

## Design Settings

|                       |                   |                                      |               |
|-----------------------|-------------------|--------------------------------------|---------------|
| Rainfall Methodology  | FSR               | Maximum Time of Concentration (mins) | 30.00         |
| Return Period (years) | 2                 | Maximum Rainfall (mm/hr)             | 50.0          |
| Additional Flow (%)   | 0                 | Minimum Velocity (m/s)               | 1.00          |
| FSR Region            | England and Wales | Connection Type                      | Level Soffits |
| M5-60 (mm)            | 21.000            | Minimum Backdrop Height (m)          | 0.200         |
| Ratio-R               | 0.400             | Preferred Cover Depth (m)            | 1.200         |
| CV                    | 0.750             | Include Intermediate Ground          | ✓             |
| Time of Entry (mins)  | 5.00              | Enforce best practice design rules   | x             |

## Nodes

| Name | Area<br>(ha) | T of E<br>(mins) | Cover<br>Level<br>(m) | Diameter<br>(mm) | Easting<br>(m) | Northing<br>(m) | Depth<br>(m) |
|------|--------------|------------------|-----------------------|------------------|----------------|-----------------|--------------|
| S2   | 0.028        | 5.00             | 54.601                | 1350             | 394936.747     | 178816.667      | 1.491        |
| S4   | 0.018        | 5.00             | 54.744                | 1350             | 394935.011     | 178829.804      | 1.690        |
| S6   | 0.005        | 5.00             | 54.885                | 1200             | 394942.014     | 178843.115      | 1.900        |
| S8   | 0.057        | 5.00             | 54.893                | 1200             | 394952.014     | 178845.092      | 1.953        |
| S28  | 0.170        | 5.00             | 54.531                | 1350             | 395005.541     | 178750.504      | 1.500        |
| S30  | 0.077        | 5.00             | 54.448                | 1350             | 395001.196     | 178779.544      | 1.625        |
| S32  | 0.047        | 5.00             | 54.533                | 1200             | 395000.067     | 178795.105      | 1.783        |
| S10  | 0.108        | 5.00             | 54.431                | 1350             | 395010.052     | 178812.972      | 1.846        |
| S34  | 0.123        | 5.00             | 53.879                | 1500             | 395106.885     | 178845.038      | 1.433        |
| S38  | 0.139        | 5.00             | 54.796                | 1350             | 395024.817     | 178877.253      | 1.575        |
| S40  | 0.097        | 5.00             | 54.281                | 1350             | 395037.192     | 178839.171      | 1.576        |
| S36  | 0.113        | 5.00             | 54.191                | 1350             | 395048.178     | 178826.257      | 2.017        |
| S12  | 0.053        | 5.00             | 54.564                | 1350             | 395033.959     | 178799.861      | 2.544        |
| S14  | 0.105        | 5.00             | 53.904                | 1500             | 395082.605     | 178772.569      | 2.004        |
| S44  | 0.057        | 5.00             | 53.466                | 1350             | 395092.778     | 178743.854      | 1.159        |
| S16  | 0.019        | 5.00             | 53.828                | 1500             | 395087.198     | 178764.243      | 1.948        |
| HW1  |              |                  | 53.208                | 1350             | 395099.736     | 178770.259      | 1.358        |
| HW2  |              |                  | 53.208                | 1350             | 395125.277     | 178779.264      | 1.508        |
| S42  | 0.084        | 5.00             | 53.686                | 1350             | 395105.553     | 178785.771      | 1.406        |
| S18  |              |                  | 53.871                | 3000             | 395129.804     | 178788.026      | 2.227        |
| S20  |              |                  | 53.914                | 1500             | 395114.313     | 178847.155      | 2.404        |
| S22  |              |                  | 53.878                | 1500             | 395106.261     | 178876.164      | 2.435        |
| S24  |              |                  | 53.726                | 1500             | 395077.094     | 178976.796      | 2.513        |
| HW3  |              |                  | 52.500                | 1350             | 395045.886     | 179082.495      | 1.529        |

