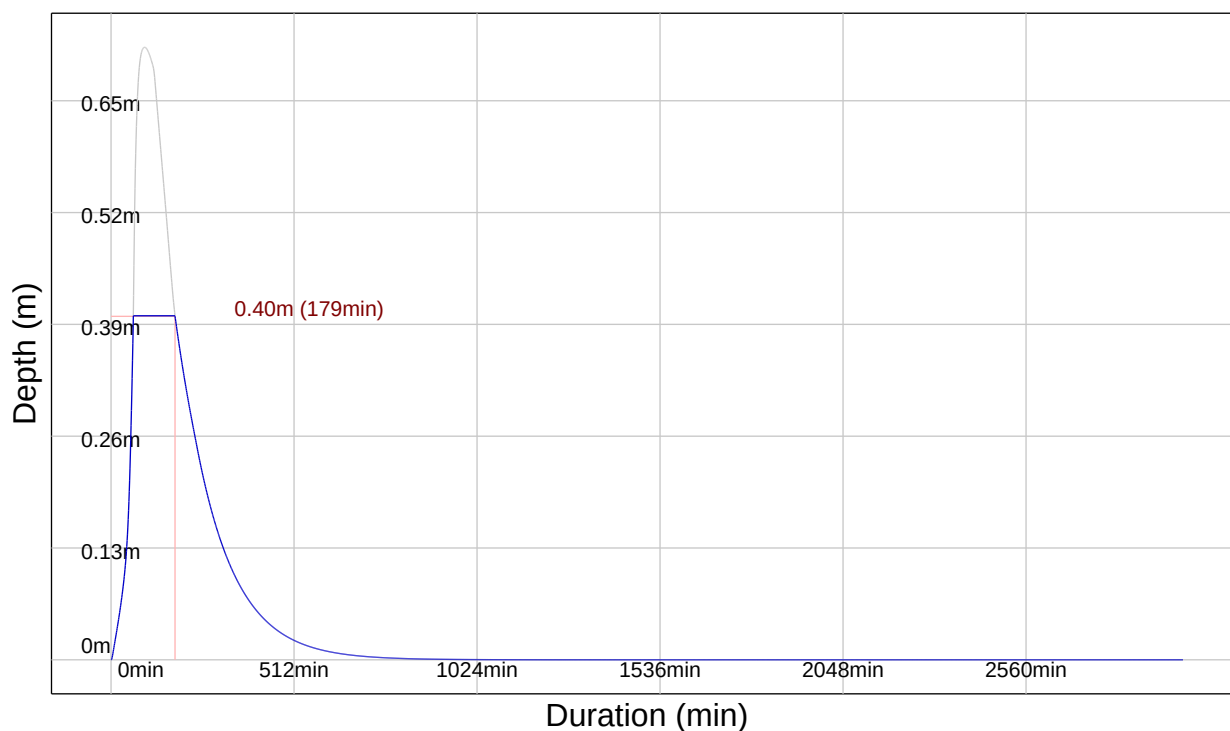
Outfall Manhole S25 : Infiltration Tank

## Flow Control Details

### Tank Structure at Manhole S25

| Tank Invert (m) | Tank Height (m) | Porosity Ratio (%) | Area (m2) | Effective Area (m2)<br>Area x Porosity Ratio | Max Storage (m3)<br>Effective Area x Height | Infil Base (m/hr) | Infil Side (m/hr) | Safety Factor |
|-----------------|-----------------|--------------------|-----------|----------------------------------------------|---------------------------------------------|-------------------|-------------------|---------------|
| 15.300          | 0.400           | 95.00              | 2.500     | 2.375                                        | 0.950                                       | 0.00000000        | 0.36000000        | 2.00          |

### Plot 3 Soakaway at S25 (100Yr+45% 120Min Summer)



## Simulation Settings

FEH2022 (point): Filename=FEH\_Point\_Descriptors\_494846\_106034\_v5\_0\_1.xml

Summer (Cv: 1.00), Winter (Cv: 1.00)

Global Time of Entry: 5.0 mins

Durations (mins): 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080

Return Periods (yrs) + Climate Change: (2, +0%), (10, +0%), (30, +0%), (30, +40%), (100, +0%), (100, +45%)

Manhole Flood Risk Freeboard: 0.300m

## Simulated Rainfall Events

| Storm               | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % | Storm                    | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % |
|---------------------|---------------------------|---------------------|-------------------|--------------------------|---------------------------|---------------------|-------------------|
| 2Yr 15Min Winter    | 32.749                    | 0.00                | 0.00              | 30Yr+40% 15Min Summer    | 115.400                   | 0.00                | 0.00              |
| 2Yr 15Min Summer    | 32.749                    | 0.00                | 0.00              | 30Yr+40% 15Min Winter    | 115.400                   | 0.00                | 0.00              |
| 2Yr 30Min Winter    | 21.400                    | 0.00                | 0.00              | 30Yr+40% 30Min Summer    | 76.723                    | 0.00                | 0.00              |
| 2Yr 30Min Summer    | 21.400                    | 0.00                | 0.00              | 30Yr+40% 30Min Winter    | 76.723                    | 0.00                | 0.00              |
| 2Yr 60Min Winter    | 13.587                    | 0.00                | 0.00              | 30Yr+40% 60Min Summer    | 48.813                    | 0.00                | 0.00              |
| 2Yr 60Min Summer    | 13.587                    | 0.00                | 0.00              | 30Yr+40% 60Min Winter    | 48.813                    | 0.00                | 0.00              |
| 2Yr 120Min Summer   | 9.453                     | 0.00                | 0.00              | 30Yr+40% 120Min Summer   | 29.821                    | 0.00                | 0.00              |
| 2Yr 120Min Winter   | 9.453                     | 0.00                | 0.00              | 30Yr+40% 120Min Winter   | 29.821                    | 0.00                | 0.00              |
| 2Yr 180Min Winter   | 7.477                     | 0.00                | 0.00              | 30Yr+40% 180Min Summer   | 22.101                    | 0.00                | 0.00              |
| 2Yr 180Min Summer   | 7.477                     | 0.00                | 0.00              | 30Yr+40% 180Min Winter   | 22.101                    | 0.00                | 0.00              |
| 2Yr 240Min Summer   | 6.107                     | 0.00                | 0.00              | 30Yr+40% 240Min Summer   | 17.734                    | 0.00                | 0.00              |
| 2Yr 240Min Winter   | 6.107                     | 0.00                | 0.00              | 30Yr+40% 240Min Winter   | 17.734                    | 0.00                | 0.00              |
| 2Yr 360Min Summer   | 4.586                     | 0.00                | 0.00              | 30Yr+40% 360Min Summer   | 12.872                    | 0.00                | 0.00              |
| 2Yr 360Min Winter   | 4.586                     | 0.00                | 0.00              | 30Yr+40% 360Min Winter   | 12.872                    | 0.00                | 0.00              |
| 2Yr 480Min Summer   | 3.720                     | 0.00                | 0.00              | 30Yr+40% 480Min Summer   | 10.214                    | 0.00                | 0.00              |
| 2Yr 480Min Winter   | 3.720                     | 0.00                | 0.00              | 30Yr+40% 480Min Winter   | 10.214                    | 0.00                | 0.00              |
| 2Yr 600Min Summer   | 3.134                     | 0.00                | 0.00              | 30Yr+40% 600Min Summer   | 8.511                     | 0.00                | 0.00              |
| 2Yr 600Min Winter   | 3.134                     | 0.00                | 0.00              | 30Yr+40% 600Min Winter   | 8.511                     | 0.00                | 0.00              |
| 2Yr 720Min Summer   | 2.713                     | 0.00                | 0.00              | 30Yr+40% 720Min Summer   | 7.317                     | 0.00                | 0.00              |
| 2Yr 720Min Winter   | 2.713                     | 0.00                | 0.00              | 30Yr+40% 720Min Winter   | 7.317                     | 0.00                | 0.00              |
| 2Yr 960Min Summer   | 2.169                     | 0.00                | 0.00              | 30Yr+40% 960Min Summer   | 5.758                     | 0.00                | 0.00              |
| 2Yr 960Min Winter   | 2.169                     | 0.00                | 0.00              | 30Yr+40% 960Min Winter   | 5.758                     | 0.00                | 0.00              |
| 2Yr 1440Min Winter  | 1.591                     | 0.00                | 0.00              | 30Yr+40% 1440Min Summer  | 4.120                     | 0.00                | 0.00              |
| 2Yr 1440Min Summer  | 1.591                     | 0.00                | 0.00              | 30Yr+40% 1440Min Winter  | 4.120                     | 0.00                | 0.00              |
| 2Yr 2160Min Summer  | 1.178                     | 0.00                | 0.00              | 30Yr+40% 2160Min Summer  | 2.968                     | 0.00                | 0.00              |
| 2Yr 2160Min Winter  | 1.178                     | 0.00                | 0.00              | 30Yr+40% 2160Min Winter  | 2.968                     | 0.00                | 0.00              |
| 2Yr 2880Min Summer  | 0.962                     | 0.00                | 0.00              | 30Yr+40% 2880Min Summer  | 2.364                     | 0.00                | 0.00              |
| 2Yr 2880Min Winter  | 0.962                     | 0.00                | 0.00              | 30Yr+40% 2880Min Winter  | 2.364                     | 0.00                | 0.00              |
| 2Yr 4320Min Summer  | 0.740                     | 0.00                | 0.00              | 30Yr+40% 4320Min Summer  | 1.748                     | 0.00                | 0.00              |
| 2Yr 4320Min Winter  | 0.740                     | 0.00                | 0.00              | 30Yr+40% 4320Min Winter  | 1.748                     | 0.00                | 0.00              |
| 2Yr 5760Min Summer  | 0.627                     | 0.00                | 0.00              | 30Yr+40% 5760Min Summer  | 1.434                     | 0.00                | 0.00              |
| 2Yr 5760Min Winter  | 0.627                     | 0.00                | 0.00              | 30Yr+40% 5760Min Winter  | 1.434                     | 0.00                | 0.00              |
| 2Yr 7200Min Summer  | 0.558                     | 0.00                | 0.00              | 30Yr+40% 7200Min Summer  | 1.242                     | 0.00                | 0.00              |
| 2Yr 7200Min Winter  | 0.558                     | 0.00                | 0.00              | 30Yr+40% 7200Min Winter  | 1.242                     | 0.00                | 0.00              |
| 2Yr 8640Min Summer  | 0.510                     | 0.00                | 0.00              | 30Yr+40% 8640Min Summer  | 1.111                     | 0.00                | 0.00              |
| 2Yr 8640Min Winter  | 0.510                     | 0.00                | 0.00              | 30Yr+40% 8640Min Winter  | 1.111                     | 0.00                | 0.00              |
| 2Yr 10080Min Summer | 0.475                     | 0.00                | 0.00              | 30Yr+40% 10080Min Summer | 1.016                     | 0.00                | 0.00              |
| 2Yr 10080Min Winter | 0.475                     | 0.00                | 0.00              | 30Yr+40% 10080Min Winter | 1.016                     | 0.00                | 0.00              |
| 10Yr 15Min Summer   | 63.472                    | 0.00                | 0.00              | 100Yr 15Min Summer       | 103.039                   | 0.00                | 0.00              |
| 10Yr 15Min Winter   | 63.472                    | 0.00                | 0.00              | 100Yr 15Min Winter       | 103.039                   | 0.00                | 0.00              |
| 10Yr 30Min Summer   | 41.975                    | 0.00                | 0.00              | 100Yr 30Min Summer       | 69.133                    | 0.00                | 0.00              |
| 10Yr 30Min Winter   | 41.975                    | 0.00                | 0.00              | 100Yr 30Min Winter       | 69.133                    | 0.00                | 0.00              |
| 10Yr 60Min Summer   | 26.518                    | 0.00                | 0.00              | 100Yr 60Min Summer       | 44.424                    | 0.00                | 0.00              |
| 10Yr 60Min Winter   | 26.518                    | 0.00                | 0.00              | 100Yr 60Min Winter       | 44.424                    | 0.00                | 0.00              |
| 10Yr 120Min Summer  | 16.678                    | 0.00                | 0.00              | 100Yr 120Min Summer      | 26.631                    | 0.00                | 0.00              |
| 10Yr 120Min Winter  | 16.678                    | 0.00                | 0.00              | 100Yr 120Min Winter      | 26.631                    | 0.00                | 0.00              |
| 10Yr 180Min Summer  | 12.547                    | 0.00                | 0.00              | 100Yr 180Min Summer      | 19.524                    | 0.00                | 0.00              |
| 10Yr 180Min Winter  | 12.547                    | 0.00                | 0.00              | 100Yr 180Min Winter      | 19.524                    | 0.00                | 0.00              |
| 10Yr 240Min Summer  | 10.114                    | 0.00                | 0.00              | 100Yr 240Min Summer      | 15.695                    | 0.00                | 0.00              |
| 10Yr 240Min Winter  | 10.114                    | 0.00                | 0.00              | 100Yr 240Min Winter      | 15.695                    | 0.00                | 0.00              |
| 10Yr 360Min Summer  | 7.394                     | 0.00                | 0.00              | 100Yr 360Min Summer      | 11.386                    | 0.00                | 0.00              |
| 10Yr 360Min Winter  | 7.394                     | 0.00                | 0.00              | 100Yr 360Min Winter      | 11.386                    | 0.00                | 0.00              |
| 10Yr 480Min Summer  | 5.892                     | 0.00                | 0.00              | 100Yr 480Min Summer      | 9.035                     | 0.00                | 0.00              |
| 10Yr 480Min Winter  | 5.892                     | 0.00                | 0.00              | 100Yr 480Min Winter      | 9.035                     | 0.00                | 0.00              |

## Simulated Rainfall Events

| Storm                | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % | Storm                     | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % |
|----------------------|---------------------------|---------------------|-------------------|---------------------------|---------------------------|---------------------|-------------------|
| 10Yr 600Min Summer   | 4.919                     | 0.00                | 0.00              | 100Yr 600Min Summer       | 7.544                     | 0.00                | 0.00              |
| 10Yr 600Min Winter   | 4.919                     | 0.00                | 0.00              | 100Yr 600Min Winter       | 7.544                     | 0.00                | 0.00              |
| 10Yr 720Min Summer   | 4.233                     | 0.00                | 0.00              | 100Yr 720Min Summer       | 6.499                     | 0.00                | 0.00              |
| 10Yr 720Min Winter   | 4.233                     | 0.00                | 0.00              | 100Yr 720Min Winter       | 6.499                     | 0.00                | 0.00              |
| 10Yr 960Min Summer   | 3.341                     | 0.00                | 0.00              | 100Yr 960Min Summer       | 5.119                     | 0.00                | 0.00              |
| 10Yr 960Min Winter   | 3.341                     | 0.00                | 0.00              | 100Yr 960Min Winter       | 5.119                     | 0.00                | 0.00              |
| 10Yr 1440Min Summer  | 2.405                     | 0.00                | 0.00              | 100Yr 1440Min Summer      | 3.659                     | 0.00                | 0.00              |
| 10Yr 1440Min Winter  | 2.405                     | 0.00                | 0.00              | 100Yr 1440Min Winter      | 3.659                     | 0.00                | 0.00              |
| 10Yr 2160Min Summer  | 1.746                     | 0.00                | 0.00              | 100Yr 2160Min Summer      | 2.624                     | 0.00                | 0.00              |
| 10Yr 2160Min Winter  | 1.746                     | 0.00                | 0.00              | 100Yr 2160Min Winter      | 2.624                     | 0.00                | 0.00              |
| 10Yr 2880Min Summer  | 1.400                     | 0.00                | 0.00              | 100Yr 2880Min Summer      | 2.074                     | 0.00                | 0.00              |
| 10Yr 2880Min Winter  | 1.400                     | 0.00                | 0.00              | 100Yr 2880Min Winter      | 2.074                     | 0.00                | 0.00              |
| 10Yr 4320Min Summer  | 1.048                     | 0.00                | 0.00              | 100Yr 4320Min Summer      | 1.512                     | 0.00                | 0.00              |
| 10Yr 4320Min Winter  | 1.048                     | 0.00                | 0.00              | 100Yr 4320Min Winter      | 1.512                     | 0.00                | 0.00              |
| 10Yr 5760Min Summer  | 0.869                     | 0.00                | 0.00              | 100Yr 5760Min Summer      | 1.226                     | 0.00                | 0.00              |
| 10Yr 5760Min Winter  | 0.869                     | 0.00                | 0.00              | 100Yr 5760Min Winter      | 1.226                     | 0.00                | 0.00              |
| 10Yr 7200Min Summer  | 0.760                     | 0.00                | 0.00              | 100Yr 7200Min Summer      | 1.051                     | 0.00                | 0.00              |
| 10Yr 7200Min Winter  | 0.760                     | 0.00                | 0.00              | 100Yr 7200Min Winter      | 1.051                     | 0.00                | 0.00              |
| 10Yr 8640Min Summer  | 0.685                     | 0.00                | 0.00              | 100Yr 8640Min Summer      | 0.933                     | 0.00                | 0.00              |
| 10Yr 8640Min Winter  | 0.685                     | 0.00                | 0.00              | 100Yr 8640Min Winter      | 0.933                     | 0.00                | 0.00              |
| 10Yr 10080Min Summer | 0.630                     | 0.00                | 0.00              | 100Yr 10080Min Summer     | 0.846                     | 0.00                | 0.00              |
| 10Yr 10080Min Winter | 0.630                     | 0.00                | 0.00              | 100Yr 10080Min Winter     | 0.846                     | 0.00                | 0.00              |
| 30Yr 15Min Summer    | 82.428                    | 0.00                | 0.00              | 100Yr+45% 15Min Summer    | 149.406                   | 0.00                | 0.00              |
| 30Yr 15Min Winter    | 82.428                    | 0.00                | 0.00              | 100Yr+45% 15Min Winter    | 149.406                   | 0.00                | 0.00              |
| 30Yr 30Min Summer    | 54.802                    | 0.00                | 0.00              | 100Yr+45% 30Min Summer    | 100.242                   | 0.00                | 0.00              |
| 30Yr 30Min Winter    | 54.802                    | 0.00                | 0.00              | 100Yr+45% 30Min Winter    | 100.242                   | 0.00                | -2.55             |
| 30Yr 60Min Summer    | 34.866                    | 0.00                | 0.00              | 100Yr+45% 60Min Summer    | 64.415                    | 0.00                | -4.07             |
| 30Yr 60Min Winter    | 34.866                    | 0.00                | 0.00              | 100Yr+45% 60Min Winter    | 64.415                    | 0.00                | -3.08             |
| 30Yr 120Min Summer   | 21.301                    | 0.00                | 0.00              | 100Yr+45% 120Min Summer   | 38.616                    | 0.00                | -2.42             |
| 30Yr 120Min Winter   | 21.301                    | 0.00                | 0.00              | 100Yr+45% 120Min Winter   | 38.616                    | 0.00                | -1.51             |
| 30Yr 180Min Summer   | 15.787                    | 0.00                | 0.00              | 100Yr+45% 180Min Summer   | 28.310                    | 0.00                | -1.56             |
| 30Yr 180Min Winter   | 15.787                    | 0.00                | 0.00              | 100Yr+45% 180Min Winter   | 28.310                    | 0.00                | 0.00              |
| 30Yr 240Min Summer   | 12.667                    | 0.00                | 0.00              | 100Yr+45% 240Min Summer   | 22.758                    | 0.00                | 0.00              |
| 30Yr 240Min Winter   | 12.667                    | 0.00                | 0.00              | 100Yr+45% 240Min Winter   | 22.758                    | 0.00                | 0.00              |
| 30Yr 360Min Summer   | 9.194                     | 0.00                | 0.00              | 100Yr+45% 360Min Summer   | 16.509                    | 0.00                | 0.00              |
| 30Yr 360Min Winter   | 9.194                     | 0.00                | 0.00              | 100Yr+45% 360Min Winter   | 16.509                    | 0.00                | 0.00              |
| 30Yr 480Min Summer   | 7.295                     | 0.00                | 0.00              | 100Yr+45% 480Min Summer   | 13.100                    | 0.00                | 0.00              |
| 30Yr 480Min Winter   | 7.295                     | 0.00                | 0.00              | 100Yr+45% 480Min Winter   | 13.100                    | 0.00                | 0.00              |
| 30Yr 600Min Summer   | 6.080                     | 0.00                | 0.00              | 100Yr+45% 600Min Summer   | 10.939                    | 0.00                | 0.00              |
| 30Yr 600Min Winter   | 6.080                     | 0.00                | 0.00              | 100Yr+45% 600Min Winter   | 10.939                    | 0.00                | 0.00              |
| 30Yr 720Min Summer   | 5.227                     | 0.00                | 0.00              | 100Yr+45% 720Min Summer   | 9.424                     | 0.00                | 0.00              |
| 30Yr 720Min Winter   | 5.227                     | 0.00                | 0.00              | 100Yr+45% 720Min Winter   | 9.424                     | 0.00                | 0.00              |
| 30Yr 960Min Summer   | 4.113                     | 0.00                | 0.00              | 100Yr+45% 960Min Summer   | 7.423                     | 0.00                | 0.00              |
| 30Yr 960Min Winter   | 4.113                     | 0.00                | 0.00              | 100Yr+45% 960Min Winter   | 7.423                     | 0.00                | 0.00              |
| 30Yr 1440Min Summer  | 2.943                     | 0.00                | 0.00              | 100Yr+45% 1440Min Summer  | 5.305                     | 0.00                | 0.00              |
| 30Yr 1440Min Winter  | 2.943                     | 0.00                | 0.00              | 100Yr+45% 1440Min Winter  | 5.305                     | 0.00                | 0.00              |
| 30Yr 2160Min Summer  | 2.120                     | 0.00                | 0.00              | 100Yr+45% 2160Min Summer  | 3.805                     | 0.00                | 0.00              |
| 30Yr 2160Min Winter  | 2.120                     | 0.00                | 0.00              | 100Yr+45% 2160Min Winter  | 3.805                     | 0.00                | 0.00              |
| 30Yr 2880Min Summer  | 1.689                     | 0.00                | 0.00              | 100Yr+45% 2880Min Summer  | 3.008                     | 0.00                | 0.00              |
| 30Yr 2880Min Winter  | 1.689                     | 0.00                | 0.00              | 100Yr+45% 2880Min Winter  | 3.008                     | 0.00                | 0.00              |
| 30Yr 4320Min Summer  | 1.248                     | 0.00                | 0.00              | 100Yr+45% 4320Min Summer  | 2.193                     | 0.00                | 0.00              |
| 30Yr 4320Min Winter  | 1.248                     | 0.00                | 0.00              | 100Yr+45% 4320Min Winter  | 2.193                     | 0.00                | 0.00              |
| 30Yr 5760Min Summer  | 1.024                     | 0.00                | 0.00              | 100Yr+45% 5760Min Summer  | 1.778                     | 0.00                | 0.00              |
| 30Yr 5760Min Winter  | 1.024                     | 0.00                | 0.00              | 100Yr+45% 5760Min Winter  | 1.778                     | 0.00                | 0.00              |
| 30Yr 7200Min Summer  | 0.887                     | 0.00                | 0.00              | 100Yr+45% 7200Min Summer  | 1.524                     | 0.00                | 0.00              |
| 30Yr 7200Min Winter  | 0.887                     | 0.00                | 0.00              | 100Yr+45% 7200Min Winter  | 1.524                     | 0.00                | 0.00              |
| 30Yr 8640Min Summer  | 0.794                     | 0.00                | 0.00              | 100Yr+45% 8640Min Summer  | 1.353                     | 0.00                | 0.00              |
| 30Yr 8640Min Winter  | 0.794                     | 0.00                | 0.00              | 100Yr+45% 8640Min Winter  | 1.353                     | 0.00                | 0.00              |
| 30Yr 10080Min Summer | 0.726                     | 0.00                | 0.00              | 100Yr+45% 10080Min Summer | 1.227                     | 0.00                | 0.00              |
| 30Yr 10080Min Winter | 0.726                     | 0.00                | 0.00              | 100Yr+45% 10080Min Winter | 1.227                     | 0.00                | 0.00              |

## Simulation Results

Return Period (yrs) + Climate Change (%):  
2yr+0%

### Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status |
|---------|----------------|-------------|-----------|-----------|--------------|------------|--------|
| S24     | 15 min Summer  | 8           | 15.714    | 0.014     | 0.522        |            | OK     |
| S25     | 180 min Summer | 118         | 15.454    | 0.154     | 0.055        |            | OK     |

### Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 15 min Summer  | 8           | S24        | S25        | 0.013          | 0.662              | 0.516          | 0.017           | OK     |

Return Period (yrs) + Climate Change (%):

10yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status |
|---------|----------------|-------------|-----------|-----------|--------------|------------|--------|
| S24     | 15 min Summer  | 8           | 15.719    | 0.019     | 1.012        |            | OK     |
| S25     | 180 min Summer | 118         | 15.558    | 0.258     | 0.091        |            | OK     |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 15 min Summer  | 8           | S24        | S25        | 0.018          | 0.803              | 1.004          | 0.032           | OK     |

Return Period (yrs) + Climate Change (%):

30yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status |
|---------|----------------|-------------|-----------|-----------|--------------|------------|--------|
| S24     | 15 min Summer  | 8           | 15.722    | 0.022     | 1.314        |            | OK     |
| S25     | 180 min Summer | 118         | 15.618    | 0.318     | 0.113        |            | OK     |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 180 min Summer | 117         | S24        | S25        | 0.037          | 0.636              | 0.452          | 0.015           | OK     |

Return Period (yrs) + Climate Change (%):

30yr+40%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S24     | 180 min Summer | 120         | 15.762    | 0.062     | 0.141        |            | OK         |
| S25     | 180 min Summer | 120         | 15.762    | 0.462     | 0.141        |            | Surcharged |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 180 min Summer | 120         | S24        | S25        | 0.106          | 0.681              | 0.632          | 0.020           | OK     |

Return Period (yrs) + Climate Change (%):

100yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status |
|---------|----------------|-------------|-----------|-----------|--------------|------------|--------|
| S24     | 15 min Summer  | 8           | 15.724    | 0.024     | 1.644        |            | OK     |
| S25     | 120 min Summer | 84          | 15.690    | 0.390     | 0.140        |            | OK     |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 120 min Summer | 83          | S24        | S25        | 0.074          | 0.736              | 0.742          | 0.024           | OK     |

Return Period (yrs) + Climate Change (%):

100yr+45%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S24     | 120 min Summer | 94          | 16.012    | 0.312     | 0.141        |            | Surcharged |
| S25     | 120 min Summer | 94          | 16.012    | 0.712     | 0.141        |            | Surcharged |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 60 min Winter  | 39          | S24        | S25        | 0.150          | 0.823              | 1.168          | 0.038           | Surcharged |

## PLOT 4 CALCULATIONS

## Network Details

### Manhole Schedule

| Manhole | Catchment Area (ha) | Size (mm) | Type    | CL (m) | IL (m) | Depth To Soffit (m) | Easting (m) | Northing (m) |
|---------|---------------------|-----------|---------|--------|--------|---------------------|-------------|--------------|
| S19     | 0.002               | 100       | Unknown | 16.825 | 16.125 | 0.600               | 494832.239  | 106015.533   |
| S20     | 0.000               | 450       | Unknown | 16.825 | 16.025 | 0.700               | 494829.037  | 106007.224   |
| S21     | 0.000               | 450       | Unknown | 16.700 | 15.925 | 0.675               | 494820.882  | 106010.367   |
| S22     | 0.006               | 450       | Unknown | 16.700 | 15.750 | 0.800               | 494822.672  | 106015.011   |
| S23     | 0.000               | 150       | Unknown | 16.700 | 15.700 | 0.850               | 494818.006  | 106016.809   |

### Pipe Schedule

| Pipe Number | US Manhole | US IL (m) | DS Manhole | DS IL (m) | Shape | Dimension (mm) | Length (m) | Gradient (1:x) | Roughness (mm) | US Depth To Soffit (m) | DS Depth To Soffit (m) |
|-------------|------------|-----------|------------|-----------|-------|----------------|------------|----------------|----------------|------------------------|------------------------|
| 1.000       | S19        | 16.125    | S20        | 16.025    | Circ  | 100            | 8.904      | 89             | 0.600          | 0.600                  | 0.700                  |
| 1.001       | S20        | 16.025    | S21        | 15.925    | Circ  | 100            | 8.740      | 87             | 0.600          | 0.700                  | 0.675                  |
| 1.002       | S21        | 15.925    | S22        | 15.800    | Circ  | 100            | 4.976      | 40             | 0.600          | 0.675                  | 0.800                  |
| 1.003       | S22        | 15.750    | S23        | 15.700    | Circ  | 150            | 5.000      | 100            | 0.600          | 0.800                  | 0.850                  |

## Outfall Details

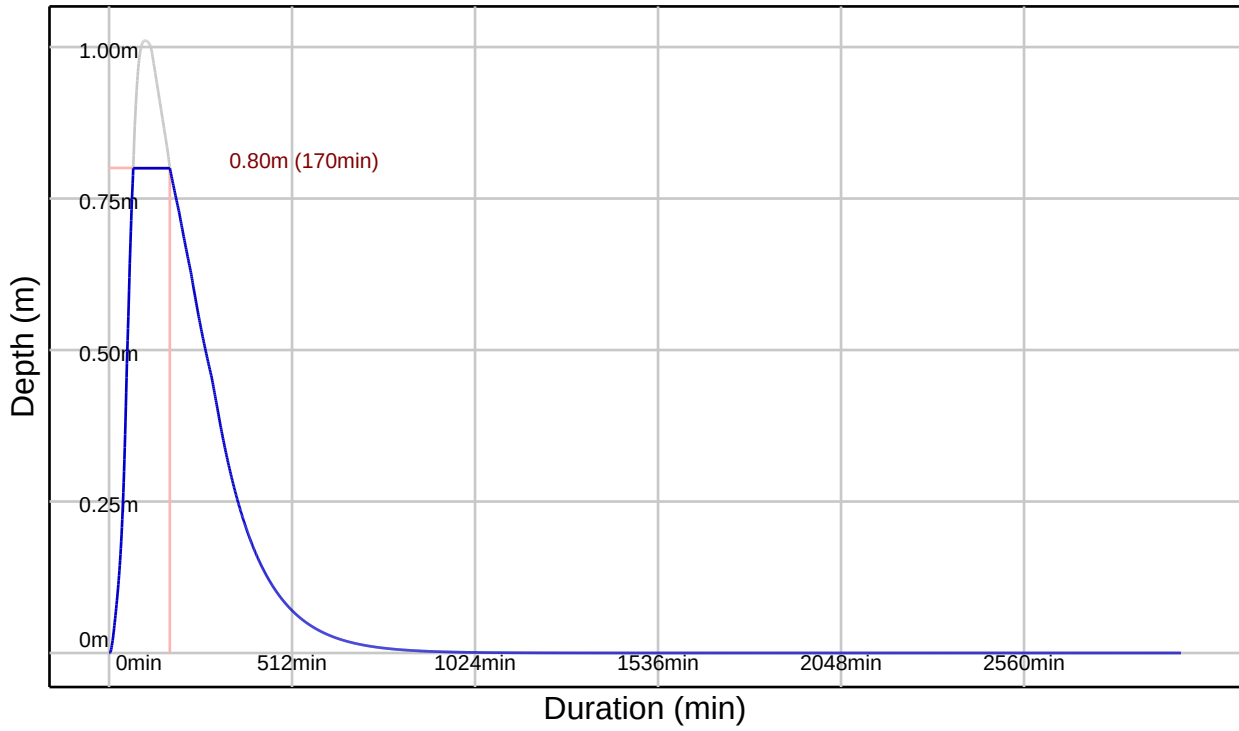
### Outfall Manhole S23 : Infiltration Tank

## Flow Control Details

### Tank Structure at Manhole S23

| Tank Invert (m) | Tank Height (m) | Porosity Ratio (%) | Area (m2) | Effective Area (m2)<br>Area x Porosity Ratio | Max Storage (m3)<br>Effective Area x Height | Infil Base (m/hr) | Infil Side (m/hr) | Safety Factor |
|-----------------|-----------------|--------------------|-----------|----------------------------------------------|---------------------------------------------|-------------------|-------------------|---------------|
| 15.300          | 0.800           | 95.00              | 3.000     | 2.850                                        | 2.280                                       | 0.00000000        | 0.36000000        | 2.00          |

## Plot 4 Soakaway at S23 (100Yr+45% 120Min Winter)



## Simulation Settings

FEH2022 (point): Filename=FEH\_Point\_Descriptors\_494846\_106034\_v5\_0\_1.xml

Summer (Cv: 1.00), Winter (Cv: 1.00)

Global Time of Entry: 5.0 mins

Durations (mins): 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080

Return Periods (yrs) + Climate Change: (2, +0%), (10, +0%), (30, +0%), (30, +40%), (100, +0%), (100, +45%)

Manhole Flood Risk Freeboard: 0.300m

## Simulated Rainfall Events

| Storm               | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % | Storm                    | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % |
|---------------------|---------------------------|---------------------|-------------------|--------------------------|---------------------------|---------------------|-------------------|
| 2Yr 15Min Winter    | 32.749                    | 0.00                | 0.00              | 30Yr+40% 15Min Summer    | 115.400                   | 0.00                | 0.00              |
| 2Yr 15Min Summer    | 32.749                    | 0.00                | 0.00              | 30Yr+40% 15Min Winter    | 115.400                   | 0.00                | 0.00              |
| 2Yr 30Min Winter    | 21.400                    | 0.00                | 0.00              | 30Yr+40% 30Min Summer    | 76.723                    | 0.00                | 0.00              |
| 2Yr 30Min Summer    | 21.400                    | 0.00                | 0.00              | 30Yr+40% 30Min Winter    | 76.723                    | 0.00                | 0.00              |
| 2Yr 60Min Winter    | 13.587                    | 0.00                | 0.00              | 30Yr+40% 60Min Summer    | 48.813                    | 0.00                | 0.00              |
| 2Yr 60Min Summer    | 13.587                    | 0.00                | 0.00              | 30Yr+40% 60Min Winter    | 48.813                    | 0.00                | 0.00              |
| 2Yr 120Min Summer   | 9.453                     | 0.00                | 0.00              | 30Yr+40% 120Min Summer   | 29.821                    | 0.00                | 0.00              |
| 2Yr 120Min Winter   | 9.453                     | 0.00                | 0.00              | 30Yr+40% 120Min Winter   | 29.821                    | 0.00                | 0.00              |
| 2Yr 180Min Winter   | 7.477                     | 0.00                | 0.00              | 30Yr+40% 180Min Summer   | 22.101                    | 0.00                | 0.00              |
| 2Yr 180Min Summer   | 7.477                     | 0.00                | 0.00              | 30Yr+40% 180Min Winter   | 22.101                    | 0.00                | 0.00              |
| 2Yr 240Min Summer   | 6.107                     | 0.00                | 0.00              | 30Yr+40% 240Min Summer   | 17.734                    | 0.00                | 0.00              |
| 2Yr 240Min Winter   | 6.107                     | 0.00                | 0.00              | 30Yr+40% 240Min Winter   | 17.734                    | 0.00                | 0.00              |
| 2Yr 360Min Summer   | 4.586                     | 0.00                | 0.00              | 30Yr+40% 360Min Summer   | 12.872                    | 0.00                | 0.00              |
| 2Yr 360Min Winter   | 4.586                     | 0.00                | 0.00              | 30Yr+40% 360Min Winter   | 12.872                    | 0.00                | 0.00              |
| 2Yr 480Min Summer   | 3.720                     | 0.00                | 0.00              | 30Yr+40% 480Min Summer   | 10.214                    | 0.00                | 0.00              |
| 2Yr 480Min Winter   | 3.720                     | 0.00                | 0.00              | 30Yr+40% 480Min Winter   | 10.214                    | 0.00                | 0.00              |
| 2Yr 600Min Summer   | 3.134                     | 0.00                | 0.00              | 30Yr+40% 600Min Summer   | 8.511                     | 0.00                | 0.00              |
| 2Yr 600Min Winter   | 3.134                     | 0.00                | 0.00              | 30Yr+40% 600Min Winter   | 8.511                     | 0.00                | 0.00              |
| 2Yr 720Min Summer   | 2.713                     | 0.00                | 0.00              | 30Yr+40% 720Min Summer   | 7.317                     | 0.00                | 0.00              |
| 2Yr 720Min Winter   | 2.713                     | 0.00                | 0.00              | 30Yr+40% 720Min Winter   | 7.317                     | 0.00                | 0.00              |
| 2Yr 960Min Summer   | 2.169                     | 0.00                | 0.00              | 30Yr+40% 960Min Summer   | 5.758                     | 0.00                | 0.00              |
| 2Yr 960Min Winter   | 2.169                     | 0.00                | 0.00              | 30Yr+40% 960Min Winter   | 5.758                     | 0.00                | 0.00              |
| 2Yr 1440Min Winter  | 1.591                     | 0.00                | 0.00              | 30Yr+40% 1440Min Summer  | 4.120                     | 0.00                | 0.00              |
| 2Yr 1440Min Summer  | 1.591                     | 0.00                | 0.00              | 30Yr+40% 1440Min Winter  | 4.120                     | 0.00                | 0.00              |
| 2Yr 2160Min Summer  | 1.178                     | 0.00                | 0.00              | 30Yr+40% 2160Min Summer  | 2.968                     | 0.00                | 0.00              |
| 2Yr 2160Min Winter  | 1.178                     | 0.00                | 0.00              | 30Yr+40% 2160Min Winter  | 2.968                     | 0.00                | 0.00              |
| 2Yr 2880Min Summer  | 0.962                     | 0.00                | 0.00              | 30Yr+40% 2880Min Summer  | 2.364                     | 0.00                | 0.00              |
| 2Yr 2880Min Winter  | 0.962                     | 0.00                | 0.00              | 30Yr+40% 2880Min Winter  | 2.364                     | 0.00                | 0.00              |
| 2Yr 4320Min Summer  | 0.740                     | 0.00                | 0.00              | 30Yr+40% 4320Min Summer  | 1.748                     | 0.00                | 0.00              |
| 2Yr 4320Min Winter  | 0.740                     | 0.00                | 0.00              | 30Yr+40% 4320Min Winter  | 1.748                     | 0.00                | 0.00              |
| 2Yr 5760Min Summer  | 0.627                     | 0.00                | 0.00              | 30Yr+40% 5760Min Summer  | 1.434                     | 0.00                | 0.00              |
| 2Yr 5760Min Winter  | 0.627                     | 0.00                | 0.00              | 30Yr+40% 5760Min Winter  | 1.434                     | 0.00                | 0.00              |
| 2Yr 7200Min Summer  | 0.558                     | 0.00                | 0.00              | 30Yr+40% 7200Min Summer  | 1.242                     | 0.00                | 0.00              |
| 2Yr 7200Min Winter  | 0.558                     | 0.00                | 0.00              | 30Yr+40% 7200Min Winter  | 1.242                     | 0.00                | 0.00              |
| 2Yr 8640Min Summer  | 0.510                     | 0.00                | 0.00              | 30Yr+40% 8640Min Summer  | 1.111                     | 0.00                | 0.00              |
| 2Yr 8640Min Winter  | 0.510                     | 0.00                | 0.00              | 30Yr+40% 8640Min Winter  | 1.111                     | 0.00                | 0.00              |
| 2Yr 10080Min Summer | 0.475                     | 0.00                | 0.00              | 30Yr+40% 10080Min Summer | 1.016                     | 0.00                | 0.00              |
| 2Yr 10080Min Winter | 0.475                     | 0.00                | 0.00              | 30Yr+40% 10080Min Winter | 1.016                     | 0.00                | 0.00              |
| 10Yr 15Min Summer   | 63.472                    | 0.00                | 0.00              | 100Yr 15Min Summer       | 103.039                   | 0.00                | 0.00              |
| 10Yr 15Min Winter   | 63.472                    | 0.00                | 0.00              | 100Yr 15Min Winter       | 103.039                   | 0.00                | 0.00              |
| 10Yr 30Min Summer   | 41.975                    | 0.00                | 0.00              | 100Yr 30Min Summer       | 69.133                    | 0.00                | 0.00              |
| 10Yr 30Min Winter   | 41.975                    | 0.00                | 0.00              | 100Yr 30Min Winter       | 69.133                    | 0.00                | 0.00              |
| 10Yr 60Min Summer   | 26.518                    | 0.00                | 0.00              | 100Yr 60Min Summer       | 44.424                    | 0.00                | 0.00              |
| 10Yr 60Min Winter   | 26.518                    | 0.00                | 0.00              | 100Yr 60Min Winter       | 44.424                    | 0.00                | 0.00              |
| 10Yr 120Min Summer  | 16.678                    | 0.00                | 0.00              | 100Yr 120Min Summer      | 26.631                    | 0.00                | 0.00              |
| 10Yr 120Min Winter  | 16.678                    | 0.00                | 0.00              | 100Yr 120Min Winter      | 26.631                    | 0.00                | 0.00              |
| 10Yr 180Min Summer  | 12.547                    | 0.00                | 0.00              | 100Yr 180Min Summer      | 19.524                    | 0.00                | 0.00              |
| 10Yr 180Min Winter  | 12.547                    | 0.00                | 0.00              | 100Yr 180Min Winter      | 19.524                    | 0.00                | 0.00              |
| 10Yr 240Min Summer  | 10.114                    | 0.00                | 0.00              | 100Yr 240Min Summer      | 15.695                    | 0.00                | 0.00              |
| 10Yr 240Min Winter  | 10.114                    | 0.00                | 0.00              | 100Yr 240Min Winter      | 15.695                    | 0.00                | 0.00              |
| 10Yr 360Min Summer  | 7.394                     | 0.00                | 0.00              | 100Yr 360Min Summer      | 11.386                    | 0.00                | 0.00              |
| 10Yr 360Min Winter  | 7.394                     | 0.00                | 0.00              | 100Yr 360Min Winter      | 11.386                    | 0.00                | 0.00              |
| 10Yr 480Min Summer  | 5.892                     | 0.00                | 0.00              | 100Yr 480Min Summer      | 9.035                     | 0.00                | 0.00              |
| 10Yr 480Min Winter  | 5.892                     | 0.00                | 0.00              | 100Yr 480Min Winter      | 9.035                     | 0.00                | 0.00              |

