

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 0                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 1 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

### STORM SEWER DESIGN by the Modified Rational Method

#### Design Criteria for 7778 - SW NET 1 REV F.SWS

Pipe Sizes 7778 - SW NET 3 REV F Manhole Sizes 7778 - SW NET 3 REV F

FSR Rainfall Model - England and Wales

|                                      |        |                                       |       |
|--------------------------------------|--------|---------------------------------------|-------|
| Return Period (years)                | 2      | PIMP (%)                              | 100   |
| M5-60 (mm)                           | 19.400 | Add Flow / Climate Change (%)         | 0     |
| Ratio R                              | 0.387  | Minimum Backdrop Height (m)           | 0.200 |
| Maximum Rainfall (mm/hr)             | 50     | Maximum Backdrop Height (m)           | 0.000 |
| Maximum Time of Concentration (mins) | 30     | Min Design Depth for Optimisation (m) | 1.200 |
| Foul Sewage (l/s/ha)                 | 0.000  | Min Vel for Auto Design only (m/s)    | 0.75  |
| Volumetric Runoff Coeff.             | 0.750  | Min Slope for Optimisation (1:X)      | 500   |

Designed with Level Soffits

#### Network Design Table for 7778 - SW NET 1 REV F.SWS

« - Indicates pipe capacity < flow

| PN    | Length<br>(m) | Fall<br>(m) | Slope<br>(1:X) | I.Area<br>(ha) | T.E.<br>(mins) | Base<br>Flow (l/s) | k<br>(mm) | HYD<br>SECT | DIA<br>(mm) | Section Type | Auto<br>Design                                                                        |
|-------|---------------|-------------|----------------|----------------|----------------|--------------------|-----------|-------------|-------------|--------------|---------------------------------------------------------------------------------------|
| 1.000 | 29.668        | 0.177       | 167.6          | 0.041          | 5.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |  |
| 1.001 | 56.822        | 1.001       | 56.8           | 0.052          | 0.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |  |
| 2.000 | 37.707        | 0.191       | 197.4          | 0.100          | 5.00           | 0.0                | 0.600     | o           | 300         | Pipe/Conduit |  |
| 1.002 | 19.049        | 0.079       | 241.1          | 0.242          | 0.00           | 0.0                | 0.600     | o           | 450         | Pipe/Conduit |  |
| 1.003 | 21.371        | 0.089       | 240.1          | 0.064          | 0.00           | 0.0                | 0.600     | o           | 450         | Pipe/Conduit |  |
| 1.004 | 11.349        | 0.038       | 298.7          | 0.103          | 0.00           | 0.0                | 0.600     | o           | 450         | Pipe/Conduit |  |
| 1.005 | 38.978        | 0.686       | 56.8           | 0.052          | 0.00           | 0.0                | 0.600     | o           | 450         | Pipe/Conduit |  |
| 1.006 | 9.105         | 0.030       | 303.5          | 0.075          | 0.00           | 0.0                | 0.600     | o           | 450         | Pipe/Conduit |  |
| 1.007 | 55.292        | 0.138       | 400.7          | 0.049          | 0.00           | 0.0                | 0.600     | o           | 1500        | Pipe/Conduit |  |
| 1.008 | 54.750        | 0.137       | 399.6          | 0.148          | 0.00           | 0.0                | 0.600     | o           | 1500        | Pipe/Conduit |  |
| 1.009 | 50.715        | 0.127       | 399.3          | 0.110          | 0.00           | 0.0                | 0.600     | o           | 1500        | Pipe/Conduit |  |

#### Network Results Table

| PN    | Rain<br>(mm/hr) | T.C.<br>(mins) | US/IL<br>(m) | E I.Area<br>(ha) | E Base<br>Flow (l/s) | Foul<br>(l/s) | Add Flow<br>(l/s) | Vel<br>(m/s) | Cap<br>(l/s) | Flow<br>(l/s) |
|-------|-----------------|----------------|--------------|------------------|----------------------|---------------|-------------------|--------------|--------------|---------------|
| 1.000 | 50.00           | 5.49           | 24.800       | 0.041            | 0.0                  | 0.0           | 0.0               | 1.01         | 40.0         | 5.6           |
| 1.001 | 50.00           | 6.04           | 24.623       | 0.093            | 0.0                  | 0.0           | 0.0               | 1.74         | 69.2         | 12.6          |
| 2.000 | 50.00           | 5.56           | 23.738       | 0.100            | 0.0                  | 0.0           | 0.0               | 1.12         | 78.8         | 13.5          |
| 1.002 | 50.00           | 6.28           | 23.397       | 0.435            | 0.0                  | 0.0           | 0.0               | 1.30         | 207.5        | 58.9          |
| 1.003 | 50.00           | 6.55           | 23.318       | 0.499            | 0.0                  | 0.0           | 0.0               | 1.31         | 208.0        | 67.6          |
| 1.004 | 50.00           | 6.71           | 23.229       | 0.602            | 0.0                  | 0.0           | 0.0               | 1.17         | 186.3        | 81.5          |
| 1.005 | 50.00           | 6.95           | 23.191       | 0.654            | 0.0                  | 0.0           | 0.0               | 2.70         | 429.6        | 88.6          |
| 1.006 | 50.00           | 7.08           | 22.505       | 0.729            | 0.0                  | 0.0           | 0.0               | 1.16         | 184.8        | 98.7          |
| 1.007 | 50.00           | 7.52           | 20.600       | 0.778            | 0.0                  | 0.0           | 0.0               | 2.14         | 3775.9       | 105.4         |
| 1.008 | 50.00           | 7.94           | 20.462       | 0.926            | 0.0                  | 0.0           | 0.0               | 2.14         | 3780.8       | 125.4         |
| 1.009 | 50.00           | 8.34           | 20.325       | 1.036            | 0.0                  | 0.0           | 0.0               | 2.14         | 3782.3       | 140.3         |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 1                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 1 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

Network Design Table for 7778 - SW NET 1 REV F.SWS

| PN    | Length<br>(m) | Fall<br>(m) | Slope<br>(1:X) | I.Area<br>(ha) | T.E.<br>(mins) | Base<br>Flow (l/s) | k<br>(mm) | HYD<br>SECT | DIA<br>(mm) | Section Type | Auto<br>Design                                                                        |
|-------|---------------|-------------|----------------|----------------|----------------|--------------------|-----------|-------------|-------------|--------------|---------------------------------------------------------------------------------------|
| 1.010 | 17.610        | 0.044       | 400.2          | 0.120          | 0.00           | 0.0                | 0.600     | o           | 1500        | Pipe/Conduit |    |
| 3.000 | 24.730        | 0.618       | 40.0           | 0.097          | 5.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |    |
| 3.001 | 20.721        | 0.518       | 40.0           | 0.104          | 0.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |    |
| 1.011 | 60.022        | 0.154       | 389.8          | 0.020          | 0.00           | 0.0                | 0.600     | o           | 1500        | Pipe/Conduit |    |
| 4.000 | 78.717        | 1.574       | 50.0           | 0.124          | 5.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |    |
| 4.001 | 31.677        | 0.132       | 240.0          | 0.207          | 0.00           | 0.0                | 0.600     | o           | 300         | Pipe/Conduit |    |
| 4.002 | 7.768         | 0.032       | 242.8          | 0.056          | 0.00           | 0.0                | 0.600     | o           | 300         | Pipe/Conduit |    |
| 4.003 | 6.220         | 0.026       | 239.2          | 0.009          | 0.00           | 0.0                | 0.600     | o           | 300         | Pipe/Conduit |    |
| 4.004 | 12.851        | 0.033       | 389.4          | 0.062          | 0.00           | 0.0                | 0.600     | o           | 1050        | Pipe/Conduit |    |
| 5.000 | 67.433        | 0.401       | 168.2          | 0.167          | 5.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |    |
| 5.001 | 21.998        | 0.055       | 400.0          | 0.127          | 0.00           | 0.0                | 0.600     | o           | 1050        | Pipe/Conduit |    |
| 5.002 | 39.292        | 0.098       | 400.9          | 0.050          | 0.00           | 0.0                | 0.600     | o           | 1050        | Pipe/Conduit |    |
| 4.005 | 25.780        | 0.064       | 402.8          | 0.004          | 0.00           | 0.0                | 0.600     | o           | 1050        | Pipe/Conduit |   |
| 4.006 | 33.853        | 0.094       | 360.1          | 0.080          | 0.00           | 0.0                | 0.600     | o           | 1050        | Pipe/Conduit |  |
| 6.000 | 32.491        | 0.335       | 97.0           | 0.073          | 5.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |  |
| 6.001 | 8.027         | 0.090       | 89.2           | 0.082          | 0.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |  |
| 6.002 | 7.477         | 0.075       | 99.7           | 0.112          | 0.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |  |
| 6.003 | 68.639        | 0.172       | 399.1          | 0.150          | 0.00           | 0.0                | 0.600     | o           | 1050        | Pipe/Conduit |  |

Network Results Table

| PN    | Rain<br>(mm/hr) | T.C.<br>(mins) | US/IL<br>(m) | Σ I.Area<br>(ha) | Σ Base<br>Flow (l/s) | Foul<br>(l/s) | Add Flow<br>(l/s) | Vel<br>(m/s) | Cap<br>(l/s) | Flow<br>(l/s) |
|-------|-----------------|----------------|--------------|------------------|----------------------|---------------|-------------------|--------------|--------------|---------------|
| 1.010 | 50.00           | 8.47           | 20.198       | 1.156            | 0.0                  | 0.0           | 0.0               | 2.14         | 3778.0       | 156.5         |
| 3.000 | 50.00           | 5.20           | 23.375       | 0.097            | 0.0                  | 0.0           | 0.0               | 2.07         | 82.5         | 13.1          |
| 3.001 | 50.00           | 5.37           | 22.757       | 0.201            | 0.0                  | 0.0           | 0.0               | 2.07         | 82.5         | 27.2          |
| 1.011 | 50.00           | 8.94           | 20.154       | 1.377            | 0.0                  | 0.0           | 0.0               | 2.17         | 3828.7       | 186.5         |
| 4.000 | 50.00           | 5.71           | 25.288       | 0.124            | 0.0                  | 0.0           | 0.0               | 1.85         | 73.7         | 16.8          |
| 4.001 | 50.00           | 6.23           | 23.639       | 0.331            | 0.0                  | 0.0           | 0.0               | 1.01         | 71.4         | 44.8          |
| 4.002 | 50.00           | 6.36           | 23.507       | 0.387            | 0.0                  | 0.0           | 0.0               | 1.00         | 71.0         | 52.4          |
| 4.003 | 50.00           | 6.46           | 23.475       | 0.396            | 0.0                  | 0.0           | 0.0               | 1.01         | 71.5         | 53.6          |
| 4.004 | 50.00           | 6.58           | 21.620       | 0.458            | 0.0                  | 0.0           | 0.0               | 1.74         | 1506.8       | 62.0          |
| 5.000 | 50.00           | 6.12           | 24.111       | 0.167            | 0.0                  | 0.0           | 0.0               | 1.01         | 40.0         | 22.6          |
| 5.001 | 50.00           | 6.33           | 21.740       | 0.294            | 0.0                  | 0.0           | 0.0               | 1.72         | 1486.7       | 39.8          |
| 5.002 | 50.00           | 6.71           | 21.685       | 0.344            | 0.0                  | 0.0           | 0.0               | 1.71         | 1484.9       | 46.6          |
| 4.005 | 50.00           | 6.96           | 21.587       | 0.806            | 0.0                  | 0.0           | 0.0               | 1.71         | 1481.4       | 109.1         |
| 4.006 | 50.00           | 7.28           | 21.522       | 0.886            | 0.0                  | 0.0           | 0.0               | 1.81         | 1567.3       | 120.0         |
| 6.000 | 50.00           | 5.41           | 24.201       | 0.073            | 0.0                  | 0.0           | 0.0               | 1.33         | 52.8         | 9.9           |
| 6.001 | 50.00           | 5.50           | 23.866       | 0.155            | 0.0                  | 0.0           | 0.0               | 1.39         | 55.1         | 21.0          |
| 6.002 | 50.00           | 5.60           | 23.776       | 0.267            | 0.0                  | 0.0           | 0.0               | 1.31         | 52.1         | 36.2          |
| 6.003 | 50.00           | 6.27           | 21.600       | 0.417            | 0.0                  | 0.0           | 0.0               | 1.72         | 1488.4       | 56.5          |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 2                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 1 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

Network Design Table for 7778 - SW NET 1 REV F.SWS

| PN    | Length<br>(m) | Fall<br>(m) | Slope<br>(1:X) | I.Area<br>(ha) | T.E.<br>(mins) | Base<br>Flow (l/s) | k<br>(mm) | HYD<br>SECT | DIA<br>(mm) | Section Type | Auto<br>Design                                                                        |
|-------|---------------|-------------|----------------|----------------|----------------|--------------------|-----------|-------------|-------------|--------------|---------------------------------------------------------------------------------------|
| 4.007 | 51.383        | 0.128       | 401.4          | 0.120          | 0.00           | 0.0                | 0.600     | o           | 1050        | Pipe/Conduit |    |
| 7.000 | 16.720        | 0.100       | 167.2          | 0.095          | 5.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |    |
| 7.001 | 30.020        | 0.460       | 65.3           | 0.065          | 0.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |    |
| 8.000 | 22.219        | 0.454       | 48.9           | 0.078          | 5.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |    |
| 7.002 | 65.372        | 0.164       | 398.6          | 0.113          | 0.00           | 0.0                | 0.600     | o           | 1050        | Pipe/Conduit |    |
| 9.000 | 57.093        | 0.144       | 396.5          | 0.153          | 5.00           | 0.0                | 0.600     | o           | 1050        | Pipe/Conduit |    |
| 7.003 | 14.840        | 0.038       | 390.5          | 0.167          | 0.00           | 0.0                | 0.600     | o           | 1050        | Pipe/Conduit |    |
| 7.004 | 50.285        | 0.126       | 399.1          | 0.104          | 0.00           | 0.0                | 0.600     | o           | 1050        | Pipe/Conduit |    |
| 7.005 | 14.931        | 0.044       | 339.3          | 0.053          | 0.00           | 0.0                | 0.600     | o           | 1050        | Pipe/Conduit |    |
| 4.008 | 11.000        | 0.065       | 168.0          | 0.120          | 0.00           | 0.0                | 0.600     | o           | 375         | Pipe/Conduit |    |
| 4.009 | 47.992        | 0.120       | 399.9          | 0.049          | 0.00           | 0.0                | 0.600     | o           | 1500        | Pipe/Conduit |    |
| 1.012 | 17.735        | 0.537       | 33.0           | 0.207          | 0.00           | 0.0                | 0.600     | o           | 375         | Pipe/Conduit |  |
| 1.013 | 66.809        | 1.261       | 53.0           | 0.000          | 0.00           | 0.0                | 0.600     | o           | 375         | Pipe/Conduit |  |
| 1.014 | 17.616        | 0.326       | 54.0           | 0.000          | 0.00           | 0.0                | 0.600     | o           | 375         | Pipe/Conduit |  |
| 1.015 | 42.134        | 0.795       | 53.0           | 0.000          | 0.00           | 0.0                | 0.600     | o           | 375         | Pipe/Conduit |  |
| 1.016 | 87.958        | 1.660       | 53.0           | 0.000          | 0.00           | 0.0                | 0.600     | o           | 375         | Pipe/Conduit |  |

Network Results Table

| PN    | Rain<br>(mm/hr) | T.C.<br>(mins) | US/IL<br>(m) | Σ I.Area<br>(ha) | Σ Base<br>Flow (l/s) | Foul<br>(l/s) | Add Flow<br>(l/s) | Vel<br>(m/s) | Cap<br>(l/s) | Flow<br>(l/s) |
|-------|-----------------|----------------|--------------|------------------|----------------------|---------------|-------------------|--------------|--------------|---------------|
| 4.007 | 50.00           | 7.78           | 21.428       | 1.423            | 0.0                  | 0.0           | 0.0               | 1.71         | 1484.0       | 192.7         |
| 7.000 | 50.00           | 5.28           | 23.054       | 0.095            | 0.0                  | 0.0           | 0.0               | 1.01         | 40.1         | 12.9          |
| 7.001 | 50.00           | 5.58           | 22.954       | 0.160            | 0.0                  | 0.0           | 0.0               | 1.62         | 64.5         | 21.7          |
| 8.000 | 50.00           | 5.20           | 23.900       | 0.078            | 0.0                  | 0.0           | 0.0               | 1.87         | 74.5         | 10.6          |
| 7.002 | 50.00           | 6.22           | 21.670       | 0.351            | 0.0                  | 0.0           | 0.0               | 1.72         | 1489.2       | 47.5          |
| 9.000 | 50.00           | 5.55           | 21.650       | 0.153            | 0.0                  | 0.0           | 0.0               | 1.72         | 1493.3       | 20.7          |
| 7.003 | 50.00           | 6.36           | 21.506       | 0.671            | 0.0                  | 0.0           | 0.0               | 1.74         | 1504.7       | 90.9          |
| 7.004 | 50.00           | 6.85           | 21.468       | 0.775            | 0.0                  | 0.0           | 0.0               | 1.72         | 1488.3       | 104.9         |
| 7.005 | 50.00           | 6.98           | 21.342       | 0.828            | 0.0                  | 0.0           | 0.0               | 1.87         | 1615.0       | 112.1         |
| 4.008 | 50.00           | 7.91           | 21.300       | 2.371            | 0.0                  | 0.0           | 0.0               | 1.40         | 154.1«       | 321.1         |
| 4.009 | 50.00           | 8.28           | 20.120       | 2.420            | 0.0                  | 0.0           | 0.0               | 2.14         | 3779.4       | 327.7         |
| 1.012 | 50.00           | 9.03           | 20.000       | 4.004            | 0.0                  | 0.0           | 0.0               | 3.16         | 349.3«       | 542.2         |
| 1.013 | 49.46           | 9.48           | 19.460       | 4.004            | 0.0                  | 0.0           | 0.0               | 2.49         | 275.5«       | 542.2         |
| 1.014 | 49.13           | 9.59           | 18.206       | 4.004            | 0.0                  | 0.0           | 0.0               | 2.47         | 272.7«       | 542.2         |
| 1.015 | 48.39           | 9.88           | 17.882       | 4.004            | 0.0                  | 0.0           | 0.0               | 2.49         | 275.4«       | 542.2         |
| 1.016 | 46.94           | 10.46          | 17.094       | 4.004            | 0.0                  | 0.0           | 0.0               | 2.49         | 275.4«       | 542.2         |

|                                                  |  |                                  |
|--------------------------------------------------|--|----------------------------------|
| Coopers                                          |  | Page 3                           |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |  | Cherryfield Drive<br>Kirkby      |
| Date 23/04/2024<br>File 7778 SW NET 1 REV F.MDX  |  | Designed by JAR<br>Checked by AJ |
| Micro Drainage                                   |  | Network 2020.1.3                 |



Manhole Schedules for 7778 - SW NET 1 REV F.SWS

| MH Name | MH CL (m) | MH Depth (m) | MH Connection | MH Diam., L*W (mm) | Pipe Out PN | Invert Level (m) | Diameter (mm) | Pipes In PN | Invert Level (m) | Diameter (mm) | Backdrop (mm) |
|---------|-----------|--------------|---------------|--------------------|-------------|------------------|---------------|-------------|------------------|---------------|---------------|
| 101     | 26.525    | 1.725        | Open Manhole  | 1500               | 1.000       | 24.800           | 225           |             |                  |               |               |
| 102     | 26.894    | 2.271        | Open Manhole  | 1500               | 1.001       | 24.623           | 225           | 1.000       | 24.623           | 225           |               |
| 103     | 25.463    | 1.725        | Open Manhole  | 1500               | 2.000       | 23.738           | 300           |             |                  |               |               |
| 104     | 25.197    | 1.800        | Open Manhole  | 1500               | 1.002       | 23.397           | 450           | 1.001       | 23.622           | 225           |               |
|         |           |              |               |                    |             |                  |               | 2.000       | 23.547           | 300           |               |
| 105     | 25.410    | 2.092        | Open Manhole  | 1500               | 1.003       | 23.318           | 450           | 1.002       | 23.318           | 450           |               |
| 106     | 25.350    | 2.121        | Open Manhole  | 1500               | 1.004       | 23.229           | 450           | 1.003       | 23.229           | 450           |               |
| 107     | 25.059    | 1.868        | Open Manhole  | 1500               | 1.005       | 23.191           | 450           | 1.004       | 23.191           | 450           |               |
| 108     | 24.080    | 1.575        | Open Manhole  | 1500               | 1.006       | 22.505           | 450           | 1.005       | 22.505           | 450           |               |
| 109     | 23.868    | 3.268        | Open Manhole  | 3000               | 1.007       | 20.600           | 1500          | 1.006       | 22.475           | 450           | 825           |
| 110     | 24.196    | 3.734        | Open Manhole  | 3000               | 1.008       | 20.462           | 1500          | 1.007       | 20.462           | 1500          |               |
| 111     | 23.825    | 3.500        | Open Manhole  | 3000               | 1.009       | 20.325           | 1500          | 1.008       | 20.325           | 1500          |               |
| 112     | 24.367    | 4.169        | Open Manhole  | 3000               | 1.010       | 20.198           | 1500          | 1.009       | 20.198           | 1500          |               |
| 113     | 25.100    | 1.725        | Open Manhole  | 1500               | 3.000       | 23.375           | 225           |             |                  |               |               |
| 114     | 24.685    | 1.928        | Open Manhole  | 1500               | 3.001       | 22.757           | 225           | 3.000       | 22.757           | 225           |               |
| 115     | 23.855    | 3.701        | Open Manhole  | 3000               | 1.011       | 20.154           | 1500          | 1.010       | 20.154           | 1500          |               |
|         |           |              |               |                    |             |                  |               | 3.001       | 22.239           | 225           | 810           |
| 116     | 27.013    | 1.725        | Open Manhole  | 1500               | 4.000       | 25.288           | 225           |             |                  |               |               |
| 117     | 26.616    | 2.977        | Open Manhole  | 1500               | 4.001       | 23.639           | 300           | 4.000       | 23.714           | 225           |               |
| 118     | 26.634    | 3.127        | Open Manhole  | 1500               | 4.002       | 23.507           | 300           | 4.001       | 23.507           | 300           |               |
| 119     | 26.500    | 3.025        | Open Manhole  | 1500               | 4.003       | 23.475           | 300           | 4.002       | 23.475           | 300           |               |
| 120     | 26.389    | 4.769        | Open Manhole  | 2700               | 4.004       | 21.620           | 1050          | 4.003       | 23.449           | 300           | 1079          |
| 121     | 25.836    | 1.725        | Open Manhole  | 1500               | 5.000       | 24.111           | 225           |             |                  |               |               |
| 122     | 25.927    | 4.187        | Open Manhole  | 2700               | 5.001       | 21.740           | 1050          | 5.000       | 23.710           | 225           | 1145          |
| 123     | 25.514    | 3.829        | Open Manhole  | 2700               | 5.002       | 21.685           | 1050          | 5.001       | 21.685           | 1050          |               |
| 124     | 26.169    | 4.582        | Open Manhole  | 2700               | 4.005       | 21.587           | 1050          | 4.004       | 21.587           | 1050          |               |
|         |           |              |               |                    |             |                  |               | 5.002       | 21.587           | 1050          |               |
| 125     | 26.029    | 4.507        | Open Manhole  | 2700               | 4.006       | 21.522           | 1050          | 4.005       | 21.523           | 1050          | 1             |
| 126     | 25.926    | 1.725        | Open Manhole  | 1500               | 6.000       | 24.201           | 225           |             |                  |               |               |
| 127     | 25.591    | 1.725        | Open Manhole  | 1500               | 6.001       | 23.866           | 225           | 6.000       | 23.866           | 225           |               |
| 128     | 25.600    | 1.824        | Open Manhole  | 1500               | 6.002       | 23.776           | 225           | 6.001       | 23.776           | 225           |               |
| 129     | 25.679    | 4.079        | Open Manhole  | 2700               | 6.003       | 21.600           | 1050          | 6.002       | 23.701           | 225           | 1276          |
| 130     | 26.499    | 5.071        | Open Manhole  | 2700               | 4.007       | 21.428           | 1050          | 4.006       | 21.428           | 1050          |               |
|         |           |              |               |                    |             |                  |               | 6.003       | 21.428           | 1050          |               |
| 131     | 25.000    | 1.946        | Open Manhole  | 1500               | 7.000       | 23.054           | 225           |             |                  |               |               |
| 132     | 24.972    | 2.018        | Open Manhole  | 1500               | 7.001       | 22.954           | 225           | 7.000       | 22.954           | 225           |               |
| 133     | 25.625    | 1.725        | Open Manhole  | 1500               | 8.000       | 23.900           | 225           |             |                  |               |               |
| 134     | 25.349    | 3.679        | Open Manhole  | 2700               | 7.002       | 21.670           | 1050          | 7.001       | 22.494           | 225           |               |
|         |           |              |               |                    |             |                  |               | 8.000       | 23.446           | 225           | 951           |
| 135     | 25.327    | 3.677        | Open Manhole  | 2700               | 9.000       | 21.650           | 1050          |             |                  |               |               |

|                                                  |  |                                  |
|--------------------------------------------------|--|----------------------------------|
| Coopers                                          |  | Page 4                           |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |  | Cherryfield Drive<br>Kirkby      |
| Date 23/04/2024<br>File 7778 SW NET 1 REV F.MDX  |  | Designed by JAR<br>Checked by AJ |
| Micro Drainage                                   |  | Network 2020.1.3                 |



Manhole Schedules for 7778 - SW NET 1 REV F.SWS

| MH Name | MH CL (m) | MH Depth (m) | MH Connection | MH Diam., L*W (mm) | Pipe Out PN | Pipe Out Invert Level (m) | Pipe Out Diameter (mm) | Pipes In PN | Pipes In Invert Level (m) | Pipes In Diameter (mm) | Backdrop (mm) |
|---------|-----------|--------------|---------------|--------------------|-------------|---------------------------|------------------------|-------------|---------------------------|------------------------|---------------|
| 136     | 25.387    | 3.881        | Open Manhole  | 2700               | 7.003       | 21.506                    | 1050                   | 7.002       | 21.506                    | 1050                   |               |
|         |           |              |               |                    |             |                           |                        | 9.000       | 21.506                    | 1050                   |               |
| 137     | 25.517    | 4.049        | Open Manhole  | 2700               | 7.004       | 21.468                    | 1050                   | 7.003       | 21.468                    | 1050                   |               |
| 138     | 26.100    | 4.758        | Open Manhole  | 2700               | 7.005       | 21.342                    | 1050                   | 7.004       | 21.342                    | 1050                   |               |
| 139     | 26.032    | 4.734        | Open Manhole  | 1500               | 4.008       | 21.300                    | 375                    | 4.007       | 21.300                    | 1050                   |               |
|         |           |              |               |                    |             |                           |                        | 7.005       | 21.298                    | 1050                   |               |
| 140     | 25.862    | 5.742        | Open Manhole  | 3000               | 4.009       | 20.120                    | 1500                   | 4.008       | 21.235                    | 375                    |               |
| 141     | 23.790    | 3.790        | Open Manhole  | 3000               | 1.012       | 20.000                    | 375                    | 1.011       | 20.000                    | 1500                   |               |
|         |           |              |               |                    |             |                           |                        | 4.009       | 20.000                    | 1500                   |               |
| 142     | 23.150    | 3.690        | Open Manhole  | 1500               | 1.013       | 19.460                    | 375                    | 1.012       | 19.463                    | 375                    | 3             |
| 143     | 23.293    | 5.094        | Open Manhole  | 1500               | 1.014       | 18.206                    | 375                    | 1.013       | 18.199                    | 375                    |               |
| 144     | 21.316    | 3.436        | Open Manhole  | 1500               | 1.015       | 17.882                    | 375                    | 1.014       | 17.880                    | 375                    |               |
| 145     | 20.620    | 3.533        | Open Manhole  | 1800               | 1.016       | 17.094                    | 375                    | 1.015       | 17.087                    | 375                    |               |
| 146     | 16.562    | 1.128        | Open Manhole  | 0                  |             | OUTFALL                   |                        | 1.016       | 15.434                    | 375                    |               |

| MH Name | Manhole Easting (m) | Manhole Northing (m) | Intersection Easting (m) | Intersection Northing (m) | Manhole Access | Layout (North) |
|---------|---------------------|----------------------|--------------------------|---------------------------|----------------|----------------|
| 101     | 341142.628          | 398495.238           | 341142.628               | 398495.238                | Required       |                |
| 102     | 341114.854          | 398505.665           | 341114.854               | 398505.665                | Required       |                |
| 103     | 341099.685          | 398572.039           | 341099.685               | 398572.039                | Required       |                |
| 104     | 341134.991          | 398558.798           | 341134.991               | 398558.798                | Required       |                |
| 105     | 341152.845          | 398552.159           | 341152.845               | 398552.159                | Required       |                |
| 106     | 341173.923          | 398548.632           | 341173.923               | 398548.632                | Required       |                |
| 107     | 341177.862          | 398559.275           | 341177.862               | 398559.275                | Required       |                |
| 108     | 341176.458          | 398598.229           | 341176.458               | 398598.229                | Required       |                |
| 109     | 341171.261          | 398605.705           | 341171.261               | 398605.705                | Required       |                |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 5                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 1 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

Manhole Schedules for 7778 - SW NET 1 REV F.SWS

| MH Name | Manhole Easting (m) | Manhole Northing (m) | Intersection Easting (m) | Intersection Northing (m) | Manhole Access | Layout (North)                                                                        |
|---------|---------------------|----------------------|--------------------------|---------------------------|----------------|---------------------------------------------------------------------------------------|
| 110     | 341119.948          | 398626.300           | 341119.948               | 398626.300                | Required       |    |
| 111     | 341069.137          | 398646.693           | 341069.137               | 398646.693                | Required       |    |
| 112     | 341022.071          | 398665.582           | 341022.071               | 398665.582                | Required       |    |
| 113     | 340998.203          | 398639.099           | 340998.203               | 398639.099                | Required       |    |
| 114     | 341007.061          | 398662.188           | 341007.061               | 398662.188                | Required       |    |
| 115     | 341014.554          | 398681.507           | 341014.554               | 398681.507                | Required       |  |
| 116     | 341081.275          | 398517.302           | 341081.275               | 398517.302                | Required       |  |
| 117     | 341007.646          | 398545.144           | 341007.646               | 398545.144                | Required       |  |
| 118     | 340978.017          | 398556.348           | 340978.017               | 398556.348                | Required       |  |
| 119     | 340971.816          | 398561.026           | 340971.816               | 398561.026                | Required       |  |
| 120     | 340970.931          | 398567.183           | 340970.931               | 398567.183                | Required       |  |
| 121     | 341073.091          | 398584.429           | 341073.091               | 398584.429                | Required       |  |
| 122     | 341009.984          | 398608.194           | 341009.984               | 398608.194                | Required       |  |
| 123     | 340989.398          | 398615.947           | 340989.398               | 398615.947                | Required       |  |
| 124     | 340975.518          | 398579.188           | 340975.518               | 398579.188                | Required       |  |
| 125     | 340951.398          | 398588.288           | 340951.398               | 398588.288                | Required       |  |
| 126     | 340928.710          | 398510.191           | 340928.710               | 398510.191                | Required       |  |

|                                                  |                                  |                                                                                     |
|--------------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                                  | Page 6                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby      |  |
| Date 23/04/2024<br>File 7778 SW NET 1 REV F.MDX  | Designed by JAR<br>Checked by AJ |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3                 |                                                                                     |

Manhole Schedules for 7778 - SW NET 1 REV F.SWS

| MH Name | Manhole Easting (m) | Manhole Northing (m) | Intersection Easting (m) | Intersection Northing (m) | Manhole Access | Layout (North)                                                                        |
|---------|---------------------|----------------------|--------------------------|---------------------------|----------------|---------------------------------------------------------------------------------------|
| 127     | 340898.340          | 398521.739           | 340898.340               | 398521.739                | Required       |    |
| 128     | 340894.270          | 398528.658           | 340894.270               | 398528.658                | Required       |    |
| 129     | 340895.422          | 398536.045           | 340895.422               | 398536.045                | Required       |    |
| 130     | 340919.724          | 398600.239           | 340919.724               | 398600.239                | Required       |    |
| 131     | 340803.904          | 398608.481           | 340803.904               | 398608.481                | Required       |    |
| 132     | 340820.574          | 398607.176           | 340820.574               | 398607.176                | Required       |   |
| 133     | 340869.443          | 398588.720           | 340869.443               | 398588.720                | Required       |  |
| 134     | 340848.629          | 398596.495           | 340848.629               | 398596.495                | Required       |  |
| 135     | 340818.314          | 398677.788           | 340818.314               | 398677.788                | Required       |  |
| 136     | 340871.736          | 398657.647           | 340871.736               | 398657.647                | Required       |  |
| 137     | 340876.981          | 398671.529           | 340876.981               | 398671.529                | Required       |  |
| 138     | 340923.964          | 398653.608           | 340923.964               | 398653.608                | Required       |  |
| 139     | 340937.917          | 398648.293           | 340937.917               | 398648.293                | Required       |  |
| 140     | 340941.790          | 398658.589           | 340941.790               | 398658.589                | Required       |  |
| 141     | 340958.707          | 398703.501           | 340958.707               | 398703.501                | Required       |  |
| 142     | 340965.213          | 398719.999           | 340965.213               | 398719.999                | Required       |  |
| 143     | 340908.304          | 398754.997           | 340908.304               | 398754.997                | Required       |  |

Manhole Schedules for 7778 - SW NET 1 REV F.SWS

| MH Name | Manhole Easting (m) | Manhole Northing (m) | Intersection Easting (m) | Intersection Northing (m) | Manhole Access | Layout (North)                                                                      |
|---------|---------------------|----------------------|--------------------------|---------------------------|----------------|-------------------------------------------------------------------------------------|
| 144     | 340893.298          | 398764.225           | 340893.298               | 398764.225                | Required       |  |
| 145     | 340852.344          | 398754.324           | 340852.344               | 398754.324                | Required       |  |
| 146     | 340764.387          | 398754.009           |                          |                           | No Entry       |  |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 8                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 1 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   |                             | Network 2020.1.3                                                                    |

PIPELINE SCHEDULES for 7778 - SW NET 1 REV F.SWS

Upstream Manhole

| PN    | Hyd Sect | Diam (mm) | MH Name | C.Level (m) | I.Level (m) | D.Depth (m) | MH Connection | MH DIAM., L*W (mm) |
|-------|----------|-----------|---------|-------------|-------------|-------------|---------------|--------------------|
| 1.000 | o        | 225       | 101     | 26.525      | 24.800      | 1.500       | Open Manhole  | 1500               |
| 1.001 | o        | 225       | 102     | 26.894      | 24.623      | 2.046       | Open Manhole  | 1500               |
| 2.000 | o        | 300       | 103     | 25.463      | 23.738      | 1.425       | Open Manhole  | 1500               |
| 1.002 | o        | 450       | 104     | 25.197      | 23.397      | 1.350       | Open Manhole  | 1500               |
| 1.003 | o        | 450       | 105     | 25.410      | 23.318      | 1.642       | Open Manhole  | 1500               |
| 1.004 | o        | 450       | 106     | 25.350      | 23.229      | 1.671       | Open Manhole  | 1500               |
| 1.005 | o        | 450       | 107     | 25.059      | 23.191      | 1.418       | Open Manhole  | 1500               |
| 1.006 | o        | 450       | 108     | 24.080      | 22.505      | 1.125       | Open Manhole  | 1500               |
| 1.007 | o        | 1500      | 109     | 23.868      | 20.600      | 1.768       | Open Manhole  | 3000               |
| 1.008 | o        | 1500      | 110     | 24.196      | 20.462      | 2.234       | Open Manhole  | 3000               |
| 1.009 | o        | 1500      | 111     | 23.825      | 20.325      | 2.000       | Open Manhole  | 3000               |
| 1.010 | o        | 1500      | 112     | 24.367      | 20.198      | 2.669       | Open Manhole  | 3000               |
| 3.000 | o        | 225       | 113     | 25.100      | 23.375      | 1.500       | Open Manhole  | 1500               |
| 3.001 | o        | 225       | 114     | 24.685      | 22.757      | 1.703       | Open Manhole  | 1500               |
| 1.011 | o        | 1500      | 115     | 23.855      | 20.154      | 2.201       | Open Manhole  | 3000               |
| 4.000 | o        | 225       | 116     | 27.013      | 25.288      | 1.500       | Open Manhole  | 1500               |
| 4.001 | o        | 300       | 117     | 26.616      | 23.639      | 2.677       | Open Manhole  | 1500               |
| 4.002 | o        | 300       | 118     | 26.634      | 23.507      | 2.827       | Open Manhole  | 1500               |

Downstream Manhole

| PN    | Length (m) | Slope (1:X) | MH Name | C.Level (m) | I.Level (m) | D.Depth (m) | MH Connection | MH DIAM., L*W (mm) |
|-------|------------|-------------|---------|-------------|-------------|-------------|---------------|--------------------|
| 1.000 | 29.668     | 167.6       | 102     | 26.894      | 24.623      | 2.046       | Open Manhole  | 1500               |
| 1.001 | 56.822     | 56.8        | 104     | 25.197      | 23.622      | 1.350       | Open Manhole  | 1500               |
| 2.000 | 37.707     | 197.4       | 104     | 25.197      | 23.547      | 1.350       | Open Manhole  | 1500               |
| 1.002 | 19.049     | 241.1       | 105     | 25.410      | 23.318      | 1.642       | Open Manhole  | 1500               |
| 1.003 | 21.371     | 240.1       | 106     | 25.350      | 23.229      | 1.671       | Open Manhole  | 1500               |
| 1.004 | 11.349     | 298.7       | 107     | 25.059      | 23.191      | 1.418       | Open Manhole  | 1500               |
| 1.005 | 38.978     | 56.8        | 108     | 24.080      | 22.505      | 1.125       | Open Manhole  | 1500               |
| 1.006 | 9.105      | 303.5       | 109     | 23.868      | 22.475      | 0.943       | Open Manhole  | 3000               |
| 1.007 | 55.292     | 400.7       | 110     | 24.196      | 20.462      | 2.234       | Open Manhole  | 3000               |
| 1.008 | 54.750     | 399.6       | 111     | 23.825      | 20.325      | 2.000       | Open Manhole  | 3000               |
| 1.009 | 50.715     | 399.3       | 112     | 24.367      | 20.198      | 2.669       | Open Manhole  | 3000               |
| 1.010 | 17.610     | 400.2       | 115     | 23.855      | 20.154      | 2.201       | Open Manhole  | 3000               |
| 3.000 | 24.730     | 40.0        | 114     | 24.685      | 22.757      | 1.703       | Open Manhole  | 1500               |
| 3.001 | 20.721     | 40.0        | 115     | 23.855      | 22.239      | 1.391       | Open Manhole  | 3000               |
| 1.011 | 60.022     | 389.8       | 141     | 23.790      | 20.000      | 2.290       | Open Manhole  | 3000               |
| 4.000 | 78.717     | 50.0        | 117     | 26.616      | 23.714      | 2.677       | Open Manhole  | 1500               |
| 4.001 | 31.677     | 240.0       | 118     | 26.634      | 23.507      | 2.827       | Open Manhole  | 1500               |
| 4.002 | 7.768      | 242.8       | 119     | 26.500      | 23.475      | 2.725       | Open Manhole  | 1500               |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 9                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 1 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

