

### 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)            | 20.000            | Minimum Backdrop Height (m)          | 0.600         |
| 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   | ✓             |

### Nodes

| Name | Area (ha) | T of E (mins) | Cover Level (m) | Diameter (mm) | Easting (m) | Northing (m) | Depth (m) |
|------|-----------|---------------|-----------------|---------------|-------------|--------------|-----------|
| S1   | 0.003     | 5.00          | 9.850           | 300           | 1050.186    | 159.571      | 0.450     |
| S2   | 0.001     | 5.00          | 9.850           | 450           | 1061.794    | 159.571      | 0.566     |
| S3   | 0.001     | 5.00          | 9.850           | 500           | 1061.794    | 144.936      | 0.710     |
| SA1  | 0.000     |               | 9.850           | 100           | 1061.794    | 142.361      | 0.736     |

### Links (Input)

| 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) |
|-------|---------|---------|------------|-------------|-----------|-----------|----------|-------------|----------|---------------|--------------|
| 1.000 | S1      | S2      | 11.608     | 0.600       | 9.400     | 9.284     | 0.116    | 100.1       | 100      | 5.25          | 50.0         |
| 1.001 | S2      | S3      | 14.635     | 0.600       | 9.284     | 9.140     | 0.144    | 101.6       | 100      | 5.57          | 50.0         |
| 1.002 | S3      | SA1     | 2.575      | 0.600       | 9.140     | 9.114     | 0.026    | 100.0       | 100      | 5.63          | 50.0         |

### Simulation Settings

|                      |                   |                            |        |
|----------------------|-------------------|----------------------------|--------|
| Rainfall Methodology | FSR               | Analysis Speed             | Normal |
| FSR Region           | England and Wales | Skip Steady State          | x      |
| M5-60 (mm)           | 20.000            | Drain Down Time (mins)     | 240    |
| Ratio-R              | 0.400             | Additional Storage (m³/ha) | 20.0   |
| 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 (years) | Climate Change (CC %) | Additional Area (A %) | Additional Flow (Q %) |
|-----------------------|-----------------------|-----------------------|-----------------------|
| 10                    | 0                     | 0                     | 0                     |
| 30                    | 0                     | 0                     | 0                     |
| 100                   | 40                    | 0                     | 0                     |

### Node SA1 Soakaway Storage Structure

|                             |         |                           |       |                 |       |
|-----------------------------|---------|---------------------------|-------|-----------------|-------|
| Base Inf Coefficient (m/hr) | 0.00000 | Invert Level (m)          | 8.550 | Depth (m)       | 0.800 |
| Side Inf Coefficient (m/hr) | 0.03780 | Time to half empty (mins) | 1293  | Inf Depth (m)   |       |
| Safety Factor               | 2.0     | Pit Width (m)             | 1.500 | Number Required | 1     |
| Porosity                    | 0.95    | Pit Length (m)            | 2.000 |                 |       |

**Results for 10 year Critical Storm Duration. Lowest mass balance: 93.94%**

| Node Event        | US<br>Node | Peak<br>(mins) | Level<br>(m) | Depth<br>(m) | Inflow<br>(l/s) | Node<br>Vol (m³) | Flood<br>(m³) | Status |
|-------------------|------------|----------------|--------------|--------------|-----------------|------------------|---------------|--------|
| 15 minute winter  | S1         | 11             | 9.425        | 0.025        | 0.8             | 0.0050           | 0.0000        | OK     |
| 15 minute winter  | S2         | 11             | 9.313        | 0.029        | 1.1             | 0.0056           | 0.0000        | OK     |
| 15 minute winter  | S3         | 11             | 9.175        | 0.035        | 1.4             | 0.0079           | 0.0000        | OK     |
| 180 minute winter | SA1        | 148            | 8.919        | -0.195       | 0.4             | 1.0524           | 0.0000        | OK     |

| Link Event<br>(Upstream Depth) | US<br>Node | Link         | DS<br>Node | Outflow<br>(l/s) | Velocity<br>(m/s) | Flow/Cap | Link<br>Vol (m³) |
|--------------------------------|------------|--------------|------------|------------------|-------------------|----------|------------------|
| 15 minute winter               | S1         | 1.000        | S2         | 0.8              | 0.481             | 0.133    | 0.0195           |
| 15 minute winter               | S2         | 1.001        | S3         | 1.1              | 0.510             | 0.183    | 0.0316           |
| 15 minute winter               | S3         | 1.002        | SA1        | 1.4              | 0.593             | 0.228    | 0.0060           |
| 180 minute winter              | SA1        | Infiltration |            | 0.0              |                   |          |                  |