## Simulated Rainfall Events

| Storm                | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % | Storm                     | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % |
|----------------------|---------------------------|---------------------|-------------------|---------------------------|---------------------------|---------------------|-------------------|
| 10Yr 600Min Summer   | 4.919                     | 0.00                | 0.00              | 100Yr 600Min Summer       | 7.544                     | 0.00                | 0.00              |
| 10Yr 600Min Winter   | 4.919                     | 0.00                | 0.00              | 100Yr 600Min Winter       | 7.544                     | 0.00                | 0.00              |
| 10Yr 720Min Summer   | 4.233                     | 0.00                | 0.00              | 100Yr 720Min Summer       | 6.499                     | 0.00                | 0.00              |
| 10Yr 720Min Winter   | 4.233                     | 0.00                | 0.00              | 100Yr 720Min Winter       | 6.499                     | 0.00                | 0.00              |
| 10Yr 960Min Summer   | 3.341                     | 0.00                | 0.00              | 100Yr 960Min Summer       | 5.119                     | 0.00                | 0.00              |
| 10Yr 960Min Winter   | 3.341                     | 0.00                | 0.00              | 100Yr 960Min Winter       | 5.119                     | 0.00                | 0.00              |
| 10Yr 1440Min Summer  | 2.405                     | 0.00                | 0.00              | 100Yr 1440Min Summer      | 3.659                     | 0.00                | 0.00              |
| 10Yr 1440Min Winter  | 2.405                     | 0.00                | 0.00              | 100Yr 1440Min Winter      | 3.659                     | 0.00                | 0.00              |
| 10Yr 2160Min Summer  | 1.746                     | 0.00                | 0.00              | 100Yr 2160Min Summer      | 2.624                     | 0.00                | 0.00              |
| 10Yr 2160Min Winter  | 1.746                     | 0.00                | 0.00              | 100Yr 2160Min Winter      | 2.624                     | 0.00                | 0.00              |
| 10Yr 2880Min Summer  | 1.400                     | 0.00                | 0.00              | 100Yr 2880Min Summer      | 2.074                     | 0.00                | 0.00              |
| 10Yr 2880Min Winter  | 1.400                     | 0.00                | 0.00              | 100Yr 2880Min Winter      | 2.074                     | 0.00                | 0.00              |
| 10Yr 4320Min Summer  | 1.048                     | 0.00                | 0.00              | 100Yr 4320Min Summer      | 1.512                     | 0.00                | 0.00              |
| 10Yr 4320Min Winter  | 1.048                     | 0.00                | 0.00              | 100Yr 4320Min Winter      | 1.512                     | 0.00                | 0.00              |
| 10Yr 5760Min Summer  | 0.869                     | 0.00                | 0.00              | 100Yr 5760Min Summer      | 1.226                     | 0.00                | 0.00              |
| 10Yr 5760Min Winter  | 0.869                     | 0.00                | 0.00              | 100Yr 5760Min Winter      | 1.226                     | 0.00                | 0.00              |
| 10Yr 7200Min Summer  | 0.760                     | 0.00                | 0.00              | 100Yr 7200Min Summer      | 1.051                     | 0.00                | 0.00              |
| 10Yr 7200Min Winter  | 0.760                     | 0.00                | 0.00              | 100Yr 7200Min Winter      | 1.051                     | 0.00                | 0.00              |
| 10Yr 8640Min Summer  | 0.685                     | 0.00                | 0.00              | 100Yr 8640Min Summer      | 0.933                     | 0.00                | 0.00              |
| 10Yr 8640Min Winter  | 0.685                     | 0.00                | 0.00              | 100Yr 8640Min Winter      | 0.933                     | 0.00                | 0.00              |
| 10Yr 10080Min Summer | 0.630                     | 0.00                | 0.00              | 100Yr 10080Min Summer     | 0.846                     | 0.00                | 0.00              |
| 10Yr 10080Min Winter | 0.630                     | 0.00                | 0.00              | 100Yr 10080Min Winter     | 0.846                     | 0.00                | 0.00              |
| 30Yr 15Min Summer    | 82.428                    | 0.00                | 0.00              | 100Yr+45% 15Min Summer    | 149.406                   | 0.00                | 0.00              |
| 30Yr 15Min Winter    | 82.428                    | 0.00                | 0.00              | 100Yr+45% 15Min Winter    | 149.406                   | 0.00                | 0.00              |
| 30Yr 30Min Summer    | 54.802                    | 0.00                | 0.00              | 100Yr+45% 30Min Summer    | 100.242                   | 0.00                | 0.00              |
| 30Yr 30Min Winter    | 54.802                    | 0.00                | 0.00              | 100Yr+45% 30Min Winter    | 100.242                   | 0.00                | 0.00              |
| 30Yr 60Min Summer    | 34.866                    | 0.00                | 0.00              | 100Yr+45% 60Min Summer    | 64.415                    | 0.00                | 0.00              |
| 30Yr 60Min Winter    | 34.866                    | 0.00                | 0.00              | 100Yr+45% 60Min Winter    | 64.415                    | 0.00                | 0.00              |
| 30Yr 120Min Summer   | 21.301                    | 0.00                | 0.00              | 100Yr+45% 120Min Summer   | 38.616                    | 0.00                | 0.00              |
| 30Yr 120Min Winter   | 21.301                    | 0.00                | 0.00              | 100Yr+45% 120Min Winter   | 38.616                    | 0.00                | 0.00              |
| 30Yr 180Min Summer   | 15.787                    | 0.00                | 0.00              | 100Yr+45% 180Min Summer   | 28.310                    | 0.00                | 0.00              |
| 30Yr 180Min Winter   | 15.787                    | 0.00                | 0.00              | 100Yr+45% 180Min Winter   | 28.310                    | 0.00                | 0.00              |
| 30Yr 240Min Summer   | 12.667                    | 0.00                | 0.00              | 100Yr+45% 240Min Summer   | 22.758                    | 0.00                | 0.00              |
| 30Yr 240Min Winter   | 12.667                    | 0.00                | 0.00              | 100Yr+45% 240Min Winter   | 22.758                    | 0.00                | 0.00              |
| 30Yr 360Min Summer   | 9.194                     | 0.00                | 0.00              | 100Yr+45% 360Min Summer   | 16.509                    | 0.00                | 0.00              |
| 30Yr 360Min Winter   | 9.194                     | 0.00                | 0.00              | 100Yr+45% 360Min Winter   | 16.509                    | 0.00                | 0.00              |
| 30Yr 480Min Summer   | 7.295                     | 0.00                | 0.00              | 100Yr+45% 480Min Summer   | 13.100                    | 0.00                | 0.00              |
| 30Yr 480Min Winter   | 7.295                     | 0.00                | 0.00              | 100Yr+45% 480Min Winter   | 13.100                    | 0.00                | 0.00              |
| 30Yr 600Min Summer   | 6.080                     | 0.00                | 0.00              | 100Yr+45% 600Min Summer   | 10.939                    | 0.00                | 0.00              |
| 30Yr 600Min Winter   | 6.080                     | 0.00                | 0.00              | 100Yr+45% 600Min Winter   | 10.939                    | 0.00                | 0.00              |
| 30Yr 720Min Summer   | 5.227                     | 0.00                | 0.00              | 100Yr+45% 720Min Summer   | 9.424                     | 0.00                | 0.00              |
| 30Yr 720Min Winter   | 5.227                     | 0.00                | 0.00              | 100Yr+45% 720Min Winter   | 9.424                     | 0.00                | 0.00              |
| 30Yr 960Min Summer   | 4.113                     | 0.00                | 0.00              | 100Yr+45% 960Min Summer   | 7.423                     | 0.00                | 0.00              |
| 30Yr 960Min Winter   | 4.113                     | 0.00                | 0.00              | 100Yr+45% 960Min Winter   | 7.423                     | 0.00                | 0.00              |
| 30Yr 1440Min Summer  | 2.943                     | 0.00                | 0.00              | 100Yr+45% 1440Min Summer  | 5.305                     | 0.00                | 0.00              |
| 30Yr 1440Min Winter  | 2.943                     | 0.00                | 0.00              | 100Yr+45% 1440Min Winter  | 5.305                     | 0.00                | 0.00              |
| 30Yr 2160Min Summer  | 2.120                     | 0.00                | 0.00              | 100Yr+45% 2160Min Summer  | 3.805                     | 0.00                | 0.00              |
| 30Yr 2160Min Winter  | 2.120                     | 0.00                | 0.00              | 100Yr+45% 2160Min Winter  | 3.805                     | 0.00                | 0.00              |
| 30Yr 2880Min Summer  | 1.689                     | 0.00                | 0.00              | 100Yr+45% 2880Min Summer  | 3.008                     | 0.00                | 0.00              |
| 30Yr 2880Min Winter  | 1.689                     | 0.00                | 0.00              | 100Yr+45% 2880Min Winter  | 3.008                     | 0.00                | 0.00              |
| 30Yr 4320Min Summer  | 1.248                     | 0.00                | 0.00              | 100Yr+45% 4320Min Summer  | 2.193                     | 0.00                | 0.00              |
| 30Yr 4320Min Winter  | 1.248                     | 0.00                | 0.00              | 100Yr+45% 4320Min Winter  | 2.193                     | 0.00                | 0.00              |
| 30Yr 5760Min Summer  | 1.024                     | 0.00                | 0.00              | 100Yr+45% 5760Min Summer  | 1.778                     | 0.00                | 0.00              |
| 30Yr 5760Min Winter  | 1.024                     | 0.00                | 0.00              | 100Yr+45% 5760Min Winter  | 1.778                     | 0.00                | 0.00              |
| 30Yr 7200Min Summer  | 0.887                     | 0.00                | 0.00              | 100Yr+45% 7200Min Summer  | 1.524                     | 0.00                | 0.00              |
| 30Yr 7200Min Winter  | 0.887                     | 0.00                | 0.00              | 100Yr+45% 7200Min Winter  | 1.524                     | 0.00                | 0.00              |
| 30Yr 8640Min Summer  | 0.794                     | 0.00                | 0.00              | 100Yr+45% 8640Min Summer  | 1.353                     | 0.00                | 0.00              |
| 30Yr 8640Min Winter  | 0.794                     | 0.00                | 0.00              | 100Yr+45% 8640Min Winter  | 1.353                     | 0.00                | 0.00              |
| 30Yr 10080Min Summer | 0.726                     | 0.00                | 0.00              | 100Yr+45% 10080Min Summer | 1.227                     | 0.00                | 0.00              |
| 30Yr 10080Min Winter | 0.726                     | 0.00                | 0.00              | 100Yr+45% 10080Min Winter | 1.227                     | 0.00                | 0.00              |

## Simulation Results

Return Period (yrs) + Climate Change (%):

2yr+0%

### Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status |
|---------|----------------|-------------|-----------|-----------|--------------|------------|--------|
| S19     | 15 min Summer  | 8           | 16.139    | 0.014     | 0.293        |            | OK     |
| S20     | 15 min Summer  | 9           | 16.040    | 0.015     | 0.287        |            | OK     |
| S21     | 15 min Summer  | 9           | 15.937    | 0.012     | 0.289        |            | OK     |
| S22     | 15 min Summer  | 9           | 15.779    | 0.029     | 1.335        |            | OK     |
| S23     | 240 min Summer | 154         | 15.644    | 0.344     | 0.138        |            | OK     |

### Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 15 min Summer  | 9           | S19        | S20        | 0.014          | 0.412              | 0.287          | 0.045           | OK     |
| 1.001    | 15 min Summer  | 9           | S20        | S21        | 0.013          | 0.474              | 0.289          | 0.045           | OK     |
| 1.002    | 15 min Summer  | 9           | S21        | S22        | 0.012          | 0.560              | 0.284          | 0.029           | OK     |
| 1.003    | 15 min Summer  | 9           | S22        | S23        | 0.028          | 0.588              | 1.341          | 0.076           | OK     |

Return Period (yrs) + Climate Change (%):

10yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status |
|---------|----------------|-------------|-----------|-----------|--------------|------------|--------|
| S19     | 15 min Summer  | 8           | 16.145    | 0.020     | 0.568        |            | OK     |
| S20     | 15 min Summer  | 9           | 16.045    | 0.020     | 0.554        |            | OK     |
| S21     | 15 min Summer  | 9           | 15.941    | 0.016     | 0.560        |            | OK     |
| S22     | 180 min Summer | 120         | 15.839    | 0.089     | 0.234        |            | OK     |
| S23     | 180 min Summer | 121         | 15.839    | 0.539     | 0.069        |            | OK     |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 15 min Summer  | 8           | S19        | S20        | 0.020          | 0.499              | 0.560          | 0.088           | OK     |
| 1.001    | 15 min Summer  | 9           | S20        | S21        | 0.018          | 0.571              | 0.560          | 0.087           | OK     |
| 1.002    | 180 min Summer | 120         | S21        | S22        | 0.022          | 0.507              | 0.200          | 0.021           | OK     |
| 1.003    | 180 min Summer | 120         | S22        | S23        | 0.114          | 0.534              | 0.949          | 0.054           | OK     |

Return Period (yrs) + Climate Change (%):

30yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S19     | 15 min Summer  | 8           | 16.148    | 0.023     | 0.738        |            | OK         |
| S20     | 15 min Summer  | 9           | 16.048    | 0.023     | 0.718        |            | OK         |
| S21     | 180 min Summer | 122         | 15.944    | 0.019     | 0.057        |            | OK         |
| S22     | 180 min Summer | 121         | 15.943    | 0.193     | 0.277        |            | Surcharged |
| S23     | 180 min Summer | 121         | 15.943    | 0.643     | 0.274        |            | OK         |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 15 min Summer  | 8           | S19        | S20        | 0.023          | 0.538              | 0.728          | 0.114           | OK         |
| 1.001    | 15 min Summer  | 9           | S20        | S21        | 0.021          | 0.615              | 0.726          | 0.113           | OK         |
| 1.002    | 180 min Summer | 122         | S21        | S22        | 0.059          | 0.540              | 0.252          | 0.026           | OK         |
| 1.003    | 60 min Winter  | 46          | S22        | S23        | 0.150          | 0.625              | 1.714          | 0.097           | Surcharged |

Return Period (yrs) + Climate Change (%):

30yr+40%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S19     | 15 min Summer  | 8           | 16.152    | 0.027     | 1.033        |            | OK         |
| S20     | 180 min Summer | 124         | 16.103    | 0.078     | 0.070        |            | OK         |
| S21     | 180 min Summer | 124         | 16.102    | 0.177     | 0.063        |            | Surcharged |
| S22     | 180 min Summer | 124         | 16.102    | 0.352     | 0.315        |            | Surcharged |
| S23     | 180 min Summer | 124         | 16.102    | 0.802     | 0.319        |            | Surcharged |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 180 min Summer | 123         | S19        | S20        | 0.042          | 0.435              | 0.355          | 0.056           | OK         |
| 1.001    | 180 min Summer | 124         | S20        | S21        | 0.089          | 0.503              | 0.367          | 0.057           | OK         |
| 1.002    | 60 min Winter  | 41          | S21        | S22        | 0.100          | 0.657              | 0.503          | 0.052           | Surcharged |
| 1.003    | 30 min Winter  | 20          | S22        | S23        | 0.150          | 0.754              | 3.481          | 0.196           | Surcharged |

Return Period (yrs) + Climate Change (%):

100yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S19     | 15 min Summer  | 8           | 16.151    | 0.026     | 0.922        |            | OK         |
| S20     | 15 min Summer  | 9           | 16.051    | 0.026     | 0.897        |            | OK         |
| S21     | 120 min Winter | 94          | 16.045    | 0.120     | 0.047        |            | Surcharged |
| S22     | 120 min Winter | 94          | 16.045    | 0.295     | 0.276        |            | Surcharged |
| S23     | 120 min Winter | 94          | 16.045    | 0.745     | 0.280        |            | OK         |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 15 min Summer  | 8           | S19        | S20        | 0.026          | 0.573              | 0.912          | 0.143           | OK         |
| 1.001    | 120 min Winter | 93          | S20        | S21        | 0.060          | 0.467              | 0.277          | 0.043           | OK         |
| 1.002    | 120 min Summer | 76          | S21        | S22        | 0.100          | 0.609              | 0.414          | 0.043           | Surcharged |
| 1.003    | 30 min Winter  | 22          | S22        | S23        | 0.150          | 0.738              | 3.140          | 0.177           | Surcharged |

Return Period (yrs) + Climate Change (%):

100yr+45%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S19     | 120 min Winter | 101         | 16.311    | 0.186     | 0.068        |            | Surcharged |
| S20     | 120 min Winter | 101         | 16.311    | 0.286     | 0.065        |            | Surcharged |
| S21     | 120 min Winter | 101         | 16.311    | 0.386     | 0.064        |            | Surcharged |
| S22     | 120 min Winter | 102         | 16.311    | 0.561     | 0.320        |            | Surcharged |
| S23     | 120 min Winter | 102         | 16.311    | 1.011     | 0.321        |            | Surcharged |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 60 min Winter  | 45          | S19        | S20        | 0.100          | 0.530              | 0.656          | 0.103           | Surcharged |
| 1.001    | 30 min Winter  | 27          | S20        | S21        | 0.100          | 0.674              | 0.962          | 0.149           | Surcharged |
| 1.002    | 30 min Winter  | 20          | S21        | S22        | 0.100          | 0.790              | 0.963          | 0.100           | Surcharged |
| 1.003    | 15 min Winter  | 11          | S22        | S23        | 0.150          | 0.861              | 5.778          | 0.326           | Surcharged |

## PLOT 7 CALCULATIONS

## Network Details

### Manhole Schedule

| Manhole | Catchment Area (ha) | Size (mm) | Type    | CL (m) | IL (m) | Depth To Soffit (m) | Easting (m) | Northing (m) |
|---------|---------------------|-----------|---------|--------|--------|---------------------|-------------|--------------|
| S45     | 0.000               | 100       | Unknown | 16.100 | 15.600 | 0.400               | 494766.201  | 106007.166   |
| S46     | 0.000               | 450       | Unknown | 16.100 | 15.500 | 0.500               | 494762.763  | 105998.083   |
| S41     | 0.000               | 100       | Unknown | 16.100 | 15.600 | 0.400               | 494784.850  | 106000.107   |
| S42     | 0.000               | 450       | Unknown | 16.367 | 15.500 | 0.767               | 494781.412  | 105991.024   |
| S43     | 0.014               | 450       | Unknown | 16.294 | 15.400 | 0.744               | 494776.612  | 105992.841   |
| S44     | 0.000               | 150       | Unknown | 16.107 | 15.375 | 0.582               | 494775.025  | 105988.648   |

### Pipe Schedule

| Pipe Number | US Manhole | US IL (m) | DS Manhole | DS IL (m) | Shape | Dimension (mm) | Length (m) | Gradient (1:x) | Roughness (mm) | US Depth To Soffit (m) | DS Depth To Soffit (m) |
|-------------|------------|-----------|------------|-----------|-------|----------------|------------|----------------|----------------|------------------------|------------------------|
| 1.000       | S45        | 15.600    | S46        | 15.500    | Circ  | 100            | 9.712      | 97             | 0.600          | 0.400                  | 0.500                  |
| 1.001       | S46        | 15.500    | S43        | 15.400    | Circ  | 150            | 14.808     | 148            | 0.600          | 0.450                  | 0.744                  |
| 2.000       | S41        | 15.600    | S42        | 15.500    | Circ  | 100            | 9.712      | 97             | 0.600          | 0.400                  | 0.767                  |
| 2.001       | S42        | 15.500    | S43        | 15.400    | Circ  | 150            | 5.132      | 51             | 0.600          | 0.717                  | 0.744                  |
| 1.002       | S43        | 15.400    | S44        | 15.375    | Circ  | 150            | 4.483      | 179            | 0.600          | 0.744                  | 0.582                  |

## Outfall Details

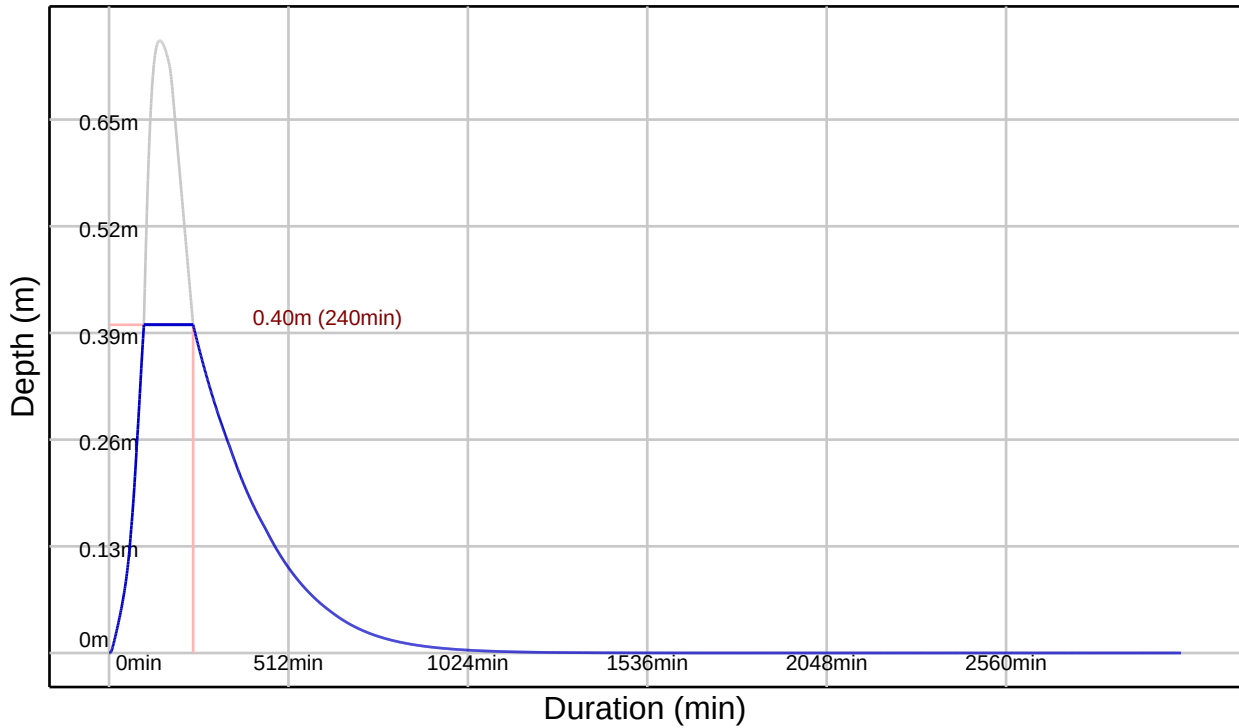
Outfall Manhole S44 : Infiltration Tank

## Flow Control Details

### Tank Structure at Manhole S44

| Tank Invert (m) | Tank Height (m) | Porosity Ratio (%) | Area (m2) | Effective Area (m2)<br>Area x Porosity Ratio | Max Storage (m3)<br>Effective Area x Height | Infil Base (m/hr) | Infil Side (m/hr) | Safety Factor |
|-----------------|-----------------|--------------------|-----------|----------------------------------------------|---------------------------------------------|-------------------|-------------------|---------------|
| 15.350          | 0.400           | 95.00              | 12.012    | 11.412                                       | 4.565                                       | 0.00000000        | 0.36000000        | 2.00          |

## Plot 7 Soakaway at S44 (100Yr+45% 180Min Winter)



## Simulation Settings

FEH2022 (point): Filename=FEH\_Point\_Descriptors\_494846\_106034\_v5\_0\_1.xml

Summer (Cv: 1.00), Winter (Cv: 1.00)

Global Time of Entry: 5.0 mins

Durations (mins): 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080

Return Periods (yrs) + Climate Change: (2, +0%), (10, +0%), (30, +0%), (30, +40%), (100, +0%), (100, +45%)

Manhole Flood Risk Freeboard: 0.300m

## Simulated Rainfall Events

| Storm               | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % | Storm                    | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % |
|---------------------|---------------------------|---------------------|-------------------|--------------------------|---------------------------|---------------------|-------------------|
| 2Yr 15Min Winter    | 32.749                    | 0.00                | 0.00              | 30Yr+40% 15Min Summer    | 115.400                   | 0.00                | 0.00              |
| 2Yr 15Min Summer    | 32.749                    | 0.00                | 0.00              | 30Yr+40% 15Min Winter    | 115.400                   | 0.00                | 0.00              |
| 2Yr 30Min Winter    | 21.400                    | 0.00                | 0.00              | 30Yr+40% 30Min Summer    | 76.723                    | 0.00                | 0.00              |
| 2Yr 30Min Summer    | 21.400                    | 0.00                | 0.00              | 30Yr+40% 30Min Winter    | 76.723                    | 0.00                | 0.00              |
| 2Yr 60Min Winter    | 13.587                    | 0.00                | 0.00              | 30Yr+40% 60Min Summer    | 48.813                    | 0.00                | 0.00              |
| 2Yr 60Min Summer    | 13.587                    | 0.00                | 0.00              | 30Yr+40% 60Min Winter    | 48.813                    | 0.00                | 0.00              |
| 2Yr 120Min Summer   | 9.453                     | 0.00                | 0.00              | 30Yr+40% 120Min Summer   | 29.821                    | 0.00                | 0.00              |
| 2Yr 120Min Winter   | 9.453                     | 0.00                | 0.00              | 30Yr+40% 120Min Winter   | 29.821                    | 0.00                | 0.00              |
| 2Yr 180Min Winter   | 7.477                     | 0.00                | 0.00              | 30Yr+40% 180Min Summer   | 22.101                    | 0.00                | 0.00              |
| 2Yr 180Min Summer   | 7.477                     | 0.00                | 0.00              | 30Yr+40% 180Min Winter   | 22.101                    | 0.00                | 0.00              |
| 2Yr 240Min Summer   | 6.107                     | 0.00                | 0.00              | 30Yr+40% 240Min Summer   | 17.734                    | 0.00                | 0.00              |
| 2Yr 240Min Winter   | 6.107                     | 0.00                | 0.00              | 30Yr+40% 240Min Winter   | 17.734                    | 0.00                | 0.00              |
| 2Yr 360Min Summer   | 4.586                     | 0.00                | 0.00              | 30Yr+40% 360Min Summer   | 12.872                    | 0.00                | 0.00              |
| 2Yr 360Min Winter   | 4.586                     | 0.00                | 0.00              | 30Yr+40% 360Min Winter   | 12.872                    | 0.00                | 0.00              |
| 2Yr 480Min Summer   | 3.720                     | 0.00                | 0.00              | 30Yr+40% 480Min Summer   | 10.214                    | 0.00                | 0.00              |
| 2Yr 480Min Winter   | 3.720                     | 0.00                | 0.00              | 30Yr+40% 480Min Winter   | 10.214                    | 0.00                | 0.00              |
| 2Yr 600Min Summer   | 3.134                     | 0.00                | 0.00              | 30Yr+40% 600Min Summer   | 8.511                     | 0.00                | 0.00              |
| 2Yr 600Min Winter   | 3.134                     | 0.00                | 0.00              | 30Yr+40% 600Min Winter   | 8.511                     | 0.00                | 0.00              |
| 2Yr 720Min Summer   | 2.713                     | 0.00                | 0.00              | 30Yr+40% 720Min Summer   | 7.317                     | 0.00                | 0.00              |
| 2Yr 720Min Winter   | 2.713                     | 0.00                | 0.00              | 30Yr+40% 720Min Winter   | 7.317                     | 0.00                | 0.00              |
| 2Yr 960Min Summer   | 2.169                     | 0.00                | 0.00              | 30Yr+40% 960Min Summer   | 5.758                     | 0.00                | 0.00              |
| 2Yr 960Min Winter   | 2.169                     | 0.00                | 0.00              | 30Yr+40% 960Min Winter   | 5.758                     | 0.00                | 0.00              |
| 2Yr 1440Min Winter  | 1.591                     | 0.00                | 0.00              | 30Yr+40% 1440Min Summer  | 4.120                     | 0.00                | 0.00              |
| 2Yr 1440Min Summer  | 1.591                     | 0.00                | 0.00              | 30Yr+40% 1440Min Winter  | 4.120                     | 0.00                | 0.00              |
| 2Yr 2160Min Summer  | 1.178                     | 0.00                | 0.00              | 30Yr+40% 2160Min Summer  | 2.968                     | 0.00                | 0.00              |
| 2Yr 2160Min Winter  | 1.178                     | 0.00                | 0.00              | 30Yr+40% 2160Min Winter  | 2.968                     | 0.00                | 0.00              |
| 2Yr 2880Min Summer  | 0.962                     | 0.00                | 0.00              | 30Yr+40% 2880Min Summer  | 2.364                     | 0.00                | 0.00              |
| 2Yr 2880Min Winter  | 0.962                     | 0.00                | 0.00              | 30Yr+40% 2880Min Winter  | 2.364                     | 0.00                | 0.00              |
| 2Yr 4320Min Summer  | 0.740                     | 0.00                | 0.00              | 30Yr+40% 4320Min Summer  | 1.748                     | 0.00                | 0.00              |
| 2Yr 4320Min Winter  | 0.740                     | 0.00                | 0.00              | 30Yr+40% 4320Min Winter  | 1.748                     | 0.00                | 0.00              |
| 2Yr 5760Min Summer  | 0.627                     | 0.00                | 0.00              | 30Yr+40% 5760Min Summer  | 1.434                     | 0.00                | 0.00              |
| 2Yr 5760Min Winter  | 0.627                     | 0.00                | 0.00              | 30Yr+40% 5760Min Winter  | 1.434                     | 0.00                | 0.00              |
| 2Yr 7200Min Summer  | 0.558                     | 0.00                | 0.00              | 30Yr+40% 7200Min Summer  | 1.242                     | 0.00                | 0.00              |
| 2Yr 7200Min Winter  | 0.558                     | 0.00                | 0.00              | 30Yr+40% 7200Min Winter  | 1.242                     | 0.00                | 0.00              |
| 2Yr 8640Min Summer  | 0.510                     | 0.00                | 0.00              | 30Yr+40% 8640Min Summer  | 1.111                     | 0.00                | 0.00              |
| 2Yr 8640Min Winter  | 0.510                     | 0.00                | 0.00              | 30Yr+40% 8640Min Winter  | 1.111                     | 0.00                | 0.00              |
| 2Yr 10080Min Summer | 0.475                     | 0.00                | 0.00              | 30Yr+40% 10080Min Summer | 1.016                     | 0.00                | 0.00              |
| 2Yr 10080Min Winter | 0.475                     | 0.00                | 0.00              | 30Yr+40% 10080Min Winter | 1.016                     | 0.00                | 0.00              |
| 10Yr 15Min Summer   | 63.472                    | 0.00                | 0.00              | 100Yr 15Min Summer       | 103.039                   | 0.00                | 0.00              |
| 10Yr 15Min Winter   | 63.472                    | 0.00                | 0.00              | 100Yr 15Min Winter       | 103.039                   | 0.00                | 0.00              |
| 10Yr 30Min Summer   | 41.975                    | 0.00                | 0.00              | 100Yr 30Min Summer       | 69.133                    | 0.00                | 0.00              |
| 10Yr 30Min Winter   | 41.975                    | 0.00                | 0.00              | 100Yr 30Min Winter       | 69.133                    | 0.00                | 0.00              |
| 10Yr 60Min Summer   | 26.518                    | 0.00                | 0.00              | 100Yr 60Min Summer       | 44.424                    | 0.00                | 0.00              |
| 10Yr 60Min Winter   | 26.518                    | 0.00                | 0.00              | 100Yr 60Min Winter       | 44.424                    | 0.00                | 0.00              |
| 10Yr 120Min Summer  | 16.678                    | 0.00                | 0.00              | 100Yr 120Min Summer      | 26.631                    | 0.00                | 0.00              |
| 10Yr 120Min Winter  | 16.678                    | 0.00                | 0.00              | 100Yr 120Min Winter      | 26.631                    | 0.00                | 0.00              |
| 10Yr 180Min Summer  | 12.547                    | 0.00                | 0.00              | 100Yr 180Min Summer      | 19.524                    | 0.00                | 0.00              |
| 10Yr 180Min Winter  | 12.547                    | 0.00                | 0.00              | 100Yr 180Min Winter      | 19.524                    | 0.00                | 0.00              |
| 10Yr 240Min Summer  | 10.114                    | 0.00                | 0.00              | 100Yr 240Min Summer      | 15.695                    | 0.00                | 0.00              |
| 10Yr 240Min Winter  | 10.114                    | 0.00                | 0.00              | 100Yr 240Min Winter      | 15.695                    | 0.00                | 0.00              |
| 10Yr 360Min Summer  | 7.394                     | 0.00                | 0.00              | 100Yr 360Min Summer      | 11.386                    | 0.00                | 0.00              |
| 10Yr 360Min Winter  | 7.394                     | 0.00                | 0.00              | 100Yr 360Min Winter      | 11.386                    | 0.00                | 0.00              |
| 10Yr 480Min Summer  | 5.892                     | 0.00                | 0.00              | 100Yr 480Min Summer      | 9.035                     | 0.00                | 0.00              |
| 10Yr 480Min Winter  | 5.892                     | 0.00                | 0.00              | 100Yr 480Min Winter      | 9.035                     | 0.00                | 0.00              |

## Simulated Rainfall Events

| Storm                | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % | Storm                     | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % |
|----------------------|---------------------------|---------------------|-------------------|---------------------------|---------------------------|---------------------|-------------------|
| 10Yr 600Min Summer   | 4.919                     | 0.00                | 0.00              | 100Yr 600Min Summer       | 7.544                     | 0.00                | 0.00              |
| 10Yr 600Min Winter   | 4.919                     | 0.00                | 0.00              | 100Yr 600Min Winter       | 7.544                     | 0.00                | 0.00              |
| 10Yr 720Min Summer   | 4.233                     | 0.00                | 0.00              | 100Yr 720Min Summer       | 6.499                     | 0.00                | 0.00              |
| 10Yr 720Min Winter   | 4.233                     | 0.00                | 0.00              | 100Yr 720Min Winter       | 6.499                     | 0.00                | 0.00              |
| 10Yr 960Min Summer   | 3.341                     | 0.00                | 0.00              | 100Yr 960Min Summer       | 5.119                     | 0.00                | 0.00              |
| 10Yr 960Min Winter   | 3.341                     | 0.00                | 0.00              | 100Yr 960Min Winter       | 5.119                     | 0.00                | 0.00              |
| 10Yr 1440Min Summer  | 2.405                     | 0.00                | 0.00              | 100Yr 1440Min Summer      | 3.659                     | 0.00                | 0.00              |
| 10Yr 1440Min Winter  | 2.405                     | 0.00                | 0.00              | 100Yr 1440Min Winter      | 3.659                     | 0.00                | 0.00              |
| 10Yr 2160Min Summer  | 1.746                     | 0.00                | 0.00              | 100Yr 2160Min Summer      | 2.624                     | 0.00                | 0.00              |
| 10Yr 2160Min Winter  | 1.746                     | 0.00                | 0.00              | 100Yr 2160Min Winter      | 2.624                     | 0.00                | 0.00              |
| 10Yr 2880Min Summer  | 1.400                     | 0.00                | 0.00              | 100Yr 2880Min Summer      | 2.074                     | 0.00                | 0.00              |
| 10Yr 2880Min Winter  | 1.400                     | 0.00                | 0.00              | 100Yr 2880Min Winter      | 2.074                     | 0.00                | 0.00              |
| 10Yr 4320Min Summer  | 1.048                     | 0.00                | 0.00              | 100Yr 4320Min Summer      | 1.512                     | 0.00                | 0.00              |
| 10Yr 4320Min Winter  | 1.048                     | 0.00                | 0.00              | 100Yr 4320Min Winter      | 1.512                     | 0.00                | 0.00              |
| 10Yr 5760Min Summer  | 0.869                     | 0.00                | 0.00              | 100Yr 5760Min Summer      | 1.226                     | 0.00                | 0.00              |
| 10Yr 5760Min Winter  | 0.869                     | 0.00                | 0.00              | 100Yr 5760Min Winter      | 1.226                     | 0.00                | 0.00              |
| 10Yr 7200Min Summer  | 0.760                     | 0.00                | 0.00              | 100Yr 7200Min Summer      | 1.051                     | 0.00                | 0.00              |
| 10Yr 7200Min Winter  | 0.760                     | 0.00                | 0.00              | 100Yr 7200Min Winter      | 1.051                     | 0.00                | 0.00              |
| 10Yr 8640Min Summer  | 0.685                     | 0.00                | 0.00              | 100Yr 8640Min Summer      | 0.933                     | 0.00                | 0.00              |
| 10Yr 8640Min Winter  | 0.685                     | 0.00                | 0.00              | 100Yr 8640Min Winter      | 0.933                     | 0.00                | 0.00              |
| 10Yr 10080Min Summer | 0.630                     | 0.00                | 0.00              | 100Yr 10080Min Summer     | 0.846                     | 0.00                | 0.00              |
| 10Yr 10080Min Winter | 0.630                     | 0.00                | 0.00              | 100Yr 10080Min Winter     | 0.846                     | 0.00                | 0.00              |
| 30Yr 15Min Summer    | 82.428                    | 0.00                | 0.00              | 100Yr+45% 15Min Summer    | 149.406                   | 0.00                | 0.00              |
| 30Yr 15Min Winter    | 82.428                    | 0.00                | 0.00              | 100Yr+45% 15Min Winter    | 149.406                   | 0.00                | 0.00              |
| 30Yr 30Min Summer    | 54.802                    | 0.00                | 0.00              | 100Yr+45% 30Min Summer    | 100.242                   | 0.00                | 0.00              |
| 30Yr 30Min Winter    | 54.802                    | 0.00                | 0.00              | 100Yr+45% 30Min Winter    | 100.242                   | 0.00                | 0.00              |
| 30Yr 60Min Summer    | 34.866                    | 0.00                | 0.00              | 100Yr+45% 60Min Summer    | 64.415                    | 0.00                | 0.00              |
| 30Yr 60Min Winter    | 34.866                    | 0.00                | 0.00              | 100Yr+45% 60Min Winter    | 64.415                    | 0.00                | 0.00              |
| 30Yr 120Min Summer   | 21.301                    | 0.00                | 0.00              | 100Yr+45% 120Min Summer   | 38.616                    | 0.00                | 0.00              |
| 30Yr 120Min Winter   | 21.301                    | 0.00                | 0.00              | 100Yr+45% 120Min Winter   | 38.616                    | 0.00                | 0.00              |
| 30Yr 180Min Summer   | 15.787                    | 0.00                | 0.00              | 100Yr+45% 180Min Summer   | 28.310                    | 0.00                | 0.00              |
| 30Yr 180Min Winter   | 15.787                    | 0.00                | 0.00              | 100Yr+45% 180Min Winter   | 28.310                    | 0.00                | 0.00              |
| 30Yr 240Min Summer   | 12.667                    | 0.00                | 0.00              | 100Yr+45% 240Min Summer   | 22.758                    | 0.00                | 0.00              |
| 30Yr 240Min Winter   | 12.667                    | 0.00                | 0.00              | 100Yr+45% 240Min Winter   | 22.758                    | 0.00                | 0.00              |
| 30Yr 360Min Summer   | 9.194                     | 0.00                | 0.00              | 100Yr+45% 360Min Summer   | 16.509                    | 0.00                | 0.00              |
| 30Yr 360Min Winter   | 9.194                     | 0.00                | 0.00              | 100Yr+45% 360Min Winter   | 16.509                    | 0.00                | 0.00              |
| 30Yr 480Min Summer   | 7.295                     | 0.00                | 0.00              | 100Yr+45% 480Min Summer   | 13.100                    | 0.00                | 0.00              |
| 30Yr 480Min Winter   | 7.295                     | 0.00                | 0.00              | 100Yr+45% 480Min Winter   | 13.100                    | 0.00                | 0.00              |
| 30Yr 600Min Summer   | 6.080                     | 0.00                | 0.00              | 100Yr+45% 600Min Summer   | 10.939                    | 0.00                | 0.00              |
| 30Yr 600Min Winter   | 6.080                     | 0.00                | 0.00              | 100Yr+45% 600Min Winter   | 10.939                    | 0.00                | 0.00              |
| 30Yr 720Min Summer   | 5.227                     | 0.00                | 0.00              | 100Yr+45% 720Min Summer   | 9.424                     | 0.00                | 0.00              |
| 30Yr 720Min Winter   | 5.227                     | 0.00                | 0.00              | 100Yr+45% 720Min Winter   | 9.424                     | 0.00                | 0.00              |
| 30Yr 960Min Summer   | 4.113                     | 0.00                | 0.00              | 100Yr+45% 960Min Summer   | 7.423                     | 0.00                | 0.00              |
| 30Yr 960Min Winter   | 4.113                     | 0.00                | 0.00              | 100Yr+45% 960Min Winter   | 7.423                     | 0.00                | 0.00              |
| 30Yr 1440Min Summer  | 2.943                     | 0.00                | 0.00              | 100Yr+45% 1440Min Summer  | 5.305                     | 0.00                | 0.00              |
| 30Yr 1440Min Winter  | 2.943                     | 0.00                | 0.00              | 100Yr+45% 1440Min Winter  | 5.305                     | 0.00                | 0.00              |
| 30Yr 2160Min Summer  | 2.120                     | 0.00                | 0.00              | 100Yr+45% 2160Min Summer  | 3.805                     | 0.00                | 0.00              |
| 30Yr 2160Min Winter  | 2.120                     | 0.00                | 0.00              | 100Yr+45% 2160Min Winter  | 3.805                     | 0.00                | 0.00              |
| 30Yr 2880Min Summer  | 1.689                     | 0.00                | 0.00              | 100Yr+45% 2880Min Summer  | 3.008                     | 0.00                | 0.00              |
| 30Yr 2880Min Winter  | 1.689                     | 0.00                | 0.00              | 100Yr+45% 2880Min Winter  | 3.008                     | 0.00                | 0.00              |
| 30Yr 4320Min Summer  | 1.248                     | 0.00                | 0.00              | 100Yr+45% 4320Min Summer  | 2.193                     | 0.00                | 0.00              |
| 30Yr 4320Min Winter  | 1.248                     | 0.00                | 0.00              | 100Yr+45% 4320Min Winter  | 2.193                     | 0.00                | 0.00              |
| 30Yr 5760Min Summer  | 1.024                     | 0.00                | 0.00              | 100Yr+45% 5760Min Summer  | 1.778                     | 0.00                | 0.00              |
| 30Yr 5760Min Winter  | 1.024                     | 0.00                | 0.00              | 100Yr+45% 5760Min Winter  | 1.778                     | 0.00                | 0.00              |
| 30Yr 7200Min Summer  | 0.887                     | 0.00                | 0.00              | 100Yr+45% 7200Min Summer  | 1.524                     | 0.00                | 0.00              |
| 30Yr 7200Min Winter  | 0.887                     | 0.00                | 0.00              | 100Yr+45% 7200Min Winter  | 1.524                     | 0.00                | 0.00              |
| 30Yr 8640Min Summer  | 0.794                     | 0.00                | 0.00              | 100Yr+45% 8640Min Summer  | 1.353                     | 0.00                | 0.00              |
| 30Yr 8640Min Winter  | 0.794                     | 0.00                | 0.00              | 100Yr+45% 8640Min Winter  | 1.353                     | 0.00                | 0.00              |
| 30Yr 10080Min Summer | 0.726                     | 0.00                | 0.00              | 100Yr+45% 10080Min Summer | 1.227                     | 0.00                | 0.00              |
| 30Yr 10080Min Winter | 0.726                     | 0.00                | 0.00              | 100Yr+45% 10080Min Winter | 1.227                     | 0.00                | 0.00              |

