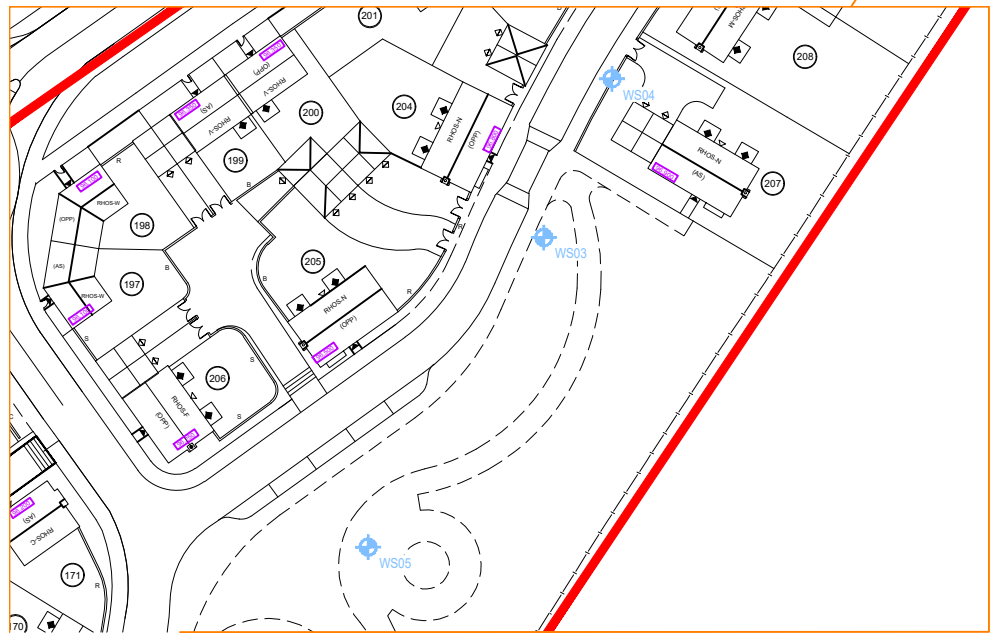


Legend:

- Approximate Site Boundary
- WS Locations
- Existing Highway Drainage
- Existing Sewer Pipe

W3W Locations:

- WS01///crackling.interests.nail
- WS02///reclined.commended.resting
- WS03///tunes.continued.defrost
- WS04///issue.bandwagon.gossiped
- WS05///riders.condense.sheepish







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as recognised by



SAFETY  
SCHEMES IN  
PROCUREMENT

| Drawing Stage                           |             | Drawing Status                          |              |
|-----------------------------------------|-------------|-----------------------------------------|--------------|
| Draft                                   | Comments    | <input checked="" type="radio"/> Tender |              |
| <input checked="" type="radio"/> Issued | Information |                                         | Construction |
| Preliminary                             | Approval    |                                         | As Built     |

This drawing is not authorised unless signed as checked & approved

Client

**SG Estates**

Job title

**Wrexham Road, Rhostyllen**

Drawing title

**Window Sample Location Plan**



45 Bridgeman Terrace  
Wigan, Lancs  
WN1 1TT  
Tel: -(01942) 826020  
Fax: -(01942) 230816

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|------|-------|----------|-------|-------|
| Chkd | Appvd | date     | scale | drawn |
|      |       | 20.10.22 | NTS   | MA    |

|            |          |     |
|------------|----------|-----|
| DRAWING No | 22094/06 | rev |
|            |          |     |

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Legend:

- Approximate Site Boundary
- TP Locations
- Combined Sewer Pipe
- Combined Sewer Manhole

W3W Locations:

- TP12///dwell.broads.blackbird

TP13///erupt.recitals.nuance

TP14///bitter.shortage.folk

TP15///unsightly.dreading.thus

TP16///reseller.pool.rumble

TP17///vets.noun.symphony
- TP18///scooter.rise.lifegaurd

TP19///typically.pass.shocks

TP20///paraded.object.vies

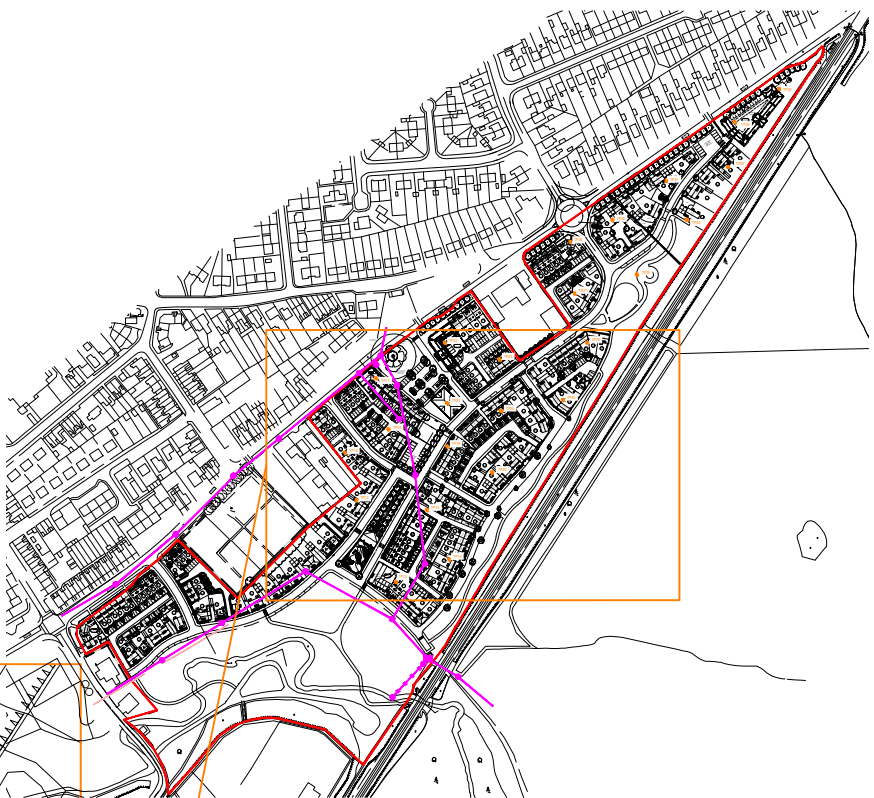
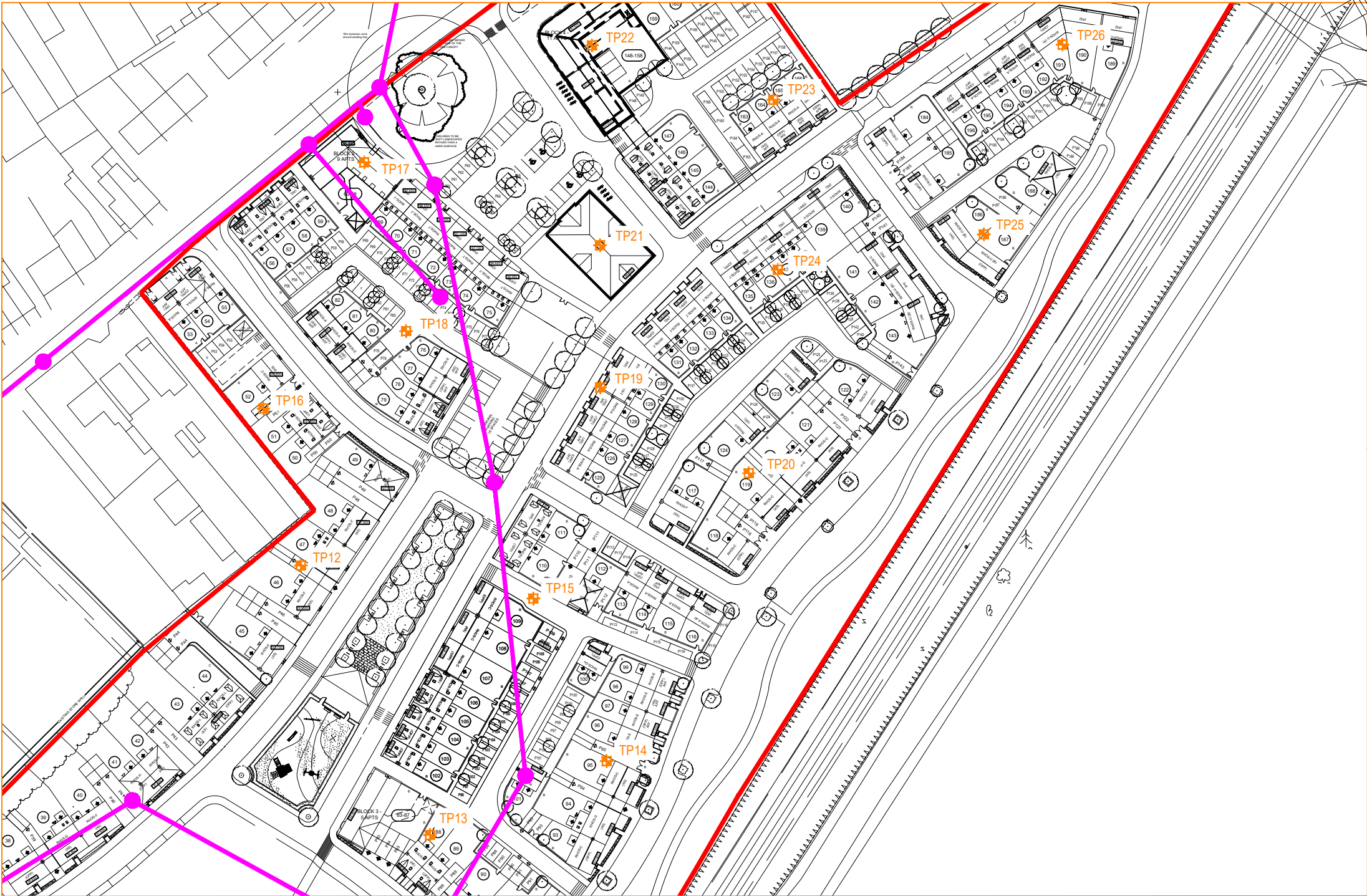
TP21///dares.calibrate.classic

TP22///overhaul.vegetable.fade

TP23///shippers.transmitted.notice
- TP24///tweaked.districts.pelt

TP25///internet.ruins.manifests

TP26///reversed.equipment.darling



|                                                                                                                                                                                                                                                                                           |                  |                |       |       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------|-------|-------|
| revision<br>suffix                                                                                                                                                                                                                                                                        | Revision details | Date           |       |       |
| <div><div><div>smas</div><div>worksafe<br/>consultant</div><div>www.smasltd.com</div></div><div><div>as recognised by</div><div>SSIP</div><div>SAFETY<br/>SCHEMES IN<br/>PROCUREMENT</div></div></div>                                                                                    |                  |                |       |       |
| Drawing Stage                                                                                                                                                                                                                                                                             |                  | Drawing Status |       |       |
| Draft                                                                                                                                                                                                                                                                                     | Comments         | ● Tender       |       |       |
| ● Issued                                                                                                                                                                                                                                                                                  | Information      | Construction   |       |       |
| Preliminary                                                                                                                                                                                                                                                                               | Approval         | As Built       |       |       |
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| Client                                                                                                                                                                                                                                                                                    |                  |                |       |       |
| SG Estates                                                                                                                                                                                                                                                                                |                  |                |       |       |
| Job title                                                                                                                                                                                                                                                                                 |                  |                |       |       |
| Wrexham Road, Rhostyllen                                                                                                                                                                                                                                                                  |                  |                |       |       |
| Drawing title                                                                                                                                                                                                                                                                             |                  |                |       |       |
| Exploratory Hole Location<br>Plan Plots 45-223 page 1                                                                                                                                                                                                                                     |                  |                |       |       |
| <div><div><div>REFA</div><div>CONSULTING ENGINEERS</div><div>CIVIL • STRUCTURAL</div><div>GEOTECHNICAL • ENVIRONMENTAL</div></div><div><div>45 Bridgeman Terrace</div><div>Wigan, Lancs</div><div>WN1 1TT</div><div>Tel: -(01942) 826020</div><div>Fax: -(01942) 230816</div></div></div> |                  |                |       |       |
| Chkd                                                                                                                                                                                                                                                                                      | Appvd            | date           | scale | drawn |
|                                                                                                                                                                                                                                                                                           |                  | 15.11.22       | NTS   | MA    |
| DRAWING No                                                                                                                                                                                                                                                                                |                  | 22094/07/01    |       | rev   |
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Legend:

- Approximate Site Boundary
- TP Locations
- Overhead Cables

W3W Locations:

- TP27///coffee.thousands.armed

TP28///think.goggles.bedsread

TP29///storybook.reporters.recall

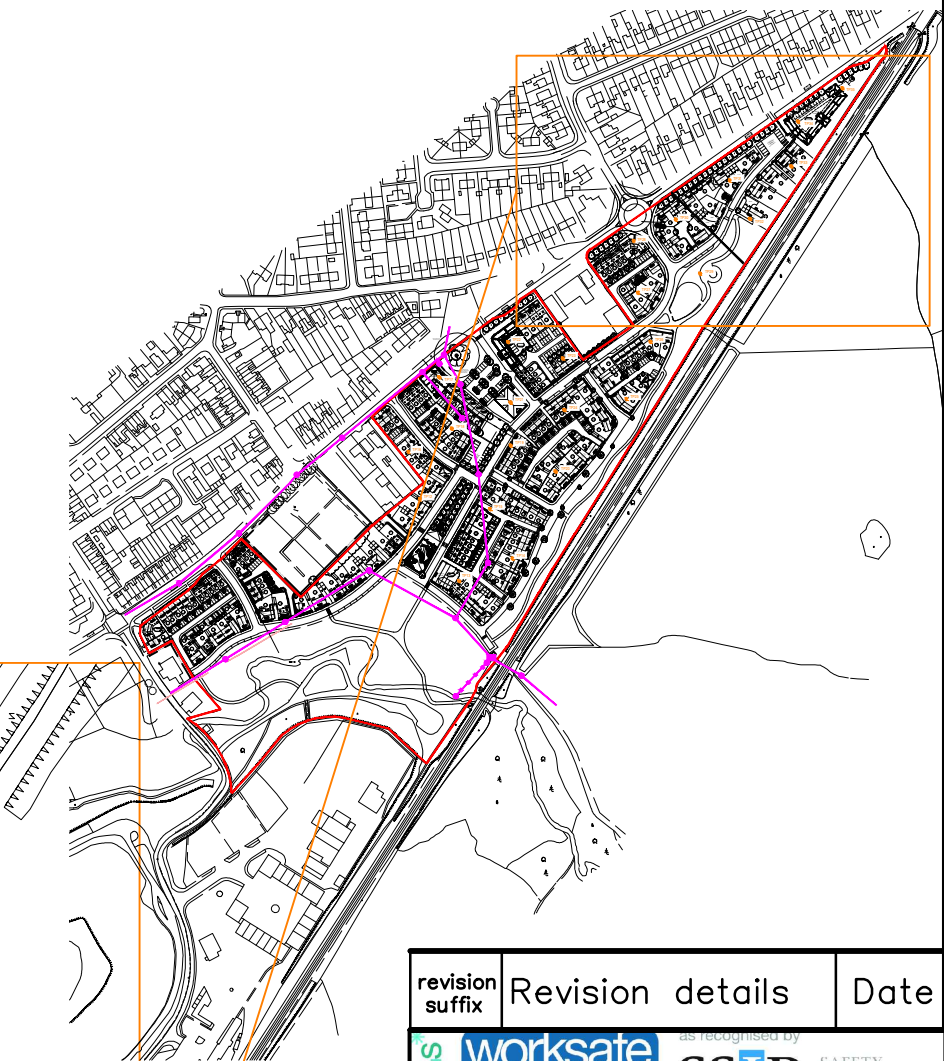
TP30///commit.clip.stubble

TP31///wreck.excellent.farm

TP32///something.suave.hazel
- TP33///proposes.porridge.results

TP34///congested.release.pacemaker

TP35///hikes.wiggled.cabs



|                                                                                                                                                                                                                                              |                                   |                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------------|
| revision suffix                                                                                                                                                                                                                              | Revision details                  | Date                                    |
| <div><div>smas</div><div>worksafe consultant</div><div>www.smasltd.com</div></div> <div><div>SSIP</div><div>SAFETY SCHEMES IN PROCUREMENT</div></div>                                                                                        |                                   |                                         |
| Drawing Stage                                                                                                                                                                                                                                | Drawing Status                    |                                         |
| <input type="radio"/> Draft                                                                                                                                                                                                                  | <input type="radio"/> Comments    | <input checked="" type="radio"/> Tender |
| <input checked="" type="radio"/> Issued                                                                                                                                                                                                      | <input type="radio"/> Information | <input type="radio"/> Construction      |
| <input type="radio"/> Preliminary                                                                                                                                                                                                            | <input type="radio"/> Approval    | <input type="radio"/> As Built          |
| This drawing is not authorised unless signed as checked & approved                                                                                                                                                                           |                                   |                                         |
| Client<br>SG Estates                                                                                                                                                                                                                         |                                   |                                         |
| Job title<br>Wrexham Road, Rhostyllen                                                                                                                                                                                                        |                                   |                                         |
| Drawing title<br>Exploratory Hole Location<br>Plan Plots 45-223 page 2                                                                                                                                                                       |                                   |                                         |
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| Chkd                                                                                                                                                                                                                                         | Appvd                             | date                                    |
|                                                                                                                                                                                                                                              |                                   | 15.11.22                                |
| scale                                                                                                                                                                                                                                        | drawn                             |                                         |
| NTS                                                                                                                                                                                                                                          | MA                                |                                         |
| DRAWING No                                                                                                                                                                                                                                   |                                   | rev                                     |
| 22094/07/02                                                                                                                                                                                                                                  |                                   |                                         |
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# APPENDIX G

