

Calculations

Design Settings

| | | | |
|-----------------------|-------------------|--------------------------------------|---------------|
| Rainfall Methodology | FSR | Maximum Time of Concentration (mins) | 30.00 |
| Return Period (years) | 100 | Maximum Rainfall (mm/hr) | 50.0 |
| Additional Flow (%) | 40 | Minimum Velocity (m/s) | 1.00 |
| FSR Region | England and Wales | Connection Type | Level Soffits |
| M5-60 (mm) | 20.000 | Minimum Backdrop Height (m) | 0.200 |
| Ratio-R | 0.300 | Preferred Cover Depth (m) | 0.650 |
| CV | 0.750 | Include Intermediate Ground | x |
| Time of Entry (mins) | 4.00 | Enforce best practice design rules | x |

Nodes

| Name | Area (ha) | T of E (mins) | Cover Level (m) | Diameter (mm) | Easting (m) | Northing (m) | Depth (m) |
|------|-----------|---------------|-----------------|---------------|-------------|--------------|-----------|
| 6 | 0.020 | 4.00 | 127.100 | 1010 | 299846.850 | 518665.875 | 0.750 |
| 7 | 0.020 | 4.00 | 127.100 | 1010 | 299846.850 | 518690.900 | 0.967 |
| 8 | 0.020 | 4.00 | 127.100 | 1010 | 299878.480 | 518691.000 | 1.322 |
| 9 | | | 127.100 | 1010 | 299929.111 | 518691.000 | 1.660 |
| 10 | | | 127.100 | | 299942.864 | 518658.000 | 2.320 |
| 1 | 0.020 | 4.00 | 127.100 | 1010 | 299847.000 | 518646.250 | 0.750 |
| 2 | 0.020 | 4.00 | 127.100 | 1010 | 299847.000 | 518626.000 | 0.935 |
| 3 | 0.020 | 4.00 | 127.100 | 1010 | 299878.600 | 518626.700 | 1.221 |
| 4 | | | 127.100 | 1010 | 299925.000 | 518626.800 | 1.530 |
| 5 | | | 127.100 | | 299944.200 | 518641.100 | 2.320 |
| 12 | | 4.00 | 127.100 | | 299949.200 | 518636.084 | 2.350 |
| 13 | | | 126.750 | 1200 | 299942.000 | 518617.000 | 2.136 |
| 99 | | | 125.800 | | 299946.000 | 518608.000 | 1.244 |
| 11 | 0.020 | 4.00 | 127.100 | 1200 | 299876.792 | 518664.507 | 0.750 |
| 14 | 0.020 | 4.00 | 127.100 | 1200 | 299876.681 | 518645.658 | 0.750 |

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 | 6 | 7 | 25.025 | 0.600 | 126.350 | 126.183 | 0.167 | 150.0 | 100 | 4.67 | 50.0 |
| 1.001 | 7 | 8 | 31.630 | 0.600 | 126.133 | 125.922 | 0.211 | 150.0 | 150 | 5.31 | 50.0 |
| 1.002 | 8 | 9 | 50.631 | 0.600 | 125.778 | 125.440 | 0.338 | 150.0 | 225 | 6.10 | 50.0 |
| 1.003 | 9 | 10 | 35.751 | 0.600 | 125.440 | 125.082 | 0.358 | 100.0 | 225 | 6.56 | 50.0 |
| 3.000_1 | 1 | 2 | 20.250 | 0.600 | 126.350 | 126.215 | 0.135 | 150.0 | 100 | 4.54 | 50.0 |
| 3.001 | 2 | 3 | 31.608 | 0.600 | 126.165 | 125.954 | 0.211 | 150.0 | 150 | 5.18 | 50.0 |
| 3.002 | 3 | 4 | 46.400 | 0.600 | 125.879 | 125.570 | 0.309 | 150.0 | 225 | 5.91 | 50.0 |
| 3.003 | 4 | 5 | 23.940 | 0.600 | 125.570 | 125.331 | 0.239 | 100.0 | 225 | 6.22 | 50.0 |

| 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) |
|---------|-----------|-----------|------------|--------------|--------------|-------------|--------------------|----------------|--------------------|
| 1.000 | 0.625 | 4.9 | 3.8 | 0.650 | 0.817 | 0.020 | 0.0 | 66 | 0.690 |
| 1.001 | 0.818 | 14.5 | 7.6 | 0.817 | 1.028 | 0.040 | 0.0 | 77 | 0.827 |
| 1.002 | 1.065 | 42.3 | 15.2 | 1.097 | 1.435 | 0.080 | 0.0 | 93 | 0.977 |
| 1.003 | 1.307 | 52.0 | 15.2 | 1.435 | 1.793 | 0.080 | 0.0 | 83 | 1.137 |
| 3.000_1 | 0.625 | 4.9 | 3.8 | 0.650 | 0.785 | 0.020 | 0.0 | 66 | 0.690 |
| 3.001 | 0.818 | 14.5 | 7.6 | 0.785 | 0.996 | 0.040 | 0.0 | 77 | 0.827 |
| 3.002 | 1.065 | 42.3 | 15.2 | 0.996 | 1.305 | 0.080 | 0.0 | 93 | 0.977 |
| 3.003 | 1.307 | 52.0 | 15.2 | 1.305 | 1.544 | 0.080 | 0.0 | 83 | 1.137 |

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) |
|-------|---------|---------|------------|-------------|-----------|-----------|----------|-------------|----------|---------------|--------------|
| 3.000 | 12 | 13 | 20.397 | 0.600 | 124.750 | 124.614 | 0.136 | 150.0 | 225 | 4.41 | 50.0 |
| 5.001 | 13 | 99 | 9.849 | 0.600 | 124.614 | 124.556 | 0.058 | 169.8 | 225 | 4.57 | 50.0 |
| 2.000 | 11 | 8 | 26.547 | 0.600 | 126.350 | 125.903 | 0.447 | 59.4 | 100 | 4.44 | 50.0 |
| 4.000 | 14 | 3 | 19.055 | 0.600 | 126.350 | 126.004 | 0.346 | 55.1 | 100 | 4.31 | 50.0 |



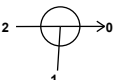



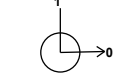





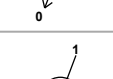
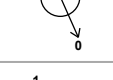