## Links

| Name  | US<br>Node | DS<br>Node | Length<br>(m) | ks (mm) /<br>n | US IL<br>(m) | DS IL<br>(m) | Fall<br>(m) | Slope<br>(1:X) | Dia<br>(mm) | T of C<br>(mins) | Rain<br>(mm/hr) |
|-------|------------|------------|---------------|----------------|--------------|--------------|-------------|----------------|-------------|------------------|-----------------|
| 1.000 | S2         | S4         | 13.251        | 0.600          | 53.110       | 53.054       | 0.056       | 236.6          | 300         | 5.22             | 50.0            |
| 1.001 | S4         | S6         | 15.041        | 0.600          | 53.054       | 52.985       | 0.069       | 218.0          | 300         | 5.45             | 50.0            |
| 1.002 | S6         | S8         | 10.194        | 0.600          | 52.985       | 52.940       | 0.045       | 226.5          | 300         | 5.62             | 50.0            |
| 1.003 | S8         | S10        | 66.334        | 0.600          | 52.940       | 52.660       | 0.280       | 236.9          | 300         | 6.70             | 50.0            |

| Name  | Vel<br>(m/s) | Cap<br>(l/s) | Flow<br>(l/s) | US<br>Depth<br>(m) | DS<br>Depth<br>(m) | Σ Area<br>(ha) | Σ Add<br>Inflow<br>(l/s) | Pro<br>Depth<br>(mm) | Pro<br>Velocity<br>(m/s) |
|-------|--------------|--------------|---------------|--------------------|--------------------|----------------|--------------------------|----------------------|--------------------------|
| 1.000 | 1.018        | 71.9         | 3.8           | 1.191              | 1.390              | 0.028          | 0.0                      | 47                   | 0.544                    |
| 1.001 | 1.061        | 75.0         | 6.2           | 1.390              | 1.600              | 0.046          | 0.0                      | 58                   | 0.650                    |
| 1.002 | 1.040        | 73.5         | 6.9           | 1.600              | 1.653              | 0.051          | 0.0                      | 62                   | 0.659                    |
| 1.003 | 1.017        | 71.9         | 14.6          | 1.653              | 1.471              | 0.108          | 0.0                      | 92                   | 0.804                    |

## Links

| Name  | US Node | DS Node | Length (m) | ks (mm) / n | US IL (m) | DS IL (m) | Fall (m) | Slope (1:X) | Dia (mm) | T of C (mins) | Rain (mm/hr) |
|-------|---------|---------|------------|-------------|-----------|-----------|----------|-------------|----------|---------------|--------------|
| 2.000 | S28     | S30     | 29.363     | 0.600       | 53.031    | 52.898    | 0.133    | 220.8       | 300      | 5.46          | 50.0         |
| 2.001 | S30     | S32     | 15.602     | 0.600       | 52.823    | 52.750    | 0.073    | 213.7       | 375      | 5.67          | 50.0         |
| 2.002 | S32     | S10     | 20.468     | 0.600       | 52.750    | 52.585    | 0.165    | 124.0       | 375      | 5.88          | 50.0         |
| 1.004 | S10     | S12     | 27.266     | 0.600       | 52.585    | 52.170    | 0.415    | 65.7        | 375      | 6.91          | 50.0         |
| 3.000 | S34     | S36     | 61.638     | 0.600       | 52.446    | 52.249    | 0.197    | 312.9       | 375      | 6.01          | 50.0         |
| 4.000 | S38     | S40     | 40.042     | 0.600       | 53.221    | 52.705    | 0.516    | 77.6        | 375      | 5.32          | 50.0         |
| 4.001 | S40     | S36     | 16.955     | 0.600       | 52.705    | 52.249    | 0.456    | 37.2        | 375      | 5.42          | 50.0         |
| 3.001 | S36     | S12     | 29.982     | 0.600       | 52.174    | 52.095    | 0.079    | 379.5       | 450      | 6.49          | 50.0         |
| 1.005 | S12     | S14     | 55.779     | 0.600       | 52.020    | 51.900    | 0.120    | 464.8       | 525      | 7.81          | 50.0         |
| 1.006 | S14     | S16     | 9.509      | 0.600       | 51.900    | 51.880    | 0.020    | 475.5       | 525      | 7.96          | 50.0         |
| 5.000 | S44     | S16     | 21.139     | 0.600       | 52.307    | 52.180    | 0.127    | 166.4       | 225      | 5.35          | 50.0         |
| 1.007 | S16     | HW1     | 13.907     | 0.600       | 51.880    | 51.850    | 0.030    | 463.6       | 525      | 8.19          | 50.0         |
| 1.008 | HW1     | HW2     | 27.081     | 0.600       | 51.850    | 51.700    | 0.150    | 180.5       | 750      | 8.40          | 50.0         |
| 1.009 | HW2     | S18     | 9.862      | 0.600       | 51.700    | 51.644    | 0.056    | 176.1       | 525      | 8.50          | 50.0         |
| 6.000 | S42     | S18     | 24.355     | 0.600       | 52.280    | 51.944    | 0.336    | 72.5        | 225      | 5.26          | 50.0         |
| 1.010 | S18     | S20     | 61.125     | 0.600       | 51.644    | 51.510    | 0.134    | 456.2       | 525      | 9.48          | 50.0         |
| 1.011 | S20     | S22     | 30.105     | 0.600       | 51.510    | 51.443    | 0.067    | 449.3       | 525      | 9.96          | 50.0         |
| 1.012 | S22     | S24     | 104.774    | 0.600       | 51.443    | 51.213    | 0.230    | 455.5       | 525      | 11.63         | 48.7         |
| 1.013 | S24     | HW3     | 110.210    | 0.600       | 51.213    | 50.971    | 0.242    | 455.4       | 525      | 13.39         | 45.0         |