REFA / Causeway Technologies Ltd Surface Water Calculations

### Design Settings

|                       |                   |                                      |               |
|-----------------------|-------------------|--------------------------------------|---------------|
| Rainfall Methodology  | FSR               | Maximum Time of Concentration (mins) | 30.00         |
| Return Period (years) | 2                 | Maximum Rainfall (mm/hr)             | 200.0         |
| Additional Flow (%)   | 0                 | Minimum Velocity (m/s)               | 1.00          |
| FSR Region            | England and Wales | Connection Type                      | Level Soffits |
| M5-60 (mm)            | 17.000            | Minimum Backdrop Height (m)          | 0.200         |
| Ratio-R               | 0.300             | Preferred Cover Depth (m)            | 1.250         |
| CV                    | 0.750             | Include Intermediate Ground          | x             |
| Time of Entry (mins)  | 5.00              | Enforce best practice design rules   | x             |

### SFA 7 Manhole Type

| Max Width (mm) | Diameter (mm) | Max Width (mm) | Diameter (mm) | Max Width (mm) | Diameter (mm) |
|----------------|---------------|----------------|---------------|----------------|---------------|
| 299            | 1200          | 599            | 1500          | 1199           | 2100          |
| 449            | 1350          | 899            | 1800          | 1800           | 2700          |

>1800 Link+900 mm

### SW CIRCULAR Link Type

|         |          |                     |    |
|---------|----------|---------------------|----|
| Shape   | Circular | Auto Increment (mm) | 75 |
| Barrels | 1        | Follow Ground       | x  |

### Available Diameters (mm)

|     |     |     |     |      |      |      |
|-----|-----|-----|-----|------|------|------|
| 225 | 375 | 525 | 750 | 900  | 1200 | 1500 |
| 300 | 450 | 600 | 825 | 1050 | 1350 | 1800 |

### Nodes

| Name | Area (ha) | T of E (mins) | Cover Level (m) | Diameter (mm) | Easting (m) | Northing (m) | Depth (m) |
|------|-----------|---------------|-----------------|---------------|-------------|--------------|-----------|
| 1    | 0.044     | 5.00          | 96.548          | 1800          | 331917.601  | 348872.962   | 2.757     |
| 2    | 0.044     | 5.00          | 96.797          | 1800          | 331899.135  | 348853.733   | 3.074     |
| 3    | 0.044     | 5.00          | 96.807          | 1800          | 331886.397  | 348837.227   | 3.138     |
| 4    | 0.044     | 5.00          | 96.726          | 1800          | 331871.384  | 348808.428   | 3.140     |
| 5    | 0.044     | 5.00          | 96.584          | 1800          | 331864.087  | 348795.880   | 3.036     |
| 100  | 0.000     | 5.00          | 96.200          | 1350          | 331866.038  | 348777.506   | 1.800     |
| 6    | 0.044     | 5.00          | 96.222          | 1800          | 331848.999  | 348784.482   | 2.723     |
| 7    | 0.044     | 5.00          | 95.780          | 1800          | 331808.877  | 348801.103   | 2.249     |
| 8    | 0.044     | 5.00          | 95.870          | 1800          | 331823.880  | 348778.646   | 2.408     |
| 9    | 0.044     | 5.00          | 95.921          | 1800          | 331828.983  | 348769.542   | 2.486     |
| 10   | 0.044     | 5.00          | 95.941          | 1800          | 331826.693  | 348754.145   | 2.546     |
| 11   | 0.044     | 5.00          | 95.838          | 1800          | 331821.687  | 348741.849   | 2.477     |
| 12   | 0.044     | 5.00          | 95.879          | 1800          | 331811.820  | 348729.948   | 2.558     |
| 13   | 0.044     | 5.00          | 95.700          | 1800          | 331770.767  | 348700.295   | 2.509     |
| 14   | 0.044     | 5.00          | 95.600          | 1800          | 331754.408  | 348688.498   | 2.461     |
| 15   | 0.044     | 5.00          | 96.101          | 1200          | 331731.141  | 348711.273   | 1.475     |
| 16   | 0.044     | 5.00          | 96.106          | 1200          | 331712.057  | 348697.912   | 1.635     |
| 17   | 0.044     | 5.00          | 95.775          | 1200          | 331724.691  | 348681.227   | 1.444     |
| 18   | 0.044     | 5.00          | 95.600          | 1800          | 331732.186  | 348671.688   | 2.532     |
| 19   | 0.044     | 5.00          | 96.721          | 1800          | 331669.919  | 348710.543   | 3.533     |
| 20   | 0.044     | 5.00          | 96.559          | 1800          | 331688.431  | 348685.561   | 3.451     |
| 21   | 0.044     | 5.00          | 96.580          | 1800          | 331693.269  | 348681.511   | 3.488     |
| 22   | 0.044     | 5.00          | 95.858          | 2100          | 331714.164  | 348656.897   | 3.150     |
| 23   | 0.044     | 5.00          | 96.216          | 2100          | 331696.811  | 348639.657   | 3.570     |

**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) |
|------|--------------|------------------|-----------------------|------------------|----------------|-----------------|--------------|
| 24   | 0.044        | 5.00             | 96.788                | 2100             | 331675.094     | 348603.693      | 4.250        |
| 25   | 0.044        | 5.00             | 96.957                | 2100             | 331631.833     | 348656.406      | 4.206        |
| 26   | 0.044        | 5.00             | 96.775                | 2100             | 331648.267     | 348641.715      | 4.081        |
| 101  | 0.000        | 5.00             | 96.603                | 1350             | 331675.883     | 348631.476      | 2.203        |
| 27   | 0.044        | 5.00             | 96.603                | 2100             | 331673.192     | 348626.130      | 3.984        |
| 28   | 0.044        | 5.00             | 98.500                | 2100             | 331600.662     | 348653.923      | 5.755        |
| 29   | 0.044        | 5.00             | 97.831                | 2100             | 331614.061     | 348636.401      | 5.143        |
| 30   | 0.044        | 5.00             | 97.413                | 2100             | 331629.308     | 348618.783      | 4.785        |
| 31   | 0.044        | 5.00             | 97.145                | 2100             | 331657.905     | 348599.479      | 4.605        |
| 32   | 0.044        | 5.00             | 97.037                | 2100             | 331668.191     | 348593.490      | 4.530        |
| 33   | 0.044        | 5.00             | 97.326                | 2100             | 331650.468     | 348561.481      | 4.913        |
| 34   | 0.044        | 5.00             | 96.884                | 2100             | 331634.092     | 348531.915      | 4.558        |
| 35   | 0.066        | 5.00             | 98.531                | 1200             | 331413.724     | 348466.405      | 2.039        |
| 36   | 0.072        | 5.00             | 98.598                | 1200             | 331439.003     | 348484.925      | 2.367        |
| 37   | 0.031        | 5.00             | 98.324                | 1200             | 331453.719     | 348496.253      | 2.248        |
| 38   | 0.051        | 5.00             | 98.782                | 1200             | 331454.556     | 348517.972      | 2.182        |
| 39   | 0.035        | 5.00             | 98.098                | 1200             | 331464.713     | 348504.190      | 2.144        |
| 40   | 0.043        | 5.00             | 97.487                | 1200             | 331471.688     | 348490.349      | 2.025        |
| 41   | 0.018        | 5.00             | 97.603                | 2100             | 331421.405     | 348445.897      | 3.605        |
| 42   | 0.014        | 5.00             | 96.855                | 2100             | 331428.963     | 348435.352      | 2.890        |
| 43   | 0.030        | 5.00             | 97.013                | 2100             | 331441.415     | 348444.303      | 3.087        |
| 44   | 0.026        | 5.00             | 97.000                | 2100             | 331450.860     | 348454.512      | 3.109        |
| 45   | 0.038        | 5.00             | 96.790                | 2100             | 331467.508     | 348464.759      | 2.950        |
| 46   | 0.027        | 5.00             | 96.650                | 2700             | 331480.727     | 348470.895      | 2.847        |
| 47   | 0.074        | 5.00             | 96.393                | 2400             | 331511.357     | 348476.337      | 2.670        |
| 48   | 0.021        | 5.00             | 96.522                | 2400             | 331529.855     | 348481.705      | 2.848        |
| 49   | 0.068        | 5.00             | 96.740                | 2400             | 331547.248     | 348489.987      | 3.115        |
| 50   | 0.053        | 5.00             | 97.146                | 2400             | 331578.138     | 348512.258      | 3.619        |
| 51   | 0.059        | 5.00             | 97.272                | 2400             | 331640.799     | 348590.199      | 3.601        |
| 52   | 0.031        | 5.00             | 97.521                | 2400             | 331628.337     | 348571.522      | 3.907        |
| 53   | 0.012        | 5.00             | 97.678                | 2400             | 331620.101     | 348558.458      | 4.104        |
| 54   | 0.062        | 5.00             | 97.671                | 2400             | 331610.253     | 348545.144      | 4.139        |
| 55   | 0.039        | 5.00             | 97.411                | 2700             | 331594.199     | 348527.530      | 3.940        |
| 103  | 0.000        | 5.00             | 96.846                | 1350             | 331604.439     | 348513.711      | 1.846        |
| HB3  | 0.000        | 5.00             | 96.717                | 2700             | 331612.891     | 348515.561      | 3.304        |
| 57   | 0.044        | 5.00             | 96.454                | 2100             | 331620.995     | 348509.961      | 4.194        |
| 58   | 0.044        | 5.00             | 96.097                | 2100             | 331637.019     | 348497.983      | 3.888        |
| HB2  | 0.044        | 5.00             | 95.939                | 2700             | 331648.435     | 348488.057      | 3.769        |
| 60   | 0.044        | 5.00             | 94.686                | 1500             | 331808.017     | 348692.655      | 2.286        |
| 61   | 0.044        | 5.00             | 94.434                | 1500             | 331787.303     | 348677.421      | 2.100        |
| 62   | 0.044        | 5.00             | 94.720                | 1500             | 331768.887     | 348664.881      | 2.443        |
| 63   | 0.044        | 5.00             | 94.300                | 1800             | 331784.768     | 348643.742      | 2.091        |
| 64   | 0.044        | 5.00             | 94.773                | 1800             | 331762.018     | 348608.869      | 2.671        |
| 65   | 0.044        | 5.00             | 95.295                | 1500             | 331746.881     | 348643.510      | 3.038        |
| 66   | 0.044        | 5.00             | 95.606                | 1500             | 331734.865     | 348635.086      | 3.387        |
| 67   | 0.044        | 5.00             | 96.104                | 1500             | 331715.845     | 348617.665      | 3.951        |
| 68   | 0.044        | 5.00             | 96.454                | 1500             | 331698.251     | 348588.660      | 4.388        |
| 69   | 0.044        | 5.00             | 96.104                | 1800             | 331729.450     | 348571.623      | 4.279        |
| 102  | 0.000        | 5.00             | 96.645                | 1350             | 331731.651     | 348550.709      | 3.645        |
| 70   | 0.044        | 5.00             | 96.645                | 1800             | 331720.017     | 348551.913      | 4.876        |
| 71   | 0.044        | 5.00             | 97.043                | 1800             | 331709.659     | 348525.642      | 5.346        |
| 72   | 0.044        | 5.00             | 97.030                | 1800             | 331675.342     | 348569.900      | 5.165        |

### 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) |
|------|--------------|------------------|-----------------------|------------------|----------------|-----------------|--------------|
| 73   | 0.044        | 5.00             | 96.886                | 1800             | 331685.899     | 348563.508      | 5.053        |
| 74   | 0.044        | 5.00             | 96.909                | 1800             | 331673.372     | 348540.153      | 5.144        |
| 75   | 0.044        | 5.00             | 96.955                | 1800             | 331661.006     | 348516.462      | 5.259        |
| 76   | 0.044        | 5.00             | 96.744                | 1800             | 331677.315     | 348503.302      | 5.102        |
| 77   | 0.044        | 5.00             | 96.690                | 1800             | 331690.455     | 348492.751      | 5.091        |
| 81   |              | 5.00             | 95.522                | 1200             | 331673.739     | 348460.741      | 1.522        |
| HB1  | 0.000        | 5.00             | 95.645                | 2700             | 331667.223     | 348469.436      | 4.128        |
| 79   | 0.000        | 5.00             | 90.891                | 1350             | 331655.681     | 348448.632      | 1.441        |
| 80   | 0.000        |                  | 90.910                | 1350             | 331633.186     | 348429.536      | 1.583        |
| HW   |              |                  | 90.000                |                  | 331634.304     | 348419.431      | 0.715        |

### 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 | 1          | 2          | 26.660        | 0.600          | 93.791       | 93.723       | 0.068       | 392.1          | 600         | 5.36             | 50.1            |
| 1.001 | 2          | 3          | 20.850        | 0.600          | 93.723       | 93.669       | 0.054       | 386.1          | 600         | 5.65             | 49.1            |
| 1.002 | 3          | 4          | 32.477        | 0.600          | 93.669       | 93.586       | 0.083       | 391.3          | 600         | 6.09             | 47.6            |
| 1.003 | 4          | 5          | 14.515        | 0.600          | 93.586       | 93.548       | 0.038       | 382.0          | 600         | 6.28             | 47.0            |
| 1.004 | 5          | 6          | 18.909        | 0.600          | 93.548       | 93.499       | 0.049       | 385.9          | 600         | 6.54             | 46.2            |
| 2.000 | 100        | 6          | 18.412        | 0.600          | 94.400       | 93.799       | 0.601       | 30.6           | 300         | 5.11             | 51.1            |
| 1.005 | 6          | 9          | 24.977        | 0.600          | 93.499       | 93.435       | 0.064       | 390.3          | 600         | 6.88             | 45.2            |
| 3.000 | 7          | 8          | 27.008        | 0.600          | 93.531       | 93.462       | 0.069       | 391.4          | 600         | 5.37             | 50.1            |
| 3.001 | 8          | 9          | 10.437        | 0.600          | 93.462       | 93.435       | 0.027       | 386.6          | 600         | 5.51             | 49.6            |
| 1.006 | 9          | 10         | 15.566        | 0.600          | 93.435       | 93.395       | 0.040       | 389.2          | 600         | 7.09             | 44.6            |
| 1.007 | 10         | 11         | 13.276        | 0.600          | 93.395       | 93.361       | 0.034       | 390.5          | 600         | 7.27             | 44.1            |
| 1.008 | 11         | 12         | 15.459        | 0.600          | 93.361       | 93.321       | 0.040       | 386.5          | 600         | 7.48             | 43.6            |
| 1.009 | 12         | 13         | 50.642        | 0.600          | 93.321       | 93.191       | 0.130       | 389.6          | 600         | 8.17             | 41.9            |
| 1.010 | 13         | 14         | 20.169        | 0.600          | 93.191       | 93.139       | 0.052       | 387.9          | 600         | 8.44             | 41.3            |
| 1.011 | 14         | 18         | 27.864        | 0.600          | 93.139       | 93.068       | 0.071       | 392.5          | 600         | 8.82             | 40.4            |
| 4.000 | 15         | 16         | 23.296        | 0.600          | 94.626       | 94.471       | 0.155       | 150.3          | 225         | 5.36             | 50.1            |

| 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 | 1.223        | 345.9        | 6.0           | 2.157              | 2.474              | 0.044          | 0.0                      | 54                   | 0.475                    |
| 1.001 | 1.233        | 348.6        | 11.7          | 2.474              | 2.538              | 0.088          | 0.0                      | 74                   | 0.582                    |
| 1.002 | 1.225        | 346.3        | 17.0          | 2.538              | 2.540              | 0.132          | 0.0                      | 89                   | 0.648                    |
| 1.003 | 1.240        | 350.5        | 22.4          | 2.540              | 2.436              | 0.176          | 0.0                      | 102                  | 0.708                    |
| 1.004 | 1.233        | 348.7        | 27.5          | 2.436              | 2.123              | 0.220          | 0.0                      | 113                  | 0.749                    |
| 2.000 | 2.850        | 201.5        | 0.0           | 1.500              | 2.123              | 0.000          | 0.0                      | 0                    | 0.000                    |
| 1.005 | 1.226        | 346.7        | 32.3          | 2.123              | 1.886              | 0.264          | 0.0                      | 122                  | 0.780                    |
| 3.000 | 1.224        | 346.2        | 6.0           | 1.649              | 1.808              | 0.044          | 0.0                      | 54                   | 0.476                    |
| 3.001 | 1.232        | 348.4        | 11.8          | 1.808              | 1.886              | 0.088          | 0.0                      | 75                   | 0.585                    |
| 1.006 | 1.228        | 347.2        | 47.9          | 1.886              | 1.946              | 0.396          | 0.0                      | 149                  | 0.873                    |
| 1.007 | 1.226        | 346.6        | 52.6          | 1.946              | 1.877              | 0.440          | 0.0                      | 157                  | 0.896                    |
| 1.008 | 1.232        | 348.4        | 57.2          | 1.877              | 1.958              | 0.484          | 0.0                      | 163                  | 0.920                    |
| 1.009 | 1.227        | 347.0        | 60.0          | 1.958              | 1.909              | 0.528          | 0.0                      | 167                  | 0.929                    |
| 1.010 | 1.230        | 347.8        | 64.0          | 1.909              | 1.861              | 0.572          | 0.0                      | 173                  | 0.948                    |
| 1.011 | 1.223        | 345.8        | 67.5          | 1.861              | 1.932              | 0.616          | 0.0                      | 178                  | 0.957                    |
| 4.000 | 1.064        | 42.3         | 6.0           | 1.250              | 1.410              | 0.044          | 0.0                      | 57                   | 0.754                    |

