

## Network Details

### Manhole Schedule

| Manhole           | Catchment Area (ha) | Size (mm) | Type    | CL (m) | IL (m) | Depth To Soffit (m) | Easting (m) | Northing (m) |
|-------------------|---------------------|-----------|---------|--------|--------|---------------------|-------------|--------------|
| PS27-RE           | 0.006               | 180       | Type E  | 17.551 | 17.201 | 0.250               | 494850.392  | 106269.391   |
| PS28              | 0.002               | 450       | Type D  | 17.487 | 17.007 | 0.330               | 494845.242  | 106259.072   |
| PS29-DIF          | 0.014               | 300x300   | Type E  | 17.496 | 16.887 | 0.460               | 494853.862  | 106254.780   |
| PS22-RE           | 0.004               | 180       | Type E  | 17.587 | 17.237 | 0.250               | 494877.237  | 106257.498   |
| PS23              | 0.006               | 450       | Type D  | 17.654 | 17.101 | 0.453               | 494872.336  | 106247.805   |
| PS30-RE           | 0.006               | 180       | Type E  | 17.461 | 17.109 | 0.252               | 494858.977  | 106265.592   |
| PS31              | 0.009               | 450       | Type D  | 17.450 | 16.957 | 0.343               | 494866.333  | 106261.964   |
| PS24              | 0.000               | 450       | Type D  | 17.594 | 16.831 | 0.613               | 494861.838  | 106253.007   |
| PS25-DIF          | 0.000               | 300x300   | Type E  | 17.612 | 16.807 | 0.655               | 494861.083  | 106251.796   |
| PP3-Dummy Outfall | 0.000               | 100       | Unknown | 17.734 | 16.775 | 0.809               | 494858.621  | 106246.615   |

### Pipe Schedule

| Pipe Number | US Manhole | US IL (m) | DS Manhole        | DS IL (m) | Shape | Dimension (mm) | Length (m) | Gradient (1:x) | Roughness (mm) | US Depth To Soffit (m) | DS Depth To Soffit (m) |
|-------------|------------|-----------|-------------------|-----------|-------|----------------|------------|----------------|----------------|------------------------|------------------------|
| 1.000       | PS27-RE    | 17.201    | PS28              | 17.057    | Circ  | 100            | 11.533     | 80             | 0.600          | 0.250                  | 0.330                  |
| 1.001       | PS28       | 17.007    | PS29-DIF          | 16.887    | Circ  | 150            | 9.630      | 80             | 0.600          | 0.330                  | 0.460                  |
| 1.002       | PS29-DIF   | 16.887    | PS25-DIF          | 16.807    | Circ  | 150            | 7.813      | 98             | 0.600          | 0.460                  | 0.655                  |
| 2.000       | PS22-RE    | 17.237    | PS23              | 17.101    | Circ  | 100            | 10.862     | 80             | 0.600          | 0.250                  | 0.453                  |
| 2.001       | PS23       | 17.101    | PS24              | 16.881    | Circ  | 100            | 11.716     | 53             | 0.600          | 0.453                  | 0.613                  |
| 3.000       | PS30-RE    | 17.109    | PS31              | 17.007    | Circ  | 100            | 8.202      | 80             | 0.600          | 0.252                  | 0.343                  |
| 3.001       | PS31       | 16.957    | PS24              | 16.831    | Circ  | 150            | 10.022     | 80             | 0.600          | 0.343                  | 0.613                  |
| 2.002       | PS24       | 16.831    | PS25-DIF          | 16.807    | Circ  | 150            | 1.427      | 59             | 0.600          | 0.613                  | 0.655                  |
| 1.003       | PS25-DIF   | 16.807    | PP3-Dummy Outfall | 16.775    | Circ  | 150            | 5.736      | 179            | 0.600          | 0.655                  | 0.809                  |