| Name  | Vel (m/s) | Cap (l/s) | Flow (l/s) | US Depth (m) | DS Depth (m) | Σ Area (ha) | Σ Add Inflow (l/s) | Pro Depth (mm) | Pro Velocity (m/s) |
|-------|-----------|-----------|------------|--------------|--------------|-------------|--------------------|----------------|--------------------|
| 2.000 | 1.054     | 74.5      | 23.0       | 1.200        | 1.250        | 0.170       | 0.0                | 114            | 0.931              |
| 2.001 | 1.235     | 136.4     | 33.5       | 1.250        | 1.408        | 0.247       | 0.0                | 126            | 1.029              |
| 2.002 | 1.625     | 179.5     | 39.8       | 1.408        | 1.471        | 0.294       | 0.0                | 120            | 1.318              |
| 1.004 | 2.238     | 247.2     | 69.1       | 1.471        | 2.019        | 0.510       | 0.0                | 135            | 1.930              |
| 3.000 | 1.019     | 112.5     | 16.7       | 1.058        | 1.567        | 0.123       | 0.0                | 97             | 0.737              |
| 4.000 | 2.058     | 227.3     | 18.8       | 1.200        | 1.201        | 0.139       | 0.0                | 72             | 1.261              |
| 4.001 | 2.979     | 329.0     | 32.0       | 1.201        | 1.567        | 0.236       | 0.0                | 78             | 1.912              |
| 3.001 | 1.037     | 165.0     | 64.0       | 1.567        | 2.019        | 0.472       | 0.0                | 194            | 0.973              |
| 1.005 | 1.032     | 223.4     | 140.3      | 2.019        | 1.479        | 1.035       | 0.0                | 302            | 1.088              |
| 1.006 | 1.020     | 220.9     | 154.5      | 1.479        | 1.423        | 1.140       | 0.0                | 324            | 1.100              |
| 5.000 | 1.010     | 40.2      | 7.7        | 0.934        | 1.423        | 0.057       | 0.0                | 66             | 0.782              |
| 1.007 | 1.033     | 223.7     | 164.8      | 1.423        | 0.833        | 1.216       | 0.0                | 336            | 1.126              |
| 1.008 | 2.079     | 918.6     | 164.8      | 0.608        | 0.758        | 1.216       | 0.0                | 214            | 1.595              |
| 1.009 | 1.684     | 364.7     | 164.8      | 0.983        | 1.702        | 1.216       | 0.0                | 247            | 1.644              |
| 6.000 | 1.538     | 61.1      | 11.4       | 1.181        | 1.702        | 0.084       | 0.0                | 65             | 1.182              |
| 1.010 | 1.042     | 225.6     | 176.2      | 1.702        | 1.879        | 1.300       | 0.0                | 350            | 1.147              |
| 1.011 | 1.050     | 227.3     | 176.2      | 1.879        | 1.910        | 1.300       | 0.0                | 348            | 1.154              |
| 1.012 | 1.043     | 225.7     | 171.6      | 1.910        | 1.988        | 1.300       | 0.0                | 344            | 1.142              |
| 1.013 | 1.043     | 225.7     | 158.5      | 1.988        | 1.004        | 1.300       | 0.0                | 325            | 1.125              |

## Simulation Settings

|                      |                   |                            |        |
|----------------------|-------------------|----------------------------|--------|
| Rainfall Methodology | FSR               | Analysis Speed             | Normal |
| Rainfall Events      | Singular          | Skip Steady State          | x      |
| FSR Region           | England and Wales | Drain Down Time (mins)     | 360    |
| M5-60 (mm)           | 21.000            | Additional Storage (m³/ha) | 0.0    |
| Ratio-R              | 0.400             | Starting Level (m)         |        |
| Summer CV            | 0.750             | Check Discharge Rate(s)    | x      |
| Winter CV            | 0.840             | Check Discharge Volume     | x      |

| Storm Durations          |                          |    |                          |     |                          |     |     |     |     |     |      |
|--------------------------|--------------------------|----|--------------------------|-----|--------------------------|-----|-----|-----|-----|-----|------|
| 15                       | 30                       | 60 | 120                      | 180 | 240                      | 360 | 480 | 600 | 720 | 960 | 1440 |
| Return Period<br>(years) | Climate Change<br>(CC %) |    | Additional Area<br>(A %) |     | Additional Flow<br>(Q %) |     |     |     |     |     |      |
| 2                        | 0                        |    | 0                        |     | 0                        |     | 0   |     |     |     |      |
| 30                       | 0                        |    | 0                        |     | 0                        |     | 0   |     |     |     |      |
| 100                      | 40                       |    | 0                        |     | 0                        |     | 0   |     |     |     |      |

