## Design Settings

| | | | |
|---|---|---|---|
| Rainfall Methodology | FEH-22 | Minimum Velocity (m/s) | 1.00 |
| Return Period (years) | 1 | Connection Type | Level Soffits |
| Additional Flow (%) | 0 | Minimum Backdrop Height (m) | 0.200 |
| CV | 0.750 | Preferred Cover Depth (m) | 1.200 |
| Time of Entry (mins) | 5.00 | Include Intermediate Ground | ✓ |
| Maximum Time of Concentration (mins) | 30.00 | Enforce best practice design rules | ✓ |
| Maximum Rainfall (mm/hr) | 50.0 | | |

## Adoptable Manhole Type

| Max Width (mm) | Diameter (mm) | Max Width (mm) | Diameter (mm) |
|---|---|---|---|
| 374 | 1200 | 749 | 1500 |
| 499 | 1350 | 900 | 1800 |

>900 Link+900 mm

| Max Depth (m) | Diameter (mm) | Max Depth (m) | Diameter (mm) |
|---|---|---|---|
| 1.500 | 1050 | 99.999 | 1200 |

## Nodes

| Name | T of E (mins) | Add Inflow (l/s) | Cover Level (m) | Diameter (mm) | Easting (m) | Northing (m) | Depth (m) |
|---|---|---|---|---|---|---|---|
| HW10 | 5.00 | 51.7 | 23.400 | | 530758.087 | 120515.489 | 0.900 |
| 49 | | 0.0 | 23.729 | 1200 | 530758.659 | 120499.749 | 1.300 |
| 55 | | | 23.250 | 1200 | 530764.465 | 120500.195 | 1.200 |
| 50 | | | 22.530 | 1200 | 530778.728 | 120489.931 | 1.180 |
| 51 | | | 22.304 | 1200 | 530788.088 | 120490.700 | 1.154 |
| 52 | | | 21.073 | 1200 | 530822.655 | 120465.300 | 1.200 |
| HW11 | | | 20.200 | | 530834.243 | 120452.835 | 0.398 |

## 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) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.000 | HW10 | 49 | 15.750 | 0.600 | 22.500 | 22.429 | 0.071 | 221.8 | 300 | 5.25 | 36.3 |
| 1.001 | 49 | 55 | 5.823 | 0.600 | 22.429 | 22.050 | 0.379 | 15.4 | 300 | 5.27 | 36.2 |
| 1.002 | 55 | 50 | 17.572 | 0.600 | 22.050 | 21.350 | 0.700 | 25.1 | 300 | 5.37 | 36.0 |
| 1.003 | 50 | 51 | 9.392 | 0.600 | 21.350 | 21.150 | 0.200 | 47.0 | 300 | 5.43 | 35.8 |
| 1.004 | 51 | 52 | 42.896 | 0.600 | 21.150 | 19.873 | 1.277 | 33.6 | 300 | 5.70 | 35.0 |
| 1.005 | 52 | HW11 | 17.019 | 0.600 | 19.873 | 19.802 | 0.071 | 240.0 | 300 | 5.98 | 34.2 |

| 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) |
|---|---|---|---|---|---|---|---|---|---|
| 1.000 | 1.051 | 74.3 | 51.7 | 0.600 | 1.000 | 0.000 | 51.7 | 185 | 1.134 |
| 1.001 | 4.030 | 284.9 | 51.7 | 1.000 | 0.900 | 0.000 | 51.7 | 86 | 3.083 |
| 1.002 | 3.150 | 222.7 | 51.7 | 0.900 | 0.880 | 0.000 | 51.7 | 98 | 2.585 |
| 1.003 | 2.300 | 162.6 | 51.7 | 0.880 | 0.854 | 0.000 | 51.7 | 116 | 2.048 |
| 1.004 | 2.722 | 192.4 | 51.7 | 0.854 | 0.900 | 0.000 | 51.7 | 106 | 2.319 |
| 1.005 | 1.010 | 71.4 | 51.7 | 0.900 | 0.098 | 0.000 | 51.7 | 190 | 1.098 |