PIPELINE SCHEDULES for 7778 - SW NET 1 REV F.SWS

Upstream Manhole

| PN    | Hyd<br>Sect | Diam<br>(mm) | MH<br>Name | C.Level<br>(m) | I.Level<br>(m) | D.Depth<br>(m) | MH<br>Connection | MH DIAM., L*W<br>(mm) |
|-------|-------------|--------------|------------|----------------|----------------|----------------|------------------|-----------------------|
| 4.003 | o           | 300          | 119        | 26.500         | 23.475         | 2.725          | Open Manhole     | 1500                  |
| 4.004 | o           | 1050         | 120        | 26.389         | 21.620         | 3.719          | Open Manhole     | 2700                  |
| 5.000 | o           | 225          | 121        | 25.836         | 24.111         | 1.500          | Open Manhole     | 1500                  |
| 5.001 | o           | 1050         | 122        | 25.927         | 21.740         | 3.137          | Open Manhole     | 2700                  |
| 5.002 | o           | 1050         | 123        | 25.514         | 21.685         | 2.779          | Open Manhole     | 2700                  |
| 4.005 | o           | 1050         | 124        | 26.169         | 21.587         | 3.532          | Open Manhole     | 2700                  |
| 4.006 | o           | 1050         | 125        | 26.029         | 21.522         | 3.457          | Open Manhole     | 2700                  |
| 6.000 | o           | 225          | 126        | 25.926         | 24.201         | 1.500          | Open Manhole     | 1500                  |
| 6.001 | o           | 225          | 127        | 25.591         | 23.866         | 1.500          | Open Manhole     | 1500                  |
| 6.002 | o           | 225          | 128        | 25.600         | 23.776         | 1.599          | Open Manhole     | 1500                  |
| 6.003 | o           | 1050         | 129        | 25.679         | 21.600         | 3.029          | Open Manhole     | 2700                  |
| 4.007 | o           | 1050         | 130        | 26.499         | 21.428         | 4.021          | Open Manhole     | 2700                  |
| 7.000 | o           | 225          | 131        | 25.000         | 23.054         | 1.721          | Open Manhole     | 1500                  |
| 7.001 | o           | 225          | 132        | 24.972         | 22.954         | 1.793          | Open Manhole     | 1500                  |
| 8.000 | o           | 225          | 133        | 25.625         | 23.900         | 1.500          | Open Manhole     | 1500                  |
| 7.002 | o           | 1050         | 134        | 25.349         | 21.670         | 2.629          | Open Manhole     | 2700                  |

Downstream Manhole

| PN    | Length<br>(m) | Slope<br>(1:X) | MH<br>Name | C.Level<br>(m) | I.Level<br>(m) | D.Depth<br>(m) | MH<br>Connection | MH DIAM., L*W<br>(mm) |
|-------|---------------|----------------|------------|----------------|----------------|----------------|------------------|-----------------------|
| 4.003 | 6.220         | 239.2          | 120        | 26.389         | 23.449         | 2.640          | Open Manhole     | 2700                  |
| 4.004 | 12.851        | 389.4          | 124        | 26.169         | 21.587         | 3.532          | Open Manhole     | 2700                  |
| 5.000 | 67.433        | 168.2          | 122        | 25.927         | 23.710         | 1.992          | Open Manhole     | 2700                  |
| 5.001 | 21.998        | 400.0          | 123        | 25.514         | 21.685         | 2.779          | Open Manhole     | 2700                  |
| 5.002 | 39.292        | 400.9          | 124        | 26.169         | 21.587         | 3.532          | Open Manhole     | 2700                  |
| 4.005 | 25.780        | 402.8          | 125        | 26.029         | 21.523         | 3.456          | Open Manhole     | 2700                  |
| 4.006 | 33.853        | 360.1          | 130        | 26.499         | 21.428         | 4.021          | Open Manhole     | 2700                  |
| 6.000 | 32.491        | 97.0           | 127        | 25.591         | 23.866         | 1.500          | Open Manhole     | 1500                  |
| 6.001 | 8.027         | 89.2           | 128        | 25.600         | 23.776         | 1.599          | Open Manhole     | 1500                  |
| 6.002 | 7.477         | 99.7           | 129        | 25.679         | 23.701         | 1.753          | Open Manhole     | 2700                  |
| 6.003 | 68.639        | 399.1          | 130        | 26.499         | 21.428         | 4.021          | Open Manhole     | 2700                  |
| 4.007 | 51.383        | 401.4          | 139        | 26.032         | 21.300         | 3.682          | Open Manhole     | 1500                  |
| 7.000 | 16.720        | 167.2          | 132        | 24.972         | 22.954         | 1.793          | Open Manhole     | 1500                  |
| 7.001 | 30.020        | 65.3           | 134        | 25.349         | 22.494         | 2.630          | Open Manhole     | 2700                  |
| 8.000 | 22.219        | 48.9           | 134        | 25.349         | 23.446         | 1.678          | Open Manhole     | 2700                  |
| 7.002 | 65.372        | 398.6          | 136        | 25.387         | 21.506         | 2.831          | Open Manhole     | 2700                  |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 10                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 1 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

PIPELINE SCHEDULES for 7778 - SW NET 1 REV F.SWS

Upstream Manhole

| PN    | Hyd<br>Sect | Diam<br>(mm) | MH<br>Name | C.Level<br>(m) | I.Level<br>(m) | D.Depth<br>(m) | MH<br>Connection | MH DIAM., L*W<br>(mm) |
|-------|-------------|--------------|------------|----------------|----------------|----------------|------------------|-----------------------|
| 9.000 | o           | 1050         | 135        | 25.327         | 21.650         | 2.627          | Open Manhole     | 2700                  |
| 7.003 | o           | 1050         | 136        | 25.387         | 21.506         | 2.831          | Open Manhole     | 2700                  |
| 7.004 | o           | 1050         | 137        | 25.517         | 21.468         | 2.999          | Open Manhole     | 2700                  |
| 7.005 | o           | 1050         | 138        | 26.100         | 21.342         | 3.708          | Open Manhole     | 2700                  |
| 4.008 | o           | 375          | 139        | 26.032         | 21.300         | 4.357          | Open Manhole     | 1500                  |
| 4.009 | o           | 1500         | 140        | 25.862         | 20.120         | 4.242          | Open Manhole     | 3000                  |
| 1.012 | o           | 375          | 141        | 23.790         | 20.000         | 3.415          | Open Manhole     | 3000                  |
| 1.013 | o           | 375          | 142        | 23.150         | 19.460         | 3.315          | Open Manhole     | 1500                  |
| 1.014 | o           | 375          | 143        | 23.293         | 18.206         | 4.712          | Open Manhole     | 1500                  |
| 1.015 | o           | 375          | 144        | 21.316         | 17.882         | 3.059          | Open Manhole     | 1500                  |
| 1.016 | o           | 375          | 145        | 20.620         | 17.094         | 3.151          | Open Manhole     | 1800                  |

Downstream Manhole

| PN    | Length<br>(m) | Slope<br>(1:X) | MH<br>Name | C.Level<br>(m) | I.Level<br>(m) | D.Depth<br>(m) | MH<br>Connection | MH DIAM., L*W<br>(mm) |
|-------|---------------|----------------|------------|----------------|----------------|----------------|------------------|-----------------------|
| 9.000 | 57.093        | 396.5          | 136        | 25.387         | 21.506         | 2.831          | Open Manhole     | 2700                  |
| 7.003 | 14.840        | 390.5          | 137        | 25.517         | 21.468         | 2.999          | Open Manhole     | 2700                  |
| 7.004 | 50.285        | 399.1          | 138        | 26.100         | 21.342         | 3.708          | Open Manhole     | 2700                  |
| 7.005 | 14.931        | 339.3          | 139        | 26.032         | 21.298         | 3.684          | Open Manhole     | 1500                  |
| 4.008 | 11.000        | 168.0          | 140        | 25.862         | 21.235         | 4.252          | Open Manhole     | 3000                  |
| 4.009 | 47.992        | 399.9          | 141        | 23.790         | 20.000         | 2.290          | Open Manhole     | 3000                  |
| 1.012 | 17.735        | 33.0           | 142        | 23.150         | 19.463         | 3.312          | Open Manhole     | 1500                  |
| 1.013 | 66.809        | 53.0           | 143        | 23.293         | 18.199         | 4.719          | Open Manhole     | 1500                  |
| 1.014 | 17.616        | 54.0           | 144        | 21.316         | 17.880         | 3.061          | Open Manhole     | 1500                  |
| 1.015 | 42.134        | 53.0           | 145        | 20.620         | 17.087         | 3.158          | Open Manhole     | 1800                  |
| 1.016 | 87.958        | 53.0           | 146        | 16.562         | 15.434         | 0.753          | Open Manhole     | 0                     |

Free Flowing Outfall Details for 7778 - SW NET 1 REV F.SWS

| Outfall<br>Pipe Number | Outfall<br>Name | C. Level<br>(m) | I. Level<br>(m) | Min<br>I. Level<br>(m) | D,L<br>(mm) | W<br>(mm) |
|------------------------|-----------------|-----------------|-----------------|------------------------|-------------|-----------|
| 1.016                  | 146             | 16.562          | 15.434          | 0.000                  | 0           | 0         |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 11                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 1 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

#### Simulation Criteria for 7778 - SW NET 1 REV F.SWS

|                                 |       |                                     |       |
|---------------------------------|-------|-------------------------------------|-------|
| Volumetric Runoff Coeff         | 0.750 | Additional Flow - % of Total Flow   | 0.000 |
| Areal Reduction Factor          | 1.000 | MADD Factor * 10m³/ha Storage       | 2.000 |
| Hot Start (mins)                | 0     | Inlet Coefficient                   | 0.800 |
| Hot Start Level (mm)            | 0     | Flow per Person per Day (l/per/day) | 0.000 |
| Manhole Headloss Coeff (Global) | 0.500 | Run Time (mins)                     | 60    |
| Foul Sewage per hectare (l/s)   | 0.000 | Output Interval (mins)              | 1     |

Number of Input Hydrographs 0    Number of Offline Controls 0    Number of Time/Area Diagrams 0  
 Number of Online Controls 2    Number of Storage Structures 5    Number of Real Time Controls 0

#### Synthetic Rainfall Details

|                       |                   |                       |        |
|-----------------------|-------------------|-----------------------|--------|
| Rainfall Model        | FSR               | Profile Type          | Summer |
| Return Period (years) | 2                 | Cv (Summer)           | 0.750  |
| Region                | England and Wales | Cv (Winter)           | 0.840  |
| M5-60 (mm)            | 19.400            | Storm Duration (mins) | 30     |
| Ratio R               | 0.387             |                       |        |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 12                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 1 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

Online Controls for 7778 - SW NET 1 REV F.SWS

Hydro-Brake® Optimum Manhole: 139, DS/PN: 4.008, Volume (m³): 62.1

Unit Reference MD-SHE-0190-2800-3800-2800  
Design Head (m) 3.800  
Design Flow (l/s) 28.0  
Flush-Flo™ Calculated  
Objective Minimise upstream storage  
Application Surface  
Sump Available Yes  
Diameter (mm) 190  
Invert Level (m) 21.300  
Minimum Outlet Pipe Diameter (mm) 225  
Suggested Manhole Diameter (mm) 1800

| Control Points            | Head (m) | Flow (l/s) | Control Points            | Head (m) | Flow (l/s) |
|---------------------------|----------|------------|---------------------------|----------|------------|
| Design Point (Calculated) | 3.800    | 28.0       | Kick-Flo®                 | 1.697    | 19.0       |
| Flush-Flo™                | 0.828    | 24.2       | Mean Flow over Head Range | -        | 22.5       |

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

| Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) |
|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|
| 0.100     | 6.6        | 0.800     | 24.2       | 2.000     | 20.6       | 4.000     | 28.7       | 7.000     | 37.6       |
| 0.200     | 17.4       | 1.000     | 24.1       | 2.200     | 21.5       | 4.500     | 30.4       | 7.500     | 38.8       |
| 0.300     | 20.6       | 1.200     | 23.5       | 2.400     | 22.5       | 5.000     | 31.9       | 8.000     | 40.1       |
| 0.400     | 22.2       | 1.400     | 22.5       | 2.600     | 23.3       | 5.500     | 33.4       | 8.500     | 41.3       |
| 0.500     | 23.2       | 1.600     | 20.5       | 3.000     | 25.0       | 6.000     | 34.9       | 9.000     | 42.4       |
| 0.600     | 23.8       | 1.800     | 19.6       | 3.500     | 26.9       | 6.500     | 36.2       | 9.500     | 43.5       |

Hydro-Brake® Optimum Manhole: 141, DS/PN: 1.012, Volume (m³): 207.1

Unit Reference MD-SHE-0212-3500-3800-3500  
Design Head (m) 3.800  
Design Flow (l/s) 35.0  
Flush-Flo™ Calculated  
Objective Minimise upstream storage  
Application Surface  
Sump Available Yes  
Diameter (mm) 212  
Invert Level (m) 20.000  
Minimum Outlet Pipe Diameter (mm) 225  
Suggested Manhole Diameter (mm) 2100

| Control Points            | Head (m) | Flow (l/s) | Control Points            | Head (m) | Flow (l/s) |
|---------------------------|----------|------------|---------------------------|----------|------------|
| Design Point (Calculated) | 3.800    | 35.0       | Kick-Flo®                 | 1.897    | 25.1       |
| Flush-Flo™                | 0.925    | 32.0       | Mean Flow over Head Range | -        | 29.0       |

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Hydro-Brake® Optimum Manhole: 141, DS/PN: 1.012, Volume (m³): 207.1

| Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) |
|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|
| 0.100     | 7.2        | 0.800     | 31.9       | 2.000     | 25.7       | 4.000     | 35.8       | 7.000     | 47.0       |
| 0.200     | 20.6       | 1.000     | 32.0       | 2.200     | 26.9       | 4.500     | 37.9       | 7.500     | 48.6       |
| 0.300     | 26.3       | 1.200     | 31.6       | 2.400     | 28.0       | 5.000     | 39.9       | 8.000     | 50.1       |
| 0.400     | 28.5       | 1.400     | 30.7       | 2.600     | 29.1       | 5.500     | 41.8       | 8.500     | 51.6       |
| 0.500     | 30.0       | 1.600     | 29.3       | 3.000     | 31.2       | 6.000     | 43.6       | 9.000     | 53.0       |
| 0.600     | 31.0       | 1.800     | 26.8       | 3.500     | 33.6       | 6.500     | 45.3       | 9.500     | 54.5       |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 14                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 1 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

Storage Structures for 7778 - SW NET 1 REV F.SWS

Cellular Storage Manhole: 110, DS/PN: 1.008

Invert Level (m) 20.500 Safety Factor 2.0  
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95  
Infiltration Coefficient Side (m/hr) 0.00000

| 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     | 164.0                  | 164.0                       | 0.800     | 164.0                  | 236.0                       | 0.900     | 0.0                    | 236.0                       |

Cellular Storage Manhole: 111, DS/PN: 1.009

Invert Level (m) 20.500 Safety Factor 2.0  
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95  
Infiltration Coefficient Side (m/hr) 0.00000

| 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     | 164.0                  | 164.0                       | 0.800     | 164.0                  | 236.0                       | 0.900     | 0.0                    | 236.0                       |

Cellular Storage Manhole: 112, DS/PN: 1.010

Invert Level (m) 20.500 Safety Factor 2.0  
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95  
Infiltration Coefficient Side (m/hr) 0.00000

| 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     | 164.0                  | 164.0                       | 1.200     | 164.0                  | 272.0                       | 1.300     | 0.0                    | 272.0                       |

Cellular Storage Manhole: 120, DS/PN: 4.004

Invert Level (m) 24.100 Safety Factor 2.0  
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95  
Infiltration Coefficient Side (m/hr) 0.00000

| 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     | 440.0                  | 440.0                       | 0.800     | 440.0                  | 521.6                       | 0.900     | 0.0                    | 521.6                       |

Cellular Storage Manhole: 124, DS/PN: 4.005

Invert Level (m) 24.100 Safety Factor 2.0  
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95  
Infiltration Coefficient Side (m/hr) 0.00000

| 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     | 440.0                  | 440.0                       | 0.800     | 440.0                  | 521.6                       | 0.900     | 0.0                    | 521.6                       |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 15                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 1 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW NET  
1 REV F.SWS

Simulation Criteria

Areal Reduction Factor 1.000    Additional Flow - % of Total Flow 0.000  
Hot Start (mins) 0    MADD Factor \* 10m³/ha Storage 2.000  
Hot Start Level (mm) 0    Inlet Coefficient 0.800  
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000  
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0    Number of Offline Controls 0    Number of Time/Area Diagrams 0  
Number of Online Controls 2    Number of Storage Structures 5    Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model    FSR M5-60 (mm) 19.400 Cv (Summer) 0.750  
Region England and Wales    Ratio R 0.387 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0  
Analysis Timestep 2.5 Second Increment (Extended)  
DTS Status OFF  
DVD Status ON  
Inertia Status ON

Profile(s) Summer and Winter  
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960,  
1440, 2160, 2880  
Return Period(s) (years) 1, 30, 100  
Climate Change (%) 0, 0, 45

| US/MH |      |            | Return Climate |        | First (X)      | First (Y)     | First (Z) | Overflow | Water  | Surcharged |
|-------|------|------------|----------------|--------|----------------|---------------|-----------|----------|--------|------------|
| PN    | Name | Storm      | Period         | Change | Surcharge      | Flood         | Overflow  | Act.     | Level  | Depth      |
|       |      |            |                |        |                |               |           |          | (m)    | (m)        |
| 1.000 | 101  | 15 Winter  | 1              | +0%    | 100/15 Summer  |               |           |          | 24.857 | -0.168     |
| 1.001 | 102  | 15 Winter  | 1              | +0%    | 100/15 Summer  |               |           |          | 24.685 | -0.163     |
| 2.000 | 103  | 15 Winter  | 1              | +0%    | 100/15 Summer  |               |           |          | 23.825 | -0.213     |
| 1.002 | 104  | 15 Winter  | 1              | +0%    | 30/15 Summer   |               |           |          | 23.571 | -0.276     |
| 1.003 | 105  | 15 Winter  | 1              | +0%    | 30/15 Summer   |               |           |          | 23.512 | -0.256     |
| 1.004 | 106  | 15 Winter  | 1              | +0%    | 30/15 Summer   |               |           |          | 23.457 | -0.222     |
| 1.005 | 107  | 15 Winter  | 1              | +0%    | 100/15 Summer  |               |           |          | 23.325 | -0.316     |
| 1.006 | 108  | 15 Winter  | 1              | +0%    | 30/15 Summer   |               |           |          | 22.769 | -0.186     |
| 1.007 | 109  | 15 Winter  | 1              | +0%    | 100/240 Winter |               |           |          | 20.772 | -1.328     |
| 1.008 | 110  | 180 Winter | 1              | +0%    | 100/240 Winter |               |           |          | 20.652 | -1.310     |
| 1.009 | 111  | 180 Winter | 1              | +0%    | 100/180 Winter |               |           |          | 20.652 | -1.173     |
| 1.010 | 112  | 180 Winter | 1              | +0%    | 100/180 Winter |               |           |          | 20.651 | -1.047     |
| 3.000 | 113  | 15 Winter  | 1              | +0%    | 100/15 Summer  |               |           |          | 23.437 | -0.163     |
| 3.001 | 114  | 15 Winter  | 1              | +0%    | 100/15 Summer  |               |           |          | 22.847 | -0.135     |
| 1.011 | 115  | 180 Winter | 1              | +0%    | 100/180 Winter |               |           |          | 20.651 | -1.003     |
| 4.000 | 116  | 15 Winter  | 1              | +0%    | 100/15 Summer  |               |           |          | 25.361 | -0.152     |
| 4.001 | 117  | 15 Winter  | 1              | +0%    | 30/15 Summer   |               |           |          | 23.808 | -0.131     |
| 4.002 | 118  | 15 Winter  | 1              | +0%    | 30/15 Summer   |               |           |          | 23.722 | -0.085     |
| 4.003 | 119  | 15 Winter  | 1              | +0%    | 30/15 Summer   |               |           |          | 23.697 | -0.078     |
| 4.004 | 120  | 60 Winter  | 1              | +0%    | 30/60 Summer   |               |           |          | 21.999 | -0.671     |
| 5.000 | 121  | 15 Winter  | 1              | +0%    | 30/15 Summer   | 100/15 Winter |           |          | 24.234 | -0.102     |
| 5.001 | 122  | 60 Winter  | 1              | +0%    | 30/60 Winter   |               |           |          | 21.999 | -0.791     |
| 5.002 | 123  | 60 Winter  | 1              | +0%    | 30/60 Winter   |               |           |          | 21.999 | -0.736     |
| 4.005 | 124  | 60 Winter  | 1              | +0%    | 30/60 Summer   |               |           |          | 21.998 | -0.639     |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 16                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 1 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW NET  
1 REV F.SWS

| PN    | US/MH<br>Name | Flooded        |                | Half Drain        |                | Pipe          | Status | Level<br>Exceeded |
|-------|---------------|----------------|----------------|-------------------|----------------|---------------|--------|-------------------|
|       |               | Volume<br>(m³) | Flow /<br>Cap. | Overflow<br>(l/s) | Time<br>(mins) | Flow<br>(l/s) |        |                   |
| 1.000 | 101           | 0.000          | 0.14           |                   |                | 5.4           | OK     |                   |
| 1.001 | 102           | 0.000          | 0.17           |                   |                | 11.2          | OK     |                   |
| 2.000 | 103           | 0.000          | 0.18           |                   |                | 13.3          | OK     |                   |
| 1.002 | 104           | 0.000          | 0.31           |                   |                | 51.2          | OK     |                   |
| 1.003 | 105           | 0.000          | 0.34           |                   |                | 57.0          | OK     |                   |
| 1.004 | 106           | 0.000          | 0.51           |                   |                | 68.1          | OK     |                   |
| 1.005 | 107           | 0.000          | 0.19           |                   |                | 73.4          | OK     |                   |
| 1.006 | 108           | 0.000          | 0.64           |                   |                | 80.4          | OK     |                   |
| 1.007 | 109           | 0.000          | 0.03           |                   |                | 85.3          | OK     |                   |
| 1.008 | 110           | 0.000          | 0.01           |                   | 115            | 23.3          | OK     |                   |
| 1.009 | 111           | 0.000          | 0.01           |                   | 116            | 18.0          | OK     |                   |
| 1.010 | 112           | 0.000          | 0.01           |                   | 121            | 23.2          | OK     |                   |
| 3.000 | 113           | 0.000          | 0.17           |                   |                | 12.9          | OK     |                   |
| 3.001 | 114           | 0.000          | 0.33           |                   |                | 24.5          | OK     |                   |
| 1.011 | 115           | 0.000          | 0.01           |                   |                | 24.1          | OK     |                   |
| 4.000 | 116           | 0.000          | 0.23           |                   |                | 16.1          | OK     |                   |
| 4.001 | 117           | 0.000          | 0.60           |                   |                | 38.9          | OK     |                   |
| 4.002 | 118           | 0.000          | 0.84           |                   |                | 44.1          | OK     |                   |
| 4.003 | 119           | 0.000          | 0.90           |                   |                | 45.2          | OK     |                   |
| 4.004 | 120           | 0.000          | 0.04           |                   | 66             | 29.7          | OK     |                   |
| 5.000 | 121           | 0.000          | 0.57           |                   |                | 22.0          | OK     | 1                 |
| 5.001 | 122           | 0.000          | 0.02           |                   |                | 19.8          | OK     |                   |
| 5.002 | 123           | 0.000          | 0.02           |                   |                | 20.7          | OK     |                   |
| 4.005 | 124           | 0.000          | 0.04           |                   | 49             | 40.0          | OK     |                   |

|                                                  |  |                                  |
|--------------------------------------------------|--|----------------------------------|
| Coopers                                          |  | Page 17                          |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |  | Cherryfield Drive<br>Kirkby      |
| Date 23/04/2024<br>File 7778 SW NET 1 REV F.MDX  |  | Designed by JAR<br>Checked by AJ |
| Micro Drainage                                   |  | Network 2020.1.3                 |



1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW NET  
1 REV F.SWS

|       |      |            |        |         |                |           |           |          | Water  | Surcharged | Flooded |
|-------|------|------------|--------|---------|----------------|-----------|-----------|----------|--------|------------|---------|
| US/MH |      |            | Return | Climate | First (X)      | First (Y) | First (Z) | Overflow | Level  | Depth      | Volume  |
| PN    | Name | Storm      | Period | Change  | Surcharge      | Flood     | Overflow  | Act.     | (m)    | (m)        | (m³)    |
| 4.006 | 125  | 60 Winter  | 1      | +0%     | 30/30 Winter   |           |           |          | 21.997 | -0.575     | 0.000   |
| 6.000 | 126  | 15 Winter  | 1      | +0%     | 30/15 Winter   |           |           |          | 24.269 | -0.157     | 0.000   |
| 6.001 | 127  | 15 Winter  | 1      | +0%     | 30/15 Summer   |           |           |          | 23.972 | -0.119     | 0.000   |
| 6.002 | 128  | 15 Winter  | 1      | +0%     | 30/15 Summer   |           |           |          | 23.932 | -0.069     | 0.000   |
| 6.003 | 129  | 60 Winter  | 1      | +0%     | 30/60 Summer   |           |           |          | 21.995 | -0.655     | 0.000   |
| 4.007 | 130  | 60 Winter  | 1      | +0%     | 30/30 Winter   |           |           |          | 21.995 | -0.483     | 0.000   |
| 7.000 | 131  | 15 Winter  | 1      | +0%     | 30/60 Winter   |           |           |          | 23.147 | -0.132     | 0.000   |
| 7.001 | 132  | 15 Winter  | 1      | +0%     | 30/60 Winter   |           |           |          | 23.044 | -0.135     | 0.000   |
| 8.000 | 133  | 15 Winter  | 1      | +0%     | 100/15 Winter  |           |           |          | 23.959 | -0.166     | 0.000   |
| 7.002 | 134  | 120 Winter | 1      | +0%     | 30/60 Winter   |           |           |          | 21.989 | -0.731     | 0.000   |
| 9.000 | 135  | 120 Winter | 1      | +0%     | 30/60 Winter   |           |           |          | 21.989 | -0.711     | 0.000   |
| 7.003 | 136  | 120 Winter | 1      | +0%     | 30/30 Winter   |           |           |          | 21.989 | -0.567     | 0.000   |
| 7.004 | 137  | 120 Winter | 1      | +0%     | 30/30 Winter   |           |           |          | 21.988 | -0.530     | 0.000   |
| 7.005 | 138  | 120 Winter | 1      | +0%     | 30/30 Winter   |           |           |          | 21.987 | -0.405     | 0.000   |
| 4.008 | 139  | 60 Winter  | 1      | +0%     | 1/15 Summer    |           |           |          | 21.986 | 0.311      | 0.000   |
| 4.009 | 140  | 180 Winter | 1      | +0%     | 100/120 Winter |           |           |          | 20.659 | -0.961     | 0.000   |
| 1.012 | 141  | 180 Winter | 1      | +0%     | 1/15 Summer    |           |           |          | 20.650 | 0.275      | 0.000   |
| 1.013 | 142  | 180 Winter | 1      | +0%     |                |           |           |          | 19.546 | -0.289     | 0.000   |
| 1.014 | 143  | 180 Winter | 1      | +0%     |                |           |           |          | 18.299 | -0.282     | 0.000   |
| 1.015 | 144  | 180 Winter | 1      | +0%     |                |           |           |          | 17.969 | -0.288     | 0.000   |
| 1.016 | 145  | 180 Winter | 1      | +0%     |                |           |           |          | 17.180 | -0.289     | 0.000   |

| US/MH |      | Flow / Overflow |       | Half Drain  | Pipe       | Level      |          |
|-------|------|-----------------|-------|-------------|------------|------------|----------|
| PN    | Name | Cap.            | (l/s) | Time (mins) | Flow (l/s) | Status     | Exceeded |
| 4.006 | 125  | 0.03            |       |             | 37.3       | OK         |          |
| 6.000 | 126  | 0.19            |       |             | 9.6        | OK         |          |
| 6.001 | 127  | 0.45            |       |             | 18.9       | OK         |          |
| 6.002 | 128  | 0.82            |       |             | 31.5       | OK         |          |
| 6.003 | 129  | 0.02            |       |             | 26.5       | OK         |          |
| 4.007 | 130  | 0.03            |       |             | 37.4       | OK         |          |
| 7.000 | 131  | 0.35            |       |             | 12.5       | OK         |          |
| 7.001 | 132  | 0.33            |       |             | 20.0       | OK         |          |
| 8.000 | 133  | 0.15            |       |             | 10.4       | OK         |          |
| 7.002 | 134  | 0.01            |       |             | 14.8       | OK         |          |
| 9.000 | 135  | 0.00            |       |             | 5.6        | OK         |          |
| 7.003 | 136  | 0.02            |       |             | 12.6       | OK         |          |
| 7.004 | 137  | 0.01            |       |             | 13.4       | OK         |          |
| 7.005 | 138  | 0.01            |       |             | 10.1       | OK         |          |
| 4.008 | 139  | 0.22            |       |             | 24.1       | SURCHARGED |          |
| 4.009 | 140  | 0.01            |       |             | 24.7       | OK         |          |
| 1.012 | 141  | 0.11            |       |             | 31.3       | SURCHARGED |          |
| 1.013 | 142  | 0.12            |       |             | 31.3       | OK         |          |
| 1.014 | 143  | 0.14            |       |             | 31.3       | OK         |          |
| 1.015 | 144  | 0.12            |       |             | 31.3       | OK         |          |
| 1.016 | 145  | 0.12            |       |             | 31.3       | OK         |          |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 18                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 1 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW NET 1 REV F.SWS

Simulation Criteria

Areal Reduction Factor 1.000    Additional Flow - % of Total Flow 0.000  
 Hot Start (mins) 0    MADD Factor \* 10m³/ha Storage 2.000  
 Hot Start Level (mm) 0    Inlet Coefficient 0.800  
 Manhole Headloss Coeff (Global) 0.500    Flow per Person per Day (l/per/day) 0.000  
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0    Number of Offline Controls 0    Number of Time/Area Diagrams 0  
 Number of Online Controls 2    Number of Storage Structures 5    Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model    FSR M5-60 (mm) 19.400 Cv (Summer) 0.750  
 Region England and Wales    Ratio R 0.387 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0  
 Analysis Timestep 2.5 Second Increment (Extended)  
 DTS Status OFF  
 DVD Status ON  
 Inertia Status ON

Profile(s) Summer and Winter  
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880  
 Return Period(s) (years) 1, 30, 100  
 Climate Change (%) 0, 0, 45

| US/MH |      |            | Return Period | Climate Change | First (X) Surchage | First (Y) Flood | First (Z) Overflow | Overflow Act. | Water Level | Surcharged Depth |
|-------|------|------------|---------------|----------------|--------------------|-----------------|--------------------|---------------|-------------|------------------|
| PN    | Name | Storm      |               |                |                    |                 |                    |               | (m)         | (m)              |
| 1.000 | 101  | 15 Winter  | 30            | +0%            | 100/15 Summer      |                 |                    |               | 24.894      | -0.131           |
| 1.001 | 102  | 15 Winter  | 30            | +0%            | 100/15 Summer      |                 |                    |               | 24.732      | -0.116           |
| 2.000 | 103  | 15 Winter  | 30            | +0%            | 100/15 Summer      |                 |                    |               | 23.983      | -0.055           |
| 1.002 | 104  | 15 Winter  | 30            | +0%            | 30/15 Summer       |                 |                    |               | 23.926      | 0.079            |
| 1.003 | 105  | 15 Winter  | 30            | +0%            | 30/15 Summer       |                 |                    |               | 23.823      | 0.055            |
| 1.004 | 106  | 15 Winter  | 30            | +0%            | 30/15 Summer       |                 |                    |               | 23.718      | 0.039            |
| 1.005 | 107  | 15 Winter  | 30            | +0%            | 100/15 Summer      |                 |                    |               | 23.419      | -0.222           |
| 1.006 | 108  | 15 Winter  | 30            | +0%            | 30/15 Summer       |                 |                    |               | 23.045      | 0.090            |
| 1.007 | 109  | 240 Winter | 30            | +0%            | 100/240 Winter     |                 |                    |               | 21.013      | -1.087           |
| 1.008 | 110  | 240 Winter | 30            | +0%            | 100/240 Winter     |                 |                    |               | 21.013      | -0.949           |
| 1.009 | 111  | 240 Winter | 30            | +0%            | 100/180 Winter     |                 |                    |               | 21.012      | -0.813           |
| 1.010 | 112  | 240 Winter | 30            | +0%            | 100/180 Winter     |                 |                    |               | 21.012      | -0.686           |
| 3.000 | 113  | 15 Winter  | 30            | +0%            | 100/15 Summer      |                 |                    |               | 23.477      | -0.123           |
| 3.001 | 114  | 15 Winter  | 30            | +0%            | 100/15 Summer      |                 |                    |               | 22.926      | -0.056           |
| 1.011 | 115  | 240 Winter | 30            | +0%            | 100/180 Winter     |                 |                    |               | 21.011      | -0.643           |
| 4.000 | 116  | 15 Winter  | 30            | +0%            | 100/15 Summer      |                 |                    |               | 25.410      | -0.103           |
| 4.001 | 117  | 15 Winter  | 30            | +0%            | 30/15 Summer       |                 |                    |               | 24.492      | 0.553            |
| 4.002 | 118  | 15 Winter  | 30            | +0%            | 30/15 Summer       |                 |                    |               | 24.179      | 0.372            |
| 4.003 | 119  | 180 Winter | 30            | +0%            | 30/15 Summer       |                 |                    |               | 24.014      | 0.239            |
| 4.004 | 120  | 180 Winter | 30            | +0%            | 30/60 Summer       |                 |                    |               | 24.013      | 1.343            |
| 5.000 | 121  | 15 Winter  | 30            | +0%            | 30/15 Summer       | 100/15 Winter   |                    |               | 24.611      | 0.275            |
| 5.001 | 122  | 180 Winter | 30            | +0%            | 30/60 Winter       |                 |                    |               | 24.013      | 1.223            |
| 5.002 | 123  | 180 Winter | 30            | +0%            | 30/60 Winter       |                 |                    |               | 24.013      | 1.278            |
| 4.005 | 124  | 180 Winter | 30            | +0%            | 30/60 Summer       |                 |                    |               | 24.013      | 1.376            |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 19                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 1 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW NET  
1 REV F.SWS

| PN    | US/MH<br>Name | Flooded        |                | Overflow<br>(l/s) | Half Drain<br>Time<br>(mins) | Pipe<br>Flow<br>(l/s) | Status     | Level<br>Exceeded |
|-------|---------------|----------------|----------------|-------------------|------------------------------|-----------------------|------------|-------------------|
|       |               | Volume<br>(m³) | Flow /<br>Cap. |                   |                              |                       |            |                   |
| 1.000 | 101           | 0.000          | 0.35           |                   |                              | 13.2                  | OK         |                   |
| 1.001 | 102           | 0.000          | 0.45           |                   |                              | 30.1                  | OK         |                   |
| 2.000 | 103           | 0.000          | 0.41           |                   |                              | 29.7                  | OK         |                   |
| 1.002 | 104           | 0.000          | 0.78           |                   |                              | 129.5                 | SURCHARGED |                   |
| 1.003 | 105           | 0.000          | 0.85           |                   |                              | 144.0                 | SURCHARGED |                   |
| 1.004 | 106           | 0.000          | 1.28           |                   |                              | 171.4                 | SURCHARGED |                   |
| 1.005 | 107           | 0.000          | 0.49           |                   |                              | 187.0                 | OK         |                   |
| 1.006 | 108           | 0.000          | 1.67           |                   |                              | 207.9                 | SURCHARGED |                   |
| 1.007 | 109           | 0.000          | 0.02           |                   |                              | 49.0                  | OK         |                   |
| 1.008 | 110           | 0.000          | 0.01           |                   | 397                          | 35.4                  | OK         |                   |
| 1.009 | 111           | 0.000          | 0.01           |                   | 411                          | 17.6                  | OK         |                   |
| 1.010 | 112           | 0.000          | 0.01           |                   | 420                          | 24.5                  | OK         |                   |
| 3.000 | 113           | 0.000          | 0.42           |                   |                              | 31.7                  | OK         |                   |
| 3.001 | 114           | 0.000          | 0.90           |                   |                              | 67.7                  | OK         |                   |
| 1.011 | 115           | 0.000          | 0.01           |                   |                              | 25.5                  | OK         |                   |
| 4.000 | 116           | 0.000          | 0.55           |                   |                              | 39.6                  | OK         |                   |
| 4.001 | 117           | 0.000          | 1.52           |                   |                              | 99.3                  | SURCHARGED |                   |
| 4.002 | 118           | 0.000          | 2.18           |                   |                              | 114.7                 | SURCHARGED |                   |
| 4.003 | 119           | 0.000          | 0.62           |                   |                              | 31.3                  | SURCHARGED |                   |
| 4.004 | 120           | 0.000          | 0.05           |                   | 92                           | 33.9                  | SURCHARGED |                   |
| 5.000 | 121           | 0.000          | 1.29           |                   |                              | 50.1                  | SURCHARGED | 1                 |
| 5.001 | 122           | 0.000          | 0.02           |                   |                              | 20.9                  | SURCHARGED |                   |
| 5.002 | 123           | 0.000          | 0.01           |                   |                              | 15.8                  | SURCHARGED |                   |
| 4.005 | 124           | 0.000          | 0.04           |                   | 198                          | 39.8                  | SURCHARGED |                   |

|                                                  |  |                                  |
|--------------------------------------------------|--|----------------------------------|
| Coopers                                          |  | Page 20                          |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |  | Cherryfield Drive<br>Kirkby      |
| Date 23/04/2024<br>File 7778 SW NET 1 REV F.MDX  |  | Designed by JAR<br>Checked by AJ |
| Micro Drainage                                   |  | Network 2020.1.3                 |