Node S18 Online Hydro-Brake® Control

|                          |        |                         |                                |
|--------------------------|--------|-------------------------|--------------------------------|
| Flap Valve               | x      | Objective               | (HE) Minimise upstream storage |
| Replaces Downstream Link | x      | Sump Available          | ✓                              |
| Invert Level (m)         | 51.644 | Product Number          | CTL-SHE-0107-5900-1500-5900    |
| Design Depth (m)         | 1.500  | Min Outlet Diameter (m) | 0.150                          |
| Design Flow (l/s)        | 5.9    | Min Node Diameter (mm)  | 1200                           |

Node HW2 Depth/Area Storage Structure

|                             |         |               |      |                           |        |
|-----------------------------|---------|---------------|------|---------------------------|--------|
| Base Inf Coefficient (m/hr) | 0.00000 | Safety Factor | 2.0  | Invert Level (m)          | 51.700 |
| Side Inf Coefficient (m/hr) | 0.00000 | Porosity      | 1.00 | Time to half empty (mins) |        |

| Depth<br>(m) | Area<br>(m²) | Inf Area<br>(m²) | Depth<br>(m) | Area<br>(m²) | Inf Area<br>(m²) | Depth<br>(m) | Area<br>(m²) | Inf Area<br>(m²) | Depth<br>(m) | Area<br>(m²) | Inf Area<br>(m²) |
|--------------|--------------|------------------|--------------|--------------|------------------|--------------|--------------|------------------|--------------|--------------|------------------|
| 0.000        | 525.8        | 0.0              | 0.500        | 634.6        | 0.0              | 1.000        | 753.0        | 0.0              | 1.500        | 880.5        | 0.0              |
| 0.100        | 546.5        | 0.0              | 0.600        | 657.6        | 0.0              | 1.100        | 777.8        | 0.0              | 1.508        | 882.6        | 0.0              |
| 0.200        | 568.0        | 0.0              | 0.700        | 680.9        | 0.0              | 1.200        | 802.9        | 0.0              |              |              |                  |
| 0.300        | 589.8        | 0.0              | 0.800        | 704.6        | 0.0              | 1.300        | 828.4        | 0.0              |              |              |                  |
| 0.400        | 612.1        | 0.0              | 0.900        | 728.6        | 0.0              | 1.400        | 854.3        | 0.0              |              |              |                  |

**Results for 2 year Critical Storm Duration. Lowest mass balance: 99.56%**

| Node Event        | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status |
|-------------------|---------|-------------|-----------|-----------|--------------|---------------|------------|--------|
| 15 minute winter  | S2      | 10          | 53.165    | 0.055     | 5.4          | 0.0786        | 0.0000     | OK     |
| 15 minute winter  | S4      | 10          | 53.125    | 0.071     | 8.8          | 0.1019        | 0.0000     | OK     |
| 15 minute winter  | S6      | 11          | 53.064    | 0.079     | 9.6          | 0.0896        | 0.0000     | OK     |
| 15 minute winter  | S8      | 11          | 53.047    | 0.107     | 20.0         | 0.1209        | 0.0000     | OK     |
| 15 minute winter  | S28     | 10          | 53.174    | 0.143     | 32.5         | 0.2044        | 0.0000     | OK     |
| 15 minute winter  | S30     | 10          | 52.986    | 0.163     | 46.5         | 0.2330        | 0.0000     | OK     |
| 15 minute winter  | S32     | 10          | 52.903    | 0.153     | 55.0         | 0.1731        | 0.0000     | OK     |
| 15 minute winter  | S10     | 10          | 52.745    | 0.160     | 93.7         | 0.2296        | 0.0000     | OK     |
| 15 minute winter  | S34     | 11          | 52.558    | 0.112     | 23.6         | 0.1987        | 0.0000     | OK     |
| 15 minute winter  | S38     | 10          | 53.308    | 0.087     | 26.6         | 0.1239        | 0.0000     | OK     |
| 15 minute winter  | S40     | 10          | 52.797    | 0.092     | 44.8         | 0.1316        | 0.0000     | OK     |
| 15 minute winter  | S36     | 11          | 52.529    | 0.355     | 88.6         | 0.5084        | 0.0000     | OK     |
| 15 minute winter  | S12     | 11          | 52.484    | 0.464     | 205.1        | 0.6633        | 0.0000     | OK     |
| 15 minute summer  | S14     | 10          | 52.408    | 0.508     | 214.5        | 0.8968        | 0.0000     | OK     |
| 15 minute winter  | S44     | 10          | 52.397    | 0.090     | 10.9         | 0.1295        | 0.0000     | OK     |
| 15 minute summer  | S16     | 10          | 52.390    | 0.510     | 231.1        | 0.9016        | 0.0000     | OK     |
| 15 minute summer  | HW1     | 10          | 52.359    | 0.508     | 235.8        | 0.7277        | 0.0000     | OK     |
| 360 minute winter | HW2     | 336         | 52.066    | 0.366     | 33.2         | 206.8987      | 0.0000     | OK     |
| 15 minute winter  | S42     | 10          | 52.361    | 0.081     | 16.1         | 0.1155        | 0.0000     | OK     |
| 360 minute winter | S18     | 336         | 52.066    | 0.422     | 6.2          | 2.9798        | 0.0000     | OK     |
| 360 minute winter | S20     | 336         | 51.569    | 0.059     | 5.9          | 0.1034        | 0.0000     | OK     |
| 360 minute winter | S22     | 344         | 51.500    | 0.057     | 5.9          | 0.1014        | 0.0000     | OK     |
| 360 minute winter | S24     | 344         | 51.273    | 0.060     | 5.9          | 0.1069        | 0.0000     | OK     |
| 360 minute winter | HW3     | 344         | 51.020    | 0.049     | 5.9          | 0.0000        | 0.0000     | OK     |