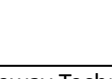

| Name | Vel (m/s) | Cap (l/s) | Flow (l/s) | US Depth (m) | DS Depth (m) | Σ Area (ha) | Σ Add Inflow (l/s) | Pro Depth (mm) | Pro Velocity (m/s) |
|-------|-----------|-----------|------------|--------------|--------------|-------------|--------------------|----------------|--------------------|
| 3.000 | 1.065 | 42.3 | 0.0 | 2.125 | 1.911 | 0.000 | 0.0 | 0 | 0.000 |
| 5.001 | 1.000 | 39.8 | 0.0 | 1.911 | 1.019 | 0.000 | 0.0 | 0 | 0.000 |
| 2.000 | 1.001 | 7.9 | 3.8 | 0.650 | 1.097 | 0.020 | 0.0 | 49 | 0.991 |
| 4.000 | 1.040 | 8.2 | 3.8 | 0.650 | 0.996 | 0.020 | 0.0 | 48 | 1.022 |

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 | 25.025 | 150.0 | 100 | Circular | 127.100 | 126.350 | 0.650 | 127.100 | 126.183 | 0.817 |
| 1.001 | 31.630 | 150.0 | 150 | Circular | 127.100 | 126.133 | 0.817 | 127.100 | 125.922 | 1.028 |
| 1.002 | 50.631 | 150.0 | 225 | Circular | 127.100 | 125.778 | 1.097 | 127.100 | 125.440 | 1.435 |
| 1.003 | 35.751 | 100.0 | 225 | Circular | 127.100 | 125.440 | 1.435 | 127.100 | 125.082 | 1.793 |
| 3.000_1 | 20.250 | 150.0 | 100 | Circular | 127.100 | 126.350 | 0.650 | 127.100 | 126.215 | 0.785 |
| 3.001 | 31.608 | 150.0 | 150 | Circular | 127.100 | 126.165 | 0.785 | 127.100 | 125.954 | 0.996 |
| 3.002 | 46.400 | 150.0 | 225 | Circular | 127.100 | 125.879 | 0.996 | 127.100 | 125.570 | 1.305 |
| 3.003 | 23.940 | 100.0 | 225 | Circular | 127.100 | 125.570 | 1.305 | 127.100 | 125.331 | 1.544 |
| 3.000 | 20.397 | 150.0 | 225 | Circular | 127.100 | 124.750 | 2.125 | 126.750 | 124.614 | 1.911 |
| 5.001 | 9.849 | 169.8 | 225 | Circular | 126.750 | 124.614 | 1.911 | 125.800 | 124.556 | 1.019 |
| 2.000 | 26.547 | 59.4 | 100 | Circular | 127.100 | 126.350 | 0.650 | 127.100 | 125.903 | 1.097 |
| 4.000 | 19.055 | 55.1 | 100 | Circular | 127.100 | 126.350 | 0.650 | 127.100 | 126.004 | 0.996 |

| Link | US Node | Dia (mm) | Node Type | MH Type | DS Node | Dia (mm) | Node Type | MH Type |
|---------|---------|----------|-----------|-----------|---------|----------|-----------|-----------|
| 1.000 | 6 | 1010 | Manhole | Adoptable | 7 | 1010 | Manhole | Adoptable |
| 1.001 | 7 | 1010 | Manhole | Adoptable | 8 | 1010 | Manhole | Adoptable |
| 1.002 | 8 | 1010 | Manhole | Adoptable | 9 | 1010 | Manhole | Adoptable |
| 1.003 | 9 | 1010 | Manhole | Adoptable | 10 | | Junction | |
| 3.000_1 | 1 | 1010 | Manhole | Adoptable | 2 | 1010 | Manhole | Adoptable |
| 3.001 | 2 | 1010 | Manhole | Adoptable | 3 | 1010 | Manhole | Adoptable |
| 3.002 | 3 | 1010 | Manhole | Adoptable | 4 | 1010 | Manhole | Adoptable |
| 3.003 | 4 | 1010 | Manhole | Adoptable | 5 | | Junction | |
| 3.000 | 12 | | Junction | | 13 | 1200 | Manhole | Adoptable |
| 5.001 | 13 | 1200 | Manhole | Adoptable | 99 | | Junction | |
| 2.000 | 11 | 1200 | Manhole | Adoptable | 8 | 1010 | Manhole | Adoptable |
| 4.000 | 14 | 1200 | Manhole | Adoptable | 3 | 1010 | Manhole | Adoptable |

Manhole Schedule

| Node | Easting (m) | Northing (m) | CL (m) | Depth (m) | Dia (mm) | Connections | Link | IL (m) | Dia (mm) | |
|------|-------------|--------------|---------|-----------|----------|--|------|---------|----------|-----|
| 6 | 299846.850 | 518665.875 | 127.100 | 0.750 | 1010 |  | 0 | 1.000 | 126.350 | 100 |
| 7 | 299846.850 | 518690.900 | 127.100 | 0.967 | 1010 |  | 1 | 1.000 | 126.183 | 100 |
| 8 | 299878.480 | 518691.000 | 127.100 | 1.322 | 1010 |  | 0 | 1.001 | 126.133 | 150 |
| 9 | 299929.111 | 518691.000 | 127.100 | 1.660 | 1010 |  | 1 | 2.000 | 125.903 | 100 |
| 10 | 299942.864 | 518658.000 | 127.100 | 2.320 | |  | 2 | 1.001 | 125.922 | 150 |
| 1 | 299847.000 | 518646.250 | 127.100 | 0.750 | 1010 |  | 0 | 1.002 | 125.778 | 225 |
| 2 | 299847.000 | 518626.000 | 127.100 | 0.935 | 1010 |  | 1 | 1.002 | 125.440 | 225 |
| 3 | 299878.600 | 518626.700 | 127.100 | 1.221 | 1010 |  | 0 | 1.003 | 125.440 | 225 |
| 4 | 299925.000 | 518626.800 | 127.100 | 1.530 | 1010 |  | 1 | 1.003 | 125.082 | 225 |
| 5 | 299944.200 | 518641.100 | 127.100 | 2.320 | |  | 0 | 3.000_1 | 126.350 | 100 |
| 12 | 299949.200 | 518636.084 | 127.100 | 2.350 | |  | 1 | 3.000_1 | 126.215 | 100 |
| 13 | 299942.000 | 518617.000 | 126.750 | 2.136 | 1200 |  | 0 | 3.001 | 126.165 | 150 |
| 99 | 299946.000 | 518608.000 | 125.800 | 1.244 | |  | 1 | 4.000 | 126.004 | 100 |
| | | | | | |  | 2 | 3.001 | 125.954 | 150 |
| | | | | | |  | 0 | 3.002 | 125.879 | 225 |
| | | | | | |  | 1 | 3.002 | 125.570 | 225 |
| | | | | | |  | 0 | 3.003 | 125.570 | 225 |
| | | | | | | | 1 | 3.003 | 125.331 | 225 |

