

### Design Settings

|                                      |        |                                    |               |
|--------------------------------------|--------|------------------------------------|---------------|
| Rainfall Methodology                 | FEH-22 | Minimum Velocity (m/s)             | 1.00          |
| Return Period (years)                | 2      | Connection Type                    | Level Soffits |
| Additional Flow (%)                  | 0      | Minimum Backdrop Height (m)        | 0.200         |
| CV                                   | 1.000  | Preferred Cover Depth (m)          | 1.200         |
| Time of Entry (mins)                 | 4.00   | Include Intermediate Ground        | ✓             |
| Maximum Time of Concentration (mins) | 30.00  | Enforce best practice design rules | x             |
| Maximum Rainfall (mm/hr)             | 50.0   |                                    |               |

### 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) |
|-----------|--------------|------------------|-----------------------|------------------|----------------|-----------------|--------------|
| S4        | 0.020        | 4.00             | 76.450                | 450              | 531339.322     | 139400.828      | 0.675        |
| S5        | 0.001        | 4.00             | 76.600                | 450              | 531320.350     | 139400.236      | 1.086        |
| S6        | 0.020        | 4.00             | 76.600                | 450              | 531311.714     | 139399.895      | 1.000        |
| S7        |              | 4.00             | 76.400                | 450              | 531304.381     | 139399.580      | 0.600        |
| S8        |              |                  | 76.500                | 900              | 531319.567     | 139407.840      | 1.062        |
| SA2       | 0.000        |                  | 76.400                | 450              | 531312.919     | 139407.906      | 1.050        |
| Carpark 1 | 0.010        |                  | 76.400                |                  | 531306.910     | 139405.435      | 0.500        |

### 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 | S4         | S5         | 18.981        | 0.600          | 75.775       | 75.514       | 0.261       | 72.7           | 150         | 4.27             | 50.0            |
| 2.000 | S7         | S6         | 7.340         | 0.600          | 75.800       | 75.600       | 0.200       | 36.7           | 150         | 4.07             | 50.0            |
| 2.001 | S6         | S5         | 8.643         | 0.600          | 75.600       | 75.514       | 0.086       | 100.0          | 150         | 4.22             | 50.0            |
| 1.001 | S5         | S8         | 7.644         | 0.600          | 75.514       | 75.438       | 0.076       | 100.6          | 150         | 4.40             | 50.0            |
| 1.002 | S8         | SA2        | 1.000         | 0.600          | 75.438       | 75.350       | 0.088       | 11.4           | 150         | 4.40             | 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 | 1.180        | 20.9         | 3.6           | 0.525              | 0.936              | 0.020          | 0.0                      | 42                   | 0.890                    |
| 2.000 | 1.667        | 29.4         | 0.0           | 0.450              | 0.850              | 0.000          | 0.0                      | 0                    | 0.000                    |
| 2.001 | 1.005        | 17.8         | 3.6           | 0.850              | 0.936              | 0.020          | 0.0                      | 46                   | 0.791                    |
| 1.001 | 1.002        | 17.7         | 7.4           | 0.936              | 0.912              | 0.041          | 0.0                      | 68                   | 0.958                    |
| 1.002 | 3.005        | 53.1         | 7.4           | 0.912              | 0.900              | 0.041          | 0.0                      | 38                   | 2.127                    |

### Pipeline Schedule

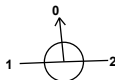
| Link  | Length<br>(m) | Slope<br>(1:X) | Dia<br>(mm) | Link<br>Type | US CL<br>(m) | US IL<br>(m) | US Depth<br>(m) | DS CL<br>(m) | DS IL<br>(m) | DS Depth<br>(m) |
|-------|---------------|----------------|-------------|--------------|--------------|--------------|-----------------|--------------|--------------|-----------------|
| 1.000 | 18.981        | 72.7           | 150         | Circular     | 76.450       | 75.775       | 0.525           | 76.600       | 75.514       | 0.936           |
| 2.000 | 7.340         | 36.7           | 150         | Circular     | 76.400       | 75.800       | 0.450           | 76.600       | 75.600       | 0.850           |
| 2.001 | 8.643         | 100.0          | 150         | Circular     | 76.600       | 75.600       | 0.850           | 76.600       | 75.514       | 0.936           |
| 1.001 | 7.644         | 100.6          | 150         | Circular     | 76.600       | 75.514       | 0.936           | 76.500       | 75.438       | 0.912           |