  

| Link Event<br>(Upstream Depth) | US Node | Link  | DS Node | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Link Vol (m³) | Discharge Vol (m³) |
|--------------------------------|---------|-------|---------|---------------|----------------|----------|---------------|--------------------|
| 15 minute winter               | S2      | 1.000 | S4      | 5.3           | 0.495          | 0.074    | 0.1431        |                    |
| 15 minute winter               | S4      | 1.001 | S6      | 8.6           | 0.635          | 0.115    | 0.2065        |                    |
| 15 minute winter               | S6      | 1.002 | S8      | 9.6           | 0.525          | 0.131    | 0.1902        |                    |
| 15 minute winter               | S8      | 1.003 | S10     | 19.1          | 0.869          | 0.265    | 1.4647        |                    |
| 15 minute winter               | S28     | 2.000 | S30     | 31.7          | 1.002          | 0.425    | 0.9358        |                    |
| 15 minute winter               | S30     | 2.001 | S32     | 46.0          | 1.054          | 0.337    | 0.6874        |                    |
| 15 minute winter               | S32     | 2.002 | S10     | 55.1          | 1.272          | 0.307    | 0.8928        |                    |
| 15 minute winter               | S10     | 1.004 | S12     | 94.8          | 1.732          | 0.384    | 1.9501        |                    |
| 15 minute winter               | S34     | 3.000 | S36     | 22.7          | 0.650          | 0.202    | 3.5777        |                    |
| 15 minute winter               | S38     | 4.000 | S40     | 26.2          | 1.309          | 0.115    | 0.8030        |                    |
| 15 minute winter               | S40     | 4.001 | S36     | 44.3          | 1.580          | 0.135    | 0.9237        |                    |
| 15 minute winter               | S36     | 3.001 | S12     | 100.6         | 0.867          | 0.610    | 4.1935        |                    |
| 15 minute winter               | S12     | 1.005 | S14     | 202.3         | 1.046          | 0.905    | 11.4551       |                    |
| 15 minute summer               | S14     | 1.006 | S16     | 219.7         | 1.231          | 0.995    | 2.0355        |                    |
| 15 minute winter               | S44     | 5.000 | S16     | 10.5          | 0.767          | 0.263    | 0.5278        |                    |
| 15 minute summer               | S16     | 1.007 | HW1     | 235.8         | 1.624          | 1.054    | 2.9785        |                    |
| 15 minute summer               | HW1     | 1.008 | HW2     | 245.5         | 2.791          | 0.267    | 4.3360        |                    |
| 360 minute winter              | HW2     | 1.009 | S18     | 5.7           | 0.107          | 0.016    | 1.7079        |                    |
| 15 minute winter               | S42     | 6.000 | S18     | 15.8          | 1.269          | 0.258    | 0.3032        |                    |
| 360 minute winter              | S18     | 1.010 | S20     | 5.9           | 0.453          | 0.026    | 0.7905        |                    |
| 360 minute winter              | S20     | 1.011 | S22     | 5.9           | 0.455          | 0.026    | 0.3877        |                    |
| 360 minute winter              | S22     | 1.012 | S24     | 5.9           | 0.443          | 0.026    | 1.3848        |                    |
| 360 minute winter              | S24     | 1.013 | HW3     | 5.9           | 0.493          | 0.026    | 1.3133        | 203.7              |