30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW NET  
1 REV F.SWS

|       |       |       |        |        |         |           |           |           | Water    | Surcharged | Flooded |        |
|-------|-------|-------|--------|--------|---------|-----------|-----------|-----------|----------|------------|---------|--------|
|       | US/MH |       |        | Return | Climate | First (X) | First (Y) | First (Z) | Overflow | Level      | Depth   | Volume |
| PN    | Name  | Storm | Period | Change |         | Surcharge | Flood     | Overflow  | Act.     | (m)        | (m)     | (m³)   |
| 4.006 | 125   | 180   | Winter | 30     | +0%     | 30/30     | Winter    |           |          | 24.013     | 1.441   | 0.000  |
| 6.000 | 126   | 15    | Winter | 30     | +0%     | 30/15     | Winter    |           |          | 24.438     | 0.012   | 0.000  |
| 6.001 | 127   | 15    | Winter | 30     | +0%     | 30/15     | Summer    |           |          | 24.376     | 0.285   | 0.000  |
| 6.002 | 128   | 15    | Winter | 30     | +0%     | 30/15     | Summer    |           |          | 24.264     | 0.263   | 0.000  |
| 6.003 | 129   | 180   | Winter | 30     | +0%     | 30/60     | Summer    |           |          | 24.013     | 1.363   | 0.000  |
| 4.007 | 130   | 180   | Winter | 30     | +0%     | 30/30     | Winter    |           |          | 24.013     | 1.535   | 0.000  |
| 7.000 | 131   | 180   | Winter | 30     | +0%     | 30/60     | Winter    |           |          | 24.019     | 0.740   | 0.000  |
| 7.001 | 132   | 180   | Winter | 30     | +0%     | 30/60     | Winter    |           |          | 24.017     | 0.838   | 0.000  |
| 8.000 | 133   | 180   | Winter | 30     | +0%     | 100/15    | Winter    |           |          | 24.015     | -0.110  | 0.000  |
| 7.002 | 134   | 180   | Winter | 30     | +0%     | 30/60     | Winter    |           |          | 24.013     | 1.293   | 0.000  |
| 9.000 | 135   | 180   | Winter | 30     | +0%     | 30/60     | Winter    |           |          | 24.013     | 1.313   | 0.000  |
| 7.003 | 136   | 180   | Winter | 30     | +0%     | 30/30     | Winter    |           |          | 24.013     | 1.457   | 0.000  |
| 7.004 | 137   | 180   | Winter | 30     | +0%     | 30/30     | Winter    |           |          | 24.013     | 1.495   | 0.000  |
| 7.005 | 138   | 180   | Winter | 30     | +0%     | 30/30     | Winter    |           |          | 24.013     | 1.621   | 0.000  |
| 4.008 | 139   | 180   | Winter | 30     | +0%     | 1/15      | Summer    |           |          | 24.013     | 2.338   | 0.000  |
| 4.009 | 140   | 240   | Winter | 30     | +0%     | 100/120   | Winter    |           |          | 21.023     | -0.597  | 0.000  |
| 1.012 | 141   | 240   | Winter | 30     | +0%     | 1/15      | Summer    |           |          | 21.010     | 0.635   | 0.000  |
| 1.013 | 142   | 1440  | Summer | 30     | +0%     |           |           |           |          | 19.547     | -0.288  | 0.000  |
| 1.014 | 143   | 1440  | Summer | 30     | +0%     |           |           |           |          | 18.300     | -0.281  | 0.000  |
| 1.015 | 144   | 1440  | Summer | 30     | +0%     |           |           |           |          | 17.970     | -0.287  | 0.000  |
| 1.016 | 145   | 1440  | Summer | 30     | +0%     |           |           |           |          | 17.180     | -0.289  | 0.000  |

| US/MH |      | Flow / Overflow |       | Half Drain  | Pipe       | Level      |          |
|-------|------|-----------------|-------|-------------|------------|------------|----------|
| PN    | Name | Cap.            | (l/s) | Time (mins) | Flow (l/s) | Status     | Exceeded |
| 4.006 | 125  | 0.03            |       |             | 33.1       | SURCHARGED |          |
| 6.000 | 126  | 0.46            |       |             | 22.9       | SURCHARGED |          |
| 6.001 | 127  | 1.12            |       |             | 47.3       | SURCHARGED |          |
| 6.002 | 128  | 2.12            |       |             | 81.8       | SURCHARGED |          |
| 6.003 | 129  | 0.02            |       |             | 30.6       | SURCHARGED |          |
| 4.007 | 130  | 0.04            |       |             | 45.2       | SURCHARGED |          |
| 7.000 | 131  | 0.21            |       |             | 7.5        | SURCHARGED |          |
| 7.001 | 132  | 0.21            |       |             | 12.6       | SURCHARGED |          |
| 8.000 | 133  | 0.09            |       |             | 6.2        | OK         |          |
| 7.002 | 134  | 0.02            |       |             | 25.6       | SURCHARGED |          |
| 9.000 | 135  | 0.01            |       |             | 10.0       | SURCHARGED |          |
| 7.003 | 136  | 0.01            |       |             | 11.2       | SURCHARGED |          |
| 7.004 | 137  | 0.01            |       |             | 11.9       | SURCHARGED |          |
| 7.005 | 138  | 0.02            |       |             | 13.6       | SURCHARGED |          |
| 4.008 | 139  | 0.23            |       |             | 24.2       | SURCHARGED |          |
| 4.009 | 140  | 0.01            |       |             | 26.5       | OK         |          |
| 1.012 | 141  | 0.11            |       |             | 31.9       | SURCHARGED |          |
| 1.013 | 142  | 0.12            |       |             | 31.9       | OK         |          |
| 1.014 | 143  | 0.14            |       |             | 31.9       | OK         |          |
| 1.015 | 144  | 0.13            |       |             | 31.9       | OK         |          |
| 1.016 | 145  | 0.12            |       |             | 31.9       | OK         |          |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 21                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 1 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW  
NET 1 REV F.SWS

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000  
Hot Start (mins) 0 MADD Factor \* 10m³/ha Storage 2.000  
Hot Start Level (mm) 0 Inlet Coefficient 0.800  
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000  
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0  
Number of Online Controls 2 Number of Storage Structures 5 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.400 Cv (Summer) 0.750  
Region England and Wales Ratio R 0.387 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0  
Analysis Timestep 2.5 Second Increment (Extended)  
DTS Status OFF  
DVD Status ON  
Inertia Status ON

Profile(s) Summer and Winter  
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960,  
1440, 2160, 2880  
Return Period(s) (years) 1, 30, 100  
Climate Change (%) 0, 0, 45

| US/MH |      |            | Return<br>Period | Climate<br>Change | First (X)<br>Surcharge     | First (Y)<br>Flood | First (Z)<br>Overflow | Overflow<br>Act. | Water        | Surcharged   |
|-------|------|------------|------------------|-------------------|----------------------------|--------------------|-----------------------|------------------|--------------|--------------|
| PN    | Name | Storm      |                  |                   |                            |                    |                       |                  | Level<br>(m) | Depth<br>(m) |
| 1.000 | 101  | 15 Winter  | 100              | +45%              | 100/15 Summer              |                    |                       |                  | 25.150       | 0.125        |
| 1.001 | 102  | 15 Winter  | 100              | +45%              | 100/15 Summer              |                    |                       |                  | 25.095       | 0.247        |
| 2.000 | 103  | 15 Winter  | 100              | +45%              | 100/15 Summer              |                    |                       |                  | 24.748       | 0.710        |
| 1.002 | 104  | 15 Winter  | 100              | +45%              | 30/15 Summer               |                    |                       |                  | 24.636       | 0.789        |
| 1.003 | 105  | 15 Winter  | 100              | +45%              | 30/15 Summer               |                    |                       |                  | 24.469       | 0.701        |
| 1.004 | 106  | 15 Winter  | 100              | +45%              | 30/15 Summer               |                    |                       |                  | 24.253       | 0.574        |
| 1.005 | 107  | 15 Winter  | 100              | +45%              | 100/15 Summer              |                    |                       |                  | 23.936       | 0.295        |
| 1.006 | 108  | 600 Winter | 100              | +45%              | 30/15 Summer               |                    |                       |                  | 23.470       | 0.515        |
| 1.007 | 109  | 600 Winter | 100              | +45%              | 100/240 Winter             |                    |                       |                  | 23.469       | 1.369        |
| 1.008 | 110  | 600 Winter | 100              | +45%              | 100/240 Winter             |                    |                       |                  | 23.469       | 1.507        |
| 1.009 | 111  | 600 Winter | 100              | +45%              | 100/180 Winter             |                    |                       |                  | 23.469       | 1.644        |
| 1.010 | 112  | 600 Winter | 100              | +45%              | 100/180 Winter             |                    |                       |                  | 23.469       | 1.771        |
| 3.000 | 113  | 15 Winter  | 100              | +45%              | 100/15 Summer              |                    |                       |                  | 23.971       | 0.371        |
| 3.001 | 114  | 15 Winter  | 100              | +45%              | 100/15 Summer              |                    |                       |                  | 23.630       | 0.648        |
| 1.011 | 115  | 600 Winter | 100              | +45%              | 100/180 Winter             |                    |                       |                  | 23.469       | 1.815        |
| 4.000 | 116  | 15 Winter  | 100              | +45%              | 100/15 Summer              |                    |                       |                  | 26.815       | 1.302        |
| 4.001 | 117  | 15 Winter  | 100              | +45%              | 30/15 Summer               |                    |                       |                  | 25.790       | 1.851        |
| 4.002 | 118  | 15 Winter  | 100              | +45%              | 30/15 Summer               |                    |                       |                  | 24.952       | 1.145        |
| 4.003 | 119  | 360 Winter | 100              | +45%              | 30/15 Summer               |                    |                       |                  | 24.862       | 1.087        |
| 4.004 | 120  | 360 Winter | 100              | +45%              | 30/60 Summer               |                    |                       |                  | 24.861       | 2.191        |
| 5.000 | 121  | 15 Winter  | 100              | +45%              | 30/15 Summer 100/15 Winter |                    |                       |                  | 25.836       | 1.500        |
| 5.001 | 122  | 360 Winter | 100              | +45%              | 30/60 Winter               |                    |                       |                  | 24.864       | 2.074        |
| 5.002 | 123  | 360 Winter | 100              | +45%              | 30/60 Winter               |                    |                       |                  | 24.864       | 2.129        |
| 4.005 | 124  | 360 Winter | 100              | +45%              | 30/60 Summer               |                    |                       |                  | 24.864       | 2.227        |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 22                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 1 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW  
NET 1 REV F.SWS

| PN    | US/MH<br>Name | Flooded        |                | Overflow<br>(l/s) | Half Drain<br>Time<br>(mins) | Pipe<br>Flow<br>(l/s) | Status     | Level<br>Exceeded |
|-------|---------------|----------------|----------------|-------------------|------------------------------|-----------------------|------------|-------------------|
|       |               | Volume<br>(m³) | Flow /<br>Cap. |                   |                              |                       |            |                   |
| 1.000 | 101           | 0.000          | 0.62           |                   |                              | 23.4                  | SURCHARGED |                   |
| 1.001 | 102           | 0.000          | 0.74           |                   |                              | 49.4                  | SURCHARGED |                   |
| 2.000 | 103           | 0.000          | 0.77           |                   |                              | 56.1                  | SURCHARGED |                   |
| 1.002 | 104           | 0.000          | 1.35           |                   |                              | 225.2                 | SURCHARGED |                   |
| 1.003 | 105           | 0.000          | 1.54           |                   |                              | 260.0                 | SURCHARGED |                   |
| 1.004 | 106           | 0.000          | 2.34           |                   |                              | 312.8                 | SURCHARGED |                   |
| 1.005 | 107           | 0.000          | 0.89           |                   |                              | 340.1                 | SURCHARGED |                   |
| 1.006 | 108           | 0.000          | 0.34           |                   |                              | 43.0                  | SURCHARGED |                   |
| 1.007 | 109           | 0.000          | 0.02           |                   |                              | 45.1                  | SURCHARGED |                   |
| 1.008 | 110           | 0.000          | 0.01           |                   |                              | 30.7                  | SURCHARGED |                   |
| 1.009 | 111           | 0.000          | 0.01           |                   |                              | 24.1                  | SURCHARGED |                   |
| 1.010 | 112           | 0.000          | 0.01           |                   |                              | 13.3                  | SURCHARGED |                   |
| 3.000 | 113           | 0.000          | 0.75           |                   |                              | 56.8                  | SURCHARGED |                   |
| 3.001 | 114           | 0.000          | 1.50           |                   |                              | 112.0                 | SURCHARGED |                   |
| 1.011 | 115           | 0.000          | 0.00           |                   |                              | 12.0                  | SURCHARGED |                   |
| 4.000 | 116           | 0.000          | 0.88           |                   |                              | 62.9                  | FLOOD RISK |                   |
| 4.001 | 117           | 0.000          | 2.48           |                   |                              | 161.5                 | SURCHARGED |                   |
| 4.002 | 118           | 0.000          | 3.59           |                   |                              | 189.3                 | SURCHARGED |                   |
| 4.003 | 119           | 0.000          | 0.67           |                   |                              | 33.4                  | SURCHARGED |                   |
| 4.004 | 120           | 0.000          | 0.05           |                   | 282                          | 34.9                  | SURCHARGED |                   |
| 5.000 | 121           | 0.386          | 2.18           |                   |                              | 84.6                  | FLOOD      | 1                 |
| 5.001 | 122           | 0.000          | 0.03           |                   |                              | 26.7                  | SURCHARGED |                   |
| 5.002 | 123           | 0.000          | 0.03           |                   |                              | 30.0                  | SURCHARGED |                   |
| 4.005 | 124           | 0.000          | 0.04           |                   | 312                          | 44.7                  | SURCHARGED |                   |

|                                                  |                                  |                                                                                     |
|--------------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                                  | Page 23                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby      |  |
| Date 23/04/2024<br>File 7778 SW NET 1 REV F.MDX  | Designed by JAR<br>Checked by AJ |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3                 |                                                                                     |

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW  
NET 1 REV F.SWS

| PN    | US/MH |     | Storm  | Return<br>Period | Climate<br>Change | First (X) |        | First (Y) |  | First (Z) |  | Overflow | Water        | Surcharged   | Flooded        |
|-------|-------|-----|--------|------------------|-------------------|-----------|--------|-----------|--|-----------|--|----------|--------------|--------------|----------------|
|       | Name  |     |        |                  |                   | Surcharge |        | Flood     |  | Overflow  |  | Act.     | Level<br>(m) | Depth<br>(m) | Volume<br>(m³) |
| 4.006 | 125   | 240 | Winter | 100              | +45%              | 30/30     | Winter |           |  |           |  |          | 24.868       | 2.296        | 0.000          |
| 6.000 | 126   | 15  | Winter | 100              | +45%              | 30/15     | Winter |           |  |           |  |          | 25.506       | 1.080        | 0.000          |
| 6.001 | 127   | 15  | Winter | 100              | +45%              | 30/15     | Summer |           |  |           |  |          | 25.287       | 1.196        | 0.000          |
| 6.002 | 128   | 15  | Winter | 100              | +45%              | 30/15     | Summer |           |  |           |  |          | 24.943       | 0.942        | 0.000          |
| 6.003 | 129   | 240 | Winter | 100              | +45%              | 30/60     | Summer |           |  |           |  |          | 24.876       | 2.226        | 0.000          |
| 4.007 | 130   | 240 | Winter | 100              | +45%              | 30/30     | Winter |           |  |           |  |          | 24.876       | 2.398        | 0.000          |
| 7.000 | 131   | 60  | Winter | 100              | +45%              | 30/60     | Winter |           |  |           |  |          | 24.879       | 1.600        | 0.000          |
| 7.001 | 132   | 360 | Winter | 100              | +45%              | 30/60     | Winter |           |  |           |  |          | 24.874       | 1.695        | 0.000          |
| 8.000 | 133   | 360 | Winter | 100              | +45%              | 100/15    | Winter |           |  |           |  |          | 24.882       | 0.757        | 0.000          |
| 7.002 | 134   | 240 | Winter | 100              | +45%              | 30/60     | Winter |           |  |           |  |          | 24.876       | 2.156        | 0.000          |
| 9.000 | 135   | 240 | Winter | 100              | +45%              | 30/60     | Winter |           |  |           |  |          | 24.876       | 2.176        | 0.000          |
| 7.003 | 136   | 240 | Winter | 100              | +45%              | 30/30     | Winter |           |  |           |  |          | 24.876       | 2.320        | 0.000          |
| 7.004 | 137   | 240 | Winter | 100              | +45%              | 30/30     | Winter |           |  |           |  |          | 24.876       | 2.358        | 0.000          |
| 7.005 | 138   | 240 | Winter | 100              | +45%              | 30/30     | Winter |           |  |           |  |          | 24.876       | 2.484        | 0.000          |
| 4.008 | 139   | 240 | Winter | 100              | +45%              | 1/15      | Summer |           |  |           |  |          | 24.876       | 3.201        | 0.000          |
| 4.009 | 140   | 600 | Winter | 100              | +45%              | 100/120   | Winter |           |  |           |  |          | 23.469       | 1.849        | 0.000          |
| 1.012 | 141   | 600 | Winter | 100              | +45%              | 1/15      | Summer |           |  |           |  |          | 23.469       | 3.094        | 0.000          |
| 1.013 | 142   | 600 | Winter | 100              | +45%              |           |        |           |  |           |  |          | 19.549       | -0.286       | 0.000          |
| 1.014 | 143   | 600 | Winter | 100              | +45%              |           |        |           |  |           |  |          | 18.302       | -0.279       | 0.000          |
| 1.015 | 144   | 600 | Winter | 100              | +45%              |           |        |           |  |           |  |          | 17.972       | -0.285       | 0.000          |
| 1.016 | 145   | 600 | Winter | 100              | +45%              |           |        |           |  |           |  |          | 17.182       | -0.287       | 0.000          |

| PN    | US/MH |  | Flow /<br>Cap. | Overflow<br>(l/s) | Half Drain     |  | Pipe<br>Flow<br>(l/s) | Status     | Level<br>Exceeded |
|-------|-------|--|----------------|-------------------|----------------|--|-----------------------|------------|-------------------|
|       | Name  |  |                |                   | Time<br>(mins) |  |                       |            |                   |
| 4.006 | 125   |  | 0.03           |                   |                |  | 38.9                  | SURCHARGED |                   |
| 6.000 | 126   |  | 0.85           |                   |                |  | 42.1                  | SURCHARGED |                   |
| 6.001 | 127   |  | 1.96           |                   |                |  | 82.8                  | SURCHARGED |                   |
| 6.002 | 128   |  | 3.67           |                   |                |  | 141.5                 | SURCHARGED |                   |
| 6.003 | 129   |  | 0.05           |                   |                |  | 59.2                  | SURCHARGED |                   |
| 4.007 | 130   |  | 0.05           |                   |                |  | 53.9                  | SURCHARGED |                   |
| 7.000 | 131   |  | 0.84           |                   |                |  | 29.8                  | FLOOD RISK |                   |
| 7.001 | 132   |  | 0.31           |                   |                |  | 18.8                  | FLOOD RISK |                   |
| 8.000 | 133   |  | 0.19           |                   |                |  | 12.6                  | SURCHARGED |                   |
| 7.002 | 134   |  | 0.04           |                   |                |  | 47.1                  | SURCHARGED |                   |
| 9.000 | 135   |  | 0.02           |                   |                |  | 29.8                  | SURCHARGED |                   |
| 7.003 | 136   |  | 0.13           |                   |                |  | 100.5                 | SURCHARGED |                   |
| 7.004 | 137   |  | 0.09           |                   |                |  | 109.5                 | SURCHARGED |                   |
| 7.005 | 138   |  | 0.13           |                   |                |  | 113.2                 | SURCHARGED |                   |
| 4.008 | 139   |  | 0.24           |                   |                |  | 26.0                  | SURCHARGED |                   |
| 4.009 | 140   |  | 0.01           |                   |                |  | 27.0                  | SURCHARGED |                   |
| 1.012 | 141   |  | 0.12           |                   |                |  | 33.5                  | SURCHARGED |                   |
| 1.013 | 142   |  | 0.13           |                   |                |  | 33.5                  | OK         |                   |
| 1.014 | 143   |  | 0.15           |                   |                |  | 33.5                  | OK         |                   |
| 1.015 | 144   |  | 0.13           |                   |                |  | 33.5                  | OK         |                   |
| 1.016 | 145   |  | 0.13           |                   |                |  | 33.5                  | OK         |                   |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 0                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 2 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

### STORM SEWER DESIGN by the Modified Rational Method

#### Design Criteria for 7778 - SW NET 2 REV F.SWS

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

|                                      |        |                                       |       |
|--------------------------------------|--------|---------------------------------------|-------|
| Return Period (years)                | 2      | PIMP (%)                              | 100   |
| M5-60 (mm)                           | 19.400 | Add Flow / Climate Change (%)         | 0     |
| Ratio R                              | 0.387  | Minimum Backdrop Height (m)           | 0.200 |
| Maximum Rainfall (mm/hr)             | 50     | Maximum Backdrop Height (m)           | 0.000 |
| Maximum Time of Concentration (mins) | 30     | Min Design Depth for Optimisation (m) | 1.200 |
| Foul Sewage (l/s/ha)                 | 0.000  | Min Vel for Auto Design only (m/s)    | 0.75  |
| Volumetric Runoff Coeff.             | 0.750  | Min Slope for Optimisation (1:X)      | 500   |

Designed with Level Soffits

#### Network Design Table for 7778 - SW NET 2 REV F.SWS

« - Indicates pipe capacity < flow

| PN    | Length<br>(m) | Fall<br>(m) | Slope<br>(1:X) | I.Area<br>(ha) | T.E.<br>(mins) | Base<br>Flow (l/s) | k<br>(mm) | HYD<br>SECT | DIA<br>(mm) | Section Type | Auto<br>Design                                                                        |
|-------|---------------|-------------|----------------|----------------|----------------|--------------------|-----------|-------------|-------------|--------------|---------------------------------------------------------------------------------------|
| 1.000 | 23.610        | 0.060       | 393.5          | 0.093          | 5.00           | 0.0                | 0.600     | o           | 450         | Pipe/Conduit |  |
| 2.000 | 34.665        | 0.087       | 398.4          | 0.107          | 5.00           | 0.0                | 0.600     | o           | 450         | Pipe/Conduit |  |
| 2.001 | 11.630        | 0.029       | 401.0          | 0.132          | 0.00           | 0.0                | 0.600     | o           | 450         | Pipe/Conduit |  |
| 2.002 | 21.308        | 0.053       | 402.0          | 0.000          | 0.00           | 0.0                | 0.600     | o           | 450         | Pipe/Conduit |  |
| 2.003 | 34.085        | 0.086       | 396.3          | 0.134          | 0.00           | 0.0                | 0.600     | o           | 450         | Pipe/Conduit |  |
| 1.001 | 9.564         | 0.024       | 398.5          | 0.056          | 0.00           | 0.0                | 0.600     | o           | 525         | Pipe/Conduit |  |
| 1.002 | 11.629        | 0.029       | 401.0          | 0.011          | 0.00           | 0.0                | 0.600     | o           | 525         | Pipe/Conduit |  |
| 1.003 | 41.151        | 0.104       | 395.7          | 0.074          | 0.00           | 0.0                | 0.600     | o           | 525         | Pipe/Conduit |  |
| 3.000 | 46.479        | 0.116       | 400.7          | 0.116          | 5.00           | 0.0                | 0.600     | o           | 450         | Pipe/Conduit |  |
| 3.001 | 12.603        | 0.033       | 381.9          | 0.124          | 0.00           | 0.0                | 0.600     | o           | 450         | Pipe/Conduit |  |

#### Network Results Table

| PN    | Rain<br>(mm/hr) | T.C.<br>(mins) | US/IL<br>(m) | E I.Area<br>(ha) | E Base<br>Flow (l/s) | Foul<br>(l/s) | Add Flow<br>(l/s) | Vel<br>(m/s) | Cap<br>(l/s) | Flow<br>(l/s) |
|-------|-----------------|----------------|--------------|------------------|----------------------|---------------|-------------------|--------------|--------------|---------------|
| 1.000 | 50.00           | 5.39           | 24.327       | 0.093            | 0.0                  | 0.0           | 0.0               | 1.02         | 162.0        | 12.6          |
| 2.000 | 50.00           | 5.57           | 24.522       | 0.107            | 0.0                  | 0.0           | 0.0               | 1.01         | 161.0        | 14.5          |
| 2.001 | 50.00           | 5.76           | 24.435       | 0.239            | 0.0                  | 0.0           | 0.0               | 1.01         | 160.5        | 32.4          |
| 2.002 | 50.00           | 6.12           | 24.406       | 0.239            | 0.0                  | 0.0           | 0.0               | 1.01         | 160.3        | 32.4          |
| 2.003 | 50.00           | 6.67           | 24.353       | 0.373            | 0.0                  | 0.0           | 0.0               | 1.02         | 161.4        | 50.5          |
| 1.001 | 50.00           | 6.82           | 24.192       | 0.522            | 0.0                  | 0.0           | 0.0               | 1.12         | 241.6        | 70.7          |
| 1.002 | 50.00           | 6.99           | 24.168       | 0.533            | 0.0                  | 0.0           | 0.0               | 1.11         | 240.8        | 72.2          |
| 1.003 | 50.00           | 7.60           | 24.139       | 0.607            | 0.0                  | 0.0           | 0.0               | 1.12         | 242.4        | 82.2          |
| 3.000 | 50.00           | 5.77           | 24.259       | 0.116            | 0.0                  | 0.0           | 0.0               | 1.01         | 160.5        | 15.7          |
| 3.001 | 50.00           | 5.97           | 24.143       | 0.240            | 0.0                  | 0.0           | 0.0               | 1.03         | 164.5        | 32.5          |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 1                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 2 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

Network Design Table for 7778 - SW NET 2 REV F.SWS

| PN    | Length<br>(m) | Fall<br>(m) | Slope<br>(1:X) | I.Area<br>(ha) | T.E.<br>(mins) | Base<br>Flow (l/s) | k<br>(mm) | HYD<br>SECT | DIA<br>(mm) | Section Type | Auto<br>Design                                                                        |
|-------|---------------|-------------|----------------|----------------|----------------|--------------------|-----------|-------------|-------------|--------------|---------------------------------------------------------------------------------------|
| 1.004 | 63.134        | 0.158       | 399.6          | 0.084          | 0.00           | 0.0                | 0.600     | o           | 525         | Pipe/Conduit |    |
| 1.005 | 12.139        | 0.030       | 404.6          | 0.160          | 0.00           | 0.0                | 0.600     | o           | 525         | Pipe/Conduit |    |
| 1.006 | 35.544        | 0.089       | 399.4          | 0.030          | 0.00           | 0.0                | 0.600     | o           | 525         | Pipe/Conduit |    |
| 1.007 | 14.282        | 0.036       | 396.7          | 0.199          | 0.00           | 0.0                | 0.600     | o           | 525         | Pipe/Conduit |    |
| 1.008 | 29.862        | 0.075       | 398.2          | 0.000          | 0.00           | 0.0                | 0.600     | o           | 525         | Pipe/Conduit |    |
| 1.009 | 16.950        | 0.321       | 52.8           | 0.000          | 0.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |    |
| 4.000 | 18.482        | 0.231       | 80.0           | 0.087          | 5.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |    |
| 4.001 | 9.366         | 0.123       | 76.1           | 0.069          | 0.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |    |
| 4.002 | 13.308        | 0.308       | 43.2           | 0.013          | 0.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |    |
| 5.000 | 22.680        | 0.491       | 46.2           | 0.125          | 5.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |    |
| 1.010 | 60.892        | 0.680       | 89.5           | 0.104          | 0.00           | 0.0                | 0.600     | o           | 450         | Pipe/Conduit |    |
| 1.011 | 62.997        | 0.157       | 400.0          | 0.220          | 0.00           | 0.0                | 0.600     | o           | 525         | Pipe/Conduit |    |
| 1.012 | 10.000        | 0.060       | 166.7          | 0.337          | 0.00           | 0.0                | 0.600     | o           | 300         | Pipe/Conduit |    |
| 1.013 | 46.656        | 0.279       | 167.2          | 0.000          | 0.00           | 0.0                | 0.600     | o           | 600         | Pipe/Conduit |    |
| 1.014 | 8.849         | 0.053       | 167.0          | 0.141          | 0.00           | 0.0                | 0.600     | o           | 600         | Pipe/Conduit |   |
| 1.015 | 60.733        | 0.152       | 399.6          | 0.105          | 0.00           | 0.0                | 0.600     | o           | 600         | Pipe/Conduit |  |
| 1.016 | 78.806        | 0.197       | 400.0          | 0.234          | 0.00           | 0.0                | 0.600     | o           | 600         | Pipe/Conduit |  |
| 1.017 | 31.667        | 0.085       | 372.6          | 0.261          | 0.00           | 0.0                | 0.600     | o           | 600         | Pipe/Conduit |  |
| 6.000 | 21.282        | 0.887       | 24.0           | 0.103          | 5.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |  |

Network Results Table

| PN    | Rain<br>(mm/hr) | T.C.<br>(mins) | US/IL<br>(m) | Σ I.Area<br>(ha) | Σ Base<br>Flow (l/s) | Foul<br>(l/s) | Add Flow<br>(l/s) | Vel<br>(m/s) | Cap<br>(l/s) | Flow<br>(l/s) |
|-------|-----------------|----------------|--------------|------------------|----------------------|---------------|-------------------|--------------|--------------|---------------|
| 1.004 | 50.00           | 8.55           | 24.035       | 0.931            | 0.0                  | 0.0           | 0.0               | 1.11         | 241.2        | 126.1         |
| 1.005 | 50.00           | 8.73           | 23.877       | 1.091            | 0.0                  | 0.0           | 0.0               | 1.11         | 239.7        | 147.7         |
| 1.006 | 50.00           | 9.26           | 23.847       | 1.121            | 0.0                  | 0.0           | 0.0               | 1.11         | 241.3        | 151.8         |
| 1.007 | 49.46           | 9.48           | 23.758       | 1.320            | 0.0                  | 0.0           | 0.0               | 1.12         | 242.1        | 176.8         |
| 1.008 | 48.28           | 9.92           | 23.422       | 1.320            | 0.0                  | 0.0           | 0.0               | 1.12         | 241.7        | 176.8         |
| 1.009 | 47.88           | 10.08          | 23.347       | 1.320            | 0.0                  | 0.0           | 0.0               | 1.80         | 71.7         | 176.8         |
| 4.000 | 50.00           | 5.21           | 23.688       | 0.087            | 0.0                  | 0.0           | 0.0               | 1.46         | 58.2         | 11.8          |
| 4.001 | 50.00           | 5.31           | 23.457       | 0.156            | 0.0                  | 0.0           | 0.0               | 1.50         | 59.6         | 21.1          |
| 4.002 | 50.00           | 5.43           | 23.334       | 0.169            | 0.0                  | 0.0           | 0.0               | 2.00         | 79.3         | 22.9          |
| 5.000 | 50.00           | 5.20           | 23.517       | 0.125            | 0.0                  | 0.0           | 0.0               | 1.93         | 76.7         | 16.9          |
| 1.010 | 46.73           | 10.55          | 22.801       | 1.718            | 0.0                  | 0.0           | 0.0               | 2.15         | 341.9        | 217.4         |
| 1.011 | 44.62           | 11.49          | 22.046       | 1.938            | 0.0                  | 0.0           | 0.0               | 1.11         | 241.1        | 234.2         |
| 1.012 | 44.34           | 11.63          | 21.889       | 2.275            | 0.0                  | 0.0           | 0.0               | 1.22         | 85.9         | 273.2         |
| 1.013 | 43.49           | 12.04          | 21.589       | 2.275            | 0.0                  | 0.0           | 0.0               | 1.88         | 531.7        | 273.2         |
| 1.014 | 43.34           | 12.12          | 21.310       | 2.416            | 0.0                  | 0.0           | 0.0               | 1.88         | 532.0        | 283.6         |
| 1.015 | 41.75           | 12.96          | 21.257       | 2.521            | 0.0                  | 0.0           | 0.0               | 1.21         | 342.7        | 285.1         |
| 1.016 | 39.89           | 14.04          | 21.105       | 2.755            | 0.0                  | 0.0           | 0.0               | 1.21         | 342.5        | 297.6         |
| 1.017 | 39.22           | 14.46          | 20.908       | 3.016            | 0.0                  | 0.0           | 0.0               | 1.26         | 355.0        | 320.4         |
| 6.000 | 50.00           | 5.13           | 23.500       | 0.103            | 0.0                  | 0.0           | 0.0               | 2.68         | 106.7        | 13.9          |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 2                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 2 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

Network Design Table for 7778 - SW NET 2 REV F.SWS

| PN     | Length<br>(m) | Fall<br>(m) | Slope<br>(1:X) | I.Area<br>(ha) | T.E.<br>(mins) | Base<br>Flow (l/s) | k<br>(mm) | HYD<br>SECT | DIA<br>(mm) | Section Type | Auto<br>Design                                                                        |
|--------|---------------|-------------|----------------|----------------|----------------|--------------------|-----------|-------------|-------------|--------------|---------------------------------------------------------------------------------------|
| 7.000  | 22.932        | 1.147       | 20.0           | 0.187          | 5.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |    |
| 6.001  | 70.649        | 0.177       | 399.1          | 0.027          | 0.00           | 0.0                | 0.600     | o           | 600         | Pipe/Conduit |    |
| 6.002  | 8.476         | 0.025       | 339.0          | 0.113          | 0.00           | 0.0                | 0.600     | o           | 600         | Pipe/Conduit |    |
| 8.000  | 23.998        | 0.558       | 43.0           | 0.074          | 5.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |    |
| 8.001  | 32.659        | 1.276       | 25.6           | 0.071          | 0.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |    |
| 9.000  | 47.008        | 1.190       | 39.5           | 0.070          | 5.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |    |
| 8.002  | 54.508        | 0.136       | 400.8          | 0.220          | 0.00           | 0.0                | 0.600     | o           | 450         | Pipe/Conduit |    |
| 8.003  | 7.579         | 0.020       | 378.9          | 0.100          | 0.00           | 0.0                | 0.600     | o           | 450         | Pipe/Conduit |    |
| 6.003  | 20.214        | 0.051       | 396.4          | 0.008          | 0.00           | 0.0                | 0.600     | o           | 600         | Pipe/Conduit |    |
| 6.004  | 30.682        | 0.077       | 398.5          | 0.038          | 0.00           | 0.0                | 0.600     | o           | 600         | Pipe/Conduit |    |
| 6.005  | 13.343        | 0.033       | 404.3          | 0.071          | 0.00           | 0.0                | 0.600     | o           | 600         | Pipe/Conduit |    |
| 10.000 | 54.501        | 0.136       | 400.7          | 0.061          | 5.00           | 0.0                | 0.600     | o           | 600         | Pipe/Conduit |   |
| 10.001 | 19.979        | 0.050       | 399.6          | 0.103          | 0.00           | 0.0                | 0.600     | o           | 600         | Pipe/Conduit |  |
| 10.002 | 47.851        | 0.120       | 398.8          | 0.131          | 0.00           | 0.0                | 0.600     | o           | 600         | Pipe/Conduit |  |
| 10.003 | 13.819        | 0.040       | 345.5          | 0.112          | 0.00           | 0.0                | 0.600     | o           | 600         | Pipe/Conduit |  |
| 6.006  | 48.804        | 0.122       | 400.0          | 0.013          | 0.00           | 0.0                | 0.600     | o           | 600         | Pipe/Conduit |  |

Network Results Table

| PN     | Rain<br>(mm/hr) | T.C.<br>(mins) | US/IL<br>(m) | Σ I.Area<br>(ha) | Σ Base<br>Flow (l/s) | Foul<br>(l/s) | Add Flow<br>(l/s) | Vel<br>(m/s) | Cap<br>(l/s) | Flow<br>(l/s) |
|--------|-----------------|----------------|--------------|------------------|----------------------|---------------|-------------------|--------------|--------------|---------------|
| 7.000  | 50.00           | 5.13           | 23.762       | 0.187            | 0.0                  | 0.0           | 0.0               | 2.94         | 116.9        | 25.3          |
| 6.001  | 50.00           | 6.10           | 21.339       | 0.317            | 0.0                  | 0.0           | 0.0               | 1.21         | 342.9        | 42.9          |
| 6.002  | 50.00           | 6.21           | 21.162       | 0.430            | 0.0                  | 0.0           | 0.0               | 1.32         | 372.3        | 58.2          |
| 8.000  | 50.00           | 5.20           | 23.502       | 0.074            | 0.0                  | 0.0           | 0.0               | 2.00         | 79.5         | 10.0          |
| 8.001  | 50.00           | 5.41           | 22.944       | 0.145            | 0.0                  | 0.0           | 0.0               | 2.60         | 103.2        | 19.6          |
| 9.000  | 50.00           | 5.38           | 22.861       | 0.070            | 0.0                  | 0.0           | 0.0               | 2.09         | 83.0         | 9.5           |
| 8.002  | 50.00           | 6.31           | 21.443       | 0.435            | 0.0                  | 0.0           | 0.0               | 1.01         | 160.5        | 58.9          |
| 8.003  | 50.00           | 6.43           | 21.307       | 0.535            | 0.0                  | 0.0           | 0.0               | 1.04         | 165.1        | 72.4          |
| 6.003  | 50.00           | 6.71           | 21.137       | 0.973            | 0.0                  | 0.0           | 0.0               | 1.22         | 344.1        | 131.8         |
| 6.004  | 50.00           | 7.13           | 21.086       | 1.011            | 0.0                  | 0.0           | 0.0               | 1.21         | 343.2        | 136.9         |
| 6.005  | 50.00           | 7.31           | 21.009       | 1.082            | 0.0                  | 0.0           | 0.0               | 1.20         | 340.7        | 146.5         |
| 10.000 | 50.00           | 5.75           | 21.322       | 0.061            | 0.0                  | 0.0           | 0.0               | 1.21         | 342.2        | 8.3           |
| 10.001 | 50.00           | 6.03           | 21.186       | 0.164            | 0.0                  | 0.0           | 0.0               | 1.21         | 342.7        | 22.2          |
| 10.002 | 50.00           | 6.68           | 21.136       | 0.295            | 0.0                  | 0.0           | 0.0               | 1.21         | 343.1        | 39.9          |
| 10.003 | 50.00           | 6.86           | 21.016       | 0.407            | 0.0                  | 0.0           | 0.0               | 1.30         | 368.8        | 55.1          |
| 6.006  | 50.00           | 7.99           | 20.976       | 1.502            | 0.0                  | 0.0           | 0.0               | 1.21         | 342.5        | 203.4         |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 3                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 2 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

Network Design Table for 7778 - SW NET 2 REV F.SWS

| PN     | Length<br>(m) | Fall<br>(m) | Slope<br>(1:X) | I.Area<br>(ha) | T.E.<br>(mins) | Base<br>Flow (l/s) | k<br>(mm) | HYD<br>SECT | DIA<br>(mm) | Section Type | Auto<br>Design                                                                      |
|--------|---------------|-------------|----------------|----------------|----------------|--------------------|-----------|-------------|-------------|--------------|-------------------------------------------------------------------------------------|
| 6.007  | 12.448        | 0.031       | 401.5          | 0.000          | 0.00           | 0.0                | 0.600     | o           | 600         | Pipe/Conduit |  |
| 1.018  | 11.857        | 0.030       | 395.2          | 0.000          | 0.00           | 0.0                | 0.600     | o           | 600         | Pipe/Conduit |  |
| 1.019  | 98.943        | 0.247       | 400.6          | 0.000          | 0.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |
| 1.020  | 36.933        | 0.092       | 401.4          | 0.000          | 0.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |
| 1.021  | 16.493        | 0.500       | 33.0           | 0.000          | 0.00           | 0.0                | 0.600     | o           | 375         | Pipe/Conduit |  |
| 11.000 | 67.157        | 0.168       | 399.7          | 0.189          | 5.00           | 0.0                | 0.600     | o           | 1200        | Pipe/Conduit |  |
| 11.001 | 24.988        | 0.062       | 403.0          | 0.160          | 0.00           | 0.0                | 0.600     | o           | 1200        | Pipe/Conduit |  |
| 1.022  | 48.569        | 0.121       | 401.4          | 0.086          | 0.00           | 0.0                | 0.600     | o           | 1200        | Pipe/Conduit |  |
| 1.023  | 11.248        | 0.262       | 43.0           | 0.126          | 0.00           | 0.0                | 0.600     | o           | 375         | Pipe/Conduit |  |
| 1.024  | 24.866        | 0.216       | 115.1          | 0.000          | 0.00           | 0.0                | 0.600     | o           | 375         | Pipe/Conduit |  |
| 1.025  | 28.408        | 0.247       | 115.0          | 0.000          | 0.00           | 0.0                | 0.600     | o           | 375         | Pipe/Conduit |  |
| 1.026  | 48.261        | 1.097       | 44.0           | 0.000          | 0.00           | 0.0                | 0.600     | o           | 375         | Pipe/Conduit |  |
| 1.027  | 18.321        | 0.733       | 25.0           | 0.000          | 0.00           | 0.0                | 0.600     | o           | 375         | Pipe/Conduit |  |