| Link  | US<br>Node | Dia<br>(mm) | Node<br>Type | MH<br>Type | DS<br>Node | Dia<br>(mm) | Node<br>Type | MH<br>Type |
|-------|------------|-------------|--------------|------------|------------|-------------|--------------|------------|
| 1.000 | S4         | 450         | Manhole      | Adoptable  | S5         | 450         | Manhole      | Adoptable  |
| 2.000 | S7         | 450         | Manhole      | Adoptable  | S6         | 450         | Manhole      | Adoptable  |
| 2.001 | S6         | 450         | Manhole      | Adoptable  | S5         | 450         | Manhole      | Adoptable  |
| 1.001 | S5         | 450         | Manhole      | Adoptable  | S8         | 900         | Manhole      | Adoptable  |

### Pipeline Schedule

| Link  | Length<br>(m) | Slope<br>(1:X) | Dia<br>(mm)  | Link<br>Type | US CL<br>(m) | US IL<br>(m) | US Depth<br>(m) | DS CL<br>(m) | DS IL<br>(m) | DS Depth<br>(m) |
|-------|---------------|----------------|--------------|--------------|--------------|--------------|-----------------|--------------|--------------|-----------------|
| 1.002 | 1.000         | 11.4           | 150          | Circular     | 76.500       | 75.438       | 0.912           | 76.400       | 75.350       | 0.900           |
|       |               |                |              |              |              |              |                 |              |              |                 |
| Link  | US<br>Node    | Dia<br>(mm)    | Node<br>Type | MH<br>Type   | DS<br>Node   | Dia<br>(mm)  | Node<br>Type    | MH<br>Type   |              |                 |
| 1.002 | S8            | 900            | Manhole      | Adoptable    | SA2          | 450          | Manhole         | Adoptable    |              |                 |

### Manhole Schedule

| Node      | Easting<br>(m) | Northing<br>(m) | CL<br>(m) | Depth<br>(m) | Dia<br>(mm) | Connections                                                                          | Link  | IL<br>(m) | Dia<br>(mm) |
|-----------|----------------|-----------------|-----------|--------------|-------------|--------------------------------------------------------------------------------------|-------|-----------|-------------|
| S4        | 531339.322     | 139400.828      | 76.450    | 0.675        | 450         |    |       |           |             |
|           |                |                 |           |              |             | 0                                                                                    | 1.000 | 75.775    | 150         |
| S5        | 531320.350     | 139400.236      | 76.600    | 1.086        | 450         |    | 1     | 2.001     | 75.514      |
|           |                |                 |           |              |             | 2                                                                                    | 1.000 | 75.514    | 150         |
|           |                |                 |           |              |             | 0                                                                                    | 1.001 | 75.514    | 150         |
| S6        | 531311.714     | 139399.895      | 76.600    | 1.000        | 450         |   | 1     | 2.000     | 75.600      |
|           |                |                 |           |              |             | 0                                                                                    | 2.001 | 75.600    | 150         |
| S7        | 531304.381     | 139399.580      | 76.400    | 0.600        | 450         |  | 0     | 2.000     | 75.800      |
|           |                |                 |           |              |             | 0                                                                                    | 2.000 | 75.800    | 150         |
| S8        | 531319.567     | 139407.840      | 76.500    | 1.062        | 900         |  | 1     | 1.001     | 75.438      |
|           |                |                 |           |              |             | 0                                                                                    | 1.002 | 75.438    | 150         |
| SA2       | 531312.919     | 139407.906      | 76.400    | 1.050        | 450         |  | 1     | 1.002     | 75.350      |
|           |                |                 |           |              |             |                                                                                      |       |           | 150         |
| Carpark 1 | 531306.910     | 139405.435      | 76.400    | 0.500        |             |  |       |           |             |