**Results for 30 year Critical Storm Duration. Lowest mass balance: 99.60%**

| Node Event        | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status     |
|-------------------|---------|-------------|-----------|-----------|--------------|---------------|------------|------------|
| 15 minute winter  | S2      | 10          | 53.189    | 0.079     | 10.2         | 0.1127        | 0.0000     | OK         |
| 15 minute winter  | S4      | 10          | 53.155    | 0.101     | 16.6         | 0.1447        | 0.0000     | OK         |
| 15 minute winter  | S6      | 12          | 53.154    | 0.169     | 18.2         | 0.1916        | 0.0000     | OK         |
| 15 minute winter  | S8      | 12          | 53.155    | 0.215     | 38.2         | 0.2427        | 0.0000     | OK         |
| 15 minute winter  | S28     | 12          | 53.263    | 0.232     | 61.8         | 0.3318        | 0.0000     | OK         |
| 15 minute winter  | S30     | 11          | 53.221    | 0.398     | 88.2         | 0.5693        | 0.0000     | SURCHARGED |
| 15 minute winter  | S32     | 11          | 53.203    | 0.453     | 103.5        | 0.5124        | 0.0000     | SURCHARGED |
| 15 minute winter  | S10     | 11          | 53.112    | 0.527     | 159.2        | 0.7543        | 0.0000     | SURCHARGED |
| 15 minute summer  | S34     | 11          | 53.089    | 0.643     | 42.5         | 1.1355        | 0.0000     | SURCHARGED |
| 15 minute winter  | S38     | 10          | 53.339    | 0.118     | 50.5         | 0.1690        | 0.0000     | OK         |
| 15 minute winter  | S40     | 11          | 53.034    | 0.329     | 85.3         | 0.4712        | 0.0000     | OK         |
| 15 minute winter  | S36     | 11          | 52.996    | 0.822     | 155.7        | 1.1759        | 0.0000     | SURCHARGED |
| 15 minute winter  | S12     | 11          | 52.900    | 0.880     | 329.2        | 1.2591        | 0.0000     | SURCHARGED |
| 15 minute winter  | S14     | 11          | 52.575    | 0.675     | 363.9        | 1.1926        | 0.0000     | SURCHARGED |
| 15 minute summer  | S44     | 9           | 52.633    | 0.326     | 19.8         | 0.4659        | 0.0000     | SURCHARGED |
| 15 minute summer  | S16     | 9           | 52.517    | 0.637     | 374.5        | 1.1263        | 0.0000     | SURCHARGED |
| 15 minute winter  | HW1     | 8           | 52.450    | 0.600     | 388.7        | 0.8586        | 0.0000     | OK         |
| 480 minute winter | HW2     | 464         | 52.389    | 0.689     | 45.4         | 414.4985      | 0.0000     | SURCHARGED |
| 15 minute winter  | S42     | 10          | 52.397    | 0.117     | 30.5         | 0.1680        | 0.0000     | OK         |
| 480 minute winter | S18     | 464         | 52.389    | 0.745     | 6.7          | 5.2640        | 0.0000     | SURCHARGED |
| 60 minute winter  | S20     | 44          | 51.569    | 0.059     | 5.9          | 0.1038        | 0.0000     | OK         |
| 15 minute winter  | S22     | 19          | 51.502    | 0.059     | 5.8          | 0.1044        | 0.0000     | OK         |
| 60 minute summer  | S24     | 140         | 51.274    | 0.061     | 5.9          | 0.1072        | 0.0000     | OK         |
| 60 minute summer  | HW3     | 139         | 51.020    | 0.049     | 5.9          | 0.0000        | 0.0000     | OK         |