### 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) |
|--------|---------|---------|------------|-------------|-----------|-----------|----------|-------------|----------|---------------|--------------|
| 4.001  | 16      | 17      | 20.929     | 0.600       | 94.471    | 94.331    | 0.140    | 149.5       | 225      | 5.69          | 48.9         |
| 4.002  | 17      | 18      | 12.131     | 0.600       | 94.331    | 94.210    | 0.121    | 100.3       | 225      | 5.85          | 48.7         |
| 1.012  | 18      | 22      | 23.315     | 0.600       | 93.068    | 93.008    | 0.060    | 388.6       | 600      | 9.13          | 39.7         |
| 5.000  | 19      | 20      | 31.093     | 0.600       | 93.188    | 93.108    | 0.080    | 388.7       | 600      | 5.42          | 49.9         |
| 5.001  | 20      | 21      | 6.309      | 0.600       | 93.108    | 93.092    | 0.016    | 394.3       | 600      | 5.51          | 49.6         |
| 5.002  | 21      | 22      | 32.287     | 0.600       | 93.092    | 93.008    | 0.084    | 384.4       | 600      | 5.94          | 48.1         |
| 1.013  | 22      | 23      | 24.461     | 0.600       | 92.708    | 92.646    | 0.062    | 394.5       | 900      | 9.39          | 41.2         |
| 1.014  | 23      | 24      | 42.012     | 0.600       | 92.646    | 92.538    | 0.108    | 389.0       | 900      | 9.84          | 40.2         |
| 1.015  | 24      | 32      | 12.319     | 0.600       | 92.538    | 92.507    | 0.031    | 397.4       | 900      | 9.97          | 39.9         |
| 6.000  | 25      | 26      | 22.043     | 0.600       | 92.751    | 92.694    | 0.057    | 386.7       | 900      | 5.23          | 50.6         |
| 6.001  | 26      | 27      | 29.396     | 0.600       | 92.694    | 92.619    | 0.075    | 391.9       | 900      | 5.54          | 49.5         |
| 7.000  | 101     | 27      | 5.985      | 0.600       | 94.400    | 93.219    | 1.181    | 5.1         | 300      | 5.01          | 51.4         |
| 6.002  | 27      | 31      | 30.724     | 0.600       | 92.619    | 92.540    | 0.079    | 388.9       | 900      | 5.87          | 48.4         |
| 8.000  | 28      | 29      | 22.058     | 0.600       | 92.745    | 92.688    | 0.057    | 387.0       | 900      | 5.23          | 50.6         |
| 8.001  | 29      | 30      | 23.299     | 0.600       | 92.688    | 92.628    | 0.060    | 388.3       | 900      | 5.48          | 49.7         |
| 8.002  | 30      | 31      | 34.503     | 0.600       | 92.628    | 92.540    | 0.088    | 392.1       | 900      | 5.84          | 48.4         |
| 6.003  | 31      | 32      | 11.903     | 0.600       | 92.540    | 92.507    | 0.033    | 360.7       | 900      | 5.99          | 48.0         |
| 1.016  | 32      | 33      | 36.588     | 0.600       | 92.507    | 92.413    | 0.094    | 389.2       | 900      | 10.35         | 39.1         |
| 1.017  | 33      | 34      | 33.798     | 0.600       | 92.413    | 92.326    | 0.087    | 388.5       | 900      | 10.71         | 38.5         |
| 1.018  | 34      | 57      | 25.564     | 0.600       | 92.326    | 92.260    | 0.066    | 387.3       | 900      | 10.98         | 37.9         |
| 9.000  | 35      | 36      | 31.337     | 0.600       | 96.492    | 96.231    | 0.261    | 120.1       | 225      | 5.44          | 49.8         |
| 9.001  | 36      | 37      | 18.571     | 0.600       | 96.231    | 96.076    | 0.155    | 119.8       | 225      | 5.70          | 48.9         |
| 9.002  | 37      | 39      | 13.559     | 0.600       | 96.076    | 95.954    | 0.122    | 111.1       | 225      | 5.90          | 48.2         |
| 10.000 | 38      | 39      | 17.120     | 0.600       | 96.600    | 95.964    | 0.636    | 26.9        | 225      | 5.12          | 51.0         |

| 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) |
|--------|-----------|-----------|------------|--------------|--------------|-------------|--------------------|----------------|--------------------|
| 4.001  | 1.067     | 42.4      | 11.7       | 1.410        | 1.219        | 0.088       | 0.0                | 80             | 0.913              |
| 4.002  | 1.305     | 51.9      | 17.4       | 1.219        | 1.165        | 0.132       | 0.0                | 90             | 1.182              |
| 1.012  | 1.229     | 347.5     | 85.2       | 1.932        | 2.250        | 0.792       | 0.0                | 201            | 1.024              |
| 5.000  | 1.229     | 347.4     | 6.0        | 2.933        | 2.851        | 0.044       | 0.0                | 54             | 0.474              |
| 5.001  | 1.220     | 344.9     | 11.8       | 2.851        | 2.888        | 0.088       | 0.0                | 75             | 0.579              |
| 5.002  | 1.236     | 349.4     | 17.2       | 2.888        | 2.250        | 0.132       | 0.0                | 89             | 0.654              |
| 1.013  | 1.571     | 999.4     | 108.1      | 2.250        | 2.670        | 0.968       | 0.0                | 197            | 1.047              |
| 1.014  | 1.582     | 1006.5    | 110.3      | 2.670        | 3.350        | 1.012       | 0.0                | 198            | 1.057              |
| 1.015  | 1.565     | 995.8     | 114.2      | 3.350        | 3.630        | 1.056       | 0.0                | 203            | 1.061              |
| 6.000  | 1.587     | 1009.5    | 6.0        | 3.306        | 3.181        | 0.044       | 0.0                | 49             | 0.452              |
| 6.001  | 1.576     | 1002.7    | 11.8       | 3.181        | 3.084        | 0.088       | 0.0                | 67             | 0.551              |
| 7.000  | 7.028     | 496.7     | 0.0        | 1.903        | 3.084        | 0.000       | 0.0                | 0              | 0.000              |
| 6.002  | 1.582     | 1006.7    | 17.3       | 3.084        | 3.705        | 0.132       | 0.0                | 80             | 0.619              |
| 8.000  | 1.586     | 1009.2    | 6.0        | 4.855        | 4.243        | 0.044       | 0.0                | 49             | 0.451              |
| 8.001  | 1.584     | 1007.4    | 11.9       | 4.243        | 3.885        | 0.088       | 0.0                | 67             | 0.554              |
| 8.002  | 1.576     | 1002.6    | 17.3       | 3.885        | 3.705        | 0.132       | 0.0                | 80             | 0.616              |
| 6.003  | 1.644     | 1045.6    | 40.1       | 3.705        | 3.630        | 0.308       | 0.0                | 118            | 0.814              |
| 1.016  | 1.582     | 1006.2    | 149.2      | 3.630        | 4.013        | 1.408       | 0.0                | 232            | 1.151              |
| 1.017  | 1.583     | 1007.2    | 151.5      | 4.013        | 3.658        | 1.452       | 0.0                | 233            | 1.156              |
| 1.018  | 1.586     | 1008.7    | 153.7      | 3.658        | 3.294        | 1.496       | 0.0                | 235            | 1.163              |
| 9.000  | 1.192     | 47.4      | 8.9        | 1.814        | 2.142        | 0.066       | 0.0                | 65             | 0.916              |
| 9.001  | 1.193     | 47.4      | 18.3       | 2.142        | 2.023        | 0.138       | 0.0                | 97             | 1.119              |
| 9.002  | 1.239     | 49.3      | 22.1       | 2.023        | 1.919        | 0.169       | 0.0                | 106            | 1.208              |
| 10.000 | 2.531     | 100.6     | 7.1        | 1.957        | 1.909        | 0.051       | 0.0                | 40             | 1.469              |

### 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) |
|--------|---------|---------|------------|-------------|-----------|-----------|----------|-------------|----------|---------------|--------------|
| 9.003  | 39      | 40      | 15.500     | 0.600       | 95.964    | 95.462    | 0.502    | 30.9        | 225      | 6.01          | 48.7         |
| 9.004  | 40      | 46      | 21.451     | 0.600       | 95.462    | 94.478    | 0.984    | 21.8        | 225      | 6.14          | 48.2         |
| 11.000 | 41      | 42      | 12.974     | 0.600       | 93.998    | 93.965    | 0.033    | 393.2       | 900      | 5.14          | 51.0         |
| 11.001 | 42      | 43      | 15.335     | 0.600       | 93.965    | 93.926    | 0.039    | 393.2       | 900      | 5.30          | 50.3         |
| 11.002 | 43      | 44      | 13.908     | 0.600       | 93.926    | 93.891    | 0.035    | 397.4       | 900      | 5.45          | 49.8         |
| 11.003 | 44      | 45      | 19.549     | 0.600       | 93.891    | 93.840    | 0.051    | 383.3       | 900      | 5.64          | 49.1         |
| 11.004 | 45      | 46      | 14.574     | 0.600       | 93.840    | 93.803    | 0.037    | 393.9       | 900      | 5.79          | 48.6         |
| 9.005  | 46      | 47      | 31.110     | 0.600       | 93.803    | 93.723    | 0.080    | 388.9       | 900      | 6.47          | 46.4         |
| 9.006  | 47      | 48      | 19.261     | 0.600       | 93.723    | 93.674    | 0.049    | 393.1       | 900      | 6.66          | 46.5         |
| 9.007  | 48      | 49      | 19.264     | 0.600       | 93.674    | 93.625    | 0.049    | 393.1       | 900      | 6.86          | 45.9         |
| 9.008  | 49      | 50      | 38.081     | 0.600       | 93.625    | 93.527    | 0.098    | 388.6       | 900      | 7.26          | 44.8         |
| 9.009  | 50      | 55      | 22.163     | 0.600       | 93.527    | 93.471    | 0.056    | 395.8       | 900      | 7.50          | 44.1         |
| 12.000 | 51      | 52      | 22.453     | 0.600       | 93.671    | 93.614    | 0.057    | 393.9       | 900      | 5.24          | 50.6         |
| 12.001 | 52      | 53      | 15.443     | 0.600       | 93.614    | 93.574    | 0.040    | 386.1       | 900      | 5.40          | 50.0         |
| 12.002 | 53      | 54      | 16.561     | 0.600       | 93.574    | 93.532    | 0.042    | 394.3       | 900      | 5.58          | 49.4         |
| 12.003 | 54      | 55      | 23.832     | 0.600       | 93.532    | 93.471    | 0.061    | 390.7       | 900      | 5.83          | 48.5         |
| 9.010  | 55      | HB3     | 22.196     | 0.600       | 93.471    | 93.413    | 0.058    | 382.7       | 900      | 7.73          | 43.5         |
| 13.000 | 103     | HB3     | 8.652      | 0.600       | 95.000    | 94.800    | 0.200    | 43.3        | 300      | 5.06          | 51.3         |
| 9.011  | HB3     | 57      | 9.851      | 0.600       | 93.413    | 92.935    | 0.478    | 20.6        | 225      | 7.79          | 43.4         |
| 1.019  | 57      | 58      | 20.006     | 0.600       | 92.260    | 92.209    | 0.051    | 392.3       | 900      | 11.19         | 37.6         |
| 1.020  | 58      | HB2     | 15.128     | 0.600       | 92.209    | 92.170    | 0.039    | 387.9       | 900      | 11.35         | 37.3         |
| 1.021  | HB2     | HB1     | 26.452     | 0.600       | 92.170    | 91.892    | 0.278    | 95.2        | 225      | 11.68         | 38.3         |
| 14.000 | 60      | 61      | 25.713     | 0.600       | 92.400    | 92.334    | 0.066    | 389.6       | 450      | 5.42          | 49.9         |
| 14.001 | 61      | 62      | 22.280     | 0.600       | 92.334    | 92.277    | 0.057    | 390.9       | 450      | 5.78          | 48.6         |

| 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) |
|--------|-----------|-----------|------------|--------------|--------------|-------------|--------------------|----------------|--------------------|
| 9.003  | 2.363     | 93.9      | 33.7       | 1.909        | 1.800        | 0.255       | 0.0                | 93             | 2.170              |
| 9.004  | 2.814     | 111.9     | 38.9       | 1.800        | 1.947        | 0.298       | 0.0                | 92             | 2.573              |
| 11.000 | 1.574     | 1001.2    | 2.5        | 2.705        | 1.990        | 0.018       | 0.0                | 32             | 0.340              |
| 11.001 | 1.574     | 1001.1    | 4.4        | 1.990        | 2.187        | 0.032       | 0.0                | 42             | 0.404              |
| 11.002 | 1.565     | 995.8     | 8.4        | 2.187        | 2.209        | 0.062       | 0.0                | 58             | 0.496              |
| 11.003 | 1.594     | 1014.0    | 11.7       | 2.209        | 2.050        | 0.088       | 0.0                | 66             | 0.553              |
| 11.004 | 1.572     | 1000.2    | 16.6       | 2.050        | 1.947        | 0.126       | 0.0                | 79             | 0.607              |
| 9.005  | 1.582     | 1006.7    | 56.7       | 1.947        | 1.770        | 0.451       | 0.0                | 143            | 0.877              |
| 9.006  | 1.574     | 1001.3    | 66.2       | 1.770        | 1.948        | 0.525       | 0.0                | 154            | 0.912              |
| 9.007  | 1.574     | 1001.2    | 67.9       | 1.948        | 2.215        | 0.546       | 0.0                | 156            | 0.918              |
| 9.008  | 1.583     | 1007.1    | 74.6       | 2.215        | 2.719        | 0.614       | 0.0                | 163            | 0.947              |
| 9.009  | 1.569     | 997.8     | 79.7       | 2.719        | 3.040        | 0.667       | 0.0                | 169            | 0.958              |
| 12.000 | 1.572     | 1000.2    | 8.1        | 2.701        | 3.007        | 0.059       | 0.0                | 56             | 0.488              |
| 12.001 | 1.588     | 1010.4    | 12.2       | 3.007        | 3.204        | 0.090       | 0.0                | 68             | 0.560              |
| 12.002 | 1.571     | 999.7     | 13.7       | 3.204        | 3.239        | 0.102       | 0.0                | 72             | 0.572              |
| 12.003 | 1.579     | 1004.4    | 21.6       | 3.239        | 3.040        | 0.164       | 0.0                | 89             | 0.659              |
| 9.010  | 1.595     | 1014.9    | 102.6      | 3.040        | 2.404        | 0.870       | 0.0                | 190            | 1.042              |
| 13.000 | 2.397     | 169.4     | 0.0        | 1.546        | 1.617        | 0.000       | 0.0                | 0              | 0.000              |
| 9.011  | 2.895     | 115.1     | 102.3      | 3.079        | 3.294        | 0.870       | 0.0                | 166            | 3.256              |
| 1.019  | 1.576     | 1002.3    | 245.6      | 3.294        | 2.988        | 2.410       | 0.0                | 302            | 1.315              |
| 1.020  | 1.584     | 1008.0    | 248.1      | 2.988        | 2.869        | 2.454       | 0.0                | 302            | 1.323              |
| 1.021  | 1.340     | 53.3      | 259.3      | 3.544        | 3.528        | 2.498       | 0.0                | 225            | 1.365              |
| 14.000 | 1.024     | 162.8     | 6.0        | 1.836        | 1.650        | 0.044       | 0.0                | 58             | 0.495              |
| 14.001 | 1.022     | 162.5     | 11.6       | 1.650        | 1.993        | 0.088       | 0.0                | 80             | 0.599              |

### 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) |
|--------|---------|---------|------------|-------------|-----------|-----------|----------|-------------|----------|---------------|--------------|
| 14.002 | 62      | 63      | 26.440     | 0.600       | 92.277    | 92.209    | 0.068    | 388.8       | 450      | 6.21          | 47.2         |
| 14.003 | 63      | 64      | 41.638     | 0.600       | 92.209    | 92.102    | 0.107    | 389.1       | 450      | 6.89          | 45.2         |
| 14.004 | 64      | 69      | 49.477     | 0.600       | 92.102    | 91.975    | 0.127    | 389.6       | 450      | 7.70          | 43.0         |
| 15.000 | 65      | 66      | 14.675     | 0.600       | 92.257    | 92.219    | 0.038    | 386.2       | 450      | 5.24          | 50.6         |
| 15.001 | 66      | 67      | 25.792     | 0.600       | 92.219    | 92.153    | 0.066    | 390.8       | 450      | 5.66          | 49.1         |
| 15.002 | 67      | 68      | 33.924     | 0.600       | 92.153    | 92.066    | 0.087    | 389.9       | 450      | 6.21          | 47.2         |
| 15.003 | 68      | 69      | 35.548     | 0.600       | 92.066    | 91.975    | 0.091    | 390.6       | 450      | 6.79          | 45.5         |
| 14.005 | 69      | 70      | 21.851     | 0.600       | 91.825    | 91.769    | 0.056    | 390.2       | 600      | 7.99          | 43.4         |
| 16.000 | 102     | 70      | 11.696     | 0.600       | 93.000    | 92.069    | 0.931    | 12.6        | 300      | 5.04          | 51.3         |
| 14.006 | 70      | 71      | 28.239     | 0.600       | 91.769    | 91.697    | 0.072    | 392.2       | 600      | 8.38          | 42.5         |
| 14.007 | 71      | 77      | 38.087     | 0.600       | 91.697    | 91.599    | 0.098    | 388.6       | 600      | 8.89          | 41.2         |
| 17.000 | 72      | 73      | 12.341     | 0.600       | 91.865    | 91.833    | 0.032    | 385.7       | 600      | 5.17          | 50.8         |
| 17.001 | 73      | 74      | 26.502     | 0.600       | 91.833    | 91.765    | 0.068    | 389.7       | 600      | 5.53          | 49.5         |
| 17.002 | 74      | 75      | 26.724     | 0.600       | 91.765    | 91.696    | 0.069    | 387.3       | 600      | 5.89          | 48.3         |
| 17.003 | 75      | 76      | 20.956     | 0.600       | 91.696    | 91.642    | 0.054    | 388.1       | 600      | 6.17          | 47.3         |
| 17.004 | 76      | 77      | 16.852     | 0.600       | 91.642    | 91.599    | 0.043    | 391.9       | 600      | 6.40          | 46.6         |
| 14.008 | 77      | HB1     | 32.914     | 0.600       | 91.599    | 91.517    | 0.082    | 401.4       | 600      | 9.33          | 40.3         |
| 18.000 | 81      | HB1     | 10.866     | 0.600       | 94.000    | 93.000    | 1.000    | 10.9        | 150      | 5.06          | 51.3         |
| 1.022  | HB1     | 79      | 23.791     | 0.600       | 91.517    | 89.450    | 2.067    | 11.5        | 300      | 11.77         | 38.3         |
| 1.023  | 79      | 80      | 29.507     | 0.600       | 89.450    | 89.327    | 0.123    | 239.9       | 300      | 12.25         | 37.4         |
| 1.024  | 80      | HW      | 10.167     | 0.600       | 89.327    | 89.285    | 0.042    | 242.1       | 300      | 12.42         | 37.1         |