## Outfall Details

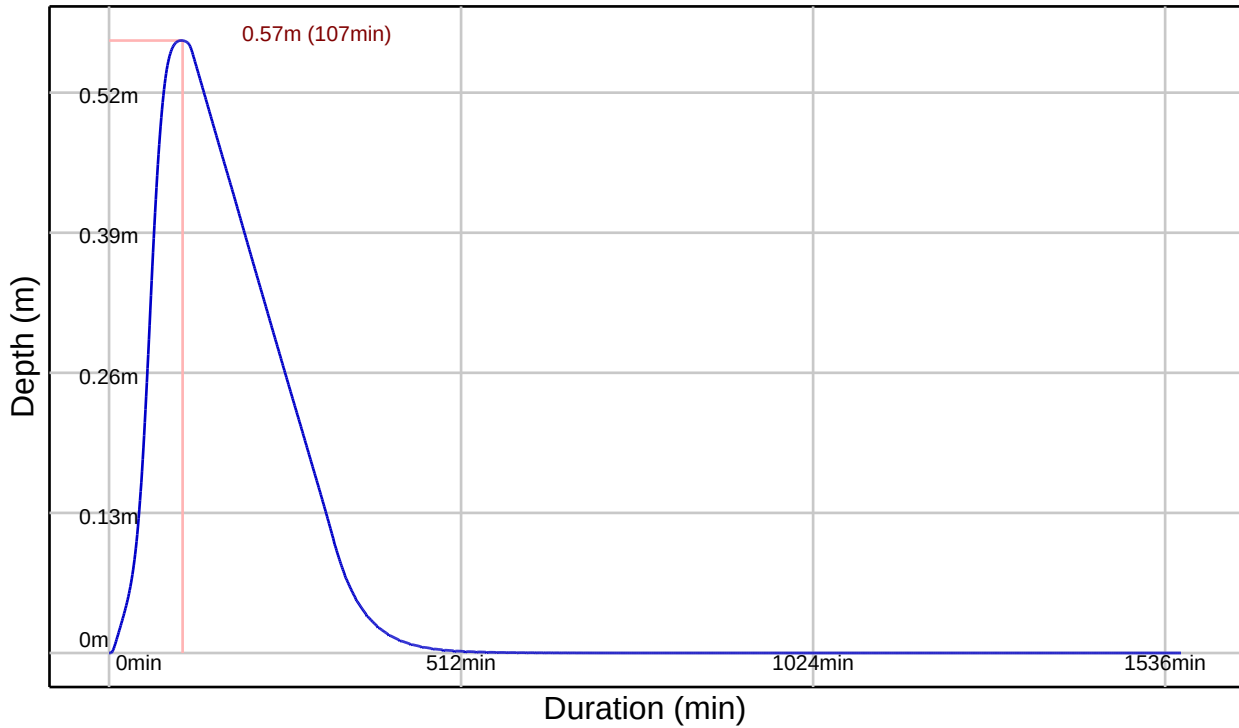
Outfall Manhole PP3-Dummy Outfall : Free Discharge

## Flow Control Details

### Tank Structure at Manhole PS25-DIF

| 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 |
|-----------------|-----------------|--------------------|-----------|----------------------------------------------|---------------------------------------------|-------------------|-------------------|---------------|
| 16.680          | 1.200           | 30.00              | 140.745   | 42.224                                       | 50.668                                      | 0.07812000        | 0.07812000        | 2.00          |

## Permeable Paving 3 at PS25-DIF (100Yr+45% 120Min Winter)



## Controls within Manhole PP3-Dummy Outfall

### Orifice Control

| Invert Offset (m) | Orifice Diameter (m) | Discharge Coeff |
|-------------------|----------------------|-----------------|
| 0.000             | 0.001                | 0.600           |

## Simulation Settings

FEH2022 (point): Filename=FEH\_Point\_Descriptors\_494812\_106233\_v5\_1\_0.xml

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

Global Time of Entry: 5.0 mins

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

Return Periods (yrs) + Climate Change: (1, +0%), (30, +40%), (100, +45%)