Manhole Schedule

| Node | Easting (m) | Northing (m) | CL (m) | Depth (m) | Dia (mm) | Connections | Link | IL (m) | Dia (mm) |
|------|-------------|--------------|---------|-----------|----------|--|-------|---------|----------|
| 11 | 299876.792 | 518664.507 | 127.100 | 0.750 | 1200 |  | | | |
| | | | | | | 0 | 2.000 | 126.350 | 100 |
| 14 | 299876.681 | 518645.658 | 127.100 | 0.750 | 1200 |  | | | |
| | | | | | | 0 | 4.000 | 126.350 | 100 |

Simulation Settings

| | | | |
|----------------------|-------------------|--|------|
| Rainfall Methodology | FSR | Drain Down Time (mins) | 240 |
| FSR Region | England and Wales | Additional Storage (m ³ /ha) | 0.0 |
| M5-60 (mm) | 20.000 | Check Discharge Rate(s) | ✓ |
| Ratio-R | 0.300 | 10 year (l/s) | 17.9 |
| Summer CV | 0.750 | 30 year (l/s) | 22.0 |
| Winter CV | 0.840 | 100 year (l/s) | 26.9 |
| Analysis Speed | Normal | Check Discharge Volume | ✓ |
| Skip Steady State | x | 100 year +40% 360 minute (m ³) | 1004 |

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 |

Pre-development Discharge Rate

| | | | |
|------------------------------|------------|------------------------|------|
| Site Makeup | Greenfield | Growth Factor 30 year | 1.95 |
| Greenfield Method | IH124 | Growth Factor 100 year | 2.48 |
| Positively Drained Area (ha) | 1.876 | Betterment (%) | 0 |
| SAAR (mm) | 950 | QBar | 13.0 |
| Soil Index | 4 | Q 1 year (l/s) | |
| SPR | 0.47 | Q 30 year (l/s) | |
| Region | 10 | Q 100 year (l/s) | |
| Growth Factor 1 year | 0.85 | | |

Pre-development Discharge Volume

| | | | |
|------------------------------|------------|---------------------------------|-------|
| Site Makeup | Greenfield | Return Period (years) | 100 |
| Greenfield Method | FSR/FEH | Climate Change (%) | 40 |
| Positively Drained Area (ha) | 1.876 | Storm Duration (mins) | 360 |
| Soil Index | 4 | Betterment (%) | 0 |
| SPR | 0.47 | PR | 0.547 |
| CWI | 124.875 | Runoff Volume (m ³) | 1004 |

Node 13 Online ACO Q-Brake Control

| | | | | | |
|--------------------------|---------|-------------------------|-------|------------------------|-------|
| Flap Valve | x | Design Depth (m) | 1.400 | Min Node Diameter (mm) | 1050 |
| Replaces Downstream Link | ✓ | Design Flow (l/s) | 13.0 | Orifice Diameter (mm) | 0.145 |
| Invert Level (m) | 124.614 | Min Outlet Diameter (m) | 0.145 | | |

Node 12 Flow through Pond Storage Structure

| | | | | | |
|-----------------------------|---------|---------------------------|---------|--------------------------|--------|
| Base Inf Coefficient (m/hr) | 0.00000 | Porosity | 1.00 | Main Channel Length (m) | 30.000 |
| Side Inf Coefficient (m/hr) | 0.00000 | Invert Level (m) | 124.750 | Main Channel Slope (1:X) | 1000.0 |
| Safety Factor | 1.0 | Time to half empty (mins) | 45 | Main Channel n | 0.030 |

Inlets

10 | 5

| Depth (m) | Area (m ²) | Inf Area (m ²) | Depth (m) | Area (m ²) | Inf Area (m ²) | Depth (m) | Area (m ²) | Inf Area (m ²) | Depth (m) | Area (m ²) | Inf Area (m ²) |
|-----------|------------------------|----------------------------|-----------|------------------------|----------------------------|-----------|------------------------|----------------------------|-----------|------------------------|----------------------------|
| 0.000 | 0.0 | 0.0 | 0.050 | 25.0 | 0.0 | 1.200 | 50.0 | 0.0 | 1.500 | 85.0 | 0.0 |

Other (defaults)

| | | | | | |
|----------------------|-------|-----------------------|-------|--------------------------|-------|
| Entry Loss (manhole) | 0.250 | Entry Loss (junction) | 0.000 | Apply Recommended Losses | x |
| Exit Loss (manhole) | 0.250 | Exit Loss (junction) | 0.000 | Flood Risk (m) | 0.300 |

Approval Settings

| | | | |
|-----------------------------|---------|---------------------------------------|-------|
| Node Size | ✓ | Minimum Full Bore Velocity (m/s) | |
| Node Losses | ✓ | Maximum Full Bore Velocity (m/s) | 3.000 |
| Link Size | ✓ | Proportional Velocity | ✓ |
| Minimum Diameter (mm) | 150 | Return Period (years) | |
| Link Length | ✓ | Minimum Proportional Velocity (m/s) | 0.750 |
| Maximum Length (m) | 100.000 | Maximum Proportional Velocity (m/s) | 3.000 |
| Coordinates | ✓ | Surcharged Depth | ✓ |
| Accuracy (m) | 1.000 | Return Period (years) | |
| Crossings | ✓ | Maximum Surcharged Depth (m) | 0.100 |
| Cover Depth | ✓ | Flooding | ✓ |
| Minimum Cover Depth (m) | | Return Period (years) | 30 |
| Maximum Cover Depth (m) | 3.000 | Time to Half Empty | x |
| Backdrops | ✓ | Discharge Rates | ✓ |
| Minimum Backdrop Height (m) | | Discharge Volume | ✓ |
| Maximum Backdrop Height (m) | 1.500 | 100 year 360 minute (m ³) | |
| Full Bore Velocity | ✓ | | |