## Simulation Results

Return Period (yrs) + Climate Change (%):

2yr+0%

### Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status |
|---------|----------------|-------------|-----------|-----------|--------------|------------|--------|
| S45     | 15 min Winter  | 0           | 15.600    | 0.000     | 0.000        |            | OK     |
| S46     | 240 min Summer | 160         | 15.510    | 0.010     | 0.000        |            | OK     |
| S41     | 15 min Winter  | 0           | 15.600    | 0.000     | 0.000        |            | OK     |
| S42     | 240 min Summer | 159         | 15.510    | 0.010     | 0.010        |            | OK     |
| S43     | 240 min Summer | 158         | 15.510    | 0.110     | 0.209        |            | OK     |
| S44     | 240 min Summer | 159         | 15.510    | 0.160     | 0.193        |            | OK     |

### Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 240 min Summer | 160         | S45        | S46        | 0.005          | 0.000              | 0.000          | 0.000           | OK     |
| 1.001    | 240 min Summer | 169         | S46        | S43        | 0.060          | 0.004              | 0.026          | 0.002           | OK     |
| 2.000    | 240 min Summer | 159         | S41        | S42        | 0.005          | 0.000              | 0.000          | 0.000           | OK     |
| 2.001    | 240 min Summer | 164         | S42        | S43        | 0.060          | 0.004              | 0.024          | 0.001           | OK     |
| 1.002    | 240 min Summer | 158         | S43        | S44        | 0.123          | 0.283              | 0.800          | 0.061           | OK     |

Return Period (yrs) + Climate Change (%):

10yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S45     | 180 min Winter | 137         | 15.600    | 0.000     | 0.000        |            | OK         |
| S46     | 180 min Summer | 125         | 15.600    | 0.100     | 0.009        |            | OK         |
| S41     | 180 min Summer | 126         | 15.601    | 0.001     | 0.000        |            | OK         |
| S42     | 180 min Summer | 126         | 15.600    | 0.100     | 0.000        |            | OK         |
| S43     | 180 min Winter | 135         | 15.600    | 0.200     | 0.340        |            | Surcharged |
| S44     | 180 min Summer | 125         | 15.600    | 0.250     | 0.336        |            | OK         |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 180 min Winter | 137         | S45        | S46        | 0.050          | 0.000              | 0.000          | 0.000           | OK         |
| 1.001    | 180 min Summer | 182         | S46        | S43        | 0.125          | 0.003              | 0.046          | 0.003           | OK         |
| 2.000    | 180 min Summer | 126         | S41        | S42        | 0.050          | 0.000              | 0.000          | 0.000           | OK         |
| 2.001    | 180 min Summer | 141         | S42        | S43        | 0.125          | 0.003              | 0.039          | 0.002           | OK         |
| 1.002    | 60 min Winter  | 40          | S43        | S44        | 0.150          | 0.478              | 2.143          | 0.163           | Surcharged |

Return Period (yrs) + Climate Change (%):

30yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S45     | 180 min Summer | 128         | 15.654    | 0.054     | 0.000        |            | OK         |
| S46     | 180 min Winter | 136         | 15.653    | 0.153     | 0.001        |            | Surcharged |
| S41     | 180 min Winter | 136         | 15.653    | 0.053     | 0.000        |            | OK         |
| S42     | 180 min Winter | 136         | 15.653    | 0.153     | 0.001        |            | Surcharged |
| S43     | 180 min Winter | 136         | 15.653    | 0.253     | 0.392        |            | Surcharged |
| S44     | 180 min Winter | 136         | 15.653    | 0.303     | 0.392        |            | OK         |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 180 min Summer | 151         | S45        | S46        | 0.077          | 0.008              | 0.048          | 0.008           | OK         |
| 1.001    | 180 min Summer | 149         | S46        | S43        | 0.150          | 0.004              | 0.072          | 0.005           | Surcharged |
| 2.000    | 180 min Winter | 182         | S41        | S42        | 0.077          | 0.005              | 0.024          | 0.004           | OK         |
| 2.001    | 180 min Summer | 184         | S42        | S43        | 0.150          | 0.003              | 0.056          | 0.002           | Surcharged |
| 1.002    | 30 min Summer  | 19          | S43        | S44        | 0.150          | 0.621              | 5.369          | 0.407           | Surcharged |

Return Period (yrs) + Climate Change (%):

30yr+40%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S45     | 180 min Winter | 137         | 15.774    | 0.174     | 0.003        |            | Surcharged |
| S46     | 180 min Winter | 137         | 15.774    | 0.274     | 0.008        |            | Surcharged |
| S41     | 180 min Winter | 138         | 15.774    | 0.174     | 0.000        |            | Surcharged |
| S42     | 180 min Winter | 138         | 15.774    | 0.274     | 0.021        |            | Surcharged |
| S43     | 180 min Winter | 138         | 15.774    | 0.374     | 0.527        |            | Surcharged |
| S44     | 180 min Winter | 138         | 15.774    | 0.424     | 0.523        |            | Surcharged |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 180 min Summer | 139         | S45        | S46        | 0.100          | 0.007              | 0.059          | 0.010           | Surcharged |
| 1.001    | 60 min Winter  | 67          | S46        | S43        | 0.150          | 0.005              | 0.092          | 0.006           | Surcharged |
| 2.000    | 60 min Winter  | 60          | S41        | S42        | 0.100          | 0.006              | 0.049          | 0.008           | Surcharged |
| 2.001    | 180 min Winter | 156         | S42        | S43        | 0.150          | 0.005              | 0.082          | 0.003           | Surcharged |
| 1.002    | 15 min Winter  | 10          | S43        | S44        | 0.150          | 0.708              | 7.608          | 0.577           | Surcharged |

Return Period (yrs) + Climate Change (%):

100yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S45     | 180 min Winter | 139         | 15.716    | 0.116     | 0.016        |            | Surcharged |
| S46     | 180 min Winter | 136         | 15.716    | 0.216     | 0.001        |            | Surcharged |
| S41     | 180 min Winter | 138         | 15.716    | 0.116     | 0.005        |            | Surcharged |
| S42     | 180 min Winter | 138         | 15.716    | 0.216     | 0.007        |            | Surcharged |
| S43     | 180 min Winter | 136         | 15.716    | 0.316     | 0.481        |            | Surcharged |
| S44     | 180 min Winter | 137         | 15.715    | 0.365     | 0.440        |            | OK         |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 120 min Winter | 125         | S45        | S46        | 0.100          | 0.005              | 0.039          | 0.006           | Surcharged |
| 1.001    | 120 min Summer | 124         | S46        | S43        | 0.150          | 0.004              | 0.078          | 0.005           | Surcharged |
| 2.000    | 120 min Winter | 123         | S41        | S42        | 0.100          | 0.005              | 0.043          | 0.007           | Surcharged |
| 2.001    | 120 min Summer | 125         | S42        | S43        | 0.150          | 0.005              | 0.091          | 0.004           | Surcharged |
| 1.002    | 15 min Winter  | 11          | S43        | S44        | 0.150          | 0.726              | 7.203          | 0.547           | Surcharged |

Return Period (yrs) + Climate Change (%):

100yr+45%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S45     | 180 min Winter | 145         | 16.096    | 0.496     | 0.000        |            | Flood Risk |
| S46     | 180 min Winter | 145         | 16.096    | 0.596     | 0.001        |            | Flood Risk |
| S41     | 180 min Winter | 145         | 16.096    | 0.496     | 0.000        |            | Flood Risk |
| S42     | 180 min Winter | 145         | 16.096    | 0.596     | 0.001        |            | Flood Risk |
| S43     | 180 min Winter | 145         | 16.096    | 0.696     | 0.520        |            | Flood Risk |
| S44     | 180 min Winter | 145         | 16.096    | 0.746     | 0.521        |            | Surcharged |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 30 min Winter  | 32          | S45        | S46        | 0.100          | 0.016              | 0.128          | 0.021           | Surcharged |
| 1.001    | 30 min Summer  | 33          | S46        | S43        | 0.150          | 0.013              | 0.228          | 0.016           | Surcharged |
| 2.000    | 30 min Winter  | 33          | S41        | S42        | 0.100          | 0.016              | 0.128          | 0.021           | Surcharged |
| 2.001    | 30 min Summer  | 37          | S42        | S43        | 0.150          | 0.013              | 0.227          | 0.009           | Surcharged |
| 1.002    | 15 min Winter  | 9           | S43        | S44        | 0.150          | 0.751              | 9.050          | 0.687           | Surcharged |

## PLOT 8 CALCULATIONS

## Network Details

### Manhole Schedule

| Manhole | Catchment Area (ha) | Size (mm) | Type    | CL (m) | IL (m) | Depth To Soffit (m) | Easting (m) | Northing (m) |
|---------|---------------------|-----------|---------|--------|--------|---------------------|-------------|--------------|
| S51     | 0.000               | 100       | Unknown | 16.000 | 15.500 | 0.400               | 494778.391  | 105978.475   |
| S52     | 0.000               | 450       | Unknown | 16.138 | 15.400 | 0.638               | 494774.903  | 105969.964   |
| S47     | 0.000               | 100       | Unknown | 16.000 | 15.500 | 0.400               | 494758.245  | 105986.096   |
| S48     | 0.000               | 450       | Unknown | 16.229 | 15.400 | 0.729               | 494754.991  | 105977.501   |
| S49     | 0.014               | 450       | Unknown | 16.000 | 15.225 | 0.625               | 494763.911  | 105974.125   |
| S50     | 0.000               | 150       | Unknown | 16.000 | 15.175 | 0.675               | 494762.147  | 105969.465   |

### Pipe Schedule

| Pipe Number | US Manhole | US IL (m) | DS Manhole | DS IL (m) | Shape | Dimension (mm) | Length (m) | Gradient (1:x) | Roughness (mm) | US Depth To Soffit (m) | DS Depth To Soffit (m) |
|-------------|------------|-----------|------------|-----------|-------|----------------|------------|----------------|----------------|------------------------|------------------------|
| 1.000       | S51        | 15.500    | S52        | 15.400    | Circ  | 100            | 9.197      | 92             | 0.600          | 0.400                  | 0.638                  |
| 1.001       | S52        | 15.400    | S49        | 15.275    | Circ  | 100            | 11.753     | 94             | 0.600          | 0.638                  | 0.625                  |
| 2.000       | S47        | 15.500    | S48        | 15.400    | Circ  | 100            | 9.190      | 92             | 0.600          | 0.400                  | 0.729                  |
| 2.001       | S48        | 15.400    | S49        | 15.275    | Circ  | 100            | 9.537      | 76             | 0.600          | 0.729                  | 0.625                  |
| 1.002       | S49        | 15.225    | S50        | 15.175    | Circ  | 150            | 4.983      | 100            | 0.600          | 0.625                  | 0.675                  |

## Outfall Details

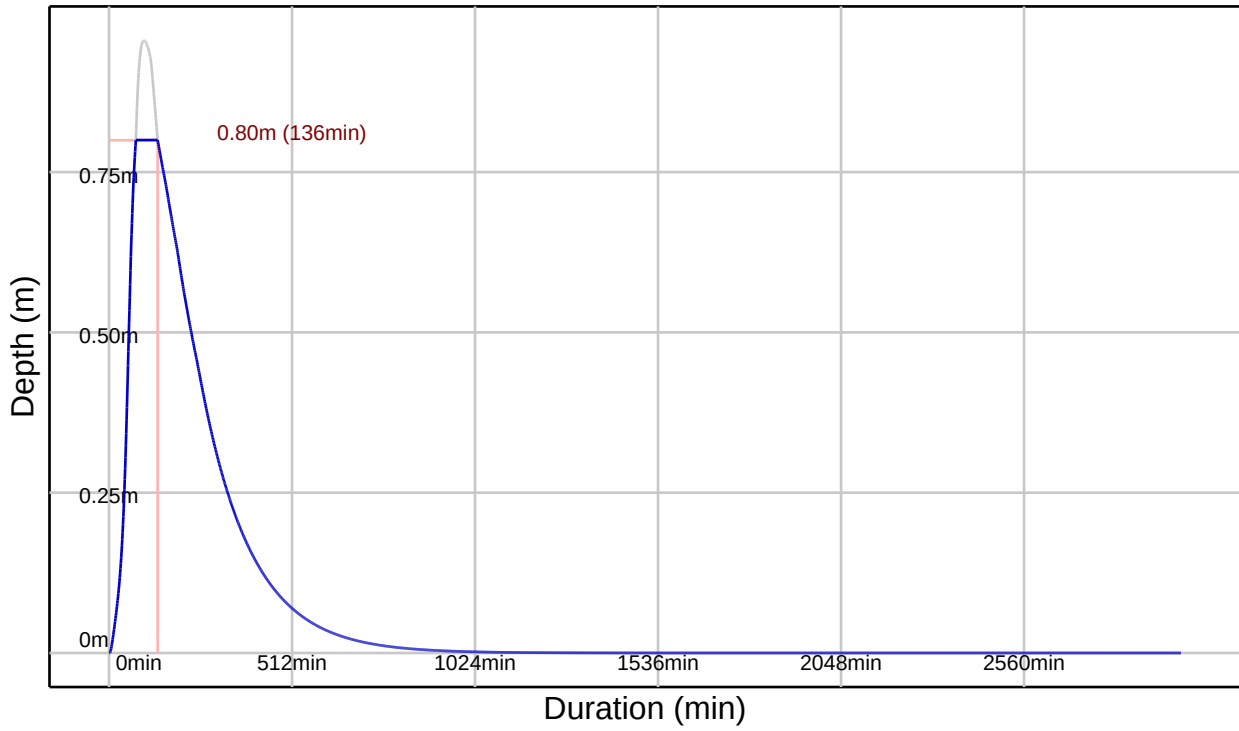
Outfall Manhole S50 : Infiltration Tank

## Flow Control Details

### Tank Structure at Manhole S50

| Tank Invert (m) | Tank Height (m) | Porosity Ratio (%) | Area (m2) | Effective Area (m2)<br>Area x Porosity Ratio | Max Storage (m3)<br>Effective Area x Height | Infil Base (m/hr) | Infil Side (m/hr) | Safety Factor |
|-----------------|-----------------|--------------------|-----------|----------------------------------------------|---------------------------------------------|-------------------|-------------------|---------------|
| 14.775          | 0.800           | 95.00              | 8.000     | 7.600                                        | 6.080                                       | 0.00000000        | 0.36000000        | 2.00          |

## Plot 8 Soakaway at S50 (100Yr+45% 120Min Winter)



## Simulation Settings

FEH2022 (point): Filename=FEH\_Point\_Descriptors\_494846\_106034\_v5\_0\_1.xml

Summer (Cv: 1.00), Winter (Cv: 1.00)

Global Time of Entry: 5.0 mins

Durations (mins): 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080

Return Periods (yrs) + Climate Change: (2, +0%), (10, +0%), (30, +0%), (30, +40%), (100, +0%), (100, +45%)

Manhole Flood Risk Freeboard: 0.300m

## Simulated Rainfall Events

| Storm               | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % | Storm                    | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % |
|---------------------|---------------------------|---------------------|-------------------|--------------------------|---------------------------|---------------------|-------------------|
| 2Yr 15Min Winter    | 32.749                    | 0.00                | 0.00              | 30Yr+40% 15Min Summer    | 115.400                   | 0.00                | 0.00              |
| 2Yr 15Min Summer    | 32.749                    | 0.00                | 0.00              | 30Yr+40% 15Min Winter    | 115.400                   | 0.00                | 0.00              |
| 2Yr 30Min Winter    | 21.400                    | 0.00                | 0.00              | 30Yr+40% 30Min Summer    | 76.723                    | 0.00                | 0.00              |
| 2Yr 30Min Summer    | 21.400                    | 0.00                | 0.00              | 30Yr+40% 30Min Winter    | 76.723                    | 0.00                | 0.00              |
| 2Yr 60Min Winter    | 13.587                    | 0.00                | 0.00              | 30Yr+40% 60Min Summer    | 48.813                    | 0.00                | 0.00              |
| 2Yr 60Min Summer    | 13.587                    | 0.00                | 0.00              | 30Yr+40% 60Min Winter    | 48.813                    | 0.00                | 0.00              |
| 2Yr 120Min Summer   | 9.453                     | 0.00                | 0.00              | 30Yr+40% 120Min Summer   | 29.821                    | 0.00                | 0.00              |
| 2Yr 120Min Winter   | 9.453                     | 0.00                | 0.00              | 30Yr+40% 120Min Winter   | 29.821                    | 0.00                | 0.00              |
| 2Yr 180Min Winter   | 7.477                     | 0.00                | 0.00              | 30Yr+40% 180Min Summer   | 22.101                    | 0.00                | 0.00              |
| 2Yr 180Min Summer   | 7.477                     | 0.00                | 0.00              | 30Yr+40% 180Min Winter   | 22.101                    | 0.00                | 0.00              |
| 2Yr 240Min Summer   | 6.107                     | 0.00                | 0.00              | 30Yr+40% 240Min Summer   | 17.734                    | 0.00                | 0.00              |
| 2Yr 240Min Winter   | 6.107                     | 0.00                | 0.00              | 30Yr+40% 240Min Winter   | 17.734                    | 0.00                | 0.00              |
| 2Yr 360Min Summer   | 4.586                     | 0.00                | 0.00              | 30Yr+40% 360Min Summer   | 12.872                    | 0.00                | 0.00              |
| 2Yr 360Min Winter   | 4.586                     | 0.00                | 0.00              | 30Yr+40% 360Min Winter   | 12.872                    | 0.00                | 0.00              |
| 2Yr 480Min Summer   | 3.720                     | 0.00                | 0.00              | 30Yr+40% 480Min Summer   | 10.214                    | 0.00                | 0.00              |
| 2Yr 480Min Winter   | 3.720                     | 0.00                | 0.00              | 30Yr+40% 480Min Winter   | 10.214                    | 0.00                | 0.00              |
| 2Yr 600Min Summer   | 3.134                     | 0.00                | 0.00              | 30Yr+40% 600Min Summer   | 8.511                     | 0.00                | 0.00              |
| 2Yr 600Min Winter   | 3.134                     | 0.00                | 0.00              | 30Yr+40% 600Min Winter   | 8.511                     | 0.00                | 0.00              |
| 2Yr 720Min Summer   | 2.713                     | 0.00                | 0.00              | 30Yr+40% 720Min Summer   | 7.317                     | 0.00                | 0.00              |
| 2Yr 720Min Winter   | 2.713                     | 0.00                | 0.00              | 30Yr+40% 720Min Winter   | 7.317                     | 0.00                | 0.00              |
| 2Yr 960Min Summer   | 2.169                     | 0.00                | 0.00              | 30Yr+40% 960Min Summer   | 5.758                     | 0.00                | 0.00              |
| 2Yr 960Min Winter   | 2.169                     | 0.00                | 0.00              | 30Yr+40% 960Min Winter   | 5.758                     | 0.00                | 0.00              |
| 2Yr 1440Min Winter  | 1.591                     | 0.00                | 0.00              | 30Yr+40% 1440Min Summer  | 4.120                     | 0.00                | 0.00              |
| 2Yr 1440Min Summer  | 1.591                     | 0.00                | 0.00              | 30Yr+40% 1440Min Winter  | 4.120                     | 0.00                | 0.00              |
| 2Yr 2160Min Summer  | 1.178                     | 0.00                | 0.00              | 30Yr+40% 2160Min Summer  | 2.968                     | 0.00                | 0.00              |
| 2Yr 2160Min Winter  | 1.178                     | 0.00                | 0.00              | 30Yr+40% 2160Min Winter  | 2.968                     | 0.00                | 0.00              |
| 2Yr 2880Min Summer  | 0.962                     | 0.00                | 0.00              | 30Yr+40% 2880Min Summer  | 2.364                     | 0.00                | 0.00              |
| 2Yr 2880Min Winter  | 0.962                     | 0.00                | 0.00              | 30Yr+40% 2880Min Winter  | 2.364                     | 0.00                | 0.00              |
| 2Yr 4320Min Summer  | 0.740                     | 0.00                | 0.00              | 30Yr+40% 4320Min Summer  | 1.748                     | 0.00                | 0.00              |
| 2Yr 4320Min Winter  | 0.740                     | 0.00                | 0.00              | 30Yr+40% 4320Min Winter  | 1.748                     | 0.00                | 0.00              |
| 2Yr 5760Min Summer  | 0.627                     | 0.00                | 0.00              | 30Yr+40% 5760Min Summer  | 1.434                     | 0.00                | 0.00              |
| 2Yr 5760Min Winter  | 0.627                     | 0.00                | 0.00              | 30Yr+40% 5760Min Winter  | 1.434                     | 0.00                | 0.00              |
| 2Yr 7200Min Summer  | 0.558                     | 0.00                | 0.00              | 30Yr+40% 7200Min Summer  | 1.242                     | 0.00                | 0.00              |
| 2Yr 7200Min Winter  | 0.558                     | 0.00                | 0.00              | 30Yr+40% 7200Min Winter  | 1.242                     | 0.00                | 0.00              |
| 2Yr 8640Min Summer  | 0.510                     | 0.00                | 0.00              | 30Yr+40% 8640Min Summer  | 1.111                     | 0.00                | 0.00              |
| 2Yr 8640Min Winter  | 0.510                     | 0.00                | 0.00              | 30Yr+40% 8640Min Winter  | 1.111                     | 0.00                | 0.00              |
| 2Yr 10080Min Summer | 0.475                     | 0.00                | 0.00              | 30Yr+40% 10080Min Summer | 1.016                     | 0.00                | 0.00              |
| 2Yr 10080Min Winter | 0.475                     | 0.00                | 0.00              | 30Yr+40% 10080Min Winter | 1.016                     | 0.00                | 0.00              |
| 10Yr 15Min Summer   | 63.472                    | 0.00                | 0.00              | 100Yr 15Min Summer       | 103.039                   | 0.00                | 0.00              |
| 10Yr 15Min Winter   | 63.472                    | 0.00                | 0.00              | 100Yr 15Min Winter       | 103.039                   | 0.00                | 0.00              |
| 10Yr 30Min Summer   | 41.975                    | 0.00                | 0.00              | 100Yr 30Min Summer       | 69.133                    | 0.00                | 0.00              |
| 10Yr 30Min Winter   | 41.975                    | 0.00                | 0.00              | 100Yr 30Min Winter       | 69.133                    | 0.00                | 0.00              |
| 10Yr 60Min Summer   | 26.518                    | 0.00                | 0.00              | 100Yr 60Min Summer       | 44.424                    | 0.00                | 0.00              |
| 10Yr 60Min Winter   | 26.518                    | 0.00                | 0.00              | 100Yr 60Min Winter       | 44.424                    | 0.00                | 0.00              |
| 10Yr 120Min Summer  | 16.678                    | 0.00                | 0.00              | 100Yr 120Min Summer      | 26.631                    | 0.00                | 0.00              |
| 10Yr 120Min Winter  | 16.678                    | 0.00                | 0.00              | 100Yr 120Min Winter      | 26.631                    | 0.00                | 0.00              |
| 10Yr 180Min Summer  | 12.547                    | 0.00                | 0.00              | 100Yr 180Min Summer      | 19.524                    | 0.00                | 0.00              |
| 10Yr 180Min Winter  | 12.547                    | 0.00                | 0.00              | 100Yr 180Min Winter      | 19.524                    | 0.00                | 0.00              |
| 10Yr 240Min Summer  | 10.114                    | 0.00                | 0.00              | 100Yr 240Min Summer      | 15.695                    | 0.00                | 0.00              |
| 10Yr 240Min Winter  | 10.114                    | 0.00                | 0.00              | 100Yr 240Min Winter      | 15.695                    | 0.00                | 0.00              |
| 10Yr 360Min Summer  | 7.394                     | 0.00                | 0.00              | 100Yr 360Min Summer      | 11.386                    | 0.00                | 0.00              |
| 10Yr 360Min Winter  | 7.394                     | 0.00                | 0.00              | 100Yr 360Min Winter      | 11.386                    | 0.00                | 0.00              |
| 10Yr 480Min Summer  | 5.892                     | 0.00                | 0.00              | 100Yr 480Min Summer      | 9.035                     | 0.00                | 0.00              |
| 10Yr 480Min Winter  | 5.892                     | 0.00                | 0.00              | 100Yr 480Min Winter      | 9.035                     | 0.00                | 0.00              |

## Simulated Rainfall Events

| Storm                | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % | Storm                     | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % |
|----------------------|---------------------------|---------------------|-------------------|---------------------------|---------------------------|---------------------|-------------------|
| 10Yr 600Min Summer   | 4.919                     | 0.00                | 0.00              | 100Yr 600Min Summer       | 7.544                     | 0.00                | 0.00              |
| 10Yr 600Min Winter   | 4.919                     | 0.00                | 0.00              | 100Yr 600Min Winter       | 7.544                     | 0.00                | 0.00              |
| 10Yr 720Min Summer   | 4.233                     | 0.00                | 0.00              | 100Yr 720Min Summer       | 6.499                     | 0.00                | 0.00              |
| 10Yr 720Min Winter   | 4.233                     | 0.00                | 0.00              | 100Yr 720Min Winter       | 6.499                     | 0.00                | 0.00              |
| 10Yr 960Min Summer   | 3.341                     | 0.00                | 0.00              | 100Yr 960Min Summer       | 5.119                     | 0.00                | 0.00              |
| 10Yr 960Min Winter   | 3.341                     | 0.00                | 0.00              | 100Yr 960Min Winter       | 5.119                     | 0.00                | 0.00              |
| 10Yr 1440Min Summer  | 2.405                     | 0.00                | 0.00              | 100Yr 1440Min Summer      | 3.659                     | 0.00                | 0.00              |
| 10Yr 1440Min Winter  | 2.405                     | 0.00                | 0.00              | 100Yr 1440Min Winter      | 3.659                     | 0.00                | 0.00              |
| 10Yr 2160Min Summer  | 1.746                     | 0.00                | 0.00              | 100Yr 2160Min Summer      | 2.624                     | 0.00                | 0.00              |
| 10Yr 2160Min Winter  | 1.746                     | 0.00                | 0.00              | 100Yr 2160Min Winter      | 2.624                     | 0.00                | 0.00              |
| 10Yr 2880Min Summer  | 1.400                     | 0.00                | 0.00              | 100Yr 2880Min Summer      | 2.074                     | 0.00                | 0.00              |
| 10Yr 2880Min Winter  | 1.400                     | 0.00                | 0.00              | 100Yr 2880Min Winter      | 2.074                     | 0.00                | 0.00              |
| 10Yr 4320Min Summer  | 1.048                     | 0.00                | 0.00              | 100Yr 4320Min Summer      | 1.512                     | 0.00                | 0.00              |
| 10Yr 4320Min Winter  | 1.048                     | 0.00                | 0.00              | 100Yr 4320Min Winter      | 1.512                     | 0.00                | 0.00              |
| 10Yr 5760Min Summer  | 0.869                     | 0.00                | 0.00              | 100Yr 5760Min Summer      | 1.226                     | 0.00                | 0.00              |
| 10Yr 5760Min Winter  | 0.869                     | 0.00                | 0.00              | 100Yr 5760Min Winter      | 1.226                     | 0.00                | 0.00              |
| 10Yr 7200Min Summer  | 0.760                     | 0.00                | 0.00              | 100Yr 7200Min Summer      | 1.051                     | 0.00                | 0.00              |
| 10Yr 7200Min Winter  | 0.760                     | 0.00                | 0.00              | 100Yr 7200Min Winter      | 1.051                     | 0.00                | 0.00              |
| 10Yr 8640Min Summer  | 0.685                     | 0.00                | 0.00              | 100Yr 8640Min Summer      | 0.933                     | 0.00                | 0.00              |
| 10Yr 8640Min Winter  | 0.685                     | 0.00                | 0.00              | 100Yr 8640Min Winter      | 0.933                     | 0.00                | 0.00              |
| 10Yr 10080Min Summer | 0.630                     | 0.00                | 0.00              | 100Yr 10080Min Summer     | 0.846                     | 0.00                | 0.00              |
| 10Yr 10080Min Winter | 0.630                     | 0.00                | 0.00              | 100Yr 10080Min Winter     | 0.846                     | 0.00                | 0.00              |
| 30Yr 15Min Summer    | 82.428                    | 0.00                | 0.00              | 100Yr+45% 15Min Summer    | 149.406                   | 0.00                | 0.00              |
| 30Yr 15Min Winter    | 82.428                    | 0.00                | 0.00              | 100Yr+45% 15Min Winter    | 149.406                   | 0.00                | 0.00              |
| 30Yr 30Min Summer    | 54.802                    | 0.00                | 0.00              | 100Yr+45% 30Min Summer    | 100.242                   | 0.00                | 0.00              |
| 30Yr 30Min Winter    | 54.802                    | 0.00                | 0.00              | 100Yr+45% 30Min Winter    | 100.242                   | 0.00                | 0.00              |
| 30Yr 60Min Summer    | 34.866                    | 0.00                | 0.00              | 100Yr+45% 60Min Summer    | 64.415                    | 0.00                | 0.00              |
| 30Yr 60Min Winter    | 34.866                    | 0.00                | 0.00              | 100Yr+45% 60Min Winter    | 64.415                    | 0.00                | 0.00              |
| 30Yr 120Min Summer   | 21.301                    | 0.00                | 0.00              | 100Yr+45% 120Min Summer   | 38.616                    | 0.00                | 0.00              |
| 30Yr 120Min Winter   | 21.301                    | 0.00                | 0.00              | 100Yr+45% 120Min Winter   | 38.616                    | 0.00                | 0.00              |
| 30Yr 180Min Summer   | 15.787                    | 0.00                | 0.00              | 100Yr+45% 180Min Summer   | 28.310                    | 0.00                | 0.00              |
| 30Yr 180Min Winter   | 15.787                    | 0.00                | 0.00              | 100Yr+45% 180Min Winter   | 28.310                    | 0.00                | 0.00              |
| 30Yr 240Min Summer   | 12.667                    | 0.00                | 0.00              | 100Yr+45% 240Min Summer   | 22.758                    | 0.00                | 0.00              |
| 30Yr 240Min Winter   | 12.667                    | 0.00                | 0.00              | 100Yr+45% 240Min Winter   | 22.758                    | 0.00                | 0.00              |
| 30Yr 360Min Summer   | 9.194                     | 0.00                | 0.00              | 100Yr+45% 360Min Summer   | 16.509                    | 0.00                | 0.00              |
| 30Yr 360Min Winter   | 9.194                     | 0.00                | 0.00              | 100Yr+45% 360Min Winter   | 16.509                    | 0.00                | 0.00              |
| 30Yr 480Min Summer   | 7.295                     | 0.00                | 0.00              | 100Yr+45% 480Min Summer   | 13.100                    | 0.00                | 0.00              |
| 30Yr 480Min Winter   | 7.295                     | 0.00                | 0.00              | 100Yr+45% 480Min Winter   | 13.100                    | 0.00                | 0.00              |
| 30Yr 600Min Summer   | 6.080                     | 0.00                | 0.00              | 100Yr+45% 600Min Summer   | 10.939                    | 0.00                | 0.00              |
| 30Yr 600Min Winter   | 6.080                     | 0.00                | 0.00              | 100Yr+45% 600Min Winter   | 10.939                    | 0.00                | 0.00              |
| 30Yr 720Min Summer   | 5.227                     | 0.00                | 0.00              | 100Yr+45% 720Min Summer   | 9.424                     | 0.00                | 0.00              |
| 30Yr 720Min Winter   | 5.227                     | 0.00                | 0.00              | 100Yr+45% 720Min Winter   | 9.424                     | 0.00                | 0.00              |
| 30Yr 960Min Summer   | 4.113                     | 0.00                | 0.00              | 100Yr+45% 960Min Summer   | 7.423                     | 0.00                | 0.00              |
| 30Yr 960Min Winter   | 4.113                     | 0.00                | 0.00              | 100Yr+45% 960Min Winter   | 7.423                     | 0.00                | 0.00              |
| 30Yr 1440Min Summer  | 2.943                     | 0.00                | 0.00              | 100Yr+45% 1440Min Summer  | 5.305                     | 0.00                | 0.00              |
| 30Yr 1440Min Winter  | 2.943                     | 0.00                | 0.00              | 100Yr+45% 1440Min Winter  | 5.305                     | 0.00                | 0.00              |
| 30Yr 2160Min Summer  | 2.120                     | 0.00                | 0.00              | 100Yr+45% 2160Min Summer  | 3.805                     | 0.00                | 0.00              |
| 30Yr 2160Min Winter  | 2.120                     | 0.00                | 0.00              | 100Yr+45% 2160Min Winter  | 3.805                     | 0.00                | 0.00              |
| 30Yr 2880Min Summer  | 1.689                     | 0.00                | 0.00              | 100Yr+45% 2880Min Summer  | 3.008                     | 0.00                | 0.00              |
| 30Yr 2880Min Winter  | 1.689                     | 0.00                | 0.00              | 100Yr+45% 2880Min Winter  | 3.008                     | 0.00                | 0.00              |
| 30Yr 4320Min Summer  | 1.248                     | 0.00                | 0.00              | 100Yr+45% 4320Min Summer  | 2.193                     | 0.00                | 0.00              |
| 30Yr 4320Min Winter  | 1.248                     | 0.00                | 0.00              | 100Yr+45% 4320Min Winter  | 2.193                     | 0.00                | 0.00              |
| 30Yr 5760Min Summer  | 1.024                     | 0.00                | 0.00              | 100Yr+45% 5760Min Summer  | 1.778                     | 0.00                | 0.00              |
| 30Yr 5760Min Winter  | 1.024                     | 0.00                | 0.00              | 100Yr+45% 5760Min Winter  | 1.778                     | 0.00                | 0.00              |
| 30Yr 7200Min Summer  | 0.887                     | 0.00                | 0.00              | 100Yr+45% 7200Min Summer  | 1.524                     | 0.00                | 0.00              |
| 30Yr 7200Min Winter  | 0.887                     | 0.00                | 0.00              | 100Yr+45% 7200Min Winter  | 1.524                     | 0.00                | 0.00              |
| 30Yr 8640Min Summer  | 0.794                     | 0.00                | 0.00              | 100Yr+45% 8640Min Summer  | 1.353                     | 0.00                | 0.00              |
| 30Yr 8640Min Winter  | 0.794                     | 0.00                | 0.00              | 100Yr+45% 8640Min Winter  | 1.353                     | 0.00                | 0.00              |
| 30Yr 10080Min Summer | 0.726                     | 0.00                | 0.00              | 100Yr+45% 10080Min Summer | 1.227                     | 0.00                | 0.00              |
| 30Yr 10080Min Winter | 0.726                     | 0.00                | 0.00              | 100Yr+45% 10080Min Winter | 1.227                     | 0.00                | 0.00              |

## Simulation Results

Return Period (yrs) + Climate Change (%):  
2yr+0%

### Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status |
|---------|----------------|-------------|-----------|-----------|--------------|------------|--------|
| S51     | 15 min Winter  | 0           | 15.500    | 0.000     | 0.000        |            | OK     |
| S52     | 15 min Winter  | 0           | 15.400    | 0.000     | 0.000        |            | OK     |
| S47     | 15 min Winter  | 0           | 15.500    | 0.000     | 0.000        |            | OK     |
| S48     | 15 min Winter  | 0           | 15.400    | 0.000     | 0.000        |            | OK     |
| S49     | 15 min Summer  | 8           | 15.267    | 0.042     | 2.774        |            | OK     |
| S50     | 240 min Summer | 155         | 15.049    | 0.274     | 0.251        |            | OK     |

### Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 15 min Winter  | 0           | S51        | S52        | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 1.001    | 15 min Winter  | 0           | S52        | S49        | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 2.000    | 15 min Winter  | 0           | S47        | S48        | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 2.001    | 15 min Winter  | 0           | S48        | S49        | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 1.002    | 15 min Summer  | 8           | S49        | S50        | 0.041          | 0.714              | 2.755          | 0.155           | OK     |

Return Period (yrs) + Climate Change (%):

10yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status |
|---------|----------------|-------------|-----------|-----------|--------------|------------|--------|
| S51     | 15 min Summer  | 0           | 15.500    | 0.000     | 0.000        |            | OK     |
| S52     | 15 min Summer  | 0           | 15.400    | 0.000     | 0.000        |            | OK     |
| S47     | 15 min Summer  | 0           | 15.500    | 0.000     | 0.000        |            | OK     |
| S48     | 15 min Summer  | 0           | 15.400    | 0.000     | 0.000        |            | OK     |
| S49     | 15 min Summer  | 8           | 15.286    | 0.061     | 5.380        |            | OK     |
| S50     | 180 min Summer | 121         | 15.230    | 0.455     | 0.414        |            | OK     |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 15 min Summer  | 0           | S51        | S52        | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 1.001    | 15 min Summer  | 8           | S52        | S49        | 0.005          | 0.000              | 0.000          | 0.000           | OK     |
| 2.000    | 15 min Summer  | 0           | S47        | S48        | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 2.001    | 15 min Summer  | 8           | S48        | S49        | 0.005          | 0.000              | 0.000          | 0.000           | OK     |
| 1.002    | 15 min Summer  | 8           | S49        | S50        | 0.058          | 0.846              | 5.344          | 0.301           | OK     |

Return Period (yrs) + Climate Change (%):

30yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status |
|---------|----------------|-------------|-----------|-----------|--------------|------------|--------|
| S51     | 15 min Summer  | 0           | 15.500    | 0.000     | 0.000        |            | OK     |
| S52     | 15 min Summer  | 0           | 15.400    | 0.000     | 0.000        |            | OK     |
| S47     | 15 min Summer  | 0           | 15.500    | 0.000     | 0.000        |            | OK     |
| S48     | 15 min Summer  | 0           | 15.400    | 0.000     | 0.000        |            | OK     |
| S49     | 180 min Summer | 122         | 15.331    | 0.106     | 0.492        |            | OK     |
| S50     | 180 min Summer | 122         | 15.331    | 0.556     | 0.497        |            | OK     |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 15 min Summer  | 0           | S51        | S52        | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 1.001    | 180 min Summer | 122         | S52        | S49        | 0.028          | 0.000              | 0.000          | 0.000           | OK     |
| 2.000    | 15 min Summer  | 0           | S47        | S48        | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 2.001    | 180 min Summer | 122         | S48        | S49        | 0.028          | 0.000              | 0.000          | 0.000           | OK     |
| 1.002    | 180 min Summer | 122         | S49        | S50        | 0.128          | 0.689              | 2.398          | 0.135           | OK     |

Return Period (yrs) + Climate Change (%):

30yr+40%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S51     | 180 min Summer | 123         | 15.505    | 0.005     | 0.000        |            | OK         |
| S52     | 180 min Summer | 123         | 15.505    | 0.105     | 0.003        |            | Surcharged |
| S47     | 180 min Summer | 123         | 15.505    | 0.005     | 0.008        |            | OK         |
| S48     | 180 min Summer | 124         | 15.505    | 0.105     | 0.008        |            | Surcharged |
| S49     | 180 min Summer | 123         | 15.505    | 0.280     | 0.683        |            | Surcharged |
| S50     | 180 min Summer | 123         | 15.505    | 0.730     | 0.675        |            | OK         |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 180 min Summer | 126         | S51        | S52        | 0.053          | 0.006              | 0.025          | 0.004           | OK         |
| 1.001    | 180 min Winter | 183         | S52        | S49        | 0.100          | 0.014              | 0.060          | 0.010           | Surcharged |
| 2.000    | 180 min Summer | 129         | S47        | S48        | 0.053          | 0.004              | 0.015          | 0.002           | OK         |
| 2.001    | 180 min Winter | 183         | S48        | S49        | 0.100          | 0.014              | 0.060          | 0.009           | Surcharged |
| 1.002    | 30 min Winter  | 26          | S49        | S50        | 0.150          | 0.905              | 6.985          | 0.393           | Surcharged |

Return Period (yrs) + Climate Change (%):

100yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S51     | 15 min Summer  | 0           | 15.500    | 0.000     | 0.000        |            | OK         |
| S52     | 120 min Winter | 93          | 15.441    | 0.041     | 0.003        |            | OK         |
| S47     | 15 min Summer  | 0           | 15.500    | 0.000     | 0.000        |            | OK         |
| S48     | 120 min Winter | 93          | 15.441    | 0.041     | 0.004        |            | OK         |
| S49     | 120 min Winter | 94          | 15.441    | 0.216     | 0.588        |            | Surcharged |
| S50     | 120 min Winter | 94          | 15.441    | 0.666     | 0.590        |            | OK         |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 120 min Winter | 93          | S51        | S52        | 0.020          | 0.000              | 0.000          | 0.000           | OK         |
| 1.001    | 120 min Winter | 121         | S52        | S49        | 0.070          | 0.013              | 0.056          | 0.009           | OK         |
| 2.000    | 120 min Winter | 93          | S47        | S48        | 0.020          | 0.000              | 0.000          | 0.000           | OK         |
| 2.001    | 120 min Winter | 121         | S48        | S49        | 0.070          | 0.014              | 0.059          | 0.009           | OK         |
| 1.002    | 60 min Winter  | 41          | S49        | S50        | 0.150          | 0.801              | 4.280          | 0.241           | Surcharged |

Return Period (yrs) + Climate Change (%):

100yr+45%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S51     | 120 min Winter | 99          | 15.731    | 0.231     | 0.001        |            | Flood Risk |
| S52     | 120 min Winter | 97          | 15.730    | 0.330     | 0.007        |            | Surcharged |
| S47     | 120 min Winter | 98          | 15.731    | 0.231     | 0.000        |            | Flood Risk |
| S48     | 120 min Winter | 98          | 15.731    | 0.331     | 0.020        |            | Surcharged |
| S49     | 120 min Winter | 97          | 15.730    | 0.505     | 0.740        |            | Flood Risk |
| S50     | 120 min Winter | 97          | 15.730    | 0.955     | 0.723        |            | Surcharged |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 120 min Summer | 125         | S51        | S52        | 0.100          | 0.018              | 0.141          | 0.022           | Surcharged |
| 1.001    | 60 min Summer  | 65          | S52        | S49        | 0.100          | 0.035              | 0.279          | 0.045           | Surcharged |
| 2.000    | 120 min Summer | 125         | S47        | S48        | 0.100          | 0.018              | 0.142          | 0.023           | Surcharged |
| 2.001    | 60 min Summer  | 66          | S48        | S49        | 0.100          | 0.035              | 0.277          | 0.040           | Surcharged |
| 1.002    | 15 min Winter  | 13          | S49        | S50        | 0.150          | 1.017              | 11.653         | 0.656           | Surcharged |

## PLOT 9 CALCULATIONS

## Network Details

### Manhole Schedule

| Manhole | Catchment Area (ha) | Size (mm) | Type    | CL (m) | IL (m) | Depth To Soffit (m) | Easting (m) | Northing (m) |
|---------|---------------------|-----------|---------|--------|--------|---------------------|-------------|--------------|
| S53     | 0.000               | 100       | Unknown | 16.300 | 15.800 | 0.400               | 494763.903  | 105945.917   |
| S54     | 0.000               | 450       | Unknown | 16.326 | 15.700 | 0.526               | 494767.227  | 105955.147   |
| S55     | 0.000               | 450       | Unknown | 16.154 | 15.600 | 0.454               | 494758.369  | 105958.337   |
| S58     | 0.000               | 100       | Unknown | 16.300 | 15.800 | 0.400               | 494762.356  | 105939.629   |
| S59     | 0.000               | 450       | Unknown | 15.951 | 15.700 | 0.151               | 494759.814  | 105932.573   |
| S60     | 0.000               | 450       | Unknown | 15.999 | 15.550 | 0.349               | 494750.321  | 105935.992   |
| S56     | 0.017               | 450       | Unknown | 16.086 | 15.350 | 0.586               | 494753.921  | 105945.988   |
| S57     | 0.000               | 150       | Unknown | 16.119 | 15.300 | 0.669               | 494749.217  | 105947.683   |

### Pipe Schedule

| Pipe Number | US Manhole | US IL (m) | DS Manhole | DS IL (m) | Shape | Dimension (mm) | Length (m) | Gradient (1:x) | Roughness (mm) | US Depth To Soffit (m) | DS Depth To Soffit (m) |
|-------------|------------|-----------|------------|-----------|-------|----------------|------------|----------------|----------------|------------------------|------------------------|
| 1.000       | S53        | 15.800    | S54        | 15.700    | Circ  | 100            | 9.810      | 98             | 0.600          | 0.400                  | 0.526                  |
| 1.001       | S54        | 15.700    | S55        | 15.600    | Circ  | 100            | 9.415      | 94             | 0.600          | 0.526                  | 0.454                  |
| 1.002       | S55        | 15.600    | S56        | 15.400    | Circ  | 100            | 13.125     | 66             | 0.600          | 0.454                  | 0.586                  |
| 2.000       | S58        | 15.800    | S59        | 15.700    | Circ  | 100            | 7.500      | 75             | 0.600          | 0.400                  | 0.151                  |
| 2.001       | S59        | 15.700    | S60        | 15.550    | Circ  | 100            | 10.090     | 67             | 0.600          | 0.151                  | 0.349                  |
| 2.002       | S60        | 15.550    | S56        | 15.400    | Circ  | 100            | 10.625     | 71             | 0.600          | 0.349                  | 0.586                  |
| 1.003       | S56        | 15.350    | S57        | 15.300    | Circ  | 150            | 5.000      | 100            | 0.600          | 0.586                  | 0.669                  |

## Outfall Details

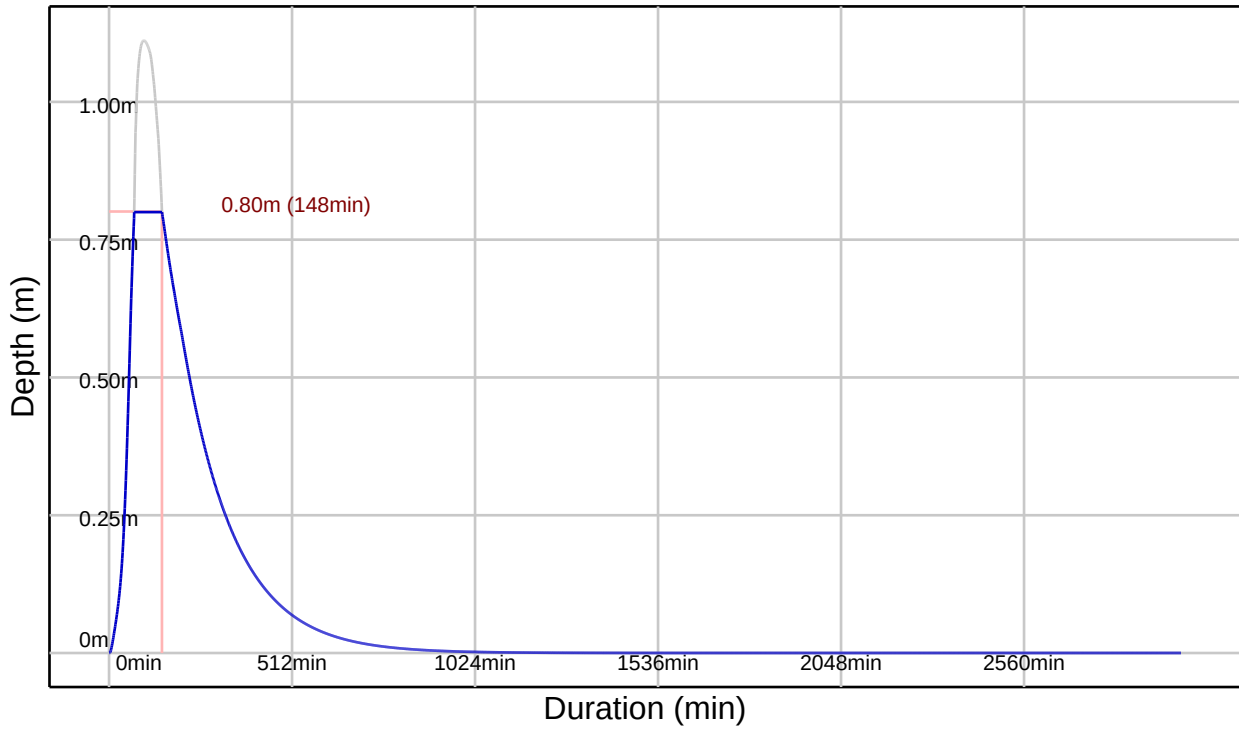
### Outfall Manhole S57 : Infiltration Tank

## Flow Control Details

### Tank Structure at Manhole S57

| Tank Invert (m) | Tank Height (m) | Porosity Ratio (%) | Area (m2) | Effective Area (m2)<br>Area x Porosity Ratio | Max Storage (m3)<br>Effective Area x Height | Infil Base (m/hr) | Infil Side (m/hr) | Safety Factor |
|-----------------|-----------------|--------------------|-----------|----------------------------------------------|---------------------------------------------|-------------------|-------------------|---------------|
| 14.775          | 0.800           | 95.00              | 10.000    | 9.500                                        | 7.600                                       | 0.00000000        | 0.36000000        | 2.00          |

## Plot 9 Soakaway at S57 (100Yr+45% 120Min Winter)



## Simulation Settings

FEH2022 (point): Filename=FEH\_Point\_Descriptors\_494846\_106034\_v5\_0\_1.xml

Summer (Cv: 1.00), Winter (Cv: 1.00)

Global Time of Entry: 5.0 mins

Durations (mins): 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080

Return Periods (yrs) + Climate Change: (2, +0%), (10, +0%), (30, +0%), (30, +40%), (100, +0%), (100, +45%)

Manhole Flood Risk Freeboard: 0.300m

## Simulated Rainfall Events

| Storm               | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % | Storm                    | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % |
|---------------------|---------------------------|---------------------|-------------------|--------------------------|---------------------------|---------------------|-------------------|
| 2Yr 15Min Winter    | 32.749                    | 0.00                | 0.00              | 30Yr+40% 15Min Summer    | 115.400                   | 0.00                | 0.00              |
| 2Yr 15Min Summer    | 32.749                    | 0.00                | 0.00              | 30Yr+40% 15Min Winter    | 115.400                   | 0.00                | 0.00              |
| 2Yr 30Min Winter    | 21.400                    | 0.00                | 0.00              | 30Yr+40% 30Min Summer    | 76.723                    | 0.00                | 0.00              |
| 2Yr 30Min Summer    | 21.400                    | 0.00                | 0.00              | 30Yr+40% 30Min Winter    | 76.723                    | 0.00                | 0.00              |
| 2Yr 60Min Winter    | 13.587                    | 0.00                | 0.00              | 30Yr+40% 60Min Summer    | 48.813                    | 0.00                | 0.00              |
| 2Yr 60Min Summer    | 13.587                    | 0.00                | 0.00              | 30Yr+40% 60Min Winter    | 48.813                    | 0.00                | 0.00              |
| 2Yr 120Min Summer   | 9.453                     | 0.00                | 0.00              | 30Yr+40% 120Min Summer   | 29.821                    | 0.00                | 0.00              |
| 2Yr 120Min Winter   | 9.453                     | 0.00                | 0.00              | 30Yr+40% 120Min Winter   | 29.821                    | 0.00                | 0.00              |
| 2Yr 180Min Winter   | 7.477                     | 0.00                | 0.00              | 30Yr+40% 180Min Summer   | 22.101                    | 0.00                | 0.00              |
| 2Yr 180Min Summer   | 7.477                     | 0.00                | 0.00              | 30Yr+40% 180Min Winter   | 22.101                    | 0.00                | 0.00              |
| 2Yr 240Min Summer   | 6.107                     | 0.00                | 0.00              | 30Yr+40% 240Min Summer   | 17.734                    | 0.00                | 0.00              |
| 2Yr 240Min Winter   | 6.107                     | 0.00                | 0.00              | 30Yr+40% 240Min Winter   | 17.734                    | 0.00                | 0.00              |
| 2Yr 360Min Summer   | 4.586                     | 0.00                | 0.00              | 30Yr+40% 360Min Summer   | 12.872                    | 0.00                | 0.00              |
| 2Yr 360Min Winter   | 4.586                     | 0.00                | 0.00              | 30Yr+40% 360Min Winter   | 12.872                    | 0.00                | 0.00              |
| 2Yr 480Min Summer   | 3.720                     | 0.00                | 0.00              | 30Yr+40% 480Min Summer   | 10.214                    | 0.00                | 0.00              |
| 2Yr 480Min Winter   | 3.720                     | 0.00                | 0.00              | 30Yr+40% 480Min Winter   | 10.214                    | 0.00                | 0.00              |
| 2Yr 600Min Summer   | 3.134                     | 0.00                | 0.00              | 30Yr+40% 600Min Summer   | 8.511                     | 0.00                | 0.00              |
| 2Yr 600Min Winter   | 3.134                     | 0.00                | 0.00              | 30Yr+40% 600Min Winter   | 8.511                     | 0.00                | 0.00              |
| 2Yr 720Min Summer   | 2.713                     | 0.00                | 0.00              | 30Yr+40% 720Min Summer   | 7.317                     | 0.00                | 0.00              |
| 2Yr 720Min Winter   | 2.713                     | 0.00                | 0.00              | 30Yr+40% 720Min Winter   | 7.317                     | 0.00                | 0.00              |
| 2Yr 960Min Summer   | 2.169                     | 0.00                | 0.00              | 30Yr+40% 960Min Summer   | 5.758                     | 0.00                | 0.00              |
| 2Yr 960Min Winter   | 2.169                     | 0.00                | 0.00              | 30Yr+40% 960Min Winter   | 5.758                     | 0.00                | 0.00              |
| 2Yr 1440Min Winter  | 1.591                     | 0.00                | 0.00              | 30Yr+40% 1440Min Summer  | 4.120                     | 0.00                | 0.00              |
| 2Yr 1440Min Summer  | 1.591                     | 0.00                | 0.00              | 30Yr+40% 1440Min Winter  | 4.120                     | 0.00                | 0.00              |
| 2Yr 2160Min Summer  | 1.178                     | 0.00                | 0.00              | 30Yr+40% 2160Min Summer  | 2.968                     | 0.00                | 0.00              |
| 2Yr 2160Min Winter  | 1.178                     | 0.00                | 0.00              | 30Yr+40% 2160Min Winter  | 2.968                     | 0.00                | 0.00              |
| 2Yr 2880Min Summer  | 0.962                     | 0.00                | 0.00              | 30Yr+40% 2880Min Summer  | 2.364                     | 0.00                | 0.00              |
| 2Yr 2880Min Winter  | 0.962                     | 0.00                | 0.00              | 30Yr+40% 2880Min Winter  | 2.364                     | 0.00                | 0.00              |
| 2Yr 4320Min Summer  | 0.740                     | 0.00                | 0.00              | 30Yr+40% 4320Min Summer  | 1.748                     | 0.00                | 0.00              |
| 2Yr 4320Min Winter  | 0.740                     | 0.00                | 0.00              | 30Yr+40% 4320Min Winter  | 1.748                     | 0.00                | 0.00              |
| 2Yr 5760Min Summer  | 0.627                     | 0.00                | 0.00              | 30Yr+40% 5760Min Summer  | 1.434                     | 0.00                | 0.00              |
| 2Yr 5760Min Winter  | 0.627                     | 0.00                | 0.00              | 30Yr+40% 5760Min Winter  | 1.434                     | 0.00                | 0.00              |
| 2Yr 7200Min Summer  | 0.558                     | 0.00                | 0.00              | 30Yr+40% 7200Min Summer  | 1.242                     | 0.00                | 0.00              |
| 2Yr 7200Min Winter  | 0.558                     | 0.00                | 0.00              | 30Yr+40% 7200Min Winter  | 1.242                     | 0.00                | 0.00              |
| 2Yr 8640Min Summer  | 0.510                     | 0.00                | 0.00              | 30Yr+40% 8640Min Summer  | 1.111                     | 0.00                | 0.00              |
| 2Yr 8640Min Winter  | 0.510                     | 0.00                | 0.00              | 30Yr+40% 8640Min Winter  | 1.111                     | 0.00                | 0.00              |
| 2Yr 10080Min Summer | 0.475                     | 0.00                | 0.00              | 30Yr+40% 10080Min Summer | 1.016                     | 0.00                | 0.00              |
| 2Yr 10080Min Winter | 0.475                     | 0.00                | 0.00              | 30Yr+40% 10080Min Winter | 1.016                     | 0.00                | 0.00              |
| 10Yr 15Min Summer   | 63.472                    | 0.00                | 0.00              | 100Yr 15Min Summer       | 103.039                   | 0.00                | 0.00              |
| 10Yr 15Min Winter   | 63.472                    | 0.00                | 0.00              | 100Yr 15Min Winter       | 103.039                   | 0.00                | 0.00              |
| 10Yr 30Min Summer   | 41.975                    | 0.00                | 0.00              | 100Yr 30Min Summer       | 69.133                    | 0.00                | 0.00              |
| 10Yr 30Min Winter   | 41.975                    | 0.00                | 0.00              | 100Yr 30Min Winter       | 69.133                    | 0.00                | 0.00              |
| 10Yr 60Min Summer   | 26.518                    | 0.00                | 0.00              | 100Yr 60Min Summer       | 44.424                    | 0.00                | 0.00              |
| 10Yr 60Min Winter   | 26.518                    | 0.00                | 0.00              | 100Yr 60Min Winter       | 44.424                    | 0.00                | 0.00              |
| 10Yr 120Min Summer  | 16.678                    | 0.00                | 0.00              | 100Yr 120Min Summer      | 26.631                    | 0.00                | 0.00              |
| 10Yr 120Min Winter  | 16.678                    | 0.00                | 0.00              | 100Yr 120Min Winter      | 26.631                    | 0.00                | 0.00              |
| 10Yr 180Min Summer  | 12.547                    | 0.00                | 0.00              | 100Yr 180Min Summer      | 19.524                    | 0.00                | 0.00              |
| 10Yr 180Min Winter  | 12.547                    | 0.00                | 0.00              | 100Yr 180Min Winter      | 19.524                    | 0.00                | 0.00              |
| 10Yr 240Min Summer  | 10.114                    | 0.00                | 0.00              | 100Yr 240Min Summer      | 15.695                    | 0.00                | 0.00              |
| 10Yr 240Min Winter  | 10.114                    | 0.00                | 0.00              | 100Yr 240Min Winter      | 15.695                    | 0.00                | 0.00              |
| 10Yr 360Min Summer  | 7.394                     | 0.00                | 0.00              | 100Yr 360Min Summer      | 11.386                    | 0.00                | 0.00              |
| 10Yr 360Min Winter  | 7.394                     | 0.00                | 0.00              | 100Yr 360Min Winter      | 11.386                    | 0.00                | 0.00              |
| 10Yr 480Min Summer  | 5.892                     | 0.00                | 0.00              | 100Yr 480Min Summer      | 9.035                     | 0.00                | 0.00              |
| 10Yr 480Min Winter  | 5.892                     | 0.00                | 0.00              | 100Yr 480Min Winter      | 9.035                     | 0.00                | 0.00              |

## Simulated Rainfall Events

| Storm                | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % | Storm                     | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % |
|----------------------|---------------------------|---------------------|-------------------|---------------------------|---------------------------|---------------------|-------------------|
| 10Yr 600Min Summer   | 4.919                     | 0.00                | 0.00              | 100Yr 600Min Summer       | 7.544                     | 0.00                | 0.00              |
| 10Yr 600Min Winter   | 4.919                     | 0.00                | 0.00              | 100Yr 600Min Winter       | 7.544                     | 0.00                | 0.00              |
| 10Yr 720Min Summer   | 4.233                     | 0.00                | 0.00              | 100Yr 720Min Summer       | 6.499                     | 0.00                | 0.00              |
| 10Yr 720Min Winter   | 4.233                     | 0.00                | 0.00              | 100Yr 720Min Winter       | 6.499                     | 0.00                | 0.00              |
| 10Yr 960Min Summer   | 3.341                     | 0.00                | 0.00              | 100Yr 960Min Summer       | 5.119                     | 0.00                | 0.00              |
| 10Yr 960Min Winter   | 3.341                     | 0.00                | 0.00              | 100Yr 960Min Winter       | 5.119                     | 0.00                | 0.00              |
| 10Yr 1440Min Summer  | 2.405                     | 0.00                | 0.00              | 100Yr 1440Min Summer      | 3.659                     | 0.00                | 0.00              |
| 10Yr 1440Min Winter  | 2.405                     | 0.00                | 0.00              | 100Yr 1440Min Winter      | 3.659                     | 0.00                | 0.00              |
| 10Yr 2160Min Summer  | 1.746                     | 0.00                | 0.00              | 100Yr 2160Min Summer      | 2.624                     | 0.00                | 0.00              |
| 10Yr 2160Min Winter  | 1.746                     | 0.00                | 0.00              | 100Yr 2160Min Winter      | 2.624                     | 0.00                | 0.00              |
| 10Yr 2880Min Summer  | 1.400                     | 0.00                | 0.00              | 100Yr 2880Min Summer      | 2.074                     | 0.00                | 0.00              |
| 10Yr 2880Min Winter  | 1.400                     | 0.00                | 0.00              | 100Yr 2880Min Winter      | 2.074                     | 0.00                | 0.00              |
| 10Yr 4320Min Summer  | 1.048                     | 0.00                | 0.00              | 100Yr 4320Min Summer      | 1.512                     | 0.00                | 0.00              |
| 10Yr 4320Min Winter  | 1.048                     | 0.00                | 0.00              | 100Yr 4320Min Winter      | 1.512                     | 0.00                | 0.00              |
| 10Yr 5760Min Summer  | 0.869                     | 0.00                | 0.00              | 100Yr 5760Min Summer      | 1.226                     | 0.00                | 0.00              |
| 10Yr 5760Min Winter  | 0.869                     | 0.00                | 0.00              | 100Yr 5760Min Winter      | 1.226                     | 0.00                | 0.00              |
| 10Yr 7200Min Summer  | 0.760                     | 0.00                | 0.00              | 100Yr 7200Min Summer      | 1.051                     | 0.00                | 0.00              |
| 10Yr 7200Min Winter  | 0.760                     | 0.00                | 0.00              | 100Yr 7200Min Winter      | 1.051                     | 0.00                | 0.00              |
| 10Yr 8640Min Summer  | 0.685                     | 0.00                | 0.00              | 100Yr 8640Min Summer      | 0.933                     | 0.00                | 0.00              |
| 10Yr 8640Min Winter  | 0.685                     | 0.00                | 0.00              | 100Yr 8640Min Winter      | 0.933                     | 0.00                | 0.00              |
| 10Yr 10080Min Summer | 0.630                     | 0.00                | 0.00              | 100Yr 10080Min Summer     | 0.846                     | 0.00                | 0.00              |
| 10Yr 10080Min Winter | 0.630                     | 0.00                | 0.00              | 100Yr 10080Min Winter     | 0.846                     | 0.00                | 0.00              |
| 30Yr 15Min Summer    | 82.428                    | 0.00                | 0.00              | 100Yr+45% 15Min Summer    | 149.406                   | 0.00                | 0.00              |
| 30Yr 15Min Winter    | 82.428                    | 0.00                | 0.00              | 100Yr+45% 15Min Winter    | 149.406                   | 0.00                | 0.00              |
| 30Yr 30Min Summer    | 54.802                    | 0.00                | 0.00              | 100Yr+45% 30Min Summer    | 100.242                   | 0.00                | 0.00              |
| 30Yr 30Min Winter    | 54.802                    | 0.00                | 0.00              | 100Yr+45% 30Min Winter    | 100.242                   | 0.00                | 0.00              |
| 30Yr 60Min Summer    | 34.866                    | 0.00                | 0.00              | 100Yr+45% 60Min Summer    | 64.415                    | 0.00                | -0.56             |
| 30Yr 60Min Winter    | 34.866                    | 0.00                | 0.00              | 100Yr+45% 60Min Winter    | 64.415                    | 0.00                | -0.49             |
| 30Yr 120Min Summer   | 21.301                    | 0.00                | 0.00              | 100Yr+45% 120Min Summer   | 38.616                    | 0.00                | -0.44             |
| 30Yr 120Min Winter   | 21.301                    | 0.00                | 0.00              | 100Yr+45% 120Min Winter   | 38.616                    | 0.00                | -0.42             |
| 30Yr 180Min Summer   | 15.787                    | 0.00                | 0.00              | 100Yr+45% 180Min Summer   | 28.310                    | 0.00                | -0.38             |
| 30Yr 180Min Winter   | 15.787                    | 0.00                | 0.00              | 100Yr+45% 180Min Winter   | 28.310                    | 0.00                | -0.26             |
| 30Yr 240Min Summer   | 12.667                    | 0.00                | 0.00              | 100Yr+45% 240Min Summer   | 22.758                    | 0.00                | -0.31             |
| 30Yr 240Min Winter   | 12.667                    | 0.00                | 0.00              | 100Yr+45% 240Min Winter   | 22.758                    | 0.00                | 0.00              |
| 30Yr 360Min Summer   | 9.194                     | 0.00                | 0.00              | 100Yr+45% 360Min Summer   | 16.509                    | 0.00                | 0.00              |
| 30Yr 360Min Winter   | 9.194                     | 0.00                | 0.00              | 100Yr+45% 360Min Winter   | 16.509                    | 0.00                | 0.00              |
| 30Yr 480Min Summer   | 7.295                     | 0.00                | 0.00              | 100Yr+45% 480Min Summer   | 13.100                    | 0.00                | 0.00              |
| 30Yr 480Min Winter   | 7.295                     | 0.00                | 0.00              | 100Yr+45% 480Min Winter   | 13.100                    | 0.00                | 0.00              |
| 30Yr 600Min Summer   | 6.080                     | 0.00                | 0.00              | 100Yr+45% 600Min Summer   | 10.939                    | 0.00                | 0.00              |
| 30Yr 600Min Winter   | 6.080                     | 0.00                | 0.00              | 100Yr+45% 600Min Winter   | 10.939                    | 0.00                | 0.00              |
| 30Yr 720Min Summer   | 5.227                     | 0.00                | 0.00              | 100Yr+45% 720Min Summer   | 9.424                     | 0.00                | 0.00              |
| 30Yr 720Min Winter   | 5.227                     | 0.00                | 0.00              | 100Yr+45% 720Min Winter   | 9.424                     | 0.00                | 0.00              |
| 30Yr 960Min Summer   | 4.113                     | 0.00                | 0.00              | 100Yr+45% 960Min Summer   | 7.423                     | 0.00                | 0.00              |
| 30Yr 960Min Winter   | 4.113                     | 0.00                | 0.00              | 100Yr+45% 960Min Winter   | 7.423                     | 0.00                | 0.00              |
| 30Yr 1440Min Summer  | 2.943                     | 0.00                | 0.00              | 100Yr+45% 1440Min Summer  | 5.305                     | 0.00                | 0.00              |
| 30Yr 1440Min Winter  | 2.943                     | 0.00                | 0.00              | 100Yr+45% 1440Min Winter  | 5.305                     | 0.00                | 0.00              |
| 30Yr 2160Min Summer  | 2.120                     | 0.00                | 0.00              | 100Yr+45% 2160Min Summer  | 3.805                     | 0.00                | 0.00              |
| 30Yr 2160Min Winter  | 2.120                     | 0.00                | 0.00              | 100Yr+45% 2160Min Winter  | 3.805                     | 0.00                | 0.00              |
| 30Yr 2880Min Summer  | 1.689                     | 0.00                | 0.00              | 100Yr+45% 2880Min Summer  | 3.008                     | 0.00                | 0.00              |
| 30Yr 2880Min Winter  | 1.689                     | 0.00                | 0.00              | 100Yr+45% 2880Min Winter  | 3.008                     | 0.00                | 0.00              |
| 30Yr 4320Min Summer  | 1.248                     | 0.00                | 0.00              | 100Yr+45% 4320Min Summer  | 2.193                     | 0.00                | 0.00              |
| 30Yr 4320Min Winter  | 1.248                     | 0.00                | 0.00              | 100Yr+45% 4320Min Winter  | 2.193                     | 0.00                | 0.00              |
| 30Yr 5760Min Summer  | 1.024                     | 0.00                | 0.00              | 100Yr+45% 5760Min Summer  | 1.778                     | 0.00                | 0.00              |
| 30Yr 5760Min Winter  | 1.024                     | 0.00                | 0.00              | 100Yr+45% 5760Min Winter  | 1.778                     | 0.00                | 0.00              |
| 30Yr 7200Min Summer  | 0.887                     | 0.00                | 0.00              | 100Yr+45% 7200Min Summer  | 1.524                     | 0.00                | 0.00              |
| 30Yr 7200Min Winter  | 0.887                     | 0.00                | 0.00              | 100Yr+45% 7200Min Winter  | 1.524                     | 0.00                | 0.00              |
| 30Yr 8640Min Summer  | 0.794                     | 0.00                | 0.00              | 100Yr+45% 8640Min Summer  | 1.353                     | 0.00                | 0.00              |
| 30Yr 8640Min Winter  | 0.794                     | 0.00                | 0.00              | 100Yr+45% 8640Min Winter  | 1.353                     | 0.00                | 0.00              |
| 30Yr 10080Min Summer | 0.726                     | 0.00                | 0.00              | 100Yr+45% 10080Min Summer | 1.227                     | 0.00                | 0.00              |
| 30Yr 10080Min Winter | 0.726                     | 0.00                | 0.00              | 100Yr+45% 10080Min Winter | 1.227                     | 0.00                | 0.00              |

## Simulation Results

Return Period (yrs) + Climate Change (%):

2yr+0%

### Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status |
|---------|----------------|-------------|-----------|-----------|--------------|------------|--------|
| S53     | 15 min Winter  | 0           | 15.800    | 0.000     | 0.000        |            | OK     |
| S54     | 15 min Winter  | 0           | 15.700    | 0.000     | 0.000        |            | OK     |
| S55     | 15 min Winter  | 0           | 15.600    | 0.000     | 0.000        |            | OK     |
| S58     | 15 min Winter  | 0           | 15.800    | 0.000     | 0.000        |            | OK     |
| S59     | 15 min Winter  | 0           | 15.700    | 0.000     | 0.000        |            | OK     |
| S60     | 15 min Winter  | 0           | 15.550    | 0.000     | 0.000        |            | OK     |
| S56     | 15 min Summer  | 8           | 15.397    | 0.047     | 3.347        |            | OK     |
| S57     | 240 min Summer | 156         | 15.041    | 0.266     | 0.291        |            | OK     |

### Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 15 min Winter  | 0           | S53        | S54        | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 1.001    | 15 min Winter  | 0           | S54        | S55        | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 1.002    | 15 min Winter  | 0           | S55        | S56        | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 2.000    | 15 min Winter  | 0           | S58        | S59        | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 2.001    | 15 min Winter  | 0           | S59        | S60        | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 2.002    | 15 min Winter  | 0           | S60        | S56        | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 1.003    | 15 min Summer  | 8           | S56        | S57        | 0.045          | 0.749              | 3.325          | 0.188           | OK     |

Return Period (yrs) + Climate Change (%):

10yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status |
|---------|----------------|-------------|-----------|-----------|--------------|------------|--------|
| S53     | 15 min Summer  | 0           | 15.800    | 0.000     | 0.000        |            | OK     |
| S54     | 15 min Summer  | 0           | 15.700    | 0.000     | 0.000        |            | OK     |
| S55     | 15 min Summer  | 0           | 15.600    | 0.000     | 0.000        |            | OK     |
| S58     | 15 min Summer  | 0           | 15.800    | 0.000     | 0.000        |            | OK     |
| S59     | 15 min Summer  | 0           | 15.700    | 0.000     | 0.000        |            | OK     |
| S60     | 15 min Summer  | 0           | 15.550    | 0.000     | 0.000        |            | OK     |
| S56     | 15 min Summer  | 8           | 15.418    | 0.068     | 6.489        |            | OK     |
| S57     | 180 min Summer | 122         | 15.217    | 0.442     | 0.479        |            | OK     |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 15 min Summer  | 0           | S53        | S54        | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 1.001    | 15 min Summer  | 0           | S54        | S55        | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 1.002    | 15 min Summer  | 8           | S55        | S56        | 0.009          | 0.000              | 0.000          | 0.000           | OK     |
| 2.000    | 15 min Summer  | 0           | S58        | S59        | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 2.001    | 15 min Summer  | 0           | S59        | S60        | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 2.002    | 15 min Summer  | 8           | S60        | S56        | 0.009          | 0.000              | 0.000          | 0.000           | OK     |
| 1.003    | 15 min Summer  | 8           | S56        | S57        | 0.065          | 0.885              | 6.441          | 0.363           | OK     |

Return Period (yrs) + Climate Change (%):

30yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status |
|---------|----------------|-------------|-----------|-----------|--------------|------------|--------|
| S53     | 15 min Summer  | 0           | 15.800    | 0.000     | 0.000        |            | OK     |
| S54     | 15 min Summer  | 0           | 15.700    | 0.000     | 0.000        |            | OK     |
| S55     | 15 min Summer  | 0           | 15.600    | 0.000     | 0.000        |            | OK     |
| S58     | 15 min Summer  | 0           | 15.800    | 0.000     | 0.000        |            | OK     |
| S59     | 15 min Summer  | 0           | 15.700    | 0.000     | 0.000        |            | OK     |
| S60     | 15 min Summer  | 0           | 15.550    | 0.000     | 0.000        |            | OK     |
| S56     | 15 min Summer  | 8           | 15.430    | 0.080     | 8.427        |            | OK     |
| S57     | 180 min Summer | 122         | 15.331    | 0.556     | 0.601        |            | OK     |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 15 min Summer  | 0           | S53        | S54        | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 1.001    | 15 min Summer  | 0           | S54        | S55        | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 1.002    | 15 min Summer  | 8           | S55        | S56        | 0.015          | 0.000              | 0.000          | 0.000           | OK     |
| 2.000    | 15 min Summer  | 0           | S58        | S59        | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 2.001    | 15 min Summer  | 0           | S59        | S60        | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 2.002    | 15 min Summer  | 8           | S60        | S56        | 0.015          | 0.000              | 0.000          | 0.000           | OK     |
| 1.003    | 15 min Summer  | 8           | S56        | S57        | 0.075          | 0.943              | 8.363          | 0.472           | OK     |

Return Period (yrs) + Climate Change (%):

30yr+40%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S53     | 15 min Summer  | 0           | 15.800    | 0.000     | 0.000        |            | OK         |
| S54     | 15 min Summer  | 0           | 15.700    | 0.000     | 0.000        |            | OK         |
| S55     | 15 min Summer  | 0           | 15.600    | 0.000     | 0.000        |            | OK         |
| S58     | 15 min Summer  | 0           | 15.800    | 0.000     | 0.000        |            | OK         |
| S59     | 15 min Summer  | 0           | 15.700    | 0.000     | 0.000        |            | OK         |
| S60     | 15 min Summer  | 0           | 15.550    | 0.000     | 0.000        |            | OK         |
| S56     | 180 min Summer | 122         | 15.529    | 0.179     | 0.832        |            | Surcharged |
| S57     | 180 min Summer | 122         | 15.529    | 0.754     | 0.832        |            | OK         |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 15 min Summer  | 0           | S53        | S54        | 0.000          | 0.000              | 0.000          | 0.000           | OK         |
| 1.001    | 15 min Summer  | 0           | S54        | S55        | 0.000          | 0.000              | 0.000          | 0.000           | OK         |
| 1.002    | 120 min Summer | 77          | S55        | S56        | 0.050          | 0.000              | 0.000          | 0.000           | OK         |
| 2.000    | 15 min Summer  | 0           | S58        | S59        | 0.000          | 0.000              | 0.000          | 0.000           | OK         |
| 2.001    | 15 min Summer  | 0           | S59        | S60        | 0.000          | 0.000              | 0.000          | 0.000           | OK         |
| 2.002    | 120 min Summer | 77          | S60        | S56        | 0.050          | 0.000              | 0.000          | 0.000           | OK         |
| 1.003    | 180 min Summer | 109         | S56        | S57        | 0.150          | 0.789              | 4.050          | 0.228           | Surcharged |

Return Period (yrs) + Climate Change (%):

100yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status |
|---------|----------------|-------------|-----------|-----------|--------------|------------|--------|
| S53     | 15 min Summer  | 0           | 15.800    | 0.000     | 0.000        |            | OK     |
| S54     | 15 min Summer  | 0           | 15.700    | 0.000     | 0.000        |            | OK     |
| S55     | 15 min Summer  | 0           | 15.600    | 0.000     | 0.000        |            | OK     |
| S58     | 15 min Summer  | 0           | 15.800    | 0.000     | 0.000        |            | OK     |
| S59     | 15 min Summer  | 0           | 15.700    | 0.000     | 0.000        |            | OK     |
| S60     | 15 min Summer  | 0           | 15.550    | 0.000     | 0.000        |            | OK     |
| S56     | 120 min Winter | 93          | 15.451    | 0.101     | 0.743        |            | OK     |
| S57     | 120 min Winter | 93          | 15.450    | 0.675     | 0.743        |            | OK     |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 15 min Summer  | 0           | S53        | S54        | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 1.001    | 15 min Summer  | 0           | S54        | S55        | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 1.002    | 120 min Winter | 93          | S55        | S56        | 0.025          | 0.000              | 0.000          | 0.000           | OK     |
| 2.000    | 15 min Summer  | 0           | S58        | S59        | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 2.001    | 15 min Summer  | 0           | S59        | S60        | 0.000          | 0.000              | 0.000          | 0.000           | OK     |
| 2.002    | 120 min Winter | 93          | S60        | S56        | 0.025          | 0.000              | 0.000          | 0.000           | OK     |
| 1.003    | 120 min Winter | 93          | S56        | S57        | 0.125          | 0.740              | 3.172          | 0.179           | OK     |

Return Period (yrs) + Climate Change (%):

100yr+45%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S53     | 120 min Winter | 97          | 15.887    | 0.087     | 0.001        |            | OK         |
| S54     | 120 min Winter | 97          | 15.887    | 0.187     | 0.002        |            | Surcharged |
| S55     | 120 min Winter | 97          | 15.887    | 0.287     | 0.004        |            | Flood Risk |
| S58     | 120 min Winter | 97          | 15.887    | 0.087     | 0.002        |            | OK         |
| S59     | 120 min Winter | 97          | 15.887    | 0.187     | 0.003        |            | Flood Risk |
| S60     | 120 min Winter | 97          | 15.887    | 0.337     | 0.004        |            | Flood Risk |
| S56     | 120 min Winter | 97          | 15.887    | 0.537     | 0.892        |            | Flood Risk |
| S57     | 120 min Winter | 97          | 15.886    | 1.111     | 0.883        |            | Surcharged |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 120 min Winter | 123         | S53        | S54        | 0.093          | 0.025              | 0.121          | 0.020           | OK         |
| 1.001    | 120 min Summer | 123         | S54        | S55        | 0.100          | 0.039              | 0.254          | 0.041           | Surcharged |
| 1.002    | 120 min Summer | 123         | S55        | S56        | 0.100          | 0.054              | 0.361          | 0.048           | Surcharged |
| 2.000    | 120 min Winter | 123         | S58        | S59        | 0.093          | 0.026              | 0.120          | 0.017           | OK         |
| 2.001    | 120 min Summer | 123         | S59        | S60        | 0.100          | 0.035              | 0.255          | 0.035           | Surcharged |
| 2.002    | 120 min Summer | 123         | S60        | S56        | 0.100          | 0.056              | 0.358          | 0.050           | Surcharged |
| 1.003    | 30 min Winter  | 23          | S56        | S57        | 0.150          | 1.005              | 11.007         | 0.621           | Surcharged |

## SOAKAWAY 1 CALCULATIONS

## Network Details

### Manhole Schedule

| Manhole | Catchment Area (ha) | Size (mm) | Type    | CL (m) | IL (m) | Depth To Soffit (m) | Easting (m) | Northing (m) |
|---------|---------------------|-----------|---------|--------|--------|---------------------|-------------|--------------|
| S14     | 0.023               | 708x354   | Unknown | 16.692 | 15.962 | 0.580               | 494850.430  | 106067.466   |
| S13     | 0.000               | 1200      | Unknown | 16.757 | 15.922 | 0.685               | 494845.846  | 106063.711   |
| S15     | 0.005               | 708x354   | Unknown | 16.817 | 16.387 | 0.280               | 494830.419  | 106008.865   |
| S8      | 0.000               | 450       | Unknown | 16.880 | 16.130 | 0.600               | 494832.391  | 106009.739   |
| S16     | 0.006               | 708x354   | Unknown | 16.814 | 16.384 | 0.280               | 494833.188  | 106016.128   |
| S9      | 0.000               | 450       | Unknown | 16.875 | 16.078 | 0.648               | 494835.197  | 106017.019   |
| S17     | 0.006               | 708x354   | Unknown | 16.817 | 16.387 | 0.280               | 494836.000  | 106023.410   |
| S10     | 0.000               | 450       | Unknown | 16.885 | 16.026 | 0.709               | 494838.003  | 106024.299   |
| S18     | 0.010               | 708x354   | Unknown | 16.742 | 16.312 | 0.280               | 494832.737  | 106034.086   |
| S11     | 0.000               | 1200      | Unknown | 17.034 | 15.720 | 1.164               | 494841.764  | 106034.055   |
| S12     | 0.000               | 150       | Unknown | 17.026 | 15.500 | 1.376               | 494849.478  | 106035.032   |

### Pipe Schedule

| Pipe Number | US Manhole | US IL (m) | DS Manhole | DS IL (m) | Shape | Dimension (mm) | Length (m) | Gradient (1:x) | Roughness (mm) | US Depth To Soffit (m) | DS Depth To Soffit (m) |
|-------------|------------|-----------|------------|-----------|-------|----------------|------------|----------------|----------------|------------------------|------------------------|
| 1.000       | S14        | 15.962    | S13        | 15.922    | Circ  | 150            | 5.926      | 150            | 0.600          | 0.580                  | 0.685                  |
| 1.001       | S13        | 15.922    | S11        | 15.720    | Circ  | 150            | 29.935     | 148            | 0.600          | 0.685                  | 1.164                  |
| 2.000       | S15        | 16.387    | S8         | 16.130    | Circ  | 150            | 2.157      | 8              | 0.600          | 0.280                  | 0.600                  |
| 2.001       | S8         | 16.130    | S9         | 16.078    | Circ  | 150            | 7.802      | 150            | 0.600          | 0.600                  | 0.648                  |
| 3.000       | S16        | 16.384    | S9         | 16.078    | Circ  | 150            | 2.198      | 7              | 0.600          | 0.280                  | 0.648                  |
| 2.002       | S9         | 16.078    | S10        | 16.026    | Circ  | 150            | 7.802      | 150            | 0.600          | 0.648                  | 0.709                  |
| 4.000       | S17        | 16.387    | S10        | 16.026    | Circ  | 150            | 2.192      | 6              | 0.600          | 0.280                  | 0.709                  |
| 2.003       | S10        | 16.026    | S11        | 15.956    | Circ  | 150            | 10.456     | 150            | 0.600          | 0.709                  | 0.928                  |
| 5.000       | S18        | 16.312    | S11        | 15.720    | Circ  | 150            | 9.027      | 15             | 0.600          | 0.280                  | 1.164                  |
| 1.002       | S11        | 15.720    | S12        | 15.500    | Circ  | 150            | 7.776      | 35             | 0.600          | 1.164                  | 1.376                  |