Manhole Flood Risk Freeboard: 0.300m

## 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       | 15.628                       | 0.00                   | 0.00                 | 30Yr+40% 360Min Summer   | 12.891                       | 0.00                   | 0.00                 |
| 1Yr 15Min Summer       | 15.628                       | 0.00                   | 0.00                 | 30Yr+40% 360Min Winter   | 12.891                       | 0.00                   | 0.00                 |
| 1Yr 30Min Winter       | 10.316                       | 0.00                   | 0.00                 | 30Yr+40% 480Min Summer   | 10.228                       | 0.00                   | 0.00                 |
| 1Yr 30Min Summer       | 10.316                       | 0.00                   | 0.00                 | 30Yr+40% 480Min Winter   | 10.228                       | 0.00                   | 0.00                 |
| 1Yr 60Min Winter       | 6.595                        | 0.00                   | 0.00                 | 30Yr+40% 600Min Summer   | 8.522                        | 0.00                   | 0.00                 |
| 1Yr 60Min Summer       | 6.595                        | 0.00                   | 0.00                 | 30Yr+40% 600Min Winter   | 8.522                        | 0.00                   | 0.00                 |
| 1Yr 120Min Summer      | 5.323                        | 0.00                   | 0.00                 | 30Yr+40% 720Min Summer   | 7.326                        | 0.00                   | 0.00                 |
| 1Yr 120Min Winter      | 5.323                        | 0.00                   | 0.00                 | 30Yr+40% 720Min Winter   | 7.326                        | 0.00                   | 0.00                 |
| 1Yr 180Min Winter      | 4.511                        | 0.00                   | 0.00                 | 30Yr+40% 960Min Summer   | 5.766                        | 0.00                   | 0.00                 |
| 1Yr 180Min Summer      | 4.511                        | 0.00                   | 0.00                 | 30Yr+40% 960Min Winter   | 5.766                        | 0.00                   | 0.00                 |
| 1Yr 240Min Winter      | 3.753                        | 0.00                   | 0.00                 | 30Yr+40% 1440Min Summer  | 4.126                        | 0.00                   | 0.00                 |
| 1Yr 240Min Summer      | 3.753                        | 0.00                   | 0.00                 | 30Yr+40% 1440Min Winter  | 4.126                        | 0.00                   | 0.00                 |
| 1Yr 360Min Winter      | 2.919                        | 0.00                   | 0.00                 | 100Yr+45% 15Min Summer   | 149.272                      | 0.00                   | 0.00                 |
| 1Yr 360Min Summer      | 2.919                        | 0.00                   | 0.00                 | 100Yr+45% 15Min Winter   | 149.272                      | 0.00                   | 0.00                 |
| 1Yr 480Min Summer      | 2.427                        | 0.00                   | 0.00                 | 100Yr+45% 30Min Summer   | 100.198                      | 0.00                   | 0.00                 |
| 1Yr 480Min Winter      | 2.427                        | 0.00                   | 0.00                 | 100Yr+45% 30Min Winter   | 100.198                      | 0.00                   | 0.00                 |
| 1Yr 600Min Winter      | 2.074                        | 0.00                   | 0.00                 | 100Yr+45% 60Min Summer   | 64.450                       | 0.00                   | 0.00                 |
| 1Yr 600Min Summer      | 2.074                        | 0.00                   | 0.00                 | 100Yr+45% 60Min Winter   | 64.450                       | 0.00                   | 0.00                 |
| 1Yr 720Min Summer      | 1.811                        | 0.00                   | 0.00                 | 100Yr+45% 120Min Summer  | 38.652                       | 0.00                   | 0.00                 |
| 1Yr 720Min Winter      | 1.811                        | 0.00                   | 0.00                 | 100Yr+45% 120Min Winter  | 38.652                       | 0.00                   | 0.00                 |
| 1Yr 960Min Summer      | 1.465                        | 0.00                   | 0.00                 | 100Yr+45% 180Min Summer  | 28.339                       | 0.00                   | 0.00                 |
| 1Yr 960Min Winter      | 1.465                        | 0.00                   | 0.00                 | 100Yr+45% 180Min Winter  | 28.339                       | 0.00                   | 0.00                 |
| 1Yr 1440Min Winter     | 1.102                        | 0.00                   | 0.00                 | 100Yr+45% 240Min Summer  | 22.782                       | 0.00                   | 0.00                 |
| 1Yr 1440Min Summer     | 1.102                        | 0.00                   | 0.00                 | 100Yr+45% 240Min Winter  | 22.782                       | 0.00                   | 0.00                 |
| 30Yr+40% 15Min Winter  | 115.253                      | 0.00                   | 0.00                 | 100Yr+45% 360Min Summer  | 16.530                       | 0.00                   | 0.00                 |
| 30Yr+40% 15Min Summer  | 115.253                      | 0.00                   | 0.00                 | 100Yr+45% 360Min Winter  | 16.530                       | 0.00                   | 0.00                 |
| 30Yr+40% 30Min Summer  | 76.731                       | 0.00                   | 0.00                 | 100Yr+45% 480Min Summer  | 13.117                       | 0.00                   | 0.00                 |
| 30Yr+40% 30Min Winter  | 76.731                       | 0.00                   | 0.00                 | 100Yr+45% 480Min Winter  | 13.117                       | 0.00                   | 0.00                 |
| 30Yr+40% 60Min Summer  | 48.847                       | 0.00                   | 0.00                 | 100Yr+45% 600Min Summer  | 10.952                       | 0.00                   | 0.00                 |
| 30Yr+40% 60Min Winter  | 48.847                       | 0.00                   | 0.00                 | 100Yr+45% 600Min Winter  | 10.952                       | 0.00                   | 0.00                 |
| 30Yr+40% 120Min Summer | 29.859                       | 0.00                   | 0.00                 | 100Yr+45% 720Min Summer  | 9.434                        | 0.00                   | 0.00                 |
| 30Yr+40% 120Min Winter | 29.859                       | 0.00                   | 0.00                 | 100Yr+45% 720Min Winter  | 9.434                        | 0.00                   | 0.00                 |
| 30Yr+40% 180Min Winter | 22.126                       | 0.00                   | 0.00                 | 100Yr+45% 960Min Summer  | 7.431                        | 0.00                   | 0.00                 |
| 30Yr+40% 180Min Summer | 22.126                       | 0.00                   | 0.00                 | 100Yr+45% 960Min Winter  | 7.431                        | 0.00                   | 0.00                 |
| 30Yr+40% 240Min Summer | 17.757                       | 0.00                   | 0.00                 | 100Yr+45% 1440Min Winter | 5.311                        | 0.00                   | 0.00                 |
| 30Yr+40% 240Min Winter | 17.757                       | 0.00                   | 0.00                 | 100Yr+45% 1440Min Summer | 5.311                        | 0.00                   | 0.00                 |