Rainfall

| Event | Peak Intensity (mm/hr) | Average Intensity (mm/hr) | Event | Peak Intensity (mm/hr) | Average Intensity (mm/hr) |
|---------------------------|------------------------|---------------------------|---------------------------|------------------------|---------------------------|
| 10 year 15 minute summer | 192.806 | 54.557 | 10 year 180 minute winter | 29.245 | 11.577 |
| 10 year 15 minute winter | 135.303 | 54.557 | 10 year 240 minute summer | 35.975 | 9.507 |
| 10 year 30 minute summer | 130.321 | 36.876 | 10 year 240 minute winter | 23.901 | 9.507 |
| 10 year 30 minute winter | 91.453 | 36.876 | 10 year 360 minute summer | 27.947 | 7.192 |
| 10 year 60 minute summer | 90.826 | 24.003 | 10 year 360 minute winter | 18.166 | 7.192 |
| 10 year 60 minute winter | 60.342 | 24.003 | 10 year 480 minute summer | 22.300 | 5.893 |
| 10 year 120 minute summer | 57.664 | 15.239 | 10 year 480 minute winter | 14.816 | 5.893 |
| 10 year 120 minute winter | 38.311 | 15.239 | 10 year 600 minute summer | 18.452 | 5.047 |
| 10 year 180 minute summer | 44.990 | 11.577 | 10 year 600 minute winter | 12.608 | 5.047 |

Rainfall

| Event | Peak Intensity (mm/hr) | Average Intensity (mm/hr) | Event | Peak Intensity (mm/hr) | Average Intensity (mm/hr) |
|----------------------------|-------------------------------|----------------------------------|-------------------------------------|-------------------------------|----------------------------------|
| 10 year 720 minute summer | 16.587 | 4.446 | 30 year 960 minute winter | 11.289 | 4.488 |
| 10 year 720 minute winter | 11.148 | 4.446 | 30 year 1440 minute summer | 12.485 | 3.346 |
| 10 year 960 minute summer | 13.811 | 3.637 | 30 year 1440 minute winter | 8.390 | 3.346 |
| 10 year 960 minute winter | 9.149 | 3.637 | 100 year +40% CC 15 minute summer | 441.486 | 124.925 |
| 10 year 1440 minute summer | 10.216 | 2.738 | 100 year +40% CC 15 minute winter | 309.815 | 124.925 |
| 10 year 1440 minute winter | 6.866 | 2.738 | 100 year +40% CC 30 minute summer | 304.460 | 86.152 |
| 30 year 15 minute summer | 243.818 | 68.992 | 100 year +40% CC 30 minute winter | 213.656 | 86.152 |
| 30 year 15 minute winter | 171.101 | 68.992 | 100 year +40% CC 60 minute summer | 214.603 | 56.713 |
| 30 year 30 minute summer | 166.387 | 47.082 | 100 year +40% CC 60 minute winter | 142.577 | 56.713 |
| 30 year 30 minute winter | 116.763 | 47.082 | 100 year +40% CC 120 minute summer | 135.791 | 35.885 |
| 30 year 60 minute summer | 116.589 | 30.811 | 100 year +40% CC 120 minute winter | 90.216 | 35.885 |
| 30 year 60 minute winter | 77.459 | 30.811 | 100 year +40% CC 180 minute summer | 104.615 | 26.921 |
| 30 year 120 minute summer | 73.902 | 19.530 | 100 year +40% CC 180 minute winter | 68.003 | 26.921 |
| 30 year 120 minute winter | 49.099 | 19.530 | 100 year +40% CC 240 minute summer | 82.776 | 21.875 |
| 30 year 180 minute summer | 57.313 | 14.749 | 100 year +40% CC 240 minute winter | 54.994 | 21.875 |
| 30 year 180 minute winter | 37.255 | 14.749 | 100 year +40% CC 360 minute summer | 63.377 | 16.309 |
| 30 year 240 minute summer | 45.598 | 12.050 | 100 year +40% CC 360 minute winter | 41.197 | 16.309 |
| 30 year 240 minute winter | 30.295 | 12.050 | 100 year +40% CC 480 minute summer | 50.006 | 13.215 |
| 30 year 360 minute summer | 35.178 | 9.053 | 100 year +40% CC 480 minute winter | 33.223 | 13.215 |
| 30 year 360 minute winter | 22.867 | 9.053 | 100 year +40% CC 600 minute summer | 40.997 | 11.214 |
| 30 year 480 minute summer | 27.920 | 7.379 | 100 year +40% CC 600 minute winter | 28.011 | 11.214 |
| 30 year 480 minute winter | 18.550 | 7.379 | 100 year +40% CC 720 minute summer | 36.560 | 9.799 |
| 30 year 600 minute summer | 23.001 | 6.291 | 100 year +40% CC 720 minute winter | 24.571 | 9.799 |
| 30 year 600 minute winter | 15.716 | 6.291 | 100 year +40% CC 960 minute summer | 30.041 | 7.911 |
| 30 year 720 minute summer | 20.598 | 5.520 | 100 year +40% CC 960 minute winter | 19.900 | 7.911 |
| 30 year 720 minute winter | 13.843 | 5.520 | 100 year +40% CC 1440 minute summer | 21.775 | 5.836 |
| 30 year 960 minute summer | 17.043 | 4.488 | 100 year +40% CC 1440 minute winter | 14.634 | 5.836 |

