

## Network Details

### Manhole Schedule

| Manhole | Catchment Area (ha) | Diameter (m) | Type    | CL (m) | IL (m) | Depth To Soffit (m) | Easting (m) | Northing (m) |
|---------|---------------------|--------------|---------|--------|--------|---------------------|-------------|--------------|
| RE      | 0.000               | 0.250        | Type 4  | 84.285 | 83.735 | 0.400               | 333614.887  | 350669.510   |
| S7      | 0.007               | 0.900        | Unknown | 84.093 | 83.040 | 0.903               | 333615.469  | 350692.802   |
| S8      | 0.005               | 0.900        | Unknown | 84.286 | 82.930 | 1.206               | 333641.156  | 350692.266   |
| S1      | 0.008               | 0.000        | Type 4  | 84.534 | 83.752 | 0.631               | 333625.002  | 350658.916   |
| S2      | 0.000               | 0.460        | Type 4  | 84.387 | 83.616 | 0.621               | 333631.636  | 350658.615   |
| S3      | 0.034               | 0.460        | Type 4  | 84.376 | 83.562 | 0.664               | 333634.484  | 350663.250   |
| S4      | 0.018               | 0.460        | Type 4  | 84.238 | 83.456 | 0.632               | 333637.237  | 350672.350   |
| S9      | 0.000               | 0.600        | Type 4  | 84.135 | 83.238 | 0.747               | 333641.248  | 350672.312   |
| S5      | 0.011               | 0.460        | Unknown | 84.177 | 82.640 | 1.387               | 333641.232  | 350683.335   |

### Pipe Schedule

| Pipe Number | US Manhole | US IL (m) | DS Manhole | DS IL (m) | Shape | Dimension (m) | Length (m) | Gradient (1:x) | Roughness (mm) | US Depth To Soffit (m) | DS Depth To Soffit (m) |
|-------------|------------|-----------|------------|-----------|-------|---------------|------------|----------------|----------------|------------------------|------------------------|
| 1.000       | RE         | 83.735    | S7         | 83.040    | Circ  | 0.15mØ        | 23.299     | 33.5           | 0.600          | 0.400                  | 0.903                  |
| 1.001       | S7         | 83.040    | S8         | 82.930    | Circ  | 0.15mØ        | 25.693     | 233.6          | 0.600          | 0.903                  | 1.206                  |
| 1.002       | S8         | 82.930    | S5         | 82.640    | Circ  | 0.15mØ        | 8.932      | 30.8           | 0.600          | 1.206                  | 1.387                  |
| 2.000       | S1         | 83.752    | S2         | 83.616    | Circ  | 0.15mØ        | 6.641      | 48.7           | 0.600          | 0.631                  | 0.621                  |
| 2.001       | S2         | 83.616    | S3         | 83.562    | Circ  | 0.15mØ        | 5.440      | 100.7          | 0.600          | 0.621                  | 0.664                  |
| 2.002       | S3         | 83.562    | S4         | 83.456    | Circ  | 0.15mØ        | 9.507      | 89.7           | 0.600          | 0.664                  | 0.632                  |
| 2.003       | S4         | 83.456    | S9         | 83.238    | Circ  | 0.15mØ        | 4.011      | 18.4           | 0.600          | 0.632                  | 0.747                  |
| 2.004       | S9         | 83.238    | S5         | 82.640    | Circ  | 0.15mØ        | 11.023     | 18.4           | 0.600          | 0.747                  | 1.387                  |