Network Results Table

| PN     | Rain<br>(mm/hr) | T.C.<br>(mins) | US/IL<br>(m) | Σ I.Area<br>(ha) | Σ Base<br>Flow (l/s) | Foul<br>(l/s) | Add Flow<br>(l/s) | Vel<br>(m/s) | Cap<br>(l/s) | Flow<br>(l/s) |
|--------|-----------------|----------------|--------------|------------------|----------------------|---------------|-------------------|--------------|--------------|---------------|
| 6.007  | 50.00           | 8.16           | 20.854       | 1.502            | 0.0                  | 0.0           | 0.0               | 1.21         | 341.8        | 203.4         |
| 1.018  | 38.97           | 14.62          | 20.823       | 4.518            | 0.0                  | 0.0           | 0.0               | 1.22         | 344.6«       | 476.8         |
| 1.019  | 37.42           | 15.68          | 20.500       | 4.518            | 0.0                  | 0.0           | 0.0               | 1.56         | 992.0        | 476.8         |
| 1.020  | 36.87           | 16.08          | 20.253       | 4.518            | 0.0                  | 0.0           | 0.0               | 1.56         | 990.9        | 476.8         |
| 1.021  | 36.76           | 16.16          | 20.154       | 4.518            | 0.0                  | 0.0           | 0.0               | 3.16         | 349.5«       | 476.8         |
| 11.000 | 50.00           | 5.60           | 16.951       | 0.189            | 0.0                  | 0.0           | 0.0               | 1.87         | 2109.3       | 25.6          |
| 11.001 | 50.00           | 5.82           | 16.783       | 0.349            | 0.0                  | 0.0           | 0.0               | 1.86         | 2100.6       | 47.3          |
| 1.022  | 36.18           | 16.60          | 16.721       | 4.953            | 0.0                  | 0.0           | 0.0               | 1.86         | 2104.9       | 485.4         |
| 1.023  | 36.10           | 16.67          | 16.600       | 5.079            | 0.0                  | 0.0           | 0.0               | 2.77         | 305.9«       | 496.5         |
| 1.024  | 35.78           | 16.91          | 16.338       | 5.079            | 0.0                  | 0.0           | 0.0               | 1.69         | 186.4«       | 496.5         |
| 1.025  | 35.43           | 17.19          | 16.122       | 5.079            | 0.0                  | 0.0           | 0.0               | 1.69         | 186.5«       | 496.5         |
| 1.026  | 35.08           | 17.49          | 15.875       | 5.079            | 0.0                  | 0.0           | 0.0               | 2.74         | 302.4«       | 496.5         |
| 1.027  | 34.98           | 17.57          | 14.778       | 5.079            | 0.0                  | 0.0           | 0.0               | 3.64         | 401.7«       | 496.5         |

|                                                  |  |                                  |
|--------------------------------------------------|--|----------------------------------|
| Coopers                                          |  | Page 4                           |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |  | Cherryfield Drive<br>Kirkby      |
| Date 23/04/2024<br>File 7778 SW NET 2 REV F.MDX  |  | Designed by JAR<br>Checked by AJ |
| Micro Drainage                                   |  | Network 2020.1.3                 |



Manhole Schedules for 7778 - SW NET 2 REV F.SWS

| MH Name | MH CL (m) | MH Depth (m) | MH Connection | MH Diam., L*W (mm) | Pipe Out PN | Invert Level (m) | Diameter (mm) | Pipes In PN | Invert Level (m) | Diameter (mm) | Backdrop (mm) |
|---------|-----------|--------------|---------------|--------------------|-------------|------------------|---------------|-------------|------------------|---------------|---------------|
| 201     | 26.250    | 1.923        | Open Manhole  | 1800               | 1.000       | 24.327           | 450           |             |                  |               |               |
| 202     | 26.537    | 2.015        | Open Manhole  | 1800               | 2.000       | 24.522           | 450           |             |                  |               |               |
| 203     | 26.100    | 1.665        | Open Manhole  | 1800               | 2.001       | 24.435           | 450           | 2.000       | 24.435           | 450           |               |
| 204     | 25.982    | 1.576        | Open Manhole  | 1800               | 2.002       | 24.406           | 450           | 2.001       | 24.406           | 450           |               |
| 205     | 26.000    | 1.647        | Open Manhole  | 1800               | 2.003       | 24.353           | 450           | 2.002       | 24.353           | 450           |               |
| 206     | 26.441    | 2.249        | Open Manhole  | 1800               | 1.001       | 24.192           | 525           | 1.000       | 24.267           | 450           |               |
|         |           |              |               |                    |             |                  |               | 2.003       | 24.267           | 450           |               |
| 207     | 26.320    | 2.152        | Open Manhole  | 1800               | 1.002       | 24.168           | 525           | 1.001       | 24.168           | 525           |               |
| 208     | 26.193    | 2.054        | Open Manhole  | 1800               | 1.003       | 24.139           | 525           | 1.002       | 24.139           | 525           |               |
| 209     | 26.211    | 1.952        | Open Manhole  | 1800               | 3.000       | 24.259           | 450           |             |                  |               |               |
| 210     | 26.324    | 2.181        | Open Manhole  | 1800               | 3.001       | 24.143           | 450           | 3.000       | 24.143           | 450           |               |
| 211     | 26.484    | 2.449        | Open Manhole  | 1800               | 1.004       | 24.035           | 525           | 1.003       | 24.035           | 525           |               |
|         |           |              |               |                    |             |                  |               | 3.001       | 24.110           | 450           |               |
| 212     | 26.384    | 2.507        | Open Manhole  | 1800               | 1.005       | 23.877           | 525           | 1.004       | 23.877           | 525           |               |
| 213     | 26.233    | 2.386        | Open Manhole  | 1800               | 1.006       | 23.847           | 525           | 1.005       | 23.847           | 525           |               |
| 214     | 25.685    | 1.927        | Open Manhole  | 1800               | 1.007       | 23.758           | 525           | 1.006       | 23.758           | 525           |               |
| 215     | 25.569    | 2.147        | Open Manhole  | 1800               | 1.008       | 23.422           | 525           | 1.007       | 23.722           | 525           | 300           |
| 216     | 25.000    | 1.653        | Open Manhole  | 2400               | 1.009       | 23.347           | 225           | 1.008       | 23.347           | 525           |               |
| 217     | 25.113    | 1.425        | Open Manhole  | 1500               | 4.000       | 23.688           | 225           |             |                  |               |               |
| 218     | 24.882    | 1.425        | Open Manhole  | 1500               | 4.001       | 23.457           | 225           | 4.000       | 23.457           | 225           |               |
| 219     | 24.759    | 1.425        | Open Manhole  | 1500               | 4.002       | 23.334           | 225           | 4.001       | 23.334           | 225           |               |
| 220     | 24.942    | 1.425        | Open Manhole  | 1500               | 5.000       | 23.517           | 225           |             |                  |               |               |
| 221     | 24.711    | 1.910        | Open Manhole  | 1800               | 1.010       | 22.801           | 450           | 1.009       | 23.026           | 225           |               |
|         |           |              |               |                    |             |                  |               | 4.002       | 23.026           | 225           |               |
|         |           |              |               |                    |             |                  |               | 5.000       | 23.026           | 225           |               |
| 222     | 24.662    | 2.616        | Open Manhole  | 2400               | 1.011       | 22.046           | 525           | 1.010       | 22.121           | 450           |               |
| 223     | 24.320    | 2.431        | Open Manhole  | 2400               | 1.012       | 21.889           | 300           | 1.011       | 21.889           | 525           |               |
| 223a    | 24.450    | 2.861        | Open Manhole  | 1500               | 1.013       | 21.589           | 600           | 1.012       | 21.829           | 300           |               |
| 224     | 24.179    | 2.869        | Open Manhole  | 1800               | 1.014       | 21.310           | 600           | 1.013       | 21.310           | 600           |               |
| 225     | 24.011    | 2.754        | Open Manhole  | 1800               | 1.015       | 21.257           | 600           | 1.014       | 21.257           | 600           |               |
| 226     | 23.297    | 2.192        | Open Manhole  | 1800               | 1.016       | 21.105           | 600           | 1.015       | 21.105           | 600           |               |
| 227     | 22.961    | 2.053        | Open Manhole  | 1800               | 1.017       | 20.908           | 600           | 1.016       | 20.908           | 600           |               |
| 228     | 25.985    | 2.485        | Open Manhole  | 1500               | 6.000       | 23.500           | 225           |             |                  |               |               |
| 229     | 25.187    | 1.425        | Open Manhole  | 1500               | 7.000       | 23.762           | 225           |             |                  |               |               |
| 230     | 25.475    | 4.136        | Open Manhole  | 1800               | 6.001       | 21.339           | 600           | 6.000       | 22.613           | 225           | 899           |
|         |           |              |               |                    |             |                  |               | 7.000       | 22.615           | 225           | 901           |
| 231     | 24.236    | 3.074        | Open Manhole  | 1800               | 6.002       | 21.162           | 600           | 6.001       | 21.162           | 600           |               |
| 232     | 24.927    | 1.425        | Open Manhole  | 1500               | 8.000       | 23.502           | 225           |             |                  |               |               |
| 233     | 24.370    | 1.426        | Open Manhole  | 1500               | 8.001       | 22.944           | 225           | 8.000       | 22.944           | 225           |               |
| 234     | 24.286    | 1.425        | Open Manhole  | 1500               | 9.000       | 22.861           | 225           |             |                  |               |               |

|                                                  |  |                                  |
|--------------------------------------------------|--|----------------------------------|
| Coopers                                          |  | Page 5                           |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |  | Cherryfield Drive<br>Kirkby      |
| Date 23/04/2024<br>File 7778 SW NET 2 REV F.MDX  |  | Designed by JAR<br>Checked by AJ |
| Micro Drainage                                   |  | Network 2020.1.3                 |



# Manhole Schedules for 7778 - SW NET 2 REV F.SWS

| MH Name | MH CL (m) | MH Depth (m) | MH Connection | MH Diam., L*W (mm) | PN     | Pipe Out Invert Level (m) | Pipe Out Diameter (mm) | PN     | Pipes In Invert Level (m) | Pipes In Diameter (mm) | Backdrop (mm) |
|---------|-----------|--------------|---------------|--------------------|--------|---------------------------|------------------------|--------|---------------------------|------------------------|---------------|
| 235     | 23.700    | 2.257        | Open Manhole  | 2100               | 8.002  | 21.443                    | 450                    | 8.001  | 21.668                    | 225                    | 3             |
|         |           |              |               |                    |        |                           |                        | 9.000  | 21.671                    | 225                    |               |
| 236     | 23.989    | 2.682        | Open Manhole  | 2100               | 8.003  | 21.307                    | 450                    | 8.002  | 21.307                    | 450                    |               |
| 237     | 24.103    | 2.966        | Open Manhole  | 2100               | 6.003  | 21.137                    | 600                    | 6.002  | 21.137                    | 600                    |               |
|         |           |              |               |                    |        |                           |                        | 8.003  | 21.287                    | 450                    |               |
| 238     | 23.759    | 2.673        | Open Manhole  | 2100               | 6.004  | 21.086                    | 600                    | 6.003  | 21.086                    | 600                    |               |
| 239     | 23.331    | 2.322        | Open Manhole  | 2100               | 6.005  | 21.009                    | 600                    | 6.004  | 21.009                    | 600                    |               |
| 240     | 24.531    | 3.209        | Open Manhole  | 2100               | 10.000 | 21.322                    | 600                    |        |                           |                        |               |
| 241     | 24.159    | 2.973        | Open Manhole  | 2100               | 10.001 | 21.186                    | 600                    | 10.000 | 21.186                    | 600                    |               |
| 242     | 23.911    | 2.775        | Open Manhole  | 2100               | 10.002 | 21.136                    | 600                    | 10.001 | 21.136                    | 600                    |               |
| 243     | 23.343    | 2.327        | Open Manhole  | 2100               | 10.003 | 21.016                    | 600                    | 10.002 | 21.016                    | 600                    |               |
| 244     | 23.307    | 2.331        | Open Manhole  | 2100               | 6.006  | 20.976                    | 600                    | 6.005  | 20.976                    | 600                    |               |
|         |           |              |               |                    |        |                           |                        | 10.003 | 20.976                    | 600                    |               |
| 245     | 23.141    | 2.287        | Open Manhole  | 2100               | 6.007  | 20.854                    | 600                    | 6.006  | 20.854                    | 600                    |               |
| 246     | 23.095    | 2.272        | Open Manhole  | 2400               | 1.018  | 20.823                    | 600                    | 1.017  | 20.823                    | 600                    |               |
|         |           |              |               |                    |        |                           |                        | 6.007  | 20.823                    | 600                    |               |
| 247     | 22.000    | 1.500        | Open Manhole  | 2400               | 1.019  | 20.500                    | 900                    | 1.018  | 20.793                    | 600                    |               |
| 248     | 22.000    | 1.747        | Open Manhole  | 2400               | 1.020  | 20.253                    | 900                    | 1.019  | 20.253                    | 900                    | 532           |
| 250     | 22.000    | 1.846        | Open Manhole  | 2400               | 1.021  | 20.154                    | 375                    | 1.020  | 20.161                    | 900                    |               |
| 251     | 21.839    | 4.888        | Open Manhole  | 3000               | 11.000 | 16.951                    | 1200                   |        |                           |                        |               |
| 252     | 21.800    | 5.017        | Open Manhole  | 3000               | 11.001 | 16.783                    | 1200                   | 11.000 | 16.783                    | 1200                   | 2108          |
| 253     | 21.649    | 4.928        | Open Manhole  | 3000               | 1.022  | 16.721                    | 1200                   | 1.021  | 19.654                    | 375                    |               |
|         |           |              |               |                    |        |                           |                        | 11.001 | 16.721                    | 1200                   |               |
| 254     | 19.310    | 2.710        | Open Manhole  | 3000               | 1.023  | 16.600                    | 375                    | 1.022  | 16.600                    | 1200                   |               |
| 255     | 19.029    | 2.691        | Open Manhole  | 1500               | 1.024  | 16.338                    | 375                    | 1.023  | 16.338                    | 375                    |               |
| 256     | 18.492    | 2.370        | Open Manhole  | 1500               | 1.025  | 16.122                    | 375                    | 1.024  | 16.122                    | 375                    |               |
| 257     | 17.908    | 2.033        | Open Manhole  | 1500               | 1.026  | 15.875                    | 375                    | 1.025  | 15.875                    | 375                    |               |
| 258     | 16.911    | 2.133        | Open Manhole  | 1500               | 1.027  | 14.778                    | 375                    | 1.026  | 14.778                    | 375                    |               |
| 259     | 15.000    | 0.955        | Open Manhole  | 0                  |        | OUTFALL                   |                        | 1.027  | 14.045                    | 375                    |               |

| MH Name | Manhole Easting (m) | Manhole Northing (m) | Intersection Easting (m) | Intersection Northing (m) | Manhole Access | Layout (North) |
|---------|---------------------|----------------------|--------------------------|---------------------------|----------------|----------------|
| 201     | 341298.116          | 398523.183           | 341298.116               | 398523.183                | Required       |                |
| 202     | 341339.584          | 398424.311           | 341339.584               | 398424.311                | Required       |                |
| 203     | 341338.386          | 398458.955           | 341338.386               | 398458.955                | Required       |                |



|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 6                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 2 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

Manhole Schedules for 7778 - SW NET 2 REV F.SWS

| MH Name | Manhole Easting (m) | Manhole Northing (m) | Intersection Easting (m) | Intersection Northing (m) | Manhole Access | Layout (North)                                                                        |
|---------|---------------------|----------------------|--------------------------|---------------------------|----------------|---------------------------------------------------------------------------------------|
| 204     | 341333.684          | 398469.592           | 341333.684               | 398469.592                | Required       |    |
| 205     | 341319.198          | 398485.219           | 341319.198               | 398485.219                | Required       |    |
| 206     | 341289.164          | 398501.336           | 341289.164               | 398501.336                | Required       |    |
| 207     | 341283.972          | 398493.304           | 341283.972               | 398493.304                | Required       |    |
| 208     | 341274.077          | 398487.195           | 341274.077               | 398487.195                | Required       |    |
| 209     | 341234.755          | 398426.391           | 341234.755               | 398426.391                | Required       |   |
| 210     | 341233.308          | 398472.846           | 341233.308               | 398472.846                | Required       |  |
| 211     | 341232.963          | 398485.445           | 341232.963               | 398485.445                | Required       |  |
| 212     | 341169.857          | 398483.570           | 341169.857               | 398483.570                | Required       |  |
| 213     | 341158.548          | 398479.159           | 341158.548               | 398479.159                | Required       |  |
| 214     | 341145.696          | 398446.020           | 341145.696               | 398446.020                | Required       |  |
| 215     | 341131.681          | 398443.271           | 341131.681               | 398443.271                | Required       |  |
| 216     | 341101.961          | 398440.363           | 341101.961               | 398440.363                | Required       |  |
| 217     | 341064.227          | 398457.030           | 341064.227               | 398457.030                | Required       |  |
| 218     | 341081.420          | 398450.249           | 341081.420               | 398450.249                | Required       |  |
| 219     | 341087.511          | 398443.133           | 341087.511               | 398443.133                | Required       |  |
| 220     | 341111.327          | 398429.877           | 341111.327               | 398429.877                | Required       |  |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 7                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 2 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

Manhole Schedules for 7778 - SW NET 2 REV F.SWS

| MH Name | Manhole Easting (m) | Manhole Northing (m) | Intersection Easting (m) | Intersection Northing (m) | Manhole Access | Layout (North)                                                                        |
|---------|---------------------|----------------------|--------------------------|---------------------------|----------------|---------------------------------------------------------------------------------------|
| 221     | 341088.647          | 398429.874           | 341088.647               | 398429.874                | Required       |    |
| 222     | 341090.941          | 398369.025           | 341090.941               | 398369.025                | Required       |    |
| 223     | 341092.991          | 398306.062           | 341092.991               | 398306.062                | Required       |    |
| 224     | 341095.223          | 398249.450           | 341095.223               | 398249.450                | Required       |    |
| 225     | 341087.664          | 398244.850           | 341087.664               | 398244.850                | Required       |   |
| 226     | 341030.238          | 398264.616           | 341030.238               | 398264.616                | Required       |  |
| 227     | 340955.722          | 398290.263           | 340955.722               | 398290.263                | Required       |  |
| 228     | 340961.222          | 398494.428           | 340961.222               | 398494.428                | Required       |  |
| 229     | 341003.053          | 398480.153           | 341003.053               | 398480.153                | Required       |  |
| 230     | 340981.177          | 398487.030           | 340981.177               | 398487.030                | Required       |  |
| 231     | 340956.618          | 398420.787           | 340956.618               | 398420.787                | Required       |  |
| 232     | 341034.382          | 398448.014           | 341034.382               | 398448.014                | Required       |  |
| 233     | 341026.368          | 398425.394           | 341026.368               | 398425.394                | Required       |  |
| 234     | 341059.927          | 398379.359           | 341059.927               | 398379.359                | Required       |  |
| 235     | 341015.461          | 398394.609           | 341015.461               | 398394.609                | Required       |  |
| 236     | 340963.838          | 398412.104           | 340963.838               | 398412.104                | Required       |  |
| 237     | 340956.262          | 398412.318           | 340956.262               | 398412.318                | Required       |  |

|                                                  |                                  |                                                                                     |
|--------------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                                  | Page 8                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby      |  |
| Date 23/04/2024<br>File 7778 SW NET 2 REV F.MDX  | Designed by JAR<br>Checked by AJ |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3                 |                                                                                     |

Manhole Schedules for 7778 - SW NET 2 REV F.SWS

| MH Name | Manhole Easting (m) | Manhole Northing (m) | Intersection Easting (m) | Intersection Northing (m) | Manhole Access | Layout (North)                                                                        |
|---------|---------------------|----------------------|--------------------------|---------------------------|----------------|---------------------------------------------------------------------------------------|
| 238     | 340955.413          | 398392.122           | 340955.413               | 398392.122                | Required       |    |
| 239     | 340945.938          | 398362.939           | 340945.938               | 398362.939                | Required       |    |
| 240     | 341063.819          | 398318.404           | 341063.819               | 398318.404                | Required       |    |
| 241     | 341012.211          | 398335.924           | 341012.211               | 398335.924                | Required       |    |
| 242     | 340992.400          | 398338.509           | 340992.400               | 398338.509                | Required       |    |
| 243     | 340946.883          | 398353.272           | 340946.883               | 398353.272                | Required       |   |
| 244     | 340933.738          | 398357.535           | 340933.738               | 398357.535                | Required       |  |
| 245     | 340919.578          | 398310.830           | 340919.578               | 398310.830                | Required       |  |
| 246     | 340925.562          | 398299.915           | 340925.562               | 398299.915                | Required       |  |
| 247     | 340921.581          | 398288.746           | 340921.581               | 398288.746                | Required       |  |
| 248     | 340892.428          | 398194.196           | 340892.428               | 398194.196                | Required       |  |
| 250     | 340880.040          | 398159.342           | 340880.040               | 398159.342                | Required       |  |
| 251     | 340913.981          | 398226.572           | 340913.981               | 398226.572                | Required       |  |
| 252     | 340893.775          | 398162.527           | 340893.775               | 398162.527                | Required       |  |
| 253     | 340878.252          | 398142.946           | 340878.252               | 398142.946                | Required       |  |
| 254     | 340878.141          | 398094.377           | 340878.141               | 398094.377                | Required       |  |
| 255     | 340877.165          | 398083.172           | 340877.165               | 398083.172                | Required       |  |

Manhole Schedules for 7778 - SW NET 2 REV F.SWS

| MH Name | Manhole Easting (m) | Manhole Northing (m) | Intersection Easting (m) | Intersection Northing (m) | Manhole Access | Layout (North)                                                                      |
|---------|---------------------|----------------------|--------------------------|---------------------------|----------------|-------------------------------------------------------------------------------------|
| 256     | 340852.304          | 398082.671           | 340852.304               | 398082.671                | Required       |  |
| 257     | 340824.088          | 398085.970           | 340824.088               | 398085.970                | Required       |  |
| 258     | 340777.274          | 398097.701           | 340777.274               | 398097.701                | Required       |  |
| 259     | 340759.901          | 398091.884           |                          |                           | No Entry       |  |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 10                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 2 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

PIPELINE SCHEDULES for 7778 - SW NET 2 REV F.SWS

Upstream Manhole

| PN    | Hyd Sect | Diam (mm) | MH Name | C.Level (m) | I.Level (m) | D.Depth (m) | MH Connection | MH DIAM., L*W (mm) |
|-------|----------|-----------|---------|-------------|-------------|-------------|---------------|--------------------|
| 1.000 | o        | 450       | 201     | 26.250      | 24.327      | 1.473       | Open Manhole  | 1800               |
| 2.000 | o        | 450       | 202     | 26.537      | 24.522      | 1.565       | Open Manhole  | 1800               |
| 2.001 | o        | 450       | 203     | 26.100      | 24.435      | 1.215       | Open Manhole  | 1800               |
| 2.002 | o        | 450       | 204     | 25.982      | 24.406      | 1.126       | Open Manhole  | 1800               |
| 2.003 | o        | 450       | 205     | 26.000      | 24.353      | 1.197       | Open Manhole  | 1800               |
| 1.001 | o        | 525       | 206     | 26.441      | 24.192      | 1.724       | Open Manhole  | 1800               |
| 1.002 | o        | 525       | 207     | 26.320      | 24.168      | 1.627       | Open Manhole  | 1800               |
| 1.003 | o        | 525       | 208     | 26.193      | 24.139      | 1.529       | Open Manhole  | 1800               |
| 3.000 | o        | 450       | 209     | 26.211      | 24.259      | 1.502       | Open Manhole  | 1800               |
| 3.001 | o        | 450       | 210     | 26.324      | 24.143      | 1.731       | Open Manhole  | 1800               |
| 1.004 | o        | 525       | 211     | 26.484      | 24.035      | 1.924       | Open Manhole  | 1800               |
| 1.005 | o        | 525       | 212     | 26.384      | 23.877      | 1.982       | Open Manhole  | 1800               |
| 1.006 | o        | 525       | 213     | 26.233      | 23.847      | 1.861       | Open Manhole  | 1800               |
| 1.007 | o        | 525       | 214     | 25.685      | 23.758      | 1.402       | Open Manhole  | 1800               |
| 1.008 | o        | 525       | 215     | 25.569      | 23.422      | 1.622       | Open Manhole  | 1800               |
| 1.009 | o        | 225       | 216     | 25.000      | 23.347      | 1.428       | Open Manhole  | 2400               |
| 4.000 | o        | 225       | 217     | 25.113      | 23.688      | 1.200       | Open Manhole  | 1500               |
| 4.001 | o        | 225       | 218     | 24.882      | 23.457      | 1.200       | Open Manhole  | 1500               |

Downstream Manhole

| PN    | Length (m) | Slope (1:X) | MH Name | C.Level (m) | I.Level (m) | D.Depth (m) | MH Connection | MH DIAM., L*W (mm) |
|-------|------------|-------------|---------|-------------|-------------|-------------|---------------|--------------------|
| 1.000 | 23.610     | 393.5       | 206     | 26.441      | 24.267      | 1.724       | Open Manhole  | 1800               |
| 2.000 | 34.665     | 398.4       | 203     | 26.100      | 24.435      | 1.215       | Open Manhole  | 1800               |
| 2.001 | 11.630     | 401.0       | 204     | 25.982      | 24.406      | 1.126       | Open Manhole  | 1800               |
| 2.002 | 21.308     | 402.0       | 205     | 26.000      | 24.353      | 1.197       | Open Manhole  | 1800               |
| 2.003 | 34.085     | 396.3       | 206     | 26.441      | 24.267      | 1.724       | Open Manhole  | 1800               |
| 1.001 | 9.564      | 398.5       | 207     | 26.320      | 24.168      | 1.627       | Open Manhole  | 1800               |
| 1.002 | 11.629     | 401.0       | 208     | 26.193      | 24.139      | 1.529       | Open Manhole  | 1800               |
| 1.003 | 41.151     | 395.7       | 211     | 26.484      | 24.035      | 1.924       | Open Manhole  | 1800               |
| 3.000 | 46.479     | 400.7       | 210     | 26.324      | 24.143      | 1.731       | Open Manhole  | 1800               |
| 3.001 | 12.603     | 381.9       | 211     | 26.484      | 24.110      | 1.924       | Open Manhole  | 1800               |
| 1.004 | 63.134     | 399.6       | 212     | 26.384      | 23.877      | 1.982       | Open Manhole  | 1800               |
| 1.005 | 12.139     | 404.6       | 213     | 26.233      | 23.847      | 1.861       | Open Manhole  | 1800               |
| 1.006 | 35.544     | 399.4       | 214     | 25.685      | 23.758      | 1.402       | Open Manhole  | 1800               |
| 1.007 | 14.282     | 396.7       | 215     | 25.569      | 23.722      | 1.322       | Open Manhole  | 1800               |
| 1.008 | 29.862     | 398.2       | 216     | 25.000      | 23.347      | 1.128       | Open Manhole  | 2400               |
| 1.009 | 16.950     | 52.8        | 221     | 24.711      | 23.026      | 1.460       | Open Manhole  | 1800               |
| 4.000 | 18.482     | 80.0        | 218     | 24.882      | 23.457      | 1.200       | Open Manhole  | 1500               |
| 4.001 | 9.366      | 76.1        | 219     | 24.759      | 23.334      | 1.200       | Open Manhole  | 1500               |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 11                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 2 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

PIPELINE SCHEDULES for 7778 - SW NET 2 REV F.SWS

Upstream Manhole

| PN    | Hyd Sect | Diam (mm) | MH Name | C.Level (m) | I.Level (m) | D.Depth (m) | MH Connection | MH DIAM., L*W (mm) |
|-------|----------|-----------|---------|-------------|-------------|-------------|---------------|--------------------|
| 4.002 | o        | 225       | 219     | 24.759      | 23.334      | 1.200       | Open Manhole  | 1500               |
| 5.000 | o        | 225       | 220     | 24.942      | 23.517      | 1.200       | Open Manhole  | 1500               |
| 1.010 | o        | 450       | 221     | 24.711      | 22.801      | 1.460       | Open Manhole  | 1800               |
| 1.011 | o        | 525       | 222     | 24.662      | 22.046      | 2.091       | Open Manhole  | 2400               |
| 1.012 | o        | 300       | 223     | 24.320      | 21.889      | 2.131       | Open Manhole  | 2400               |
| 1.013 | o        | 600       | 223a    | 24.450      | 21.589      | 2.261       | Open Manhole  | 1500               |
| 1.014 | o        | 600       | 224     | 24.179      | 21.310      | 2.269       | Open Manhole  | 1800               |
| 1.015 | o        | 600       | 225     | 24.011      | 21.257      | 2.154       | Open Manhole  | 1800               |
| 1.016 | o        | 600       | 226     | 23.297      | 21.105      | 1.592       | Open Manhole  | 1800               |
| 1.017 | o        | 600       | 227     | 22.961      | 20.908      | 1.453       | Open Manhole  | 1800               |
| 6.000 | o        | 225       | 228     | 25.985      | 23.500      | 2.260       | Open Manhole  | 1500               |
| 7.000 | o        | 225       | 229     | 25.187      | 23.762      | 1.200       | Open Manhole  | 1500               |
| 6.001 | o        | 600       | 230     | 25.475      | 21.339      | 3.536       | Open Manhole  | 1800               |
| 6.002 | o        | 600       | 231     | 24.236      | 21.162      | 2.474       | Open Manhole  | 1800               |
| 8.000 | o        | 225       | 232     | 24.927      | 23.502      | 1.200       | Open Manhole  | 1500               |
| 8.001 | o        | 225       | 233     | 24.370      | 22.944      | 1.201       | Open Manhole  | 1500               |

Downstream Manhole

| PN    | Length (m) | Slope (1:X) | MH Name | C.Level (m) | I.Level (m) | D.Depth (m) | MH Connection | MH DIAM., L*W (mm) |
|-------|------------|-------------|---------|-------------|-------------|-------------|---------------|--------------------|
| 4.002 | 13.308     | 43.2        | 221     | 24.711      | 23.026      | 1.460       | Open Manhole  | 1800               |
| 5.000 | 22.680     | 46.2        | 221     | 24.711      | 23.026      | 1.460       | Open Manhole  | 1800               |
| 1.010 | 60.892     | 89.5        | 222     | 24.662      | 22.121      | 2.091       | Open Manhole  | 2400               |
| 1.011 | 62.997     | 400.0       | 223     | 24.320      | 21.889      | 1.906       | Open Manhole  | 2400               |
| 1.012 | 10.000     | 166.7       | 223a    | 24.450      | 21.829      | 2.321       | Open Manhole  | 1500               |
| 1.013 | 46.656     | 167.2       | 224     | 24.179      | 21.310      | 2.269       | Open Manhole  | 1800               |
| 1.014 | 8.849      | 167.0       | 225     | 24.011      | 21.257      | 2.154       | Open Manhole  | 1800               |
| 1.015 | 60.733     | 399.6       | 226     | 23.297      | 21.105      | 1.592       | Open Manhole  | 1800               |
| 1.016 | 78.806     | 400.0       | 227     | 22.961      | 20.908      | 1.453       | Open Manhole  | 1800               |
| 1.017 | 31.667     | 372.6       | 246     | 23.095      | 20.823      | 1.672       | Open Manhole  | 2400               |
| 6.000 | 21.282     | 24.0        | 230     | 25.475      | 22.613      | 2.637       | Open Manhole  | 1800               |
| 7.000 | 22.932     | 20.0        | 230     | 25.475      | 22.615      | 2.635       | Open Manhole  | 1800               |
| 6.001 | 70.649     | 399.1       | 231     | 24.236      | 21.162      | 2.474       | Open Manhole  | 1800               |
| 6.002 | 8.476      | 339.0       | 237     | 24.103      | 21.137      | 2.366       | Open Manhole  | 2100               |
| 8.000 | 23.998     | 43.0        | 233     | 24.370      | 22.944      | 1.201       | Open Manhole  | 1500               |
| 8.001 | 32.659     | 25.6        | 235     | 23.700      | 21.668      | 1.807       | Open Manhole  | 2100               |

|                                                  |                                  |                                                                                     |
|--------------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                                  | Page 12                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby      |  |
| Date 23/04/2024<br>File 7778 SW NET 2 REV F.MDX  | Designed by JAR<br>Checked by AJ |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3                 |                                                                                     |

PIPELINE SCHEDULES for 7778 - SW NET 2 REV F.SWS

Upstream Manhole

| PN     | Hyd<br>Sect | Diam<br>(mm) | MH<br>Name | C.Level<br>(m) | I.Level<br>(m) | D.Depth<br>(m) | MH<br>Connection | MH DIAM., L*W<br>(mm) |
|--------|-------------|--------------|------------|----------------|----------------|----------------|------------------|-----------------------|
| 9.000  | o           | 225          | 234        | 24.286         | 22.861         | 1.200          | Open Manhole     | 1500                  |
| 8.002  | o           | 450          | 235        | 23.700         | 21.443         | 1.807          | Open Manhole     | 2100                  |
| 8.003  | o           | 450          | 236        | 23.989         | 21.307         | 2.232          | Open Manhole     | 2100                  |
| 6.003  | o           | 600          | 237        | 24.103         | 21.137         | 2.366          | Open Manhole     | 2100                  |
| 6.004  | o           | 600          | 238        | 23.759         | 21.086         | 2.073          | Open Manhole     | 2100                  |
| 6.005  | o           | 600          | 239        | 23.331         | 21.009         | 1.722          | Open Manhole     | 2100                  |
| 10.000 | o           | 600          | 240        | 24.531         | 21.322         | 2.609          | Open Manhole     | 2100                  |
| 10.001 | o           | 600          | 241        | 24.159         | 21.186         | 2.373          | Open Manhole     | 2100                  |
| 10.002 | o           | 600          | 242        | 23.911         | 21.136         | 2.175          | Open Manhole     | 2100                  |
| 10.003 | o           | 600          | 243        | 23.343         | 21.016         | 1.727          | Open Manhole     | 2100                  |
| 6.006  | o           | 600          | 244        | 23.307         | 20.976         | 1.731          | Open Manhole     | 2100                  |
| 6.007  | o           | 600          | 245        | 23.141         | 20.854         | 1.687          | Open Manhole     | 2100                  |
| 1.018  | o           | 600          | 246        | 23.095         | 20.823         | 1.672          | Open Manhole     | 2400                  |
| 1.019  | o           | 900          | 247        | 22.000         | 20.500         | 0.600          | Open Manhole     | 2400                  |
| 1.020  | o           | 900          | 248        | 22.000         | 20.253         | 0.847          | Open Manhole     | 2400                  |
| 1.021  | o           | 375          | 250        | 22.000         | 20.154         | 1.471          | Open Manhole     | 2400                  |
| 11.000 | o           | 1200         | 251        | 21.839         | 16.951         | 3.688          | Open Manhole     | 3000                  |

Downstream Manhole

| PN     | Length<br>(m) | Slope<br>(1:X) | MH<br>Name | C.Level<br>(m) | I.Level<br>(m) | D.Depth<br>(m) | MH<br>Connection | MH DIAM., L*W<br>(mm) |
|--------|---------------|----------------|------------|----------------|----------------|----------------|------------------|-----------------------|
| 9.000  | 47.008        | 39.5           | 235        | 23.700         | 21.671         | 1.804          | Open Manhole     | 2100                  |
| 8.002  | 54.508        | 400.8          | 236        | 23.989         | 21.307         | 2.232          | Open Manhole     | 2100                  |
| 8.003  | 7.579         | 378.9          | 237        | 24.103         | 21.287         | 2.366          | Open Manhole     | 2100                  |
| 6.003  | 20.214        | 396.4          | 238        | 23.759         | 21.086         | 2.073          | Open Manhole     | 2100                  |
| 6.004  | 30.682        | 398.5          | 239        | 23.331         | 21.009         | 1.722          | Open Manhole     | 2100                  |
| 6.005  | 13.343        | 404.3          | 244        | 23.307         | 20.976         | 1.731          | Open Manhole     | 2100                  |
| 10.000 | 54.501        | 400.7          | 241        | 24.159         | 21.186         | 2.373          | Open Manhole     | 2100                  |
| 10.001 | 19.979        | 399.6          | 242        | 23.911         | 21.136         | 2.175          | Open Manhole     | 2100                  |
| 10.002 | 47.851        | 398.8          | 243        | 23.343         | 21.016         | 1.727          | Open Manhole     | 2100                  |
| 10.003 | 13.819        | 345.5          | 244        | 23.307         | 20.976         | 1.731          | Open Manhole     | 2100                  |
| 6.006  | 48.804        | 400.0          | 245        | 23.141         | 20.854         | 1.687          | Open Manhole     | 2100                  |
| 6.007  | 12.448        | 401.5          | 246        | 23.095         | 20.823         | 1.672          | Open Manhole     | 2400                  |
| 1.018  | 11.857        | 395.2          | 247        | 22.000         | 20.793         | 0.607          | Open Manhole     | 2400                  |
| 1.019  | 98.943        | 400.6          | 248        | 22.000         | 20.253         | 0.847          | Open Manhole     | 2400                  |
| 1.020  | 36.933        | 401.4          | 250        | 22.000         | 20.161         | 0.939          | Open Manhole     | 2400                  |
| 1.021  | 16.493        | 33.0           | 253        | 21.649         | 19.654         | 1.620          | Open Manhole     | 3000                  |
| 11.000 | 67.157        | 399.7          | 252        | 21.800         | 16.783         | 3.817          | Open Manhole     | 3000                  |

|                                                  |                             |                                                                                     |
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| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 2 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

PIPELINE SCHEDULES for 7778 - SW NET 2 REV F.SWS

Upstream Manhole

| PN     | Hyd Sect | Diam (mm) | MH Name | C.Level (m) | I.Level (m) | D.Depth (m) | MH Connection | MH DIAM., L*W (mm) |
|--------|----------|-----------|---------|-------------|-------------|-------------|---------------|--------------------|
| 11.001 | o        | 1200      | 252     | 21.800      | 16.783      | 3.817       | Open Manhole  | 3000               |
| 1.022  | o        | 1200      | 253     | 21.649      | 16.721      | 3.728       | Open Manhole  | 3000               |
| 1.023  | o        | 375       | 254     | 19.310      | 16.600      | 2.335       | Open Manhole  | 3000               |
| 1.024  | o        | 375       | 255     | 19.029      | 16.338      | 2.316       | Open Manhole  | 1500               |
| 1.025  | o        | 375       | 256     | 18.492      | 16.122      | 1.995       | Open Manhole  | 1500               |
| 1.026  | o        | 375       | 257     | 17.908      | 15.875      | 1.658       | Open Manhole  | 1500               |
| 1.027  | o        | 375       | 258     | 16.911      | 14.778      | 1.758       | Open Manhole  | 1500               |