Results for 10 year Critical Storm Duration. Lowest mass balance: 99.06%

| Node Event | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m ³) | Flood (m ³) | Status |
|------------------|---------|-------------|-----------|-----------|--------------|----------------------------|-------------------------|------------|
| 15 minute winter | 6 | 10 | 126.441 | 0.091 | 5.3 | 0.0730 | 0.0000 | OK |
| 15 minute winter | 7 | 10 | 126.228 | 0.095 | 10.3 | 0.0760 | 0.0000 | OK |
| 15 minute winter | 8 | 10 | 125.892 | 0.114 | 20.6 | 0.0913 | 0.0000 | OK |
| 15 minute winter | 9 | 11 | 125.538 | 0.098 | 20.3 | 0.0786 | 0.0000 | OK |
| 30 minute winter | 10 | 26 | 125.101 | 0.321 | 15.9 | 0.0000 | 0.0000 | OK |
| 15 minute winter | 1 | 10 | 126.443 | 0.093 | 5.3 | 0.0745 | 0.0000 | OK |
| 15 minute winter | 2 | 10 | 126.260 | 0.095 | 10.4 | 0.0764 | 0.0000 | OK |
| 15 minute winter | 3 | 10 | 125.993 | 0.114 | 20.7 | 0.0916 | 0.0000 | OK |
| 15 minute winter | 4 | 11 | 125.669 | 0.099 | 20.5 | 0.0797 | 0.0000 | OK |
| 30 minute winter | 5 | 24 | 125.091 | 0.311 | 16.7 | 0.0000 | 0.0000 | OK |
| 30 minute winter | 12 | 25 | 125.091 | 0.341 | 24.5 | 0.0000 | 0.0000 | SURCHARGED |
| 30 minute winter | 13 | 25 | 125.077 | 0.463 | 14.6 | 0.5238 | 0.0000 | SURCHARGED |
| 15 minute summer | 99 | 1 | 124.556 | 0.000 | 13.0 | 0.0000 | 0.0000 | OK |
| 15 minute winter | 11 | 10 | 126.412 | 0.062 | 5.3 | 0.0696 | 0.0000 | OK |
| 15 minute winter | 14 | 10 | 126.411 | 0.061 | 5.3 | 0.0686 | 0.0000 | OK |

| Link Event (Upstream Depth) | US Node | Link | DS Node | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Link Vol (m ³) | Discharge Vol (m ³) |
|-----------------------------|---------|-------------------|---------|---------------|----------------|----------|----------------------------|---------------------------------|
| 15 minute winter | 6 | 1.000 | 7 | 5.0 | 0.735 | 1.021 | 0.1700 | |
| 15 minute winter | 7 | 1.001 | 8 | 10.0 | 0.876 | 0.693 | 0.3631 | |
| 15 minute winter | 8 | 1.002 | 9 | 20.3 | 1.130 | 0.479 | 0.9153 | |
| 15 minute winter | 9 | 1.003 | 10 | 20.1 | 1.226 | 0.388 | 0.5875 | |
| 30 minute winter | 10 | Flow through pond | 12 | 24.5 | 0.266 | 0.008 | 8.3442 | |
| 15 minute winter | 1 | 3.000_1 | 2 | 5.1 | 0.735 | 1.032 | 0.1389 | |
| 15 minute winter | 2 | 3.001 | 3 | 10.1 | 0.877 | 0.698 | 0.3648 | |
| 15 minute winter | 3 | 3.002 | 4 | 20.5 | 1.117 | 0.483 | 0.8503 | |
| 15 minute winter | 4 | 3.003 | 5 | 20.4 | 1.225 | 0.393 | 0.3989 | |
| 30 minute winter | 5 | Flow through pond | 12 | 24.5 | 0.266 | 0.008 | 8.3442 | |
| 30 minute winter | 12 | 3.000 | 13 | 14.6 | 0.950 | 0.345 | 0.8112 | |
| 30 minute winter | 13 | ACO Q-Brake | 99 | 13.0 | | | | 24.8 |
| 15 minute winter | 11 | 2.000 | 8 | 5.3 | 1.060 | 0.670 | 0.1320 | |
| 15 minute winter | 14 | 4.000 | 3 | 5.3 | 1.087 | 0.648 | 0.0927 | |

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.06%

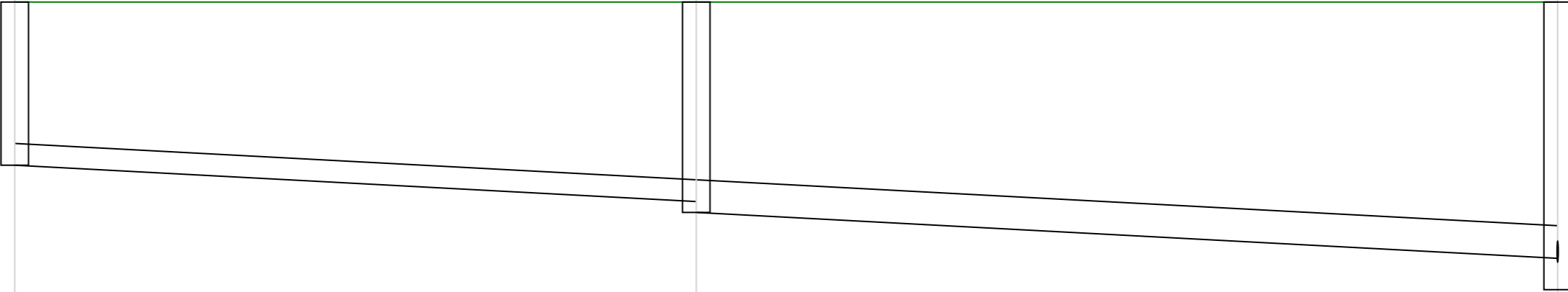
| Node Event | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m ³) | Flood (m ³) | Status |
|------------------|---------|-------------|-----------|-----------|--------------|----------------------------|-------------------------|------------|
| 15 minute winter | 6 | 11 | 126.506 | 0.156 | 6.6 | 0.1247 | 0.0000 | SURCHARGED |
| 15 minute winter | 7 | 10 | 126.242 | 0.109 | 12.4 | 0.0874 | 0.0000 | OK |
| 15 minute winter | 8 | 10 | 125.907 | 0.129 | 25.2 | 0.1033 | 0.0000 | OK |
| 15 minute winter | 9 | 11 | 125.551 | 0.111 | 24.9 | 0.0887 | 0.0000 | OK |
| 30 minute winter | 10 | 26 | 125.226 | 0.446 | 20.2 | 0.0000 | 0.0000 | OK |
| 15 minute winter | 1 | 11 | 126.503 | 0.153 | 6.6 | 0.1225 | 0.0000 | SURCHARGED |
| 15 minute winter | 2 | 10 | 126.275 | 0.110 | 12.6 | 0.0882 | 0.0000 | OK |
| 15 minute winter | 3 | 10 | 126.009 | 0.129 | 25.4 | 0.1037 | 0.0000 | OK |
| 15 minute winter | 4 | 11 | 125.682 | 0.112 | 25.1 | 0.0899 | 0.0000 | OK |
| 30 minute winter | 5 | 26 | 125.226 | 0.446 | 20.3 | 0.0000 | 0.0000 | OK |
| 30 minute winter | 12 | 26 | 125.224 | 0.474 | 27.0 | 0.0000 | 0.0000 | SURCHARGED |
| 30 minute winter | 13 | 26 | 125.211 | 0.597 | 15.1 | 0.6756 | 0.0000 | SURCHARGED |
| 15 minute summer | 99 | 1 | 124.556 | 0.000 | 13.0 | 0.0000 | 0.0000 | OK |
| 15 minute winter | 11 | 10 | 126.422 | 0.072 | 6.6 | 0.0816 | 0.0000 | OK |
| 15 minute winter | 14 | 10 | 126.421 | 0.071 | 6.6 | 0.0803 | 0.0000 | OK |