### Permeable Paving Schedule

| Permeable Paving        | Assigned Manhole | Effective Storage Volume (m3) | CL (m) | IL (m) | Storage Infil Rate (m/hr) | Safety Factor | Easting (m) | Northing (m) |
|-------------------------|------------------|-------------------------------|--------|--------|---------------------------|---------------|-------------|--------------|
| Road 1 Permeable Paving | S14              | 41.934                        | 16.692 | 15.962 | 0.00000000                | 2.00          | 494845.564  | 106064.670   |
| Plot 4 Driveway         | S15              | 4.767                         | 16.817 | 16.387 | 0.00000000                | 2.00          | 494834.495  | 106010.009   |
| Plot 3 Driveway         | S16              | 5.356                         | 16.814 | 16.384 | 0.00000000                | 2.00          | 494838.538  | 106016.792   |
| Plot 2 Driveway         | S17              | 5.043                         | 16.817 | 16.387 | 0.00000000                | 2.00          | 494839.296  | 106024.872   |
| Driveway                | S18              | 8.848                         | 16.742 | 16.312 | 0.00000000                | 2.00          | 494841.136  | 106034.367   |

## Outfall Details

Outfall Manhole S12 : Infiltration Tank

## Flow Control Details

Controls within Manhole S11

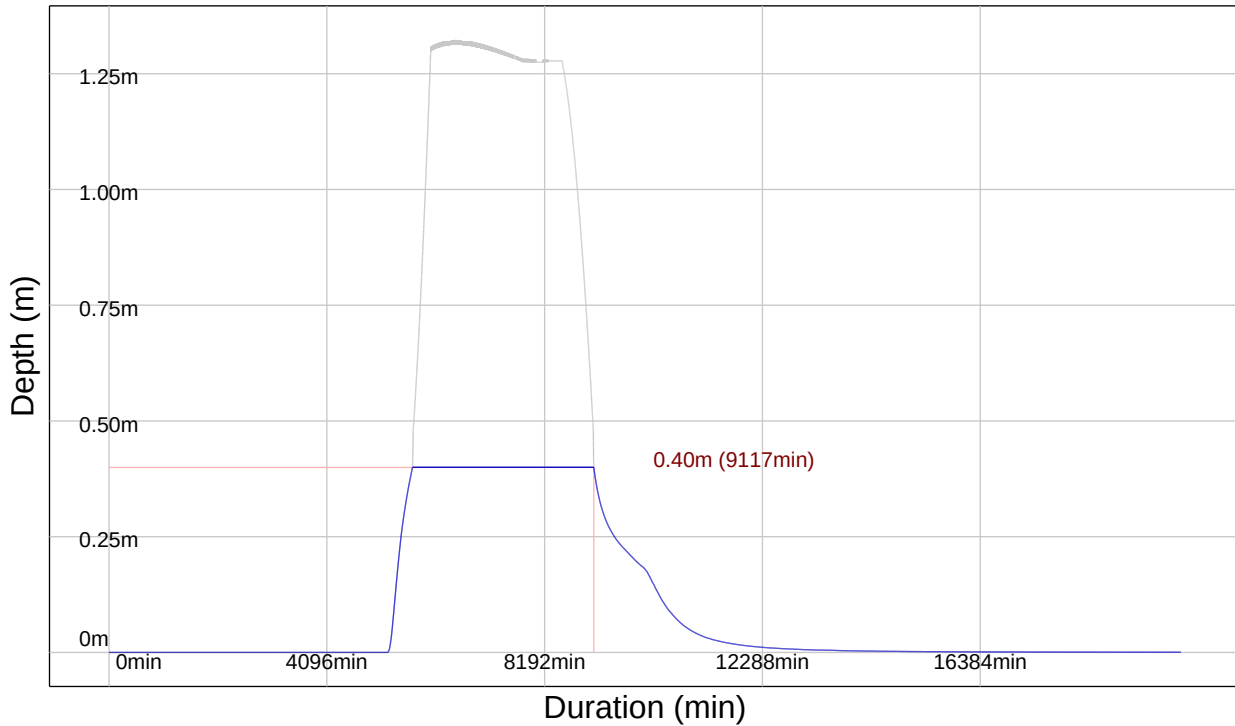
### Orifice Control

| Invert Offset (m) | Orifice Diameter (m) | Discharge Coeff |
|-------------------|----------------------|-----------------|
| 0.786             | 0.020                | 0.600           |

## Tank Structure at Manhole S12

| Tank Invert (m) | Tank Height (m) | Porosity Ratio (%) | Area (m2) | Effective Area (m2)<br>Area x Porosity Ratio | Max Storage (m3)<br>Effective Area x Height | Infil Base (m/hr) | Infil Side (m/hr) | Safety Factor |
|-----------------|-----------------|--------------------|-----------|----------------------------------------------|---------------------------------------------|-------------------|-------------------|---------------|
| 15.250          | 0.400           | 95.00              | 2.997     | 2.847                                        | 1.139                                       | 0.00000000        | 0.36000000        | 2.00          |

## Soakaway 1 at S12 (100Yr+45% 10080Min Summer)



## Simulation Settings

FEH2022 (point): Filename=FEH\_Point\_Descriptors\_494846\_106034\_v5\_0\_1.xml

Summer (Cv: 1.00), Winter (Cv: 1.00)

Global Time of Entry: 5.0 mins

Durations (mins): 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080

Return Periods (yrs) + Climate Change: (2, +0%), (10, +0%), (30, +0%), (30, +40%), (100, +0%), (100, +45%)

Manhole Flood Risk Freeboard: 0.300m

## Simulated Rainfall Events

| Storm               | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % | Storm                    | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % |
|---------------------|---------------------------|---------------------|-------------------|--------------------------|---------------------------|---------------------|-------------------|
| 2Yr 15Min Winter    | 32.749                    | 0.00                | 3.81              | 30Yr+40% 15Min Winter    | 115.400                   | 0.00                | 2.07              |
| 2Yr 15Min Summer    | 32.749                    | 0.00                | 3.77              | 30Yr+40% 30Min Summer    | 76.723                    | 0.00                | 2.17              |
| 2Yr 30Min Winter    | 21.400                    | 0.00                | 3.08              | 30Yr+40% 30Min Winter    | 76.723                    | 0.00                | 2.16              |
| 2Yr 30Min Summer    | 21.400                    | 0.00                | 3.09              | 30Yr+40% 60Min Summer    | 48.813                    | 0.00                | 2.37              |
| 2Yr 60Min Winter    | 13.587                    | 0.00                | 2.65              | 30Yr+40% 60Min Winter    | 48.813                    | 0.00                | 2.37              |
| 2Yr 60Min Summer    | 13.587                    | 0.00                | 2.65              | 30Yr+40% 120Min Summer   | 29.821                    | 0.00                | 2.65              |
| 2Yr 120Min Summer   | 9.453                     | 0.00                | 2.24              | 30Yr+40% 120Min Winter   | 29.821                    | 0.00                | 2.65              |
| 2Yr 120Min Winter   | 9.453                     | 0.00                | 2.24              | 30Yr+40% 180Min Summer   | 22.101                    | 0.00                | 2.74              |
| 2Yr 180Min Winter   | 7.477                     | 0.00                | 2.06              | 30Yr+40% 180Min Winter   | 22.101                    | 0.00                | 2.74              |
| 2Yr 180Min Summer   | 7.477                     | 0.00                | 2.03              | 30Yr+40% 240Min Summer   | 17.734                    | 0.00                | 2.77              |
| 2Yr 240Min Summer   | 6.107                     | 0.00                | 1.99              | 30Yr+40% 240Min Winter   | 17.734                    | 0.00                | 2.77              |
| 2Yr 240Min Winter   | 6.107                     | 0.00                | 2.00              | 30Yr+40% 360Min Summer   | 12.872                    | 0.00                | 2.79              |
| 2Yr 360Min Summer   | 4.586                     | 0.00                | 2.00              | 30Yr+40% 360Min Winter   | 12.872                    | 0.00                | 2.79              |
| 2Yr 360Min Winter   | 4.586                     | 0.00                | 2.00              | 30Yr+40% 480Min Summer   | 10.214                    | 0.00                | 2.80              |
| 2Yr 480Min Summer   | 3.720                     | 0.00                | 2.05              | 30Yr+40% 480Min Winter   | 10.214                    | 0.00                | 2.80              |
| 2Yr 480Min Winter   | 3.720                     | 0.00                | 2.05              | 30Yr+40% 600Min Summer   | 8.511                     | 0.00                | 2.80              |
| 2Yr 600Min Winter   | 3.134                     | 0.00                | 2.06              | 30Yr+40% 600Min Winter   | 8.511                     | 0.00                | 2.80              |
| 2Yr 600Min Summer   | 3.134                     | 0.00                | 2.06              | 30Yr+40% 720Min Summer   | 7.317                     | 0.00                | 2.80              |
| 2Yr 720Min Summer   | 2.713                     | 0.00                | 2.06              | 30Yr+40% 720Min Winter   | 7.317                     | 0.00                | 2.80              |
| 2Yr 720Min Winter   | 2.713                     | 0.00                | 2.06              | 30Yr+40% 960Min Summer   | 5.758                     | 0.00                | 2.80              |
| 2Yr 960Min Summer   | 2.169                     | 0.00                | 2.10              | 30Yr+40% 960Min Winter   | 5.758                     | 0.00                | 2.80              |
| 2Yr 960Min Winter   | 2.169                     | 0.00                | 2.10              | 30Yr+40% 1440Min Summer  | 4.120                     | 0.00                | 2.80              |
| 2Yr 1440Min Winter  | 1.591                     | 0.00                | 2.14              | 30Yr+40% 1440Min Winter  | 4.120                     | 0.00                | 2.79              |
| 2Yr 1440Min Summer  | 1.591                     | 0.00                | 2.15              | 30Yr+40% 2160Min Summer  | 2.968                     | 0.00                | 2.81              |
| 2Yr 2160Min Summer  | 1.178                     | 0.00                | 2.23              | 30Yr+40% 2160Min Winter  | 2.968                     | 0.00                | 2.81              |
| 2Yr 2160Min Winter  | 1.178                     | 0.00                | 2.22              | 30Yr+40% 2880Min Summer  | 2.364                     | 0.00                | 2.82              |
| 2Yr 2880Min Winter  | 0.962                     | 0.00                | 2.30              | 30Yr+40% 2880Min Winter  | 2.364                     | 0.00                | 2.82              |
| 2Yr 2880Min Summer  | 0.962                     | 0.00                | 2.30              | 30Yr+40% 4320Min Summer  | 1.748                     | 0.00                | 2.64              |
| 2Yr 4320Min Summer  | 0.740                     | 0.00                | 2.49              | 30Yr+40% 4320Min Winter  | 1.748                     | 0.00                | 2.65              |
| 2Yr 4320Min Winter  | 0.740                     | 0.00                | 2.48              | 30Yr+40% 5760Min Summer  | 1.434                     | 0.00                | 2.41              |
| 2Yr 5760Min Summer  | 0.627                     | 0.00                | 2.67              | 30Yr+40% 5760Min Winter  | 1.434                     | 0.00                | 2.42              |
| 2Yr 5760Min Winter  | 0.627                     | 0.00                | 2.66              | 30Yr+40% 7200Min Summer  | 1.242                     | 0.00                | 2.22              |
| 2Yr 7200Min Summer  | 0.558                     | 0.00                | 2.74              | 30Yr+40% 7200Min Winter  | 1.242                     | 0.00                | 2.23              |
| 2Yr 7200Min Winter  | 0.558                     | 0.00                | 2.75              | 30Yr+40% 8640Min Summer  | 1.111                     | 0.00                | 2.06              |
| 2Yr 8640Min Summer  | 0.510                     | 0.00                | 2.78              | 30Yr+40% 8640Min Winter  | 1.111                     | 0.00                | 2.07              |
| 2Yr 8640Min Winter  | 0.510                     | 0.00                | 2.78              | 30Yr+40% 10080Min Summer | 1.016                     | 0.00                | 1.93              |
| 2Yr 10080Min Summer | 0.475                     | 0.00                | 2.80              | 30Yr+40% 10080Min Winter | 1.016                     | 0.00                | 1.94              |
| 2Yr 10080Min Winter | 0.475                     | 0.00                | 2.80              | 100Yr 15Min Summer       | 103.039                   | 0.00                | 2.04              |
| 10Yr 15Min Summer   | 63.472                    | 0.00                | 2.42              | 100Yr 15Min Winter       | 103.039                   | 0.00                | 2.03              |
| 10Yr 15Min Winter   | 63.472                    | 0.00                | 2.43              | 100Yr 30Min Summer       | 69.133                    | 0.00                | 2.12              |
| 10Yr 30Min Summer   | 41.975                    | 0.00                | 2.08              | 100Yr 30Min Winter       | 69.133                    | 0.00                | 2.11              |
| 10Yr 30Min Winter   | 41.975                    | 0.00                | 2.15              | 100Yr 60Min Summer       | 44.424                    | 0.00                | 2.27              |
| 10Yr 60Min Summer   | 26.518                    | 0.00                | 2.02              | 100Yr 60Min Winter       | 44.424                    | 0.00                | 2.27              |
| 10Yr 60Min Winter   | 26.518                    | 0.00                | 2.02              | 100Yr 120Min Summer      | 26.631                    | 0.00                | 2.49              |
| 10Yr 120Min Summer  | 16.678                    | 0.00                | 2.08              | 100Yr 120Min Winter      | 26.631                    | 0.00                | 2.48              |
| 10Yr 180Min Summer  | 12.547                    | 0.00                | 2.14              | 100Yr 180Min Summer      | 19.524                    | 0.00                | 2.63              |
| 10Yr 180Min Winter  | 12.547                    | 0.00                | 2.14              | 100Yr 180Min Winter      | 19.524                    | 0.00                | 2.62              |
| 10Yr 240Min Summer  | 10.114                    | 0.00                | 2.18              | 100Yr 240Min Summer      | 15.695                    | 0.00                | 2.71              |
| 10Yr 240Min Winter  | 10.114                    | 0.00                | 2.18              | 100Yr 240Min Winter      | 15.695                    | 0.00                | 2.71              |
| 10Yr 360Min Summer  | 7.394                     | 0.00                | 2.27              | 100Yr 360Min Summer      | 11.386                    | 0.00                | 2.75              |
| 10Yr 360Min Winter  | 7.394                     | 0.00                | 2.26              | 100Yr 360Min Winter      | 11.386                    | 0.00                | 2.75              |
| 10Yr 480Min Summer  | 5.892                     | 0.00                | 2.32              | 100Yr 480Min Summer      | 9.035                     | 0.00                | 2.77              |
| 10Yr 480Min Winter  | 5.892                     | 0.00                | 2.32              | 100Yr 480Min Winter      | 9.035                     | 0.00                | 2.77              |
| 10Yr 600Min Summer  | 4.919                     | 0.00                | 2.38              | 100Yr 600Min Summer      | 7.544                     | 0.00                | 2.79              |

## Simulated Rainfall Events

| Storm                 | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % | Storm                     | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % |
|-----------------------|---------------------------|---------------------|-------------------|---------------------------|---------------------------|---------------------|-------------------|
| 10Yr 600Min Winter    | 4.919                     | 0.00                | 2.37              | 100Yr 600Min Winter       | 7.544                     | 0.00                | 2.79              |
| 10Yr 720Min Summer    | 4.233                     | 0.00                | 2.42              | 100Yr 720Min Summer       | 6.499                     | 0.00                | 2.79              |
| 10Yr 720Min Winter    | 4.233                     | 0.00                | 2.42              | 100Yr 720Min Winter       | 6.499                     | 0.00                | 2.79              |
| 10Yr 960Min Summer    | 3.341                     | 0.00                | 2.49              | 100Yr 960Min Summer       | 5.119                     | 0.00                | 2.80              |
| 10Yr 960Min Winter    | 3.341                     | 0.00                | 2.48              | 100Yr 960Min Winter       | 5.119                     | 0.00                | 2.80              |
| 10Yr 1440Min Summer   | 2.405                     | 0.00                | 2.60              | 100Yr 1440Min Summer      | 3.659                     | 0.00                | 2.80              |
| 10Yr 1440Min Winter   | 2.405                     | 0.00                | 2.60              | 100Yr 1440Min Winter      | 3.659                     | 0.00                | 2.80              |
| 10Yr 2160Min Summer   | 1.746                     | 0.00                | 2.71              | 100Yr 2160Min Summer      | 2.624                     | 0.00                | 2.80              |
| 10Yr 2160Min Winter   | 1.746                     | 0.00                | 2.71              | 100Yr 2160Min Winter      | 2.624                     | 0.00                | 2.80              |
| 10Yr 2880Min Summer   | 1.400                     | 0.00                | 2.75              | 100Yr 2880Min Summer      | 2.074                     | 0.00                | 2.80              |
| 10Yr 2880Min Winter   | 1.400                     | 0.00                | 2.74              | 100Yr 2880Min Winter      | 2.074                     | 0.00                | 2.80              |
| 10Yr 4320Min Summer   | 1.048                     | 0.00                | 2.78              | 100Yr 4320Min Summer      | 1.512                     | 0.00                | 2.81              |
| 10Yr 4320Min Winter   | 1.048                     | 0.00                | 2.79              | 100Yr 4320Min Winter      | 1.512                     | 0.00                | 2.81              |
| 10Yr 5760Min Summer   | 0.869                     | 0.00                | 2.80              | 100Yr 5760Min Summer      | 1.226                     | 0.00                | 2.82              |
| 10Yr 5760Min Winter   | 0.869                     | 0.00                | 2.80              | 100Yr 5760Min Winter      | 1.226                     | 0.00                | 2.82              |
| 10Yr 7200Min Summer   | 0.760                     | 0.00                | 2.79              | 100Yr 7200Min Summer      | 1.051                     | 0.00                | 2.63              |
| 10Yr 7200Min Winter   | 0.760                     | 0.00                | 2.79              | 100Yr 7200Min Winter      | 1.051                     | 0.00                | 2.64              |
| 10Yr 8640Min Summer   | 0.685                     | 0.00                | 2.79              | 100Yr 8640Min Summer      | 0.933                     | 0.00                | 2.46              |
| 10Yr 8640Min Winter   | 0.685                     | 0.00                | 2.78              | 100Yr 8640Min Winter      | 0.933                     | 0.00                | 2.48              |
| 10Yr 10080Min Summer  | 0.630                     | 0.00                | 2.81              | 100Yr 10080Min Summer     | 0.846                     | 0.00                | 2.33              |
| 10Yr 10080Min Winter  | 0.630                     | 0.00                | 2.81              | 100Yr 10080Min Winter     | 0.846                     | 0.00                | 2.33              |
| 30Yr 15Min Summer     | 82.428                    | 0.00                | 2.16              | 100Yr+45% 15Min Summer    | 149.406                   | 0.00                | 2.17              |
| 30Yr 15Min Winter     | 82.428                    | 0.00                | 2.18              | 100Yr+45% 15Min Winter    | 149.406                   | 0.00                | 2.17              |
| 30Yr 30Min Summer     | 54.802                    | 0.00                | 2.04              | 100Yr+45% 30Min Summer    | 100.242                   | 0.00                | 2.40              |
| 30Yr 30Min Winter     | 54.802                    | 0.00                | 2.03              | 100Yr+45% 30Min Winter    | 100.242                   | 0.00                | 2.41              |
| 30Yr 60Min Summer     | 34.866                    | 0.00                | 2.11              | 100Yr+45% 60Min Summer    | 64.415                    | 0.00                | 2.73              |
| 30Yr 60Min Winter     | 34.866                    | 0.00                | 2.11              | 100Yr+45% 60Min Winter    | 64.415                    | 0.00                | 2.73              |
| 30Yr 120Min Summer    | 21.301                    | 0.00                | 2.23              | 100Yr+45% 120Min Summer   | 38.616                    | 0.00                | 2.80              |
| 30Yr 120Min Winter    | 21.301                    | 0.00                | 2.23              | 100Yr+45% 120Min Winter   | 38.616                    | 0.00                | 2.79              |
| 30Yr 180Min Summer    | 15.787                    | 0.00                | 2.32              | 100Yr+45% 180Min Summer   | 28.310                    | 0.00                | 2.80              |
| 30Yr 180Min Winter    | 15.787                    | 0.00                | 2.33              | 100Yr+45% 180Min Winter   | 28.310                    | 0.00                | 2.80              |
| 30Yr 240Min Summer    | 12.667                    | 0.00                | 2.42              | 100Yr+45% 240Min Summer   | 22.758                    | 0.00                | 2.80              |
| 30Yr 240Min Winter    | 12.667                    | 0.00                | 2.41              | 100Yr+45% 240Min Winter   | 22.758                    | 0.00                | 2.80              |
| 30Yr 360Min Summer    | 9.194                     | 0.00                | 2.54              | 100Yr+45% 360Min Summer   | 16.509                    | 0.00                | 2.80              |
| 30Yr 360Min Winter    | 9.194                     | 0.00                | 2.53              | 100Yr+45% 360Min Winter   | 16.509                    | 0.00                | 2.80              |
| 30Yr 480Min Summer    | 7.295                     | 0.00                | 2.62              | 100Yr+45% 480Min Summer   | 13.100                    | 0.00                | 2.81              |
| 30Yr 480Min Winter    | 7.295                     | 0.00                | 2.61              | 100Yr+45% 480Min Winter   | 13.100                    | 0.00                | 2.81              |
| 30Yr 600Min Summer    | 6.080                     | 0.00                | 2.68              | 100Yr+45% 600Min Summer   | 10.939                    | 0.00                | 2.81              |
| 30Yr 600Min Winter    | 6.080                     | 0.00                | 2.67              | 100Yr+45% 600Min Winter   | 10.939                    | 0.00                | 2.81              |
| 30Yr 720Min Summer    | 5.227                     | 0.00                | 2.71              | 100Yr+45% 720Min Summer   | 9.424                     | 0.00                | 2.82              |
| 30Yr 720Min Winter    | 5.227                     | 0.00                | 2.71              | 100Yr+45% 720Min Winter   | 9.424                     | 0.00                | 2.82              |
| 30Yr 960Min Summer    | 4.113                     | 0.00                | 2.74              | 100Yr+45% 960Min Summer   | 7.423                     | 0.00                | 2.80              |
| 30Yr 960Min Winter    | 4.113                     | 0.00                | 2.73              | 100Yr+45% 960Min Winter   | 7.423                     | 0.00                | 2.81              |
| 30Yr 1440Min Summer   | 2.943                     | 0.00                | 2.77              | 100Yr+45% 1440Min Summer  | 5.305                     | 0.00                | 2.62              |
| 30Yr 1440Min Winter   | 2.943                     | 0.00                | 2.77              | 100Yr+45% 1440Min Winter  | 5.305                     | 0.00                | 2.63              |
| 30Yr 2160Min Summer   | 2.120                     | 0.00                | 2.79              | 100Yr+45% 2160Min Summer  | 3.805                     | 0.00                | 2.43              |
| 30Yr 2160Min Winter   | 2.120                     | 0.00                | 2.79              | 100Yr+45% 2160Min Winter  | 3.805                     | 0.00                | 2.44              |
| 30Yr 2880Min Summer   | 1.689                     | 0.00                | 2.80              | 100Yr+45% 2880Min Summer  | 3.008                     | 0.00                | 2.31              |
| 30Yr 2880Min Winter   | 1.689                     | 0.00                | 2.80              | 100Yr+45% 2880Min Winter  | 3.008                     | 0.00                | 2.31              |
| 30Yr 4320Min Summer   | 1.248                     | 0.00                | 2.80              | 100Yr+45% 4320Min Summer  | 2.193                     | 0.00                | 2.10              |
| 30Yr 4320Min Winter   | 1.248                     | 0.00                | 2.79              | 100Yr+45% 4320Min Winter  | 2.193                     | 0.00                | 2.11              |
| 30Yr 5760Min Summer   | 1.024                     | 0.00                | 2.79              | 100Yr+45% 5760Min Summer  | 1.778                     | 0.00                | 1.93              |
| 30Yr 5760Min Winter   | 1.024                     | 0.00                | 2.79              | 100Yr+45% 5760Min Winter  | 1.778                     | 0.00                | 2.43              |
| 30Yr 7200Min Summer   | 0.887                     | 0.00                | 2.81              | 100Yr+45% 7200Min Summer  | 1.524                     | 0.00                | 2.65              |
| 30Yr 7200Min Winter   | 0.887                     | 0.00                | 2.81              | 100Yr+45% 7200Min Winter  | 1.524                     | 0.00                | 3.14              |
| 30Yr 8640Min Summer   | 0.794                     | 0.00                | 2.82              | 100Yr+45% 8640Min Summer  | 1.353                     | 0.00                | 1.72              |
| 30Yr 8640Min Winter   | 0.794                     | 0.00                | 2.82              | 100Yr+45% 8640Min Winter  | 1.353                     | 0.00                | 1.43              |
| 30Yr 10080Min Summer  | 0.726                     | 0.00                | 2.72              | 100Yr+45% 10080Min Summer | 1.227                     | 0.00                | 1.70              |
| 30Yr 10080Min Winter  | 0.726                     | 0.00                | 2.73              | 100Yr+45% 10080Min Winter | 1.227                     | 0.00                | 1.55              |
| 30Yr+40% 15Min Summer | 115.400                   | 0.00                | 2.08              |                           |                           |                     |                   |

## Simulation Results

Return Period (yrs) + Climate Change (%):  
2yr+0%

### Manholes

| Manhole | Critical Storm   | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|------------------|-------------|-----------|-----------|--------------|------------|------------|
| S14     | 10080 min Summer | 19216       | 16.394    | 0.432     | 0.052        |            | Flood Risk |
| S13     | 10080 min Summer | 20145       | 16.393    | 0.470     | 0.161        |            | Surcharged |
| S15     | 120 min Summer   | 69          | 16.394    | 0.008     | 0.358        |            | OK         |
| S8      | 10080 min Summer | 20146       | 16.393    | 0.263     | 0.020        |            | Surcharged |
| S16     | 10080 min Summer | 20146       | 16.393    | 0.008     | 0.018        |            | OK         |
| S9      | 10080 min Summer | 19134       | 16.393    | 0.315     | 0.011        |            | Surcharged |
| S17     | 120 min Summer   | 69          | 16.394    | 0.007     | 0.374        |            | OK         |
| S10     | 10080 min Summer | 19766       | 16.393    | 0.367     | 0.025        |            | Surcharged |
| S18     | 10080 min Summer | 19831       | 16.393    | 0.081     | 0.170        |            | OK         |
| S11     | 10080 min Summer | 19268       | 16.393    | 0.673     | 0.086        |            | Surcharged |
| S12     | 15 min Winter    | 0           | 15.250    | 0.000     | 0.000        |            | OK         |

### Conduits

| Pipe No. | Critical Storm   | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|------------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 8640 min Winter  | 4018        | S14        | S13        | 0.150          | 0.145              | 0.289          | 0.020           | Surcharged |
| 1.001    | 240 min Winter   | 240         | S13        | S11        | 0.150          | 0.032              | 0.242          | 0.017           | Surcharged |
| 2.000    | 10080 min Summer | 20059       | S15        | S8         | 0.078          | 0.249              | 0.045          | 0.001           | OK         |
| 2.001    | 8640 min Winter  | 5440        | S8         | S9         | 0.150          | 0.104              | 0.120          | 0.008           | Surcharged |
| 3.000    | 10080 min Summer | 19927       | S16        | S9         | 0.079          | 0.173              | 0.060          | 0.001           | OK         |
| 2.002    | 5760 min Winter  | 3760        | S9         | S10        | 0.150          | 0.156              | 0.194          | 0.013           | Surcharged |
| 4.000    | 10080 min Summer | 20131       | S17        | S10        | 0.078          | 0.120              | 0.062          | 0.001           | OK         |
| 2.003    | 2160 min Winter  | 1814        | S10        | S11        | 0.150          | 0.224              | 0.256          | 0.018           | Surcharged |
| 5.000    | 10080 min Summer | 19516       | S18        | S11        | 0.116          | 0.012              | 0.161          | 0.004           | OK         |
| 1.002    | 15 min Winter    | 0           | S11        | S12        | 0.000          | 0.000              | 0.000          | 0.000           | OK         |

### Permeable Paving Storage

| Permeable Paving        | Critical Storm   | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Surface Runoff (m3) | Status |
|-------------------------|------------------|-------------|-----------|-----------|--------------|------------|---------------------|--------|
| Road 1 Permeable Paving | 10080 min Summer | 19958       | 16.392    | 0.430     | 0.000        |            |                     | OK     |
| Plot 4 Driveway         | 120 min Summer   | 68          | 16.402    | 0.015     | 0.371        |            |                     | OK     |
| Plot 3 Driveway         | 120 min Summer   | 69          | 16.401    | 0.016     | 0.382        |            |                     | OK     |
| Plot 2 Driveway         | 120 min Summer   | 69          | 16.402    | 0.016     | 0.360        |            |                     | OK     |
| Driveway                | 10080 min Summer | 19832       | 16.393    | 0.080     | 0.018        |            |                     | OK     |

Return Period (yrs) + Climate Change (%):

10yr+0%

## Manholes

| Manhole | Critical Storm   | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|------------------|-------------|-----------|-----------|--------------|------------|------------|
| S14     | 10080 min Summer | 19531       | 16.474    | 0.512     | 0.000        |            | Flood Risk |
| S13     | 10080 min Summer | 19217       | 16.473    | 0.550     | 0.056        |            | Flood Risk |
| S15     | 10080 min Summer | 12727       | 16.474    | 0.087     | 0.000        |            | OK         |
| S8      | 10080 min Summer | 19134       | 16.474    | 0.344     | 0.300        |            | Surcharged |
| S16     | 10080 min Summer | 11412       | 16.474    | 0.090     | 0.029        |            | OK         |
| S9      | 10080 min Summer | 18189       | 16.473    | 0.396     | 0.128        |            | Surcharged |
| S17     | 10080 min Summer | 11738       | 16.474    | 0.087     | 0.000        |            | OK         |
| S10     | 10080 min Summer | 18629       | 16.473    | 0.448     | 0.100        |            | Surcharged |
| S18     | 10080 min Summer | 16550       | 16.475    | 0.163     | 0.151        |            | Flood Risk |
| S11     | 10080 min Summer | 19172       | 16.473    | 0.753     | 0.034        |            | Surcharged |
| S12     | 15 min Summer    | 0           | 15.250    | 0.000     | 0.000        |            | OK         |

## Conduits

| Pipe No. | Critical Storm   | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|------------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 120 min Summer   | 106         | S14        | S13        | 0.150          | 0.411              | 0.736          | 0.051           | Surcharged |
| 1.001    | 60 min Summer    | 60          | S13        | S11        | 0.150          | 0.073              | 0.692          | 0.048           | Surcharged |
| 2.000    | 10080 min Summer | 12727       | S15        | S8         | 0.119          | 0.247              | 0.526          | 0.009           | OK         |
| 2.001    | 10080 min Summer | 9755        | S8         | S9         | 0.150          | 0.103              | 0.283          | 0.020           | Surcharged |
| 3.000    | 10080 min Summer | 18647       | S16        | S9         | 0.121          | 0.170              | 0.641          | 0.010           | OK         |
| 2.002    | 720 min Summer   | 639         | S9         | S10        | 0.150          | 0.317              | 0.499          | 0.035           | Surcharged |
| 4.000    | 10080 min Summer | 19209       | S17        | S10        | 0.119          | 0.103              | 0.616          | 0.008           | OK         |
| 2.003    | 360 min Summer   | 289         | S10        | S11        | 0.150          | 0.366              | 1.204          | 0.083           | Surcharged |
| 5.000    | 10080 min Winter | 19670       | S18        | S11        | 0.150          | 0.046              | 0.281          | 0.006           | Surcharged |
| 1.002    | 15 min Summer    | 0           | S11        | S12        | 0.000          | 0.000              | 0.000          | 0.000           | OK         |

## Permeable Paving Storage

| Permeable Paving        | Critical Storm   | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Surface Runoff (m3) | Status |
|-------------------------|------------------|-------------|-----------|-----------|--------------|------------|---------------------|--------|
| Road 1 Permeable Paving | 10080 min Summer | 20134       | 16.472    | 0.510     | 0.028        |            |                     | OK     |
| Plot 4 Driveway         | 10080 min Summer | 20040       | 16.472    | 0.085     | 0.035        |            |                     | OK     |
| Plot 3 Driveway         | 10080 min Summer | 20076       | 16.472    | 0.087     | 0.102        |            |                     | OK     |
| Plot 2 Driveway         | 10080 min Summer | 19016       | 16.472    | 0.085     | 0.012        |            |                     | OK     |
| Driveway                | 10080 min Summer | 19320       | 16.472    | 0.160     | 0.038        |            |                     | OK     |

Return Period (yrs) + Climate Change (%):

30yr+0%

## Manholes

| Manhole | Critical Storm   | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|------------------|-------------|-----------|-----------|--------------|------------|------------|
| S14     | 10080 min Summer | 10025       | 16.517    | 0.555     | 0.097        |            | Flood Risk |
| S13     | 10080 min Summer | 9997        | 16.516    | 0.593     | 0.032        |            | Flood Risk |
| S15     | 10080 min Summer | 10055       | 16.513    | 0.127     | 0.057        |            | OK         |
| S8      | 10080 min Summer | 10201       | 16.516    | 0.386     | 0.075        |            | Surcharged |
| S16     | 10080 min Summer | 10060       | 16.517    | 0.133     | 0.000        |            | OK         |
| S9      | 10080 min Summer | 10060       | 16.515    | 0.437     | 0.064        |            | Surcharged |
| S17     | 10080 min Summer | 10054       | 16.514    | 0.127     | 0.057        |            | OK         |
| S10     | 10080 min Summer | 10054       | 16.517    | 0.491     | 0.000        |            | Surcharged |
| S18     | 10080 min Summer | 10049       | 16.517    | 0.205     | 0.128        |            | Flood Risk |
| S11     | 10080 min Summer | 10016       | 16.516    | 0.796     | 0.176        |            | Surcharged |
| S12     | 10080 min Summer | 10115       | 15.307    | 0.057     | 0.023        |            | OK         |

## Conduits

| Pipe No. | Critical Storm   | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|------------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 60 min Winter    | 54          | S14        | S13        | 0.150          | 0.474              | 1.036          | 0.072           | Surcharged |
| 1.001    | 30 min Winter    | 27          | S13        | S11        | 0.150          | 0.085              | 0.803          | 0.055           | Surcharged |
| 2.000    | 10080 min Summer | 10054       | S15        | S8         | 0.138          | 0.245              | 0.499          | 0.008           | OK         |
| 2.001    | 8640 min Winter  | 7562        | S8         | S9         | 0.150          | 0.109              | 0.346          | 0.024           | Surcharged |
| 3.000    | 10080 min Summer | 10060       | S16        | S9         | 0.142          | 0.166              | 0.578          | 0.009           | OK         |
| 2.002    | 360 min Summer   | 271         | S9         | S10        | 0.150          | 0.391              | 1.044          | 0.072           | Surcharged |
| 4.000    | 10080 min Summer | 10054       | S17        | S10        | 0.138          | 0.094              | 0.470          | 0.006           | OK         |
| 2.003    | 180 min Summer   | 133         | S10        | S11        | 0.150          | 0.459              | 2.345          | 0.162           | Surcharged |
| 5.000    | 8640 min Summer  | 7614        | S18        | S11        | 0.150          | 0.050              | 0.368          | 0.008           | Surcharged |
| 1.002    | 10080 min Summer | 10060       | S11        | S12        | 0.003          | 0.269              | 0.026          | 0.001           | OK         |

## Permeable Paving Storage

| Permeable Paving        | Critical Storm   | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Surface Runoff (m3) | Status |
|-------------------------|------------------|-------------|-----------|-----------|--------------|------------|---------------------|--------|
| Road 1 Permeable Paving | 10080 min Summer | 10043       | 16.516    | 0.554     | 0.012        |            |                     | OK     |
| Plot 4 Driveway         | 10080 min Summer | 10061       | 16.515    | 0.128     | 0.001        |            |                     | OK     |
| Plot 3 Driveway         | 10080 min Summer | 10028       | 16.516    | 0.131     | 0.032        |            |                     | OK     |
| Plot 2 Driveway         | 10080 min Summer | 10061       | 16.515    | 0.128     | 0.002        |            |                     | OK     |
| Driveway                | 10080 min Summer | 10073       | 16.516    | 0.203     | 0.022        |            |                     | OK     |

Return Period (yrs) + Climate Change (%):

30yr+40%

## Manholes

| Manhole | Critical Storm   | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|------------------|-------------|-----------|-----------|--------------|------------|------------|
| S14     | 10080 min Winter | 6962        | 16.547    | 0.585     | 0.028        |            | Flood Risk |
| S13     | 10080 min Winter | 6996        | 16.548    | 0.625     | 0.046        |            | Flood Risk |
| S15     | 10080 min Winter | 6946        | 16.547    | 0.161     | 0.057        |            | Flood Risk |
| S8      | 10080 min Winter | 6940        | 16.549    | 0.419     | 0.006        |            | Surcharged |
| S16     | 10080 min Winter | 6942        | 16.547    | 0.163     | 0.057        |            | Flood Risk |
| S9      | 10080 min Winter | 6945        | 16.548    | 0.471     | 0.007        |            | Surcharged |
| S17     | 10080 min Winter | 6945        | 16.547    | 0.161     | 0.057        |            | Flood Risk |
| S10     | 10080 min Winter | 7027        | 16.549    | 0.523     | 0.035        |            | Surcharged |
| S18     | 10080 min Winter | 6954        | 16.547    | 0.235     | 0.000        |            | Flood Risk |
| S11     | 10080 min Winter | 6998        | 16.548    | 0.828     | 0.248        |            | Surcharged |
| S12     | 10080 min Winter | 7102        | 15.615    | 0.365     | 0.146        |            | OK         |

## Conduits

| Pipe No. | Critical Storm   | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|------------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 30 min Winter    | 28          | S14        | S13        | 0.150          | 0.517              | 1.360          | 0.094           | Surcharged |
| 1.001    | 30 min Summer    | 23          | S13        | S11        | 0.150          | 0.101              | 1.099          | 0.076           | Surcharged |
| 2.000    | 10080 min Winter | 7977        | S15        | S8         | 0.150          | 0.242              | 0.630          | 0.010           | Surcharged |
| 2.001    | 180 min Summer   | 133         | S8         | S9         | 0.150          | 0.355              | 1.049          | 0.073           | Surcharged |
| 3.000    | 10080 min Winter | 6280        | S16        | S9         | 0.150          | 0.170              | 0.507          | 0.008           | Surcharged |
| 2.002    | 60 min Winter    | 128         | S9         | S10        | 0.150          | 0.522              | 2.808          | 0.195           | Surcharged |
| 4.000    | 10080 min Winter | 7978        | S17        | S10        | 0.150          | 0.120              | 0.559          | 0.008           | Surcharged |
| 2.003    | 60 min Winter    | 43          | S10        | S11        | 0.150          | 0.614              | 4.045          | 0.280           | Surcharged |
| 5.000    | 8640 min Summer  | 12475       | S18        | S11        | 0.150          | 0.050              | 0.317          | 0.007           | Surcharged |
| 1.002    | 10080 min Winter | 7097        | S11        | S12        | 0.061          | 0.426              | 0.148          | 0.005           | OK         |

## Permeable Paving Storage

| Permeable Paving        | Critical Storm   | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Surface Runoff (m3) | Status |
|-------------------------|------------------|-------------|-----------|-----------|--------------|------------|---------------------|--------|
| Road 1 Permeable Paving | 10080 min Winter | 6956        | 16.548    | 0.586     | 0.068        |            |                     | OK     |
| Plot 4 Driveway         | 10080 min Winter | 6947        | 16.549    | 0.162     | 0.016        |            |                     | OK     |
| Plot 3 Driveway         | 10080 min Winter | 6955        | 16.548    | 0.164     | 0.018        |            |                     | OK     |
| Plot 2 Driveway         | 10080 min Winter | 6946        | 16.549    | 0.162     | 0.017        |            |                     | OK     |
| Driveway                | 10080 min Winter | 6957        | 16.548    | 0.235     | 0.187        |            |                     | OK     |

Return Period (yrs) + Climate Change (%):

100yr+0%

## Manholes

| Manhole | Critical Storm   | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|------------------|-------------|-----------|-----------|--------------|------------|------------|
| S14     | 10080 min Winter | 7486        | 16.526    | 0.564     | 0.008        |            | Flood Risk |
| S13     | 10080 min Winter | 7668        | 16.526    | 0.603     | 0.086        |            | Flood Risk |
| S15     | 10080 min Winter | 7648        | 16.523    | 0.136     | 0.057        |            | OK         |
| S8      | 10080 min Winter | 7648        | 16.526    | 0.396     | 0.000        |            | Surcharged |
| S16     | 10080 min Winter | 7648        | 16.528    | 0.144     | 0.000        |            | OK         |
| S9      | 10080 min Winter | 7605        | 16.525    | 0.447     | 0.085        |            | Surcharged |
| S17     | 10080 min Winter | 7648        | 16.523    | 0.136     | 0.057        |            | OK         |
| S10     | 10080 min Winter | 7604        | 16.526    | 0.500     | 0.009        |            | Surcharged |
| S18     | 10080 min Winter | 7440        | 16.527    | 0.214     | 0.039        |            | Flood Risk |
| S11     | 10080 min Winter | 7524        | 16.525    | 0.805     | 0.131        |            | Surcharged |
| S12     | 10080 min Winter | 7787        | 15.434    | 0.184     | 0.073        |            | OK         |