## Outfall Details

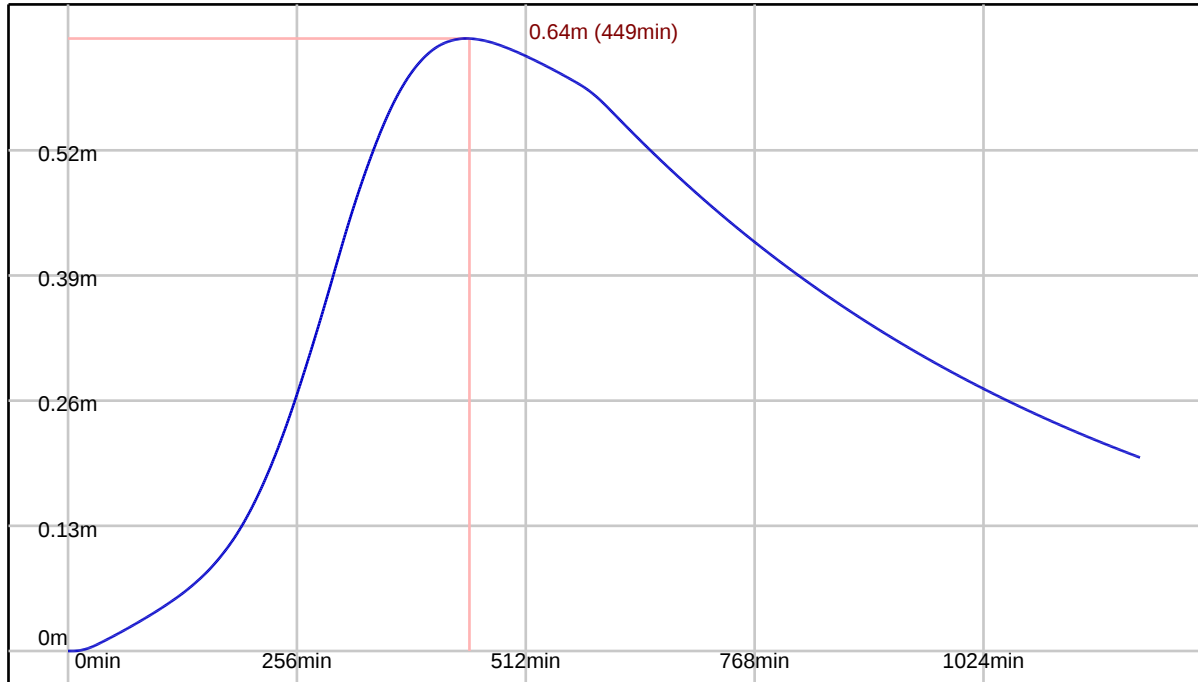
Outfall Manhole S5 : Infiltration Tank

## 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 |
|-----------------|-----------------|--------------------|-----------|----------------------------------------------|---------------------------------------------|-------------------|-------------------|---------------|
| 82.640          | 0.800           | 95.00              | 65.421    | 62.150                                       | 49.720                                      | 0.00000000        | 0.34000000        | 2.00          |

## Tank at S5 (100Yr+40% 600Min Winter)



## Simulation Settings

FSR: M5-60=18.00, R=0.33, Locale=England and Wales

Summer (Cv: 0.75), Winter (Cv: 0.84)

Global Time of Entry: 5.0 mins

Durations (mins): 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440

Return Periods (yrs) + Climate Change: (1, +0%), (5, +0%), (30, +0%), (100, +40%)