| Link Event (Upstream Depth) | US Node | Link | DS Node | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Link Vol (m ³) | Discharge Vol (m ³) |
|--------------------------------|---------|-------------------|---------|---------------|----------------|----------|----------------------------|---------------------------------|
| 15 minute winter | 6 | 1.000 | 7 | 6.0 | 0.779 | 1.215 | 0.1810 | |
| 15 minute winter | 7 | 1.001 | 8 | 12.1 | 0.916 | 0.836 | 0.4183 | |
| 15 minute winter | 8 | 1.002 | 9 | 24.9 | 1.182 | 0.589 | 1.0712 | |
| 15 minute winter | 9 | 1.003 | 10 | 24.8 | 1.293 | 0.477 | 0.6860 | |
| 30 minute winter | 10 | Flow through pond | 12 | 27.0 | 0.266 | 0.009 | 12.6613 | |
| 15 minute winter | 1 | 3.000_1 | 2 | 6.1 | 0.791 | 1.236 | 0.1470 | |
| 15 minute winter | 2 | 3.001 | 3 | 12.2 | 0.919 | 0.845 | 0.4215 | |
| 15 minute winter | 3 | 3.002 | 4 | 25.1 | 1.169 | 0.593 | 0.9966 | |
| 15 minute winter | 4 | 3.003 | 5 | 25.1 | 1.290 | 0.483 | 0.4660 | |
| 30 minute winter | 5 | Flow through pond | 12 | 27.0 | 0.266 | 0.009 | 12.6613 | |
| 30 minute winter | 12 | 3.000 | 13 | 15.1 | 0.957 | 0.357 | 0.8112 | |
| 30 minute winter | 13 | ACO Q-Brake | 99 | 13.0 | | | | 31.5 |
| 15 minute winter | 11 | 2.000 | 8 | 6.6 | 1.104 | 0.834 | 0.1577 | |
| 15 minute winter | 14 | 4.000 | 3 | 6.6 | 1.133 | 0.806 | 0.1107 | |


Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.06%

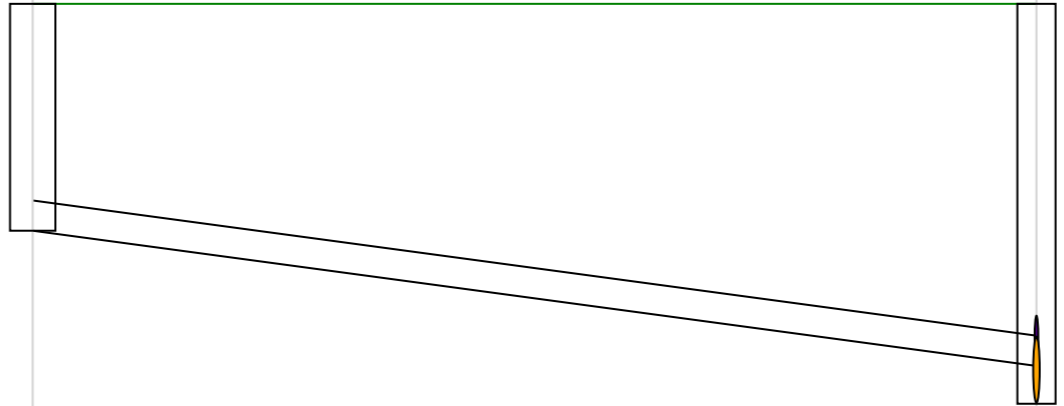
| Node Event | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m ³) | Flood (m ³) | Status |
|------------------|---------|-------------|-----------|-----------|--------------|----------------------------|-------------------------|------------|
| 15 minute winter | 6 | 11 | 127.100 | 0.750 | 12.0 | 0.6008 | 0.0652 | FLOOD |
| 15 minute winter | 7 | 11 | 126.443 | 0.310 | 20.8 | 0.2484 | 0.0000 | SURCHARGED |
| 15 minute winter | 8 | 11 | 125.960 | 0.182 | 40.4 | 0.1460 | 0.0000 | OK |
| 60 minute winter | 9 | 49 | 125.740 | 0.300 | 25.8 | 0.2400 | 0.0000 | SURCHARGED |
| 60 minute winter | 10 | 54 | 125.730 | 0.950 | 25.7 | 0.0000 | 0.0000 | OK |
| 15 minute winter | 1 | 11 | 127.098 | 0.748 | 12.0 | 0.5993 | 0.0000 | FLOOD RISK |
| 15 minute winter | 2 | 11 | 126.491 | 0.326 | 21.1 | 0.2610 | 0.0000 | SURCHARGED |
| 15 minute winter | 3 | 11 | 126.065 | 0.186 | 41.2 | 0.1492 | 0.0000 | OK |
| 60 minute winter | 4 | 50 | 125.732 | 0.162 | 25.9 | 0.1298 | 0.0000 | OK |
| 60 minute winter | 5 | 50 | 125.732 | 0.952 | 25.8 | 0.0000 | 0.0000 | OK |
| 60 minute winter | 12 | 51 | 125.729 | 0.979 | 30.5 | 0.0000 | 0.0000 | SURCHARGED |
| 60 minute winter | 13 | 50 | 125.718 | 1.104 | 13.9 | 1.2488 | 0.0000 | SURCHARGED |
| 15 minute summer | 99 | 1 | 124.556 | 0.000 | 13.0 | 0.0000 | 0.0000 | OK |
| 15 minute winter | 11 | 11 | 126.800 | 0.450 | 12.0 | 0.5087 | 0.0000 | SURCHARGED |
| 15 minute winter | 14 | 11 | 126.741 | 0.391 | 12.0 | 0.4424 | 0.0000 | SURCHARGED |