| Link Event<br>(Upstream Depth) | US Node | Link  | DS Node | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Link Vol (m³) | Discharge Vol (m³) |
|--------------------------------|---------|-------|---------|---------------|----------------|----------|---------------|--------------------|
| 15 minute winter               | S2      | 1.000 | S4      | 10.0          | 0.566          | 0.140    | 0.2357        |                    |
| 15 minute winter               | S4      | 1.001 | S6      | 16.5          | 0.695          | 0.220    | 0.4589        |                    |
| 15 minute winter               | S6      | 1.002 | S8      | 18.2          | 0.573          | 0.248    | 0.4838        |                    |
| 15 minute winter               | S8      | 1.003 | S10     | 40.1          | 0.888          | 0.558    | 4.1239        |                    |
| 15 minute winter               | S28     | 2.000 | S30     | 60.3          | 1.178          | 0.809    | 1.8882        |                    |
| 15 minute winter               | S30     | 2.001 | S32     | 86.4          | 1.140          | 0.633    | 1.7209        |                    |
| 15 minute winter               | S32     | 2.002 | S10     | 96.2          | 1.293          | 0.536    | 2.2576        |                    |
| 15 minute winter               | S10     | 1.004 | S12     | 176.4         | 1.785          | 0.714    | 3.0074        |                    |
| 15 minute summer               | S34     | 3.000 | S36     | 78.8          | 0.715          | 0.701    | 6.7985        |                    |
| 15 minute winter               | S38     | 4.000 | S40     | 50.1          | 1.408          | 0.220    | 2.6317        |                    |
| 15 minute winter               | S40     | 4.001 | S36     | 81.7          | 1.573          | 0.248    | 1.8046        |                    |
| 15 minute winter               | S36     | 3.001 | S12     | 157.4         | 0.993          | 0.954    | 4.7505        |                    |
| 15 minute winter               | S12     | 1.005 | S14     | 330.9         | 1.532          | 1.481    | 12.0501       |                    |
| 15 minute winter               | S14     | 1.006 | S16     | 363.1         | 1.681          | 1.644    | 2.0543        |                    |
| 15 minute summer               | S44     | 5.000 | S16     | 21.8          | 0.756          | 0.544    | 0.8407        |                    |
| 15 minute summer               | S16     | 1.007 | HW1     | 376.1         | 2.005          | 1.681    | 3.0044        |                    |
| 15 minute winter               | HW1     | 1.008 | HW2     | 396.1         | 3.120          | 0.431    | 5.1483        |                    |
| 480 minute winter              | HW2     | 1.009 | S18     | 5.8           | 0.101          | 0.016    | 2.1305        |                    |
| 15 minute winter               | S42     | 6.000 | S18     | 30.0          | 1.490          | 0.491    | 0.4911        |                    |
| 480 minute winter              | S18     | 1.010 | S20     | 5.9           | 0.454          | 0.026    | 0.7944        |                    |
| 60 minute winter               | S20     | 1.011 | S22     | 5.9           | 0.457          | 0.026    | 0.3896        |                    |
| 15 minute winter               | S22     | 1.012 | S24     | 6.0           | 0.541          | 0.026    | 1.3810        |                    |
| 60 minute summer               | S24     | 1.013 | HW3     | 5.9           | 0.495          | 0.026    | 1.3197        | 136.6              |

**Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.81%**

| Node Event        | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status     |
|-------------------|---------|-------------|-----------|-----------|--------------|---------------|------------|------------|
| 15 minute winter  | S2      | 11          | 54.601    | 1.491     | 30.6         | 2.1336        | 0.0386     | FLOOD      |
| 15 minute winter  | S4      | 11          | 54.606    | 1.552     | 60.1         | 2.2208        | 0.0000     | FLOOD RISK |
| 15 minute winter  | S6      | 11          | 54.576    | 1.591     | 56.3         | 1.7995        | 0.0000     | SURCHARGED |
| 15 minute winter  | S8      | 11          | 54.553    | 1.613     | 67.1         | 1.8248        | 0.0000     | SURCHARGED |
| 15 minute winter  | S28     | 10          | 54.531    | 1.500     | 112.6        | 2.1465        | 8.0864     | FLOOD      |
| 15 minute winter  | S30     | 10          | 54.448    | 1.625     | 140.4        | 2.3254        | 1.1520     | FLOOD      |
| 15 minute winter  | S32     | 10          | 54.400    | 1.650     | 158.5        | 1.8662        | 0.0000     | FLOOD RISK |
| 15 minute winter  | S10     | 11          | 54.294    | 1.709     | 251.5        | 2.4458        | 0.0000     | FLOOD RISK |
| 15 minute winter  | S34     | 10          | 53.879    | 1.433     | 102.7        | 2.5321        | 13.6878    | FLOOD      |
| 15 minute winter  | S38     | 10          | 54.236    | 1.015     | 92.1         | 1.4526        | 0.0000     | SURCHARGED |
| 15 minute winter  | S40     | 10          | 54.128    | 1.423     | 153.3        | 2.0358        | 0.0000     | FLOOD RISK |
| 15 minute winter  | S36     | 10          | 53.974    | 1.800     | 235.3        | 2.5761        | 0.0000     | FLOOD RISK |
| 15 minute winter  | S12     | 10          | 53.782    | 1.762     | 494.1        | 2.5212        | 0.0000     | SURCHARGED |
| 15 minute winter  | S14     | 10          | 53.064    | 1.164     | 560.9        | 2.0572        | 0.0000     | SURCHARGED |
| 720 minute winter | S44     | 705         | 52.991    | 0.684     | 2.9          | 0.9790        | 0.0000     | SURCHARGED |
| 720 minute winter | S16     | 705         | 52.990    | 1.110     | 58.8         | 1.9620        | 0.0000     | SURCHARGED |
| 720 minute winter | HW1     | 705         | 52.991    | 1.141     | 57.7         | 1.6326        | 0.0000     | FLOOD RISK |
| 720 minute winter | HW2     | 705         | 52.991    | 1.291     | 57.4         | 867.4916      | 0.0000     | FLOOD RISK |
| 720 minute winter | S42     | 705         | 52.991    | 0.711     | 4.3          | 1.0169        | 0.0000     | SURCHARGED |
| 720 minute winter | S18     | 705         | 52.991    | 1.347     | 6.6          | 9.5195        | 0.0000     | SURCHARGED |
| 60 minute summer  | S20     | 36          | 51.569    | 0.059     | 5.9          | 0.1038        | 0.0000     | OK         |
| 15 minute winter  | S22     | 17          | 51.503    | 0.060     | 5.9          | 0.1063        | 0.0000     | OK         |
| 15 minute summer  | S24     | 188         | 51.274    | 0.061     | 6.1          | 0.1072        | 0.0000     | OK         |
| 15 minute summer  | HW3     | 187         | 51.020    | 0.049     | 5.9          | 0.0000        | 0.0000     | OK         |