## Simulated Rainfall Events

| Storm              | Average Intensity<br>(mm/hr) | Runoff<br>Continuity % | Flow<br>Continuity % | Storm                    | Average Intensity<br>(mm/hr) | Runoff<br>Continuity % | Flow<br>Continuity % |
|--------------------|------------------------------|------------------------|----------------------|--------------------------|------------------------------|------------------------|----------------------|
| 1Yr 15Min Winter   | 31.058                       | 0.00                   | 0.00                 | 30Yr 15Min Summer        | 63.721                       | 0.00                   | 0.00                 |
| 1Yr 15Min Summer   | 31.058                       | 0.00                   | 0.00                 | 30Yr 15Min Winter        | 63.721                       | 0.00                   | 0.00                 |
| 1Yr 30Min Winter   | 20.281                       | 0.00                   | 0.00                 | 30Yr 30Min Summer        | 42.849                       | 0.00                   | 0.00                 |
| 1Yr 30Min Summer   | 20.281                       | 0.00                   | 0.00                 | 30Yr 30Min Winter        | 42.849                       | 0.00                   | 0.00                 |
| 1Yr 60Min Winter   | 12.828                       | 0.00                   | 0.00                 | 30Yr 60Min Summer        | 27.653                       | 0.00                   | 0.00                 |
| 1Yr 60Min Summer   | 12.828                       | 0.00                   | 0.00                 | 30Yr 60Min Winter        | 27.653                       | 0.00                   | 0.00                 |
| 1Yr 120Min Summer  | 7.999                        | 0.00                   | 0.00                 | 30Yr 120Min Summer       | 17.347                       | 0.00                   | 0.00                 |
| 1Yr 120Min Winter  | 7.999                        | 0.00                   | 0.00                 | 30Yr 120Min Winter       | 17.347                       | 0.00                   | 0.00                 |
| 1Yr 180Min Summer  | 6.060                        | 0.00                   | 0.00                 | 30Yr 180Min Summer       | 13.061                       | 0.00                   | 0.00                 |
| 1Yr 180Min Winter  | 6.060                        | 0.00                   | 0.00                 | 30Yr 180Min Winter       | 13.061                       | 0.00                   | 0.00                 |
| 1Yr 240Min Summer  | 4.983                        | 0.00                   | 0.00                 | 30Yr 240Min Summer       | 10.626                       | 0.00                   | 0.00                 |
| 1Yr 240Min Winter  | 4.983                        | 0.00                   | 0.00                 | 30Yr 240Min Winter       | 10.626                       | 0.00                   | 0.00                 |
| 1Yr 360Min Summer  | 3.785                        | 0.00                   | 0.00                 | 30Yr 360Min Summer       | 7.906                        | 0.00                   | 0.00                 |
| 1Yr 360Min Winter  | 3.785                        | 0.00                   | 0.00                 | 30Yr 360Min Winter       | 7.906                        | 0.00                   | 0.00                 |
| 1Yr 480Min Summer  | 3.110                        | 0.00                   | 0.00                 | 30Yr 480Min Summer       | 6.410                        | 0.00                   | 0.00                 |
| 1Yr 480Min Winter  | 3.110                        | 0.00                   | 0.00                 | 30Yr 480Min Winter       | 6.410                        | 0.00                   | 0.00                 |
| 1Yr 600Min Summer  | 2.671                        | 0.00                   | 0.00                 | 30Yr 600Min Summer       | 5.443                        | 0.00                   | 0.00                 |
| 1Yr 600Min Winter  | 2.671                        | 0.00                   | 0.00                 | 30Yr 600Min Winter       | 5.443                        | 0.00                   | 0.00                 |
| 1Yr 720Min Winter  | 2.358                        | 0.00                   | 0.00                 | 30Yr 720Min Summer       | 4.760                        | 0.00                   | 0.00                 |
| 1Yr 720Min Summer  | 2.358                        | 0.00                   | 0.00                 | 30Yr 720Min Winter       | 4.760                        | 0.00                   | 0.00                 |
| 1Yr 960Min Summer  | 1.938                        | 0.00                   | 0.00                 | 30Yr 960Min Summer       | 3.850                        | 0.00                   | 0.00                 |
| 1Yr 960Min Winter  | 1.938                        | 0.00                   | 0.00                 | 30Yr 960Min Winter       | 3.850                        | 0.00                   | 0.00                 |
| 1Yr 1440Min Summer | 1.470                        | 0.00                   | 0.00                 | 30Yr 1440Min Summer      | 2.851                        | 0.00                   | 0.00                 |