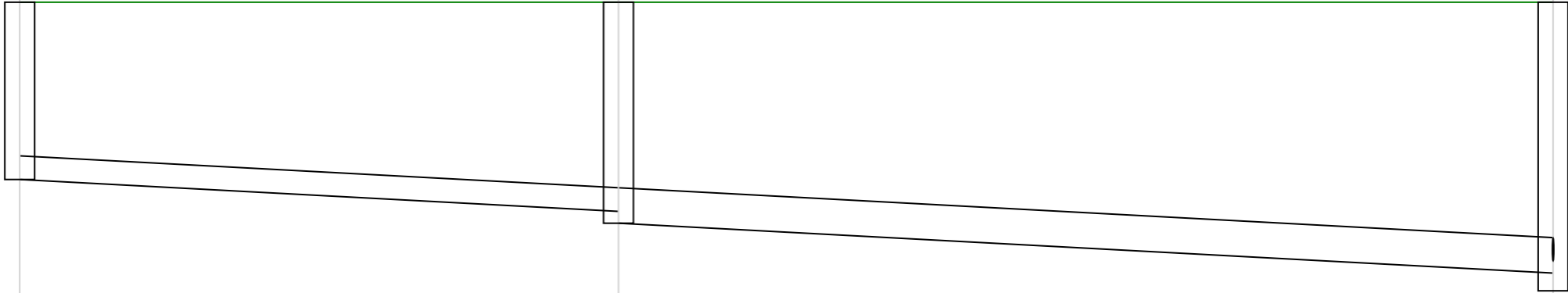
| Link Event (Upstream Depth) | US Node | Link | DS Node | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Link Vol (m ³) | Discharge Vol (m ³) |
|-----------------------------|---------|-------------------|---------|---------------|----------------|----------|----------------------------|---------------------------------|
| 15 minute winter | 6 | 1.000 | 7 | 9.2 | 1.180 | 1.879 | 0.1958 | |
| 15 minute winter | 7 | 1.001 | 8 | 19.6 | 1.121 | 1.357 | 0.5318 | |
| 15 minute winter | 8 | 1.002 | 9 | 40.5 | 1.285 | 0.955 | 1.5867 | |
| 60 minute winter | 9 | 1.003 | 10 | 25.7 | 1.264 | 0.495 | 1.4219 | |
| 60 minute winter | 10 | Flow through pond | 12 | 30.5 | 0.231 | 0.010 | 32.5318 | |
| 15 minute winter | 1 | 3.000_1 | 2 | 9.7 | 1.242 | 1.978 | 0.1584 | |
| 15 minute winter | 2 | 3.001 | 3 | 20.0 | 1.140 | 1.382 | 0.5330 | |
| 15 minute winter | 3 | 3.002 | 4 | 41.3 | 1.276 | 0.974 | 1.4933 | |
| 60 minute winter | 4 | 3.003 | 5 | 25.8 | 1.299 | 0.497 | 0.8426 | |
| 60 minute winter | 5 | Flow through pond | 12 | 30.5 | 0.231 | 0.010 | 32.5318 | |
| 60 minute winter | 12 | 3.000 | 13 | 13.9 | 0.973 | 0.327 | 0.8112 | |
| 60 minute winter | 13 | ACO Q-Brake | 99 | 13.0 | | | | 76.8 |
| 15 minute winter | 11 | 2.000 | 8 | 10.1 | 1.293 | 1.286 | 0.2055 | |
| 15 minute winter | 14 | 4.000 | 3 | 10.6 | 1.351 | 1.294 | 0.1476 | |


| Node Name | 6 | 7 | 8 | |
|---|---|---------|--------------------|---------|
|  | | | | |
| A3 drawing | | | | |
| Hor Scale 200 | | | | |
| Ver Scale 25 | | | | |
| Datum (m) 124.000 | | | | |
| Link Name | | 1.000 | 1.001 | |
| Section Type | | 100mm | 150mm | |
| Slope (1:X) | | 150.0 | 150.0 | |
| Cover Level (m) | | 127.100 | 127.100 | |
| Invert Level (m) | | 126.350 | 126.183 126.133 | 125.922 |
| Length (m) | | 25.025 | 31.630 | |


| Node Name | 8 | | 9 |
|--|---------|---|---------|
| <p>A3 drawing</p> <p>Hor Scale 200 Ver Scale 25</p> <p>Datum (m) 124.000</p> | |  | |
| Link Name | | 1.002 | |
| Section Type | | 225mm | |
| Slope (1:X) | | 150.0 | |
| Cover Level (m) | 127.100 | | 127.100 |
| Invert Level (m) | 125.778 | | 125.440 |
| Length (m) | | 50.631 | |

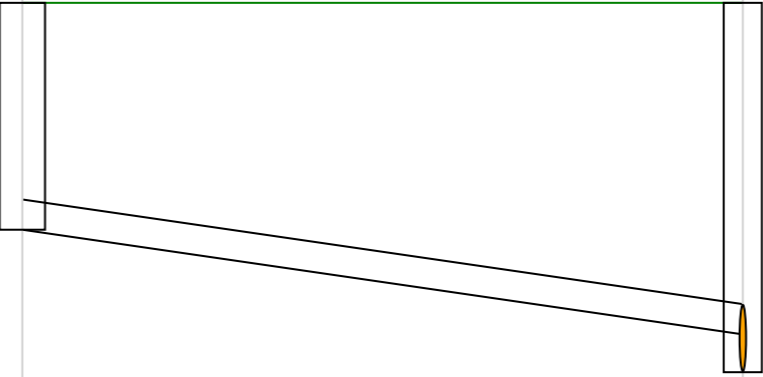
| Node Name | 9 | 10 |
|---|---------|---------|
|  | | |
| A3 drawing | | |
| Hor Scale 200 | | |
| Ver Scale 25 | | |
| Datum (m) 123.000 | | |
| Link Name | | 1.003 |
| Section Type | | 225mm |
| Slope (1:X) | | 100.0 |
| Cover Level (m) | 127.100 | 127.100 |
| Invert Level (m) | 125.440 | 125.082 |
| Length (m) | | 35.751 |