| 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) |
|--------|-----------|-----------|------------|--------------|--------------|-------------|--------------------|----------------|--------------------|
| 14.002 | 1.025     | 163.0     | 16.9       | 1.993        | 1.641        | 0.132       | 0.0                | 97             | 0.671              |
| 14.003 | 1.024     | 162.9     | 21.6       | 1.641        | 2.221        | 0.176       | 0.0                | 109            | 0.717              |
| 14.004 | 1.024     | 162.8     | 25.6       | 2.221        | 3.679        | 0.220       | 0.0                | 120            | 0.754              |
| 15.000 | 1.028     | 163.5     | 6.0        | 2.588        | 2.937        | 0.044       | 0.0                | 58             | 0.497              |
| 15.001 | 1.022     | 162.6     | 11.7       | 2.937        | 3.501        | 0.088       | 0.0                | 81             | 0.603              |
| 15.002 | 1.023     | 162.7     | 16.9       | 3.501        | 3.938        | 0.132       | 0.0                | 97             | 0.670              |
| 15.003 | 1.022     | 162.6     | 21.7       | 3.938        | 3.679        | 0.176       | 0.0                | 110            | 0.719              |
| 14.005 | 1.226     | 346.8     | 51.8       | 3.679        | 4.276        | 0.440       | 0.0                | 156            | 0.892              |
| 16.000 | 4.459     | 315.2     | 0.0        | 3.345        | 4.276        | 0.000       | 0.0                | 0              | 0.000              |
| 14.006 | 1.223     | 345.9     | 55.8       | 4.276        | 4.746        | 0.484       | 0.0                | 161            | 0.908              |
| 14.007 | 1.229     | 347.5     | 59.0       | 4.746        | 4.491        | 0.528       | 0.0                | 166            | 0.926              |
| 17.000 | 1.234     | 348.8     | 6.1        | 4.565        | 4.453        | 0.044       | 0.0                | 54             | 0.479              |
| 17.001 | 1.227     | 347.0     | 11.8       | 4.453        | 4.544        | 0.088       | 0.0                | 75             | 0.583              |
| 17.002 | 1.231     | 348.1     | 17.3       | 4.544        | 4.659        | 0.132       | 0.0                | 90             | 0.654              |
| 17.003 | 1.230     | 347.7     | 22.6       | 4.659        | 4.502        | 0.176       | 0.0                | 102            | 0.705              |
| 17.004 | 1.224     | 346.0     | 27.8       | 4.502        | 4.491        | 0.220       | 0.0                | 113            | 0.745              |
| 14.008 | 1.209     | 341.8     | 86.5       | 4.491        | 3.528        | 0.792       | 0.0                | 205            | 1.016              |
| 18.000 | 3.073     | 54.3      | 0.0        | 1.372        | 2.495        | 0.000       | 0.0                | 0              | 0.000              |
| 1.022  | 4.659     | 329.3     | 341.5      | 3.828        | 1.141        | 3.290       | 0.0                | 260            | 5.252              |
| 1.023  | 1.010     | 71.4      | 333.5      | 1.141        | 1.283        | 3.290       | 0.0                | 300            | 1.024              |
| 1.024  | 1.006     | 71.1      | 330.8      | 1.283        | 0.415        | 3.290       | 0.0                | 300            | 1.019              |

### 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 | 26.660        | 392.1          | 600         | SW CIRCULAR  | 96.548       | 93.791       | 2.157           | 96.797       | 93.723       | 2.474           |
| 1.001 | 20.850        | 386.1          | 600         | SW CIRCULAR  | 96.797       | 93.723       | 2.474           | 96.807       | 93.669       | 2.538           |
| 1.002 | 32.477        | 391.3          | 600         | SW CIRCULAR  | 96.807       | 93.669       | 2.538           | 96.726       | 93.586       | 2.540           |
| 1.003 | 14.515        | 382.0          | 600         | SW CIRCULAR  | 96.726       | 93.586       | 2.540           | 96.584       | 93.548       | 2.436           |
| 1.004 | 18.909        | 385.9          | 600         | SW CIRCULAR  | 96.584       | 93.548       | 2.436           | 96.222       | 93.499       | 2.123           |
| 2.000 | 18.412        | 30.6           | 300         | SW CIRCULAR  | 96.200       | 94.400       | 1.500           | 96.222       | 93.799       | 2.123           |
| 1.005 | 24.977        | 390.3          | 600         | SW CIRCULAR  | 96.222       | 93.499       | 2.123           | 95.921       | 93.435       | 1.886           |
| 3.000 | 27.008        | 391.4          | 600         | SW CIRCULAR  | 95.780       | 93.531       | 1.649           | 95.870       | 93.462       | 1.808           |
| 3.001 | 10.437        | 386.6          | 600         | SW CIRCULAR  | 95.870       | 93.462       | 1.808           | 95.921       | 93.435       | 1.886           |
| 1.006 | 15.566        | 389.2          | 600         | SW CIRCULAR  | 95.921       | 93.435       | 1.886           | 95.941       | 93.395       | 1.946           |
| 1.007 | 13.276        | 390.5          | 600         | SW CIRCULAR  | 95.941       | 93.395       | 1.946           | 95.838       | 93.361       | 1.877           |
| 1.008 | 15.459        | 386.5          | 600         | SW CIRCULAR  | 95.838       | 93.361       | 1.877           | 95.879       | 93.321       | 1.958           |
| 1.009 | 50.642        | 389.6          | 600         | SW CIRCULAR  | 95.879       | 93.321       | 1.958           | 95.700       | 93.191       | 1.909           |
| 1.010 | 20.169        | 387.9          | 600         | SW CIRCULAR  | 95.700       | 93.191       | 1.909           | 95.600       | 93.139       | 1.861           |
| 1.011 | 27.864        | 392.5          | 600         | SW CIRCULAR  | 95.600       | 93.139       | 1.861           | 95.600       | 93.068       | 1.932           |
| 4.000 | 23.296        | 150.3          | 225         | SW CIRCULAR  | 96.101       | 94.626       | 1.250           | 96.106       | 94.471       | 1.410           |
| 4.001 | 20.929        | 149.5          | 225         | SW CIRCULAR  | 96.106       | 94.471       | 1.410           | 95.775       | 94.331       | 1.219           |
| 4.002 | 12.131        | 100.3          | 225         | SW CIRCULAR  | 95.775       | 94.331       | 1.219           | 95.600       | 94.210       | 1.165           |
| 1.012 | 23.315        | 388.6          | 600         | SW CIRCULAR  | 95.600       | 93.068       | 1.932           | 95.858       | 93.008       | 2.250           |
| 5.000 | 31.093        | 388.7          | 600         | SW CIRCULAR  | 96.721       | 93.188       | 2.933           | 96.559       | 93.108       | 2.851           |
| 5.001 | 6.309         | 394.3          | 600         | SW CIRCULAR  | 96.559       | 93.108       | 2.851           | 96.580       | 93.092       | 2.888           |
| 5.002 | 32.287        | 384.4          | 600         | SW CIRCULAR  | 96.580       | 93.092       | 2.888           | 95.858       | 93.008       | 2.250           |
| 1.013 | 24.461        | 394.5          | 900         | SW CIRCULAR  | 95.858       | 92.708       | 2.250           | 96.216       | 92.646       | 2.670           |
| 1.014 | 42.012        | 389.0          | 900         | SW CIRCULAR  | 96.216       | 92.646       | 2.670           | 96.788       | 92.538       | 3.350           |
| 1.015 | 12.319        | 397.4          | 900         | SW CIRCULAR  | 96.788       | 92.538       | 3.350           | 97.037       | 92.507       | 3.630           |

| 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 | 1          | 1800        | Manhole      | SFA 7      | 2          | 1800        | Manhole      | SFA 7      |
| 1.001 | 2          | 1800        | Manhole      | SFA 7      | 3          | 1800        | Manhole      | SFA 7      |
| 1.002 | 3          | 1800        | Manhole      | SFA 7      | 4          | 1800        | Manhole      | SFA 7      |
| 1.003 | 4          | 1800        | Manhole      | SFA 7      | 5          | 1800        | Manhole      | SFA 7      |
| 1.004 | 5          | 1800        | Manhole      | SFA 7      | 6          | 1800        | Manhole      | SFA 7      |
| 2.000 | 100        | 1350        | Manhole      | SFA 7      | 6          | 1800        | Manhole      | SFA 7      |
| 1.005 | 6          | 1800        | Manhole      | SFA 7      | 9          | 1800        | Manhole      | SFA 7      |
| 3.000 | 7          | 1800        | Manhole      | SFA 7      | 8          | 1800        | Manhole      | SFA 7      |
| 3.001 | 8          | 1800        | Manhole      | SFA 7      | 9          | 1800        | Manhole      | SFA 7      |
| 1.006 | 9          | 1800        | Manhole      | SFA 7      | 10         | 1800        | Manhole      | SFA 7      |
| 1.007 | 10         | 1800        | Manhole      | SFA 7      | 11         | 1800        | Manhole      | SFA 7      |
| 1.008 | 11         | 1800        | Manhole      | SFA 7      | 12         | 1800        | Manhole      | SFA 7      |
| 1.009 | 12         | 1800        | Manhole      | SFA 7      | 13         | 1800        | Manhole      | SFA 7      |
| 1.010 | 13         | 1800        | Manhole      | SFA 7      | 14         | 1800        | Manhole      | SFA 7      |
| 1.011 | 14         | 1800        | Manhole      | SFA 7      | 18         | 1800        | Manhole      | SFA 7      |
| 4.000 | 15         | 1200        | Manhole      | SFA 7      | 16         | 1200        | Manhole      | SFA 7      |
| 4.001 | 16         | 1200        | Manhole      | SFA 7      | 17         | 1200        | Manhole      | SFA 7      |
| 4.002 | 17         | 1200        | Manhole      | SFA 7      | 18         | 1800        | Manhole      | SFA 7      |
| 1.012 | 18         | 1800        | Manhole      | SFA 7      | 22         | 2100        | Manhole      | SFA 7      |
| 5.000 | 19         | 1800        | Manhole      | SFA 7      | 20         | 1800        | Manhole      | SFA 7      |
| 5.001 | 20         | 1800        | Manhole      | SFA 7      | 21         | 1800        | Manhole      | SFA 7      |
| 5.002 | 21         | 1800        | Manhole      | SFA 7      | 22         | 2100        | Manhole      | SFA 7      |
| 1.013 | 22         | 2100        | Manhole      | SFA 7      | 23         | 2100        | Manhole      | SFA 7      |
| 1.014 | 23         | 2100        | Manhole      | SFA 7      | 24         | 2100        | Manhole      | SFA 7      |
| 1.015 | 24         | 2100        | Manhole      | SFA 7      | 32         | 2100        | Manhole      | SFA 7      |

### 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) |
|--------|---------------|----------------|-------------|--------------|--------------|--------------|-----------------|--------------|--------------|-----------------|
| 6.000  | 22.043        | 386.7          | 900         | SW CIRCULAR  | 96.957       | 92.751       | 3.306           | 96.775       | 92.694       | 3.181           |
| 6.001  | 29.396        | 391.9          | 900         | SW CIRCULAR  | 96.775       | 92.694       | 3.181           | 96.603       | 92.619       | 3.084           |
| 7.000  | 5.985         | 5.1            | 300         | SW CIRCULAR  | 96.603       | 94.400       | 1.903           | 96.603       | 93.219       | 3.084           |
| 6.002  | 30.724        | 388.9          | 900         | SW CIRCULAR  | 96.603       | 92.619       | 3.084           | 97.145       | 92.540       | 3.705           |
| 8.000  | 22.058        | 387.0          | 900         | SW CIRCULAR  | 98.500       | 92.745       | 4.855           | 97.831       | 92.688       | 4.243           |
| 8.001  | 23.299        | 388.3          | 900         | SW CIRCULAR  | 97.831       | 92.688       | 4.243           | 97.413       | 92.628       | 3.885           |
| 8.002  | 34.503        | 392.1          | 900         | SW CIRCULAR  | 97.413       | 92.628       | 3.885           | 97.145       | 92.540       | 3.705           |
| 6.003  | 11.903        | 360.7          | 900         | SW CIRCULAR  | 97.145       | 92.540       | 3.705           | 97.037       | 92.507       | 3.630           |
| 1.016  | 36.588        | 389.2          | 900         | SW CIRCULAR  | 97.037       | 92.507       | 3.630           | 97.326       | 92.413       | 4.013           |
| 1.017  | 33.798        | 388.5          | 900         | SW CIRCULAR  | 97.326       | 92.413       | 4.013           | 96.884       | 92.326       | 3.658           |
| 1.018  | 25.564        | 387.3          | 900         | SW CIRCULAR  | 96.884       | 92.326       | 3.658           | 96.454       | 92.260       | 3.294           |
| 9.000  | 31.337        | 120.1          | 225         | SW CIRCULAR  | 98.531       | 96.492       | 1.814           | 98.598       | 96.231       | 2.142           |
| 9.001  | 18.571        | 119.8          | 225         | SW CIRCULAR  | 98.598       | 96.231       | 2.142           | 98.324       | 96.076       | 2.023           |
| 9.002  | 13.559        | 111.1          | 225         | SW CIRCULAR  | 98.324       | 96.076       | 2.023           | 98.098       | 95.954       | 1.919           |
| 10.000 | 17.120        | 26.9           | 225         | SW CIRCULAR  | 98.782       | 96.600       | 1.957           | 98.098       | 95.964       | 1.909           |
| 9.003  | 15.500        | 30.9           | 225         | SW CIRCULAR  | 98.098       | 95.964       | 1.909           | 97.487       | 95.462       | 1.800           |
| 9.004  | 21.451        | 21.8           | 225         | SW CIRCULAR  | 97.487       | 95.462       | 1.800           | 96.650       | 94.478       | 1.947           |
| 11.000 | 12.974        | 393.2          | 900         | SW CIRCULAR  | 97.603       | 93.998       | 2.705           | 96.855       | 93.965       | 1.990           |
| 11.001 | 15.335        | 393.2          | 900         | SW CIRCULAR  | 96.855       | 93.965       | 1.990           | 97.013       | 93.926       | 2.187           |
| 11.002 | 13.908        | 397.4          | 900         | SW CIRCULAR  | 97.013       | 93.926       | 2.187           | 97.000       | 93.891       | 2.209           |
| 11.003 | 19.549        | 383.3          | 900         | SW CIRCULAR  | 97.000       | 93.891       | 2.209           | 96.790       | 93.840       | 2.050           |
| 11.004 | 14.574        | 393.9          | 900         | SW CIRCULAR  | 96.790       | 93.840       | 2.050           | 96.650       | 93.803       | 1.947           |
| 9.005  | 31.110        | 388.9          | 900         | SW CIRCULAR  | 96.650       | 93.803       | 1.947           | 96.393       | 93.723       | 1.770           |
| 9.006  | 19.261        | 393.1          | 900         | SW CIRCULAR  | 96.393       | 93.723       | 1.770           | 96.522       | 93.674       | 1.948           |
| 9.007  | 19.264        | 393.1          | 900         | SW CIRCULAR  | 96.522       | 93.674       | 1.948           | 96.740       | 93.625       | 2.215           |

| 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 |
|--------|------------|-------------|--------------|------------|------------|-------------|--------------|------------|
| 6.000  | 25         | 2100        | Manhole      | SFA 7      | 26         | 2100        | Manhole      | SFA 7      |
| 6.001  | 26         | 2100        | Manhole      | SFA 7      | 27         | 2100        | Manhole      | SFA 7      |
| 7.000  | 101        | 1350        | Manhole      | SFA 7      | 27         | 2100        | Manhole      | SFA 7      |
| 6.002  | 27         | 2100        | Manhole      | SFA 7      | 31         | 2100        | Manhole      | SFA 7      |
| 8.000  | 28         | 2100        | Manhole      | SFA 7      | 29         | 2100        | Manhole      | SFA 7      |
| 8.001  | 29         | 2100        | Manhole      | SFA 7      | 30         | 2100        | Manhole      | SFA 7      |
| 8.002  | 30         | 2100        | Manhole      | SFA 7      | 31         | 2100        | Manhole      | SFA 7      |
| 6.003  | 31         | 2100        | Manhole      | SFA 7      | 32         | 2100        | Manhole      | SFA 7      |
| 1.016  | 32         | 2100        | Manhole      | SFA 7      | 33         | 2100        | Manhole      | SFA 7      |
| 1.017  | 33         | 2100        | Manhole      | SFA 7      | 34         | 2100        | Manhole      | SFA 7      |
| 1.018  | 34         | 2100        | Manhole      | SFA 7      | 57         | 2100        | Manhole      | SFA 7      |
| 9.000  | 35         | 1200        | Manhole      | SFA 7      | 36         | 1200        | Manhole      | SFA 7      |
| 9.001  | 36         | 1200        | Manhole      | SFA 7      | 37         | 1200        | Manhole      | SFA 7      |
| 9.002  | 37         | 1200        | Manhole      | SFA 7      | 39         | 1200        | Manhole      | SFA 7      |
| 10.000 | 38         | 1200        | Manhole      | SFA 7      | 39         | 1200        | Manhole      | SFA 7      |
| 9.003  | 39         | 1200        | Manhole      | SFA 7      | 40         | 1200        | Manhole      | SFA 7      |
| 9.004  | 40         | 1200        | Manhole      | SFA 7      | 46         | 2700        | Manhole      | SFA 7      |
| 11.000 | 41         | 2100        | Manhole      | SFA 7      | 42         | 2100        | Manhole      | SFA 7      |
| 11.001 | 42         | 2100        | Manhole      | SFA 7      | 43         | 2100        | Manhole      | SFA 7      |
| 11.002 | 43         | 2100        | Manhole      | SFA 7      | 44         | 2100        | Manhole      | SFA 7      |
| 11.003 | 44         | 2100        | Manhole      | SFA 7      | 45         | 2100        | Manhole      | SFA 7      |
| 11.004 | 45         | 2100        | Manhole      | SFA 7      | 46         | 2700        | Manhole      | SFA 7      |
| 9.005  | 46         | 2700        | Manhole      | SFA 7      | 47         | 2400        | Manhole      | SFA 7      |
| 9.006  | 47         | 2400        | Manhole      | SFA 7      | 48         | 2400        | Manhole      | SFA 7      |
| 9.007  | 48         | 2400        | Manhole      | SFA 7      | 49         | 2400        | Manhole      | SFA 7      |