| 1Yr 1440Min Winter | 1.470                        | 0.00                   | 0.00                 | 30Yr 1440Min Winter      | 2.851                        | 0.00                   | 0.00                 |
| 5Yr 15Min Summer   | 43.638                       | 0.00                   | 0.00                 | 100Yr+40% 15Min Summer   | 115.053                      | 0.00                   | 0.00                 |
| 5Yr 15Min Winter   | 43.638                       | 0.00                   | 0.00                 | 100Yr+40% 15Min Winter   | 115.053                      | 0.00                   | 0.00                 |
| 5Yr 30Min Summer   | 28.894                       | 0.00                   | 0.00                 | 100Yr+40% 30Min Summer   | 78.173                       | 0.00                   | 0.00                 |
| 5Yr 30Min Winter   | 28.894                       | 0.00                   | 0.00                 | 100Yr+40% 30Min Winter   | 78.173                       | 0.00                   | 0.00                 |
| 5Yr 60Min Summer   | 18.450                       | 0.00                   | 0.00                 | 100Yr+40% 60Min Summer   | 50.812                       | 0.00                   | 0.00                 |
| 5Yr 60Min Winter   | 18.450                       | 0.00                   | 0.00                 | 100Yr+40% 60Min Winter   | 50.812                       | 0.00                   | 0.00                 |
| 5Yr 120Min Winter  | 11.537                       | 0.00                   | 0.00                 | 100Yr+40% 120Min Summer  | 31.942                       | 0.00                   | 0.00                 |
| 5Yr 120Min Summer  | 11.537                       | 0.00                   | 0.00                 | 100Yr+40% 120Min Winter  | 31.942                       | 0.00                   | 0.00                 |
| 5Yr 180Min Summer  | 8.716                        | 0.00                   | 0.00                 | 100Yr+40% 180Min Summer  | 23.996                       | 0.00                   | 0.00                 |
| 5Yr 180Min Winter  | 8.716                        | 0.00                   | 0.00                 | 100Yr+40% 180Min Winter  | 23.996                       | 0.00                   | 0.00                 |
| 5Yr 240Min Summer  | 7.130                        | 0.00                   | 0.00                 | 100Yr+40% 240Min Summer  | 19.450                       | 0.00                   | 0.00                 |
| 5Yr 240Min Winter  | 7.130                        | 0.00                   | 0.00                 | 100Yr+40% 240Min Winter  | 19.450                       | 0.00                   | 0.00                 |
| 5Yr 360Min Summer  | 5.364                        | 0.00                   | 0.00                 | 100Yr+40% 360Min Summer  | 14.366                       | 0.00                   | 0.00                 |
| 5Yr 360Min Winter  | 5.364                        | 0.00                   | 0.00                 | 100Yr+40% 360Min Winter  | 14.366                       | 0.00                   | 0.00                 |
| 5Yr 480Min Summer  | 4.379                        | 0.00                   | 0.00                 | 100Yr+40% 480Min Summer  | 11.591                       | 0.00                   | 0.00                 |
| 5Yr 480Min Winter  | 4.379                        | 0.00                   | 0.00                 | 100Yr+40% 480Min Winter  | 11.591                       | 0.00                   | 0.00                 |
| 5Yr 600Min Winter  | 3.741                        | 0.00                   | 0.00                 | 100Yr+40% 600Min Summer  | 9.805                        | 0.00                   | 0.00                 |
| 5Yr 600Min Summer  | 3.741                        | 0.00                   | 0.00                 | 100Yr+40% 600Min Winter  | 9.805                        | 0.00                   | 0.00                 |
| 5Yr 720Min Summer  | 3.288                        | 0.00                   | 0.00                 | 100Yr+40% 720Min Summer  | 8.546                        | 0.00                   | 0.00                 |
| 5Yr 720Min Winter  | 3.288                        | 0.00                   | 0.00                 | 100Yr+40% 720Min Winter  | 8.546                        | 0.00                   | 0.00                 |
| 5Yr 960Min Summer  | 2.682                        | 0.00                   | 0.00                 | 100Yr+40% 960Min Summer  | 6.874                        | 0.00                   | 0.00                 |
| 5Yr 960Min Winter  | 2.682                        | 0.00                   | 0.00                 | 100Yr+40% 960Min Winter  | 6.874                        | 0.00                   | 0.00                 |
| 5Yr 1440Min Summer | 2.011                        | 0.00                   | 0.00                 | 100Yr+40% 1440Min Winter | 5.047                        | 0.00                   | 0.00                 |
| 5Yr 1440Min Winter | 2.011                        | 0.00                   | 0.00                 | 100Yr+40% 1440Min Summer | 5.047                        | 0.00                   | 0.00                 |