### Simulation Settings

|                      |          |                            |        |                         |   |
|----------------------|----------|----------------------------|--------|-------------------------|---|
| Rainfall Methodology | FEH-22   | Analysis Speed             | Normal | Starting Level (m)      |   |
| Rainfall Events      | Singular | Skip Steady State          | x      | Check Discharge Rate(s) | x |
| Summer CV            | 1.000    | Drain Down Time (mins)     | 240    | Check Discharge Volume  | x |
| Winter CV            | 1.000    | Additional Storage (m³/ha) | 0.0    |                         |   |

### 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 %) |
|--------------------------|--------------------------|--------------------------|--------------------------|
| 10                       | 0                        | 0                        | 0                        |
| 30                       | 0                        | 0                        | 0                        |
| 30                       | 40                       | 0                        | 0                        |
| 100                      | 0                        | 0                        | 0                        |
| 100                      | 45                       | 0                        | 0                        |

#### Node SA2 Soakaway Storage Structure

|                             |         |                           |        |                 |       |
|-----------------------------|---------|---------------------------|--------|-----------------|-------|
| Base Inf Coefficient (m/hr) | 0.16200 | Invert Level (m)          | 75.350 | Depth (m)       | 0.400 |
| Side Inf Coefficient (m/hr) | 0.16200 | Time to half empty (mins) | 125    | Inf Depth (m)   |       |
| Safety Factor               | 2.0     | Pit Width (m)             | 12.000 | Number Required | 1     |
| Porosity                    | 0.95    | Pit Length (m)            | 4.500  |                 |       |

#### Node Carpark 1 Carpark Storage Structure

|                             |         |                           |        |               |       |
|-----------------------------|---------|---------------------------|--------|---------------|-------|
| Base Inf Coefficient (m/hr) | 0.16200 | Invert Level (m)          | 75.900 | Slope (1:X)   | 30.0  |
| Side Inf Coefficient (m/hr) | 0.16200 | Time to half empty (mins) | 19     | Depth (m)     | 0.300 |
| Safety Factor               | 2.0     | Width (m)                 | 10.000 | Inf Depth (m) |       |
| Porosity                    | 0.30    | Length (m)                | 10.000 |               |       |

**Results for 10 year Critical Storm Duration. Lowest mass balance: 100.00%**

| 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 summer  | S4         | 10             | 75.839       | 0.064        | 8.0             | 0.0102           | 0.0000        | OK     |
| 15 minute summer  | S5         | 10             | 75.636       | 0.122        | 16.4            | 0.0195           | 0.0000        | OK     |
| 15 minute summer  | S6         | 10             | 75.673       | 0.073        | 8.0             | 0.0116           | 0.0000        | OK     |
| 15 minute summer  | S7         | 1              | 75.800       | 0.000        | 0.0             | 0.0000           | 0.0000        | OK     |
| 15 minute summer  | S8         | 9              | 75.524       | 0.086        | 16.4            | 0.0545           | 0.0000        | OK     |
| 120 minute summer | SA2        | 86             | 75.497       | 0.147        | 7.8             | 7.5709           | 0.0000        | OK     |
| 30 minute summer  | Carpark 1  | 22             | 76.060       | 0.160        | 3.5             | 1.0450           | 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 summer               | S4         | 1.000        | S5         | 8.0              | 0.705             | 0.384    | 0.2144           |
| 15 minute summer               | S5         | 1.001        | S8         | 16.4             | 1.264             | 0.927    | 0.0981           |
| 15 minute summer               | S6         | 2.001        | S5         | 8.0              | 0.665             | 0.451    | 0.1031           |
| 15 minute summer               | S7         | 2.000        | S6         | 0.0              | 0.000             | 0.000    | 0.0311           |
| 15 minute summer               | S8         | 1.002        | SA2        | 16.5             | 2.448             | 0.310    | 0.0089           |
| 120 minute summer              | SA2        | Infiltration |            | 1.3              |                   |          |                  |
| 30 minute summer               | Carpark 1  | Infiltration |            | 1.1              |                   |          |                  |

**Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%**

| 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 summer  | S4         | 10             | 75.850       | 0.075        | 10.5            | 0.0119           | 0.0000        | OK         |
| 15 minute summer  | S5         | 10             | 75.703       | 0.189        | 21.0            | 0.0301           | 0.0000        | SURCHARGED |
| 15 minute summer  | S6         | 10             | 75.739       | 0.139        | 10.5            | 0.0220           | 0.0000        | OK         |
| 15 minute summer  | S7         | 1              | 75.800       | 0.000        | 0.0             | 0.0000           | 0.0000        | OK         |
| 120 minute summer | S8         | 90             | 75.553       | 0.115        | 8.9             | 0.0733           | 0.0000        | OK         |
| 120 minute summer | SA2        | 90             | 75.553       | 0.203        | 8.9             | 10.4541          | 0.0000        | OK         |
| 30 minute summer  | Carpark 1  | 22             | 76.090       | 0.190        | 4.6             | 1.4821           | 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 summer               | S4         | 1.000        | S5         | 10.5             | 0.732             | 0.503    | 0.2508           |
| 15 minute summer               | S5         | 1.001        | S8         | 20.9             | 1.269             | 1.179    | 0.1148           |
| 15 minute summer               | S6         | 2.001        | S5         | 10.0             | 0.682             | 0.565    | 0.1496           |
| 15 minute summer               | S7         | 2.000        | S6         | 0.0              | 0.000             | 0.000    | 0.0624           |
| 120 minute summer              | S8         | 1.002        | SA2        | 8.9              | 1.532             | 0.167    | 0.0161           |
| 120 minute summer              | SA2        | Infiltration |            | 1.4              |                   |          |                  |
| 30 minute summer               | Carpark 1  | Infiltration |            | 1.4              |                   |          |                  |

**Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%**

| 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 summer  | S4         | 10             | 75.958       | 0.183        | 14.7            | 0.0292           | 0.0000        | SURCHARGED |
| 15 minute summer  | S5         | 11             | 75.822       | 0.308        | 27.9            | 0.0489           | 0.0000        | SURCHARGED |
| 15 minute summer  | S6         | 10             | 75.889       | 0.289        | 14.7            | 0.0460           | 0.0000        | SURCHARGED |
| 15 minute summer  | S7         | 11             | 75.889       | 0.089        | 2.1             | 0.0141           | 0.0000        | OK         |
| 120 minute summer | S8         | 112            | 75.654       | 0.216        | 12.3            | 0.1377           | 0.0000        | SURCHARGED |
| 120 minute summer | SA2        | 98             | 75.653       | 0.303        | 12.0            | 15.6101          | 0.0000        | OK         |
| 30 minute summer  | Carpark 1  | 23             | 76.132       | 0.232        | 6.5             | 2.2001           | 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 summer               | S4         | 1.000        | S5         | 13.6             | 0.797             | 0.653    | 0.3342           |
| 15 minute summer               | S5         | 1.001        | S8         | 27.5             | 1.565             | 1.555    | 0.1307           |
| 15 minute summer               | S6         | 2.001        | S5         | 13.6             | 0.771             | 0.764    | 0.1522           |
| 15 minute summer               | S7         | 2.000        | S6         | -2.1             | -0.173            | -0.070   | 0.1043           |
| 120 minute summer              | S8         | 1.002        | SA2        | 12.0             | 1.989             | 0.227    | 0.0176           |
| 120 minute summer              | SA2        | Infiltration |            | 1.4              |                   |          |                  |
| 30 minute summer               | Carpark 1  | Infiltration |            | 1.7              |                   |          |                  |