## Simulation Results

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

1yr+0%

### Manholes

| Manhole           | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status |
|-------------------|----------------|-------------|-----------|-----------|--------------|------------|--------|
| PS27-RE           | 15 min Summer  | 8           | 17.221    | 0.020     | 0.601        |            | OK     |
| PS28              | 15 min Summer  | 9           | 17.027    | 0.020     | 0.787        |            | OK     |
| PS29-DIF          | 15 min Summer  | 8           | 16.922    | 0.035     | 2.100        |            | OK     |
| PS22-RE           | 15 min Summer  | 8           | 17.253    | 0.016     | 0.376        |            | OK     |
| PS23              | 15 min Summer  | 8           | 17.123    | 0.022     | 0.917        |            | OK     |
| PS30-RE           | 15 min Summer  | 8           | 17.128    | 0.019     | 0.555        |            | OK     |
| PS31              | 15 min Summer  | 8           | 16.983    | 0.026     | 1.338        |            | OK     |
| PS24              | 15 min Summer  | 9           | 16.866    | 0.035     | 2.209        |            | OK     |
| PS25-DIF          | 180 min Summer | 108         | 16.745    | 0.065     | 1.041        |            | OK     |
| PP3-Dummy Outfall | 15 min Winter  | 0           | 16.775    | 0.000     | 0.000        |            | OK     |

### Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole        | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status |
|----------|----------------|-------------|------------|-------------------|----------------|--------------------|----------------|-----------------|--------|
| 1.000    | 15 min Summer  | 8           | PS27-RE    | PS28              | 0.020          | 0.533              | 0.591          | 0.088           | OK     |
| 1.001    | 15 min Summer  | 9           | PS28       | PS29-DIF          | 0.028          | 0.353              | 0.794          | 0.040           | OK     |
| 1.002    | 15 min Summer  | 8           | PS29-DIF   | PS25-DIF          | 0.035          | 0.670              | 2.072          | 0.116           | OK     |
| 2.000    | 15 min Summer  | 8           | PS22-RE    | PS23              | 0.019          | 0.355              | 0.367          | 0.054           | OK     |
| 2.001    | 15 min Summer  | 9           | PS23       | PS24              | 0.022          | 0.700              | 0.901          | 0.109           | OK     |
| 3.000    | 15 min Summer  | 8           | PS30-RE    | PS31              | 0.019          | 0.522              | 0.545          | 0.081           | OK     |
| 3.001    | 15 min Summer  | 8           | PS31       | PS24              | 0.030          | 0.524              | 1.326          | 0.067           | OK     |
| 2.002    | 15 min Summer  | 9           | PS24       | PS25-DIF          | 0.032          | 0.812              | 2.221          | 0.096           | OK     |
| 1.003    | 15 min Winter  | 0           | PS25-DIF   | PP3-Dummy Outfall | 0.000          | 0.000              | 0.000          | 0.000           | OK     |

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

30yr+40%

## Manholes

| Manhole           | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|-------------------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| PS27-RE           | 15 min Summer  | 8           | 17.261    | 0.060     | 4.432        |            | OK         |
| PS28              | 120 min Winter | 98          | 17.105    | 0.098     | 0.342        |            | OK         |
| PS29-DIF          | 120 min Winter | 98          | 17.105    | 0.219     | 0.885        |            | Surcharged |
| PS22-RE           | 15 min Summer  | 8           | 17.281    | 0.044     | 2.769        |            | OK         |
| PS23              | 15 min Summer  | 8           | 17.171    | 0.070     | 6.801        |            | OK         |
| PS30-RE           | 15 min Summer  | 8           | 17.166    | 0.057     | 4.091        |            | OK         |
| PS31              | 120 min Winter | 98          | 17.105    | 0.148     | 0.564        |            | OK         |
| PS24              | 120 min Winter | 98          | 17.105    | 0.274     | 0.955        |            | Surcharged |
| PS25-DIF          | 120 min Winter | 98          | 17.105    | 0.425     | 1.840        |            | Surcharged |
| PP3-Dummy Outfall | 120 min Winter | 97          | 17.105    | 0.330     | 0.012        |            | OK         |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole        | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|-------------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 15 min Summer  | 8           | PS27-RE    | PS28              | 0.059          | 0.913              | 4.399          | 0.652           | OK         |
| 1.001    | 120 min Winter | 98          | PS28       | PS29-DIF          | 0.124          | 0.464              | 1.810          | 0.091           | OK         |
| 1.002    | 60 min Winter  | 40          | PS29-DIF   | PS25-DIF          | 0.150          | 0.921              | 7.591          | 0.424           | Surcharged |
| 2.000    | 15 min Summer  | 8           | PS22-RE    | PS23              | 0.057          | 0.596              | 2.748          | 0.407           | OK         |
| 2.001    | 60 min Summer  | 34          | PS23       | PS24              | 0.072          | 1.081              | 4.647          | 0.560           | OK         |
| 3.000    | 15 min Summer  | 8           | PS30-RE    | PS31              | 0.056          | 0.896              | 4.059          | 0.601           | OK         |
| 3.001    | 120 min Winter | 98          | PS31       | PS24              | 0.149          | 0.611              | 2.995          | 0.151           | OK         |
| 2.002    | 30 min Winter  | 21          | PS24       | PS25-DIF          | 0.150          | 1.222              | 11.968         | 0.519           | Surcharged |
| 1.003    | 15 min Summer  | 15          | PS25-DIF   | PP3-Dummy Outfall | 0.150          | 0.469              | 3.142          | 0.238           | Surcharged |