## Conduits

| Pipe No. | Critical Storm   | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|------------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 30 min Winter    | 33          | S14        | S13        | 0.150          | 0.511              | 1.497          | 0.104           | Surcharged |
| 1.001    | 30 min Winter    | 24          | S13        | S11        | 0.150          | 0.086              | 0.916          | 0.063           | Surcharged |
| 2.000    | 10080 min Winter | 7648        | S15        | S8         | 0.143          | 0.242              | 0.517          | 0.008           | OK         |
| 2.001    | 240 min Summer   | 195         | S8         | S9         | 0.150          | 0.337              | 0.819          | 0.057           | Surcharged |
| 3.000    | 10080 min Winter | 7605        | S16        | S9         | 0.147          | 0.171              | 0.620          | 0.009           | OK         |
| 2.002    | 180 min Summer   | 127         | S9         | S10        | 0.150          | 0.465              | 1.950          | 0.135           | Surcharged |
| 4.000    | 10080 min Winter | 7648        | S17        | S10        | 0.143          | 0.120              | 0.398          | 0.005           | OK         |
| 2.003    | 60 min Winter    | 54          | S10        | S11        | 0.150          | 0.616              | 3.724          | 0.258           | Surcharged |
| 5.000    | 4320 min Winter  | 5291        | S18        | S11        | 0.150          | 0.060              | 0.406          | 0.009           | Surcharged |
| 1.002    | 10080 min Winter | 7569        | S11        | S12        | 0.005          | 0.371              | 0.076          | 0.003           | OK         |

## Permeable Paving Storage

| Permeable Paving        | Critical Storm   | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Surface Runoff (m3) | Status |
|-------------------------|------------------|-------------|-----------|-----------|--------------|------------|---------------------|--------|
| Road 1 Permeable Paving | 10080 min Winter | 7668        | 16.525    | 0.563     | 0.047        |            |                     | OK     |
| Plot 4 Driveway         | 10080 min Winter | 7649        | 16.525    | 0.139     | 0.008        |            |                     | OK     |
| Plot 3 Driveway         | 10080 min Winter | 7649        | 16.526    | 0.142     | 0.037        |            |                     | OK     |
| Plot 2 Driveway         | 10080 min Winter | 7649        | 16.525    | 0.139     | 0.008        |            |                     | OK     |
| Driveway                | 10080 min Winter | 7659        | 16.525    | 0.213     | 0.014        |            |                     | OK     |

Return Period (yrs) + Climate Change (%):

100yr+45%

## Manholes

| Manhole | Critical Storm   | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|------------------|-------------|-----------|-----------|--------------|------------|------------|
| S14     | 10080 min Summer | 6523        | 16.608    | 0.646     | 0.028        |            | Flood Risk |
| S13     | 10080 min Summer | 6523        | 16.609    | 0.686     | 0.037        |            | Flood Risk |
| S15     | 10080 min Summer | 6503        | 16.609    | 0.222     | 0.057        |            | Flood Risk |
| S8      | 10080 min Summer | 6508        | 16.610    | 0.481     | 0.062        |            | Flood Risk |
| S16     | 10080 min Summer | 6540        | 16.610    | 0.225     | 0.000        |            | Flood Risk |
| S9      | 10080 min Summer | 6522        | 16.609    | 0.531     | 0.099        |            | Flood Risk |
| S17     | 10080 min Summer | 6539        | 16.608    | 0.221     | 0.057        |            | Flood Risk |
| S10     | 10080 min Summer | 6601        | 16.610    | 0.584     | 0.144        |            | Flood Risk |
| S18     | 10080 min Summer | 6562        | 16.609    | 0.297     | 0.000        |            | Flood Risk |
| S11     | 10080 min Summer | 6460        | 16.609    | 0.889     | 0.083        |            | Surcharged |
| S12     | 10080 min Summer | 6524        | 16.573    | 1.323     | 0.275        |            | Surcharged |

## Conduits

| Pipe No. | Critical Storm   | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|------------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 15 min Winter    | 19          | S14        | S13        | 0.150          | 0.568              | 2.383          | 0.165           | Surcharged |
| 1.001    | 15 min Winter    | 15          | S13        | S11        | 0.150          | 0.114              | 1.209          | 0.083           | Surcharged |
| 2.000    | 10080 min Summer | 6716        | S15        | S8         | 0.150          | 0.186              | 0.734          | 0.012           | Surcharged |
| 2.001    | 60 min Winter    | 43          | S8         | S9         | 0.150          | 0.408              | 1.702          | 0.118           | Surcharged |
| 3.000    | 8640 min Winter  | 4879        | S16        | S9         | 0.150          | 0.177              | 0.431          | 0.006           | Surcharged |
| 2.002    | 30 min Winter    | 25          | S9         | S10        | 0.150          | 0.575              | 4.131          | 0.286           | Surcharged |
| 4.000    | 4320 min Summer  | 2720        | S17        | S10        | 0.150          | 0.139              | 0.705          | 0.010           | Surcharged |
| 2.003    | 30 min Summer    | 24          | S10        | S11        | 0.150          | 0.699              | 6.231          | 0.432           | Surcharged |
| 5.000    | 600 min Summer   | 504         | S18        | S11        | 0.150          | 0.197              | 1.107          | 0.024           | Surcharged |
| 1.002    | 8640 min Summer  | 5463        | S11        | S12        | 0.150          | 0.452              | 0.303          | 0.010           | Surcharged |

## Permeable Paving Storage

| Permeable Paving        | Critical Storm   | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Surface Runoff (m3) | Status     |
|-------------------------|------------------|-------------|-----------|-----------|--------------|------------|---------------------|------------|
| Road 1 Permeable Paving | 10080 min Summer | 6461        | 16.612    | 0.650     | 0.082        |            |                     | Surcharged |
| Plot 4 Driveway         | 10080 min Summer | 6507        | 16.610    | 0.223     | 0.018        |            |                     | OK         |
| Plot 3 Driveway         | 10080 min Summer | 6528        | 16.609    | 0.224     | 0.048        |            |                     | OK         |
| Plot 2 Driveway         | 10080 min Summer | 6526        | 16.609    | 0.222     | 0.019        |            |                     | OK         |
| Driveway                | 10080 min Summer | 6473        | 16.608    | 0.296     | 0.034        |            |                     | OK         |

## SOAKAWAY 2 CALCULATIONS

## Network Details

### Manhole Schedule

| Manhole | Catchment Area (ha) | Size (mm) | Type    | CL (m) | IL (m) | Depth To Soffit (m) | Easting (m) | Northing (m) |
|---------|---------------------|-----------|---------|--------|--------|---------------------|-------------|--------------|
| S31     | 0.000               | 100       | Unknown | 16.575 | 16.075 | 0.400               | 494840.774  | 105985.501   |
| S32     | 0.000               | 450       | Unknown | 16.575 | 15.800 | 0.675               | 494841.396  | 105995.571   |
| S37     | 0.000               | 100       | Unknown | 16.575 | 16.075 | 0.400               | 494828.088  | 105985.959   |
| S73     | 0.013               | 708x354   | Unknown | 16.581 | 16.151 | 0.280               | 494816.366  | 105982.272   |
| S38     | 0.000               | 450       | Unknown | 16.575 | 16.000 | 0.475               | 494821.376  | 105986.373   |
| S33     | 0.013               | 450       | Unknown | 16.700 | 15.550 | 1.000               | 494822.021  | 105996.820   |
| S39     | 0.000               | 100       | Unknown | 16.275 | 15.775 | 0.400               | 494802.844  | 105989.243   |
| S72     | 0.010               | 708x354   | Unknown | 16.434 | 16.004 | 0.280               | 494810.174  | 105982.255   |
| S40     | 0.000               | 450       | Unknown | 16.502 | 15.650 | 0.752               | 494812.841  | 105985.485   |
| S34     | 0.000               | 450       | Unknown | 16.714 | 15.500 | 1.064               | 494817.218  | 105997.129   |
| S35     | 0.009               | 450       | Unknown | 16.475 | 15.440 | 0.885               | 494809.027  | 106000.208   |
| S36     | 0.000               | 150       | Unknown | 16.790 | 15.375 | 1.265               | 494811.859  | 106007.607   |

### Pipe Schedule

| Pipe Number | US Manhole | US IL (m) | DS Manhole | DS IL (m) | Shape | Dimension (mm) | Length (m) | Gradient (1:x) | Roughness (mm) | US Depth To Soffit (m) | DS Depth To Soffit (m) |
|-------------|------------|-----------|------------|-----------|-------|----------------|------------|----------------|----------------|------------------------|------------------------|
| 1.000       | S31        | 16.075    | S32        | 15.800    | Circ  | 100            | 10.090     | 37             | 0.600          | 0.400                  | 0.675                  |
| 1.001       | S32        | 15.800    | S33        | 15.600    | Circ  | 100            | 19.415     | 97             | 0.600          | 0.675                  | 1.000                  |
| 2.000       | S37        | 16.075    | S38        | 16.000    | Circ  | 100            | 6.725      | 90             | 0.600          | 0.400                  | 0.475                  |
| 3.000       | S73        | 16.151    | S38        | 16.000    | Circ  | 150            | 6.475      | 43             | 0.600          | 0.280                  | 0.425                  |
| 2.001       | S38        | 16.000    | S33        | 15.550    | Circ  | 150            | 10.466     | 23             | 0.600          | 0.425                  | 1.000                  |
| 1.002       | S33        | 15.550    | S34        | 15.500    | Circ  | 150            | 4.814      | 96             | 0.600          | 1.000                  | 1.064                  |
| 4.000       | S39        | 15.775    | S40        | 15.650    | Circ  | 100            | 10.680     | 85             | 0.600          | 0.400                  | 0.752                  |
| 5.000       | S72        | 16.004    | S40        | 15.650    | Circ  | 150            | 4.188      | 12             | 0.600          | 0.280                  | 0.702                  |
| 4.001       | S40        | 15.650    | S34        | 15.500    | Circ  | 150            | 12.440     | 83             | 0.600          | 0.702                  | 1.064                  |
| 1.003       | S34        | 15.500    | S35        | 15.440    | Circ  | 150            | 8.750      | 146            | 0.600          | 1.064                  | 0.885                  |
| 1.004       | S35        | 15.440    | S36        | 15.375    | Circ  | 150            | 7.922      | 122            | 0.600          | 0.885                  | 1.265                  |

### Permeable Paving Schedule

| Permeable Paving | Assigned Manhole | Effective Storage Volume (m3) | CL (m) | IL (m) | Storage Infil Rate (m/hr) | Safety Factor | Easting (m) | Northing (m) |
|------------------|------------------|-------------------------------|--------|--------|---------------------------|---------------|-------------|--------------|
| Plot 5 Driveway  | S73              | 8.105                         | 16.581 | 16.151 | 0.36000000                | 2.00          | 494819.551  | 105984.234   |
| Plot 6 Driveway  | S72              | 7.090                         | 16.434 | 16.004 | 0.36000000                | 3.00          | 494815.203  | 105991.826   |

## Outfall Details

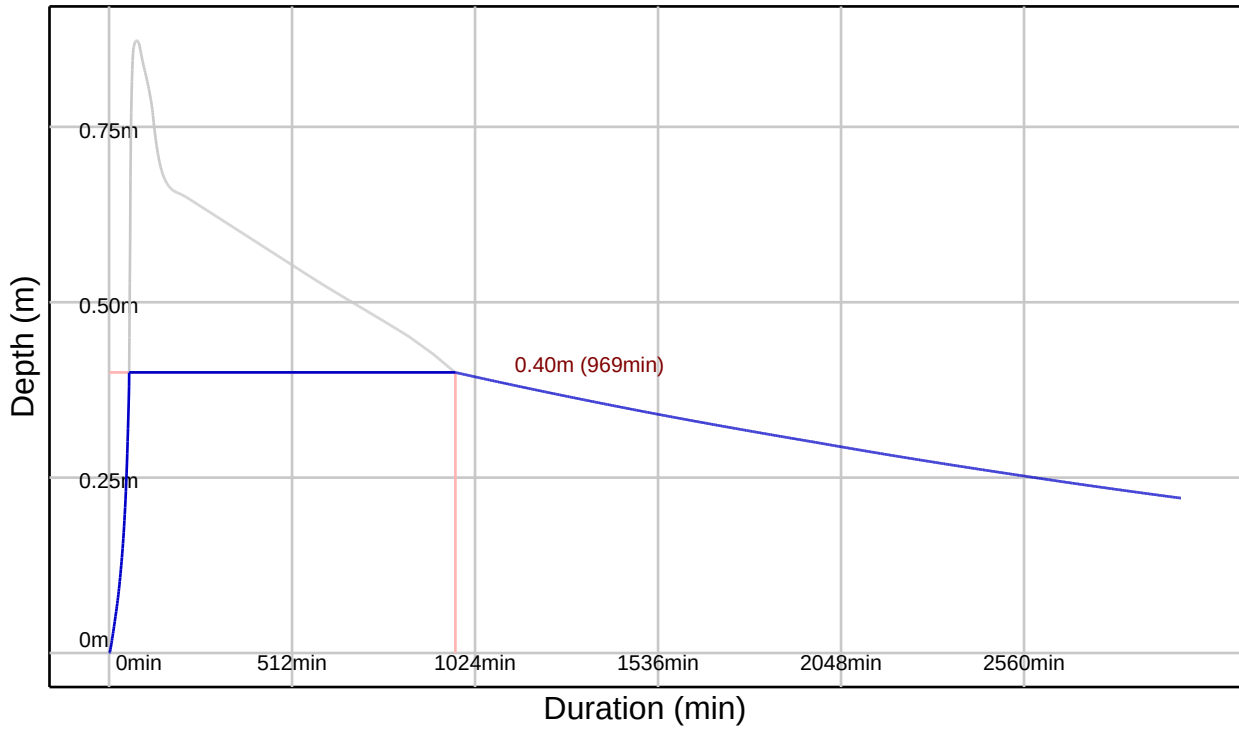
Outfall Manhole S36 : Infiltration Tank

## Flow Control Details

### Tank Structure at Manhole S36

| Tank Invert (m) | Tank Height (m) | Porosity Ratio (%) | Area (m2) | Effective Area (m2)<br>Area x Porosity Ratio | Max Storage (m3)<br>Effective Area x Height | Infil Base (m/hr) | Infil Side (m/hr) | Safety Factor |
|-----------------|-----------------|--------------------|-----------|----------------------------------------------|---------------------------------------------|-------------------|-------------------|---------------|
| 15.350          | 0.400           | 95.00              | 16.000    | 15.200                                       | 6.080                                       | 0.00000000        | 0.03600000        | 2.00          |

## Soakaway 2 at S36 (100Yr+45% 120Min Summer)



## Simulation Settings

FEH2022 (point): Filename=FEH\_Point\_Descriptors\_494846\_106034\_v5\_0\_1.xml

Summer (Cv: 1.00), Winter (Cv: 1.00)

Global Time of Entry: 5.0 mins

Durations (mins): 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080

Return Periods (yrs) + Climate Change: (2, +0%), (10, +0%), (30, +0%), (30, +40%), (100, +0%), (100, +45%)

Manhole Flood Risk Freeboard: 0.300m

## Simulated Rainfall Events

| Storm               | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % | Storm                    | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % |
|---------------------|---------------------------|---------------------|-------------------|--------------------------|---------------------------|---------------------|-------------------|
| 2Yr 15Min Winter    | 32.749                    | 0.00                | 0.00              | 30Yr+40% 15Min Summer    | 115.400                   | 0.00                | 0.00              |
| 2Yr 15Min Summer    | 32.749                    | 0.00                | 0.00              | 30Yr+40% 15Min Winter    | 115.400                   | 0.00                | 0.00              |
| 2Yr 30Min Winter    | 21.400                    | 0.00                | 0.00              | 30Yr+40% 30Min Summer    | 76.723                    | 0.00                | -0.20             |
| 2Yr 30Min Summer    | 21.400                    | 0.00                | 0.00              | 30Yr+40% 30Min Winter    | 76.723                    | 0.00                | -0.23             |
| 2Yr 60Min Winter    | 13.587                    | 0.00                | 0.00              | 30Yr+40% 60Min Summer    | 48.813                    | 0.00                | -0.15             |
| 2Yr 60Min Summer    | 13.587                    | 0.00                | 0.00              | 30Yr+40% 60Min Winter    | 48.813                    | 0.00                | -0.18             |
| 2Yr 120Min Summer   | 9.453                     | 0.00                | 0.00              | 30Yr+40% 120Min Summer   | 29.821                    | 0.00                | -0.13             |
| 2Yr 120Min Winter   | 9.453                     | 0.00                | 0.00              | 30Yr+40% 120Min Winter   | 29.821                    | 0.00                | -0.10             |
| 2Yr 180Min Winter   | 7.477                     | 0.00                | 0.00              | 30Yr+40% 180Min Summer   | 22.101                    | 0.00                | -0.10             |
| 2Yr 180Min Summer   | 7.477                     | 0.00                | 0.00              | 30Yr+40% 180Min Winter   | 22.101                    | 0.00                | -0.07             |
| 2Yr 240Min Summer   | 6.107                     | 0.00                | 0.00              | 30Yr+40% 240Min Summer   | 17.734                    | 0.00                | -0.09             |
| 2Yr 240Min Winter   | 6.107                     | 0.00                | 0.00              | 30Yr+40% 240Min Winter   | 17.734                    | 0.00                | 0.00              |
| 2Yr 360Min Summer   | 4.586                     | 0.00                | 0.00              | 30Yr+40% 360Min Summer   | 12.872                    | 0.00                | 0.00              |
| 2Yr 360Min Winter   | 4.586                     | 0.00                | 0.00              | 30Yr+40% 360Min Winter   | 12.872                    | 0.00                | 0.00              |
| 2Yr 480Min Summer   | 3.720                     | 0.00                | 0.00              | 30Yr+40% 480Min Summer   | 10.214                    | 0.00                | 0.00              |
| 2Yr 480Min Winter   | 3.720                     | 0.00                | 0.00              | 30Yr+40% 480Min Winter   | 10.214                    | 0.00                | 0.00              |
| 2Yr 600Min Summer   | 3.134                     | 0.00                | 0.00              | 30Yr+40% 600Min Summer   | 8.511                     | 0.00                | 0.00              |
| 2Yr 600Min Winter   | 3.134                     | 0.00                | 0.00              | 30Yr+40% 600Min Winter   | 8.511                     | 0.00                | 0.00              |
| 2Yr 720Min Summer   | 2.713                     | 0.00                | 0.00              | 30Yr+40% 720Min Summer   | 7.317                     | 0.00                | 0.00              |
| 2Yr 720Min Winter   | 2.713                     | 0.00                | 0.00              | 30Yr+40% 720Min Winter   | 7.317                     | 0.00                | 0.00              |
| 2Yr 960Min Summer   | 2.169                     | 0.00                | 0.00              | 30Yr+40% 960Min Summer   | 5.758                     | 0.00                | 0.00              |
| 2Yr 960Min Winter   | 2.169                     | 0.00                | 0.00              | 30Yr+40% 960Min Winter   | 5.758                     | 0.00                | 0.00              |
| 2Yr 1440Min Winter  | 1.591                     | 0.00                | 0.00              | 30Yr+40% 1440Min Summer  | 4.120                     | 0.00                | 0.00              |
| 2Yr 1440Min Summer  | 1.591                     | 0.00                | 0.00              | 30Yr+40% 1440Min Winter  | 4.120                     | 0.00                | 0.05              |
| 2Yr 2160Min Summer  | 1.178                     | 0.00                | 0.00              | 30Yr+40% 2160Min Summer  | 2.968                     | 0.00                | 0.05              |
| 2Yr 2160Min Winter  | 1.178                     | 0.00                | 0.00              | 30Yr+40% 2160Min Winter  | 2.968                     | 0.00                | 0.04              |
| 2Yr 2880Min Summer  | 0.962                     | 0.00                | 0.00              | 30Yr+40% 2880Min Summer  | 2.364                     | 0.00                | 0.04              |
| 2Yr 2880Min Winter  | 0.962                     | 0.00                | 0.00              | 30Yr+40% 2880Min Winter  | 2.364                     | 0.00                | 0.00              |
| 2Yr 4320Min Summer  | 0.740                     | 0.00                | 0.00              | 30Yr+40% 4320Min Summer  | 1.748                     | 0.00                | 0.00              |
| 2Yr 4320Min Winter  | 0.740                     | 0.00                | 0.00              | 30Yr+40% 4320Min Winter  | 1.748                     | 0.00                | 0.00              |
| 2Yr 5760Min Summer  | 0.627                     | 0.00                | 0.00              | 30Yr+40% 5760Min Summer  | 1.434                     | 0.00                | 0.00              |
| 2Yr 5760Min Winter  | 0.627                     | 0.00                | 0.00              | 30Yr+40% 5760Min Winter  | 1.434                     | 0.00                | 0.00              |
| 2Yr 7200Min Summer  | 0.558                     | 0.00                | 0.00              | 30Yr+40% 7200Min Summer  | 1.242                     | 0.00                | 0.00              |
| 2Yr 7200Min Winter  | 0.558                     | 0.00                | 0.00              | 30Yr+40% 7200Min Winter  | 1.242                     | 0.00                | 0.00              |
| 2Yr 8640Min Summer  | 0.510                     | 0.00                | 0.00              | 30Yr+40% 8640Min Summer  | 1.111                     | 0.00                | 0.00              |
| 2Yr 8640Min Winter  | 0.510                     | 0.00                | 0.00              | 30Yr+40% 8640Min Winter  | 1.111                     | 0.00                | 0.00              |
| 2Yr 10080Min Summer | 0.475                     | 0.00                | 0.00              | 30Yr+40% 10080Min Summer | 1.016                     | 0.00                | 0.00              |
| 2Yr 10080Min Winter | 0.475                     | 0.00                | 0.00              | 30Yr+40% 10080Min Winter | 1.016                     | 0.00                | 0.00              |
| 10Yr 15Min Summer   | 63.472                    | 0.00                | 0.00              | 100Yr 15Min Summer       | 103.039                   | 0.00                | 0.00              |
| 10Yr 15Min Winter   | 63.472                    | 0.00                | 0.00              | 100Yr 15Min Winter       | 103.039                   | 0.00                | 0.00              |
| 10Yr 30Min Summer   | 41.975                    | 0.00                | 0.00              | 100Yr 30Min Summer       | 69.133                    | 0.00                | -0.20             |
| 10Yr 30Min Winter   | 41.975                    | 0.00                | 0.00              | 100Yr 30Min Winter       | 69.133                    | 0.00                | -0.15             |
| 10Yr 60Min Summer   | 26.518                    | 0.00                | 0.00              | 100Yr 60Min Summer       | 44.424                    | 0.00                | -0.17             |
| 10Yr 60Min Winter   | 26.518                    | 0.00                | 0.00              | 100Yr 60Min Winter       | 44.424                    | 0.00                | -0.14             |
| 10Yr 120Min Summer  | 16.678                    | 0.00                | 0.00              | 100Yr 120Min Summer      | 26.631                    | 0.00                | -0.11             |
| 10Yr 120Min Winter  | 16.678                    | 0.00                | 0.00              | 100Yr 120Min Winter      | 26.631                    | 0.00                | -0.08             |
| 10Yr 180Min Summer  | 12.547                    | 0.00                | 0.00              | 100Yr 180Min Summer      | 19.524                    | 0.00                | -0.08             |
| 10Yr 180Min Winter  | 12.547                    | 0.00                | 0.00              | 100Yr 180Min Winter      | 19.524                    | 0.00                | -0.08             |
| 10Yr 240Min Summer  | 10.114                    | 0.00                | 0.00              | 100Yr 240Min Summer      | 15.695                    | 0.00                | -0.08             |
| 10Yr 240Min Winter  | 10.114                    | 0.00                | 0.00              | 100Yr 240Min Winter      | 15.695                    | 0.00                | -0.07             |
| 10Yr 360Min Summer  | 7.394                     | 0.00                | 0.00              | 100Yr 360Min Summer      | 11.386                    | 0.00                | 0.00              |
| 10Yr 360Min Winter  | 7.394                     | 0.00                | 0.00              | 100Yr 360Min Winter      | 11.386                    | 0.00                | 0.00              |
| 10Yr 480Min Summer  | 5.892                     | 0.00                | 0.00              | 100Yr 480Min Summer      | 9.035                     | 0.00                | 0.00              |
| 10Yr 480Min Winter  | 5.892                     | 0.00                | 0.00              | 100Yr 480Min Winter      | 9.035                     | 0.00                | 0.00              |

## Simulated Rainfall Events

| Storm                | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % | Storm                     | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % |
|----------------------|---------------------------|---------------------|-------------------|---------------------------|---------------------------|---------------------|-------------------|
| 10Yr 600Min Summer   | 4.919                     | 0.00                | 0.00              | 100Yr 600Min Summer       | 7.544                     | 0.00                | 0.00              |
| 10Yr 600Min Winter   | 4.919                     | 0.00                | 0.00              | 100Yr 600Min Winter       | 7.544                     | 0.00                | 0.00              |
| 10Yr 720Min Summer   | 4.233                     | 0.00                | 0.00              | 100Yr 720Min Summer       | 6.499                     | 0.00                | 0.00              |
| 10Yr 720Min Winter   | 4.233                     | 0.00                | 0.00              | 100Yr 720Min Winter       | 6.499                     | 0.00                | 0.00              |
| 10Yr 960Min Summer   | 3.341                     | 0.00                | 0.00              | 100Yr 960Min Summer       | 5.119                     | 0.00                | 0.00              |
| 10Yr 960Min Winter   | 3.341                     | 0.00                | 0.09              | 100Yr 960Min Winter       | 5.119                     | 0.00                | 0.00              |
| 10Yr 1440Min Summer  | 2.405                     | 0.00                | 0.07              | 100Yr 1440Min Summer      | 3.659                     | 0.00                | 0.00              |
| 10Yr 1440Min Winter  | 2.405                     | 0.00                | 0.07              | 100Yr 1440Min Winter      | 3.659                     | 0.00                | 0.05              |
| 10Yr 2160Min Summer  | 1.746                     | 0.00                | 0.00              | 100Yr 2160Min Summer      | 2.624                     | 0.00                | 0.05              |
| 10Yr 2160Min Winter  | 1.746                     | 0.00                | 0.00              | 100Yr 2160Min Winter      | 2.624                     | 0.00                | 0.04              |
| 10Yr 2880Min Summer  | 1.400                     | 0.00                | 0.00              | 100Yr 2880Min Summer      | 2.074                     | 0.00                | 0.04              |
| 10Yr 2880Min Winter  | 1.400                     | 0.00                | 0.00              | 100Yr 2880Min Winter      | 2.074                     | 0.00                | 0.00              |
| 10Yr 4320Min Summer  | 1.048                     | 0.00                | 0.00              | 100Yr 4320Min Summer      | 1.512                     | 0.00                | 0.00              |
| 10Yr 4320Min Winter  | 1.048                     | 0.00                | 0.00              | 100Yr 4320Min Winter      | 1.512                     | 0.00                | 0.00              |
| 10Yr 5760Min Summer  | 0.869                     | 0.00                | 0.00              | 100Yr 5760Min Summer      | 1.226                     | 0.00                | 0.00              |
| 10Yr 5760Min Winter  | 0.869                     | 0.00                | 0.00              | 100Yr 5760Min Winter      | 1.226                     | 0.00                | 0.00              |
| 10Yr 7200Min Summer  | 0.760                     | 0.00                | 0.00              | 100Yr 7200Min Summer      | 1.051                     | 0.00                | 0.00              |
| 10Yr 7200Min Winter  | 0.760                     | 0.00                | 0.00              | 100Yr 7200Min Winter      | 1.051                     | 0.00                | 0.00              |
| 10Yr 8640Min Summer  | 0.685                     | 0.00                | 0.00              | 100Yr 8640Min Summer      | 0.933                     | 0.00                | 0.00              |
| 10Yr 8640Min Winter  | 0.685                     | 0.00                | 0.00              | 100Yr 8640Min Winter      | 0.933                     | 0.00                | 0.00              |
| 10Yr 10080Min Summer | 0.630                     | 0.00                | 0.00              | 100Yr 10080Min Summer     | 0.846                     | 0.00                | 0.00              |
| 10Yr 10080Min Winter | 0.630                     | 0.00                | 0.00              | 100Yr 10080Min Winter     | 0.846                     | 0.00                | 0.00              |
| 30Yr 15Min Summer    | 82.428                    | 0.00                | 0.00              | 100Yr+45% 15Min Summer    | 149.406                   | 0.00                | -0.21             |
| 30Yr 15Min Winter    | 82.428                    | 0.00                | 0.00              | 100Yr+45% 15Min Winter    | 149.406                   | 0.00                | -0.19             |
| 30Yr 30Min Summer    | 54.802                    | 0.00                | 0.00              | 100Yr+45% 30Min Summer    | 100.242                   | 0.00                | -0.19             |
| 30Yr 30Min Winter    | 54.802                    | 0.00                | 0.00              | 100Yr+45% 30Min Winter    | 100.242                   | 0.00                | -0.19             |
| 30Yr 60Min Summer    | 34.866                    | 0.00                | -0.16             | 100Yr+45% 60Min Summer    | 64.415                    | 0.00                | -0.13             |
| 30Yr 60Min Winter    | 34.866                    | 0.00                | -0.15             | 100Yr+45% 60Min Winter    | 64.415                    | 0.00                | -0.14             |
| 30Yr 120Min Summer   | 21.301                    | 0.00                | -0.13             | 100Yr+45% 120Min Summer   | 38.616                    | 0.00                | -0.12             |
| 30Yr 120Min Winter   | 21.301                    | 0.00                | -0.12             | 100Yr+45% 120Min Winter   | 38.616                    | 0.00                | -0.10             |
| 30Yr 180Min Summer   | 15.787                    | 0.00                | 0.00              | 100Yr+45% 180Min Summer   | 28.310                    | 0.00                | -0.08             |
| 30Yr 180Min Winter   | 15.787                    | 0.00                | 0.00              | 100Yr+45% 180Min Winter   | 28.310                    | 0.00                | -0.08             |
| 30Yr 240Min Summer   | 12.667                    | 0.00                | -0.09             | 100Yr+45% 240Min Summer   | 22.758                    | 0.00                | -0.06             |
| 30Yr 240Min Winter   | 12.667                    | 0.00                | 0.00              | 100Yr+45% 240Min Winter   | 22.758                    | 0.00                | -0.06             |
| 30Yr 360Min Summer   | 9.194                     | 0.00                | 0.00              | 100Yr+45% 360Min Summer   | 16.509                    | 0.00                | -0.05             |
| 30Yr 360Min Winter   | 9.194                     | 0.00                | 0.00              | 100Yr+45% 360Min Winter   | 16.509                    | 0.00                | 0.00              |
| 30Yr 480Min Summer   | 7.295                     | 0.00                | 0.00              | 100Yr+45% 480Min Summer   | 13.100                    | 0.00                | 0.00              |
| 30Yr 480Min Winter   | 7.295                     | 0.00                | 0.00              | 100Yr+45% 480Min Winter   | 13.100                    | 0.00                | 0.00              |
| 30Yr 600Min Summer   | 6.080                     | 0.00                | 0.00              | 100Yr+45% 600Min Summer   | 10.939                    | 0.00                | 0.00              |
| 30Yr 600Min Winter   | 6.080                     | 0.00                | 0.00              | 100Yr+45% 600Min Winter   | 10.939                    | 0.00                | 0.00              |
| 30Yr 720Min Summer   | 5.227                     | 0.00                | 0.00              | 100Yr+45% 720Min Summer   | 9.424                     | 0.00                | 0.00              |
| 30Yr 720Min Winter   | 5.227                     | 0.00                | 0.00              | 100Yr+45% 720Min Winter   | 9.424                     | 0.00                | 0.00              |
| 30Yr 960Min Winter   | 4.113                     | 0.00                | 0.00              | 100Yr+45% 960Min Summer   | 7.423                     | 0.00                | 0.00              |
| 30Yr 960Min Summer   | 4.113                     | 0.00                | 0.00              | 100Yr+45% 960Min Winter   | 7.423                     | 0.00                | 0.00              |
| 30Yr 1440Min Summer  | 2.943                     | 0.00                | 0.00              | 100Yr+45% 1440Min Summer  | 5.305                     | 0.00                | 0.00              |
| 30Yr 1440Min Winter  | 2.943                     | 0.00                | 0.06              | 100Yr+45% 1440Min Winter  | 5.305                     | 0.00                | 0.00              |
| 30Yr 2160Min Summer  | 2.120                     | 0.00                | 0.06              | 100Yr+45% 2160Min Summer  | 3.805                     | 0.00                | 0.03              |
| 30Yr 2160Min Winter  | 2.120                     | 0.00                | 0.00              | 100Yr+45% 2160Min Winter  | 3.805                     | 0.00                | 0.03              |
| 30Yr 2880Min Summer  | 1.689                     | 0.00                | 0.05              | 100Yr+45% 2880Min Summer  | 3.008                     | 0.00                | 0.03              |
| 30Yr 2880Min Winter  | 1.689                     | 0.00                | 0.00              | 100Yr+45% 2880Min Winter  | 3.008                     | 0.00                | 0.00              |
| 30Yr 4320Min Summer  | 1.248                     | 0.00                | 0.00              | 100Yr+45% 4320Min Summer  | 2.193                     | 0.00                | 0.00              |
| 30Yr 4320Min Winter  | 1.248                     | 0.00                | 0.00              | 100Yr+45% 4320Min Winter  | 2.193                     | 0.00                | 0.00              |
| 30Yr 5760Min Summer  | 1.024                     | 0.00                | 0.00              | 100Yr+45% 5760Min Summer  | 1.778                     | 0.00                | 0.00              |
| 30Yr 5760Min Winter  | 1.024                     | 0.00                | 0.00              | 100Yr+45% 5760Min Winter  | 1.778                     | 0.00                | 0.00              |
| 30Yr 7200Min Summer  | 0.887                     | 0.00                | 0.00              | 100Yr+45% 7200Min Summer  | 1.524                     | 0.00                | 0.00              |
| 30Yr 7200Min Winter  | 0.887                     | 0.00                | 0.00              | 100Yr+45% 7200Min Winter  | 1.524                     | 0.00                | 0.00              |
| 30Yr 8640Min Summer  | 0.794                     | 0.00                | 0.00              | 100Yr+45% 8640Min Summer  | 1.353                     | 0.00                | 0.00              |
| 30Yr 8640Min Winter  | 0.794                     | 0.00                | 0.00              | 100Yr+45% 8640Min Winter  | 1.353                     | 0.00                | 0.00              |
| 30Yr 10080Min Summer | 0.726                     | 0.00                | 0.00              | 100Yr+45% 10080Min Winter | 1.227                     | 0.00                | 0.00              |
| 30Yr 10080Min Winter | 0.726                     | 0.00                | 0.00              | 100Yr+45% 10080Min Summer | 1.227                     | 0.00                | 0.00              |

## Simulation Results

Return Period (yrs) + Climate Change (%):

2yr+0%

### Manholes

| Manhole | Critical Storm   | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|------------------|-------------|-----------|-----------|--------------|------------|------------|
| S31     | 15 min Winter    | 0           | 16.075    | 0.000     | 0.000        |            | OK         |
| S32     | 10080 min Summer | 6222        | 15.946    | 0.146     | 0.000        |            | Surcharged |
| S37     | 15 min Winter    | 0           | 16.075    | 0.000     | 0.000        |            | OK         |
| S73     | 60 min Summer    | 37          | 16.162    | 0.011     | 0.269        |            | OK         |
| S38     | 30 min Summer    | 23          | 16.009    | 0.009     | 0.268        |            | OK         |
| S33     | 10080 min Summer | 6218        | 15.946    | 0.396     | 0.026        |            | Surcharged |
| S39     | 10080 min Summer | 6230        | 15.946    | 0.171     | 0.032        |            | Surcharged |
| S72     | 120 min Summer   | 68          | 16.011    | 0.008     | 0.283        |            | OK         |
| S40     | 10080 min Summer | 6219        | 15.946    | 0.296     | 0.006        |            | Surcharged |
| S34     | 10080 min Summer | 6221        | 15.946    | 0.446     | 0.031        |            | Surcharged |
| S35     | 10080 min Summer | 6221        | 15.946    | 0.506     | 0.044        |            | Surcharged |
| S36     | 10080 min Summer | 6221        | 15.946    | 0.596     | 0.042        |            | Surcharged |

### Conduits

| Pipe No. | Critical Storm   | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|------------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 8640 min Summer  | 5123        | S31        | S32        | 0.050          | 0.000              | 0.000          | 0.000           | OK         |
| 1.001    | 10080 min Summer | 7118        | S32        | S33        | 0.100          | 0.011              | 0.057          | 0.009           | Surcharged |
| 2.000    | 30 min Summer    | 23          | S37        | S38        | 0.005          | 0.000              | 0.000          | 0.000           | OK         |
| 3.000    | 30 min Summer    | 23          | S73        | S38        | 0.010          | 0.548              | 0.268          | 0.010           | OK         |
| 2.001    | 600 min Winter   | 419         | S38        | S33        | 0.076          | 0.087              | 0.036          | 0.001           | OK         |
| 1.002    | 480 min Summer   | 344         | S33        | S34        | 0.150          | 0.406              | 0.680          | 0.038           | Surcharged |
| 4.000    | 10080 min Summer | 7104        | S39        | S40        | 0.100          | 0.008              | 0.048          | 0.007           | Surcharged |
| 5.000    | 10080 min Summer | 5427        | S72        | S40        | 0.075          | 0.070              | 0.007          | 0.000           | OK         |
| 4.001    | 8640 min Summer  | 7087        | S40        | S34        | 0.150          | 0.006              | 0.070          | 0.004           | Surcharged |
| 1.003    | 180 min Summer   | 145         | S34        | S35        | 0.150          | 0.429              | 1.377          | 0.094           | Surcharged |
| 1.004    | 180 min Summer   | 106         | S35        | S36        | 0.150          | 0.354              | 1.907          | 0.119           | Surcharged |

### Permeable Paving Storage

| Permeable Paving | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Surface Runoff (m3) | Status |
|------------------|----------------|-------------|-----------|-----------|--------------|------------|---------------------|--------|
| Plot 5 Driveway  | 60 min Summer  | 37          | 16.169    | 0.018     | 1.101        |            |                     | OK     |
| Plot 6 Driveway  | 120 min Summer | 68          | 16.021    | 0.017     | 0.740        |            |                     | OK     |

Return Period (yrs) + Climate Change (%):

10yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S31     | 15 min Summer  | 0           | 16.075    | 0.000     | 0.000        |            | OK         |
| S32     | 360 min Winter | 255         | 16.029    | 0.229     | 0.000        |            | Surcharged |
| S37     | 15 min Summer  | 0           | 16.075    | 0.000     | 0.000        |            | OK         |
| S73     | 30 min Summer  | 24          | 16.168    | 0.017     | 0.712        |            | OK         |
| S38     | 360 min Winter | 254         | 16.029    | 0.029     | 0.043        |            | OK         |
| S33     | 360 min Winter | 254         | 16.029    | 0.479     | 0.291        |            | Surcharged |
| S39     | 360 min Winter | 258         | 16.029    | 0.254     | 0.005        |            | Flood Risk |
| S72     | 360 min Winter | 255         | 16.029    | 0.025     | 0.411        |            | OK         |
| S40     | 360 min Winter | 255         | 16.029    | 0.379     | 0.410        |            | Surcharged |
| S34     | 360 min Winter | 254         | 16.029    | 0.529     | 0.417        |            | Surcharged |
| S35     | 360 min Winter | 254         | 16.029    | 0.589     | 0.167        |            | Surcharged |
| S36     | 360 min Winter | 254         | 16.029    | 0.679     | 0.040        |            | Surcharged |

## Conduits

| Pipe No. | Critical Storm  | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|-----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 120 min Summer  | 98          | S31        | S32        | 0.050          | 0.000              | 0.000          | 0.000           | OK         |
| 1.001    | 7200 min Winter | 5282        | S32        | S33        | 0.100          | 0.011              | 0.064          | 0.010           | Surcharged |
| 2.000    | 360 min Winter  | 254         | S37        | S38        | 0.015          | 0.000              | 0.000          | 0.000           | OK         |
| 3.000    | 360 min Winter  | 254         | S73        | S38        | 0.017          | 0.440              | 0.131          | 0.005           | OK         |
| 2.001    | 360 min Winter  | 254         | S38        | S33        | 0.090          | 0.134              | 0.131          | 0.004           | OK         |
| 1.002    | 60 min Winter   | 47          | S33        | S34        | 0.150          | 0.649              | 2.671          | 0.148           | Surcharged |
| 4.000    | 7200 min Winter | 5274        | S39        | S40        | 0.100          | 0.007              | 0.057          | 0.009           | Surcharged |
| 5.000    | 360 min Winter  | 255         | S72        | S40        | 0.088          | 0.467              | 0.170          | 0.003           | OK         |
| 4.001    | 180 min Summer  | 110         | S40        | S34        | 0.150          | 0.127              | 0.472          | 0.024           | Surcharged |
| 1.003    | 60 min Summer   | 39          | S34        | S35        | 0.150          | 0.570              | 3.856          | 0.263           | Surcharged |
| 1.004    | 15 min Winter   | 24          | S35        | S36        | 0.150          | 0.862              | 7.444          | 0.464           | Surcharged |

## Permeable Paving Storage

| Permeable Paving | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Surface Runoff (m3) | Status |
|------------------|----------------|-------------|-----------|-----------|--------------|------------|---------------------|--------|
| Plot 5 Driveway  | 30 min Summer  | 24          | 16.184    | 0.032     | 2.292        |            |                     | OK     |
| Plot 6 Driveway  | 30 min Summer  | 25          | 16.036    | 0.032     | 1.648        |            |                     | OK     |