| Link Event<br>(Upstream Depth) | US Node | Link  | DS Node | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Link Vol (m³) | Discharge Vol (m³) |
|--------------------------------|---------|-------|---------|---------------|----------------|----------|---------------|--------------------|
| 15 minute winter               | S2      | 1.000 | S4      | 18.1          | 0.599          | 0.252    | 0.9331        |                    |
| 15 minute winter               | S4      | 1.001 | S6      | -48.9         | 0.720          | -0.652   | 1.0592        |                    |
| 15 minute winter               | S6      | 1.002 | S8      | -53.2         | -0.756         | -0.724   | 0.7179        |                    |
| 15 minute winter               | S8      | 1.003 | S10     | 66.8          | 1.076          | 0.929    | 4.6712        |                    |
| 15 minute winter               | S28     | 2.000 | S30     | 92.5          | 1.313          | 1.241    | 2.0677        |                    |
| 15 minute winter               | S30     | 2.001 | S32     | 129.3         | 1.173          | 0.948    | 1.7209        |                    |
| 15 minute winter               | S32     | 2.002 | S10     | 150.0         | 1.360          | 0.836    | 2.2576        |                    |
| 15 minute winter               | S10     | 1.004 | S12     | 252.3         | 2.287          | 1.021    | 3.0074        |                    |
| 15 minute winter               | S34     | 3.000 | S36     | 85.4          | 0.774          | 0.759    | 6.7985        |                    |
| 15 minute winter               | S38     | 4.000 | S40     | 89.3          | 1.520          | 0.393    | 4.4165        |                    |
| 15 minute winter               | S40     | 4.001 | S36     | 152.2         | 1.619          | 0.463    | 1.8701        |                    |
| 15 minute winter               | S36     | 3.001 | S12     | 228.5         | 1.442          | 1.385    | 4.7505        |                    |
| 15 minute winter               | S12     | 1.005 | S14     | 491.4         | 2.275          | 2.199    | 12.0501       |                    |
| 15 minute winter               | S14     | 1.006 | S16     | 557.9         | 2.583          | 2.526    | 2.0543        |                    |
| 720 minute winter              | S44     | 5.000 | S16     | 2.8           | 0.555          | 0.070    | 0.8407        |                    |
| 720 minute winter              | S16     | 1.007 | HW1     | 57.7          | 0.919          | 0.258    | 3.0044        |                    |
| 720 minute winter              | HW1     | 1.008 | HW2     | 57.4          | 1.090          | 0.062    | 11.9189       |                    |
| 720 minute winter              | HW2     | 1.009 | S18     | 5.5           | 0.084          | 0.015    | 2.1305        |                    |
| 720 minute winter              | S42     | 6.000 | S18     | 4.1           | 0.710          | 0.067    | 0.9686        |                    |
| 720 minute winter              | S18     | 1.010 | S20     | 5.9           | 0.454          | 0.026    | 0.7941        |                    |
| 60 minute summer               | S20     | 1.011 | S22     | 5.9           | 0.458          | 0.026    | 0.3885        |                    |
| 15 minute winter               | S22     | 1.012 | S24     | 6.1           | 0.551          | 0.027    | 1.3917        |                    |
| 15 minute summer               | S24     | 1.013 | HW3     | 5.9           | 0.495          | 0.026    | 1.3197        | 126.8              |