### 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) |
|--------|---------------|----------------|-------------|--------------|--------------|--------------|-----------------|--------------|--------------|-----------------|
| 9.008  | 38.081        | 388.6          | 900         | SW CIRCULAR  | 96.740       | 93.625       | 2.215           | 97.146       | 93.527       | 2.719           |
| 9.009  | 22.163        | 395.8          | 900         | SW CIRCULAR  | 97.146       | 93.527       | 2.719           | 97.411       | 93.471       | 3.040           |
| 12.000 | 22.453        | 393.9          | 900         | SW CIRCULAR  | 97.272       | 93.671       | 2.701           | 97.521       | 93.614       | 3.007           |
| 12.001 | 15.443        | 386.1          | 900         | SW CIRCULAR  | 97.521       | 93.614       | 3.007           | 97.678       | 93.574       | 3.204           |
| 12.002 | 16.561        | 394.3          | 900         | SW CIRCULAR  | 97.678       | 93.574       | 3.204           | 97.671       | 93.532       | 3.239           |
| 12.003 | 23.832        | 390.7          | 900         | SW CIRCULAR  | 97.671       | 93.532       | 3.239           | 97.411       | 93.471       | 3.040           |
| 9.010  | 22.196        | 382.7          | 900         | SW CIRCULAR  | 97.411       | 93.471       | 3.040           | 96.717       | 93.413       | 2.404           |
| 13.000 | 8.652         | 43.3           | 300         | SW CIRCULAR  | 96.846       | 95.000       | 1.546           | 96.717       | 94.800       | 1.617           |
| 9.011  | 9.851         | 20.6           | 225         | SW CIRCULAR  | 96.717       | 93.413       | 3.079           | 96.454       | 92.935       | 3.294           |
| 1.019  | 20.006        | 392.3          | 900         | SW CIRCULAR  | 96.454       | 92.260       | 3.294           | 96.097       | 92.209       | 2.988           |
| 1.020  | 15.128        | 387.9          | 900         | SW CIRCULAR  | 96.097       | 92.209       | 2.988           | 95.939       | 92.170       | 2.869           |
| 1.021  | 26.452        | 95.2           | 225         | SW CIRCULAR  | 95.939       | 92.170       | 3.544           | 95.645       | 91.892       | 3.528           |
| 14.000 | 25.713        | 389.6          | 450         | SW CIRCULAR  | 94.686       | 92.400       | 1.836           | 94.434       | 92.334       | 1.650           |
| 14.001 | 22.280        | 390.9          | 450         | SW CIRCULAR  | 94.434       | 92.334       | 1.650           | 94.720       | 92.277       | 1.993           |
| 14.002 | 26.440        | 388.8          | 450         | SW CIRCULAR  | 94.720       | 92.277       | 1.993           | 94.300       | 92.209       | 1.641           |
| 14.003 | 41.638        | 389.1          | 450         | SW CIRCULAR  | 94.300       | 92.209       | 1.641           | 94.773       | 92.102       | 2.221           |
| 14.004 | 49.477        | 389.6          | 450         | SW CIRCULAR  | 94.773       | 92.102       | 2.221           | 96.104       | 91.975       | 3.679           |
| 15.000 | 14.675        | 386.2          | 450         | SW CIRCULAR  | 95.295       | 92.257       | 2.588           | 95.606       | 92.219       | 2.937           |
| 15.001 | 25.792        | 390.8          | 450         | SW CIRCULAR  | 95.606       | 92.219       | 2.937           | 96.104       | 92.153       | 3.501           |
| 15.002 | 33.924        | 389.9          | 450         | SW CIRCULAR  | 96.104       | 92.153       | 3.501           | 96.454       | 92.066       | 3.938           |
| 15.003 | 35.548        | 390.6          | 450         | SW CIRCULAR  | 96.454       | 92.066       | 3.938           | 96.104       | 91.975       | 3.679           |
| 14.005 | 21.851        | 390.2          | 600         | SW CIRCULAR  | 96.104       | 91.825       | 3.679           | 96.645       | 91.769       | 4.276           |
| 16.000 | 11.696        | 12.6           | 300         | SW CIRCULAR  | 96.645       | 93.000       | 3.345           | 96.645       | 92.069       | 4.276           |
| 14.006 | 28.239        | 392.2          | 600         | SW CIRCULAR  | 96.645       | 91.769       | 4.276           | 97.043       | 91.697       | 4.746           |
| 14.007 | 38.087        | 388.6          | 600         | SW CIRCULAR  | 97.043       | 91.697       | 4.746           | 96.690       | 91.599       | 4.491           |

| 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 |
|--------|------------|-------------|--------------|------------|------------|-------------|--------------|------------|
| 9.008  | 49         | 2400        | Manhole      | SFA 7      | 50         | 2400        | Manhole      | SFA 7      |
| 9.009  | 50         | 2400        | Manhole      | SFA 7      | 55         | 2700        | Manhole      | SFA 7      |
| 12.000 | 51         | 2400        | Manhole      | SFA 7      | 52         | 2400        | Manhole      | SFA 7      |
| 12.001 | 52         | 2400        | Manhole      | SFA 7      | 53         | 2400        | Manhole      | SFA 7      |
| 12.002 | 53         | 2400        | Manhole      | SFA 7      | 54         | 2400        | Manhole      | SFA 7      |
| 12.003 | 54         | 2400        | Manhole      | SFA 7      | 55         | 2700        | Manhole      | SFA 7      |
| 9.010  | 55         | 2700        | Manhole      | SFA 7      | HB3        | 2700        | Manhole      | SFA 7      |
| 13.000 | 103        | 1350        | Manhole      | SFA 7      | HB3        | 2700        | Manhole      | SFA 7      |
| 9.011  | HB3        | 2700        | Manhole      | SFA 7      | 57         | 2100        | Manhole      | SFA 7      |
| 1.019  | 57         | 2100        | Manhole      | SFA 7      | 58         | 2100        | Manhole      | SFA 7      |
| 1.020  | 58         | 2100        | Manhole      | SFA 7      | HB2        | 2700        | Manhole      | SFA 7      |
| 1.021  | HB2        | 2700        | Manhole      | SFA 7      | HB1        | 2700        | Manhole      | SFA 7      |
| 14.000 | 60         | 1500        | Manhole      | SFA 7      | 61         | 1500        | Manhole      | SFA 7      |
| 14.001 | 61         | 1500        | Manhole      | SFA 7      | 62         | 1500        | Manhole      | SFA 7      |
| 14.002 | 62         | 1500        | Manhole      | SFA 7      | 63         | 1800        | Manhole      | SFA 7      |
| 14.003 | 63         | 1800        | Manhole      | SFA 7      | 64         | 1800        | Manhole      | SFA 7      |
| 14.004 | 64         | 1800        | Manhole      | SFA 7      | 69         | 1800        | Manhole      | SFA 7      |
| 15.000 | 65         | 1500        | Manhole      | SFA 7      | 66         | 1500        | Manhole      | SFA 7      |
| 15.001 | 66         | 1500        | Manhole      | SFA 7      | 67         | 1500        | Manhole      | SFA 7      |
| 15.002 | 67         | 1500        | Manhole      | SFA 7      | 68         | 1500        | Manhole      | SFA 7      |
| 15.003 | 68         | 1500        | Manhole      | SFA 7      | 69         | 1800        | Manhole      | SFA 7      |
| 14.005 | 69         | 1800        | Manhole      | SFA 7      | 70         | 1800        | Manhole      | SFA 7      |
| 16.000 | 102        | 1350        | Manhole      | SFA 7      | 70         | 1800        | Manhole      | SFA 7      |
| 14.006 | 70         | 1800        | Manhole      | SFA 7      | 71         | 1800        | Manhole      | SFA 7      |
| 14.007 | 71         | 1800        | Manhole      | SFA 7      | 77         | 1800        | Manhole      | SFA 7      |

### 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) |
|--------|---------------|----------------|-------------|--------------|--------------|--------------|-----------------|--------------|--------------|-----------------|
| 17.000 | 12.341        | 385.7          | 600         | SW CIRCULAR  | 97.030       | 91.865       | 4.565           | 96.886       | 91.833       | 4.453           |
| 17.001 | 26.502        | 389.7          | 600         | SW CIRCULAR  | 96.886       | 91.833       | 4.453           | 96.909       | 91.765       | 4.544           |
| 17.002 | 26.724        | 387.3          | 600         | SW CIRCULAR  | 96.909       | 91.765       | 4.544           | 96.955       | 91.696       | 4.659           |
| 17.003 | 20.956        | 388.1          | 600         | SW CIRCULAR  | 96.955       | 91.696       | 4.659           | 96.744       | 91.642       | 4.502           |
| 17.004 | 16.852        | 391.9          | 600         | SW CIRCULAR  | 96.744       | 91.642       | 4.502           | 96.690       | 91.599       | 4.491           |
| 14.008 | 32.914        | 401.4          | 600         | SW CIRCULAR  | 96.690       | 91.599       | 4.491           | 95.645       | 91.517       | 3.528           |
| 18.000 | 10.866        | 10.9           | 150         | SW CIRCULAR  | 95.522       | 94.000       | 1.372           | 95.645       | 93.000       | 2.495           |
| 1.022  | 23.791        | 11.5           | 300         | SW CIRCULAR  | 95.645       | 91.517       | 3.828           | 90.891       | 89.450       | 1.141           |
| 1.023  | 29.507        | 239.9          | 300         | SW CIRCULAR  | 90.891       | 89.450       | 1.141           | 90.910       | 89.327       | 1.283           |
| 1.024  | 10.167        | 242.1          | 300         | SW CIRCULAR  | 90.910       | 89.327       | 1.283           | 90.000       | 89.285       | 0.415           |

| 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 |
|--------|------------|-------------|--------------|------------|------------|-------------|--------------|------------|
| 17.000 | 72         | 1800        | Manhole      | SFA 7      | 73         | 1800        | Manhole      | SFA 7      |
| 17.001 | 73         | 1800        | Manhole      | SFA 7      | 74         | 1800        | Manhole      | SFA 7      |
| 17.002 | 74         | 1800        | Manhole      | SFA 7      | 75         | 1800        | Manhole      | SFA 7      |
| 17.003 | 75         | 1800        | Manhole      | SFA 7      | 76         | 1800        | Manhole      | SFA 7      |
| 17.004 | 76         | 1800        | Manhole      | SFA 7      | 77         | 1800        | Manhole      | SFA 7      |
| 14.008 | 77         | 1800        | Manhole      | SFA 7      | HB1        | 2700        | Manhole      | SFA 7      |
| 18.000 | 81         | 1200        | Manhole      | SFA 7      | HB1        | 2700        | Manhole      | SFA 7      |
| 1.022  | HB1        | 2700        | Manhole      | SFA 7      | 79         | 1350        | Manhole      | SFA 7      |
| 1.023  | 79         | 1350        | Manhole      | SFA 7      | 80         | 1350        | Manhole      | SFA 7      |
| 1.024  | 80         | 1350        | Manhole      | SFA 7      | HW         |             | Junction     |            |

### Simulation Settings

|                      |                   |                            |      |
|----------------------|-------------------|----------------------------|------|
| Rainfall Methodology | FSR               | Skip Steady State          | ✓    |
| FSR Region           | England and Wales | Drain Down Time (mins)     | 2880 |
| M5-60 (mm)           | 17.000            | Additional Storage (m³/ha) | 20.0 |
| Ratio-R              | 0.300             | Check Discharge Rate(s)    | ✓    |
| Summer CV            | 0.750             | 30 year (l/s)              | 34.7 |
| Winter CV            | 0.840             | 100 year (l/s)             | 34.7 |
| Analysis Speed       | Detailed          | Check Discharge Volume     | x    |

### 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 %) |
|--------------------------|--------------------------|--------------------------|--------------------------|
| 30                       | 0                        | 10                       | 0                        |
| 100                      | 35                       | 10                       | 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) |            | Betterment (%)         | 0    |
| SAAR (mm)                    |            | QBar                   |      |
| Soil Index                   | 1          | Q 1 year (l/s)         |      |
| SPR                          | 0.10       | Q 30 year (l/s)        |      |
| Region                       | 1          | Q 100 year (l/s)       |      |
| Growth Factor 1 year         | 0.85       |                        |      |

#### Node HB1 Online Hydro-Brake® Control

|                          |        |                         |                                |
|--------------------------|--------|-------------------------|--------------------------------|
| Flap Valve               | x      | Objective               | (HE) Minimise upstream storage |
| Replaces Downstream Link | x      | Sump Available          | ✓                              |
| Invert Level (m)         | 91.517 | Product Number          | CTL-SHE-0226-3470-2800-3470    |
| Design Depth (m)         | 2.800  | Min Outlet Diameter (m) | 0.300                          |
| Design Flow (l/s)        | 34.7   | Min Node Diameter (mm)  | 2100                           |

#### Node HB2 Online Hydro-Brake® Control

|                          |        |                         |                                |
|--------------------------|--------|-------------------------|--------------------------------|
| Flap Valve               | x      | Objective               | (HE) Minimise upstream storage |
| Replaces Downstream Link | x      | Sump Available          | ✓                              |
| Invert Level (m)         | 92.170 | Product Number          | CTL-SHE-0168-1800-2450-1800    |
| Design Depth (m)         | 2.450  | Min Outlet Diameter (m) | 0.225                          |
| Design Flow (l/s)        | 18.0   | Min Node Diameter (mm)  | 1800                           |

#### Node HB3 Online Hydro-Brake® Control

|                          |        |                         |                                |
|--------------------------|--------|-------------------------|--------------------------------|
| Flap Valve               | x      | Objective               | (HE) Minimise upstream storage |
| Replaces Downstream Link | x      | Sump Available          | ✓                              |
| Invert Level (m)         | 93.413 | Product Number          | CTL-SHE-0118-8200-2000-8200    |
| Design Depth (m)         | 2.000  | Min Outlet Diameter (m) | 0.150                          |
| Design Flow (l/s)        | 8.2    | Min Node Diameter (mm)  | 1200                           |

#### Node 100 Depth/Area Storage Structure

|                             |         |               |      |                           |        |
|-----------------------------|---------|---------------|------|---------------------------|--------|
| Base Inf Coefficient (m/hr) | 0.00000 | Safety Factor | 2.0  | Invert Level (m)          | 94.400 |
| Side Inf Coefficient (m/hr) | 0.00000 | Porosity      | 0.95 | Time to half empty (mins) | 555    |

| Depth (m) | Area (m <sup>2</sup> ) | Inf Area (m <sup>2</sup> ) | Depth (m) | Area (m <sup>2</sup> ) | Inf Area (m <sup>2</sup> ) | Depth (m) | Area (m <sup>2</sup> ) | Inf Area (m <sup>2</sup> ) |
|-----------|------------------------|----------------------------|-----------|------------------------|----------------------------|-----------|------------------------|----------------------------|
| 0.000     | 420.0                  | 0.0                        | 0.800     | 420.0                  | 0.0                        | 0.801     | 0.0                    | 0.0                        |

#### Node 101 Depth/Area Storage Structure

|                             |         |               |      |                           |        |
|-----------------------------|---------|---------------|------|---------------------------|--------|
| Base Inf Coefficient (m/hr) | 0.00000 | Safety Factor | 2.0  | Invert Level (m)          | 94.400 |
| Side Inf Coefficient (m/hr) | 0.00000 | Porosity      | 0.95 | Time to half empty (mins) | 555    |

| Depth (m) | Area (m <sup>2</sup> ) | Inf Area (m <sup>2</sup> ) | Depth (m) | Area (m <sup>2</sup> ) | Inf Area (m <sup>2</sup> ) | Depth (m) | Area (m <sup>2</sup> ) | Inf Area (m <sup>2</sup> ) |
|-----------|------------------------|----------------------------|-----------|------------------------|----------------------------|-----------|------------------------|----------------------------|
| 0.000     | 215.0                  | 0.0                        | 0.800     | 215.0                  | 0.0                        | 0.801     | 0.0                    | 0.0                        |

#### Node 102 Depth/Area Storage Structure

|                             |         |               |      |                           |        |
|-----------------------------|---------|---------------|------|---------------------------|--------|
| Base Inf Coefficient (m/hr) | 0.00000 | Safety Factor | 2.0  | Invert Level (m)          | 93.000 |
| Side Inf Coefficient (m/hr) | 0.00000 | Porosity      | 0.95 | Time to half empty (mins) | 188    |

| Depth (m) | Area (m <sup>2</sup> ) | Inf Area (m <sup>2</sup> ) | Depth (m) | Area (m <sup>2</sup> ) | Inf Area (m <sup>2</sup> ) | Depth (m) | Area (m <sup>2</sup> ) | Inf Area (m <sup>2</sup> ) |
|-----------|------------------------|----------------------------|-----------|------------------------|----------------------------|-----------|------------------------|----------------------------|
| 0.000     | 180.0                  | 0.0                        | 0.800     | 180.0                  | 0.0                        | 0.801     | 0.0                    | 0.0                        |

#### Node 103 Depth/Area Storage Structure

|                             |         |               |      |                           |        |
|-----------------------------|---------|---------------|------|---------------------------|--------|
| Base Inf Coefficient (m/hr) | 0.00000 | Safety Factor | 2.0  | Invert Level (m)          | 95.000 |
| Side Inf Coefficient (m/hr) | 0.00000 | Porosity      | 0.95 | Time to half empty (mins) | 192    |

| Depth<br>(m) | Area<br>(m <sup>2</sup> ) | Inf Area<br>(m <sup>2</sup> ) | Depth<br>(m) | Area<br>(m <sup>2</sup> ) | Inf Area<br>(m <sup>2</sup> ) | Depth<br>(m) | Area<br>(m <sup>2</sup> ) | Inf Area<br>(m <sup>2</sup> ) |
|--------------|---------------------------|-------------------------------|--------------|---------------------------|-------------------------------|--------------|---------------------------|-------------------------------|
| 0.000        | 290.0                     | 0.0                           | 0.800        | 290.0                     | 0.0                           | 0.801        | 0.0                       | 0.0                           |