## Pipeline Schedule

| Link | Length (m) | Slope (1:X) | Dia (mm) | Link Type | US CL (m) | US IL (m) | US Depth (m) | DS CL (m) | DS IL (m) | DS Depth (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1.000 | 15.750 | 221.8 | 300 | Circular_Default Sewer Type | 23.400 | 22.500 | 0.600 | 23.729 | 22.429 | 1.000 |
| 1.001 | 5.823 | 15.4 | 300 | Circular_Default Sewer Type | 23.729 | 22.429 | 1.000 | 23.250 | 22.050 | 0.900 |
| 1.002 | 17.572 | 25.1 | 300 | Circular_Default Sewer Type | 23.250 | 22.050 | 0.900 | 22.530 | 21.350 | 0.880 |
| 1.003 | 9.392 | 47.0 | 300 | Circular_Default Sewer Type | 22.530 | 21.350 | 0.880 | 22.304 | 21.150 | 0.854 |
| 1.004 | 42.896 | 33.6 | 300 | Circular_Default Sewer Type | 22.304 | 21.150 | 0.854 | 21.073 | 19.873 | 0.900 |
| 1.005 | 17.019 | 240.0 | 300 | Circular_Default Sewer Type | 21.073 | 19.873 | 0.900 | 20.200 | 19.802 | 0.098 |

| Link | US Node | Dia (mm) | Node Type | MH Type | DS Node | Dia (mm) | Node Type | MH Type |
|---|---|---|---|---|---|---|---|---|
| 1.000 | HW10 | | Junction | | 49 | 1200 | Manhole | Adoptable |
| 1.001 | 49 | 1200 | Manhole | Adoptable | 55 | 1200 | Manhole | Adoptable |
| 1.002 | 55 | 1200 | Manhole | Adoptable | 50 | 1200 | Manhole | Adoptable |
| 1.003 | 50 | 1200 | Manhole | Adoptable | 51 | 1200 | Manhole | Adoptable |
| 1.004 | 51 | 1200 | Manhole | Adoptable | 52 | 1200 | Manhole | Adoptable |
| 1.005 | 52 | 1200 | Manhole | Adoptable | HW11 | | Junction | |

## Simulation Settings

| | | | | | |
|---|---|---|---|---|---|
| Rainfall Methodology | FEH-22 | Analysis Speed | Detailed | Starting Level (m) | |
| Rainfall Events | Singular | Skip Steady State | ✓ | Check Discharge Rate(s) | ✓ |
| Summer CV | 0.750 | Drain Down Time (mins) | 240 | Check Discharge Volume | ✓ |
| Winter CV | 0.840 | Additional Storage (m³/ha) | 20.0 | 100 year 360 minute (m³) | |

### Storm Durations

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 15 | 60 | 180 | 360 | 600 | 960 | 2160 | 4320 | 7200 | 10080 |
| 30 | 120 | 240 | 480 | 720 | 1440 | 2880 | 5760 | 8640 | |

| Return Period (years) | Climate Change (CC %) | Additional Area (A %) | Additional Flow (Q %) | Return Period (years) | Climate Change (CC %) | Additional Area (A %) | Additional Flow (Q %) |
|---|---|---|---|---|---|---|---|
| 2 | 0 | 0 | 0 | 200 | 0 | 0 | 0 |

## Pre-development Discharge Rate

| | | | | | |
|---|---|---|---|---|---|
| Site Makeup | Greenfield | SPR | 0.10 | Betterment (%) | 0 |
| Greenfield Method | IH124 | Region | 1 | QBar | |
| Positively Drained Area (ha) | | Growth Factor 1 year | 0.85 | Q 1 year (l/s) | |
| SAAR (mm) | | Growth Factor 30 year | 1.95 | Q 30 year (l/s) | |
| Soil Index | 1 | Growth Factor 100 year | 2.48 | Q 100 year (l/s) | |

## Pre-development Discharge Volume

| | | | | | |
|---|---|---|---|---|---|
| Site Makeup | Greenfield | SPR | 0.10 | Storm Duration (mins) | 360 |
| Greenfield Method | FSR/FEH | CWI | | Betterment (%) | 0 |
| Positively Drained Area (ha) | | Return Period (years) | 100 | PR | |
| Soil Index | 1 | Climate Change (%) | 0 | Runoff Volume (m³) | |