Downstream Manhole

| PN     | Length (m) | Slope (1:X) | MH Name | C.Level (m) | I.Level (m) | D.Depth (m) | MH Connection | MH DIAM., L*W (mm) |
|--------|------------|-------------|---------|-------------|-------------|-------------|---------------|--------------------|
| 11.001 | 24.988     | 403.0       | 253     | 21.649      | 16.721      | 3.728       | Open Manhole  | 3000               |
| 1.022  | 48.569     | 401.4       | 254     | 19.310      | 16.600      | 1.510       | Open Manhole  | 3000               |
| 1.023  | 11.248     | 43.0        | 255     | 19.029      | 16.338      | 2.316       | Open Manhole  | 1500               |
| 1.024  | 24.866     | 115.1       | 256     | 18.492      | 16.122      | 1.995       | Open Manhole  | 1500               |
| 1.025  | 28.408     | 115.0       | 257     | 17.908      | 15.875      | 1.658       | Open Manhole  | 1500               |
| 1.026  | 48.261     | 44.0        | 258     | 16.911      | 14.778      | 1.758       | Open Manhole  | 1500               |
| 1.027  | 18.321     | 25.0        | 259     | 15.000      | 14.045      | 0.580       | Open Manhole  | 0                  |

Free Flowing Outfall Details for 7778 - SW NET 2 REV F.SWS

| Outfall Pipe Number | Outfall Name | C. Level (m) | I. Level (m) | Min I. Level (m) | D,L (mm) | W (mm) |
|---------------------|--------------|--------------|--------------|------------------|----------|--------|
|---------------------|--------------|--------------|--------------|------------------|----------|--------|

|       |     |        |        |       |   |   |
|-------|-----|--------|--------|-------|---|---|
| 1.027 | 259 | 15.000 | 14.045 | 0.000 | 0 | 0 |
|-------|-----|--------|--------|-------|---|---|

Simulation Criteria for 7778 - SW NET 2 REV F.SWS

|                                 |       |                                     |               |
|---------------------------------|-------|-------------------------------------|---------------|
| Volumetric Runoff Coeff         | 0.750 | Additional Flow - % of Total Flow   | 0.000         |
| Areal Reduction Factor          | 1.000 | MADD Factor * 10m³/ha               | Storage 2.000 |
| Hot Start (mins)                | 0     | Inlet Coefficient                   | 0.800         |
| Hot Start Level (mm)            | 0     | Flow per Person per Day (l/per/day) | 0.000         |
| Manhole Headloss Coeff (Global) | 0.500 | Run Time (mins)                     | 60            |
| Foul Sewage per hectare (l/s)   | 0.000 | Output Interval (mins)              | 1             |

Number of Input Hydrographs 0    Number of Offline Controls 0    Number of Time/Area Diagrams 0  
Number of Online Controls 4    Number of Storage Structures 7    Number of Real Time Controls 0

Synthetic Rainfall Details

|                       |                   |              |        |
|-----------------------|-------------------|--------------|--------|
| Rainfall Model        | FSR               | Ratio R      | 0.387  |
| Return Period (years) | 2                 | Profile Type | Summer |
| Region                | England and Wales | Cv (Summer)  | 0.750  |
| M5-60 (mm)            | 19.400            | Cv (Winter)  | 0.840  |

|                                                                           |                                  |                                                                                     |
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| Micro Drainage                                                            | Network 2020.1.3                 |                                                                                     |
| <div>Synthetic Rainfall Details</div> <div>Storm Duration (mins) 30</div> |                                  |                                                                                     |
| ©1982-2020 Innovyze                                                       |                                  |                                                                                     |

|                                                  |                             |                                                                                     |
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| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 2 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

### Online Controls for 7778 - SW NET 2 REV F.SWS

Hydro-Brake® Optimum Manhole: 216, DS/PN: 1.009, Volume (m³): 13.5

|                                   |                            |
|-----------------------------------|----------------------------|
| Unit Reference                    | MD-SHE-0215-3000-2500-3000 |
| Design Head (m)                   | 2.500                      |
| Design Flow (l/s)                 | 30.0                       |
| Flush-Flo™                        | Calculated                 |
| Objective                         | Minimise upstream storage  |
| Application                       | Surface                    |
| Sump Available                    | Yes                        |
| Diameter (mm)                     | 215                        |
| Invert Level (m)                  | 23.347                     |
| Minimum Outlet Pipe Diameter (mm) | 300                        |
| Suggested Manhole Diameter (mm)   | 2100                       |

| Control Points            | Head (m) | Flow (l/s) | Control Points            | Head (m) | Flow (l/s) |
|---------------------------|----------|------------|---------------------------|----------|------------|
| Design Point (Calculated) | 2.500    | 30.0       | Kick-Flo®                 | 1.529    | 23.7       |
| Flush-Flo™                | 0.727    | 30.0       | Mean Flow over Head Range | -        | 26.1       |

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

| Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) |
|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|
| 0.100     | 7.3        | 0.800     | 29.9       | 2.000     | 26.9       | 4.000     | 37.6       | 7.000     | 49.2       |
| 0.200     | 21.0       | 1.000     | 29.4       | 2.200     | 28.2       | 4.500     | 39.8       | 7.500     | 50.9       |
| 0.300     | 26.4       | 1.200     | 28.3       | 2.400     | 29.4       | 5.000     | 41.8       | 8.000     | 52.5       |
| 0.400     | 28.2       | 1.400     | 26.1       | 2.600     | 30.5       | 5.500     | 43.8       | 8.500     | 54.1       |
| 0.500     | 29.2       | 1.600     | 24.2       | 3.000     | 32.7       | 6.000     | 45.7       | 9.000     | 55.6       |
| 0.600     | 29.8       | 1.800     | 25.6       | 3.500     | 35.2       | 6.500     | 47.5       | 9.500     | 57.1       |

Hydro-Brake® Optimum Manhole: 223, DS/PN: 1.012, Volume (m³): 24.1

|                                   |                            |
|-----------------------------------|----------------------------|
| Unit Reference                    | MD-SHE-0232-3500-2500-3500 |
| Design Head (m)                   | 2.500                      |
| Design Flow (l/s)                 | 35.0                       |
| Flush-Flo™                        | Calculated                 |
| Objective                         | Minimise upstream storage  |
| Application                       | Surface                    |
| Sump Available                    | Yes                        |
| Diameter (mm)                     | 232                        |
| Invert Level (m)                  | 21.889                     |
| Minimum Outlet Pipe Diameter (mm) | 300                        |
| Suggested Manhole Diameter (mm)   | 2100                       |

| Control Points            | Head (m) | Flow (l/s) | Control Points            | Head (m) | Flow (l/s) |
|---------------------------|----------|------------|---------------------------|----------|------------|
| Design Point (Calculated) | 2.500    | 35.0       | Kick-Flo®                 | 1.539    | 27.7       |
| Flush-Flo™                | 0.727    | 35.0       | Mean Flow over Head Range | -        | 30.5       |

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

|                                                  |                             |                                                                                     |
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| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 2 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   |                             | Network 2020.1.3                                                                    |

#### Hydro-Brake® Optimum Manhole: 223, DS/PN: 1.012, Volume (m³): 24.1

| Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) |
|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|
| 0.100     | 7.7        | 0.800     | 34.9       | 2.000     | 31.4       | 4.000     | 43.9       | 7.000     | 57.5       |
| 0.200     | 23.3       | 1.000     | 34.3       | 2.200     | 32.9       | 4.500     | 46.4       | 7.500     | 59.4       |
| 0.300     | 30.8       | 1.200     | 33.1       | 2.400     | 34.3       | 5.000     | 48.8       | 8.000     | 61.3       |
| 0.400     | 32.9       | 1.400     | 30.7       | 2.600     | 35.6       | 5.500     | 51.2       | 8.500     | 63.2       |
| 0.500     | 34.1       | 1.600     | 28.2       | 3.000     | 38.2       | 6.000     | 53.4       | 9.000     | 65.0       |
| 0.600     | 34.7       | 1.800     | 29.9       | 3.500     | 41.1       | 6.500     | 55.5       | 9.500     | 66.7       |

#### Hydro-Brake® Optimum Manhole: 250, DS/PN: 1.021, Volume (m³): 30.3

|                                   |                            |
|-----------------------------------|----------------------------|
| Unit Reference                    | MD-SHE-0288-5000-1539-5000 |
| Design Head (m)                   | 1.539                      |
| Design Flow (l/s)                 | 50.0                       |
| Flush-Flo™                        | Calculated                 |
| Objective                         | Minimise upstream storage  |
| Application                       | Surface                    |
| Sump Available                    | Yes                        |
| Diameter (mm)                     | 288                        |
| Invert Level (m)                  | 20.161                     |
| Minimum Outlet Pipe Diameter (mm) | 300                        |
| Suggested Manhole Diameter (mm)   | 2100                       |

| Control Points            | Head (m) | Flow (l/s) | Control Points            | Head (m) | Flow (l/s) |
|---------------------------|----------|------------|---------------------------|----------|------------|
| Design Point (Calculated) | 1.539    | 49.9       | Kick-Flo®                 | 1.090    | 42.3       |
| Flush-Flo™                | 0.515    | 49.8       | Mean Flow over Head Range | -        | 42.2       |

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

| Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) |
|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|
| 0.100     | 8.9        | 0.800     | 48.3       | 2.000     | 56.7       | 4.000     | 79.3       | 7.000     | 104.1      |
| 0.200     | 29.7       | 1.000     | 45.4       | 2.200     | 59.3       | 4.500     | 83.9       | 7.500     | 107.6      |
| 0.300     | 47.5       | 1.200     | 44.3       | 2.400     | 61.9       | 5.000     | 88.3       | 8.000     | 111.1      |
| 0.400     | 49.3       | 1.400     | 47.7       | 2.600     | 64.3       | 5.500     | 92.5       | 8.500     | 114.4      |
| 0.500     | 49.8       | 1.600     | 50.9       | 3.000     | 68.9       | 6.000     | 96.5       | 9.000     | 117.7      |
| 0.600     | 49.6       | 1.800     | 53.8       | 3.500     | 74.3       | 6.500     | 100.4      | 9.500     | 120.8      |

#### Hydro-Brake® Optimum Manhole: 254, DS/PN: 1.023, Volume (m³): 70.7

|                                   |                                                    |
|-----------------------------------|----------------------------------------------------|
| Unit Reference                    | MD-SHE-0322-7250-2700-7250                         |
| Design Head (m)                   | 2.700                                              |
| Design Flow (l/s)                 | 72.5                                               |
| Flush-Flo™                        | Calculated                                         |
| Objective                         | Minimise upstream storage                          |
| Application                       | Surface                                            |
| Sump Available                    | Yes                                                |
| Diameter (mm)                     | 322                                                |
| Invert Level (m)                  | 16.600                                             |
| Minimum Outlet Pipe Diameter (mm) | 375                                                |
| Suggested Manhole Diameter (mm)   | Site Specific Design (Contact Hydro International) |

Hydro-Brake® Optimum Manhole: 254, DS/PN: 1.023, Volume (m³): 70.7

| Control Points            | Head (m) | Flow (l/s) | Control Points            | Head (m) | Flow (l/s) |
|---------------------------|----------|------------|---------------------------|----------|------------|
| Design Point (Calculated) | 2.700    | 72.4       | Kick-Flo®                 | 1.732    | 58.4       |
| Flush-Flo™                | 0.802    | 72.5       | Mean Flow over Head Range | -        | 62.7       |

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

| Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) |
|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|
| 0.100     | 9.6        | 0.800     | 72.5       | 2.000     | 62.6       | 4.000     | 87.6       | 7.000     | 115.0      |
| 0.200     | 32.9       | 1.000     | 71.9       | 2.200     | 65.6       | 4.500     | 92.8       | 7.500     | 119.0      |
| 0.300     | 58.0       | 1.200     | 70.5       | 2.400     | 68.4       | 5.000     | 97.7       | 8.000     | 122.8      |
| 0.400     | 66.9       | 1.400     | 68.1       | 2.600     | 71.1       | 5.500     | 102.3      | 8.500     | 126.5      |
| 0.500     | 69.8       | 1.600     | 63.6       | 3.000     | 76.2       | 6.000     | 106.7      | 9.000     | 130.1      |
| 0.600     | 71.4       | 1.800     | 59.5       | 3.500     | 82.1       | 6.500     | 111.0      | 9.500     | 133.5      |

|                                                  |                             |                                                                                     |
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| File 7778 SW NET 2 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   |                             | Network 2020.1.3                                                                    |

### Storage Structures for 7778 - SW NET 2 REV F.SWS

#### Tank or Pond Manhole: 216, DS/PN: 1.009

Invert Level (m) 23.347

| Depth (m) | Area (m <sup>2</sup> ) | Depth (m) | Area (m <sup>2</sup> ) | Depth (m) | Area (m <sup>2</sup> ) | Depth (m) | Area (m <sup>2</sup> ) | Depth (m) | Area (m <sup>2</sup> ) |
|-----------|------------------------|-----------|------------------------|-----------|------------------------|-----------|------------------------|-----------|------------------------|
| 0.000     | 216.0                  | 0.300     | 284.0                  | 0.600     | 357.0                  | 0.900     | 433.0                  | 1.200     | 518.0                  |
| 0.100     | 238.0                  | 0.400     | 308.0                  | 0.700     | 382.0                  | 1.000     | 462.0                  | 1.300     | 547.0                  |
| 0.200     | 261.0                  | 0.500     | 332.0                  | 0.800     | 409.0                  | 1.100     | 490.0                  |           |                        |

#### Cellular Storage Manhole: 222, DS/PN: 1.011

Invert Level (m) 22.121 Safety Factor 2.0  
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95  
Infiltration Coefficient Side (m/hr) 0.00000

| 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     | 232.0                  | 232.0                       | 1.200     | 232.0                  | 320.8                       | 1.300     | 0.0                    | 320.8                       |

#### Cellular Storage Manhole: 223, DS/PN: 1.012

Invert Level (m) 21.889 Safety Factor 2.0  
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95  
Infiltration Coefficient Side (m/hr) 0.00000

| 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     | 232.0                  | 232.0                       | 1.200     | 232.0                  | 320.8                       | 1.300     | 0.0                    | 320.8                       |

#### Complex Manhole: 226, DS/PN: 1.016

##### Cellular Storage

Invert Level (m) 21.300 Safety Factor 2.0  
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95  
Infiltration Coefficient Side (m/hr) 0.00000

| 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     | 133.0                  | 133.0                       | 0.400     | 133.0                  | 166.2                       | 0.500     | 0.0                    | 166.2                       |

##### Cellular Storage

Invert Level (m) 21.300 Safety Factor 2.0  
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95  
Infiltration Coefficient Side (m/hr) 0.00000

| 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     | 119.0                  | 119.0                       | 0.400     | 119.0                  | 149.0                       | 0.500     | 0.0                    | 149.0                       |

|                                                  |                             |                                                                                     |
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| Micro Drainage                                   |                             | Network 2020.1.3                                                                    |

Complex Manhole: 227, DS/PN: 1.017

Cellular Storage

Invert Level (m) 21.300 Safety Factor 2.0  
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95  
Infiltration Coefficient Side (m/hr) 0.00000

| 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     | 262.5                  | 262.5                       | 0.400     | 262.5                  | 325.3                       | 0.500     | 0.0                    | 325.3                       |

Cellular Storage

Invert Level (m) 21.300 Safety Factor 2.0  
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95  
Infiltration Coefficient Side (m/hr) 0.00000

| 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     | 262.5                  | 262.5                       | 0.400     | 262.5                  | 325.3                       | 0.500     | 0.0                    | 325.3                       |

Cellular Storage Manhole: 244, DS/PN: 6.006

Invert Level (m) 21.500 Safety Factor 2.0  
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95  
Infiltration Coefficient Side (m/hr) 0.00000

| 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     | 170.0                  | 170.0                       | 0.400     | 170.0                  | 201.2                       | 0.500     | 0.0                    | 201.2                       |

Tank or Pond Manhole: 250, DS/PN: 1.021

Invert Level (m) 20.178

| Depth (m) | Area (m <sup>2</sup> ) | Depth (m) | Area (m <sup>2</sup> ) | Depth (m) | Area (m <sup>2</sup> ) | Depth (m) | Area (m <sup>2</sup> ) |
|-----------|------------------------|-----------|------------------------|-----------|------------------------|-----------|------------------------|
| 0.000     | 16.2                   | 0.400     | 557.2                  | 0.800     | 885.2                  | 1.200     | 1223.9                 |
| 0.100     | 117.5                  | 0.500     | 638.2                  | 0.900     | 968.9                  | 1.300     | 1310.2                 |
| 0.200     | 260.5                  | 0.600     | 719.9                  | 1.000     | 1053.2                 | 1.400     | 1397.2                 |
| 0.300     | 476.9                  | 0.700     | 802.2                  | 1.100     | 1138.2                 | 1.500     | 1484.9                 |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 20                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 2 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW NET  
2 REV F.SWS

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000  
Hot Start (mins) 0 MADD Factor \* 10m³/ha Storage 2.000  
Hot Start Level (mm) 0 Inlet Coefficient 0.800  
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000  
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0  
Number of Online Controls 4 Number of Storage Structures 7 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.400 Cv (Summer) 0.750  
Region England and Wales Ratio R 0.387 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0  
Analysis Timestep 2.5 Second Increment (Extended)  
DTS Status OFF  
DVD Status ON  
Inertia Status ON

Profile(s) Summer and Winter  
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960,  
1440, 2160  
Return Period(s) (years) 1, 30, 100, 101  
Climate Change (%) 0, 0, 45, 0

|       |       |            |  |        |         |           |        |           |           | Water    | Surcharged | Flooded |        |
|-------|-------|------------|--|--------|---------|-----------|--------|-----------|-----------|----------|------------|---------|--------|
|       | US/MH |            |  | Return | Climate | First (X) |        | First (Y) | First (Z) | Overflow | Level      | Depth   | Volume |
| PN    | Name  | Storm      |  | Period | Change  | Surcharge |        | Flood     | Overflow  | Act.     | (m)        | (m)     | (m³)   |
| 1.000 | 201   | 15 Winter  |  | 1      | +0%     | 100/15    | Summer |           |           |          | 24.440     | -0.337  | 0.000  |
| 2.000 | 202   | 15 Winter  |  | 1      | +0%     | 100/15    | Summer |           |           |          | 24.637     | -0.335  | 0.000  |
| 2.001 | 203   | 15 Winter  |  | 1      | +0%     | 100/15    | Summer |           |           |          | 24.597     | -0.288  | 0.000  |
| 2.002 | 204   | 15 Winter  |  | 1      | +0%     | 100/15    | Summer |           |           |          | 24.561     | -0.295  | 0.000  |
| 2.003 | 205   | 15 Winter  |  | 1      | +0%     | 100/15    | Summer |           |           |          | 24.516     | -0.287  | 0.000  |
| 1.001 | 206   | 15 Winter  |  | 1      | +0%     | 100/15    | Summer |           |           |          | 24.421     | -0.296  | 0.000  |
| 1.002 | 207   | 15 Winter  |  | 1      | +0%     | 100/15    | Summer |           |           |          | 24.390     | -0.303  | 0.000  |
| 1.003 | 208   | 15 Winter  |  | 1      | +0%     | 100/15    | Summer |           |           |          | 24.352     | -0.312  | 0.000  |
| 3.000 | 209   | 15 Winter  |  | 1      | +0%     | 100/15    | Summer |           |           |          | 24.365     | -0.344  | 0.000  |
| 3.001 | 210   | 15 Winter  |  | 1      | +0%     | 100/15    | Summer |           |           |          | 24.298     | -0.295  | 0.000  |
| 1.004 | 211   | 15 Winter  |  | 1      | +0%     | 100/15    | Summer |           |           |          | 24.277     | -0.283  | 0.000  |
| 1.005 | 212   | 15 Winter  |  | 1      | +0%     | 30/15     | Summer |           |           |          | 24.184     | -0.218  | 0.000  |
| 1.006 | 213   | 15 Winter  |  | 1      | +0%     | 30/15     | Summer |           |           |          | 24.137     | -0.235  | 0.000  |
| 1.007 | 214   | 15 Winter  |  | 1      | +0%     | 30/15     | Winter |           |           |          | 24.071     | -0.212  | 0.000  |
| 1.008 | 215   | 60 Winter  |  | 1      | +0%     | 30/15     | Winter |           |           |          | 23.697     | -0.250  | 0.000  |
| 1.009 | 216   | 60 Winter  |  | 1      | +0%     | 1/15      | Winter |           |           |          | 23.666     | 0.094   | 0.000  |
| 4.000 | 217   | 15 Winter  |  | 1      | +0%     | 100/15    | Summer |           |           |          | 23.760     | -0.153  | 0.000  |
| 4.001 | 218   | 15 Winter  |  | 1      | +0%     | 30/15     | Winter |           |           |          | 23.556     | -0.126  | 0.000  |
| 4.002 | 219   | 15 Winter  |  | 1      | +0%     | 100/15    | Summer |           |           |          | 23.419     | -0.140  | 0.000  |
| 5.000 | 220   | 15 Winter  |  | 1      | +0%     | 100/15    | Summer |           |           |          | 23.591     | -0.151  | 0.000  |
| 1.010 | 221   | 15 Winter  |  | 1      | +0%     | 100/180   | Winter |           |           |          | 22.920     | -0.331  | 0.000  |
| 1.011 | 222   | 180 Winter |  | 1      | +0%     | 30/120    | Winter |           |           |          | 22.244     | -0.327  | 0.000  |
| 1.012 | 223   | 180 Winter |  | 1      | +0%     | 1/120     | Winter |           |           |          | 22.213     | 0.024   | 0.000  |
| 1.013 | 223a  | 180 Winter |  | 1      | +0%     |           |        |           |           |          | 21.691     | -0.498  | 0.000  |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 21                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 2 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW NET  
2 REV F.SWS

| PN    | US/MH<br>Name | Flow /<br>Cap. | Half Drain<br>Overflow<br>(l/s) | Pipe<br>Time<br>(mins) | Flow<br>(l/s) | Status     | Level<br>Exceeded |
|-------|---------------|----------------|---------------------------------|------------------------|---------------|------------|-------------------|
|       |               |                |                                 |                        |               |            |                   |
| 1.000 | 201           | 0.09           |                                 |                        | 11.7          | OK         |                   |
| 2.000 | 202           | 0.10           |                                 |                        | 13.7          | OK         |                   |
| 2.001 | 203           | 0.27           |                                 |                        | 27.0          | OK         |                   |
| 2.002 | 204           | 0.21           |                                 |                        | 26.9          | OK         |                   |
| 2.003 | 205           | 0.28           |                                 |                        | 39.4          | OK         |                   |
| 1.001 | 206           | 0.39           |                                 |                        | 53.1          | OK         |                   |
| 1.002 | 207           | 0.38           |                                 |                        | 53.9          | OK         |                   |
| 1.003 | 208           | 0.28           |                                 |                        | 59.2          | OK         |                   |
| 3.000 | 209           | 0.10           |                                 |                        | 14.8          | OK         |                   |
| 3.001 | 210           | 0.25           |                                 |                        | 26.8          | OK         |                   |
| 1.004 | 211           | 0.38           |                                 |                        | 83.3          | OK         |                   |
| 1.005 | 212           | 0.64           |                                 |                        | 91.9          | OK         |                   |
| 1.006 | 213           | 0.45           |                                 |                        | 92.8          | OK         |                   |
| 1.007 | 214           | 0.66           |                                 |                        | 101.1         | OK         |                   |
| 1.008 | 215           | 0.40           |                                 |                        | 81.4          | OK         |                   |
| 1.009 | 216           | 0.42           |                                 |                        | 26.8          | SURCHARGED |                   |
| 4.000 | 217           | 0.22           |                                 |                        | 11.6          | OK         |                   |
| 4.001 | 218           | 0.39           |                                 |                        | 19.3          | OK         |                   |
| 4.002 | 219           | 0.30           |                                 |                        | 20.9          | OK         |                   |
| 5.000 | 220           | 0.24           |                                 |                        | 16.6          | OK         |                   |
| 1.010 | 221           | 0.16           |                                 |                        | 49.6          | OK         |                   |
| 1.011 | 222           | 0.17           |                                 | 52                     | 37.1          | OK         |                   |
| 1.012 | 223           | 0.51           |                                 | 92                     | 31.4          | SURCHARGED |                   |
| 1.013 | 223a          | 0.07           |                                 |                        | 31.4          | OK         |                   |

|                                                  |  |                                  |
|--------------------------------------------------|--|----------------------------------|
| Coopers                                          |  | Page 22                          |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |  | Cherryfield Drive<br>Kirkby      |
| Date 23/04/2024<br>File 7778 SW NET 2 REV F.MDX  |  | Designed by JAR<br>Checked by AJ |
| Micro Drainage                                   |  | Network 2020.1.3                 |



1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW NET  
2 REV F.SWS

| PN     | US/MH |            | Return<br>Period | Climate<br>Change | First (X)<br>Surcharge | First (Y)<br>Flood | First (Z)<br>Overflow | Overflow<br>Act. | Water        | Surcharged   | Flooded        |
|--------|-------|------------|------------------|-------------------|------------------------|--------------------|-----------------------|------------------|--------------|--------------|----------------|
|        | Name  | Storm      |                  |                   |                        |                    |                       |                  | Level<br>(m) | Depth<br>(m) | Volume<br>(m³) |
| 1.014  | 224   | 120 Winter | 1                | +0%               |                        |                    |                       |                  | 21.439       | -0.471       | 0.000          |
| 1.015  | 225   | 60 Winter  | 1                | +0%               |                        |                    |                       |                  | 21.399       | -0.458       | 0.000          |
| 1.016  | 226   | 30 Winter  | 1                | +0%               |                        |                    |                       |                  | 21.300       | -0.405       | 0.000          |
| 1.017  | 227   | 30 Winter  | 1                | +0%               | 100/15 Winter          |                    |                       |                  | 21.262       | -0.246       | 0.000          |
| 6.000  | 228   | 15 Winter  | 1                | +0%               |                        |                    |                       |                  | 23.556       | -0.169       | 0.000          |
| 7.000  | 229   | 15 Winter  | 1                | +0%               | 100/15 Summer          |                    |                       |                  | 23.836       | -0.151       | 0.000          |
| 6.001  | 230   | 15 Winter  | 1                | +0%               | 100/15 Summer          |                    |                       |                  | 21.498       | -0.441       | 0.000          |
| 6.002  | 231   | 15 Winter  | 1                | +0%               | 30/15 Summer           |                    |                       |                  | 21.425       | -0.337       | 0.000          |
| 8.000  | 232   | 15 Winter  | 1                | +0%               |                        |                    |                       |                  | 23.557       | -0.170       | 0.000          |
| 8.001  | 233   | 15 Winter  | 1                | +0%               | 100/15 Summer          |                    |                       |                  | 23.010       | -0.159       | 0.000          |
| 9.000  | 234   | 15 Winter  | 1                | +0%               | 100/15 Winter          |                    |                       |                  | 22.912       | -0.174       | 0.000          |
| 8.002  | 235   | 15 Winter  | 1                | +0%               | 30/15 Summer           |                    |                       |                  | 21.637       | -0.256       | 0.000          |
| 8.003  | 236   | 15 Winter  | 1                | +0%               | 30/15 Summer           |                    |                       |                  | 21.561       | -0.196       | 0.000          |
| 6.003  | 237   | 15 Winter  | 1                | +0%               | 30/15 Winter           |                    |                       |                  | 21.419       | -0.318       | 0.000          |
| 6.004  | 238   | 15 Winter  | 1                | +0%               | 100/15 Summer          |                    |                       |                  | 21.378       | -0.308       | 0.000          |
| 6.005  | 239   | 15 Winter  | 1                | +0%               | 100/15 Summer          |                    |                       |                  | 21.332       | -0.277       | 0.000          |
| 10.000 | 240   | 15 Winter  | 1                | +0%               | 100/15 Winter          |                    |                       |                  | 21.393       | -0.529       | 0.000          |
| 10.001 | 241   | 30 Winter  | 1                | +0%               | 100/15 Summer          |                    |                       |                  | 21.325       | -0.461       | 0.000          |
| 10.002 | 242   | 15 Winter  | 1                | +0%               | 100/15 Summer          |                    |                       |                  | 21.320       | -0.416       | 0.000          |
| 10.003 | 243   | 15 Winter  | 1                | +0%               | 100/15 Summer          |                    |                       |                  | 21.310       | -0.306       | 0.000          |
| 6.006  | 244   | 15 Winter  | 1                | +0%               | 100/15 Summer          |                    |                       |                  | 21.301       | -0.275       | 0.000          |
| 6.007  | 245   | 30 Winter  | 1                | +0%               | 100/15 Summer          |                    |                       |                  | 21.247       | -0.207       | 0.000          |
| 1.018  | 246   | 30 Winter  | 1                | +0%               | 100/15 Summer          |                    |                       |                  | 21.226       | -0.197       | 0.000          |
| 1.019  | 247   | 30 Winter  | 1                | +0%               | 100/180 Winter         |                    |                       |                  | 20.753       | -0.647       | 0.000          |
| 1.020  | 248   | 120 Winter | 1                | +0%               | 100/30 Summer          |                    |                       |                  | 20.644       | -0.509       | 0.000          |
| 1.021  | 250   | 120 Winter | 1                | +0%               | 1/30 Summer            |                    |                       |                  | 20.617       | 0.088        | 0.000          |
| 11.000 | 251   | 15 Winter  | 1                | +0%               | 100/60 Winter          |                    |                       |                  | 17.055       | -1.096       | 0.000          |
| 11.001 | 252   | 60 Winter  | 1                | +0%               | 100/60 Winter          |                    |                       |                  | 16.986       | -0.997       | 0.000          |
| 1.022  | 253   | 60 Winter  | 1                | +0%               | 100/60 Winter          |                    |                       |                  | 16.985       | -0.936       | 0.000          |
| 1.023  | 254   | 60 Winter  | 1                | +0%               | 30/15 Summer           |                    |                       |                  | 16.965       | -0.010       | 0.000          |
| 1.024  | 255   | 60 Winter  | 1                | +0%               |                        |                    |                       |                  | 16.504       | -0.209       | 0.000          |
| 1.025  | 256   | 60 Winter  | 1                | +0%               |                        |                    |                       |                  | 16.286       | -0.211       | 0.000          |
| 1.026  | 257   | 60 Winter  | 1                | +0%               |                        |                    |                       |                  | 15.998       | -0.252       | 0.000          |
| 1.027  | 258   | 60 Winter  | 1                | +0%               |                        |                    |                       |                  | 14.891       | -0.262       | 0.000          |

| PN    | US/MH<br>Name | Half Drain     |                   | Pipe<br>Flow<br>(l/s) | Status | Level<br>Exceeded |
|-------|---------------|----------------|-------------------|-----------------------|--------|-------------------|
|       |               | Flow /<br>Cap. | Overflow<br>(l/s) |                       |        |                   |
| 1.014 | 224           | 0.10           |                   | 33.7                  | OK     |                   |
| 1.015 | 225           | 0.11           |                   | 34.1                  | OK     |                   |
| 1.016 | 226           | 0.15           |                   | 13 45.7               | OK     |                   |
| 1.017 | 227           | 0.17           |                   | 13 51.1               | OK     |                   |
| 6.000 | 228           | 0.14           |                   | 13.7                  | OK     |                   |
| 7.000 | 229           | 0.23           |                   | 24.9                  | OK     |                   |
| 6.001 | 230           | 0.13           |                   | 39.4                  | OK     |                   |
| 6.002 | 231           | 0.19           |                   | 40.5                  | OK     |                   |
| 8.000 | 232           | 0.13           |                   | 9.8                   | OK     |                   |
| 8.001 | 233           | 0.18           |                   | 17.7                  | OK     |                   |
| 9.000 | 234           | 0.12           |                   | 9.2                   | OK     |                   |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 23                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 2 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW NET  
2 REV F.SWS

| PN     | US/MH Name | Flow / Cap. | Overflow (l/s) | Half Drain Pipe |            | Status     | Level Exceeded |
|--------|------------|-------------|----------------|-----------------|------------|------------|----------------|
|        |            |             |                | Time (mins)     | Flow (l/s) |            |                |
| 8.002  | 235        | 0.34        |                |                 | 49.3       | OK         |                |
| 8.003  | 236        | 0.60        |                |                 | 57.3       | OK         |                |
| 6.003  | 237        | 0.37        |                |                 | 97.5       | OK         |                |
| 6.004  | 238        | 0.35        |                |                 | 97.3       | OK         |                |
| 6.005  | 239        | 0.49        |                |                 | 98.0       | OK         |                |
| 10.000 | 240        | 0.03        |                |                 | 7.8        | OK         |                |
| 10.001 | 241        | 0.05        |                |                 | 14.0       | OK         |                |
| 10.002 | 242        | 0.09        |                |                 | 28.0       | OK         |                |
| 10.003 | 243        | 0.11        |                |                 | 26.8       | OK         |                |
| 6.006  | 244        | 0.39        |                | 10              | 117.6      | OK         |                |
| 6.007  | 245        | 0.54        |                |                 | 107.9      | OK         |                |
| 1.018  | 246        | 0.79        |                |                 | 156.4      | OK         |                |
| 1.019  | 247        | 0.17        |                |                 | 154.6      | OK         |                |
| 1.020  | 248        | 0.14        |                |                 | 109.1      | OK         |                |
| 1.021  | 250        | 0.18        |                |                 | 49.3       | SURCHARGED |                |
| 11.000 | 251        | 0.01        |                |                 | 24.0       | OK         |                |
| 11.001 | 252        | 0.02        |                |                 | 20.5       | OK         |                |
| 1.022  | 253        | 0.04        |                |                 | 64.6       | OK         |                |
| 1.023  | 254        | 0.33        |                |                 | 65.5       | OK         |                |
| 1.024  | 255        | 0.41        |                |                 | 65.5       | OK         |                |
| 1.025  | 256        | 0.40        |                |                 | 65.5       | OK         |                |
| 1.026  | 257        | 0.23        |                |                 | 65.5       | OK         |                |
| 1.027  | 258        | 0.20        |                |                 | 65.5       | OK         |                |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 24                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 2 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW NET  
2 REV F.SWS

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000  
Hot Start (mins) 0 MADD Factor \* 10m³/ha Storage 2.000  
Hot Start Level (mm) 0 Inlet Coefficient 0.800  
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000  
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0  
Number of Online Controls 4 Number of Storage Structures 7 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.400 Cv (Summer) 0.750  
Region England and Wales Ratio R 0.387 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0  
Analysis Timestep 2.5 Second Increment (Extended)  
DTS Status OFF  
DVD Status ON  
Inertia Status ON

Profile(s) Summer and Winter  
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960,  
1440, 2160  
Return Period(s) (years) 1, 30, 100, 101  
Climate Change (%) 0, 0, 45, 0

| PN    | US/MH |            | Return<br>Period | Climate<br>Change | First (X)      |       | First (Y) |  | First (Z) |  | Overflow<br>Act. | Water        | Surcharged   | Flooded        |
|-------|-------|------------|------------------|-------------------|----------------|-------|-----------|--|-----------|--|------------------|--------------|--------------|----------------|
|       | Name  | Storm      |                  |                   | Surcharge      | Flood | Overflow  |  |           |  |                  | Level<br>(m) | Depth<br>(m) | Volume<br>(m³) |
| 1.000 | 201   | 15 Winter  | 30               | +0%               | 100/15 Summer  |       |           |  |           |  |                  | 24.725       | -0.052       | 0.000          |
| 2.000 | 202   | 15 Winter  | 30               | +0%               | 100/15 Summer  |       |           |  |           |  |                  | 24.837       | -0.135       | 0.000          |
| 2.001 | 203   | 15 Winter  | 30               | +0%               | 100/15 Summer  |       |           |  |           |  |                  | 24.806       | -0.079       | 0.000          |
| 2.002 | 204   | 15 Winter  | 30               | +0%               | 100/15 Summer  |       |           |  |           |  |                  | 24.783       | -0.073       | 0.000          |
| 2.003 | 205   | 15 Winter  | 30               | +0%               | 100/15 Summer  |       |           |  |           |  |                  | 24.733       | -0.070       | 0.000          |
| 1.001 | 206   | 15 Winter  | 30               | +0%               | 100/15 Summer  |       |           |  |           |  |                  | 24.674       | -0.043       | 0.000          |
| 1.002 | 207   | 15 Winter  | 30               | +0%               | 100/15 Summer  |       |           |  |           |  |                  | 24.649       | -0.044       | 0.000          |
| 1.003 | 208   | 15 Winter  | 30               | +0%               | 100/15 Summer  |       |           |  |           |  |                  | 24.618       | -0.046       | 0.000          |
| 3.000 | 209   | 15 Winter  | 30               | +0%               | 100/15 Summer  |       |           |  |           |  |                  | 24.643       | -0.066       | 0.000          |
| 3.001 | 210   | 15 Winter  | 30               | +0%               | 100/15 Summer  |       |           |  |           |  |                  | 24.583       | -0.010       | 0.000          |
| 1.004 | 211   | 15 Winter  | 30               | +0%               | 100/15 Summer  |       |           |  |           |  |                  | 24.537       | -0.023       | 0.000          |
| 1.005 | 212   | 15 Winter  | 30               | +0%               | 30/15 Summer   |       |           |  |           |  |                  | 24.436       | 0.034        | 0.000          |
| 1.006 | 213   | 15 Winter  | 30               | +0%               | 30/15 Summer   |       |           |  |           |  |                  | 24.381       | 0.009        | 0.000          |
| 1.007 | 214   | 15 Winter  | 30               | +0%               | 30/15 Winter   |       |           |  |           |  |                  | 24.288       | 0.005        | 0.000          |
| 1.008 | 215   | 120 Winter | 30               | +0%               | 30/15 Winter   |       |           |  |           |  |                  | 24.115       | 0.168        | 0.000          |
| 1.009 | 216   | 120 Winter | 30               | +0%               | 1/15 Winter    |       |           |  |           |  |                  | 24.106       | 0.534        | 0.000          |
| 4.000 | 217   | 15 Winter  | 30               | +0%               | 100/15 Summer  |       |           |  |           |  |                  | 23.807       | -0.106       | 0.000          |
| 4.001 | 218   | 15 Winter  | 30               | +0%               | 30/15 Winter   |       |           |  |           |  |                  | 23.687       | 0.005        | 0.000          |
| 4.002 | 219   | 15 Winter  | 30               | +0%               | 100/15 Summer  |       |           |  |           |  |                  | 23.485       | -0.074       | 0.000          |
| 5.000 | 220   | 15 Winter  | 30               | +0%               | 100/15 Summer  |       |           |  |           |  |                  | 23.641       | -0.101       | 0.000          |
| 1.010 | 221   | 15 Winter  | 30               | +0%               | 100/180 Winter |       |           |  |           |  |                  | 23.008       | -0.243       | 0.000          |
| 1.011 | 222   | 240 Winter | 30               | +0%               | 30/120 Winter  |       |           |  |           |  |                  | 22.620       | 0.049        | 0.000          |
| 1.012 | 223   | 240 Winter | 30               | +0%               | 1/120 Winter   |       |           |  |           |  |                  | 22.607       | 0.418        | 0.000          |
| 1.013 | 223a  | 240 Winter | 30               | +0%               |                |       |           |  |           |  |                  | 21.698       | -0.491       | 0.000          |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 25                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 2 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW NET  
2 REV F.SWS

| PN    | US/MH<br>Name | Flow /<br>Cap. | Half Drain<br>Overflow<br>(l/s) | Pipe<br>Time<br>(mins) | Flow<br>(l/s) | Status     | Level<br>Exceeded |
|-------|---------------|----------------|---------------------------------|------------------------|---------------|------------|-------------------|
|       |               |                |                                 |                        |               |            |                   |
| 1.000 | 201           | 0.20           |                                 |                        | 26.4          | OK         |                   |
| 2.000 | 202           | 0.23           |                                 |                        | 32.8          | OK         |                   |
| 2.001 | 203           | 0.70           |                                 |                        | 69.9          | OK         |                   |
| 2.002 | 204           | 0.52           |                                 |                        | 67.7          | OK         |                   |
| 2.003 | 205           | 0.72           |                                 |                        | 101.2         | OK         |                   |
| 1.001 | 206           | 0.91           |                                 |                        | 124.0         | OK         |                   |
| 1.002 | 207           | 0.84           |                                 |                        | 119.9         | OK         |                   |
| 1.003 | 208           | 0.59           |                                 |                        | 124.8         | OK         |                   |
| 3.000 | 209           | 0.23           |                                 |                        | 33.8          | OK         |                   |
| 3.001 | 210           | 0.54           |                                 |                        | 57.8          | OK         |                   |
| 1.004 | 211           | 0.82           |                                 |                        | 180.0         | OK         |                   |
| 1.005 | 212           | 1.41           |                                 |                        | 202.1         | SURCHARGED |                   |
| 1.006 | 213           | 0.99           |                                 |                        | 205.1         | SURCHARGED |                   |
| 1.007 | 214           | 1.52           |                                 |                        | 232.3         | SURCHARGED |                   |
| 1.008 | 215           | 0.65           |                                 |                        | 131.1         | SURCHARGED |                   |
| 1.009 | 216           | 0.47           |                                 |                        | 29.9          | SURCHARGED |                   |
| 4.000 | 217           | 0.54           |                                 |                        | 28.4          | OK         |                   |
| 4.001 | 218           | 1.02           |                                 |                        | 50.1          | SURCHARGED |                   |
| 4.002 | 219           | 0.79           |                                 |                        | 54.2          | OK         |                   |
| 5.000 | 220           | 0.58           |                                 |                        | 40.8          | OK         |                   |
| 1.010 | 221           | 0.42           |                                 |                        | 133.3         | OK         |                   |
| 1.011 | 222           | 0.21           |                                 | 145                    | 47.1          | SURCHARGED |                   |
| 1.012 | 223           | 0.57           |                                 | 174                    | 34.9          | SURCHARGED |                   |
| 1.013 | 223a          | 0.08           |                                 |                        | 34.9          | OK         |                   |

|                                                  |  |                                  |
|--------------------------------------------------|--|----------------------------------|
| Coopers                                          |  | Page 26                          |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |  | Cherryfield Drive<br>Kirkby      |
| Date 23/04/2024<br>File 7778 SW NET 2 REV F.MDX  |  | Designed by JAR<br>Checked by AJ |
| Micro Drainage                                   |  | Network 2020.1.3                 |