Return Period (yrs) + Climate Change (%):

30yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S31     | 15 min Summer  | 0           | 16.075    | 0.000     | 0.000        |            | OK         |
| S32     | 240 min Summer | 148         | 16.064    | 0.264     | 0.000        |            | Surcharged |
| S37     | 15 min Summer  | 0           | 16.075    | 0.000     | 0.000        |            | OK         |
| S73     | 30 min Summer  | 24          | 16.172    | 0.020     | 1.029        |            | OK         |
| S38     | 240 min Summer | 147         | 16.064    | 0.064     | 0.231        |            | OK         |
| S33     | 240 min Summer | 148         | 16.064    | 0.514     | 0.862        |            | Surcharged |
| S39     | 240 min Summer | 149         | 16.064    | 0.289     | 0.000        |            | Flood Risk |
| S72     | 240 min Summer | 149         | 16.062    | 0.058     | 1.213        |            | OK         |
| S40     | 240 min Summer | 149         | 16.063    | 0.413     | 1.211        |            | Surcharged |
| S34     | 240 min Summer | 148         | 16.064    | 0.564     | 1.241        |            | Surcharged |
| S35     | 240 min Summer | 148         | 16.064    | 0.624     | 0.426        |            | Surcharged |
| S36     | 240 min Summer | 148         | 16.064    | 0.714     | 0.039        |            | Surcharged |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 60 min Summer  | 46          | S31        | S32        | 0.050          | 0.000              | 0.000          | 0.000           | OK         |
| 1.001    | 180 min Summer | 442         | S32        | S33        | 0.100          | 0.009              | 0.064          | 0.010           | Surcharged |
| 2.000    | 240 min Summer | 147         | S37        | S38        | 0.032          | 0.000              | 0.000          | 0.000           | OK         |
| 3.000    | 240 min Summer | 146         | S73        | S38        | 0.037          | 0.648              | 0.468          | 0.017           | OK         |
| 2.001    | 240 min Summer | 147         | S38        | S33        | 0.107          | 0.155              | 0.468          | 0.013           | OK         |
| 1.002    | 30 min Winter  | 25          | S33        | S34        | 0.150          | 0.777              | 4.764          | 0.264           | Surcharged |
| 4.000    | 60 min Winter  | 63          | S39        | S40        | 0.100          | 0.008              | 0.063          | 0.010           | Surcharged |
| 5.000    | 240 min Summer | 149         | S72        | S40        | 0.104          | 0.606              | 0.531          | 0.010           | OK         |
| 4.001    | 30 min Winter  | 40          | S40        | S34        | 0.150          | 0.086              | 0.899          | 0.046           | Surcharged |
| 1.003    | 30 min Summer  | 21          | S34        | S35        | 0.150          | 0.592              | 5.923          | 0.405           | Surcharged |
| 1.004    | 15 min Winter  | 12          | S35        | S36        | 0.150          | 0.889              | 9.601          | 0.599           | Surcharged |

## Permeable Paving Storage

| Permeable Paving | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Surface Runoff (m3) | Status |
|------------------|----------------|-------------|-----------|-----------|--------------|------------|---------------------|--------|
| Plot 5 Driveway  | 30 min Summer  | 24          | 16.192    | 0.041     | 2.793        |            |                     | OK     |
| Plot 6 Driveway  | 240 min Summer | 154         | 16.054    | 0.051     | 1.422        |            |                     | OK     |

Return Period (yrs) + Climate Change (%):

30yr+40%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S31     | 180 min Summer | 112         | 16.152    | 0.077     | 0.000        |            | OK         |
| S32     | 180 min Summer | 112         | 16.152    | 0.352     | 0.003        |            | Surcharged |
| S37     | 180 min Summer | 112         | 16.152    | 0.077     | 0.003        |            | OK         |
| S73     | 30 min Summer  | 23          | 16.177    | 0.026     | 1.718        |            | OK         |
| S38     | 180 min Summer | 112         | 16.152    | 0.152     | 0.646        |            | Surcharged |
| S33     | 180 min Summer | 112         | 16.152    | 0.602     | 1.696        |            | Surcharged |
| S39     | 180 min Summer | 113         | 16.149    | 0.374     | 0.000        |            | Flood Risk |
| S72     | 180 min Summer | 113         | 16.148    | 0.145     | 2.270        |            | OK         |
| S40     | 180 min Summer | 113         | 16.149    | 0.499     | 2.268        |            | Surcharged |
| S34     | 180 min Summer | 112         | 16.151    | 0.651     | 2.357        |            | Surcharged |
| S35     | 180 min Summer | 112         | 16.151    | 0.711     | 0.707        |            | Surcharged |
| S36     | 180 min Summer | 112         | 16.151    | 0.801     | 0.040        |            | Surcharged |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 180 min Summer | 137         | S31        | S32        | 0.088          | 0.014              | 0.072          | 0.007           | OK         |
| 1.001    | 60 min Winter  | 62          | S32        | S33        | 0.100          | 0.025              | 0.199          | 0.033           | Surcharged |
| 2.000    | 180 min Summer | 138         | S37        | S38        | 0.088          | 0.011              | 0.056          | 0.009           | OK         |
| 3.000    | 120 min Summer | 80          | S73        | S38        | 0.083          | 0.780              | 1.123          | 0.041           | OK         |
| 2.001    | 180 min Summer | 110         | S38        | S33        | 0.150          | 0.155              | 0.712          | 0.019           | Surcharged |
| 1.002    | 15 min Winter  | 14          | S33        | S34        | 0.150          | 0.843              | 8.206          | 0.454           | Surcharged |
| 4.000    | 180 min Summer | 136         | S39        | S40        | 0.100          | 0.014              | 0.108          | 0.017           | Surcharged |
| 5.000    | 180 min Summer | 113         | S72        | S40        | 0.147          | 0.632              | 0.728          | 0.014           | OK         |
| 4.001    | 15 min Winter  | 21          | S40        | S34        | 0.150          | 0.078              | 1.186          | 0.061           | Surcharged |
| 1.003    | 15 min Winter  | 11          | S34        | S35        | 0.150          | 0.631              | 7.990          | 0.546           | Surcharged |
| 1.004    | 15 min Winter  | 9           | S35        | S36        | 0.150          | 0.922              | 13.038         | 0.813           | Surcharged |

## Permeable Paving Storage

| Permeable Paving | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Surface Runoff (m3) | Status |
|------------------|----------------|-------------|-----------|-----------|--------------|------------|---------------------|--------|
| Plot 5 Driveway  | 30 min Summer  | 23          | 16.208    | 0.056     | 4.168        |            |                     | OK     |
| Plot 6 Driveway  | 180 min Summer | 115         | 16.137    | 0.134     | 2.888        |            |                     | OK     |

Return Period (yrs) + Climate Change (%):

100yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S31     | 120 min Summer | 80          | 16.112    | 0.037     | 0.000        |            | OK         |
| S32     | 120 min Summer | 80          | 16.112    | 0.312     | 0.010        |            | Surcharged |
| S37     | 120 min Summer | 80          | 16.112    | 0.037     | 0.000        |            | OK         |
| S73     | 30 min Summer  | 23          | 16.175    | 0.024     | 1.467        |            | OK         |
| S38     | 120 min Summer | 80          | 16.112    | 0.112     | 0.693        |            | OK         |
| S33     | 120 min Summer | 80          | 16.111    | 0.561     | 1.557        |            | Surcharged |
| S39     | 120 min Summer | 80          | 16.109    | 0.334     | 0.004        |            | Flood Risk |
| S72     | 120 min Summer | 80          | 16.108    | 0.104     | 2.077        |            | OK         |
| S40     | 120 min Summer | 80          | 16.109    | 0.459     | 2.084        |            | Surcharged |
| S34     | 120 min Summer | 80          | 16.111    | 0.611     | 2.085        |            | Surcharged |
| S35     | 120 min Summer | 80          | 16.111    | 0.671     | 0.563        |            | Surcharged |
| S36     | 120 min Summer | 80          | 16.111    | 0.761     | 0.040        |            | Surcharged |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 120 min Summer | 86          | S31        | S32        | 0.068          | 0.010              | 0.053          | 0.005           | OK         |
| 1.001    | 60 min Winter  | 61          | S32        | S33        | 0.100          | 0.016              | 0.125          | 0.020           | Surcharged |
| 2.000    | 120 min Summer | 86          | S37        | S38        | 0.068          | 0.010              | 0.056          | 0.009           | OK         |
| 3.000    | 120 min Summer | 79          | S73        | S38        | 0.064          | 0.787              | 0.962          | 0.035           | OK         |
| 2.001    | 120 min Summer | 80          | S38        | S33        | 0.131          | 0.173              | 0.886          | 0.024           | OK         |
| 1.002    | 15 min Winter  | 17          | S33        | S34        | 0.150          | 0.831              | 7.348          | 0.407           | Surcharged |
| 4.000    | 30 min Winter  | 32          | S39        | S40        | 0.100          | 0.014              | 0.113          | 0.017           | Surcharged |
| 5.000    | 120 min Summer | 80          | S72        | S40        | 0.127          | 0.683              | 0.974          | 0.019           | OK         |
| 4.001    | 30 min Winter  | 24          | S40        | S34        | 0.150          | 0.061              | 0.835          | 0.043           | Surcharged |
| 1.003    | 15 min Winter  | 13          | S34        | S35        | 0.150          | 0.623              | 7.219          | 0.493           | Surcharged |
| 1.004    | 15 min Winter  | 10          | S35        | S36        | 0.150          | 0.933              | 11.957         | 0.746           | Surcharged |

## Permeable Paving Storage

| Permeable Paving | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Surface Runoff (m3) | Status |
|------------------|----------------|-------------|-----------|-----------|--------------|------------|---------------------|--------|
| Plot 5 Driveway  | 30 min Summer  | 23          | 16.202    | 0.051     | 3.751        |            |                     | OK     |
| Plot 6 Driveway  | 120 min Summer | 82          | 16.099    | 0.095     | 2.611        |            |                     | OK     |

Return Period (yrs) + Climate Change (%):

100yr+45%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|---------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| S31     | 120 min Summer | 77          | 16.223    | 0.148     | 0.002        |            | Surcharged |
| S32     | 120 min Summer | 77          | 16.223    | 0.423     | 0.006        |            | Surcharged |
| S37     | 120 min Summer | 78          | 16.223    | 0.148     | 0.000        |            | Surcharged |
| S73     | 120 min Summer | 77          | 16.223    | 0.071     | 0.607        |            | OK         |
| S38     | 120 min Summer | 77          | 16.223    | 0.223     | 0.609        |            | Surcharged |
| S33     | 120 min Summer | 77          | 16.223    | 0.673     | 1.541        |            | Surcharged |
| S39     | 120 min Summer | 78          | 16.222    | 0.447     | 0.002        |            | Flood Risk |
| S72     | 120 min Summer | 79          | 16.222    | 0.218     | 1.513        |            | Flood Risk |
| S40     | 120 min Summer | 78          | 16.222    | 0.572     | 1.694        |            | Flood Risk |
| S34     | 120 min Summer | 78          | 16.223    | 0.723     | 1.692        |            | Surcharged |
| S35     | 120 min Summer | 77          | 16.223    | 0.783     | 1.031        |            | Flood Risk |
| S36     | 120 min Summer | 77          | 16.223    | 0.873     | 0.041        |            | Surcharged |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 60 min Summer  | 81          | S31        | S32        | 0.100          | 0.021              | 0.109          | 0.011           | Surcharged |
| 1.001    | 60 min Summer  | 63          | S32        | S33        | 0.100          | 0.027              | 0.212          | 0.035           | Surcharged |
| 2.000    | 30 min Winter  | 49          | S37        | S38        | 0.100          | 0.022              | 0.111          | 0.017           | Surcharged |
| 3.000    | 120 min Summer | 77          | S73        | S38        | 0.111          | 0.744              | 1.299          | 0.048           | OK         |
| 2.001    | 30 min Winter  | 26          | S38        | S33        | 0.150          | 0.140              | 2.018          | 0.054           | Surcharged |
| 1.002    | 15 min Winter  | 9           | S33        | S34        | 0.150          | 0.856              | 9.690          | 0.536           | Surcharged |
| 4.000    | 60 min Winter  | 80          | S39        | S40        | 0.100          | 0.018              | 0.138          | 0.021           | Surcharged |
| 5.000    | 30 min Winter  | 26          | S72        | S40        | 0.150          | 0.707              | 1.591          | 0.031           | Surcharged |
| 4.001    | 15 min Winter  | 13          | S40        | S34        | 0.150          | 0.053              | 0.899          | 0.046           | Surcharged |
| 1.003    | 15 min Winter  | 8           | S34        | S35        | 0.150          | 0.632              | 8.999          | 0.615           | Surcharged |
| 1.004    | 15 min Winter  | 8           | S35        | S36        | 0.150          | 0.956              | 15.010         | 0.936           | Surcharged |

## Permeable Paving Storage

| Permeable Paving | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Surface Runoff (m3) | Status |
|------------------|----------------|-------------|-----------|-----------|--------------|------------|---------------------|--------|
| Plot 5 Driveway  | 60 min Summer  | 40          | 16.224    | 0.073     | 4.845        |            |                     | OK     |
| Plot 6 Driveway  | 120 min Summer | 81          | 16.217    | 0.213     | 2.923        |            |                     | OK     |

## ROAD 2 PERMEABLE PAVING CALCULATIONS

## Network Details

### Manhole Schedule

| Manhole | Catchment Area (ha) | Size (mm) | Type    | CL (m) | IL (m) | Depth To Soffit (m) | Easting (m) | Northing (m) |
|---------|---------------------|-----------|---------|--------|--------|---------------------|-------------|--------------|
| S64     | 0.042               | 708x354   | Unknown | 16.611 | 15.882 | 0.580               | 494787.986  | 106018.737   |
| S65     | 0.000               | 1200      | Unknown | 16.669 | 15.800 | 0.719               | 494796.253  | 106014.690   |

### Pipe Schedule

| Pipe Number | US Manhole | US IL (m) | DS Manhole | DS IL (m) | Shape | Dimension (mm) | Length (m) | Gradient (1:x) | Roughness (mm) | US Depth To Soffit (m) | DS Depth To Soffit (m) |
|-------------|------------|-----------|------------|-----------|-------|----------------|------------|----------------|----------------|------------------------|------------------------|
| 1.000       | S64        | 15.882    | S65        | 15.800    | Circ  | 150            | 9.204      | 113            | 0.600          | 0.580                  | 0.719                  |

### Permeable Paving Schedule

| Permeable Paving        | Assigned Manhole | Effective Storage Volume (m3) | CL (m) | IL (m) | Storage Infil Rate (m/hr) | Safety Factor | Easting (m) | Northing (m) |
|-------------------------|------------------|-------------------------------|--------|--------|---------------------------|---------------|-------------|--------------|
| Road 2 Permeable Paving | S64              | 71.395                        | 16.611 | 15.881 | 0.03600000                | 3.00          | 494800.175  | 106012.184   |

## Outfall Details

Outfall Manhole S65 : Free Discharge

## Flow Control Details

## Simulation Settings

FEH2022 (point): Filename=FEH\_Point\_Descriptors\_494846\_106034\_v5\_0\_1.xml

Summer (Cv: 1.00), Winter (Cv: 1.00)

Global Time of Entry: 5.0 mins

Durations (mins): 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080

Return Periods (yrs) + Climate Change: (2, +0%), (10, +0%), (30, +0%), (30, +40%), (100, +0%), (100, +45%)

Manhole Flood Risk Freeboard: 0.300m

## Simulated Rainfall Events

| Storm               | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % | Storm                    | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % |
|---------------------|---------------------------|---------------------|-------------------|--------------------------|---------------------------|---------------------|-------------------|
| 2Yr 15Min Winter    | 32.749                    | 0.00                | 0.00              | 30Yr+40% 15Min Summer    | 115.400                   | 0.00                | 0.00              |
| 2Yr 15Min Summer    | 32.749                    | 0.00                | 0.00              | 30Yr+40% 15Min Winter    | 115.400                   | 0.00                | 0.00              |
| 2Yr 30Min Winter    | 21.400                    | 0.00                | 0.00              | 30Yr+40% 30Min Summer    | 76.723                    | 0.00                | 0.00              |
| 2Yr 30Min Summer    | 21.400                    | 0.00                | 0.00              | 30Yr+40% 30Min Winter    | 76.723                    | 0.00                | 0.00              |
| 2Yr 60Min Winter    | 13.587                    | 0.00                | 0.00              | 30Yr+40% 60Min Summer    | 48.813                    | 0.00                | 0.00              |
| 2Yr 60Min Summer    | 13.587                    | 0.00                | 0.00              | 30Yr+40% 60Min Winter    | 48.813                    | 0.00                | 0.00              |
| 2Yr 120Min Summer   | 9.453                     | 0.00                | 0.00              | 30Yr+40% 120Min Summer   | 29.821                    | 0.00                | 0.00              |
| 2Yr 120Min Winter   | 9.453                     | 0.00                | 0.00              | 30Yr+40% 120Min Winter   | 29.821                    | 0.00                | 0.00              |
| 2Yr 180Min Winter   | 7.477                     | 0.00                | 0.00              | 30Yr+40% 180Min Summer   | 22.101                    | 0.00                | 0.00              |
| 2Yr 180Min Summer   | 7.477                     | 0.00                | 0.00              | 30Yr+40% 180Min Winter   | 22.101                    | 0.00                | 0.00              |
| 2Yr 240Min Summer   | 6.107                     | 0.00                | 0.00              | 30Yr+40% 240Min Summer   | 17.734                    | 0.00                | 0.00              |
| 2Yr 240Min Winter   | 6.107                     | 0.00                | 0.00              | 30Yr+40% 240Min Winter   | 17.734                    | 0.00                | 0.00              |
| 2Yr 360Min Summer   | 4.586                     | 0.00                | 0.00              | 30Yr+40% 360Min Summer   | 12.872                    | 0.00                | 0.00              |
| 2Yr 360Min Winter   | 4.586                     | 0.00                | 0.00              | 30Yr+40% 360Min Winter   | 12.872                    | 0.00                | 0.00              |
| 2Yr 480Min Summer   | 3.720                     | 0.00                | 0.00              | 30Yr+40% 480Min Summer   | 10.214                    | 0.00                | 0.00              |
| 2Yr 480Min Winter   | 3.720                     | 0.00                | 0.00              | 30Yr+40% 480Min Winter   | 10.214                    | 0.00                | 0.00              |
| 2Yr 600Min Summer   | 3.134                     | 0.00                | 0.00              | 30Yr+40% 600Min Summer   | 8.511                     | 0.00                | 0.00              |
| 2Yr 600Min Winter   | 3.134                     | 0.00                | 0.00              | 30Yr+40% 600Min Winter   | 8.511                     | 0.00                | 0.00              |
| 2Yr 720Min Summer   | 2.713                     | 0.00                | 0.00              | 30Yr+40% 720Min Summer   | 7.317                     | 0.00                | 0.00              |
| 2Yr 720Min Winter   | 2.713                     | 0.00                | 0.00              | 30Yr+40% 720Min Winter   | 7.317                     | 0.00                | 0.00              |
| 2Yr 960Min Summer   | 2.169                     | 0.00                | 0.00              | 30Yr+40% 960Min Summer   | 5.758                     | 0.00                | 0.00              |
| 2Yr 960Min Winter   | 2.169                     | 0.00                | 0.00              | 30Yr+40% 960Min Winter   | 5.758                     | 0.00                | 0.00              |
| 2Yr 1440Min Winter  | 1.591                     | 0.00                | 0.00              | 30Yr+40% 1440Min Summer  | 4.120                     | 0.00                | 0.00              |
| 2Yr 1440Min Summer  | 1.591                     | 0.00                | 0.00              | 30Yr+40% 1440Min Winter  | 4.120                     | 0.00                | 0.00              |
| 2Yr 2160Min Summer  | 1.178                     | 0.00                | 0.00              | 30Yr+40% 2160Min Summer  | 2.968                     | 0.00                | 0.00              |
| 2Yr 2160Min Winter  | 1.178                     | 0.00                | 0.00              | 30Yr+40% 2160Min Winter  | 2.968                     | 0.00                | 0.00              |
| 2Yr 2880Min Summer  | 0.962                     | 0.00                | 0.00              | 30Yr+40% 2880Min Summer  | 2.364                     | 0.00                | 0.00              |
| 2Yr 2880Min Winter  | 0.962                     | 0.00                | 0.00              | 30Yr+40% 2880Min Winter  | 2.364                     | 0.00                | 0.00              |
| 2Yr 4320Min Summer  | 0.740                     | 0.00                | 0.00              | 30Yr+40% 4320Min Summer  | 1.748                     | 0.00                | 0.00              |
| 2Yr 4320Min Winter  | 0.740                     | 0.00                | 0.00              | 30Yr+40% 4320Min Winter  | 1.748                     | 0.00                | 0.00              |
| 2Yr 5760Min Summer  | 0.627                     | 0.00                | 0.00              | 30Yr+40% 5760Min Summer  | 1.434                     | 0.00                | 0.00              |
| 2Yr 5760Min Winter  | 0.627                     | 0.00                | 0.00              | 30Yr+40% 5760Min Winter  | 1.434                     | 0.00                | 0.00              |
| 2Yr 7200Min Summer  | 0.558                     | 0.00                | 0.00              | 30Yr+40% 7200Min Summer  | 1.242                     | 0.00                | 0.00              |
| 2Yr 7200Min Winter  | 0.558                     | 0.00                | 0.00              | 30Yr+40% 7200Min Winter  | 1.242                     | 0.00                | 0.00              |
| 2Yr 8640Min Summer  | 0.510                     | 0.00                | 0.00              | 30Yr+40% 8640Min Summer  | 1.111                     | 0.00                | 0.00              |
| 2Yr 8640Min Winter  | 0.510                     | 0.00                | 0.00              | 30Yr+40% 8640Min Winter  | 1.111                     | 0.00                | 0.00              |
| 2Yr 10080Min Summer | 0.475                     | 0.00                | 0.00              | 30Yr+40% 10080Min Summer | 1.016                     | 0.00                | 0.00              |
| 2Yr 10080Min Winter | 0.475                     | 0.00                | 0.00              | 30Yr+40% 10080Min Winter | 1.016                     | 0.00                | 0.00              |
| 10Yr 15Min Summer   | 63.472                    | 0.00                | 0.00              | 100Yr 15Min Summer       | 103.039                   | 0.00                | 0.00              |
| 10Yr 15Min Winter   | 63.472                    | 0.00                | 0.00              | 100Yr 15Min Winter       | 103.039                   | 0.00                | 0.00              |
| 10Yr 30Min Summer   | 41.975                    | 0.00                | 0.00              | 100Yr 30Min Summer       | 69.133                    | 0.00                | 0.00              |
| 10Yr 30Min Winter   | 41.975                    | 0.00                | 0.00              | 100Yr 30Min Winter       | 69.133                    | 0.00                | 0.00              |
| 10Yr 60Min Summer   | 26.518                    | 0.00                | 0.00              | 100Yr 60Min Summer       | 44.424                    | 0.00                | 0.00              |
| 10Yr 60Min Winter   | 26.518                    | 0.00                | 0.00              | 100Yr 60Min Winter       | 44.424                    | 0.00                | 0.00              |
| 10Yr 120Min Summer  | 16.678                    | 0.00                | 0.00              | 100Yr 120Min Summer      | 26.631                    | 0.00                | 0.00              |
| 10Yr 120Min Winter  | 16.678                    | 0.00                | 0.00              | 100Yr 120Min Winter      | 26.631                    | 0.00                | 0.00              |
| 10Yr 180Min Summer  | 12.547                    | 0.00                | 0.00              | 100Yr 180Min Summer      | 19.524                    | 0.00                | 0.00              |
| 10Yr 180Min Winter  | 12.547                    | 0.00                | 0.00              | 100Yr 180Min Winter      | 19.524                    | 0.00                | 0.00              |
| 10Yr 240Min Summer  | 10.114                    | 0.00                | 0.00              | 100Yr 240Min Summer      | 15.695                    | 0.00                | 0.00              |
| 10Yr 240Min Winter  | 10.114                    | 0.00                | 0.00              | 100Yr 240Min Winter      | 15.695                    | 0.00                | 0.00              |
| 10Yr 360Min Summer  | 7.394                     | 0.00                | 0.00              | 100Yr 360Min Summer      | 11.386                    | 0.00                | 0.00              |
| 10Yr 360Min Winter  | 7.394                     | 0.00                | 0.00              | 100Yr 360Min Winter      | 11.386                    | 0.00                | 0.00              |
| 10Yr 480Min Summer  | 5.892                     | 0.00                | 0.00              | 100Yr 480Min Summer      | 9.035                     | 0.00                | 0.00              |
| 10Yr 480Min Winter  | 5.892                     | 0.00                | 0.00              | 100Yr 480Min Winter      | 9.035                     | 0.00                | 0.00              |

## Simulated Rainfall Events

| Storm                | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % | Storm                     | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % |
|----------------------|---------------------------|---------------------|-------------------|---------------------------|---------------------------|---------------------|-------------------|
| 10Yr 600Min Summer   | 4.919                     | 0.00                | 0.00              | 100Yr 600Min Summer       | 7.544                     | 0.00                | 0.00              |
| 10Yr 600Min Winter   | 4.919                     | 0.00                | 0.00              | 100Yr 600Min Winter       | 7.544                     | 0.00                | 0.00              |
| 10Yr 720Min Summer   | 4.233                     | 0.00                | 0.00              | 100Yr 720Min Summer       | 6.499                     | 0.00                | 0.00              |
| 10Yr 720Min Winter   | 4.233                     | 0.00                | 0.00              | 100Yr 720Min Winter       | 6.499                     | 0.00                | 0.00              |
| 10Yr 960Min Summer   | 3.341                     | 0.00                | 0.00              | 100Yr 960Min Summer       | 5.119                     | 0.00                | 0.00              |
| 10Yr 960Min Winter   | 3.341                     | 0.00                | 0.00              | 100Yr 960Min Winter       | 5.119                     | 0.00                | 0.00              |
| 10Yr 1440Min Summer  | 2.405                     | 0.00                | 0.00              | 100Yr 1440Min Summer      | 3.659                     | 0.00                | 0.00              |
| 10Yr 1440Min Winter  | 2.405                     | 0.00                | 0.00              | 100Yr 1440Min Winter      | 3.659                     | 0.00                | 0.00              |
| 10Yr 2160Min Summer  | 1.746                     | 0.00                | 0.00              | 100Yr 2160Min Summer      | 2.624                     | 0.00                | 0.00              |
| 10Yr 2160Min Winter  | 1.746                     | 0.00                | 0.00              | 100Yr 2160Min Winter      | 2.624                     | 0.00                | 0.00              |
| 10Yr 2880Min Summer  | 1.400                     | 0.00                | 0.00              | 100Yr 2880Min Summer      | 2.074                     | 0.00                | 0.00              |
| 10Yr 2880Min Winter  | 1.400                     | 0.00                | 0.00              | 100Yr 2880Min Winter      | 2.074                     | 0.00                | 0.00              |
| 10Yr 4320Min Summer  | 1.048                     | 0.00                | 0.00              | 100Yr 4320Min Summer      | 1.512                     | 0.00                | 0.00              |
| 10Yr 4320Min Winter  | 1.048                     | 0.00                | 0.00              | 100Yr 4320Min Winter      | 1.512                     | 0.00                | 0.00              |
| 10Yr 5760Min Summer  | 0.869                     | 0.00                | 0.00              | 100Yr 5760Min Summer      | 1.226                     | 0.00                | 0.00              |
| 10Yr 5760Min Winter  | 0.869                     | 0.00                | 0.00              | 100Yr 5760Min Winter      | 1.226                     | 0.00                | 0.00              |
| 10Yr 7200Min Summer  | 0.760                     | 0.00                | 0.00              | 100Yr 7200Min Summer      | 1.051                     | 0.00                | 0.00              |
| 10Yr 7200Min Winter  | 0.760                     | 0.00                | 0.00              | 100Yr 7200Min Winter      | 1.051                     | 0.00                | 0.00              |
| 10Yr 8640Min Summer  | 0.685                     | 0.00                | 0.00              | 100Yr 8640Min Summer      | 0.933                     | 0.00                | 0.00              |
| 10Yr 8640Min Winter  | 0.685                     | 0.00                | 0.00              | 100Yr 8640Min Winter      | 0.933                     | 0.00                | 0.00              |
| 10Yr 10080Min Summer | 0.630                     | 0.00                | 0.00              | 100Yr 10080Min Summer     | 0.846                     | 0.00                | 0.00              |
| 10Yr 10080Min Winter | 0.630                     | 0.00                | 0.00              | 100Yr 10080Min Winter     | 0.846                     | 0.00                | 0.00              |
| 30Yr 15Min Summer    | 82.428                    | 0.00                | 0.00              | 100Yr+45% 15Min Summer    | 149.406                   | 0.00                | 0.00              |
| 30Yr 15Min Winter    | 82.428                    | 0.00                | 0.00              | 100Yr+45% 15Min Winter    | 149.406                   | 0.00                | 0.00              |
| 30Yr 30Min Summer    | 54.802                    | 0.00                | 0.00              | 100Yr+45% 30Min Summer    | 100.242                   | 0.00                | 0.00              |
| 30Yr 30Min Winter    | 54.802                    | 0.00                | 0.00              | 100Yr+45% 30Min Winter    | 100.242                   | 0.00                | 0.00              |
| 30Yr 60Min Summer    | 34.866                    | 0.00                | 0.00              | 100Yr+45% 60Min Summer    | 64.415                    | 0.00                | 0.00              |
| 30Yr 60Min Winter    | 34.866                    | 0.00                | 0.00              | 100Yr+45% 60Min Winter    | 64.415                    | 0.00                | 0.00              |
| 30Yr 120Min Summer   | 21.301                    | 0.00                | 0.00              | 100Yr+45% 120Min Summer   | 38.616                    | 0.00                | 0.00              |
| 30Yr 120Min Winter   | 21.301                    | 0.00                | 0.00              | 100Yr+45% 120Min Winter   | 38.616                    | 0.00                | 0.00              |
| 30Yr 180Min Summer   | 15.787                    | 0.00                | 0.00              | 100Yr+45% 180Min Summer   | 28.310                    | 0.00                | 0.00              |
| 30Yr 180Min Winter   | 15.787                    | 0.00                | 0.00              | 100Yr+45% 180Min Winter   | 28.310                    | 0.00                | 0.00              |
| 30Yr 240Min Summer   | 12.667                    | 0.00                | 0.00              | 100Yr+45% 240Min Summer   | 22.758                    | 0.00                | 0.00              |
| 30Yr 240Min Winter   | 12.667                    | 0.00                | 0.00              | 100Yr+45% 240Min Winter   | 22.758                    | 0.00                | 0.00              |
| 30Yr 360Min Summer   | 9.194                     | 0.00                | 0.00              | 100Yr+45% 360Min Summer   | 16.509                    | 0.00                | 0.00              |
| 30Yr 360Min Winter   | 9.194                     | 0.00                | 0.00              | 100Yr+45% 360Min Winter   | 16.509                    | 0.00                | 0.00              |
| 30Yr 480Min Summer   | 7.295                     | 0.00                | 0.00              | 100Yr+45% 480Min Summer   | 13.100                    | 0.00                | 0.00              |
| 30Yr 480Min Winter   | 7.295                     | 0.00                | 0.00              | 100Yr+45% 480Min Winter   | 13.100                    | 0.00                | 0.00              |
| 30Yr 600Min Summer   | 6.080                     | 0.00                | 0.00              | 100Yr+45% 600Min Summer   | 10.939                    | 0.00                | 0.00              |
| 30Yr 600Min Winter   | 6.080                     | 0.00                | 0.00              | 100Yr+45% 600Min Winter   | 10.939                    | 0.00                | 0.00              |
| 30Yr 720Min Summer   | 5.227                     | 0.00                | 0.00              | 100Yr+45% 720Min Summer   | 9.424                     | 0.00                | 0.00              |
| 30Yr 720Min Winter   | 5.227                     | 0.00                | 0.00              | 100Yr+45% 720Min Winter   | 9.424                     | 0.00                | 0.00              |
| 30Yr 960Min Summer   | 4.113                     | 0.00                | 0.00              | 100Yr+45% 960Min Summer   | 7.423                     | 0.00                | 0.00              |
| 30Yr 960Min Winter   | 4.113                     | 0.00                | 0.00              | 100Yr+45% 960Min Winter   | 7.423                     | 0.00                | 0.00              |
| 30Yr 1440Min Summer  | 2.943                     | 0.00                | 0.00              | 100Yr+45% 1440Min Summer  | 5.305                     | 0.00                | 0.00              |
| 30Yr 1440Min Winter  | 2.943                     | 0.00                | 0.00              | 100Yr+45% 1440Min Winter  | 5.305                     | 0.00                | 0.00              |
| 30Yr 2160Min Summer  | 2.120                     | 0.00                | 0.00              | 100Yr+45% 2160Min Summer  | 3.805                     | 0.00                | 0.00              |
| 30Yr 2160Min Winter  | 2.120                     | 0.00                | 0.00              | 100Yr+45% 2160Min Winter  | 3.805                     | 0.00                | 0.00              |
| 30Yr 2880Min Summer  | 1.689                     | 0.00                | 0.00              | 100Yr+45% 2880Min Summer  | 3.008                     | 0.00                | 0.00              |
| 30Yr 2880Min Winter  | 1.689                     | 0.00                | 0.00              | 100Yr+45% 2880Min Winter  | 3.008                     | 0.00                | 0.00              |
| 30Yr 4320Min Summer  | 1.248                     | 0.00                | 0.00              | 100Yr+45% 4320Min Summer  | 2.193                     | 0.00                | 0.00              |
| 30Yr 4320Min Winter  | 1.248                     | 0.00                | 0.00              | 100Yr+45% 4320Min Winter  | 2.193                     | 0.00                | 0.00              |
| 30Yr 5760Min Summer  | 1.024                     | 0.00                | 0.00              | 100Yr+45% 5760Min Summer  | 1.778                     | 0.00                | 0.00              |
| 30Yr 5760Min Winter  | 1.024                     | 0.00                | 0.00              | 100Yr+45% 5760Min Winter  | 1.778                     | 0.00                | 0.00              |
| 30Yr 7200Min Summer  | 0.887                     | 0.00                | 0.00              | 100Yr+45% 7200Min Summer  | 1.524                     | 0.00                | 0.00              |
| 30Yr 7200Min Winter  | 0.887                     | 0.00                | 0.00              | 100Yr+45% 7200Min Winter  | 1.524                     | 0.00                | 0.00              |
| 30Yr 8640Min Summer  | 0.794                     | 0.00                | 0.00              | 100Yr+45% 8640Min Summer  | 1.353                     | 0.00                | 0.00              |
| 30Yr 8640Min Winter  | 0.794                     | 0.00                | 0.00              | 100Yr+45% 8640Min Winter  | 1.353                     | 0.00                | 0.00              |
| 30Yr 10080Min Summer | 0.726                     | 0.00                | 0.00              | 100Yr+45% 10080Min Summer | 1.227                     | 0.00                | 0.00              |
| 30Yr 10080Min Winter | 0.726                     | 0.00                | 0.00              | 100Yr+45% 10080Min Winter | 1.227                     | 0.00                | 0.00              |

## Simulation Results

Return Period (yrs) + Climate Change (%):  
2yr+0%

### Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status  |
|---------|----------------|-------------|-----------|-----------|--------------|------------|---------|
| S64     | 180 min Summer | 110         | 15.905    | 0.023     | 0.904        |            | OK      |
| S65     | 180 min Summer | 110         | 15.823    | 0.023     | 0.904        |            | Outfall |

### Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 180 min Summer | 110         | S64        | S65        | 0.023          | 0.523              | 0.904          | 0.054           | OK     |

### Permeable Paving Storage

| Permeable Paving        | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Surface Runoff (m3) | Status |
|-------------------------|----------------|-------------|-----------|-----------|--------------|------------|---------------------|--------|
| Road 2 Permeable Paving | 180 min Summer | 111         | 15.913    | 0.031     | 1.257        |            |                     | OK     |

Return Period (yrs) + Climate Change (%):

10yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status  |
|---------|----------------|-------------|-----------|-----------|--------------|------------|---------|
| S64     | 120 min Summer | 74          | 15.917    | 0.036     | 2.122        |            | OK      |
| S65     | 120 min Summer | 74          | 15.835    | 0.035     | 2.122        |            | Outfall |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 120 min Summer | 74          | S64        | S65        | 0.035          | 0.669              | 2.122          | 0.127           | OK     |

## Permeable Paving Storage

| Permeable Paving        | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Surface Runoff (m3) | Status |
|-------------------------|----------------|-------------|-----------|-----------|--------------|------------|---------------------|--------|
| Road 2 Permeable Paving | 120 min Summer | 75          | 15.934    | 0.053     | 2.730        |            |                     | OK     |

Return Period (yrs) + Climate Change (%):

30yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status  |
|---------|----------------|-------------|-----------|-----------|--------------|------------|---------|
| S64     | 60 min Summer  | 42          | 15.925    | 0.044     | 3.127        |            | OK      |
| S65     | 60 min Summer  | 42          | 15.842    | 0.042     | 3.126        |            | Outfall |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 60 min Summer  | 42          | S64        | S65        | 0.043          | 0.744              | 3.126          | 0.188           | OK     |

## Permeable Paving Storage

| Permeable Paving        | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Surface Runoff (m3) | Status |
|-------------------------|----------------|-------------|-----------|-----------|--------------|------------|---------------------|--------|
| Road 2 Permeable Paving | 60 min Summer  | 42          | 15.949    | 0.068     | 4.237        |            |                     | OK     |

Return Period (yrs) + Climate Change (%):

30yr+40%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status  |
|---------|----------------|-------------|-----------|-----------|--------------|------------|---------|
| S64     | 60 min Summer  | 45          | 15.938    | 0.057     | 5.106        |            | OK      |
| S65     | 60 min Summer  | 45          | 15.855    | 0.055     | 5.111        |            | Outfall |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 60 min Summer  | 45          | S64        | S65        | 0.056          | 0.850              | 5.111          | 0.307           | OK     |

## Permeable Paving Storage

| Permeable Paving        | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Surface Runoff (m3) | Status |
|-------------------------|----------------|-------------|-----------|-----------|--------------|------------|---------------------|--------|
| Road 2 Permeable Paving | 60 min Summer  | 45          | 15.975    | 0.093     | 5.179        |            |                     | OK     |

Return Period (yrs) + Climate Change (%):

100yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status  |
|---------|----------------|-------------|-----------|-----------|--------------|------------|---------|
| S64     | 60 min Summer  | 44          | 15.935    | 0.053     | 4.494        |            | OK      |
| S65     | 60 min Summer  | 44          | 15.851    | 0.051     | 4.494        |            | Outfall |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 60 min Summer  | 44          | S64        | S65        | 0.052          | 0.822              | 4.494          | 0.270           | OK     |

## Permeable Paving Storage

| Permeable Paving        | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Surface Runoff (m3) | Status |
|-------------------------|----------------|-------------|-----------|-----------|--------------|------------|---------------------|--------|
| Road 2 Permeable Paving | 60 min Summer  | 44          | 15.967    | 0.086     | 5.676        |            |                     | OK     |

Return Period (yrs) + Climate Change (%):

100yr+45%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status  |
|---------|----------------|-------------|-----------|-----------|--------------|------------|---------|
| S64     | 60 min Summer  | 45          | 15.951    | 0.070     | 7.332        |            | OK      |
| S65     | 60 min Summer  | 45          | 15.867    | 0.067     | 7.332        |            | Outfall |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 60 min Summer  | 45          | S64        | S65        | 0.068          | 0.933              | 7.332          | 0.440           | OK     |

## Permeable Paving Storage

| Permeable Paving        | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Surface Runoff (m3) | Status |
|-------------------------|----------------|-------------|-----------|-----------|--------------|------------|---------------------|--------|
| Road 2 Permeable Paving | 60 min Summer  | 45          | 16.000    | 0.118     | 8.604        |            |                     | OK     |

## ROAD 3 PERMEABLE PAVING CALCULATIONS

## Network Details

### Manhole Schedule

| Manhole | Catchment Area (ha) | Size (mm) | Type    | CL (m) | IL (m) | Depth To Soffit (m) | Easting (m) | Northing (m) |
|---------|---------------------|-----------|---------|--------|--------|---------------------|-------------|--------------|
| S61     | 0.029               | 708x354   | Unknown | 16.045 | 15.315 | 0.580               | 494767.985  | 105989.691   |
| S74     | 0.000               | 1350      | Type C  | 16.211 | 15.235 | 0.826               | 494779.038  | 105985.377   |

### Pipe Schedule

| Pipe Number | US Manhole | US IL (m) | DS Manhole | DS IL (m) | Shape | Dimension (mm) | Length (m) | Gradient (1:x) | Roughness (mm) | US Depth To Soffit (m) | DS Depth To Soffit (m) |
|-------------|------------|-----------|------------|-----------|-------|----------------|------------|----------------|----------------|------------------------|------------------------|
| 1.000       | S61        | 15.315    | S74        | 15.235    | Circ  | 150            | 11.865     | 148            | 0.600          | 0.580                  | 0.826                  |

### Permeable Paving Schedule

| Permeable Paving        | Assigned Manhole | Effective Storage Volume (m3) | CL (m) | IL (m) | Storage Infil Rate (m/hr) | Safety Factor | Easting (m) | Northing (m) |
|-------------------------|------------------|-------------------------------|--------|--------|---------------------------|---------------|-------------|--------------|
| Road 3 Permeable Paving | S61              | 51.360                        | 16.045 | 15.315 | 0.03600000                | 3.00          | 494777.606  | 105988.199   |

## Outfall Details

Outfall Manhole S74 : Free Discharge

## Flow Control Details

## Simulation Settings

FEH2022 (point): Filename=FEH\_Point\_Descriptors\_494846\_106034\_v5\_0\_1.xml

Summer (Cv: 1.00), Winter (Cv: 1.00)