**Results for 2 year Critical Storm Duration. Lowest mass balance: 95.39%**

| Node Event | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status |
|---|---|---|---|---|---|---|---|---|
| 15 minute summer | HW10 | 2 | 22.679 | 0.179 | 51.7 | 0.0000 | 0.0000 | OK |
| 15 minute summer | 49 | 1 | 22.528 | 0.099 | 52.1 | 0.1125 | 0.0000 | OK |
| 15 minute summer | 55 | 2 | 22.149 | 0.099 | 51.6 | 0.1123 | 0.0000 | OK |
| 15 minute summer | 50 | 1 | 21.491 | 0.141 | 51.7 | 0.1598 | 0.0000 | OK |
| 15 minute summer | 51 | 1 | 21.288 | 0.138 | 65.2 | 0.1556 | 0.0000 | OK |
| 15 minute summer | 52 | 2 | 20.067 | 0.194 | 52.2 | 0.2196 | 0.0000 | OK |
| 15 minute summer | HW11 | 2 | 19.974 | 0.172 | 49.1 | 0.0000 | 0.0000 | OK |

| Link Event (Upstream Depth) | US Node | Link | DS Node | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Link Vol (m³) | Discharge Vol (m³) |
|---|---|---|---|---|---|---|---|---|
| 15 minute summer | HW10 | 1.000 | 49 | 52.1 | 1.631 | 0.702 | 0.5053 | |
| 15 minute summer | 49 | 1.001 | 55 | 51.6 | 2.552 | 0.181 | 0.1184 | |
| 15 minute summer | 55 | 1.002 | 50 | 51.7 | 2.054 | 0.232 | 0.4599 | |
| 15 minute summer | 50 | 1.003 | 51 | 65.2 | 2.034 | 0.401 | 0.3011 | |
| 15 minute summer | 51 | 1.004 | 52 | 52.2 | 2.569 | 0.271 | 1.5103 | |
| 15 minute summer | 52 | 1.005 | HW11 | 49.1 | 1.091 | 0.688 | 0.7655 | 747.1 |

**Results for 200 year Critical Storm Duration. Lowest mass balance: 95.39%**

| Node Event | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status |
|---|---|---|---|---|---|---|---|---|
| 15 minute summer | HW10 | 2 | 22.679 | 0.179 | 51.7 | 0.0000 | 0.0000 | OK |
| 15 minute summer | 49 | 1 | 22.528 | 0.099 | 52.1 | 0.1125 | 0.0000 | OK |
| 15 minute summer | 55 | 2 | 22.149 | 0.099 | 51.6 | 0.1123 | 0.0000 | OK |
| 15 minute summer | 50 | 1 | 21.491 | 0.141 | 51.7 | 0.1598 | 0.0000 | OK |
| 15 minute summer | 51 | 1 | 21.288 | 0.138 | 65.2 | 0.1556 | 0.0000 | OK |
| 15 minute summer | 52 | 2 | 20.067 | 0.194 | 52.2 | 0.2196 | 0.0000 | OK |
| 15 minute summer | HW11 | 2 | 19.974 | 0.172 | 49.1 | 0.0000 | 0.0000 | OK |

| Link Event (Upstream Depth) | US Node | Link | DS Node | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Link Vol (m³) | Discharge Vol (m³) |
|---|---|---|---|---|---|---|---|---|
| 15 minute summer | HW10 | 1.000 | 49 | 52.1 | 1.631 | 0.702 | 0.5053 | |
| 15 minute summer | 49 | 1.001 | 55 | 51.6 | 2.552 | 0.181 | 0.1184 | |
| 15 minute summer | 55 | 1.002 | 50 | 51.7 | 2.054 | 0.232 | 0.4599 | |
| 15 minute summer | 50 | 1.003 | 51 | 65.2 | 2.034 | 0.401 | 0.3011 | |
| 15 minute summer | 51 | 1.004 | 52 | 52.2 | 2.569 | 0.271 | 1.5103 | |
| 15 minute summer | 52 | 1.005 | HW11 | 49.1 | 1.091 | 0.688 | 0.7655 | 747.1 |