30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW NET  
2 REV F.SWS

| PN     | US/MH |            | Return<br>Period | Climate<br>Change | First (X)<br>Surcharge | First (Y)<br>Flood | First (Z)<br>Overflow | Overflow<br>Act. | Water        | Surcharged   | Flooded        |
|--------|-------|------------|------------------|-------------------|------------------------|--------------------|-----------------------|------------------|--------------|--------------|----------------|
|        | Name  | Storm      |                  |                   |                        |                    |                       |                  | Level<br>(m) | Depth<br>(m) | Volume<br>(m³) |
| 1.014  | 224   | 15 Winter  | 30               | +0%               |                        |                    |                       |                  | 21.508       | -0.402       | 0.000          |
| 1.015  | 225   | 60 Winter  | 30               | +0%               |                        |                    |                       |                  | 21.492       | -0.365       | 0.000          |
| 1.016  | 226   | 60 Winter  | 30               | +0%               |                        |                    |                       |                  | 21.456       | -0.249       | 0.000          |
| 1.017  | 227   | 60 Winter  | 30               | +0%               | 100/15 Winter          |                    |                       |                  | 21.410       | -0.098       | 0.000          |
| 6.000  | 228   | 15 Winter  | 30               | +0%               |                        |                    |                       |                  | 23.592       | -0.133       | 0.000          |
| 7.000  | 229   | 15 Winter  | 30               | +0%               | 100/15 Summer          |                    |                       |                  | 23.885       | -0.102       | 0.000          |
| 6.001  | 230   | 15 Winter  | 30               | +0%               | 100/15 Summer          |                    |                       |                  | 21.898       | -0.041       | 0.000          |
| 6.002  | 231   | 15 Winter  | 30               | +0%               | 30/15 Summer           |                    |                       |                  | 21.792       | 0.030        | 0.000          |
| 8.000  | 232   | 15 Winter  | 30               | +0%               |                        |                    |                       |                  | 23.592       | -0.135       | 0.000          |
| 8.001  | 233   | 15 Winter  | 30               | +0%               | 100/15 Summer          |                    |                       |                  | 23.058       | -0.111       | 0.000          |
| 9.000  | 234   | 15 Winter  | 30               | +0%               | 100/15 Winter          |                    |                       |                  | 22.944       | -0.142       | 0.000          |
| 8.002  | 235   | 15 Winter  | 30               | +0%               | 30/15 Summer           |                    |                       |                  | 21.926       | 0.033        | 0.000          |
| 8.003  | 236   | 15 Winter  | 30               | +0%               | 30/15 Summer           |                    |                       |                  | 21.788       | 0.031        | 0.000          |
| 6.003  | 237   | 15 Winter  | 30               | +0%               | 30/15 Winter           |                    |                       |                  | 21.737       | 0.000        | 0.000          |
| 6.004  | 238   | 30 Winter  | 30               | +0%               | 100/15 Summer          |                    |                       |                  | 21.686       | 0.000        | 0.000          |
| 6.005  | 239   | 15 Winter  | 30               | +0%               | 100/15 Summer          |                    |                       |                  | 21.609       | 0.000        | 0.000          |
| 10.000 | 240   | 30 Winter  | 30               | +0%               | 100/15 Winter          |                    |                       |                  | 21.669       | -0.253       | 0.000          |
| 10.001 | 241   | 30 Winter  | 30               | +0%               | 100/15 Summer          |                    |                       |                  | 21.666       | -0.120       | 0.000          |
| 10.002 | 242   | 30 Winter  | 30               | +0%               | 100/15 Summer          |                    |                       |                  | 21.654       | -0.082       | 0.000          |
| 10.003 | 243   | 30 Winter  | 30               | +0%               | 100/15 Summer          |                    |                       |                  | 21.599       | -0.017       | 0.000          |
| 6.006  | 244   | 15 Winter  | 30               | +0%               | 100/15 Summer          |                    |                       |                  | 21.552       | -0.024       | 0.000          |
| 6.007  | 245   | 15 Winter  | 30               | +0%               | 100/15 Summer          |                    |                       |                  | 21.454       | 0.000        | 0.000          |
| 1.018  | 246   | 30 Winter  | 30               | +0%               | 100/15 Summer          |                    |                       |                  | 21.387       | -0.036       | 0.000          |
| 1.019  | 247   | 240 Winter | 30               | +0%               | 100/180 Winter         |                    |                       |                  | 21.254       | -0.146       | 0.000          |
| 1.020  | 248   | 240 Winter | 30               | +0%               | 100/30 Summer          |                    |                       |                  | 21.148       | -0.005       | 0.000          |
| 1.021  | 250   | 240 Winter | 30               | +0%               | 1/30 Summer            |                    |                       |                  | 21.031       | 0.502        | 0.000          |
| 11.000 | 251   | 60 Winter  | 30               | +0%               | 100/60 Winter          |                    |                       |                  | 17.348       | -0.803       | 0.000          |
| 11.001 | 252   | 60 Winter  | 30               | +0%               | 100/60 Winter          |                    |                       |                  | 17.346       | -0.637       | 0.000          |
| 1.022  | 253   | 60 Winter  | 30               | +0%               | 100/60 Winter          |                    |                       |                  | 17.342       | -0.579       | 0.000          |
| 1.023  | 254   | 60 Winter  | 30               | +0%               | 30/15 Summer           |                    |                       |                  | 17.306       | 0.331        | 0.000          |
| 1.024  | 255   | 60 Winter  | 30               | +0%               |                        |                    |                       |                  | 16.514       | -0.199       | 0.000          |
| 1.025  | 256   | 60 Winter  | 30               | +0%               |                        |                    |                       |                  | 16.296       | -0.201       | 0.000          |
| 1.026  | 257   | 60 Winter  | 30               | +0%               |                        |                    |                       |                  | 16.004       | -0.246       | 0.000          |
| 1.027  | 258   | 60 Winter  | 30               | +0%               |                        |                    |                       |                  | 14.896       | -0.257       | 0.000          |

| PN    | US/MH<br>Name | Half Drain Pipe |                   | Time<br>(mins) | Flow<br>(l/s) | Status     | Level<br>Exceeded |
|-------|---------------|-----------------|-------------------|----------------|---------------|------------|-------------------|
|       |               | Flow /<br>Cap.  | Overflow<br>(l/s) |                |               |            |                   |
| 1.014 | 224           | 0.19            |                   |                | 60.0          | OK         |                   |
| 1.015 | 225           | 0.23            |                   |                | 71.0          | OK         |                   |
| 1.016 | 226           | 0.35            |                   | 29             | 109.4         | OK         |                   |
| 1.017 | 227           | 0.39            |                   | 22             | 113.7         | OK         |                   |
| 6.000 | 228           | 0.35            |                   |                | 33.7          | OK         |                   |
| 7.000 | 229           | 0.57            |                   |                | 61.0          | OK         |                   |
| 6.001 | 230           | 0.31            |                   |                | 96.8          | OK         |                   |
| 6.002 | 231           | 0.53            |                   |                | 110.6         | SURCHARGED |                   |
| 8.000 | 232           | 0.33            |                   |                | 24.1          | OK         |                   |
| 8.001 | 233           | 0.50            |                   |                | 48.7          | OK         |                   |
| 9.000 | 234           | 0.28            |                   |                | 22.5          | OK         |                   |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 27                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 2 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW NET  
2 REV F.SWS

| PN     | US/MH Name | Flow / Cap. | Overflow (l/s) | Half Drain Pipe |            | Status     | Level Exceeded |
|--------|------------|-------------|----------------|-----------------|------------|------------|----------------|
|        |            |             |                | Time (mins)     | Flow (l/s) |            |                |
| 8.002  | 235        | 0.94        |                |                 | 137.7      | SURCHARGED |                |
| 8.003  | 236        | 1.77        |                |                 | 167.8      | SURCHARGED |                |
| 6.003  | 237        | 0.93        |                |                 | 241.0      | SURCHARGED |                |
| 6.004  | 238        | 0.72        |                |                 | 201.7      | OK         |                |
| 6.005  | 239        | 1.19        |                |                 | 238.2      | OK         |                |
| 10.000 | 240        | 0.04        |                |                 | 13.3       | OK         |                |
| 10.001 | 241        | 0.09        |                |                 | 23.2       | OK         |                |
| 10.002 | 242        | 0.15        |                |                 | 44.6       | OK         |                |
| 10.003 | 243        | 0.22        |                |                 | 51.2       | OK         |                |
| 6.006  | 244        | 0.77        |                | 6               | 230.0      | OK         |                |
| 6.007  | 245        | 1.09        |                |                 | 215.4      | OK         |                |
| 1.018  | 246        | 1.00        |                |                 | 198.6      | OK         |                |
| 1.019  | 247        | 0.18        |                |                 | 163.7      | OK         |                |
| 1.020  | 248        | 0.20        |                |                 | 150.3      | OK         |                |
| 1.021  | 250        | 0.18        |                |                 | 49.3       | SURCHARGED |                |
| 11.000 | 251        | 0.02        |                |                 | 29.2       | OK         |                |
| 11.001 | 252        | 0.02        |                |                 | 30.0       | OK         |                |
| 1.022  | 253        | 0.05        |                |                 | 75.2       | OK         |                |
| 1.023  | 254        | 0.36        |                |                 | 72.3       | SURCHARGED |                |
| 1.024  | 255        | 0.45        |                |                 | 72.3       | OK         |                |
| 1.025  | 256        | 0.44        |                |                 | 72.3       | OK         |                |
| 1.026  | 257        | 0.26        |                |                 | 72.3       | OK         |                |
| 1.027  | 258        | 0.22        |                |                 | 72.3       | OK         |                |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 28                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 2 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW  
NET 2 REV F.SWS

Simulation Criteria

Areal Reduction Factor 1.000    Additional Flow - % of Total Flow 0.000  
Hot Start (mins) 0    MADD Factor \* 10m³/ha Storage 2.000  
Hot Start Level (mm) 0    Inlet Coefficient 0.800  
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000  
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0    Number of Offline Controls 0    Number of Time/Area Diagrams 0  
Number of Online Controls 4    Number of Storage Structures 7    Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model    FSR M5-60 (mm) 19.400 Cv (Summer) 0.750  
Region England and Wales    Ratio R 0.387 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0  
Analysis Timestep 2.5 Second Increment (Extended)  
DTS Status OFF  
DVD Status ON  
Inertia Status ON

Profile(s) Summer and Winter  
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160  
Return Period(s) (years) 1, 30, 100, 101  
Climate Change (%) 0, 0, 45, 0

| PN    | US/MH |            | Return Period | Climate Change | First (X)      |       | First (Y) |      | First (Z) |  | Water Level | Surcharged Depth | Flooded Volume |
|-------|-------|------------|---------------|----------------|----------------|-------|-----------|------|-----------|--|-------------|------------------|----------------|
|       | Name  | Storm      |               |                | Surcharge      | Flood | Overflow  | Act. |           |  | (m)         | (m)              | (m³)           |
| 1.000 | 201   | 15 Winter  | 100           | +45%           | 100/15 Summer  |       |           |      |           |  | 25.731      | 0.954            | 0.000          |
| 2.000 | 202   | 15 Winter  | 100           | +45%           | 100/15 Summer  |       |           |      |           |  | 25.879      | 0.907            | 0.000          |
| 2.001 | 203   | 15 Winter  | 100           | +45%           | 100/15 Summer  |       |           |      |           |  | 25.859      | 0.974            | 0.000          |
| 2.002 | 204   | 15 Winter  | 100           | +45%           | 100/15 Summer  |       |           |      |           |  | 25.833      | 0.977            | 0.000          |
| 2.003 | 205   | 15 Winter  | 100           | +45%           | 100/15 Summer  |       |           |      |           |  | 25.798      | 0.995            | 0.000          |
| 1.001 | 206   | 15 Winter  | 100           | +45%           | 100/15 Summer  |       |           |      |           |  | 25.716      | 0.999            | 0.000          |
| 1.002 | 207   | 15 Winter  | 100           | +45%           | 100/15 Summer  |       |           |      |           |  | 25.679      | 0.986            | 0.000          |
| 1.003 | 208   | 15 Winter  | 100           | +45%           | 100/15 Summer  |       |           |      |           |  | 25.639      | 0.975            | 0.000          |
| 3.000 | 209   | 15 Winter  | 100           | +45%           | 100/15 Summer  |       |           |      |           |  | 25.581      | 0.872            | 0.000          |
| 3.001 | 210   | 15 Winter  | 100           | +45%           | 100/15 Summer  |       |           |      |           |  | 25.554      | 0.961            | 0.000          |
| 1.004 | 211   | 15 Winter  | 100           | +45%           | 100/15 Summer  |       |           |      |           |  | 25.525      | 0.965            | 0.000          |
| 1.005 | 212   | 15 Winter  | 100           | +45%           | 30/15 Summer   |       |           |      |           |  | 25.143      | 0.741            | 0.000          |
| 1.006 | 213   | 15 Winter  | 100           | +45%           | 30/15 Summer   |       |           |      |           |  | 24.891      | 0.519            | 0.000          |
| 1.007 | 214   | 180 Winter | 100           | +45%           | 30/15 Winter   |       |           |      |           |  | 24.701      | 0.418            | 0.000          |
| 1.008 | 215   | 180 Winter | 100           | +45%           | 30/15 Winter   |       |           |      |           |  | 24.693      | 0.746            | 0.000          |
| 1.009 | 216   | 180 Winter | 100           | +45%           | 1/15 Winter    |       |           |      |           |  | 24.685      | 1.113            | 0.000          |
| 4.000 | 217   | 15 Winter  | 100           | +45%           | 100/15 Summer  |       |           |      |           |  | 24.393      | 0.480            | 0.000          |
| 4.001 | 218   | 360 Winter | 100           | +45%           | 30/15 Winter   |       |           |      |           |  | 24.335      | 0.653            | 0.000          |
| 4.002 | 219   | 360 Winter | 100           | +45%           | 100/15 Summer  |       |           |      |           |  | 24.332      | 0.773            | 0.000          |
| 5.000 | 220   | 360 Winter | 100           | +45%           | 100/15 Summer  |       |           |      |           |  | 24.332      | 0.590            | 0.000          |
| 1.010 | 221   | 360 Winter | 100           | +45%           | 100/180 Winter |       |           |      |           |  | 24.328      | 1.077            | 0.000          |
| 1.011 | 222   | 360 Winter | 100           | +45%           | 30/120 Winter  |       |           |      |           |  | 24.312      | 1.741            | 0.000          |
| 1.012 | 223   | 360 Winter | 100           | +45%           | 1/120 Winter   |       |           |      |           |  | 24.300      | 2.111            | 0.000          |
| 1.013 | 223a  | 60 Winter  | 100           | +45%           |                |       |           |      |           |  | 21.763      | -0.426           | 0.000          |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 29                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 2 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW  
NET 2 REV F.SWS

| PN    | US/MH<br>Name | Flow /<br>Cap. | Half Drain<br>Overflow<br>(l/s) | Pipe<br>Time<br>(mins) | Flow<br>(l/s) | Status     | Level<br>Exceeded |
|-------|---------------|----------------|---------------------------------|------------------------|---------------|------------|-------------------|
|       |               |                |                                 |                        |               |            |                   |
| 1.000 | 201           | 0.30           |                                 |                        | 39.8          | SURCHARGED |                   |
| 2.000 | 202           | 0.33           |                                 |                        | 46.5          | SURCHARGED |                   |
| 2.001 | 203           | 0.97           |                                 |                        | 97.1          | FLOOD RISK |                   |
| 2.002 | 204           | 0.70           |                                 |                        | 91.7          | FLOOD RISK |                   |
| 2.003 | 205           | 0.98           |                                 |                        | 137.8         | FLOOD RISK |                   |
| 1.001 | 206           | 1.43           |                                 |                        | 195.8         | SURCHARGED |                   |
| 1.002 | 207           | 1.40           |                                 |                        | 201.1         | SURCHARGED |                   |
| 1.003 | 208           | 1.05           |                                 |                        | 221.3         | SURCHARGED |                   |
| 3.000 | 209           | 0.36           |                                 |                        | 51.8          | SURCHARGED |                   |
| 3.001 | 210           | 0.96           |                                 |                        | 103.2         | SURCHARGED |                   |
| 1.004 | 211           | 1.51           |                                 |                        | 331.3         | SURCHARGED |                   |
| 1.005 | 212           | 2.63           |                                 |                        | 378.8         | SURCHARGED |                   |
| 1.006 | 213           | 1.86           |                                 |                        | 383.9         | SURCHARGED |                   |
| 1.007 | 214           | 1.22           |                                 |                        | 186.3         | SURCHARGED |                   |
| 1.008 | 215           | 0.91           |                                 |                        | 184.2         | SURCHARGED |                   |
| 1.009 | 216           | 0.47           |                                 |                        | 29.9          | SURCHARGED |                   |
| 4.000 | 217           | 0.95           |                                 |                        | 49.5          | SURCHARGED |                   |
| 4.001 | 218           | 0.28           |                                 |                        | 13.7          | SURCHARGED |                   |
| 4.002 | 219           | 0.22           |                                 |                        | 14.9          | SURCHARGED |                   |
| 5.000 | 220           | 0.16           |                                 |                        | 11.0          | SURCHARGED |                   |
| 1.010 | 221           | 0.21           |                                 |                        | 64.8          | SURCHARGED |                   |
| 1.011 | 222           | 0.34           |                                 | 440                    | 75.2          | SURCHARGED |                   |
| 1.012 | 223           | 0.57           |                                 | 491                    | 34.9          | FLOOD RISK |                   |
| 1.013 | 223a          | 0.08           |                                 |                        | 34.9          | OK         |                   |

|                                                  |  |                                  |
|--------------------------------------------------|--|----------------------------------|
| Coopers                                          |  | Page 30                          |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |  | Cherryfield Drive<br>Kirkby      |
| Date 23/04/2024<br>File 7778 SW NET 2 REV F.MDX  |  | Designed by JAR<br>Checked by AJ |
| Micro Drainage                                   |  | Network 2020.1.3                 |



100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW  
NET 2 REV F.SWS

| PN     | US/MH |            | Return<br>Period | Climate<br>Change | First (X)<br>Surcharge | First (Y)<br>Flood | First (Z)<br>Overflow | Overflow<br>Act. | Water        | Surcharged   | Flooded        |
|--------|-------|------------|------------------|-------------------|------------------------|--------------------|-----------------------|------------------|--------------|--------------|----------------|
|        | Name  | Storm      |                  |                   |                        |                    |                       |                  | Level<br>(m) | Depth<br>(m) | Volume<br>(m³) |
| 1.014  | 224   | 60 Winter  | 100              | +45%              |                        |                    |                       |                  | 21.735       | -0.175       | 0.000          |
| 1.015  | 225   | 60 Winter  | 100              | +45%              |                        |                    |                       |                  | 21.718       | -0.139       | 0.000          |
| 1.016  | 226   | 60 Winter  | 100              | +45%              |                        |                    |                       |                  | 21.648       | -0.057       | 0.000          |
| 1.017  | 227   | 30 Winter  | 100              | +45%              | 100/15 Winter          |                    |                       |                  | 21.563       | 0.055        | 0.000          |
| 6.000  | 228   | 15 Winter  | 100              | +45%              |                        |                    |                       |                  | 23.634       | -0.091       | 0.000          |
| 7.000  | 229   | 15 Winter  | 100              | +45%              | 100/15 Summer          |                    |                       |                  | 24.074       | 0.087        | 0.000          |
| 6.001  | 230   | 15 Winter  | 100              | +45%              | 100/15 Summer          |                    |                       |                  | 22.518       | 0.579        | 0.000          |
| 6.002  | 231   | 15 Winter  | 100              | +45%              | 30/15 Summer           |                    |                       |                  | 22.474       | 0.712        | 0.000          |
| 8.000  | 232   | 15 Winter  | 100              | +45%              |                        |                    |                       |                  | 23.692       | -0.035       | 0.000          |
| 8.001  | 233   | 15 Winter  | 100              | +45%              | 100/15 Summer          |                    |                       |                  | 23.554       | 0.385        | 0.000          |
| 9.000  | 234   | 15 Winter  | 100              | +45%              | 100/15 Winter          |                    |                       |                  | 23.099       | 0.013        | 0.000          |
| 8.002  | 235   | 15 Winter  | 100              | +45%              | 30/15 Summer           |                    |                       |                  | 22.881       | 0.988        | 0.000          |
| 8.003  | 236   | 15 Winter  | 100              | +45%              | 30/15 Summer           |                    |                       |                  | 22.630       | 0.873        | 0.000          |
| 6.003  | 237   | 15 Winter  | 100              | +45%              | 30/15 Winter           |                    |                       |                  | 22.449       | 0.712        | 0.000          |
| 6.004  | 238   | 15 Winter  | 100              | +45%              | 100/15 Summer          |                    |                       |                  | 22.248       | 0.562        | 0.000          |
| 6.005  | 239   | 30 Winter  | 100              | +45%              | 100/15 Summer          |                    |                       |                  | 22.094       | 0.485        | 0.000          |
| 10.000 | 240   | 30 Winter  | 100              | +45%              | 100/15 Winter          |                    |                       |                  | 22.039       | 0.117        | 0.000          |
| 10.001 | 241   | 30 Winter  | 100              | +45%              | 100/15 Summer          |                    |                       |                  | 22.033       | 0.247        | 0.000          |
| 10.002 | 242   | 30 Winter  | 100              | +45%              | 100/15 Summer          |                    |                       |                  | 22.024       | 0.288        | 0.000          |
| 10.003 | 243   | 30 Winter  | 100              | +45%              | 100/15 Summer          |                    |                       |                  | 22.001       | 0.385        | 0.000          |
| 6.006  | 244   | 30 Winter  | 100              | +45%              | 100/15 Summer          |                    |                       |                  | 21.988       | 0.412        | 0.000          |
| 6.007  | 245   | 30 Winter  | 100              | +45%              | 100/15 Summer          |                    |                       |                  | 21.727       | 0.273        | 0.000          |
| 1.018  | 246   | 30 Winter  | 100              | +45%              | 100/15 Summer          |                    |                       |                  | 21.550       | 0.127        | 0.000          |
| 1.019  | 247   | 480 Winter | 100              | +45%              | 100/180 Winter         |                    |                       |                  | 21.498       | 0.098        | 0.000          |
| 1.020  | 248   | 480 Winter | 100              | +45%              | 100/30 Summer          |                    |                       |                  | 21.492       | 0.339        | 0.000          |
| 1.021  | 250   | 480 Winter | 100              | +45%              | 1/30 Summer            |                    |                       |                  | 21.488       | 0.959        | 0.000          |
| 11.000 | 251   | 120 Winter | 100              | +45%              | 100/60 Winter          |                    |                       |                  | 18.406       | 0.255        | 0.000          |
| 11.001 | 252   | 120 Winter | 100              | +45%              | 100/60 Winter          |                    |                       |                  | 18.406       | 0.423        | 0.000          |
| 1.022  | 253   | 120 Winter | 100              | +45%              | 100/60 Winter          |                    |                       |                  | 18.406       | 0.485        | 0.000          |
| 1.023  | 254   | 120 Winter | 100              | +45%              | 30/15 Summer           |                    |                       |                  | 18.404       | 1.429        | 0.000          |
| 1.024  | 255   | 480 Summer | 100              | +45%              |                        |                    |                       |                  | 16.514       | -0.199       | 0.000          |
| 1.025  | 256   | 480 Summer | 100              | +45%              |                        |                    |                       |                  | 16.296       | -0.201       | 0.000          |
| 1.026  | 257   | 480 Summer | 100              | +45%              |                        |                    |                       |                  | 16.004       | -0.246       | 0.000          |
| 1.027  | 258   | 480 Summer | 100              | +45%              |                        |                    |                       |                  | 14.896       | -0.257       | 0.000          |

|       |            | Half Drain     |                   | Pipe           |               |            |                   |
|-------|------------|----------------|-------------------|----------------|---------------|------------|-------------------|
| PN    | US/MH Name | Flow /<br>Cap. | Overflow<br>(l/s) | Time<br>(mins) | Flow<br>(l/s) | Status     | Level<br>Exceeded |
| 1.014 | 224        | 0.24           |                   |                | 77.7          | OK         |                   |
| 1.015 | 225        | 0.36           |                   |                | 110.3         | OK         |                   |
| 1.016 | 226        | 0.35           |                   | 267            | 110.5         | OK         |                   |
| 1.017 | 227        | 0.28           |                   | 108            | 83.1          | SURCHARGED |                   |
| 6.000 | 228        | 0.65           |                   |                | 63.3          | OK         |                   |
| 7.000 | 229        | 1.04           |                   |                | 111.0         | SURCHARGED |                   |
| 6.001 | 230        | 0.56           |                   |                | 174.0         | SURCHARGED |                   |
| 6.002 | 231        | 1.07           |                   |                | 224.6         | SURCHARGED |                   |
| 8.000 | 232        | 0.62           |                   |                | 45.4          | OK         |                   |
| 8.001 | 233        | 0.81           |                   |                | 78.6          | SURCHARGED |                   |
| 9.000 | 234        | 0.53           |                   |                | 42.2          | SURCHARGED |                   |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 31                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 2 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW  
NET 2 REV F.SWS

| PN     | US/MH<br>Name | Flow /<br>Cap. | Overflow<br>(l/s) | Half Drain Pipe |               | Status     | Level<br>Exceeded |
|--------|---------------|----------------|-------------------|-----------------|---------------|------------|-------------------|
|        |               |                |                   | Time<br>(mins)  | Flow<br>(l/s) |            |                   |
| 8.002  | 235           | 1.46           |                   |                 | 214.7         | SURCHARGED |                   |
| 8.003  | 236           | 2.72           |                   |                 | 258.1         | SURCHARGED |                   |
| 6.003  | 237           | 1.83           |                   |                 | 474.7         | SURCHARGED |                   |
| 6.004  | 238           | 1.72           |                   |                 | 481.7         | SURCHARGED |                   |
| 6.005  | 239           | 2.21           |                   |                 | 443.0         | SURCHARGED |                   |
| 10.000 | 240           | 0.08           |                   |                 | 25.7          | SURCHARGED |                   |
| 10.001 | 241           | 0.27           |                   |                 | 68.8          | SURCHARGED |                   |
| 10.002 | 242           | 0.37           |                   |                 | 110.5         | SURCHARGED |                   |
| 10.003 | 243           | 0.62           |                   |                 | 147.7         | SURCHARGED |                   |
| 6.006  | 244           | 1.44           |                   | 10              | 431.8         | SURCHARGED |                   |
| 6.007  | 245           | 2.18           |                   |                 | 431.1         | SURCHARGED |                   |
| 1.018  | 246           | 2.18           |                   |                 | 433.0         | SURCHARGED |                   |
| 1.019  | 247           | 0.20           |                   |                 | 174.1         | SURCHARGED |                   |
| 1.020  | 248           | 0.22           |                   |                 | 169.8         | SURCHARGED |                   |
| 1.021  | 250           | 0.18           |                   |                 | 49.3          | SURCHARGED |                   |
| 11.000 | 251           | 0.02           |                   |                 | 34.1          | SURCHARGED |                   |
| 11.001 | 252           | 0.03           |                   |                 | 35.2          | SURCHARGED |                   |
| 1.022  | 253           | 0.05           |                   |                 | 84.4          | SURCHARGED |                   |
| 1.023  | 254           | 0.36           |                   |                 | 72.5          | SURCHARGED |                   |
| 1.024  | 255           | 0.45           |                   |                 | 72.5          | OK         |                   |
| 1.025  | 256           | 0.44           |                   |                 | 72.5          | OK         |                   |
| 1.026  | 257           | 0.26           |                   |                 | 72.5          | OK         |                   |
| 1.027  | 258           | 0.22           |                   |                 | 72.5          | OK         |                   |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 32                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 2 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

101 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW  
NET 2 REV F.SWS

Simulation Criteria

Areal Reduction Factor 1.000    Additional Flow - % of Total Flow 0.000  
Hot Start (mins) 0    MADD Factor \* 10m³/ha Storage 2.000  
Hot Start Level (mm) 0    Inlet Coefficient 0.800  
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000  
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0    Number of Offline Controls 0    Number of Time/Area Diagrams 0  
Number of Online Controls 4    Number of Storage Structures 7    Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model    FSR M5-60 (mm) 19.400 Cv (Summer) 0.750  
Region England and Wales    Ratio R 0.387 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0  
Analysis Timestep 2.5 Second Increment (Extended)  
DTS Status OFF  
DVD Status ON  
Inertia Status ON

Profile(s) Summer and Winter  
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160  
Return Period(s) (years) 1, 30, 100, 101  
Climate Change (%) 0, 0, 45, 0

| PN    | US/MH |            | Return Period | Climate Change | First (X)      |       | First (Y) |          | First (Z) |  | Water Level | Surcharged Depth | Flooded Volume |
|-------|-------|------------|---------------|----------------|----------------|-------|-----------|----------|-----------|--|-------------|------------------|----------------|
|       | Name  | Storm      |               |                | Surcharge      | Flood | Overflow  | Overflow | Act.      |  | (m)         | (m)              | (m³)           |
| 1.000 | 201   | 15 Winter  | 101           | +0%            | 100/15 Summer  |       |           |          |           |  | 24.954      | 0.177            | 0.000          |
| 2.000 | 202   | 15 Winter  | 101           | +0%            | 100/15 Summer  |       |           |          |           |  | 25.047      | 0.075            | 0.000          |
| 2.001 | 203   | 15 Winter  | 101           | +0%            | 100/15 Summer  |       |           |          |           |  | 25.032      | 0.147            | 0.000          |
| 2.002 | 204   | 15 Winter  | 101           | +0%            | 100/15 Summer  |       |           |          |           |  | 25.012      | 0.156            | 0.000          |
| 2.003 | 205   | 15 Winter  | 101           | +0%            | 100/15 Summer  |       |           |          |           |  | 24.988      | 0.185            | 0.000          |
| 1.001 | 206   | 15 Winter  | 101           | +0%            | 100/15 Summer  |       |           |          |           |  | 24.943      | 0.226            | 0.000          |
| 1.002 | 207   | 15 Winter  | 101           | +0%            | 100/15 Summer  |       |           |          |           |  | 24.918      | 0.225            | 0.000          |
| 1.003 | 208   | 15 Winter  | 101           | +0%            | 100/15 Summer  |       |           |          |           |  | 24.891      | 0.227            | 0.000          |
| 3.000 | 209   | 15 Winter  | 101           | +0%            | 100/15 Summer  |       |           |          |           |  | 24.874      | 0.165            | 0.000          |
| 3.001 | 210   | 15 Winter  | 101           | +0%            | 100/15 Summer  |       |           |          |           |  | 24.856      | 0.263            | 0.000          |
| 1.004 | 211   | 15 Winter  | 101           | +0%            | 100/15 Summer  |       |           |          |           |  | 24.836      | 0.276            | 0.000          |
| 1.005 | 212   | 15 Winter  | 101           | +0%            | 30/15 Summer   |       |           |          |           |  | 24.652      | 0.250            | 0.000          |
| 1.006 | 213   | 15 Winter  | 101           | +0%            | 30/15 Summer   |       |           |          |           |  | 24.530      | 0.158            | 0.000          |
| 1.007 | 214   | 15 Winter  | 101           | +0%            | 30/15 Winter   |       |           |          |           |  | 24.380      | 0.097            | 0.000          |
| 1.008 | 215   | 120 Winter | 101           | +0%            | 30/15 Winter   |       |           |          |           |  | 24.302      | 0.355            | 0.000          |
| 1.009 | 216   | 120 Winter | 101           | +0%            | 1/15 Winter    |       |           |          |           |  | 24.293      | 0.721            | 0.000          |
| 4.000 | 217   | 15 Winter  | 101           | +0%            | 100/15 Summer  |       |           |          |           |  | 23.892      | -0.021           | 0.000          |
| 4.001 | 218   | 15 Winter  | 101           | +0%            | 30/15 Winter   |       |           |          |           |  | 23.776      | 0.094            | 0.000          |
| 4.002 | 219   | 15 Winter  | 101           | +0%            | 100/15 Summer  |       |           |          |           |  | 23.558      | -0.001           | 0.000          |
| 5.000 | 220   | 15 Winter  | 101           | +0%            | 100/15 Summer  |       |           |          |           |  | 23.665      | -0.077           | 0.000          |
| 1.010 | 221   | 15 Winter  | 101           | +0%            | 100/180 Winter |       |           |          |           |  | 23.043      | -0.208           | 0.000          |
| 1.011 | 222   | 360 Winter | 101           | +0%            | 30/120 Winter  |       |           |          |           |  | 22.862      | 0.291            | 0.000          |
| 1.012 | 223   | 360 Winter | 101           | +0%            | 1/120 Winter   |       |           |          |           |  | 22.848      | 0.659            | 0.000          |
| 1.013 | 223a  | 60 Winter  | 101           | +0%            |                |       |           |          |           |  | 21.703      | -0.486           | 0.000          |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 33                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 2 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

101 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW  
NET 2 REV F.SWS

| PN    | US/MH<br>Name | Flow /<br>Cap. | Half Drain<br>Overflow<br>(l/s) | Pipe<br>Time<br>(mins) | Flow<br>(l/s) | Status     | Level<br>Exceeded |
|-------|---------------|----------------|---------------------------------|------------------------|---------------|------------|-------------------|
|       |               |                |                                 |                        |               |            |                   |
| 1.000 | 201           | 0.24           |                                 |                        | 32.0          | SURCHARGED |                   |
| 2.000 | 202           | 0.28           |                                 |                        | 40.1          | SURCHARGED |                   |
| 2.001 | 203           | 0.81           |                                 |                        | 81.1          | SURCHARGED |                   |
| 2.002 | 204           | 0.57           |                                 |                        | 74.8          | SURCHARGED |                   |
| 2.003 | 205           | 0.80           |                                 |                        | 113.1         | SURCHARGED |                   |
| 1.001 | 206           | 1.05           |                                 |                        | 143.1         | SURCHARGED |                   |
| 1.002 | 207           | 0.97           |                                 |                        | 139.7         | SURCHARGED |                   |
| 1.003 | 208           | 0.73           |                                 |                        | 154.3         | SURCHARGED |                   |
| 3.000 | 209           | 0.27           |                                 |                        | 39.3          | SURCHARGED |                   |
| 3.001 | 210           | 0.64           |                                 |                        | 69.2          | SURCHARGED |                   |
| 1.004 | 211           | 1.04           |                                 |                        | 229.8         | SURCHARGED |                   |
| 1.005 | 212           | 1.82           |                                 |                        | 261.6         | SURCHARGED |                   |
| 1.006 | 213           | 1.27           |                                 |                        | 263.4         | SURCHARGED |                   |
| 1.007 | 214           | 1.95           |                                 |                        | 297.6         | SURCHARGED |                   |
| 1.008 | 215           | 0.75           |                                 |                        | 152.3         | SURCHARGED |                   |
| 1.009 | 216           | 0.47           |                                 |                        | 29.9          | SURCHARGED |                   |
| 4.000 | 217           | 0.70           |                                 |                        | 36.6          | OK         |                   |
| 4.001 | 218           | 1.32           |                                 |                        | 64.9          | SURCHARGED |                   |
| 4.002 | 219           | 1.00           |                                 |                        | 69.0          | OK         |                   |
| 5.000 | 220           | 0.75           |                                 |                        | 52.9          | OK         |                   |
| 1.010 | 221           | 0.55           |                                 |                        | 172.7         | OK         |                   |
| 1.011 | 222           | 0.29           |                                 | 194                    | 63.0          | SURCHARGED |                   |
| 1.012 | 223           | 0.57           |                                 | 220                    | 34.9          | SURCHARGED |                   |
| 1.013 | 223a          | 0.08           |                                 |                        | 34.9          | OK         |                   |

|                                                  |                                  |                                                                                     |
|--------------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                                  | Page 34                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby      |  |
| Date 23/04/2024<br>File 7778 SW NET 2 REV F.MDX  | Designed by JAR<br>Checked by AJ |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3                 |                                                                                     |