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

100yr+45%

## Manholes

| Manhole           | Critical Storm | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Flood (m3) | Status     |
|-------------------|----------------|-------------|-----------|-----------|--------------|------------|------------|
| PS27-RE           | 15 min Summer  | 8           | 17.273    | 0.072     | 5.741        |            | OK         |
| PS28              | 120 min Winter | 105         | 17.249    | 0.242     | 0.360        |            | Flood Risk |
| PS29-DIF          | 120 min Winter | 105         | 17.249    | 0.362     | 0.936        |            | Flood Risk |
| PS22-RE           | 15 min Summer  | 8           | 17.288    | 0.051     | 3.586        |            | OK         |
| PS23              | 120 min Winter | 105         | 17.249    | 0.148     | 0.408        |            | Surcharged |
| PS30-RE           | 120 min Winter | 105         | 17.249    | 0.140     | 0.244        |            | Flood Risk |
| PS31              | 120 min Winter | 105         | 17.249    | 0.292     | 0.594        |            | Flood Risk |
| PS24              | 120 min Winter | 105         | 17.249    | 0.418     | 1.003        |            | Surcharged |
| PS25-DIF          | 120 min Winter | 105         | 17.248    | 0.568     | 1.939        |            | Surcharged |
| PP3-Dummy Outfall | 120 min Winter | 107         | 17.248    | 0.474     | 0.000        |            | OK         |

## Conduits

| Pipe No. | Critical Storm | Peak (mins) | US Manhole | DS Manhole        | Flow Depth (m) | Max Velocity (m/s) | Max Flow (l/s) | Flow / Capacity | Status     |
|----------|----------------|-------------|------------|-------------------|----------------|--------------------|----------------|-----------------|------------|
| 1.000    | 120 min Winter | 105         | PS27-RE    | PS28              | 0.074          | 0.723              | 1.729          | 0.256           | OK         |
| 1.001    | 60 min Winter  | 40          | PS28       | PS29-DIF          | 0.150          | 0.507              | 3.812          | 0.192           | Surcharged |
| 1.002    | 15 min Winter  | 15          | PS29-DIF   | PS25-DIF          | 0.150          | 1.094              | 18.188         | 1.016           | Surcharged |
| 2.000    | 15 min Summer  | 8           | PS22-RE    | PS23              | 0.071          | 0.609              | 3.560          | 0.527           | OK         |
| 2.001    | 60 min Winter  | 45          | PS23       | PS24              | 0.100          | 1.039              | 4.331          | 0.522           | Surcharged |
| 3.000    | 60 min Winter  | 48          | PS30-RE    | PS31              | 0.100          | 0.804              | 2.597          | 0.385           | Surcharged |
| 3.001    | 30 min Winter  | 23          | PS31       | PS24              | 0.150          | 0.804              | 9.268          | 0.466           | Surcharged |
| 2.002    | 15 min Winter  | 11          | PS24       | PS25-DIF          | 0.150          | 1.379              | 19.802         | 0.858           | Surcharged |
| 1.003    | 15 min Winter  | 11          | PS25-DIF   | PP3-Dummy Outfall | 0.150          | 0.552              | 3.952          | 0.300           | Surcharged |