**Results for 100 year Critical Storm Duration. Lowest mass balance: 100.00%**

| Node Event       | US Node   | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status     |
|------------------|-----------|-------------|-----------|-----------|--------------|---------------|------------|------------|
| 15 minute summer | S4        | 10          | 75.881    | 0.106     | 13.3         | 0.0169        | 0.0000     | OK         |
| 15 minute summer | S5        | 10          | 75.789    | 0.275     | 25.9         | 0.0438        | 0.0000     | SURCHARGED |
| 15 minute summer | S6        | 10          | 75.846    | 0.246     | 13.3         | 0.0392        | 0.0000     | SURCHARGED |
| 15 minute summer | S7        | 10          | 75.846    | 0.046     | 0.6          | 0.0074        | 0.0000     | OK         |
| 60 minute winter | S8        | 59          | 75.623    | 0.185     | 12.5         | 0.1177        | 0.0000     | SURCHARGED |
| 60 minute winter | SA2       | 60          | 75.623    | 0.273     | 12.5         | 14.0446       | 0.0000     | OK         |
| 30 minute summer | Carpark 1 | 23          | 76.120    | 0.220     | 5.9          | 1.9814        | 0.0000     | OK         |

| Link Event (Upstream Depth) | US Node   | Link         | DS Node | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Link Vol (m³) |
|-----------------------------|-----------|--------------|---------|---------------|----------------|----------|---------------|
| 15 minute summer            | S4        | 1.000        | S5      | 12.9          | 0.807          | 0.621    | 0.2938        |
| 15 minute summer            | S5        | 1.001        | S8      | 25.6          | 1.490          | 1.446    | 0.1257        |
| 15 minute summer            | S6        | 2.001        | S5      | 12.4          | 0.703          | 0.697    | 0.1522        |
| 15 minute summer            | S7        | 2.000        | S6      | 0.7           | 0.058          | 0.025    | 0.0816        |
| 60 minute winter            | S8        | 1.002        | SA2     | 12.5          | 2.074          | 0.236    | 0.0176        |
| 60 minute winter            | SA2       | Infiltration |         | 1.4           |                |          |               |
| 30 minute summer            | Carpark 1 | Infiltration |         | 1.6           |                |          |               |

**Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.92%**

| Node Event        | US Node   | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status     |
|-------------------|-----------|-------------|-----------|-----------|--------------|---------------|------------|------------|
| 15 minute summer  | S4        | 11          | 76.220    | 0.445     | 19.2         | 0.0708        | 0.0000     | FLOOD RISK |
| 15 minute summer  | S5        | 11          | 76.019    | 0.505     | 34.4         | 0.0803        | 0.0000     | SURCHARGED |
| 15 minute summer  | S6        | 11          | 76.117    | 0.517     | 19.2         | 0.0822        | 0.0000     | SURCHARGED |
| 15 minute summer  | S7        | 11          | 76.117    | 0.317     | 2.4          | 0.0504        | 0.0000     | FLOOD RISK |
| 120 minute winter | S8        | 116         | 75.966    | 0.528     | 10.6         | 0.3359        | 0.0000     | SURCHARGED |
| 120 minute winter | SA2       | 116         | 75.959    | 0.609     | 10.4         | 20.6424       | 0.0000     | OK         |
| 60 minute summer  | Carpark 1 | 40          | 76.178    | 0.278     | 6.3          | 3.1517        | 0.0000     | OK         |

| Link Event (Upstream Depth) | US Node   | Link         | DS Node | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Link Vol (m³) |
|-----------------------------|-----------|--------------|---------|---------------|----------------|----------|---------------|
| 15 minute summer            | S4        | 1.000        | S5      | 17.5          | 0.994          | 0.839    | 0.3342        |
| 15 minute summer            | S5        | 1.001        | S8      | 33.5          | 1.901          | 1.890    | 0.1346        |
| 15 minute summer            | S6        | 2.001        | S5      | 16.1          | 0.914          | 0.906    | 0.1522        |
| 15 minute summer            | S7        | 2.000        | S6      | 3.0           | 0.188          | 0.101    | 0.1292        |
| 120 minute winter           | S8        | 1.002        | SA2     | 10.4          | 1.575          | 0.196    | 0.0176        |
| 120 minute winter           | SA2       | Infiltration |         | 1.5           |                |          |               |
| 60 minute summer            | Carpark 1 | Infiltration |         | 2.0           |                |          |               |