101 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW  
NET 2 REV F.SWS

| PN     | US/MH |            | Return<br>Period | Climate<br>Change | First (X)<br>Surcharge | First (Y)<br>Flood | First (Z)<br>Overflow | Overflow<br>Act. | Water        | Surcharged   | Flooded        |
|--------|-------|------------|------------------|-------------------|------------------------|--------------------|-----------------------|------------------|--------------|--------------|----------------|
|        | Name  | Storm      |                  |                   |                        |                    |                       |                  | Level<br>(m) | Depth<br>(m) | Volume<br>(m³) |
| 1.014  | 224   | 60 Winter  | 101              | +0%               |                        |                    |                       |                  | 21.591       | -0.319       | 0.000          |
| 1.015  | 225   | 60 Winter  | 101              | +0%               |                        |                    |                       |                  | 21.581       | -0.276       | 0.000          |
| 1.016  | 226   | 60 Winter  | 101              | +0%               |                        |                    |                       |                  | 21.536       | -0.169       | 0.000          |
| 1.017  | 227   | 60 Winter  | 101              | +0%               | 100/15 Winter          |                    |                       |                  | 21.478       | -0.030       | 0.000          |
| 6.000  | 228   | 15 Winter  | 101              | +0%               |                        |                    |                       |                  | 23.606       | -0.119       | 0.000          |
| 7.000  | 229   | 15 Winter  | 101              | +0%               | 100/15 Summer          |                    |                       |                  | 23.908       | -0.079       | 0.000          |
| 6.001  | 230   | 15 Winter  | 101              | +0%               | 100/15 Summer          |                    |                       |                  | 21.939       | 0.000        | 0.000          |
| 6.002  | 231   | 15 Winter  | 101              | +0%               | 30/15 Summer           |                    |                       |                  | 21.891       | 0.129        | 0.000          |
| 8.000  | 232   | 15 Winter  | 101              | +0%               |                        |                    |                       |                  | 23.606       | -0.121       | 0.000          |
| 8.001  | 233   | 15 Winter  | 101              | +0%               | 100/15 Summer          |                    |                       |                  | 23.078       | -0.091       | 0.000          |
| 9.000  | 234   | 15 Winter  | 101              | +0%               | 100/15 Winter          |                    |                       |                  | 22.957       | -0.129       | 0.000          |
| 8.002  | 235   | 15 Winter  | 101              | +0%               | 30/15 Summer           |                    |                       |                  | 22.135       | 0.242        | 0.000          |
| 8.003  | 236   | 15 Winter  | 101              | +0%               | 30/15 Summer           |                    |                       |                  | 21.972       | 0.215        | 0.000          |
| 6.003  | 237   | 15 Winter  | 101              | +0%               | 30/15 Winter           |                    |                       |                  | 21.875       | 0.138        | 0.000          |
| 6.004  | 238   | 15 Winter  | 101              | +0%               | 100/15 Summer          |                    |                       |                  | 21.797       | 0.111        | 0.000          |
| 6.005  | 239   | 15 Winter  | 101              | +0%               | 100/15 Summer          |                    |                       |                  | 21.698       | 0.089        | 0.000          |
| 10.000 | 240   | 30 Winter  | 101              | +0%               | 100/15 Winter          |                    |                       |                  | 21.805       | -0.117       | 0.000          |
| 10.001 | 241   | 60 Winter  | 101              | +0%               | 100/15 Summer          |                    |                       |                  | 21.786       | 0.000        | 0.000          |
| 10.002 | 242   | 30 Winter  | 101              | +0%               | 100/15 Summer          |                    |                       |                  | 21.736       | 0.000        | 0.000          |
| 10.003 | 243   | 30 Winter  | 101              | +0%               | 100/15 Summer          |                    |                       |                  | 21.642       | 0.026        | 0.000          |
| 6.006  | 244   | 15 Winter  | 101              | +0%               | 100/15 Summer          |                    |                       |                  | 21.632       | 0.056        | 0.000          |
| 6.007  | 245   | 30 Winter  | 101              | +0%               | 100/15 Summer          |                    |                       |                  | 21.492       | 0.038        | 0.000          |
| 1.018  | 246   | 30 Winter  | 101              | +0%               | 100/15 Summer          |                    |                       |                  | 21.431       | 0.008        | 0.000          |
| 1.019  | 247   | 360 Winter | 101              | +0%               | 100/180 Winter         |                    |                       |                  | 21.325       | -0.075       | 0.000          |
| 1.020  | 248   | 360 Winter | 101              | +0%               | 100/30 Summer          |                    |                       |                  | 21.194       | 0.041        | 0.000          |
| 1.021  | 250   | 360 Winter | 101              | +0%               | 1/30 Summer            |                    |                       |                  | 21.190       | 0.661        | 0.000          |
| 11.000 | 251   | 60 Winter  | 101              | +0%               | 100/60 Winter          |                    |                       |                  | 17.549       | -0.602       | 0.000          |
| 11.001 | 252   | 60 Winter  | 101              | +0%               | 100/60 Winter          |                    |                       |                  | 17.546       | -0.437       | 0.000          |
| 1.022  | 253   | 60 Winter  | 101              | +0%               | 100/60 Winter          |                    |                       |                  | 17.541       | -0.380       | 0.000          |
| 1.023  | 254   | 60 Winter  | 101              | +0%               | 30/15 Summer           |                    |                       |                  | 17.490       | 0.515        | 0.000          |
| 1.024  | 255   | 120 Summer | 101              | +0%               |                        |                    |                       |                  | 16.514       | -0.199       | 0.000          |
| 1.025  | 256   | 60 Summer  | 101              | +0%               |                        |                    |                       |                  | 16.296       | -0.201       | 0.000          |
| 1.026  | 257   | 120 Summer | 101              | +0%               |                        |                    |                       |                  | 16.004       | -0.246       | 0.000          |
| 1.027  | 258   | 60 Summer  | 101              | +0%               |                        |                    |                       |                  | 14.896       | -0.257       | 0.000          |

| PN    | US/MH<br>Name | Half Drain Pipe |                | Flow<br>(l/s) | Status     | Level<br>Exceeded |
|-------|---------------|-----------------|----------------|---------------|------------|-------------------|
|       |               | Flow /<br>Cap.  | Time<br>(mins) |               |            |                   |
| 1.014 | 224           | 0.20            |                | 63.0          | OK         |                   |
| 1.015 | 225           | 0.28            |                | 85.7          | OK         |                   |
| 1.016 | 226           | 0.27            | 50             | 85.4          | OK         |                   |
| 1.017 | 227           | 0.31            | 40             | 90.2          | OK         |                   |
| 6.000 | 228           | 0.45            |                | 43.8          | OK         |                   |
| 7.000 | 229           | 0.74            |                | 79.3          | OK         |                   |
| 6.001 | 230           | 0.39            |                | 122.5         | OK         |                   |
| 6.002 | 231           | 0.70            |                | 147.4         | SURCHARGED |                   |
| 8.000 | 232           | 0.43            |                | 31.4          | OK         |                   |
| 8.001 | 233           | 0.65            |                | 63.3          | OK         |                   |
| 9.000 | 234           | 0.37            |                | 29.3          | OK         |                   |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 35                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 2 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

101 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW  
NET 2 REV F.SWS

| PN     | US/MH<br>Name | Flow /<br>Cap. | Overflow<br>(l/s) | Half Drain Pipe |               | Status     | Level<br>Exceeded |
|--------|---------------|----------------|-------------------|-----------------|---------------|------------|-------------------|
|        |               |                |                   | Time<br>(mins)  | Flow<br>(l/s) |            |                   |
| 8.002  | 235           | 1.19           |                   |                 | 174.6         | SURCHARGED |                   |
| 8.003  | 236           | 2.17           |                   |                 | 205.8         | SURCHARGED |                   |
| 6.003  | 237           | 1.32           |                   |                 | 342.4         | SURCHARGED |                   |
| 6.004  | 238           | 1.19           |                   |                 | 335.1         | SURCHARGED |                   |
| 6.005  | 239           | 1.73           |                   |                 | 346.6         | SURCHARGED |                   |
| 10.000 | 240           | 0.05           |                   |                 | 16.2          | OK         |                   |
| 10.001 | 241           | 0.08           |                   |                 | 21.4          | OK         |                   |
| 10.002 | 242           | 0.17           |                   |                 | 49.8          | SURCHARGED |                   |
| 10.003 | 243           | 0.27           |                   |                 | 64.7          | SURCHARGED |                   |
| 6.006  | 244           | 1.09           |                   | 11              | 324.8         | SURCHARGED |                   |
| 6.007  | 245           | 1.62           |                   |                 | 321.1         | SURCHARGED |                   |
| 1.018  | 246           | 1.72           |                   |                 | 341.0         | SURCHARGED |                   |
| 1.019  | 247           | 0.18           |                   |                 | 162.0         | OK         |                   |
| 1.020  | 248           | 0.20           |                   |                 | 149.8         | SURCHARGED |                   |
| 1.021  | 250           | 0.18           |                   |                 | 49.2          | SURCHARGED |                   |
| 11.000 | 251           | 0.02           |                   |                 | 37.3          | OK         |                   |
| 11.001 | 252           | 0.02           |                   |                 | 30.5          | OK         |                   |
| 1.022  | 253           | 0.05           |                   |                 | 78.5          | OK         |                   |
| 1.023  | 254           | 0.36           |                   |                 | 72.5          | SURCHARGED |                   |
| 1.024  | 255           | 0.45           |                   |                 | 72.5          | OK         |                   |
| 1.025  | 256           | 0.44           |                   |                 | 72.5          | OK         |                   |
| 1.026  | 257           | 0.26           |                   |                 | 72.5          | OK         |                   |
| 1.027  | 258           | 0.22           |                   |                 | 72.5          | OK         |                   |

|                                                  |                       |                                                                                     |
|--------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                       | Page 0                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |                       |  |
| Date 01/01/0001                                  | Designed by jrattigan |                                                                                     |
| File 7778 SW NET 3 REV F.MDX                     | Checked by            |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3      |                                                                                     |

### STORM SEWER DESIGN by the Modified Rational Method

#### Design Criteria for 7778 - SW NET 3 REV F.SWS

Pipe Sizes 7778 - SW NET 2 REV F Manhole Sizes 7778 - SW NET 2 REV F

|                                        |        |                                       |       |
|----------------------------------------|--------|---------------------------------------|-------|
| FSR Rainfall Model - England and Wales |        |                                       |       |
| Return Period (years)                  | 2      | PIMP (%)                              | 100   |
| M5-60 (mm)                             | 19.400 | Add Flow / Climate Change (%)         | 0     |
| Ratio R                                | 0.387  | Minimum Backdrop Height (m)           | 0.200 |
| Maximum Rainfall (mm/hr)               | 50     | Maximum Backdrop Height (m)           | 0.000 |
| Maximum Time of Concentration (mins)   | 30     | Min Design Depth for Optimisation (m) | 1.200 |
| Foul Sewage (l/s/ha)                   | 0.000  | Min Vel for Auto Design only (m/s)    | 0.75  |
| Volumetric Runoff Coeff.               | 0.750  | Min Slope for Optimisation (1:X)      | 500   |

Designed with Level Soffits

#### Network Design Table for 7778 - SW NET 3 REV F.SWS

« - Indicates pipe capacity < flow

| PN    | Length<br>(m) | Fall<br>(m) | Slope<br>(1:X) | I.Area<br>(ha) | T.E.<br>(mins) | Base<br>Flow (l/s) | k<br>(mm) | HYD<br>SECT | DIA<br>(mm) | Section Type | Auto<br>Design                                                                        |
|-------|---------------|-------------|----------------|----------------|----------------|--------------------|-----------|-------------|-------------|--------------|---------------------------------------------------------------------------------------|
| 1.000 | 54.226        | 0.136       | 398.7          | 0.187          | 5.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |
| 1.001 | 16.200        | 0.041       | 395.1          | 0.184          | 0.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |
| 1.002 | 42.154        | 0.105       | 401.5          | 0.054          | 0.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |
| 1.003 | 36.423        | 0.091       | 400.3          | 0.150          | 0.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |
| 1.004 | 13.023        | 0.033       | 394.6          | 0.086          | 0.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |
| 1.005 | 46.327        | 0.116       | 399.4          | 0.090          | 0.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |
| 1.006 | 9.694         | 0.025       | 387.8          | 0.028          | 0.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |
| 2.000 | 31.112        | 0.078       | 398.9          | 0.093          | 5.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |
| 2.001 | 14.143        | 0.035       | 404.1          | 0.086          | 0.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |
| 2.002 | 38.895        | 0.097       | 401.0          | 0.086          | 0.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |
| 2.003 | 64.034        | 0.160       | 400.2          | 0.136          | 0.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |
| 2.004 | 37.201        | 0.093       | 400.0          | 0.149          | 0.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |

#### Network Results Table

| PN    | Rain<br>(mm/hr) | T.C.<br>(mins) | US/IL<br>(m) | E I.Area<br>(ha) | E Base<br>Flow (l/s) | Foul<br>(l/s) | Add Flow<br>(l/s) | Vel<br>(m/s) | Cap<br>(l/s) | Flow<br>(l/s) |
|-------|-----------------|----------------|--------------|------------------|----------------------|---------------|-------------------|--------------|--------------|---------------|
| 1.000 | 50.00           | 5.58           | 21.746       | 0.187            | 0.0                  | 0.0           | 0.0               | 1.56         | 994.3        | 25.3          |
| 1.001 | 50.00           | 5.75           | 21.610       | 0.371            | 0.0                  | 0.0           | 0.0               | 1.57         | 998.9        | 50.2          |
| 1.002 | 50.00           | 6.20           | 21.569       | 0.425            | 0.0                  | 0.0           | 0.0               | 1.56         | 990.9        | 57.6          |
| 1.003 | 50.00           | 6.59           | 21.464       | 0.575            | 0.0                  | 0.0           | 0.0               | 1.56         | 992.4        | 77.9          |
| 1.004 | 50.00           | 6.73           | 21.373       | 0.661            | 0.0                  | 0.0           | 0.0               | 1.57         | 999.5        | 89.5          |
| 1.005 | 50.00           | 7.22           | 21.340       | 0.751            | 0.0                  | 0.0           | 0.0               | 1.56         | 993.5        | 101.7         |
| 1.006 | 50.00           | 7.32           | 21.225       | 0.779            | 0.0                  | 0.0           | 0.0               | 1.59         | 1008.4       | 105.5         |
| 2.000 | 50.00           | 5.33           | 21.663       | 0.093            | 0.0                  | 0.0           | 0.0               | 1.56         | 994.1        | 12.6          |
| 2.001 | 50.00           | 5.48           | 21.585       | 0.179            | 0.0                  | 0.0           | 0.0               | 1.55         | 987.6        | 24.2          |
| 2.002 | 50.00           | 5.90           | 21.550       | 0.265            | 0.0                  | 0.0           | 0.0               | 1.56         | 991.5        | 35.9          |
| 2.003 | 50.00           | 6.58           | 21.453       | 0.401            | 0.0                  | 0.0           | 0.0               | 1.56         | 992.4        | 54.3          |
| 2.004 | 50.00           | 6.98           | 21.293       | 0.550            | 0.0                  | 0.0           | 0.0               | 1.56         | 992.7        | 74.5          |

|                                                  |                       |                                                                                     |
|--------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                       | Page 1                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |                       |  |
| Date 01/01/0001                                  | Designed by jrattigan |                                                                                     |
| File 7778 SW NET 3 REV F.MDX                     | Checked by            |                                                                                     |
| Micro Drainage                                   |                       | Network 2020.1.3                                                                    |

Network Design Table for 7778 - SW NET 3 REV F.SWS

| PN    | Length<br>(m) | Fall<br>(m) | Slope<br>(1:X) | I.Area<br>(ha) | T.E.<br>(mins) | Base<br>Flow (l/s) | k<br>(mm) | HYD<br>SECT | DIA<br>(mm) | Section Type | Auto<br>Design                                                                        |
|-------|---------------|-------------|----------------|----------------|----------------|--------------------|-----------|-------------|-------------|--------------|---------------------------------------------------------------------------------------|
| 1.007 | 46.981        | 0.117       | 401.5          | 0.076          | 0.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |    |
| 1.008 | 10.277        | 0.026       | 395.3          | 0.086          | 0.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |    |
| 1.009 | 35.798        | 0.092       | 389.1          | 0.077          | 0.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |    |
| 3.000 | 24.169        | 0.060       | 402.8          | 0.056          | 5.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |    |
| 1.010 | 42.359        | 0.106       | 399.6          | 0.102          | 0.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |    |
| 1.011 | 19.325        | 0.048       | 402.6          | 0.107          | 0.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |    |
| 1.012 | 9.967         | 0.025       | 398.7          | 0.067          | 0.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |    |
| 4.000 | 33.834        | 0.085       | 398.0          | 0.101          | 5.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |    |
| 5.000 | 27.575        | 0.069       | 399.6          | 0.072          | 5.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |    |
| 5.001 | 19.663        | 0.051       | 385.5          | 0.041          | 0.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |    |
| 4.001 | 26.399        | 0.066       | 400.0          | 0.102          | 0.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |    |
| 4.002 | 33.399        | 0.083       | 402.4          | 0.072          | 0.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |    |
| 4.003 | 17.138        | 0.043       | 398.6          | 0.096          | 0.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |
| 4.004 | 14.895        | 0.037       | 402.6          | 0.113          | 0.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |
| 4.005 | 78.663        | 0.197       | 399.3          | 0.201          | 0.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |
| 6.000 | 36.727        | 0.092       | 399.2          | 0.088          | 5.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |
| 6.001 | 22.051        | 0.064       | 344.5          | 0.096          | 0.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |

Network Results Table

| PN    | Rain<br>(mm/hr) | T.C.<br>(mins) | US/IL<br>(m) | Σ I.Area<br>(ha) | Σ Base<br>Flow (l/s) | Foul<br>(l/s) | Add Flow<br>(l/s) | Vel<br>(m/s) | Cap<br>(l/s) | Flow<br>(l/s) |
|-------|-----------------|----------------|--------------|------------------|----------------------|---------------|-------------------|--------------|--------------|---------------|
| 1.007 | 50.00           | 7.83           | 21.200       | 1.405            | 0.0                  | 0.0           | 0.0               | 1.56         | 990.8        | 190.3         |
| 1.008 | 50.00           | 7.94           | 21.083       | 1.491            | 0.0                  | 0.0           | 0.0               | 1.57         | 998.7        | 201.9         |
| 1.009 | 50.00           | 8.31           | 21.057       | 1.568            | 0.0                  | 0.0           | 0.0               | 1.58         | 1006.6       | 212.3         |
| 3.000 | 50.00           | 5.26           | 21.025       | 0.056            | 0.0                  | 0.0           | 0.0               | 1.55         | 989.2        | 7.6           |
| 1.010 | 50.00           | 8.77           | 20.965       | 1.726            | 0.0                  | 0.0           | 0.0               | 1.56         | 993.2        | 233.7         |
| 1.011 | 50.00           | 8.97           | 20.859       | 1.833            | 0.0                  | 0.0           | 0.0               | 1.56         | 989.5        | 248.2         |
| 1.012 | 50.00           | 9.08           | 20.811       | 1.900            | 0.0                  | 0.0           | 0.0               | 1.56         | 994.4        | 257.3         |
| 4.000 | 50.00           | 5.36           | 21.535       | 0.101            | 0.0                  | 0.0           | 0.0               | 1.56         | 995.2        | 13.7          |
| 5.000 | 50.00           | 5.29           | 21.570       | 0.072            | 0.0                  | 0.0           | 0.0               | 1.56         | 993.2        | 9.7           |
| 5.001 | 50.00           | 5.50           | 21.501       | 0.113            | 0.0                  | 0.0           | 0.0               | 1.59         | 1011.3       | 15.3          |
| 4.001 | 50.00           | 5.78           | 21.450       | 0.316            | 0.0                  | 0.0           | 0.0               | 1.56         | 992.7        | 42.8          |
| 4.002 | 50.00           | 6.14           | 21.384       | 0.388            | 0.0                  | 0.0           | 0.0               | 1.56         | 989.7        | 52.5          |
| 4.003 | 50.00           | 6.32           | 21.301       | 0.484            | 0.0                  | 0.0           | 0.0               | 1.56         | 994.5        | 65.5          |
| 4.004 | 50.00           | 6.48           | 21.258       | 0.597            | 0.0                  | 0.0           | 0.0               | 1.56         | 989.5        | 80.8          |
| 4.005 | 50.00           | 7.32           | 21.221       | 0.798            | 0.0                  | 0.0           | 0.0               | 1.56         | 993.6        | 108.1         |
| 6.000 | 50.00           | 5.39           | 21.180       | 0.088            | 0.0                  | 0.0           | 0.0               | 1.56         | 993.7        | 11.9          |
| 6.001 | 50.00           | 5.61           | 21.088       | 0.184            | 0.0                  | 0.0           | 0.0               | 1.68         | 1070.2       | 24.9          |

|                                                  |                       |                                                                                     |
|--------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                       | Page 2                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |                       |  |
| Date 01/01/0001                                  | Designed by jrattigan |                                                                                     |
| File 7778 SW NET 3 REV F.MDX                     | Checked by            |                                                                                     |
| Micro Drainage                                   |                       | Network 2020.1.3                                                                    |

Network Design Table for 7778 - SW NET 3 REV F.SWS

| PN    | Length<br>(m) | Fall<br>(m) | Slope<br>(1:X) | I.Area<br>(ha) | T.E.<br>(mins) | Base<br>Flow (l/s) | k<br>(mm) | HYD<br>SECT | DIA<br>(mm) | Section Type | Auto<br>Design                                                                      |
|-------|---------------|-------------|----------------|----------------|----------------|--------------------|-----------|-------------|-------------|--------------|-------------------------------------------------------------------------------------|
| 4.006 | 42.532        | 0.106       | 401.2          | 0.086          | 0.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |
| 4.007 | 53.064        | 0.133       | 399.0          | 0.186          | 0.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |
| 1.013 | 18.424        | 0.061       | 302.0          | 0.096          | 0.00           | 0.0                | 0.600     | o           | 375         | Pipe/Conduit |  |

Network Results Table

| PN    | Rain<br>(mm/hr) | T.C.<br>(mins) | US/IL<br>(m) | Σ I.Area<br>(ha) | Σ Base<br>Flow (l/s) | Foul<br>(l/s) | Add Flow<br>(l/s) | Vel<br>(m/s) | Cap<br>(l/s) | Flow<br>(l/s) |
|-------|-----------------|----------------|--------------|------------------|----------------------|---------------|-------------------|--------------|--------------|---------------|
| 4.006 | 50.00           | 7.78           | 21.024       | 1.068            | 0.0                  | 0.0           | 0.0               | 1.56         | 991.2        | 144.6         |
| 4.007 | 50.00           | 8.34           | 20.918       | 1.254            | 0.0                  | 0.0           | 0.0               | 1.56         | 994.0        | 169.8         |
| 1.013 | 49.74           | 9.38           | 20.785       | 3.250            | 0.0                  | 0.0           | 0.0               | 1.04         | 114.6«       | 437.8         |

|                                                  |                                     |                                                                                     |
|--------------------------------------------------|-------------------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                                     | Page 3                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |                                     |  |
| Date 01/01/0001<br>File 7778 SW NET 3 REV F.MDX  | Designed by jrattigan<br>Checked by |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3                    |                                                                                     |

Manhole Schedules for 7778 - SW NET 3 REV F.SWS

| MH Name | MH CL (m) | MH Depth (m) | MH Connection | MH Diam., L*W (mm) | Pipe Out PN | Pipe Out Invert Level (m) | Pipe Out Diameter (mm) | Pipes In PN | Pipes In Invert Level (m) | Pipes In Diameter (mm) | Backdrop (mm) |
|---------|-----------|--------------|---------------|--------------------|-------------|---------------------------|------------------------|-------------|---------------------------|------------------------|---------------|
| 301     | 24.181    | 2.435        | Open Manhole  | 2100               | 1.000       | 21.746                    | 900                    |             |                           |                        |               |
| 302     | 24.858    | 3.248        | Open Manhole  | 2100               | 1.001       | 21.610                    | 900                    | 1.000       | 21.610                    | 900                    |               |
| 303     | 24.628    | 3.059        | Open Manhole  | 2100               | 1.002       | 21.569                    | 900                    | 1.001       | 21.569                    | 900                    |               |
| 304     | 24.100    | 2.636        | Open Manhole  | 2100               | 1.003       | 21.464                    | 900                    | 1.002       | 21.464                    | 900                    |               |
| 305     | 24.041    | 2.668        | Open Manhole  | 2100               | 1.004       | 21.373                    | 900                    | 1.003       | 21.373                    | 900                    |               |
| 306     | 24.159    | 2.819        | Open Manhole  | 2100               | 1.005       | 21.340                    | 900                    | 1.004       | 21.340                    | 900                    |               |
| 307     | 24.258    | 3.034        | Open Manhole  | 2100               | 1.006       | 21.225                    | 900                    | 1.005       | 21.224                    | 900                    |               |
| 308     | 25.421    | 3.758        | Open Manhole  | 2100               | 2.000       | 21.663                    | 900                    |             |                           |                        |               |
| 309     | 25.200    | 3.615        | Open Manhole  | 2100               | 2.001       | 21.585                    | 900                    | 2.000       | 21.585                    | 900                    |               |
| 310     | 25.133    | 3.583        | Open Manhole  | 2100               | 2.002       | 21.550                    | 900                    | 2.001       | 21.550                    | 900                    |               |
| 311     | 25.012    | 3.559        | Open Manhole  | 2100               | 2.003       | 21.453                    | 900                    | 2.002       | 21.453                    | 900                    |               |
| 312     | 24.810    | 3.517        | Open Manhole  | 2100               | 2.004       | 21.293                    | 900                    | 2.003       | 21.293                    | 900                    |               |
| 313     | 24.561    | 3.361        | Open Manhole  | 2100               | 1.007       | 21.200                    | 900                    | 1.006       | 21.200                    | 900                    |               |
|         |           |              |               |                    |             |                           |                        | 2.004       | 21.200                    | 900                    |               |
| 314     | 24.573    | 3.490        | Open Manhole  | 2100               | 1.008       | 21.083                    | 900                    | 1.007       | 21.083                    | 900                    |               |
| 315     | 24.692    | 3.635        | Open Manhole  | 2100               | 1.009       | 21.057                    | 900                    | 1.008       | 21.057                    | 900                    |               |
| 316     | 25.000    | 3.975        | Open Manhole  | 2100               | 3.000       | 21.025                    | 900                    |             |                           |                        |               |
| 317     | 24.688    | 3.723        | Open Manhole  | 2100               | 1.010       | 20.965                    | 900                    | 1.009       | 20.965                    | 900                    |               |
|         |           |              |               |                    |             |                           |                        | 3.000       | 20.965                    | 900                    |               |
| 318     | 25.124    | 4.265        | Open Manhole  | 2100               | 1.011       | 20.859                    | 900                    | 1.010       | 20.859                    | 900                    |               |
| 319     | 25.368    | 4.557        | Open Manhole  | 2100               | 1.012       | 20.811                    | 900                    | 1.011       | 20.811                    | 900                    |               |
| 320     | 24.932    | 3.397        | Open Manhole  | 2100               | 4.000       | 21.535                    | 900                    |             |                           |                        |               |
| 321     | 25.008    | 3.438        | Open Manhole  | 2100               | 5.000       | 21.570                    | 900                    |             |                           |                        |               |
| 322     | 24.665    | 3.164        | Open Manhole  | 2100               | 5.001       | 21.501                    | 900                    | 5.000       | 21.501                    | 900                    |               |
| 323     | 24.508    | 3.058        | Open Manhole  | 2100               | 4.001       | 21.450                    | 900                    | 4.000       | 21.450                    | 900                    |               |
|         |           |              |               |                    |             |                           |                        | 5.001       | 21.450                    | 900                    |               |
| 324     | 24.182    | 2.798        | Open Manhole  | 2100               | 4.002       | 21.384                    | 900                    | 4.001       | 21.384                    | 900                    |               |
| 325     | 24.390    | 3.089        | Open Manhole  | 2100               | 4.003       | 21.301                    | 900                    | 4.002       | 21.301                    | 900                    |               |
| 326     | 24.450    | 3.192        | Open Manhole  | 2100               | 4.004       | 21.258                    | 900                    | 4.003       | 21.258                    | 900                    |               |
| 327     | 24.634    | 3.413        | Open Manhole  | 2100               | 4.005       | 21.221                    | 900                    | 4.004       | 21.221                    | 900                    |               |
| 328     | 25.100    | 3.920        | Open Manhole  | 2100               | 6.000       | 21.180                    | 900                    |             |                           |                        |               |
| 329     | 25.550    | 4.462        | Open Manhole  | 2100               | 6.001       | 21.088                    | 900                    | 6.000       | 21.088                    | 900                    |               |
| 330     | 25.606    | 4.582        | Open Manhole  | 2100               | 4.006       | 21.024                    | 900                    | 4.005       | 21.024                    | 900                    |               |
|         |           |              |               |                    |             |                           |                        | 6.001       | 21.024                    | 900                    |               |
| 331     | 25.100    | 4.182        | Open Manhole  | 2100               | 4.007       | 20.918                    | 900                    | 4.006       | 20.918                    | 900                    |               |
| 332     | 25.350    | 4.565        | Open Manhole  | 2400               | 1.013       | 20.785                    | 375                    | 1.012       | 20.786                    | 900                    | 526           |
|         |           |              |               |                    |             |                           |                        | 4.007       | 20.785                    | 900                    |               |
| 333     | 25.307    | 4.583        | Open Manhole  | 0                  |             | OUTFALL                   |                        | 1.013       | 20.724                    | 375                    |               |

|                                                  |                                     |                                                                                     |
|--------------------------------------------------|-------------------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                                     | Page 4                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |                                     |  |
| Date 01/01/0001<br>File 7778 SW NET 3 REV F.MDX  | Designed by jrattigan<br>Checked by |                                                                                     |
| Micro Drainage<br>Network 2020.1.3               |                                     |                                                                                     |

Manhole Schedules for 7778 - SW NET 3 REV F.SWS

| MH Name | Manhole Easting (m) | Manhole Northing (m) | Intersection Easting (m) | Intersection Northing (m) | Manhole Access | Layout (North)                                                                        |
|---------|---------------------|----------------------|--------------------------|---------------------------|----------------|---------------------------------------------------------------------------------------|
| 301     | 341131.613          | 398228.983           | 341131.613               | 398228.983                | Required       |    |
| 302     | 341182.876          | 398211.301           | 341182.876               | 398211.301                | Required       |    |
| 303     | 341178.122          | 398195.815           | 341178.122               | 398195.815                | Required       |    |
| 304     | 341164.395          | 398155.959           | 341164.395               | 398155.959                | Required       |    |
| 305     | 341152.659          | 398121.478           | 341152.659               | 398121.478                | Required       |    |
| 306     | 341154.733          | 398108.622           | 341154.733               | 398108.622                | Required       |   |
| 307     | 341198.475          | 398093.361           | 341198.475               | 398093.361                | Required       |  |
| 308     | 341218.990          | 398246.681           | 341218.990               | 398246.681                | Required       |  |
| 309     | 341208.848          | 398217.268           | 341208.848               | 398217.268                | Required       |  |
| 310     | 341203.722          | 398204.087           | 341203.722               | 398204.087                | Required       |  |
| 311     | 341240.507          | 398191.451           | 341240.507               | 398191.451                | Required       |  |
| 312     | 341219.782          | 398130.865           | 341219.782               | 398130.865                | Required       |  |
| 313     | 341207.904          | 398095.611           | 341207.904               | 398095.611                | Required       |  |
| 314     | 341251.164          | 398077.287           | 341251.164               | 398077.287                | Required       |  |
| 315     | 341260.693          | 398073.438           | 341260.693               | 398073.438                | Required       |  |
| 316     | 341283.587          | 398128.858           | 341283.587               | 398128.858                | Required       |  |
| 317     | 341274.662          | 398106.398           | 341274.662               | 398106.398                | Required       |  |

|                                                  |                                     |                                                                                     |
|--------------------------------------------------|-------------------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                                     | Page 5                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |                                     |  |
| Date 01/01/0001<br>File 7778 SW NET 3 REV F.MDX  | Designed by jrattigan<br>Checked by |                                                                                     |
| Micro Drainage<br>Network 2020.1.3               |                                     |                                                                                     |

Manhole Schedules for 7778 - SW NET 3 REV F.SWS

| MH Name | Manhole Easting (m) | Manhole Northing (m) | Intersection Easting (m) | Intersection Northing (m) | Manhole Access | Layout (North)                                                                        |
|---------|---------------------|----------------------|--------------------------|---------------------------|----------------|---------------------------------------------------------------------------------------|
| 318     | 341313.682          | 398089.915           | 341313.682               | 398089.915                | Required       |    |
| 319     | 341331.131          | 398081.610           | 341331.131               | 398081.610                | Required       |    |
| 320     | 341258.968          | 398253.511           | 341258.968               | 398253.511                | Required       |    |
| 321     | 341282.263          | 398207.712           | 341282.263               | 398207.712                | Required       |    |
| 322     | 341291.383          | 398233.735           | 341291.383               | 398233.735                | Required       |    |
| 323     | 341292.801          | 398253.347           | 341292.801               | 398253.347                | Required       |   |
| 324     | 341319.199          | 398253.183           | 341319.199               | 398253.183                | Required       |  |
| 325     | 341352.596          | 398252.830           | 341352.596               | 398252.830                | Required       |  |
| 326     | 341352.934          | 398235.696           | 341352.934               | 398235.696                | Required       |  |
| 327     | 341350.357          | 398221.026           | 341350.357               | 398221.026                | Required       |  |
| 328     | 341271.350          | 398174.712           | 341271.350               | 398174.712                | Required       |  |
| 329     | 341302.905          | 398155.918           | 341302.905               | 398155.918                | Required       |  |
| 330     | 341323.164          | 398147.212           | 341323.164               | 398147.212                | Required       |  |
| 331     | 341362.487          | 398131.005           | 341362.487               | 398131.005                | Required       |  |
| 332     | 341341.061          | 398082.458           | 341341.061               | 398082.458                | Required       |  |
| 333     | 341355.981          | 398071.649           |                          |                           | No Entry       |  |

|                                                  |                       |                                                                                     |
|--------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                       | Page 6                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |                       |  |
| Date 01/01/0001                                  | Designed by jrattigan |                                                                                     |
| File 7778 SW NET 3 REV F.MDX                     | Checked by            |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3      |                                                                                     |

PIPELINE SCHEDULES for 7778 - SW NET 3 REV F.SWS

Upstream Manhole

| PN    | Hyd Sect | Diam (mm) | MH Name | C.Level (m) | I.Level (m) | D.Depth (m) | MH Connection | MH DIAM., L*W (mm) |
|-------|----------|-----------|---------|-------------|-------------|-------------|---------------|--------------------|
| 1.000 | o        | 900       | 301     | 24.181      | 21.746      | 1.535       | Open Manhole  | 2100               |
| 1.001 | o        | 900       | 302     | 24.858      | 21.610      | 2.348       | Open Manhole  | 2100               |
| 1.002 | o        | 900       | 303     | 24.628      | 21.569      | 2.159       | Open Manhole  | 2100               |
| 1.003 | o        | 900       | 304     | 24.100      | 21.464      | 1.736       | Open Manhole  | 2100               |
| 1.004 | o        | 900       | 305     | 24.041      | 21.373      | 1.768       | Open Manhole  | 2100               |
| 1.005 | o        | 900       | 306     | 24.159      | 21.340      | 1.919       | Open Manhole  | 2100               |
| 1.006 | o        | 900       | 307     | 24.258      | 21.225      | 2.133       | Open Manhole  | 2100               |
| 2.000 | o        | 900       | 308     | 25.421      | 21.663      | 2.858       | Open Manhole  | 2100               |
| 2.001 | o        | 900       | 309     | 25.200      | 21.585      | 2.715       | Open Manhole  | 2100               |
| 2.002 | o        | 900       | 310     | 25.133      | 21.550      | 2.683       | Open Manhole  | 2100               |
| 2.003 | o        | 900       | 311     | 25.012      | 21.453      | 2.659       | Open Manhole  | 2100               |
| 2.004 | o        | 900       | 312     | 24.810      | 21.293      | 2.617       | Open Manhole  | 2100               |
| 1.007 | o        | 900       | 313     | 24.561      | 21.200      | 2.461       | Open Manhole  | 2100               |
| 1.008 | o        | 900       | 314     | 24.573      | 21.083      | 2.590       | Open Manhole  | 2100               |
| 1.009 | o        | 900       | 315     | 24.692      | 21.057      | 2.735       | Open Manhole  | 2100               |
| 3.000 | o        | 900       | 316     | 25.000      | 21.025      | 3.075       | Open Manhole  | 2100               |
| 1.010 | o        | 900       | 317     | 24.688      | 20.965      | 2.823       | Open Manhole  | 2100               |
| 1.011 | o        | 900       | 318     | 25.124      | 20.859      | 3.365       | Open Manhole  | 2100               |
| 1.012 | o        | 900       | 319     | 25.368      | 20.811      | 3.657       | Open Manhole  | 2100               |

Downstream Manhole

| PN    | Length (m) | Slope (1:X) | MH Name | C.Level (m) | I.Level (m) | D.Depth (m) | MH Connection | MH DIAM., L*W (mm) |
|-------|------------|-------------|---------|-------------|-------------|-------------|---------------|--------------------|
| 1.000 | 54.226     | 398.7       | 302     | 24.858      | 21.610      | 2.348       | Open Manhole  | 2100               |
| 1.001 | 16.200     | 395.1       | 303     | 24.628      | 21.569      | 2.159       | Open Manhole  | 2100               |
| 1.002 | 42.154     | 401.5       | 304     | 24.100      | 21.464      | 1.736       | Open Manhole  | 2100               |
| 1.003 | 36.423     | 400.3       | 305     | 24.041      | 21.373      | 1.768       | Open Manhole  | 2100               |
| 1.004 | 13.023     | 394.6       | 306     | 24.159      | 21.340      | 1.919       | Open Manhole  | 2100               |
| 1.005 | 46.327     | 399.4       | 307     | 24.258      | 21.224      | 2.134       | Open Manhole  | 2100               |
| 1.006 | 9.694      | 387.8       | 313     | 24.561      | 21.200      | 2.461       | Open Manhole  | 2100               |
| 2.000 | 31.112     | 398.9       | 309     | 25.200      | 21.585      | 2.715       | Open Manhole  | 2100               |
| 2.001 | 14.143     | 404.1       | 310     | 25.133      | 21.550      | 2.683       | Open Manhole  | 2100               |
| 2.002 | 38.895     | 401.0       | 311     | 25.012      | 21.453      | 2.659       | Open Manhole  | 2100               |
| 2.003 | 64.034     | 400.2       | 312     | 24.810      | 21.293      | 2.617       | Open Manhole  | 2100               |
| 2.004 | 37.201     | 400.0       | 313     | 24.561      | 21.200      | 2.461       | Open Manhole  | 2100               |
| 1.007 | 46.981     | 401.5       | 314     | 24.573      | 21.083      | 2.590       | Open Manhole  | 2100               |
| 1.008 | 10.277     | 395.3       | 315     | 24.692      | 21.057      | 2.735       | Open Manhole  | 2100               |
| 1.009 | 35.798     | 389.1       | 317     | 24.688      | 20.965      | 2.823       | Open Manhole  | 2100               |
| 3.000 | 24.169     | 402.8       | 317     | 24.688      | 20.965      | 2.823       | Open Manhole  | 2100               |
| 1.010 | 42.359     | 399.6       | 318     | 25.124      | 20.859      | 3.365       | Open Manhole  | 2100               |
| 1.011 | 19.325     | 402.6       | 319     | 25.368      | 20.811      | 3.657       | Open Manhole  | 2100               |
| 1.012 | 9.967      | 398.7       | 332     | 25.350      | 20.786      | 3.664       | Open Manhole  | 2400               |

|                                                  |                       |                                                                                     |
|--------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                       | Page 7                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |                       |  |
| Date 01/01/0001                                  | Designed by jrattigan |                                                                                     |
| File 7778 SW NET 3 REV F.MDX                     | Checked by            |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3      |                                                                                     |