### Rainfall

| Event                                      | Peak<br>Intensity<br>(mm/hr) | Average<br>Intensity<br>(mm/hr) |
|--------------------------------------------|------------------------------|---------------------------------|
| 30 year +10% A 15 minute summer            | 205.071                      | 58.028                          |
| 30 year +10% A 15 minute winter            | 143.910                      | 58.028                          |
| 30 year +10% A 30 minute summer            | 140.191                      | 39.669                          |
| 30 year +10% A 30 minute winter            | 98.380                       | 39.669                          |
| 30 year +10% A 60 minute summer            | 98.615                       | 26.061                          |
| 30 year +10% A 60 minute winter            | 65.517                       | 26.061                          |
| 30 year +10% A 120 minute summer           | 63.038                       | 16.659                          |
| 30 year +10% A 120 minute winter           | 41.881                       | 16.659                          |
| 30 year +10% A 180 minute summer           | 49.285                       | 12.683                          |
| 30 year +10% A 180 minute winter           | 32.037                       | 12.683                          |
| 30 year +10% A 240 minute summer           | 39.344                       | 10.398                          |
| 30 year +10% A 240 minute winter           | 26.139                       | 10.398                          |
| 30 year +10% A 360 minute summer           | 30.343                       | 7.808                           |
| 30 year +10% A 360 minute winter           | 19.724                       | 7.808                           |
| 30 year +10% A 480 minute summer           | 24.111                       | 6.372                           |
| 30 year +10% A 480 minute winter           | 16.019                       | 6.372                           |
| 30 year +10% A 600 minute summer           | 19.882                       | 5.438                           |
| 30 year +10% A 600 minute winter           | 13.585                       | 5.438                           |
| 30 year +10% A 720 minute summer           | 17.819                       | 4.776                           |
| 30 year +10% A 720 minute winter           | 11.975                       | 4.776                           |
| 30 year +10% A 960 minute summer           | 14.763                       | 3.887                           |
| 30 year +10% A 960 minute winter           | 9.779                        | 3.887                           |
| 30 year +10% A 1440 minute summer          | 10.836                       | 2.904                           |
| 30 year +10% A 1440 minute winter          | 7.282                        | 2.904                           |
| 100 year +35% CC +10% A 15 minute summer   | 355.680                      | 100.645                         |
| 100 year +35% CC +10% A 15 minute winter   | 249.600                      | 100.645                         |
| 100 year +35% CC +10% A 30 minute summer   | 245.990                      | 69.607                          |
| 100 year +35% CC +10% A 30 minute winter   | 172.625                      | 69.607                          |
| 100 year +35% CC +10% A 60 minute summer   | 174.491                      | 46.113                          |
| 100 year +35% CC +10% A 60 minute winter   | 115.928                      | 46.113                          |
| 100 year +35% CC +10% A 120 minute summer  | 111.942                      | 29.583                          |
| 100 year +35% CC +10% A 120 minute winter  | 74.372                       | 29.583                          |
| 100 year +35% CC +10% A 180 minute summer  | 87.390                       | 22.488                          |
| 100 year +35% CC +10% A 180 minute winter  | 56.806                       | 22.488                          |
| 100 year +35% CC +10% A 240 minute summer  | 69.529                       | 18.374                          |
| 100 year +35% CC +10% A 240 minute winter  | 46.193                       | 18.374                          |
| 100 year +35% CC +10% A 360 minute summer  | 53.204                       | 13.691                          |
| 100 year +35% CC +10% A 360 minute winter  | 34.584                       | 13.691                          |
| 100 year +35% CC +10% A 480 minute summer  | 42.061                       | 11.115                          |
| 100 year +35% CC +10% A 480 minute winter  | 27.944                       | 11.115                          |
| 100 year +35% CC +10% A 600 minute summer  | 34.537                       | 9.447                           |
| 100 year +35% CC +10% A 600 minute winter  | 23.598                       | 9.447                           |
| 100 year +35% CC +10% A 720 minute summer  | 30.841                       | 8.266                           |
| 100 year +35% CC +10% A 720 minute winter  | 20.727                       | 8.266                           |
| 100 year +35% CC +10% A 960 minute summer  | 25.396                       | 6.687                           |
| 100 year +35% CC +10% A 960 minute winter  | 16.823                       | 6.687                           |
| 100 year +35% CC +10% A 1440 minute summer | 18.467                       | 4.949                           |
| 100 year +35% CC +10% A 1440 minute winter | 12.411                       | 4.949                           |

**Results for 30 year +10% A Critical Storm Duration. Lowest mass balance: 99.76%**

| Node Event        | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status     |
|-------------------|---------|-------------|-----------|-----------|--------------|---------------|------------|------------|
| 360 minute winter | 1       | 344         | 94.327    | 0.536     | 2.4          | 1.5524        | 0.0000     | OK         |
| 360 minute winter | 2       | 344         | 94.326    | 0.603     | 4.4          | 1.7255        | 0.0000     | SURCHARGED |
| 360 minute winter | 3       | 344         | 94.326    | 0.657     | 6.6          | 1.8743        | 0.0000     | SURCHARGED |
| 360 minute winter | 4       | 344         | 94.326    | 0.740     | 8.8          | 2.1101        | 0.0000     | SURCHARGED |
| 360 minute winter | 5       | 344         | 94.325    | 0.777     | 11.0         | 2.2267        | 0.0000     | SURCHARGED |
| 15 minute summer  | 100     | 1           | 94.400    | 0.000     | 0.0          | 0.0000        | 0.0000     | OK         |
| 360 minute winter | 6       | 344         | 94.325    | 0.826     | 13.2         | 2.3965        | 0.0000     | SURCHARGED |
| 360 minute winter | 7       | 344         | 94.324    | 0.793     | 2.3          | 2.3606        | 0.0000     | SURCHARGED |
| 360 minute winter | 8       | 344         | 94.325    | 0.863     | 4.4          | 2.5430        | 0.0000     | SURCHARGED |
| 360 minute winter | 9       | 344         | 94.325    | 0.890     | 19.8         | 2.6116        | 0.0000     | SURCHARGED |
| 360 minute winter | 10      | 344         | 94.325    | 0.930     | 22.0         | 2.7207        | 0.0000     | SURCHARGED |
| 360 minute winter | 11      | 344         | 94.325    | 0.964     | 24.2         | 2.8296        | 0.0000     | SURCHARGED |
| 360 minute winter | 12      | 344         | 94.325    | 1.004     | 26.4         | 2.9343        | 0.0000     | SURCHARGED |
| 360 minute winter | 13      | 344         | 94.324    | 1.133     | 28.6         | 3.3205        | 0.0000     | SURCHARGED |
| 360 minute winter | 14      | 344         | 94.324    | 1.185     | 30.7         | 3.4810        | 0.0000     | SURCHARGED |
| 15 minute winter  | 15      | 10          | 94.709    | 0.083     | 12.8         | 0.1491        | 0.0000     | OK         |
| 15 minute winter  | 16      | 10          | 94.602    | 0.131     | 25.4         | 0.2257        | 0.0000     | OK         |
| 15 minute winter  | 17      | 11          | 94.487    | 0.156     | 37.5         | 0.2807        | 0.0000     | OK         |
| 360 minute winter | 18      | 344         | 94.324    | 1.256     | 38.7         | 3.6770        | 0.0000     | SURCHARGED |
| 360 minute winter | 19      | 344         | 94.326    | 1.138     | 3.5          | 3.2073        | 0.0000     | SURCHARGED |
| 360 minute winter | 20      | 344         | 94.325    | 1.217     | 5.7          | 3.4391        | 0.0000     | SURCHARGED |
| 360 minute winter | 21      | 344         | 94.325    | 1.233     | 6.5          | 3.4803        | 0.0000     | SURCHARGED |
| 360 minute winter | 22      | 344         | 94.325    | 1.617     | 44.7         | 6.0969        | 0.0000     | SURCHARGED |
| 360 minute winter | 23      | 344         | 94.325    | 1.679     | 41.3         | 6.2708        | 0.0000     | SURCHARGED |
| 360 minute winter | 24      | 344         | 94.325    | 1.787     | 38.4         | 6.5962        | 0.0000     | SURCHARGED |

| Link Event<br>(Upstream Depth) | US Node | Link  | DS Node | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Link Vol (m³) | Discharge Vol (m³) |
|--------------------------------|---------|-------|---------|---------------|----------------|----------|---------------|--------------------|
| 360 minute winter              | 1       | 1.000 | 2       | 2.2           | 0.275          | 0.006    | 7.2949        |                    |
| 360 minute winter              | 2       | 1.001 | 3       | 4.4           | 0.379          | 0.013    | 5.8718        |                    |
| 360 minute winter              | 3       | 1.002 | 4       | 6.6           | 0.434          | 0.019    | 9.1480        |                    |
| 360 minute winter              | 4       | 1.003 | 5       | 8.8           | 0.474          | 0.025    | 4.0885        |                    |
| 360 minute winter              | 5       | 1.004 | 6       | 11.0          | 0.529          | 0.032    | 5.3262        |                    |
| 15 minute summer               | 100     | 2.000 | 6       | 0.0           | 0.000          | 0.000    | 0.0000        |                    |
| 360 minute winter              | 6       | 1.005 | 9       | 13.2          | 0.495          | 0.038    | 7.0355        |                    |
| 360 minute winter              | 7       | 3.000 | 8       | 2.2           | 0.179          | 0.006    | 7.6075        |                    |
| 360 minute winter              | 8       | 3.001 | 9       | 4.4           | 0.166          | 0.013    | 2.9399        |                    |
| 360 minute winter              | 9       | 1.006 | 10      | 19.8          | 0.588          | 0.057    | 4.3846        |                    |
| 360 minute winter              | 10      | 1.007 | 11      | 22.0          | 0.613          | 0.063    | 3.7395        |                    |
| 360 minute winter              | 11      | 1.008 | 12      | 24.2          | 0.676          | 0.069    | 4.3544        |                    |
| 360 minute winter              | 12      | 1.009 | 13      | 26.4          | 0.690          | 0.076    | 14.2647       |                    |
| 360 minute winter              | 13      | 1.010 | 14      | 28.5          | 0.683          | 0.082    | 5.6811        |                    |
| 360 minute winter              | 14      | 1.011 | 18      | 29.9          | 0.651          | 0.086    | 7.8487        |                    |
| 15 minute winter               | 15      | 4.000 | 16      | 12.6          | 0.675          | 0.298    | 0.4351        |                    |
| 15 minute winter               | 16      | 4.001 | 17      | 24.8          | 0.932          | 0.584    | 0.5553        |                    |
| 15 minute winter               | 17      | 4.002 | 18      | 37.3          | 1.349          | 0.718    | 0.3351        |                    |
| 360 minute winter              | 18      | 1.012 | 22      | 37.6          | 0.830          | 0.108    | 6.5673        |                    |
| 360 minute winter              | 19      | 5.000 | 20      | 2.2           | 0.252          | 0.006    | 8.7582        |                    |
| 360 minute winter              | 20      | 5.001 | 21      | 4.3           | 0.343          | 0.012    | 1.7771        |                    |
| 360 minute winter              | 21      | 5.002 | 22      | 6.1           | 0.506          | 0.018    | 9.0945        |                    |
| 360 minute winter              | 22      | 1.013 | 23      | 39.3          | 0.621          | 0.039    | 15.5027       |                    |
| 360 minute winter              | 23      | 1.014 | 24      | 36.4          | 0.498          | 0.036    | 26.6261       |                    |
| 360 minute winter              | 24      | 1.015 | 32      | 33.2          | 0.454          | 0.033    | 7.8075        |                    |

**Results for 30 year +10% A Critical Storm Duration. Lowest mass balance: 99.76%**

| Node Event        | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status     |
|-------------------|---------|-------------|-----------|-----------|--------------|---------------|------------|------------|
| 360 minute winter | 25      | 344         | 94.326    | 1.575     | 3.5          | 5.8174        | 0.0000     | SURCHARGED |
| 360 minute winter | 26      | 344         | 94.326    | 1.632     | 6.2          | 6.0390        | 0.0000     | SURCHARGED |
| 15 minute summer  | 101     | 1           | 94.400    | 0.000     | 0.0          | 0.0000        | 0.0000     | OK         |
| 360 minute winter | 27      | 344         | 94.325    | 1.706     | 9.6          | 6.3259        | 0.0000     | SURCHARGED |
| 360 minute winter | 28      | 344         | 94.324    | 1.579     | 2.4          | 5.7356        | 0.0000     | SURCHARGED |
| 360 minute winter | 29      | 344         | 94.324    | 1.636     | 5.2          | 5.9757        | 0.0000     | SURCHARGED |
| 360 minute winter | 30      | 344         | 94.325    | 1.697     | 8.5          | 6.2196        | 0.0000     | SURCHARGED |
| 360 minute winter | 31      | 344         | 94.325    | 1.785     | 19.3         | 6.5585        | 0.0000     | SURCHARGED |
| 360 minute winter | 32      | 344         | 94.325    | 1.818     | 35.2         | 6.6854        | 0.0000     | SURCHARGED |
| 360 minute winter | 33      | 344         | 94.325    | 1.912     | 18.9         | 7.0014        | 0.0000     | SURCHARGED |
| 360 minute winter | 34      | 344         | 94.326    | 2.000     | 16.1         | 7.3503        | 0.0000     | SURCHARGED |
| 15 minute winter  | 35      | 10          | 96.590    | 0.098     | 19.2         | 0.1805        | 0.0000     | OK         |
| 15 minute winter  | 36      | 11          | 96.403    | 0.172     | 39.8         | 0.3101        | 0.0000     | OK         |
| 15 minute winter  | 37      | 11          | 96.279    | 0.203     | 47.5         | 0.2917        | 0.0000     | OK         |
| 15 minute winter  | 38      | 10          | 96.658    | 0.058     | 14.8         | 0.0953        | 0.0000     | OK         |
| 15 minute winter  | 39      | 11          | 96.129    | 0.175     | 71.4         | 0.2602        | 0.0000     | OK         |
| 15 minute winter  | 40      | 11          | 95.621    | 0.159     | 83.5         | 0.2545        | 0.0000     | OK         |
| 240 minute winter | 41      | 236         | 94.508    | 0.510     | 1.9          | 1.8211        | 0.0000     | OK         |
| 240 minute winter | 42      | 232         | 94.508    | 0.543     | 3.4          | 1.9371        | 0.0000     | OK         |
| 240 minute winter | 43      | 232         | 94.508    | 0.582     | 5.0          | 2.1386        | 0.0000     | OK         |
| 240 minute winter | 44      | 232         | 94.508    | 0.617     | 5.4          | 2.2493        | 0.0000     | OK         |
| 240 minute winter | 45      | 232         | 94.507    | 0.667     | 6.6          | 2.5005        | 0.0000     | OK         |
| 240 minute winter | 46      | 232         | 94.507    | 0.704     | 21.7         | 4.1779        | 0.0000     | OK         |
| 240 minute winter | 47      | 228         | 94.507    | 0.784     | 23.1         | 4.0248        | 0.0000     | OK         |
| 240 minute winter | 48      | 228         | 94.507    | 0.833     | 21.6         | 3.9041        | 0.0000     | OK         |

| Link Event<br>(Upstream Depth) | US Node | Link   | DS Node | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Link Vol (m³) | Discharge Vol (m³) |
|--------------------------------|---------|--------|---------|---------------|----------------|----------|---------------|--------------------|
| 360 minute winter              | 25      | 6.000  | 26      | 1.8           | 0.203          | 0.002    | 13.9703       |                    |
| 360 minute winter              | 26      | 6.001  | 27      | -4.2          | 0.251          | -0.004   | 18.6304       |                    |
| 15 minute summer               | 101     | 7.000  | 27      | 0.0           | 0.000          | 0.000    | 0.0000        |                    |
| 360 minute winter              | 27      | 6.002  | 31      | -7.4          | 0.200          | -0.007   | 19.4721       |                    |
| 360 minute winter              | 28      | 8.000  | 29      | 1.7           | 0.192          | 0.002    | 13.9798       |                    |
| 360 minute winter              | 29      | 8.001  | 30      | 3.2           | 0.251          | 0.003    | 14.7663       |                    |
| 360 minute winter              | 30      | 8.002  | 31      | -6.3          | 0.201          | -0.006   | 21.8671       |                    |
| 360 minute winter              | 31      | 6.003  | 32      | -17.1         | 0.202          | -0.016   | 7.5438        |                    |
| 360 minute winter              | 32      | 1.016  | 33      | 17.2          | 0.556          | 0.017    | 23.1885       |                    |
| 360 minute winter              | 33      | 1.017  | 34      | 16.1          | 0.502          | 0.016    | 21.4203       |                    |
| 360 minute winter              | 34      | 1.018  | 57      | 16.9          | 0.410          | 0.017    | 16.2018       |                    |
| 15 minute winter               | 35      | 9.000  | 36      | 18.9          | 0.759          | 0.398    | 0.7706        |                    |
| 15 minute winter               | 36      | 9.001  | 37      | 38.8          | 1.103          | 0.818    | 0.6540        |                    |
| 15 minute winter               | 37      | 9.002  | 39      | 47.8          | 1.349          | 0.970    | 0.4805        |                    |
| 15 minute winter               | 38      | 10.000 | 39      | 14.7          | 0.787          | 0.146    | 0.3332        |                    |
| 15 minute winter               | 39      | 9.003  | 40      | 71.7          | 2.344          | 0.764    | 0.4742        |                    |
| 15 minute winter               | 40      | 9.004  | 46      | 83.8          | 2.944          | 0.749    | 0.6105        |                    |
| 240 minute winter              | 41      | 11.000 | 42      | 1.1           | 0.217          | 0.001    | 4.9931        |                    |
| 240 minute winter              | 42      | 11.001 | 43      | -2.5          | 0.244          | -0.002   | 6.3853        |                    |
| 240 minute winter              | 43      | 11.002 | 44      | 3.4           | 0.333          | 0.003    | 6.2331        |                    |
| 240 minute winter              | 44      | 11.003 | 45      | 4.6           | 0.319          | 0.004    | 9.4534        |                    |
| 240 minute winter              | 45      | 11.004 | 46      | 5.7           | 0.244          | 0.006    | 7.5518        |                    |
| 240 minute winter              | 46      | 9.005  | 47      | 19.5          | 0.551          | 0.019    | 17.3955       |                    |
| 240 minute winter              | 47      | 9.006  | 48      | 20.6          | 0.535          | 0.021    | 11.5466       |                    |
| 240 minute winter              | 48      | 9.007  | 49      | 19.2          | 0.472          | 0.019    | 11.9780       |                    |