## Simulation Results

Return Period Yrs: 1.0

Climate Change %: 0

### Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status |
|---------|----------------|-------------|-----------|-----------|--------------|------------|--------|
| RE      | -              | 0           | 83.735    | 0.000     | 0.000        |            | OK     |
| S7      | 15 min Winter  | 9           | 83.070    | 0.030     | 0.940        |            | OK     |
| S8      | 15 min Winter  | 9           | 82.953    | 0.023     | 1.593        |            | OK     |
| S1      | 15 min Winter  | 8           | 83.773    | 0.021     | 1.103        |            | OK     |
| S2      | 15 min Winter  | 8           | 83.641    | 0.025     | 1.090        |            | OK     |
| S3      | 15 min Winter  | 8           | 83.620    | 0.058     | 5.964        |            | OK     |
| S4      | 15 min Winter  | 8           | 83.502    | 0.046     | 8.464        |            | OK     |
| S9      | 15 min Winter  | 8           | 83.284    | 0.046     | 8.435        |            | OK     |
| S5      | 720 min Winter | 523         | 82.265    | 0.175     | 0.316        |            | 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  | 9           | RE         | S7         | 0.015          | 0.000              | 0.000          | 0.000           | OK     |
| 1.001    | 15 min Winter  | 9           | S7         | S8         | 0.026          | 0.460              | 0.954          | 0.083           | OK     |
| 1.002    | 15 min Winter  | 9           | S8         | S5         | 0.023          | 0.952              | 1.600          | 0.050           | OK     |
| 2.000    | 15 min Winter  | 8           | S1         | S2         | 0.023          | 0.635              | 1.090          | 0.043           | OK     |
| 2.001    | 15 min Winter  | 8           | S2         | S3         | 0.042          | 0.273              | 1.074          | 0.061           | OK     |
| 2.002    | 15 min Winter  | 8           | S3         | S4         | 0.052          | 1.087              | 5.924          | 0.316           | OK     |
| 2.003    | 15 min Winter  | 8           | S4         | S9         | 0.046          | 1.853              | 8.435          | 0.203           | OK     |
| 2.004    | 15 min Winter  | 8           | S9         | S5         | 0.046          | 1.848              | 8.382          | 0.201           | OK     |

Return Period Yrs: 5.0

Climate Change %: 0

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status |
|---------|----------------|-------------|-----------|-----------|--------------|------------|--------|
| RE      | -              | 0           | 83.735    | 0.000     | 0.000        |            | OK     |
| S7      | 15 min Winter  | 9           | 83.075    | 0.035     | 1.322        |            | OK     |
| S8      | 15 min Winter  | 9           | 82.957    | 0.027     | 2.248        |            | OK     |
| S1      | 15 min Winter  | 8           | 83.777    | 0.025     | 1.549        |            | OK     |
| S2      | 15 min Winter  | 8           | 83.646    | 0.030     | 1.535        |            | OK     |
| S3      | 15 min Winter  | 8           | 83.632    | 0.070     | 8.387        |            | OK     |
| S4      | 15 min Winter  | 8           | 83.511    | 0.055     | 11.905       |            | OK     |
| S9      | 15 min Winter  | 8           | 83.293    | 0.055     | 11.870       |            | OK     |
| S5      | 720 min Winter | 523         | 82.334    | 0.244     | 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    | 15 min Winter  | 9           | RE         | S7         | 0.018          | 0.000              | 0.000          | 0.000           | OK     |
| 1.001    | 15 min Winter  | 9           | S7         | S8         | 0.031          | 0.511              | 1.349          | 0.117           | OK     |
| 1.002    | 15 min Winter  | 9           | S8         | S5         | 0.027          | 1.055              | 2.263          | 0.070           | OK     |
| 2.000    | 15 min Winter  | 8           | S1         | S2         | 0.027          | 0.703              | 1.535          | 0.060           | OK     |
| 2.001    | 15 min Winter  | 8           | S2         | S3         | 0.050          | 0.299              | 1.516          | 0.086           | OK     |
| 2.002    | 15 min Winter  | 8           | S3         | S4         | 0.062          | 1.197              | 8.336          | 0.445           | OK     |
| 2.003    | 15 min Winter  | 8           | S4         | S9         | 0.055          | 2.038              | 11.870         | 0.285           | OK     |
| 2.004    | 15 min Winter  | 8           | S9         | S5         | 0.055          | 2.033              | 11.803         | 0.283           | OK     |