Global Time of Entry: 5.0 mins

Durations (mins): 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080

Return Periods (yrs) + Climate Change: (2, +0%), (10, +0%), (30, +0%), (30, +40%), (100, +0%), (100, +45%)

Manhole Flood Risk Freeboard: 0.300m

## Simulated Rainfall Events

| Storm               | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % | Storm                    | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % |
|---------------------|---------------------------|---------------------|-------------------|--------------------------|---------------------------|---------------------|-------------------|
| 2Yr 15Min Winter    | 32.749                    | 0.00                | 0.00              | 30Yr+40% 15Min Summer    | 115.400                   | 0.00                | 0.00              |
| 2Yr 15Min Summer    | 32.749                    | 0.00                | 0.00              | 30Yr+40% 15Min Winter    | 115.400                   | 0.00                | 0.00              |
| 2Yr 30Min Winter    | 21.400                    | 0.00                | 0.00              | 30Yr+40% 30Min Summer    | 76.723                    | 0.00                | 0.00              |
| 2Yr 30Min Summer    | 21.400                    | 0.00                | 0.00              | 30Yr+40% 30Min Winter    | 76.723                    | 0.00                | 0.00              |
| 2Yr 60Min Winter    | 13.587                    | 0.00                | 0.00              | 30Yr+40% 60Min Summer    | 48.813                    | 0.00                | 0.00              |
| 2Yr 60Min Summer    | 13.587                    | 0.00                | 0.00              | 30Yr+40% 60Min Winter    | 48.813                    | 0.00                | 0.00              |
| 2Yr 120Min Summer   | 9.453                     | 0.00                | 0.00              | 30Yr+40% 120Min Summer   | 29.821                    | 0.00                | 0.00              |
| 2Yr 120Min Winter   | 9.453                     | 0.00                | 0.00              | 30Yr+40% 120Min Winter   | 29.821                    | 0.00                | 0.00              |
| 2Yr 180Min Winter   | 7.477                     | 0.00                | 0.00              | 30Yr+40% 180Min Summer   | 22.101                    | 0.00                | 0.00              |
| 2Yr 180Min Summer   | 7.477                     | 0.00                | 0.00              | 30Yr+40% 180Min Winter   | 22.101                    | 0.00                | 0.00              |
| 2Yr 240Min Summer   | 6.107                     | 0.00                | 0.00              | 30Yr+40% 240Min Summer   | 17.734                    | 0.00                | 0.00              |
| 2Yr 240Min Winter   | 6.107                     | 0.00                | 0.00              | 30Yr+40% 240Min Winter   | 17.734                    | 0.00                | 0.00              |
| 2Yr 360Min Summer   | 4.586                     | 0.00                | 0.00              | 30Yr+40% 360Min Summer   | 12.872                    | 0.00                | 0.00              |
| 2Yr 360Min Winter   | 4.586                     | 0.00                | 0.00              | 30Yr+40% 360Min Winter   | 12.872                    | 0.00                | 0.00              |
| 2Yr 480Min Summer   | 3.720                     | 0.00                | 0.00              | 30Yr+40% 480Min Summer   | 10.214                    | 0.00                | 0.00              |
| 2Yr 480Min Winter   | 3.720                     | 0.00                | 0.00              | 30Yr+40% 480Min Winter   | 10.214                    | 0.00                | 0.00              |
| 2Yr 600Min Summer   | 3.134                     | 0.00                | 0.00              | 30Yr+40% 600Min Summer   | 8.511                     | 0.00                | 0.00              |
| 2Yr 600Min Winter   | 3.134                     | 0.00                | 0.00              | 30Yr+40% 600Min Winter   | 8.511                     | 0.00                | 0.00              |
| 2Yr 720Min Summer   | 2.713                     | 0.00                | 0.00              | 30Yr+40% 720Min Summer   | 7.317                     | 0.00                | 0.00              |
| 2Yr 720Min Winter   | 2.713                     | 0.00                | 0.00              | 30Yr+40% 720Min Winter   | 7.317                     | 0.00                | 0.00              |
| 2Yr 960Min Summer   | 2.169                     | 0.00                | 0.00              | 30Yr+40% 960Min Summer   | 5.758                     | 0.00                | 0.00              |
| 2Yr 960Min Winter   | 2.169                     | 0.00                | 0.00              | 30Yr+40% 960Min Winter   | 5.758                     | 0.00                | 0.00              |
| 2Yr 1440Min Winter  | 1.591                     | 0.00                | 0.00              | 30Yr+40% 1440Min Summer  | 4.120                     | 0.00                | 0.00              |
| 2Yr 1440Min Summer  | 1.591                     | 0.00                | 0.00              | 30Yr+40% 1440Min Winter  | 4.120                     | 0.00                | 0.00              |
| 2Yr 2160Min Summer  | 1.178                     | 0.00                | 0.00              | 30Yr+40% 2160Min Summer  | 2.968                     | 0.00                | 0.00              |
| 2Yr 2160Min Winter  | 1.178                     | 0.00                | 0.00              | 30Yr+40% 2160Min Winter  | 2.968                     | 0.00                | 0.00              |
| 2Yr 2880Min Summer  | 0.962                     | 0.00                | 0.00              | 30Yr+40% 2880Min Summer  | 2.364                     | 0.00                | 0.00              |
| 2Yr 2880Min Winter  | 0.962                     | 0.00                | 0.00              | 30Yr+40% 2880Min Winter  | 2.364                     | 0.00                | 0.00              |
| 2Yr 4320Min Summer  | 0.740                     | 0.00                | 0.00              | 30Yr+40% 4320Min Summer  | 1.748                     | 0.00                | 0.00              |
| 2Yr 4320Min Winter  | 0.740                     | 0.00                | 0.00              | 30Yr+40% 4320Min Winter  | 1.748                     | 0.00                | 0.00              |
| 2Yr 5760Min Summer  | 0.627                     | 0.00                | 0.00              | 30Yr+40% 5760Min Summer  | 1.434                     | 0.00                | 0.00              |
| 2Yr 5760Min Winter  | 0.627                     | 0.00                | 0.00              | 30Yr+40% 5760Min Winter  | 1.434                     | 0.00                | 0.00              |
| 2Yr 7200Min Summer  | 0.558                     | 0.00                | 0.00              | 30Yr+40% 7200Min Summer  | 1.242                     | 0.00                | 0.00              |
| 2Yr 7200Min Winter  | 0.558                     | 0.00                | 0.00              | 30Yr+40% 7200Min Winter  | 1.242                     | 0.00                | 0.00              |
| 2Yr 8640Min Summer  | 0.510                     | 0.00                | 0.00              | 30Yr+40% 8640Min Summer  | 1.111                     | 0.00                | 0.00              |
| 2Yr 8640Min Winter  | 0.510                     | 0.00                | 0.00              | 30Yr+40% 8640Min Winter  | 1.111                     | 0.00                | 0.00              |
| 2Yr 10080Min Summer | 0.475                     | 0.00                | 0.00              | 30Yr+40% 10080Min Summer | 1.016                     | 0.00                | 0.00              |
| 2Yr 10080Min Winter | 0.475                     | 0.00                | 0.00              | 30Yr+40% 10080Min Winter | 1.016                     | 0.00                | 0.00              |
| 10Yr 15Min Summer   | 63.472                    | 0.00                | 0.00              | 100Yr 15Min Summer       | 103.039                   | 0.00                | 0.00              |
| 10Yr 15Min Winter   | 63.472                    | 0.00                | 0.00              | 100Yr 15Min Winter       | 103.039                   | 0.00                | 0.00              |
| 10Yr 30Min Summer   | 41.975                    | 0.00                | 0.00              | 100Yr 30Min Summer       | 69.133                    | 0.00                | 0.00              |
| 10Yr 30Min Winter   | 41.975                    | 0.00                | 0.00              | 100Yr 30Min Winter       | 69.133                    | 0.00                | 0.00              |
| 10Yr 60Min Summer   | 26.518                    | 0.00                | 0.00              | 100Yr 60Min Summer       | 44.424                    | 0.00                | 0.00              |
| 10Yr 60Min Winter   | 26.518                    | 0.00                | 0.00              | 100Yr 60Min Winter       | 44.424                    | 0.00                | 0.00              |
| 10Yr 120Min Summer  | 16.678                    | 0.00                | 0.00              | 100Yr 120Min Summer      | 26.631                    | 0.00                | 0.00              |
| 10Yr 120Min Winter  | 16.678                    | 0.00                | 0.00              | 100Yr 120Min Winter      | 26.631                    | 0.00                | 0.00              |
| 10Yr 180Min Summer  | 12.547                    | 0.00                | 0.00              | 100Yr 180Min Summer      | 19.524                    | 0.00                | 0.00              |
| 10Yr 180Min Winter  | 12.547                    | 0.00                | 0.00              | 100Yr 180Min Winter      | 19.524                    | 0.00                | 0.00              |
| 10Yr 240Min Summer  | 10.114                    | 0.00                | 0.00              | 100Yr 240Min Summer      | 15.695                    | 0.00                | 0.00              |
| 10Yr 240Min Winter  | 10.114                    | 0.00                | 0.00              | 100Yr 240Min Winter      | 15.695                    | 0.00                | 0.00              |
| 10Yr 360Min Summer  | 7.394                     | 0.00                | 0.00              | 100Yr 360Min Summer      | 11.386                    | 0.00                | 0.00              |
| 10Yr 360Min Winter  | 7.394                     | 0.00                | 0.00              | 100Yr 360Min Winter      | 11.386                    | 0.00                | 0.00              |
| 10Yr 480Min Summer  | 5.892                     | 0.00                | 0.00              | 100Yr 480Min Summer      | 9.035                     | 0.00                | 0.00              |
| 10Yr 480Min Winter  | 5.892                     | 0.00                | 0.00              | 100Yr 480Min Winter      | 9.035                     | 0.00                | 0.00              |

## Simulated Rainfall Events

| Storm                | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % | Storm                     | Average Intensity (mm/hr) | Runoff Continuity % | Flow Continuity % |
|----------------------|---------------------------|---------------------|-------------------|---------------------------|---------------------------|---------------------|-------------------|
| 10Yr 600Min Summer   | 4.919                     | 0.00                | 0.00              | 100Yr 600Min Summer       | 7.544                     | 0.00                | 0.00              |
| 10Yr 600Min Winter   | 4.919                     | 0.00                | 0.00              | 100Yr 600Min Winter       | 7.544                     | 0.00                | 0.00              |
| 10Yr 720Min Summer   | 4.233                     | 0.00                | 0.00              | 100Yr 720Min Summer       | 6.499                     | 0.00                | 0.00              |
| 10Yr 720Min Winter   | 4.233                     | 0.00                | 0.00              | 100Yr 720Min Winter       | 6.499                     | 0.00                | 0.00              |
| 10Yr 960Min Summer   | 3.341                     | 0.00                | 0.00              | 100Yr 960Min Summer       | 5.119                     | 0.00                | 0.00              |
| 10Yr 960Min Winter   | 3.341                     | 0.00                | 0.00              | 100Yr 960Min Winter       | 5.119                     | 0.00                | 0.00              |
| 10Yr 1440Min Summer  | 2.405                     | 0.00                | 0.00              | 100Yr 1440Min Summer      | 3.659                     | 0.00                | 0.00              |
| 10Yr 1440Min Winter  | 2.405                     | 0.00                | 0.00              | 100Yr 1440Min Winter      | 3.659                     | 0.00                | 0.00              |
| 10Yr 2160Min Summer  | 1.746                     | 0.00                | 0.00              | 100Yr 2160Min Summer      | 2.624                     | 0.00                | 0.00              |
| 10Yr 2160Min Winter  | 1.746                     | 0.00                | 0.00              | 100Yr 2160Min Winter      | 2.624                     | 0.00                | 0.00              |
| 10Yr 2880Min Summer  | 1.400                     | 0.00                | 0.00              | 100Yr 2880Min Summer      | 2.074                     | 0.00                | 0.00              |
| 10Yr 2880Min Winter  | 1.400                     | 0.00                | 0.00              | 100Yr 2880Min Winter      | 2.074                     | 0.00                | 0.00              |
| 10Yr 4320Min Summer  | 1.048                     | 0.00                | 0.00              | 100Yr 4320Min Summer      | 1.512                     | 0.00                | 0.00              |
| 10Yr 4320Min Winter  | 1.048                     | 0.00                | 0.00              | 100Yr 4320Min Winter      | 1.512                     | 0.00                | 0.00              |
| 10Yr 5760Min Summer  | 0.869                     | 0.00                | 0.00              | 100Yr 5760Min Summer      | 1.226                     | 0.00                | 0.00              |
| 10Yr 5760Min Winter  | 0.869                     | 0.00                | 0.00              | 100Yr 5760Min Winter      | 1.226                     | 0.00                | 0.00              |
| 10Yr 7200Min Summer  | 0.760                     | 0.00                | 0.00              | 100Yr 7200Min Summer      | 1.051                     | 0.00                | 0.00              |
| 10Yr 7200Min Winter  | 0.760                     | 0.00                | 0.00              | 100Yr 7200Min Winter      | 1.051                     | 0.00                | 0.00              |
| 10Yr 8640Min Summer  | 0.685                     | 0.00                | 0.00              | 100Yr 8640Min Summer      | 0.933                     | 0.00                | 0.00              |
| 10Yr 8640Min Winter  | 0.685                     | 0.00                | 0.00              | 100Yr 8640Min Winter      | 0.933                     | 0.00                | 0.00              |
| 10Yr 10080Min Summer | 0.630                     | 0.00                | 0.00              | 100Yr 10080Min Summer     | 0.846                     | 0.00                | 0.00              |
| 10Yr 10080Min Winter | 0.630                     | 0.00                | 0.00              | 100Yr 10080Min Winter     | 0.846                     | 0.00                | 0.00              |
| 30Yr 15Min Summer    | 82.428                    | 0.00                | 0.00              | 100Yr+45% 15Min Summer    | 149.406                   | 0.00                | 0.00              |
| 30Yr 15Min Winter    | 82.428                    | 0.00                | 0.00              | 100Yr+45% 15Min Winter    | 149.406                   | 0.00                | 0.00              |
| 30Yr 30Min Summer    | 54.802                    | 0.00                | 0.00              | 100Yr+45% 30Min Summer    | 100.242                   | 0.00                | 0.00              |
| 30Yr 30Min Winter    | 54.802                    | 0.00                | 0.00              | 100Yr+45% 30Min Winter    | 100.242                   | 0.00                | 0.00              |
| 30Yr 60Min Summer    | 34.866                    | 0.00                | 0.00              | 100Yr+45% 60Min Summer    | 64.415                    | 0.00                | 0.00              |
| 30Yr 60Min Winter    | 34.866                    | 0.00                | 0.00              | 100Yr+45% 60Min Winter    | 64.415                    | 0.00                | 0.00              |
| 30Yr 120Min Summer   | 21.301                    | 0.00                | 0.00              | 100Yr+45% 120Min Summer   | 38.616                    | 0.00                | 0.00              |
| 30Yr 120Min Winter   | 21.301                    | 0.00                | 0.00              | 100Yr+45% 120Min Winter   | 38.616                    | 0.00                | 0.00              |
| 30Yr 180Min Summer   | 15.787                    | 0.00                | 0.00              | 100Yr+45% 180Min Summer   | 28.310                    | 0.00                | 0.00              |
| 30Yr 180Min Winter   | 15.787                    | 0.00                | 0.00              | 100Yr+45% 180Min Winter   | 28.310                    | 0.00                | 0.00              |
| 30Yr 240Min Summer   | 12.667                    | 0.00                | 0.00              | 100Yr+45% 240Min Summer   | 22.758                    | 0.00                | 0.00              |
| 30Yr 240Min Winter   | 12.667                    | 0.00                | 0.00              | 100Yr+45% 240Min Winter   | 22.758                    | 0.00                | 0.00              |
| 30Yr 360Min Summer   | 9.194                     | 0.00                | 0.00              | 100Yr+45% 360Min Summer   | 16.509                    | 0.00                | 0.00              |
| 30Yr 360Min Winter   | 9.194                     | 0.00                | 0.00              | 100Yr+45% 360Min Winter   | 16.509                    | 0.00                | 0.00              |
| 30Yr 480Min Summer   | 7.295                     | 0.00                | 0.00              | 100Yr+45% 480Min Summer   | 13.100                    | 0.00                | 0.00              |
| 30Yr 480Min Winter   | 7.295                     | 0.00                | 0.00              | 100Yr+45% 480Min Winter   | 13.100                    | 0.00                | 0.00              |
| 30Yr 600Min Summer   | 6.080                     | 0.00                | 0.00              | 100Yr+45% 600Min Summer   | 10.939                    | 0.00                | 0.00              |
| 30Yr 600Min Winter   | 6.080                     | 0.00                | 0.00              | 100Yr+45% 600Min Winter   | 10.939                    | 0.00                | 0.00              |
| 30Yr 720Min Summer   | 5.227                     | 0.00                | 0.00              | 100Yr+45% 720Min Summer   | 9.424                     | 0.00                | 0.00              |
| 30Yr 720Min Winter   | 5.227                     | 0.00                | 0.00              | 100Yr+45% 720Min Winter   | 9.424                     | 0.00                | 0.00              |
| 30Yr 960Min Summer   | 4.113                     | 0.00                | 0.00              | 100Yr+45% 960Min Summer   | 7.423                     | 0.00                | 0.00              |
| 30Yr 960Min Winter   | 4.113                     | 0.00                | 0.00              | 100Yr+45% 960Min Winter   | 7.423                     | 0.00                | 0.00              |
| 30Yr 1440Min Summer  | 2.943                     | 0.00                | 0.00              | 100Yr+45% 1440Min Summer  | 5.305                     | 0.00                | 0.00              |
| 30Yr 1440Min Winter  | 2.943                     | 0.00                | 0.00              | 100Yr+45% 1440Min Winter  | 5.305                     | 0.00                | 0.00              |
| 30Yr 2160Min Summer  | 2.120                     | 0.00                | 0.00              | 100Yr+45% 2160Min Summer  | 3.805                     | 0.00                | 0.00              |
| 30Yr 2160Min Winter  | 2.120                     | 0.00                | 0.00              | 100Yr+45% 2160Min Winter  | 3.805                     | 0.00                | 0.00              |
| 30Yr 2880Min Summer  | 1.689                     | 0.00                | 0.00              | 100Yr+45% 2880Min Summer  | 3.008                     | 0.00                | 0.00              |
| 30Yr 2880Min Winter  | 1.689                     | 0.00                | 0.00              | 100Yr+45% 2880Min Winter  | 3.008                     | 0.00                | 0.00              |
| 30Yr 4320Min Summer  | 1.248                     | 0.00                | 0.00              | 100Yr+45% 4320Min Summer  | 2.193                     | 0.00                | 0.00              |
| 30Yr 4320Min Winter  | 1.248                     | 0.00                | 0.00              | 100Yr+45% 4320Min Winter  | 2.193                     | 0.00                | 0.00              |
| 30Yr 5760Min Summer  | 1.024                     | 0.00                | 0.00              | 100Yr+45% 5760Min Summer  | 1.778                     | 0.00                | 0.00              |
| 30Yr 5760Min Winter  | 1.024                     | 0.00                | 0.00              | 100Yr+45% 5760Min Winter  | 1.778                     | 0.00                | 0.00              |
| 30Yr 7200Min Summer  | 0.887                     | 0.00                | 0.00              | 100Yr+45% 7200Min Summer  | 1.524                     | 0.00                | 0.00              |
| 30Yr 7200Min Winter  | 0.887                     | 0.00                | 0.00              | 100Yr+45% 7200Min Winter  | 1.524                     | 0.00                | 0.00              |
| 30Yr 8640Min Summer  | 0.794                     | 0.00                | 0.00              | 100Yr+45% 8640Min Summer  | 1.353                     | 0.00                | 0.00              |
| 30Yr 8640Min Winter  | 0.794                     | 0.00                | 0.00              | 100Yr+45% 8640Min Winter  | 1.353                     | 0.00                | 0.00              |
| 30Yr 10080Min Summer | 0.726                     | 0.00                | 0.00              | 100Yr+45% 10080Min Summer | 1.227                     | 0.00                | 0.00              |
| 30Yr 10080Min Winter | 0.726                     | 0.00                | 0.00              | 100Yr+45% 10080Min Winter | 1.227                     | 0.00                | 0.00              |

## Simulation Results

Return Period (yrs) + Climate Change (%):  
2yr+0%

### Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status  |
|---------|----------------|-------------|-----------|-----------|--------------|------------|---------|
| S61     | 180 min Summer | 110         | 15.337    | 0.022     | 0.707        |            | OK      |
| S74     | 180 min Summer | 110         | 15.257    | 0.022     | 0.707        |            | Outfall |

### Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 180 min Summer | 110         | S61        | S74        | 0.022          | 0.441              | 0.707          | 0.049           | OK     |

### Permeable Paving Storage

| Permeable Paving        | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Surface Runoff (m3) | Status |
|-------------------------|----------------|-------------|-----------|-----------|--------------|------------|---------------------|--------|
| Road 3 Permeable Paving | 180 min Summer | 110         | 15.344    | 0.029     | 0.962        |            |                     | OK     |

Return Period (yrs) + Climate Change (%):

10yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status  |
|---------|----------------|-------------|-----------|-----------|--------------|------------|---------|
| S61     | 120 min Summer | 74          | 15.349    | 0.034     | 1.686        |            | OK      |
| S74     | 120 min Summer | 74          | 15.268    | 0.033     | 1.686        |            | Outfall |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 120 min Summer | 74          | S61        | S74        | 0.034          | 0.566              | 1.686          | 0.116           | OK     |

## Permeable Paving Storage

| Permeable Paving        | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Surface Runoff (m3) | Status |
|-------------------------|----------------|-------------|-----------|-----------|--------------|------------|---------------------|--------|
| Road 3 Permeable Paving | 120 min Summer | 74          | 15.364    | 0.048     | 2.154        |            |                     | OK     |

Return Period (yrs) + Climate Change (%):

30yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status  |
|---------|----------------|-------------|-----------|-----------|--------------|------------|---------|
| S61     | 60 min Summer  | 42          | 15.357    | 0.042     | 2.584        |            | OK      |
| S74     | 60 min Summer  | 42          | 15.277    | 0.042     | 2.583        |            | Outfall |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 60 min Summer  | 42          | S61        | S74        | 0.042          | 0.639              | 2.583          | 0.178           | OK     |

## Permeable Paving Storage

| Permeable Paving        | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Surface Runoff (m3) | Status |
|-------------------------|----------------|-------------|-----------|-----------|--------------|------------|---------------------|--------|
| Road 3 Permeable Paving | 60 min Summer  | 42          | 15.378    | 0.063     | 2.880        |            |                     | OK     |

Return Period (yrs) + Climate Change (%):

30yr+40%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status  |
|---------|----------------|-------------|-----------|-----------|--------------|------------|---------|
| S61     | 60 min Summer  | 44          | 15.370    | 0.055     | 4.184        |            | OK      |
| S74     | 60 min Summer  | 45          | 15.288    | 0.053     | 4.180        |            | Outfall |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 60 min Summer  | 45          | S61        | S74        | 0.054          | 0.729              | 4.180          | 0.288           | OK     |

## Permeable Paving Storage

| Permeable Paving        | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Surface Runoff (m3) | Status |
|-------------------------|----------------|-------------|-----------|-----------|--------------|------------|---------------------|--------|
| Road 3 Permeable Paving | 60 min Summer  | 44          | 15.401    | 0.085     | 5.647        |            |                     | OK     |

Return Period (yrs) + Climate Change (%):

100yr+0%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status  |
|---------|----------------|-------------|-----------|-----------|--------------|------------|---------|
| S61     | 60 min Summer  | 44          | 15.366    | 0.051     | 3.693        |            | OK      |
| S74     | 60 min Summer  | 44          | 15.285    | 0.050     | 3.695        |            | Outfall |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 60 min Summer  | 44          | S61        | S74        | 0.051          | 0.705              | 3.695          | 0.255           | OK     |

## Permeable Paving Storage

| Permeable Paving        | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Surface Runoff (m3) | Status |
|-------------------------|----------------|-------------|-----------|-----------|--------------|------------|---------------------|--------|
| Road 3 Permeable Paving | 60 min Summer  | 44          | 15.394    | 0.079     | 3.996        |            |                     | OK     |

Return Period (yrs) + Climate Change (%):

100yr+45%

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status  |
|---------|----------------|-------------|-----------|-----------|--------------|------------|---------|
| S61     | 60 min Summer  | 44          | 15.382    | 0.067     | 5.933        |            | OK      |
| S74     | 60 min Summer  | 44          | 15.300    | 0.065     | 5.934        |            | Outfall |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 60 min Summer  | 44          | S61        | S74        | 0.066          | 0.799              | 5.934          | 0.409           | OK     |

## Permeable Paving Storage

| Permeable Paving        | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Surface Runoff (m3) | Status |
|-------------------------|----------------|-------------|-----------|-----------|--------------|------------|---------------------|--------|
| Road 3 Permeable Paving | 60 min Summer  | 44          | 15.422    | 0.107     | 6.711        |            |                     | OK     |

## Engineers Comments Regarding Surface Water Drainage

|                                 |                                                                                                                                                                                                                                                        |                            |            |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------|
| <b>Application Reference:</b>   | BN/83/25/PL                                                                                                                                                                                                                                            | <b>Reviewer Reference:</b> | ADC/EXT4   |
| <b>Planning Officer:</b>        | Kathryn Welch                                                                                                                                                                                                                                          | <b>Date of Review:</b>     | 12/11/2025 |
| <b>Site Name:</b>               | Hill View Eastergate Lane Eastergate PO20 3SJ                                                                                                                                                                                                          |                            |            |
| <b>Application Description:</b> | Demolition of existing dilapidated commercial sheds and the erection of 9 No. dwellings with associated car parking and landscaping. This application is a Departure from the Development Plan and is IN CIL Zone 3 and is CIL Liable as new dwellings |                            |            |
| <b>Assessment Number:</b>       | 1 of 2                                                                                                                                                                                                                                                 |                            |            |

| Policy and Guidance Information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <p>Arun District Council Surface Water Drainage Guidance (including design checklists) - <a href="https://www.arun.gov.uk/surfacewater">https://www.arun.gov.uk/surfacewater</a></p> <p>Land Drainage Consent – <a href="https://www.westsussex.gov.uk/fire-emergencies-and-crime/dealing-with-extreme-weather/flooding/flood-risk-management/ordinary-watercourse-land-drainage-consent/">https://www.westsussex.gov.uk/fire-emergencies-and-crime/dealing-with-extreme-weather/flooding/flood-risk-management/ordinary-watercourse-land-drainage-consent/</a></p> <p>Arun District Council Land Drainage Byelaws - <a href="https://www.arun.gov.uk/byelaws/">https://www.arun.gov.uk/byelaws/</a></p> <p>Arun District Council surface water pre-commencement conditions - <a href="https://www.arun.gov.uk/planning-pre-commencement-conditions">https://www.arun.gov.uk/planning-pre-commencement-conditions</a></p> <p>The National Standards for SuDS - <a href="https://www.gov.uk/government/publications/national-standards-for-sustainable-drainage-systems/national-standards-for-sustainable-drainage-systems-suds">https://www.gov.uk/government/publications/national-standards-for-sustainable-drainage-systems/national-standards-for-sustainable-drainage-systems-suds</a></p> <p>The SuDs Manual [C753] by CIRIA</p> |  |

| Response | Objection |
|----------|-----------|
|----------|-----------|

| References                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>The NPPF states that when determining any planning application, local planning authorities should ensure that flood risk is not increased elsewhere (paragraph 181, 182 and 187e). The PPG guides local planning authorities to refer to 'Sustainable drainage systems: non-statutory technical standards' [NsTS] and detailed industry guidance like The SuDS Manual [C753] by CIRIA to guide decisions about the design, maintenance, and operation of sustainable drainage systems for non-major development.</p> <p>The NsTS have been superseded by the National Standards for Sustainable Drainage Systems [NSfS] from 19 June 2025.</p> <p>This consultation has been primarily informed by the NSfS and The SuDS Manual.</p> |

## Summary

This summary highlights if critical items aligning with each of the standards have been met. Critical items are highlighted in **bold** on our surface water drainage design checklist (linked above). A failure to address these will likely result in an **objection** to an objection to a full or reserved matters planning application.

If any of these items are inadequately addressed by the submission, then their correction may result in a redesign of the surface water drainage scheme. A redesign is likely to have site wide implications such as the potential for storage structures to increase in volume or plan area, or the provision of other important infrastructure to satisfy the NSfS set out below.

A full written explanation of the assessment and response is given in the consultation comments to the planning officer.

| Standard                                                                          | Assessment   | Response                                  |
|-----------------------------------------------------------------------------------|--------------|-------------------------------------------|
| 1. Runoff destination                                                             | Insufficient | <b>No objection subject to condition</b>  |
| 2. Interception drainage                                                          | Compliant    | <b>No objection subject to conditions</b> |
| 3. Extreme Rainfall and Flooding                                                  | Insufficient | <b>Objection</b>                          |
| 4. Water Quality                                                                  | Insufficient | <b>Objection</b>                          |
| 5. Amenity                                                                        | Insufficient | <b>Objection</b>                          |
| 6. Biodiversity                                                                   | Insufficient | <b>Objection</b>                          |
| 7. Construction, operation, maintenance, decommissioning and structural integrity | Insufficient | <b>No objection subject to condition</b>  |

## Reviewed Plans

The following documents have been submitted and reviewed to inform this consultation with reference to surface water drainage:

- EXISTING TOPOGRAPHICAL SURVEY 1863-XX-ZZ-DR-A-0200 P01 WIP
- Location Plan - 1863-XX-ZZ-DR-A-0302 P04
- Block Plan 1863-XX-ZZ-DR-A-0303 P04
- Proposed site plan 0301 P05
- ARBORICULTURAL SURVEY
- STAGE 1 DESK STUDY ENVIRONMENTAL RISK ASSESSMENT
- Drainage Strategy - D2380/DS1.2 June 2025 (FRA) – Appendices
- Drainage Strategy - D2380/DS1.2 June 2025 (FRA) - Drawings
- Drainage Strategy - D2380/DS1.2 June 2025 (FRA)

## Consultation comments to the planning officer

0. General

0.1. Whilst the general principles of the surface water drainage are acceptable, additional details and consideration to flood risk mitigation, biodiversity and amenity benefits are required. Without this information this could impact the scale and layout of the development

1. Runoff destination

- 1.1. The proposals do not appear to make use of any rainwater harvesting opportunities on this site. Further consideration to such opportunities should be made for the reuse of non-potable water for landscape irrigation. Such examples could include a rainwater harvesting system to allow irrigation of trees and vegetation along new access road. As rainwater harvesting rarely provides a total solution and is unlikely to impact the scale and layout of the proposed development, any rainwater reuse features may be secured via condition.
- 1.2. The proposal to discharge the surface water via infiltration to ground through permeable paving and soakaways is acceptable in principle. Groundwater monitoring has been submitted which demonstrates that it is likely that 1m of unsaturated ground will be achieved between the base of infiltration features and the peak groundwater level. However, the boreholes were only monitored monthly. This means that there is a reasonable risk that the peak groundwater level has not been observed.
- 1.3. Infiltration testing has also been submitted. However, it appears that this may not have been completed in worst case conditions. The testing provides comfort that infiltration is likely to be viable but further details are required and specifically the confirmation that the infiltration testing was carried out during winter or spring. No testing has been completed at a depth to correspond with the proposed permeable paving, however, the design accounts for this by discharging all surface water from the permeable paving to soakaways.
- 1.4. The trial pit depths of 1.6m allow for peak groundwater levels to be 0.68m higher than those observed to date (3.28m below ground level). Whilst the ground investigations are unlikely to be sufficient for detailed design purposes, they provide sufficient evidence that an infiltration design is likely to be achieved and can be secured via condition.

2. Interception drainage

2.1. No interception assessment has been submitted. However, as the drainage proposals seek to use full infiltration techniques they will satisfy the required standards associated with interception drainage.

3. Extreme rainfall and flooding

3.1. The Flood Risk Assessment (FRA) has identified that the site is a very low to high risk of surface water flooding. The FRA has noted that the central areas of the site as being at an area of high flood risk. Whilst it is noted that this risk is localised due to a low point within the site, there is a concern, based on a review of the submitted topographic survey, that there is a risk of overland flows coming into the site from the western and northern boundaries. The drainage and development proposals will need to account for these potential overland flows to ensure that they do not flood the new properties or cause any increase of existing flood risk elsewhere. The flood risk and drainage proposals should seek to evaluate these potential overland flow routes and seek to accommodate them within the site and or drainage scheme.

#### 4. Water quality

4.1. Whilst it is noted that the permeable paving is used to treat surface water run-off from the highways there doesn't appear to be any provision for treatment for rainfall from the roofs of the new dwellings. Consideration to the use of bio-retention areas or rain gardens should be made to improve water quality,

#### 5. Amenity

5.1. No assessment of amenity benefit has been submitted. However, the surface water drainage design has limited benefit towards placemaking and environmental enhancement. Water is not kept at or close to the surface and much of the design is of a conventional subterranean piped network leading to below ground soakaways. Permeable paving provides a limited multifunctional benefit. However, if further amenity benefits are provided this may impact the scale and layout of the development and is unlikely to be included via condition.

#### 6. Biodiversity

6.1. No assessment of how the surface water drainage system could benefit biodiversity has been submitted. As the proposed drainage is contained below ground through permeable paving and soakaways this doesn't provide much opportunity to contribute to the biodiversity.

#### 7. Construction, operation, maintenance, decommissioning and structural integrity

7.1. Insufficient information regarding the construction, operation and maintenance of the SuDS system, and therefore Standard 8 of the Systems NSfS. However, in the absence of significant existing trees which could impact the scale and layout and location of SuDS features, most elements of this standard can normally be secured via condition. The submission of a Management and Maintenance Plan is unlikely to affect the scale or layout of the development. Accordingly, we do not object to the proposal on these grounds, subject to a condition securing the detailed surface water drainage design.

#### 8. Suggested conditions / Overcoming the objection

8.1. As this is not a holding objection or a request for further information, requested conditions are not listed. If you are minded to approve this application, please reconsult engineers for a list of suggested conditions to ensure that the development is adequately drained and does not increase flood risk elsewhere.

**8.2. The imposition of conditions at this stage rather than overcoming the objection could result in a circumstance where the condition cannot be discharged. In the event of attaching a condition that cannot be discharged, permission may be invalid or that condition could be deemed to be unreasonable.**

8.3. If you are minded to allow the applicant additional time to submit further documents to support this application, then further evidence may overcome our objection. Please do not allow the applicant to submit further documents without prior discussion as to whether it will be possible for these to be assessed or influence your determination.

This application has been assessed with regards to surface water drainage design only, together with land drainage aspects if deemed necessary.

Other planning matters occasionally effect the surface water drainage design. If plans relating to other matters have been assessed for their impact on the proposed drainage, then it must not be assumed that they have been assessed for any other purpose. The planning officer is advised to check for conflicts with any existing approved plans and to consult any relevant consultees as appropriate.

It has been identified that the following consultees may have comments about the plans that have been submitted and reviewed for this application:

- ☒ Landscaping officer (proposed trees and landscaping)
- ☒ Tree officer (existing trees)
- ☐ Environment Agency (main rivers and fluvial/tidal flood risk, River Arun internal drainage board, groundwater source protection zones)
- ☐ Southern Water (foul drainage and surface water disposal to public sewer network/groundwater source protection zones)
- ☐ Portsmouth Water (groundwater source protection zones)
- ☐ Lead local flood authority (all other sources of flooding and ordinary watercourses)
- ☐ Other: Specify .....
- ☐ None

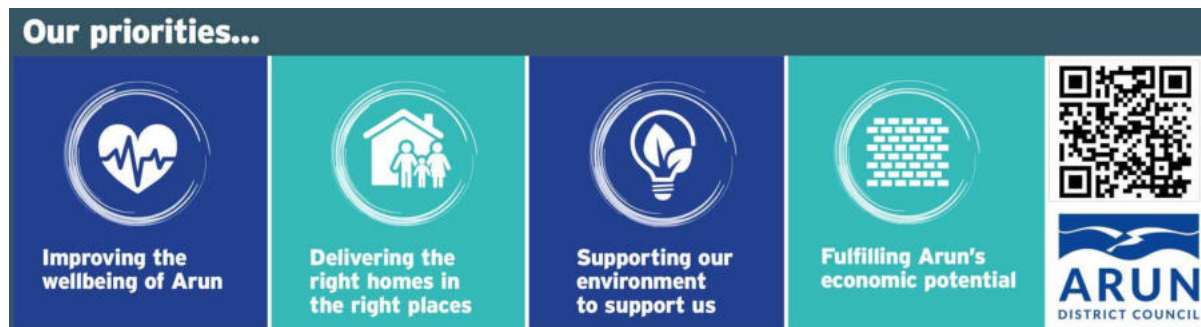
[REDACTED]

Drainage Engineers response

[REDACTED]

Arun District Council, Civic Centre, Maltravers Rd  
Littlehampton, West Sussex, BN17 5LF  
[www.arun.gov.uk](http://www.arun.gov.uk)

To register to receive notifications of planning applications in your area please go to  
<https://www1.arun.gov.uk/planning-application-finder>



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**From:** Sarah Burrow <Sarah.Burrow@arun.gov.uk>  
**Sent:** 14 November 2025 09:33  
**To:** Planning.Responses <Planning.Responses@arun.gov.uk>  
**Cc:** Paul Cann <Paul.Cann@arun.gov.uk>; Kathryn Welch <Kathryn.Welch@arun.gov.uk>  
**Subject:** RE: Planning Consultation on: BN/83/25/PL

Hi Kathryn,

Find the consultation response – an objection – attached. Apologies for the delay in response.

I am submitting this consultation on behalf of Paul, our Principal Drainage Engineer. It has been completed by one of our external consultants.

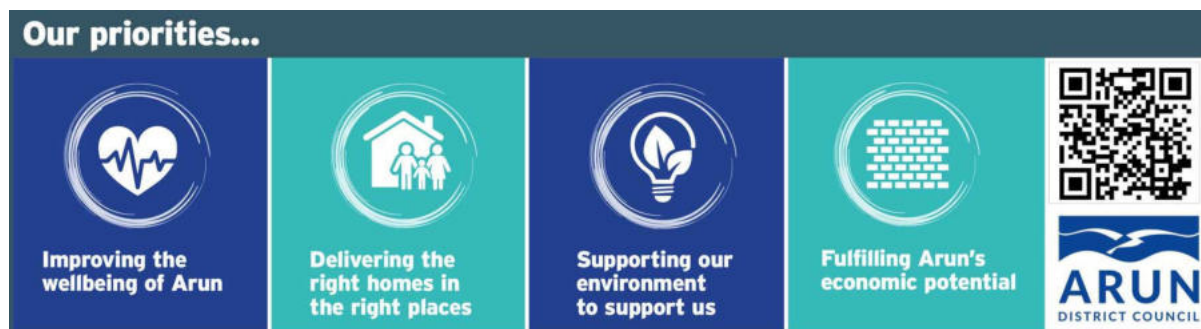
Kind regards

**Sarah Burrow**  
**Flood Risk and Drainage Engineer, Coastal Engineers and Flood Prevention**

T: 01903 737815

E: [sarah.burrow@arun.gov.uk](mailto:sarah.burrow@arun.gov.uk)

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Littlehampton, West Sussex, BN17 5LF  
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**From:** Planning.Responses <[Planning.Responses@arun.gov.uk](mailto:Planning.Responses@arun.gov.uk)>

**Sent:** 31 July 2025 11:18

**To:** Land Drainage <[Land.Drainage@arun.gov.uk](mailto:Land.Drainage@arun.gov.uk)>

**Subject:** Planning Consultation on: BN/83/25/PL

To: **Engineers (Drainage)**

## NOTIFICATION FROM ARUN DISTRICT COUNCIL

**Town & Country Planning Act 1990 (as amended)**

**Town and Country Planning (Development Management Procedure) (England) Order 2015**

### Planning Permission

**Application No:** BN/83/25/PL  
**Registered:** 31st July 2025  
**Site Address:** Hill View Eastergate Lane Eastergate PO20 3SJ  
**Grid Reference:** 494858 106055  
**Description of Works:** Demolition of existing dilapidated commercial sheds and the erection of 9 No dwellings with associated car parking and landscaping. This application is a

Departure from the Development Plan and is IN CIL Zone 3 and is CIL Liable as new dwellings

The Council have received the above application.

[Click here to view the application and documents](#) The website is updated once a day in the evening, so you may need to wait until the day after this notification to view the documents.

This application has been identified as CIL Liable. Therefore please be aware that, in accordance with Appendix 2 of the Arun CIL Charging Schedule, your consultation response should only include requests for Section 106 for onsite mitigation, Pagham Harbour Management Contributions (if applicable) or Affordable Housing. "Off" Site mitigation measures directly related to this development should be dealt with by condition if possible to ensure the scaling back of Section 106 if possible. CIL contributions will be used for "off" site infrastructure mitigation schemes. Therefore if this proposal triggers the need for "off" site mitigation, please ensure that you engage in the CIL Infrastructure List Consultation process upon receipt of a consultation letter.

Should you have any comments to make, these should be sent by replying to this email by 5th September 2025 . You can also monitor the progress of this application through the Council web site:

<https://www.arun.gov.uk/planning-application-search>

The application will be determined having regard to the development plan policies (if any are relevant) and other material considerations. The development plan can be accessed via the website

<https://www.arun.gov.uk/development-plan> as can information on what comments we can consider

<https://www.arun.gov.uk/planning-application-comments>

**Please be aware that any comments you may make will be available on our website so please do not insert personal details or signatures on your reply.**

Should the application go to appeal the Planning Inspectorate will publish any comments made to the Council on their website: <https://acp.planninginspectorate.gov.uk/> but they will protect personal details.

In the absence of a reply within the period stated, I shall assume that you have no observations to make.

Yours sincerely

Harry Chalk

Planning Officer- Arun District Council

Telephone: 01903 737577

Email: [harry.chalk@arun.gov.uk](mailto:harry.chalk@arun.gov.uk)

PLCONSULT (ODB) 2020