**Results for 30 year +10% A Critical Storm Duration. Lowest mass balance: 99.76%**

| Node Event        | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status     |
|-------------------|---------|-------------|-----------|-----------|--------------|---------------|------------|------------|
| 240 minute winter | 49      | 232         | 94.507    | 0.882     | 22.5         | 4.4152        | 0.0000     | OK         |
| 240 minute winter | 50      | 232         | 94.508    | 0.981     | 21.2         | 4.7520        | 0.0000     | SURCHARGED |
| 240 minute winter | 51      | 236         | 94.508    | 0.837     | 4.0          | 4.0886        | 0.0000     | OK         |
| 240 minute winter | 52      | 236         | 94.508    | 0.894     | 4.0          | 4.1998        | 0.0000     | OK         |
| 240 minute winter | 53      | 236         | 94.508    | 0.934     | 3.9          | 4.2839        | 0.0000     | SURCHARGED |
| 240 minute winter | 54      | 232         | 94.508    | 0.976     | 6.9          | 4.7347        | 0.0000     | SURCHARGED |
| 240 minute winter | 55      | 232         | 94.508    | 1.037     | 18.5         | 6.1612        | 0.0000     | SURCHARGED |
| 15 minute summer  | 103     | 1           | 95.000    | 0.000     | 0.0          | 0.0000        | 0.0000     | OK         |
| 240 minute winter | HB3     | 232         | 94.508    | 1.095     | 10.3         | 6.2690        | 0.0000     | SURCHARGED |
| 360 minute winter | 57      | 344         | 94.326    | 2.066     | 21.5         | 7.6302        | 0.0000     | SURCHARGED |
| 360 minute winter | 58      | 344         | 94.326    | 2.117     | 20.2         | 7.8588        | 0.0000     | SURCHARGED |
| 360 minute winter | HB2     | 344         | 94.326    | 2.156     | 19.6         | 12.8944       | 0.0000     | SURCHARGED |
| 120 minute winter | 60      | 106         | 92.900    | 0.500     | 5.1          | 1.0953        | 0.0000     | SURCHARGED |
| 120 minute winter | 61      | 106         | 92.903    | 0.569     | 10.1         | 1.2668        | 0.0000     | SURCHARGED |
| 120 minute winter | 62      | 106         | 92.902    | 0.625     | 14.1         | 1.3529        | 0.0000     | SURCHARGED |
| 120 minute winter | 63      | 108         | 92.900    | 0.691     | 18.9         | 2.0788        | 0.0000     | SURCHARGED |
| 120 minute winter | 64      | 106         | 92.901    | 0.799     | 23.5         | 2.3217        | 0.0000     | SURCHARGED |
| 120 minute winter | 65      | 102         | 92.903    | 0.646     | 4.7          | 1.3477        | 0.0000     | SURCHARGED |
| 120 minute winter | 66      | 102         | 92.902    | 0.683     | 9.7          | 1.4015        | 0.0000     | SURCHARGED |
| 120 minute winter | 67      | 100         | 92.900    | 0.747     | 14.1         | 1.5034        | 0.0000     | SURCHARGED |
| 120 minute winter | 68      | 100         | 92.900    | 0.834     | 18.6         | 1.6585        | 0.0000     | SURCHARGED |
| 120 minute winter | 69      | 104         | 92.899    | 1.074     | 42.0         | 2.9774        | 0.0000     | SURCHARGED |
| 15 minute summer  | 102     | 1           | 93.000    | 0.000     | 0.0          | 0.0000        | 0.0000     | OK         |
| 120 minute winter | 70      | 104         | 92.900    | 1.131     | 36.5         | 3.1025        | 0.0000     | SURCHARGED |
| 120 minute winter | 71      | 104         | 92.901    | 1.204     | 34.8         | 3.2813        | 0.0000     | SURCHARGED |

| Link Event<br>(Upstream Depth) | US Node | Link   | DS Node | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Link Vol (m³) | Discharge Vol (m³) |
|--------------------------------|---------|--------|---------|---------------|----------------|----------|---------------|--------------------|
| 240 minute winter              | 49      | 9.008  | 50      | 18.6          | 0.451          | 0.018    | 24.0775       |                    |
| 240 minute winter              | 50      | 9.009  | 55      | 16.6          | 0.378          | 0.017    | 14.0463       |                    |
| 240 minute winter              | 51      | 12.000 | 52      | 2.0           | 0.207          | 0.002    | 14.0062       |                    |
| 240 minute winter              | 52      | 12.001 | 53      | 2.3           | 0.264          | 0.002    | 9.7817        |                    |
| 240 minute winter              | 53      | 12.002 | 54      | -3.1          | 0.221          | -0.003   | 10.4959       |                    |
| 240 minute winter              | 54      | 12.003 | 55      | 3.3           | 0.182          | 0.003    | 15.1041       |                    |
| 240 minute winter              | 55      | 9.010  | HB3     | 10.3          | 0.312          | 0.010    | 14.0672       |                    |
| 15 minute summer               | 103     | 13.000 | HB3     | 0.0           | 0.000          | 0.000    | 0.0000        |                    |
| 240 minute winter              | HB3     | 9.011  | 57      | 7.8           | 1.608          | 0.068    | 0.3918        |                    |
| 360 minute winter              | 57      | 1.019  | 58      | 18.5          | 0.358          | 0.018    | 12.6793       |                    |
| 360 minute winter              | 58      | 1.020  | HB2     | 17.8          | 0.191          | 0.018    | 9.5877        |                    |
| 360 minute winter              | HB2     | 1.021  | HB1     | 18.0          | 1.192          | 0.338    | 1.0520        |                    |
| 120 minute winter              | 60      | 14.000 | 61      | 4.7           | 0.357          | 0.029    | 4.0741        |                    |
| 120 minute winter              | 61      | 14.001 | 62      | 9.4           | 0.485          | 0.058    | 3.5301        |                    |
| 120 minute winter              | 62      | 14.002 | 63      | 14.3          | 0.574          | 0.088    | 4.1892        |                    |
| 120 minute winter              | 63      | 14.003 | 64      | 18.8          | 0.635          | 0.115    | 6.5973        |                    |
| 120 minute winter              | 64      | 14.004 | 69      | 21.8          | 0.713          | 0.134    | 7.8393        |                    |
| 120 minute winter              | 65      | 15.000 | 66      | 6.1           | 0.359          | 0.037    | 2.3252        |                    |
| 120 minute winter              | 66      | 15.001 | 67      | 9.4           | 0.494          | 0.058    | 4.0866        |                    |
| 120 minute winter              | 67      | 15.002 | 68      | 13.9          | 0.566          | 0.085    | 5.3750        |                    |
| 120 minute winter              | 68      | 15.003 | 69      | 16.9          | 0.673          | 0.104    | 5.6323        |                    |
| 120 minute winter              | 69      | 14.005 | 70      | 32.6          | 0.575          | 0.094    | 6.1549        |                    |
| 15 minute summer               | 102     | 16.000 | 70      | 0.0           | 0.000          | 0.000    | 0.2302        |                    |
| 120 minute winter              | 70      | 14.006 | 71      | 30.9          | 0.518          | 0.089    | 7.9543        |                    |
| 120 minute winter              | 71      | 14.007 | 77      | 27.7          | 0.443          | 0.080    | 10.7282       |                    |

**Results for 30 year +10% A Critical Storm Duration. Lowest mass balance: 99.76%**

| Node Event        | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status     |
|-------------------|---------|-------------|-----------|-----------|--------------|---------------|------------|------------|
| 120 minute winter | 72      | 104         | 92.900    | 1.035     | 4.7          | 2.8273        | 0.0000     | SURCHARGED |
| 120 minute winter | 73      | 104         | 92.900    | 1.067     | 8.1          | 2.9186        | 0.0000     | SURCHARGED |
| 120 minute winter | 74      | 104         | 92.899    | 1.134     | 11.8         | 3.1003        | 0.0000     | SURCHARGED |
| 120 minute winter | 75      | 104         | 92.900    | 1.204     | 15.8         | 3.2849        | 0.0000     | SURCHARGED |
| 120 minute winter | 76      | 104         | 92.900    | 1.258     | 19.4         | 3.4400        | 0.0000     | SURCHARGED |
| 120 minute winter | 77      | 104         | 92.901    | 1.302     | 31.6         | 3.5597        | 0.0000     | SURCHARGED |
| 15 minute summer  | 81      | 1           | 94.000    | 0.000     | 0.0          | 0.0000        | 0.0000     | OK         |
| 120 minute winter | HB1     | 104         | 92.900    | 1.383     | 38.9         | 7.9218        | 0.0000     | SURCHARGED |
| 360 minute winter | 79      | 208         | 89.604    | 0.154     | 34.7         | 0.2210        | 0.0000     | OK         |
| 30 minute winter  | 80      | 46          | 89.479    | 0.152     | 34.7         | 0.2177        | 0.0000     | OK         |
| 30 minute winter  | HW      | 46          | 89.428    | 0.143     | 34.7         | 0.0000        | 0.0000     | OK         |

| Link Event<br>(Upstream Depth) | US Node | Link   | DS Node | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Link Vol (m³) | Discharge Vol (m³) |
|--------------------------------|---------|--------|---------|---------------|----------------|----------|---------------|--------------------|
| 120 minute winter              | 72      | 17.000 | 73      | 3.7           | 0.272          | 0.011    | 3.4762        |                    |
| 120 minute winter              | 73      | 17.001 | 74      | 7.6           | 0.302          | 0.022    | 7.4650        |                    |
| 120 minute winter              | 74      | 17.002 | 75      | 11.6          | 0.329          | 0.033    | 7.5275        |                    |
| 120 minute winter              | 75      | 17.003 | 76      | 15.2          | 0.364          | 0.044    | 5.9028        |                    |
| 120 minute winter              | 76      | 17.004 | 77      | 17.7          | 0.301          | 0.051    | 4.7468        |                    |
| 120 minute winter              | 77      | 14.008 | HB1     | 21.6          | 0.419          | 0.063    | 9.2711        |                    |
| 15 minute summer               | 81      | 18.000 | HB1     | 0.0           | 0.000          | 0.000    | 0.0000        |                    |
| 120 minute winter              | HB1     | 1.022  | 79      | 34.7          | 1.486          | 0.105    | 0.5690        |                    |
| 360 minute winter              | 79      | 1.023  | 80      | 34.7          | 0.959          | 0.486    | 1.0679        |                    |
| 30 minute winter               | 80      | 1.024  | HW      | 34.7          | 1.005          | 0.488    | 0.3511        | 602.5              |

**Results for 100 year +35% CC +10% A Critical Storm Duration. Lowest mass balance: 99.76%**

| Node Event        | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status     |
|-------------------|---------|-------------|-----------|-----------|--------------|---------------|------------|------------|
| 600 minute winter | 1       | 585         | 95.387    | 1.596     | 8.1          | 4.6212        | 0.0000     | SURCHARGED |
| 600 minute winter | 2       | 585         | 95.385    | 1.662     | 11.1         | 4.7538        | 0.0000     | SURCHARGED |
| 600 minute winter | 3       | 585         | 95.385    | 1.716     | 11.6         | 4.8953        | 0.0000     | SURCHARGED |
| 600 minute winter | 4       | 585         | 95.388    | 1.802     | 12.3         | 5.1400        | 0.0000     | SURCHARGED |
| 600 minute winter | 5       | 585         | 95.389    | 1.841     | 14.9         | 5.2721        | 0.0000     | SURCHARGED |
| 600 minute winter | 100     | 585         | 95.391    | 0.991     | 60.2         | 320.8171      | 0.0000     | SURCHARGED |
| 600 minute winter | 6       | 585         | 95.389    | 1.890     | 60.4         | 5.4817        | 0.0000     | SURCHARGED |
| 600 minute winter | 7       | 585         | 95.385    | 1.854     | 5.0          | 5.5154        | 0.0000     | SURCHARGED |
| 600 minute winter | 8       | 585         | 95.387    | 1.925     | 8.7          | 5.6722        | 0.0000     | SURCHARGED |
| 600 minute winter | 9       | 585         | 95.387    | 1.952     | 46.6         | 5.7279        | 0.0000     | SURCHARGED |
| 600 minute winter | 10      | 585         | 95.386    | 1.991     | 39.7         | 5.8242        | 0.0000     | SURCHARGED |
| 600 minute winter | 11      | 585         | 95.385    | 2.024     | 37.5         | 5.9416        | 0.0000     | SURCHARGED |
| 600 minute winter | 12      | 585         | 95.385    | 2.064     | 35.2         | 6.0330        | 0.0000     | SURCHARGED |
| 600 minute winter | 13      | 585         | 95.386    | 2.195     | 33.0         | 6.4326        | 0.0000     | SURCHARGED |
| 600 minute winter | 14      | 585         | 95.386    | 2.247     | 30.8         | 6.6011        | 0.0000     | FLOOD RISK |
| 600 minute winter | 15      | 585         | 95.383    | 0.757     | 2.7          | 1.3530        | 0.0000     | SURCHARGED |
| 600 minute winter | 16      | 585         | 95.386    | 0.915     | 5.5          | 1.5759        | 0.0000     | SURCHARGED |
| 600 minute winter | 17      | 585         | 95.386    | 1.055     | 9.7          | 1.9007        | 0.0000     | SURCHARGED |
| 600 minute winter | 18      | 585         | 95.385    | 2.317     | 31.6         | 6.7833        | 0.0000     | FLOOD RISK |
| 600 minute winter | 19      | 585         | 95.384    | 2.196     | 3.0          | 6.1898        | 0.0000     | SURCHARGED |
| 600 minute winter | 20      | 585         | 95.384    | 2.276     | 6.3          | 6.4292        | 0.0000     | SURCHARGED |
| 600 minute winter | 21      | 585         | 95.384    | 2.292     | 10.2         | 6.4678        | 0.0000     | SURCHARGED |
| 600 minute winter | 22      | 585         | 95.385    | 2.677     | 39.3         | 10.0938       | 0.0000     | SURCHARGED |
| 600 minute winter | 23      | 585         | 95.385    | 2.739     | 42.4         | 10.2285       | 0.0000     | SURCHARGED |
| 600 minute winter | 24      | 585         | 95.384    | 2.846     | 45.3         | 10.5058       | 0.0000     | SURCHARGED |

| Link Event<br>(Upstream Depth) | US Node | Link  | DS Node | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Link Vol (m³) | Discharge Vol (m³) |
|--------------------------------|---------|-------|---------|---------------|----------------|----------|---------------|--------------------|
| 600 minute winter              | 1       | 1.000 | 2       | -5.4          | 0.278          | -0.016   | 7.5095        |                    |
| 600 minute winter              | 2       | 1.001 | 3       | -8.4          | 0.385          | -0.024   | 5.8730        |                    |
| 600 minute winter              | 3       | 1.002 | 4       | 9.6           | 0.439          | 0.028    | 9.1480        |                    |
| 600 minute winter              | 4       | 1.003 | 5       | 12.2          | 0.478          | 0.035    | 4.0885        |                    |
| 600 minute winter              | 5       | 1.004 | 6       | 15.6          | 0.534          | 0.045    | 5.3262        |                    |
| 600 minute winter              | 100     | 2.000 | 6       | -60.2         | -1.035         | -0.299   | 1.2966        |                    |
| 600 minute winter              | 6       | 1.005 | 9       | -46.4         | 0.487          | -0.134   | 7.0355        |                    |
| 600 minute winter              | 7       | 3.000 | 8       | 2.9           | 0.175          | 0.008    | 7.6075        |                    |
| 600 minute winter              | 8       | 3.001 | 9       | -6.2          | 0.165          | -0.018   | 2.9399        |                    |
| 600 minute winter              | 9       | 1.006 | 10      | -39.5         | 0.578          | -0.114   | 4.3846        |                    |
| 600 minute winter              | 10      | 1.007 | 11      | -37.2         | 0.602          | -0.107   | 3.7395        |                    |
| 600 minute winter              | 11      | 1.008 | 12      | -35.0         | 0.662          | -0.100   | 4.3544        |                    |
| 600 minute winter              | 12      | 1.009 | 13      | -32.7         | 0.652          | -0.094   | 14.2647       |                    |
| 600 minute winter              | 13      | 1.010 | 14      | -30.5         | 0.658          | -0.088   | 5.6811        |                    |
| 600 minute winter              | 14      | 1.011 | 18      | -28.4         | 0.608          | -0.082   | 7.8487        |                    |
| 600 minute winter              | 15      | 4.000 | 16      | 2.8           | 0.458          | 0.065    | 0.9265        |                    |
| 600 minute winter              | 16      | 4.001 | 17      | 7.0           | 0.657          | 0.164    | 0.8324        |                    |
| 600 minute winter              | 17      | 4.002 | 18      | 9.2           | 0.907          | 0.177    | 0.4825        |                    |
| 600 minute winter              | 18      | 1.012 | 22      | 29.9          | 0.771          | 0.086    | 6.5673        |                    |
| 600 minute winter              | 19      | 5.000 | 20      | 3.6           | 0.232          | 0.010    | 8.7582        |                    |
| 600 minute winter              | 20      | 5.001 | 21      | 7.5           | 0.325          | 0.022    | 1.7771        |                    |
| 600 minute winter              | 21      | 5.002 | 22      | 11.4          | 0.461          | 0.033    | 9.0945        |                    |
| 600 minute winter              | 22      | 1.013 | 23      | 39.7          | 0.524          | 0.040    | 15.5027       |                    |
| 600 minute winter              | 23      | 1.014 | 24      | 42.6          | 0.518          | 0.042    | 26.6261       |                    |
| 600 minute winter              | 24      | 1.015 | 32      | 45.6          | 0.483          | 0.046    | 7.8075        |                    |