**Results for 30 year Critical Storm Duration. Lowest mass balance: 93.94%**

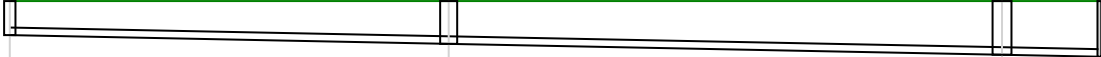
| Node Event        | US<br>Node | Peak<br>(mins) | Level<br>(m) | Depth<br>(m) | Inflow<br>(l/s) | Node<br>Vol (m³) | Flood<br>(m³) | Status |
|-------------------|------------|----------------|--------------|--------------|-----------------|------------------|---------------|--------|
| 15 minute winter  | S1         | 10             | 9.428        | 0.028        | 1.0             | 0.0056           | 0.0000        | OK     |
| 15 minute winter  | S2         | 11             | 9.316        | 0.032        | 1.3             | 0.0061           | 0.0000        | OK     |
| 15 minute winter  | S3         | 11             | 9.178        | 0.038        | 1.6             | 0.0085           | 0.0000        | OK     |
| 180 minute winter | SA1        | 156            | 9.046        | -0.068       | 0.4             | 1.4130           | 0.0000        | OK     |

| Link Event<br>(Upstream Depth) | US<br>Node | Link         | DS<br>Node | Outflow<br>(l/s) | Velocity<br>(m/s) | Flow/Cap | Link<br>Vol (m³) |
|--------------------------------|------------|--------------|------------|------------------|-------------------|----------|------------------|
| 15 minute winter               | S1         | 1.000        | S2         | 1.0              | 0.521             | 0.166    | 0.0225           |
| 15 minute winter               | S2         | 1.001        | S3         | 1.3              | 0.539             | 0.217    | 0.0355           |
| 15 minute winter               | S3         | 1.002        | SA1        | 1.6              | 0.616             | 0.263    | 0.0066           |
| 180 minute winter              | SA1        | Infiltration |            | 0.0              |                   |          |                  |

**Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 93.94%**

| Node Event        | US<br>Node | Peak<br>(mins) | Level<br>(m) | Depth<br>(m) | Inflow<br>(l/s) | Node<br>Vol (m³) | Flood<br>(m³) | Status     |
|-------------------|------------|----------------|--------------|--------------|-----------------|------------------|---------------|------------|
| 15 minute winter  | S1         | 10             | 9.439        | 0.039        | 1.9             | 0.0079           | 0.0000        | OK         |
| 360 minute winter | S2         | 296            | 9.433        | 0.149        | 0.4             | 0.0289           | 0.0000        | SURCHARGED |
| 360 minute winter | S3         | 296            | 9.433        | 0.293        | 0.5             | 0.0659           | 0.0000        | SURCHARGED |
| 360 minute winter | SA1        | 296            | 9.433        | 0.319        | 0.5             | 2.2840           | 0.0000        | OK         |

| Link Event<br>(Upstream Depth) | US<br>Node | Link         | DS<br>Node | Outflow<br>(l/s) | Velocity<br>(m/s) | Flow/Cap | Link<br>Vol (m³) |
|--------------------------------|------------|--------------|------------|------------------|-------------------|----------|------------------|
| 15 minute winter               | S1         | 1.000        | S2         | 1.9              | 0.606             | 0.310    | 0.0358           |
| 360 minute winter              | S2         | 1.001        | S3         | 0.4              | 0.388             | 0.067    | 0.1145           |
| 360 minute winter              | S3         | 1.002        | SA1        | 0.5              | 0.453             | 0.083    | 0.0201           |
| 360 minute winter              | SA1        | Infiltration |            | 0.0              |                   |          |                  |

| Node Name                                                                        | S1                                                                                  | S2     | S3     | SA1   |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------|--------|-------|
| <p>A4 drawing</p> <p>Hor Scale 200<br/>Ver Scale 100</p> <p>Datum (m) -1.000</p> |  |        |        |       |
|                                                                                  | Link Name                                                                           | 1.000  | 1.001  | 1.002 |
|                                                                                  | Section Type                                                                        | 100mm  | 100mm  | 100mm |
|                                                                                  | Slope (1:X)                                                                         | 100.1  | 101.6  | 100.0 |
|                                                                                  | Cover Level (m)                                                                     | 9.850  | 9.850  | 9.850 |
|                                                                                  | Invert Level (m)                                                                    | 9.400  | 9.284  | 9.140 |
|                                                                                  | Length (m)                                                                          | 11.608 | 14.635 | 2.575 |
|                                                                                  |                                                                                     |        |        |       |
|                                                                                  |                                                                                     |        |        |       |
|                                                                                  |                                                                                     |        |        |       |



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File: C1644\_Flow.pfd  
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