Return Period Yrs: 30.0

Climate Change %: 0

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status |
|---------|----------------|-------------|-----------|-----------|--------------|------------|--------|
| RE      | -              | 0           | 83.735    | 0.000     | 0.000        |            | OK     |
| S7      | 15 min Winter  | 9           | 83.083    | 0.043     | 1.929        |            | OK     |
| S8      | 15 min Winter  | 9           | 82.962    | 0.032     | 3.290        |            | OK     |
| S1      | 15 min Winter  | 8           | 83.782    | 0.030     | 2.263        |            | OK     |
| S2      | 15 min Winter  | 8           | 83.652    | 0.036     | 2.245        |            | OK     |
| S3      | 15 min Winter  | 8           | 83.649    | 0.087     | 12.257       |            | OK     |
| S4      | 15 min Winter  | 8           | 83.523    | 0.067     | 17.395       |            | OK     |
| S9      | 15 min Winter  | 8           | 83.306    | 0.067     | 17.348       |            | OK     |
| S5      | 600 min Winter | 446         | 82.444    | 0.354     | 0.638        |            | 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  | 9           | RE         | S7         | 0.021          | 0.000              | 0.000          | 0.000           | OK     |
| 1.001    | 15 min Winter  | 9           | S7         | S8         | 0.037          | 0.573              | 1.978          | 0.172           | OK     |
| 1.002    | 15 min Winter  | 9           | S8         | S5         | 0.032          | 1.180              | 3.318          | 0.103           | OK     |
| 2.000    | 15 min Winter  | 8           | S1         | S2         | 0.033          | 0.784              | 2.245          | 0.088           | OK     |
| 2.001    | 15 min Winter  | 8           | S2         | S3         | 0.062          | 0.327              | 2.223          | 0.126           | OK     |
| 2.002    | 15 min Winter  | 8           | S3         | S4         | 0.077          | 1.323              | 12.184         | 0.650           | OK     |
| 2.003    | 15 min Winter  | 8           | S4         | S9         | 0.067          | 2.256              | 17.348         | 0.417           | OK     |
| 2.004    | 15 min Winter  | 8           | S9         | S5         | 0.067          | 2.252              | 17.260         | 0.414           | OK     |

Return Period Yrs: 100.0

Climate Change %: 40

## Manholes

| Manhole | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status |
|---------|----------------|-------------|-----------|-----------|--------------|------------|--------|
| RE      | -              | 0           | 83.735    | 0.000     | 0.000        |            | OK     |
| S7      | 15 min Winter  | 8           | 83.098    | 0.058     | 3.705        |            | OK     |
| S8      | 15 min Winter  | 9           | 82.974    | 0.044     | 5.951        |            | OK     |
| S1      | 15 min Winter  | 8           | 83.793    | 0.040     | 4.085        |            | OK     |
| S2      | 15 min Winter  | 9           | 83.696    | 0.080     | 3.866        |            | OK     |
| S3      | 15 min Winter  | 8           | 83.697    | 0.135     | 22.062       |            | OK     |
| S4      | 15 min Winter  | 8           | 83.553    | 0.097     | 31.371       |            | OK     |
| S9      | 15 min Winter  | 8           | 83.335    | 0.097     | 31.307       |            | OK     |
| S5      | 600 min Winter | 446         | 82.726    | 0.636     | 1.145        |            | 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  | 8           | RE         | S7         | 0.029          | 0.000              | 0.000          | 0.000           | OK     |
| 1.001    | 15 min Winter  | 9           | S7         | S8         | 0.051          | 0.683              | 3.581          | 0.311           | OK     |
| 1.002    | 600 min Winter | 443         | S8         | S5         | 0.047          | 0.736              | 0.669          | 0.021           | OK     |
| 2.000    | 15 min Winter  | 8           | S1         | S2         | 0.060          | 0.796              | 4.061          | 0.159           | OK     |
| 2.001    | 15 min Winter  | 8           | S2         | S3         | 0.107          | 0.347              | 3.942          | 0.223           | OK     |
| 2.002    | 15 min Winter  | 8           | S3         | S4         | 0.116          | 1.499              | 21.960         | 1.172           | OK     |
| 2.003    | 15 min Winter  | 8           | S4         | S9         | 0.097          | 2.596              | 31.307         | 0.752           | OK     |
| 2.004    | 15 min Winter  | 8           | S9         | S5         | 0.097          | 2.595              | 31.207         | 0.749           | OK     |