**Results for 100 year +35% CC +10% A Critical Storm Duration. Lowest mass balance: 99.76%**

| Node Event        | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status     |
|-------------------|---------|-------------|-----------|-----------|--------------|---------------|------------|------------|
| 600 minute winter | 25      | 585         | 95.385    | 2.634     | 2.9          | 9.7285        | 0.0000     | SURCHARGED |
| 600 minute winter | 26      | 585         | 95.385    | 2.691     | 5.8          | 9.9577        | 0.0000     | SURCHARGED |
| 600 minute winter | 101     | 585         | 95.384    | 0.984     | 80.9         | 164.9104      | 0.0000     | SURCHARGED |
| 600 minute winter | 27      | 585         | 95.384    | 2.765     | 81.6         | 10.2512       | 0.0000     | SURCHARGED |
| 600 minute winter | 28      | 585         | 95.382    | 2.637     | 3.0          | 9.5791        | 0.0000     | SURCHARGED |
| 600 minute winter | 29      | 585         | 95.383    | 2.695     | 6.5          | 9.8411        | 0.0000     | SURCHARGED |
| 600 minute winter | 30      | 585         | 95.383    | 2.755     | 9.8          | 10.1007       | 0.0000     | SURCHARGED |
| 600 minute winter | 31      | 585         | 95.384    | 2.844     | 72.5         | 10.4492       | 0.0000     | SURCHARGED |
| 600 minute winter | 32      | 585         | 95.384    | 2.877     | 59.1         | 10.5796       | 0.0000     | SURCHARGED |
| 600 minute winter | 33      | 585         | 95.384    | 2.971     | 16.4         | 10.8775       | 0.0000     | SURCHARGED |
| 600 minute winter | 34      | 585         | 95.384    | 3.058     | 16.3         | 11.2417       | 0.0000     | SURCHARGED |
| 15 minute winter  | 35      | 12          | 97.381    | 0.889     | 33.2         | 1.6386        | 0.0000     | SURCHARGED |
| 15 minute winter  | 36      | 12          | 97.286    | 1.055     | 59.8         | 1.8998        | 0.0000     | SURCHARGED |
| 15 minute winter  | 37      | 12          | 97.026    | 0.950     | 67.1         | 1.3620        | 0.0000     | SURCHARGED |
| 15 minute winter  | 38      | 12          | 96.743    | 0.143     | 25.7         | 0.2354        | 0.0000     | OK         |
| 15 minute winter  | 39      | 12          | 96.724    | 0.770     | 102.3        | 1.1473        | 0.0000     | SURCHARGED |
| 15 minute winter  | 40      | 12          | 95.985    | 0.523     | 116.6        | 0.8359        | 0.0000     | SURCHARGED |
| 480 minute winter | 41      | 464         | 95.627    | 1.629     | 4.8          | 5.8188        | 0.0000     | SURCHARGED |
| 480 minute winter | 42      | 464         | 95.627    | 1.662     | 10.5         | 5.9318        | 0.0000     | SURCHARGED |
| 480 minute winter | 43      | 464         | 95.627    | 1.701     | 15.5         | 6.2530        | 0.0000     | SURCHARGED |
| 480 minute winter | 44      | 464         | 95.627    | 1.736     | 17.3         | 6.3313        | 0.0000     | SURCHARGED |
| 480 minute winter | 45      | 464         | 95.627    | 1.787     | 18.7         | 6.6942        | 0.0000     | SURCHARGED |
| 480 minute winter | 46      | 464         | 95.627    | 1.824     | 35.0         | 10.8210       | 0.0000     | SURCHARGED |
| 480 minute winter | 47      | 464         | 95.627    | 1.904     | 41.1         | 9.7729        | 0.0000     | SURCHARGED |
| 480 minute winter | 48      | 464         | 95.627    | 1.953     | 42.8         | 9.1498        | 0.0000     | SURCHARGED |

| Link Event<br>(Upstream Depth) | US Node | Link   | DS Node | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Link Vol (m³) | Discharge Vol (m³) |
|--------------------------------|---------|--------|---------|---------------|----------------|----------|---------------|--------------------|
| 600 minute winter              | 25      | 6.000  | 26      | 3.1           | 0.166          | 0.003    | 13.9703       |                    |
| 600 minute winter              | 26      | 6.001  | 27      | 6.3           | 0.227          | 0.006    | 18.6304       |                    |
| 600 minute winter              | 101     | 7.000  | 27      | -80.9         | -1.407         | -0.163   | 0.4215        |                    |
| 600 minute winter              | 27      | 6.002  | 31      | -72.5         | 0.191          | -0.072   | 19.4721       |                    |
| 600 minute winter              | 28      | 8.000  | 29      | 3.8           | 0.167          | 0.004    | 13.9798       |                    |
| 600 minute winter              | 29      | 8.001  | 30      | 7.1           | 0.227          | 0.007    | 14.7663       |                    |
| 600 minute winter              | 30      | 8.002  | 31      | 10.5          | 0.191          | 0.010    | 21.8671       |                    |
| 600 minute winter              | 31      | 6.003  | 32      | -59.3         | 0.204          | -0.057   | 7.5438        |                    |
| 600 minute winter              | 32      | 1.016  | 33      | 15.9          | 0.578          | 0.016    | 23.1885       |                    |
| 600 minute winter              | 33      | 1.017  | 34      | 16.3          | 0.531          | 0.016    | 21.4203       |                    |
| 600 minute winter              | 34      | 1.018  | 57      | 17.0          | 0.312          | 0.017    | 16.2018       |                    |
| 15 minute winter               | 35      | 9.000  | 36      | 26.1          | 0.773          | 0.552    | 1.2463        |                    |
| 15 minute winter               | 36      | 9.001  | 37      | 54.5          | 1.369          | 1.148    | 0.7386        |                    |
| 15 minute winter               | 37      | 9.002  | 39      | 66.3          | 1.668          | 1.346    | 0.5393        |                    |
| 15 minute winter               | 38      | 10.000 | 39      | 25.6          | 0.847          | 0.254    | 0.5684        |                    |
| 15 minute winter               | 39      | 9.003  | 40      | 98.7          | 2.481          | 1.050    | 0.6165        |                    |
| 15 minute winter               | 40      | 9.004  | 46      | 115.5         | 3.034          | 1.032    | 0.8531        |                    |
| 480 minute winter              | 41      | 11.000 | 42      | -3.5          | 0.188          | -0.003   | 8.2226        |                    |
| 480 minute winter              | 42      | 11.001 | 43      | -9.5          | 0.208          | -0.010   | 9.7189        |                    |
| 480 minute winter              | 43      | 11.002 | 44      | -13.3         | 0.287          | -0.013   | 8.8145        |                    |
| 480 minute winter              | 44      | 11.003 | 45      | -15.4         | 0.296          | -0.015   | 12.3896       |                    |
| 480 minute winter              | 45      | 11.004 | 46      | -16.0         | 0.223          | -0.016   | 9.2366        |                    |
| 480 minute winter              | 46      | 9.005  | 47      | 36.1          | 0.457          | 0.036    | 19.7167       |                    |
| 480 minute winter              | 47      | 9.006  | 48      | 41.4          | 0.457          | 0.041    | 12.2071       |                    |
| 480 minute winter              | 48      | 9.007  | 49      | 43.0          | 0.441          | 0.043    | 12.2090       |                    |

**Results for 100 year +35% CC +10% A Critical Storm Duration. Lowest mass balance: 99.76%**

| Node Event        | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status     |
|-------------------|---------|-------------|-----------|-----------|--------------|---------------|------------|------------|
| 480 minute winter | 49      | 464         | 95.627    | 2.002     | 47.6         | 10.0159       | 0.0000     | SURCHARGED |
| 480 minute winter | 50      | 464         | 95.627    | 2.100     | 51.8         | 10.1746       | 0.0000     | SURCHARGED |
| 480 minute winter | 51      | 464         | 95.627    | 1.956     | 4.2          | 9.5511        | 0.0000     | SURCHARGED |
| 480 minute winter | 52      | 464         | 95.627    | 2.013     | 5.7          | 9.4552        | 0.0000     | SURCHARGED |
| 480 minute winter | 53      | 464         | 95.627    | 2.053     | 6.2          | 9.4173        | 0.0000     | SURCHARGED |
| 480 minute winter | 54      | 464         | 95.627    | 2.095     | 10.4         | 10.1651       | 0.0000     | SURCHARGED |
| 480 minute winter | 55      | 464         | 95.627    | 2.156     | 66.1         | 12.8107       | 0.0000     | SURCHARGED |
| 480 minute winter | 103     | 464         | 95.627    | 0.627     | 62.3         | 173.5415      | 0.0000     | SURCHARGED |
| 480 minute winter | HB3     | 464         | 95.627    | 2.214     | 67.4         | 12.6751       | 0.0000     | SURCHARGED |
| 600 minute winter | 57      | 585         | 95.384    | 3.124     | 19.9         | 11.5407       | 0.0000     | SURCHARGED |
| 600 minute winter | 58      | 585         | 95.384    | 3.175     | 19.5         | 11.7897       | 0.0000     | SURCHARGED |
| 600 minute winter | HB2     | 585         | 95.384    | 3.214     | 19.4         | 19.2278       | 0.0000     | SURCHARGED |
| 240 minute winter | 60      | 224         | 94.100    | 1.700     | 7.8          | 3.7254        | 0.0000     | SURCHARGED |
| 240 minute winter | 61      | 228         | 94.101    | 1.767     | 14.4         | 3.9360        | 0.0000     | SURCHARGED |
| 240 minute winter | 62      | 228         | 94.101    | 1.824     | 17.9         | 3.9445        | 0.0000     | SURCHARGED |
| 240 minute winter | 63      | 228         | 94.100    | 1.891     | 22.0         | 5.6889        | 0.0000     | FLOOD RISK |
| 240 minute winter | 64      | 228         | 94.101    | 1.999     | 27.9         | 5.8102        | 0.0000     | SURCHARGED |
| 240 minute winter | 65      | 228         | 94.101    | 1.844     | 5.2          | 3.8460        | 0.0000     | SURCHARGED |
| 240 minute winter | 66      | 228         | 94.101    | 1.882     | 11.5         | 3.8632        | 0.0000     | SURCHARGED |
| 240 minute winter | 67      | 228         | 94.101    | 1.948     | 17.9         | 3.9185        | 0.0000     | SURCHARGED |
| 240 minute winter | 68      | 224         | 94.100    | 2.034     | 23.9         | 4.0432        | 0.0000     | SURCHARGED |
| 240 minute winter | 69      | 228         | 94.101    | 2.276     | 59.1         | 6.3058        | 0.0000     | SURCHARGED |
| 240 minute winter | 102     | 224         | 94.100    | 1.100     | 105.3        | 138.4593      | 0.0000     | SURCHARGED |
| 240 minute winter | 70      | 228         | 94.101    | 2.332     | 103.9        | 6.3961        | 0.0000     | SURCHARGED |
| 240 minute winter | 71      | 228         | 94.101    | 2.404     | 37.3         | 6.5544        | 0.0000     | SURCHARGED |

| Link Event<br>(Upstream Depth) | US Node | Link   | DS Node | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Link Vol (m³) | Discharge Vol (m³) |
|--------------------------------|---------|--------|---------|---------------|----------------|----------|---------------|--------------------|
| 480 minute winter              | 49      | 9.008  | 50      | 48.2          | 0.431          | 0.048    | 24.1347       |                    |
| 480 minute winter              | 50      | 9.009  | 55      | 52.7          | 0.371          | 0.053    | 14.0463       |                    |
| 480 minute winter              | 51      | 12.000 | 52      | 3.6           | 0.202          | 0.004    | 14.2301       |                    |
| 480 minute winter              | 52      | 12.001 | 53      | 5.4           | 0.261          | 0.005    | 9.7874        |                    |
| 480 minute winter              | 53      | 12.002 | 54      | 6.2           | 0.213          | 0.006    | 10.4959       |                    |
| 480 minute winter              | 54      | 12.003 | 55      | 10.9          | 0.165          | 0.011    | 15.1041       |                    |
| 480 minute winter              | 55      | 9.010  | HB3     | 67.4          | 0.299          | 0.066    | 14.0672       |                    |
| 480 minute winter              | 103     | 13.000 | HB3     | -62.3         | -1.354         | -0.368   | 0.6093        |                    |
| 480 minute winter              | HB3     | 9.011  | 57      | 7.7           | 1.608          | 0.067    | 0.3918        |                    |
| 600 minute winter              | 57      | 1.019  | 58      | 19.0          | 0.327          | 0.019    | 12.6793       |                    |
| 600 minute winter              | 58      | 1.020  | HB2     | 19.1          | 0.180          | 0.019    | 9.5877        |                    |
| 600 minute winter              | HB2     | 1.021  | HB1     | 19.4          | 1.209          | 0.364    | 1.0520        |                    |
| 240 minute winter              | 60      | 14.000 | 61      | 5.9           | 0.344          | 0.036    | 4.0741        |                    |
| 240 minute winter              | 61      | 14.001 | 62      | 12.1          | 0.472          | 0.075    | 3.5301        |                    |
| 240 minute winter              | 62      | 14.002 | 63      | 16.9          | 0.538          | 0.103    | 4.1892        |                    |
| 240 minute winter              | 63      | 14.003 | 64      | 22.8          | 0.585          | 0.140    | 6.5973        |                    |
| 240 minute winter              | 64      | 14.004 | 69      | 29.5          | 0.633          | 0.181    | 7.8393        |                    |
| 240 minute winter              | 65      | 15.000 | 66      | 6.4           | 0.337          | 0.039    | 2.3252        |                    |
| 240 minute winter              | 66      | 15.001 | 67      | 12.8          | 0.448          | 0.079    | 4.0866        |                    |
| 240 minute winter              | 67      | 15.002 | 68      | 18.8          | 0.512          | 0.116    | 5.3750        |                    |
| 240 minute winter              | 68      | 15.003 | 69      | 24.5          | 0.599          | 0.151    | 5.6323        |                    |
| 240 minute winter              | 69      | 14.005 | 70      | 60.3          | 0.515          | 0.174    | 6.1549        |                    |
| 240 minute winter              | 102     | 16.000 | 70      | -105.3        | -1.803         | -0.334   | 0.8236        |                    |
| 240 minute winter              | 70      | 14.006 | 71      | -38.5         | 0.530          | -0.111   | 7.9543        |                    |
| 240 minute winter              | 71      | 14.007 | 77      | -32.2         | 0.431          | -0.093   | 10.7282       |                    |

**Results for 100 year +35% CC +10% A Critical Storm Duration. Lowest mass balance: 99.76%**

| 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     |
|-------------------|------------|----------------|--------------|--------------|-----------------|------------------|---------------|------------|
| 240 minute winter | 72         | 228            | 94.101       | 2.236        | 5.2             | 6.1076           | 0.0000        | SURCHARGED |
| 240 minute winter | 73         | 228            | 94.100       | 2.267        | 11.8            | 6.2037           | 0.0000        | SURCHARGED |
| 240 minute winter | 74         | 228            | 94.100       | 2.335        | 18.4            | 6.3813           | 0.0000        | SURCHARGED |
| 240 minute winter | 75         | 224            | 94.100       | 2.404        | 24.9            | 6.5600           | 0.0000        | SURCHARGED |
| 240 minute winter | 76         | 228            | 94.100       | 2.458        | 31.2            | 6.7202           | 0.0000        | SURCHARGED |
| 240 minute winter | 77         | 228            | 94.100       | 2.501        | 37.6            | 6.8414           | 0.0000        | SURCHARGED |
| 240 minute winter | 81         | 228            | 94.100       | 0.100        | 0.3             | 0.1131           | 0.0000        | OK         |
| 240 minute winter | HB1        | 228            | 94.100       | 2.583        | 40.4            | 14.7903          | 0.0000        | SURCHARGED |
| 240 minute winter | 79         | 524            | 89.604       | 0.154        | 34.7            | 0.2210           | 0.0000        | OK         |
| 15 minute winter  | 80         | 82             | 89.479       | 0.152        | 34.7            | 0.2177           | 0.0000        | OK         |
| 30 minute winter  | HW         | 184            | 89.428       | 0.143        | 34.7            | 0.0000           | 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) | Discharge<br>Vol (m³) |
|--------------------------------|------------|--------|------------|------------------|-------------------|----------|------------------|-----------------------|
| 240 minute winter              | 72         | 17.000 | 73         | 6.7              | 0.220             | 0.019    | 3.4762           |                       |
| 240 minute winter              | 73         | 17.001 | 74         | 13.3             | 0.287             | 0.038    | 7.4650           |                       |
| 240 minute winter              | 74         | 17.002 | 75         | 19.8             | 0.336             | 0.057    | 7.5275           |                       |
| 240 minute winter              | 75         | 17.003 | 76         | 26.1             | 0.357             | 0.075    | 5.9028           |                       |
| 240 minute winter              | 76         | 17.004 | 77         | 32.5             | 0.282             | 0.094    | 4.7468           |                       |
| 240 minute winter              | 77         | 14.008 | HB1        | 23.1             | 0.385             | 0.067    | 9.2711           |                       |
| 240 minute winter              | 81         | 18.000 | HB1        | -0.3             | -0.033            | -0.006   | 0.1634           |                       |
| 240 minute winter              | HB1        | 1.022  | 79         | 34.7             | 1.486             | 0.105    | 0.5690           |                       |
| 240 minute winter              | 79         | 1.023  | 80         | 34.7             | 0.959             | 0.486    | 1.0679           |                       |
| 15 minute winter               | 80         | 1.024  | HW         | 34.7             | 1.005             | 0.488    | 0.3511           | 762.6                 |