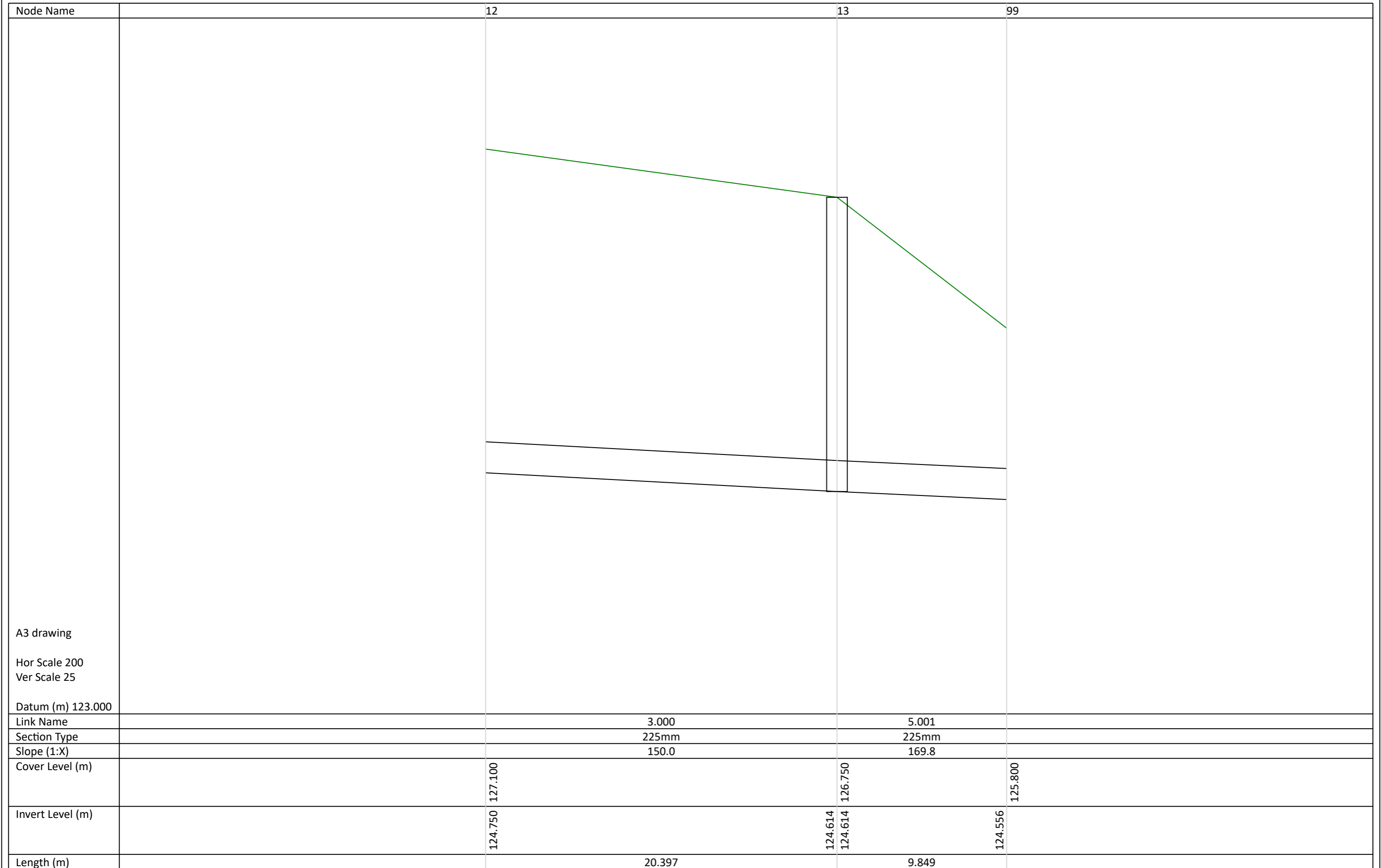
| Node Name | 11 | 8 |
|--|---------|---------|
|  | | |
| A3 drawing | | |
| Hor Scale 200 | | |
| Ver Scale 25 | | |
| Datum (m) 124.000 | | |
| Link Name | | 2.000 |
| Section Type | | 100mm |
| Slope (1:X) | | 59.4 |
| Cover Level (m) | 127.100 | 127.100 |
| Invert Level (m) | 126.350 | 125.903 |
| Length (m) | | 26.547 |

| Node Name | 1 | 2 | 3 |
|---|---------|--------------------|---------|
|  | | | |
| A3 drawing | | | |
| Hor Scale 200 | | | |
| Ver Scale 25 | | | |
| Datum (m) 124.000 | | | |
| Link Name | | 3.000_1 | 3.001 |
| Section Type | | 100mm | 150mm |
| Slope (1:X) | | 150.0 | 150.0 |
| Cover Level (m) | 127.100 | 127.100 | 127.100 |
| Invert Level (m) | 126.350 | 126.215 126.165 | 125.954 |
| Length (m) | | 20.250 | 31.608 |

| Node Name | 3 | 4 |
|---|---------|---------|
|  | | |
| A3 drawing | | |
| Hor Scale 200 | | |
| Ver Scale 25 | | |
| Datum (m) 124.000 | | |
| Link Name | | 3.002 |
| Section Type | | 225mm |
| Slope (1:X) | | 150.0 |
| Cover Level (m) | 127.100 | 127.100 |
| Invert Level (m) | 125.879 | 125.570 |
| Length (m) | | 46.400 |

| Node Name | 4 | 5 |
|--|---------|---------|
|  | | |
| A3 drawing | | |
| Hor Scale 200 | | |
| Ver Scale 25 | | |
| Datum (m) 123.000 | | |
| Link Name | | 3.003 |
| Section Type | | 225mm |
| Slope (1:X) | | 100.0 |
| Cover Level (m) | 127.100 | 127.100 |
| Invert Level (m) | 125.570 | 125.331 |
| Length (m) | | 23.940 |

| Node Name | 14 | 3 |
|--|---------|---------|
|  | | |
| A3 drawing | | |
| Hor Scale 200 | | |
| Ver Scale 25 | | |
| Datum (m) 124.000 | | |
| Link Name | | 4.000 |
| Section Type | | 100mm |
| Slope (1:X) | | 55.1 |
| Cover Level (m) | 127.100 | 127.100 |
| Invert Level (m) | 126.350 | 126.004 |
| Length (m) | | 19.055 |



A3 drawing
 Hor Scale 200
 Ver Scale 25
 Datum (m) 123.000