PIPELINE SCHEDULES for 7778 - SW NET 3 REV F.SWS

Upstream Manhole

| PN    | Hyd<br>Sect | Diam<br>(mm) | MH<br>Name | C.Level<br>(m) | I.Level<br>(m) | D.Depth<br>(m) | MH<br>Connection | MH DIAM., L*W<br>(mm) |
|-------|-------------|--------------|------------|----------------|----------------|----------------|------------------|-----------------------|
| 4.000 | o           | 900          | 320        | 24.932         | 21.535         | 2.497          | Open Manhole     | 2100                  |
| 5.000 | o           | 900          | 321        | 25.008         | 21.570         | 2.538          | Open Manhole     | 2100                  |
| 5.001 | o           | 900          | 322        | 24.665         | 21.501         | 2.264          | Open Manhole     | 2100                  |
| 4.001 | o           | 900          | 323        | 24.508         | 21.450         | 2.158          | Open Manhole     | 2100                  |
| 4.002 | o           | 900          | 324        | 24.182         | 21.384         | 1.898          | Open Manhole     | 2100                  |
| 4.003 | o           | 900          | 325        | 24.390         | 21.301         | 2.189          | Open Manhole     | 2100                  |
| 4.004 | o           | 900          | 326        | 24.450         | 21.258         | 2.292          | Open Manhole     | 2100                  |
| 4.005 | o           | 900          | 327        | 24.634         | 21.221         | 2.513          | Open Manhole     | 2100                  |
| 6.000 | o           | 900          | 328        | 25.100         | 21.180         | 3.020          | Open Manhole     | 2100                  |
| 6.001 | o           | 900          | 329        | 25.550         | 21.088         | 3.562          | Open Manhole     | 2100                  |
| 4.006 | o           | 900          | 330        | 25.606         | 21.024         | 3.682          | Open Manhole     | 2100                  |
| 4.007 | o           | 900          | 331        | 25.100         | 20.918         | 3.282          | Open Manhole     | 2100                  |
| 1.013 | o           | 375          | 332        | 25.350         | 20.785         | 4.190          | Open Manhole     | 2400                  |

Downstream Manhole

| PN    | Length<br>(m) | Slope<br>(1:X) | MH<br>Name | C.Level<br>(m) | I.Level<br>(m) | D.Depth<br>(m) | MH<br>Connection | MH DIAM., L*W<br>(mm) |
|-------|---------------|----------------|------------|----------------|----------------|----------------|------------------|-----------------------|
| 4.000 | 33.834        | 398.0          | 323        | 24.508         | 21.450         | 2.158          | Open Manhole     | 2100                  |
| 5.000 | 27.575        | 399.6          | 322        | 24.665         | 21.501         | 2.264          | Open Manhole     | 2100                  |
| 5.001 | 19.663        | 385.5          | 323        | 24.508         | 21.450         | 2.158          | Open Manhole     | 2100                  |
| 4.001 | 26.399        | 400.0          | 324        | 24.182         | 21.384         | 1.898          | Open Manhole     | 2100                  |
| 4.002 | 33.399        | 402.4          | 325        | 24.390         | 21.301         | 2.189          | Open Manhole     | 2100                  |
| 4.003 | 17.138        | 398.6          | 326        | 24.450         | 21.258         | 2.292          | Open Manhole     | 2100                  |
| 4.004 | 14.895        | 402.6          | 327        | 24.634         | 21.221         | 2.513          | Open Manhole     | 2100                  |
| 4.005 | 78.663        | 399.3          | 330        | 25.606         | 21.024         | 3.682          | Open Manhole     | 2100                  |
| 6.000 | 36.727        | 399.2          | 329        | 25.550         | 21.088         | 3.562          | Open Manhole     | 2100                  |
| 6.001 | 22.051        | 344.5          | 330        | 25.606         | 21.024         | 3.682          | Open Manhole     | 2100                  |
| 4.006 | 42.532        | 401.2          | 331        | 25.100         | 20.918         | 3.282          | Open Manhole     | 2100                  |
| 4.007 | 53.064        | 399.0          | 332        | 25.350         | 20.785         | 3.665          | Open Manhole     | 2400                  |
| 1.013 | 18.424        | 302.0          | 333        | 25.307         | 20.724         | 4.208          | Open Manhole     | 0                     |

|                                                  |                       |                                                                                     |
|--------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                       | Page 8                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |                       |  |
| Date 01/01/0001                                  | Designed by jrattigan |                                                                                     |
| File 7778 SW NET 3 REV F.MDX                     | Checked by            |                                                                                     |
| Micro Drainage                                   |                       | Network 2020.1.3                                                                    |

Free Flowing Outfall Details for 7778 - SW NET 3 REV F.SWS

| Outfall<br>Pipe Number | Outfall<br>Name | C. Level<br>(m) | I. Level<br>(m) | Min<br>I. Level<br>(m) | D,L<br>(mm) | W<br>(mm) |
|------------------------|-----------------|-----------------|-----------------|------------------------|-------------|-----------|
|------------------------|-----------------|-----------------|-----------------|------------------------|-------------|-----------|

|       |     |        |        |       |   |   |
|-------|-----|--------|--------|-------|---|---|
| 1.013 | 333 | 25.307 | 20.724 | 0.000 | 0 | 0 |
|-------|-----|--------|--------|-------|---|---|

Simulation Criteria for 7778 - SW NET 3 REV F.SWS

|                                 |       |                                            |       |
|---------------------------------|-------|--------------------------------------------|-------|
| Volumetric Runoff Coeff         | 0.750 | Additional Flow - % of Total Flow          | 0.000 |
| Areal Reduction Factor          | 1.000 | MADD Factor * 10m <sup>3</sup> /ha Storage | 2.000 |
| Hot Start (mins)                | 0     | Inlet Coefficient                          | 0.800 |
| Hot Start Level (mm)            | 0     | Flow per Person per Day (l/per/day)        | 0.000 |
| Manhole Headloss Coeff (Global) | 0.500 | Run Time (mins)                            | 60    |
| Foul Sewage per hectare (l/s)   | 0.000 | Output Interval (mins)                     | 1     |

|                             |   |                              |   |                              |   |
|-----------------------------|---|------------------------------|---|------------------------------|---|
| Number of Input Hydrographs | 0 | Number of Offline Controls   | 0 | Number of Time/Area Diagrams | 0 |
| Number of Online Controls   | 1 | Number of Storage Structures | 3 | Number of Real Time Controls | 0 |

Synthetic Rainfall Details

|                       |                   |                       |        |
|-----------------------|-------------------|-----------------------|--------|
| Rainfall Model        | FSR               | Profile Type          | Summer |
| Return Period (years) | 2                 | Cv (Summer)           | 0.750  |
| Region                | England and Wales | Cv (Winter)           | 0.840  |
| M5-60 (mm)            | 19.400            | Storm Duration (mins) | 30     |
| Ratio R               | 0.387             |                       |        |

|                                                  |                       |                                                                                     |
|--------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                       | Page 9                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |                       |  |
| Date 01/01/0001                                  | Designed by jrattigan |                                                                                     |
| File 7778 SW NET 3 REV F.MDX                     | Checked by            |                                                                                     |
| Micro Drainage                                   |                       | Network 2020.1.3                                                                    |

Online Controls for 7778 - SW NET 3 REV F.SWS

Hydro-Brake® Optimum Manhole: 332, DS/PN: 1.013, Volume (m³): 57.9

|                                           |                           |
|-------------------------------------------|---------------------------|
| Unit Reference MD-SHE-0187-2500-3172-2500 |                           |
| Design Head (m)                           | 3.172                     |
| Design Flow (l/s)                         | 25.0                      |
| Flush-Flo™                                | Calculated                |
| Objective                                 | Minimise upstream storage |
| Application                               | Surface                   |
| Sump Available                            | Yes                       |
| Diameter (mm)                             | 187                       |
| Invert Level (m)                          | 20.785                    |
| Minimum Outlet Pipe Diameter (mm)         | 225                       |
| Suggested Manhole Diameter (mm)           | 1800                      |

| Control Points            | Head (m) | Flow (l/s) | Control Points            | Head (m) | Flow (l/s) |
|---------------------------|----------|------------|---------------------------|----------|------------|
| Design Point (Calculated) | 3.172    | 25.0       | Kick-Flo®                 | 1.671    | 18.4       |
| Flush-Flo™                | 0.812    | 23.5       | Mean Flow over Head Range | -        | 21.0       |

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

| Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) |
|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|
| 0.100     | 6.5        | 0.800     | 23.5       | 2.000     | 20.0       | 4.000     | 27.9       | 7.000     | 36.6       |
| 0.200     | 17.0       | 1.000     | 23.3       | 2.200     | 21.0       | 4.500     | 29.5       | 7.500     | 37.8       |
| 0.300     | 20.1       | 1.200     | 22.7       | 2.400     | 21.9       | 5.000     | 31.1       | 8.000     | 39.0       |
| 0.400     | 21.6       | 1.400     | 21.6       | 2.600     | 22.7       | 5.500     | 32.5       | 8.500     | 40.2       |
| 0.500     | 22.6       | 1.600     | 19.5       | 3.000     | 24.3       | 6.000     | 33.9       | 9.000     | 41.3       |
| 0.600     | 23.1       | 1.800     | 19.1       | 3.500     | 26.2       | 6.500     | 35.3       | 9.500     | 42.4       |

|                                                  |                       |                                                                                     |
|--------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                       | Page 10                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |                       |  |
| Date 01/01/0001                                  | Designed by jrattigan |                                                                                     |
| File 7778 SW NET 3 REV F.MDX                     | Checked by            |                                                                                     |
| Micro Drainage                                   |                       | Network 2020.1.3                                                                    |

Storage Structures for 7778 - SW NET 3 REV F.SWS

Cellular Storage Manhole: 308, DS/PN: 2.000

Invert Level (m) 21.663 Safety Factor 2.0  
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95  
Infiltration Coefficient Side (m/hr) 0.00000

| 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     | 152.0                  | 152.0                       | 1.600     | 152.0                  | 238.4                       | 1.700     | 0.0                    | 238.4                       |

Cellular Storage Manhole: 315, DS/PN: 1.009

Invert Level (m) 21.057 Safety Factor 2.0  
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95  
Infiltration Coefficient Side (m/hr) 0.00000

| 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     | 371.0                  | 371.0                       | 1.600     | 371.0                  | 563.0                       | 1.700     | 0.0                    | 563.0                       |

Cellular Storage Manhole: 325, DS/PN: 4.003

Invert Level (m) 21.301 Safety Factor 2.0  
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95  
Infiltration Coefficient Side (m/hr) 0.00000

| 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     | 156.0                  | 156.0                       | 1.600     | 156.0                  | 258.4                       | 1.700     | 0.0                    | 258.4                       |

|                                                  |                       |                                                                                     |
|--------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                       | Page 11                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |                       |  |
| Date 01/01/0001                                  | Designed by jrattigan |                                                                                     |
| File 7778 SW NET 3 REV F.MDX                     | Checked by            |                                                                                     |
| Micro Drainage                                   |                       | Network 2020.1.3                                                                    |

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW NET  
3 REV F.SWS

Simulation Criteria

Areal Reduction Factor 1.000    Additional Flow - % of Total Flow 0.000  
Hot Start (mins) 0    MADD Factor \* 10m³/ha Storage 2.000  
Hot Start Level (mm) 0    Inlet Coefficient 0.800  
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000  
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0    Number of Offline Controls 0    Number of Time/Area Diagrams 0  
Number of Online Controls 1    Number of Storage Structures 3    Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model    FSR M5-60 (mm) 19.400 Cv (Summer) 0.750  
Region England and Wales    Ratio R 0.387 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0  
Analysis Timestep 2.5 Second Increment (Extended)  
DTS Status OFF  
DVD Status ON  
Inertia Status ON

Profile(s) Summer and Winter  
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880  
Return Period(s) (years) 1, 30, 100  
Climate Change (%) 0, 0, 45

| PN    | US/MH |            | Return Period | Climate Change | First (X)      |       | First (Y) |          | First (Z) |  | Water Level | Surcharged Depth | Flooded Volume |
|-------|-------|------------|---------------|----------------|----------------|-------|-----------|----------|-----------|--|-------------|------------------|----------------|
|       | Name  | Storm      |               |                | Surcharge      | Flood | Overflow  | Overflow | Act.      |  | (m)         | (m)              | (m³)           |
| 1.000 | 301   | 15 Winter  | 1             | +0%            | 100/120 Winter |       |           |          |           |  | 21.865      | -0.781           | 0.000          |
| 1.001 | 302   | 15 Winter  | 1             | +0%            | 100/120 Winter |       |           |          |           |  | 21.780      | -0.730           | 0.000          |
| 1.002 | 303   | 15 Winter  | 1             | +0%            | 100/120 Summer |       |           |          |           |  | 21.736      | -0.733           | 0.000          |
| 1.003 | 304   | 15 Winter  | 1             | +0%            | 100/60 Winter  |       |           |          |           |  | 21.657      | -0.707           | 0.000          |
| 1.004 | 305   | 15 Winter  | 1             | +0%            | 100/60 Winter  |       |           |          |           |  | 21.591      | -0.682           | 0.000          |
| 1.005 | 306   | 15 Winter  | 1             | +0%            | 100/60 Winter  |       |           |          |           |  | 21.554      | -0.686           | 0.000          |
| 1.006 | 307   | 15 Winter  | 1             | +0%            | 100/60 Summer  |       |           |          |           |  | 21.486      | -0.639           | 0.000          |
| 2.000 | 308   | 30 Winter  | 1             | +0%            | 100/120 Winter |       |           |          |           |  | 21.698      | -0.865           | 0.000          |
| 2.001 | 309   | 15 Winter  | 1             | +0%            | 100/120 Winter |       |           |          |           |  | 21.683      | -0.802           | 0.000          |
| 2.002 | 310   | 15 Winter  | 1             | +0%            | 100/120 Summer |       |           |          |           |  | 21.656      | -0.794           | 0.000          |
| 2.003 | 311   | 15 Winter  | 1             | +0%            | 100/60 Winter  |       |           |          |           |  | 21.584      | -0.769           | 0.000          |
| 2.004 | 312   | 15 Winter  | 1             | +0%            | 100/60 Summer  |       |           |          |           |  | 21.489      | -0.704           | 0.000          |
| 1.007 | 313   | 15 Winter  | 1             | +0%            | 100/60 Summer  |       |           |          |           |  | 21.465      | -0.635           | 0.000          |
| 1.008 | 314   | 180 Winter | 1             | +0%            | 100/30 Summer  |       |           |          |           |  | 21.439      | -0.544           | 0.000          |
| 1.009 | 315   | 180 Winter | 1             | +0%            | 100/30 Summer  |       |           |          |           |  | 21.438      | -0.519           | 0.000          |
| 3.000 | 316   | 180 Winter | 1             | +0%            | 100/30 Summer  |       |           |          |           |  | 21.434      | -0.491           | 0.000          |
| 1.010 | 317   | 180 Winter | 1             | +0%            | 30/180 Winter  |       |           |          |           |  | 21.434      | -0.431           | 0.000          |
| 1.011 | 318   | 180 Winter | 1             | +0%            | 30/120 Winter  |       |           |          |           |  | 21.429      | -0.330           | 0.000          |
| 1.012 | 319   | 180 Winter | 1             | +0%            | 30/60 Winter   |       |           |          |           |  | 21.424      | -0.287           | 0.000          |
| 4.000 | 320   | 15 Winter  | 1             | +0%            | 100/60 Winter  |       |           |          |           |  | 21.633      | -0.802           | 0.000          |
| 5.000 | 321   | 15 Winter  | 1             | +0%            | 100/120 Summer |       |           |          |           |  | 21.651      | -0.819           | 0.000          |
| 5.001 | 322   | 15 Winter  | 1             | +0%            | 100/60 Winter  |       |           |          |           |  | 21.610      | -0.791           | 0.000          |
| 4.001 | 323   | 15 Winter  | 1             | +0%            | 100/60 Winter  |       |           |          |           |  | 21.590      | -0.760           | 0.000          |
| 4.002 | 324   | 15 Winter  | 1             | +0%            | 100/60 Winter  |       |           |          |           |  | 21.523      | -0.761           | 0.000          |

|                                                  |                                     |                                                                                     |
|--------------------------------------------------|-------------------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                                     | Page 12                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |                                     |  |
| Date 01/01/0001<br>File 7778 SW NET 3 REV F.MDX  | Designed by jrattigan<br>Checked by |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3                    |                                                                                     |

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW NET  
3 REV F.SWS

| PN    | US/MH<br>Name | Flow /<br>Cap. | Overflow<br>(l/s) | Half Drain Pipe |               | Status | Level<br>Exceeded |
|-------|---------------|----------------|-------------------|-----------------|---------------|--------|-------------------|
|       |               |                |                   | Time<br>(mins)  | Flow<br>(l/s) |        |                   |
| 1.000 | 301           | 0.03           |                   |                 | 24.1          | OK     |                   |
| 1.001 | 302           | 0.07           |                   |                 | 41.7          | OK     |                   |
| 1.002 | 303           | 0.06           |                   |                 | 45.9          | OK     |                   |
| 1.003 | 304           | 0.08           |                   |                 | 59.1          | OK     |                   |
| 1.004 | 305           | 0.13           |                   |                 | 64.6          | OK     |                   |
| 1.005 | 306           | 0.09           |                   |                 | 71.0          | OK     |                   |
| 1.006 | 307           | 0.15           |                   |                 | 70.0          | OK     |                   |
| 2.000 | 308           | 0.01           |                   | 18              | 3.9           | OK     |                   |
| 2.001 | 309           | 0.02           |                   |                 | 10.0          | OK     |                   |
| 2.002 | 310           | 0.02           |                   |                 | 19.0          | OK     |                   |
| 2.003 | 311           | 0.04           |                   |                 | 31.9          | OK     |                   |
| 2.004 | 312           | 0.05           |                   |                 | 41.1          | OK     |                   |
| 1.007 | 313           | 0.14           |                   |                 | 110.0         | OK     |                   |
| 1.008 | 314           | 0.10           |                   |                 | 45.7          | OK     |                   |
| 1.009 | 315           | 0.02           |                   | 148             | 12.5          | OK     |                   |
| 3.000 | 316           | 0.00           |                   |                 | 1.5           | OK     |                   |
| 1.010 | 317           | 0.02           |                   |                 | 14.1          | OK     |                   |
| 1.011 | 318           | 0.02           |                   |                 | 15.5          | OK     |                   |
| 1.012 | 319           | 0.04           |                   |                 | 16.1          | OK     |                   |
| 4.000 | 320           | 0.02           |                   |                 | 13.1          | OK     |                   |
| 5.000 | 321           | 0.01           |                   |                 | 9.3           | OK     |                   |
| 5.001 | 322           | 0.02           |                   |                 | 13.2          | OK     |                   |
| 4.001 | 323           | 0.05           |                   |                 | 35.9          | OK     |                   |
| 4.002 | 324           | 0.06           |                   |                 | 42.5          | OK     |                   |

|                                                  |                       |                                                                                     |
|--------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                       | Page 13                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |                       |  |
| Date 01/01/0001                                  | Designed by jrattigan |                                                                                     |
| File 7778 SW NET 3 REV F.MDX                     | Checked by            |                                                                                     |
| Micro Drainage                                   |                       | Network 2020.1.3                                                                    |

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW NET  
3 REV F.SWS

|       |               |            |                  |                   |                        |                    |                       |                  |  | Water        | Surcharged   | Flooded        |
|-------|---------------|------------|------------------|-------------------|------------------------|--------------------|-----------------------|------------------|--|--------------|--------------|----------------|
| PN    | US/MH<br>Name | Storm      | Return<br>Period | Climate<br>Change | First (X)<br>Surcharge | First (Y)<br>Flood | First (Z)<br>Overflow | Overflow<br>Act. |  | Level<br>(m) | Depth<br>(m) | Volume<br>(m³) |
| 4.003 | 325           | 30 Winter  | 1                | +0%               | 100/60 Summer          |                    |                       |                  |  | 21.443       | -0.758       | 0.000          |
| 4.004 | 326           | 180 Winter | 1                | +0%               | 100/30 Winter          |                    |                       |                  |  | 21.431       | -0.727       | 0.000          |
| 4.005 | 327           | 180 Winter | 1                | +0%               | 100/30 Winter          |                    |                       |                  |  | 21.430       | -0.691       | 0.000          |
| 6.000 | 328           | 180 Winter | 1                | +0%               | 100/30 Winter          |                    |                       |                  |  | 21.429       | -0.651       | 0.000          |
| 6.001 | 329           | 180 Winter | 1                | +0%               | 100/30 Summer          |                    |                       |                  |  | 21.429       | -0.559       | 0.000          |
| 4.006 | 330           | 180 Winter | 1                | +0%               | 100/30 Summer          |                    |                       |                  |  | 21.429       | -0.495       | 0.000          |
| 4.007 | 331           | 180 Winter | 1                | +0%               | 30/120 Winter          |                    |                       |                  |  | 21.426       | -0.392       | 0.000          |
| 1.013 | 332           | 180 Winter | 1                | +0%               | 1/15 Summer            |                    |                       |                  |  | 21.422       | 0.262        | 0.000          |

|       |       |        |          | Half Drain | Pipe  |            |          |
|-------|-------|--------|----------|------------|-------|------------|----------|
|       | US/MH | Flow / | Overflow | Time       | Flow  |            | Level    |
| PN    | Name  | Cap.   | (l/s)    | (mins)     | (l/s) | Status     | Exceeded |
| 4.003 | 325   | 0.04   |          | 26         | 25.2  | OK         |          |
| 4.004 | 326   | 0.03   |          |            | 16.9  | OK         |          |
| 4.005 | 327   | 0.03   |          |            | 22.9  | OK         |          |
| 6.000 | 328   | 0.00   |          |            | 2.6   | OK         |          |
| 6.001 | 329   | 0.01   |          |            | 4.4   | OK         |          |
| 4.006 | 330   | 0.03   |          |            | 19.8  | OK         |          |
| 4.007 | 331   | 0.03   |          |            | 21.4  | OK         |          |
| 1.013 | 332   | 0.25   |          |            | 23.3  | SURCHARGED |          |

|                                                  |                       |                                                                                     |
|--------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                       | Page 14                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |                       |  |
| Date 01/01/0001                                  | Designed by jrattigan |                                                                                     |
| File 7778 SW NET 3 REV F.MDX                     | Checked by            |                                                                                     |
| Micro Drainage                                   |                       | Network 2020.1.3                                                                    |

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW NET  
3 REV F.SWS

Simulation Criteria

Areal Reduction Factor 1.000    Additional Flow - % of Total Flow 0.000  
Hot Start (mins) 0    MADD Factor \* 10m³/ha Storage 2.000  
Hot Start Level (mm) 0    Inlet Coefficient 0.800  
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000  
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0    Number of Offline Controls 0    Number of Time/Area Diagrams 0  
Number of Online Controls 1    Number of Storage Structures 3    Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model    FSR M5-60 (mm) 19.400 Cv (Summer) 0.750  
Region England and Wales    Ratio R 0.387 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0  
Analysis Timestep 2.5 Second Increment (Extended)  
DTS Status OFF  
DVD Status ON  
Inertia Status ON

Profile(s) Summer and Winter  
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880  
Return Period(s) (years) 1, 30, 100  
Climate Change (%) 0, 0, 45

|       |      |            |        |         |           |        |           |           |          | Water  | Surcharged | Flooded |
|-------|------|------------|--------|---------|-----------|--------|-----------|-----------|----------|--------|------------|---------|
| US/MH |      |            | Return | Climate | First (X) |        | First (Y) | First (Z) | Overflow | Level  | Depth      | Volume  |
| PN    | Name | Storm      | Period | Change  | Surcharge |        | Flood     | Overflow  | Act.     | (m)    | (m)        | (m³)    |
| 1.000 | 301  | 15 Winter  | 30     | +0%     | 100/120   | Winter |           |           |          | 21.958 | -0.688     | 0.000   |
| 1.001 | 302  | 240 Winter | 30     | +0%     | 100/120   | Winter |           |           |          | 21.909 | -0.601     | 0.000   |
| 1.002 | 303  | 240 Winter | 30     | +0%     | 100/120   | Summer |           |           |          | 21.909 | -0.560     | 0.000   |
| 1.003 | 304  | 240 Winter | 30     | +0%     | 100/60    | Winter |           |           |          | 21.909 | -0.455     | 0.000   |
| 1.004 | 305  | 240 Winter | 30     | +0%     | 100/60    | Winter |           |           |          | 21.908 | -0.365     | 0.000   |
| 1.005 | 306  | 240 Winter | 30     | +0%     | 100/60    | Winter |           |           |          | 21.907 | -0.333     | 0.000   |
| 1.006 | 307  | 240 Winter | 30     | +0%     | 100/60    | Summer |           |           |          | 21.906 | -0.219     | 0.000   |
| 2.000 | 308  | 240 Winter | 30     | +0%     | 100/120   | Winter |           |           |          | 21.906 | -0.657     | 0.000   |
| 2.001 | 309  | 240 Winter | 30     | +0%     | 100/120   | Winter |           |           |          | 21.906 | -0.579     | 0.000   |
| 2.002 | 310  | 240 Winter | 30     | +0%     | 100/120   | Summer |           |           |          | 21.906 | -0.544     | 0.000   |
| 2.003 | 311  | 240 Winter | 30     | +0%     | 100/60    | Winter |           |           |          | 21.906 | -0.447     | 0.000   |
| 2.004 | 312  | 240 Winter | 30     | +0%     | 100/60    | Summer |           |           |          | 21.906 | -0.287     | 0.000   |
| 1.007 | 313  | 240 Winter | 30     | +0%     | 100/60    | Summer |           |           |          | 21.905 | -0.195     | 0.000   |
| 1.008 | 314  | 240 Winter | 30     | +0%     | 100/30    | Summer |           |           |          | 21.896 | -0.087     | 0.000   |
| 1.009 | 315  | 240 Winter | 30     | +0%     | 100/30    | Summer |           |           |          | 21.892 | -0.065     | 0.000   |
| 3.000 | 316  | 240 Winter | 30     | +0%     | 100/30    | Summer |           |           |          | 21.875 | -0.050     | 0.000   |
| 1.010 | 317  | 240 Winter | 30     | +0%     | 30/180    | Winter |           |           |          | 21.875 | 0.010      | 0.000   |
| 1.011 | 318  | 240 Winter | 30     | +0%     | 30/120    | Winter |           |           |          | 21.874 | 0.115      | 0.000   |
| 1.012 | 319  | 240 Winter | 30     | +0%     | 30/60     | Winter |           |           |          | 21.873 | 0.162      | 0.000   |
| 4.000 | 320  | 240 Winter | 30     | +0%     | 100/60    | Winter |           |           |          | 21.897 | -0.538     | 0.000   |
| 5.000 | 321  | 240 Winter | 30     | +0%     | 100/120   | Summer |           |           |          | 21.897 | -0.573     | 0.000   |
| 5.001 | 322  | 240 Winter | 30     | +0%     | 100/60    | Winter |           |           |          | 21.897 | -0.504     | 0.000   |
| 4.001 | 323  | 240 Winter | 30     | +0%     | 100/60    | Winter |           |           |          | 21.897 | -0.453     | 0.000   |
| 4.002 | 324  | 240 Winter | 30     | +0%     | 100/60    | Winter |           |           |          | 21.897 | -0.387     | 0.000   |

|                                                  |                       |                                                                                     |
|--------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                       | Page 15                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |                       |  |
| Date 01/01/0001                                  | Designed by jrattigan |                                                                                     |
| File 7778 SW NET 3 REV F.MDX                     | Checked by            |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3      |                                                                                     |

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW NET  
3 REV F.SWS

| PN    | US/MH<br>Name | Flow /<br>Cap. | Overflow<br>(l/s) | Half Drain Pipe |               | Status     | Level<br>Exceeded |
|-------|---------------|----------------|-------------------|-----------------|---------------|------------|-------------------|
|       |               |                |                   | Time<br>(mins)  | Flow<br>(l/s) |            |                   |
| 1.000 | 301           | 0.07           |                   |                 | 59.0          | OK         |                   |
| 1.001 | 302           | 0.04           |                   |                 | 23.2          | OK         |                   |
| 1.002 | 303           | 0.03           |                   |                 | 26.2          | OK         |                   |
| 1.003 | 304           | 0.04           |                   |                 | 34.1          | OK         |                   |
| 1.004 | 305           | 0.07           |                   |                 | 37.3          | OK         |                   |
| 1.005 | 306           | 0.05           |                   |                 | 41.5          | OK         |                   |
| 1.006 | 307           | 0.08           |                   |                 | 37.4          | OK         |                   |
| 2.000 | 308           | 0.01           |                   | 143             | 4.0           | OK         |                   |
| 2.001 | 309           | 0.02           |                   |                 | 9.3           | OK         |                   |
| 2.002 | 310           | 0.02           |                   |                 | 14.4          | OK         |                   |
| 2.003 | 311           | 0.02           |                   |                 | 21.0          | OK         |                   |
| 2.004 | 312           | 0.03           |                   |                 | 25.2          | OK         |                   |
| 1.007 | 313           | 0.08           |                   |                 | 62.4          | OK         |                   |
| 1.008 | 314           | 0.13           |                   |                 | 61.2          | OK         |                   |
| 1.009 | 315           | 0.02           |                   | 404             | 15.1          | OK         |                   |
| 3.000 | 316           | 0.00           |                   |                 | 3.0           | OK         |                   |
| 1.010 | 317           | 0.02           |                   |                 | 16.1          | SURCHARGED |                   |
| 1.011 | 318           | 0.03           |                   |                 | 16.7          | SURCHARGED |                   |
| 1.012 | 319           | 0.04           |                   |                 | 16.9          | SURCHARGED |                   |
| 4.000 | 320           | 0.01           |                   |                 | 6.2           | OK         |                   |
| 5.000 | 321           | 0.01           |                   |                 | 4.4           | OK         |                   |
| 5.001 | 322           | 0.01           |                   |                 | 6.7           | OK         |                   |
| 4.001 | 323           | 0.03           |                   |                 | 17.9          | OK         |                   |
| 4.002 | 324           | 0.03           |                   |                 | 20.8          | OK         |                   |

|                                                  |                       |                                                                                     |
|--------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                       | Page 16                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |                       |  |
| Date 01/01/0001                                  | Designed by jrattigan |                                                                                     |
| File 7778 SW NET 3 REV F.MDX                     | Checked by            |                                                                                     |
| Micro Drainage                                   |                       | Network 2020.1.3                                                                    |

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW NET  
3 REV F.SWS

|       |       |       |        |        |           |           |           |           | Water    | Surcharged | Flooded |        |
|-------|-------|-------|--------|--------|-----------|-----------|-----------|-----------|----------|------------|---------|--------|
|       | US/MH |       |        | Return | Climate   | First (X) | First (Y) | First (Z) | Overflow | Level      | Depth   | Volume |
| PN    | Name  | Storm | Period | Change | Surcharge | Flood     | Overflow  | Act.      |          | (m)        | (m)     | (m³)   |
| 4.003 | 325   | 240   | Winter | 30     | +0%       | 100/60    | Summer    |           |          | 21.897     | -0.304  | 0.000  |
| 4.004 | 326   | 240   | Winter | 30     | +0%       | 100/30    | Winter    |           |          | 21.896     | -0.262  | 0.000  |
| 4.005 | 327   | 240   | Winter | 30     | +0%       | 100/30    | Winter    |           |          | 21.896     | -0.225  | 0.000  |
| 6.000 | 328   | 240   | Winter | 30     | +0%       | 100/30    | Winter    |           |          | 21.893     | -0.187  | 0.000  |
| 6.001 | 329   | 240   | Winter | 30     | +0%       | 100/30    | Summer    |           |          | 21.893     | -0.095  | 0.000  |
| 4.006 | 330   | 240   | Winter | 30     | +0%       | 100/30    | Summer    |           |          | 21.893     | -0.031  | 0.000  |
| 4.007 | 331   | 240   | Winter | 30     | +0%       | 30/120    | Winter    |           |          | 21.873     | 0.055   | 0.000  |
| 1.013 | 332   | 240   | Winter | 30     | +0%       | 1/15      | Summer    |           |          | 21.873     | 0.713   | 0.000  |

| US/MH |      | Flow / Overflow |       | Half Drain  | Pipe       | Level      |          |
|-------|------|-----------------|-------|-------------|------------|------------|----------|
| PN    | Name | Cap.            | (l/s) | Time (mins) | Flow (l/s) | Status     | Exceeded |
| 4.003 | 325  | 0.02            |       | 264         | 13.5       | OK         |          |
| 4.004 | 326  | 0.03            |       |             | 18.0       | OK         |          |
| 4.005 | 327  | 0.03            |       |             | 26.6       | OK         |          |
| 6.000 | 328  | 0.01            |       |             | 5.0        | OK         |          |
| 6.001 | 329  | 0.01            |       |             | 5.8        | OK         |          |
| 4.006 | 330  | 0.03            |       |             | 20.9       | OK         |          |
| 4.007 | 331  | 0.03            |       |             | 23.7       | SURCHARGED |          |
| 1.013 | 332  | 0.25            |       |             | 23.5       | SURCHARGED |          |

|                                                  |                       |                                                                                     |
|--------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                       | Page 17                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |                       |  |
| Date 01/01/0001                                  | Designed by jrattigan |                                                                                     |
| File 7778 SW NET 3 REV F.MDX                     | Checked by            |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3      |                                                                                     |

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW  
NET 3 REV F.SWS

Simulation Criteria

Areal Reduction Factor 1.000    Additional Flow - % of Total Flow 0.000  
 Hot Start (mins) 0    MADD Factor \* 10m³/ha Storage 2.000  
 Hot Start Level (mm) 0    Inlet Coefficient 0.800  
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000  
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0    Number of Offline Controls 0    Number of Time/Area Diagrams 0  
 Number of Online Controls 1    Number of Storage Structures 3    Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model    FSR M5-60 (mm) 19.400 Cv (Summer) 0.750  
 Region England and Wales    Ratio R 0.387 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0  
 Analysis Timestep 2.5 Second Increment (Extended)  
 DTS Status OFF  
 DVD Status ON  
 Inertia Status ON

Profile(s) Summer and Winter  
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960,  
 1440, 2160, 2880  
 Return Period(s) (years) 1, 30, 100  
 Climate Change (%) 0, 0, 45

| US/MH |      |            | Return<br>Period | Climate<br>Change | First (X)<br>Surcharge | First (Y)<br>Flood | First (Z)<br>Overflow | Overflow<br>Act. | Water        | Surcharged   | Flooded        |
|-------|------|------------|------------------|-------------------|------------------------|--------------------|-----------------------|------------------|--------------|--------------|----------------|
| PN    | Name | Storm      |                  |                   |                        |                    |                       |                  | Level<br>(m) | Depth<br>(m) | Volume<br>(m³) |
| 1.000 | 301  | 480 Winter | 100              | +45%              | 100/120 Winter         |                    |                       |                  | 23.912       | 1.266        | 0.000          |
| 1.001 | 302  | 480 Winter | 100              | +45%              | 100/120 Winter         |                    |                       |                  | 23.912       | 1.402        | 0.000          |
| 1.002 | 303  | 480 Winter | 100              | +45%              | 100/120 Summer         |                    |                       |                  | 23.912       | 1.443        | 0.000          |
| 1.003 | 304  | 480 Winter | 100              | +45%              | 100/60 Winter          |                    |                       |                  | 23.912       | 1.548        | 0.000          |
| 1.004 | 305  | 480 Winter | 100              | +45%              | 100/60 Winter          |                    |                       |                  | 23.912       | 1.639        | 0.000          |
| 1.005 | 306  | 480 Winter | 100              | +45%              | 100/60 Winter          |                    |                       |                  | 23.911       | 1.671        | 0.000          |
| 1.006 | 307  | 480 Winter | 100              | +45%              | 100/60 Summer          |                    |                       |                  | 23.912       | 1.787        | 0.000          |
| 2.000 | 308  | 480 Winter | 100              | +45%              | 100/120 Winter         |                    |                       |                  | 23.911       | 1.348        | 0.000          |
| 2.001 | 309  | 480 Winter | 100              | +45%              | 100/120 Winter         |                    |                       |                  | 23.911       | 1.426        | 0.000          |
| 2.002 | 310  | 480 Winter | 100              | +45%              | 100/120 Summer         |                    |                       |                  | 23.911       | 1.461        | 0.000          |
| 2.003 | 311  | 480 Winter | 100              | +45%              | 100/60 Winter          |                    |                       |                  | 23.911       | 1.558        | 0.000          |
| 2.004 | 312  | 480 Winter | 100              | +45%              | 100/60 Summer          |                    |                       |                  | 23.911       | 1.718        | 0.000          |
| 1.007 | 313  | 480 Winter | 100              | +45%              | 100/60 Summer          |                    |                       |                  | 23.911       | 1.811        | 0.000          |
| 1.008 | 314  | 480 Winter | 100              | +45%              | 100/30 Summer          |                    |                       |                  | 23.910       | 1.927        | 0.000          |
| 1.009 | 315  | 480 Winter | 100              | +45%              | 100/30 Summer          |                    |                       |                  | 23.910       | 1.953        | 0.000          |
| 3.000 | 316  | 480 Winter | 100              | +45%              | 100/30 Summer          |                    |                       |                  | 23.908       | 1.983        | 0.000          |
| 1.010 | 317  | 480 Winter | 100              | +45%              | 30/180 Winter          |                    |                       |                  | 23.909       | 2.044        | 0.000          |
| 1.011 | 318  | 480 Winter | 100              | +45%              | 30/120 Winter          |                    |                       |                  | 23.907       | 2.148        | 0.000          |
| 1.012 | 319  | 480 Winter | 100              | +45%              | 30/60 Winter           |                    |                       |                  | 23.906       | 2.195        | 0.000          |
| 4.000 | 320  | 480 Winter | 100              | +45%              | 100/60 Winter          |                    |                       |                  | 23.905       | 1.470        | 0.000          |
| 5.000 | 321  | 480 Winter | 100              | +45%              | 100/120 Summer         |                    |                       |                  | 23.905       | 1.435        | 0.000          |
| 5.001 | 322  | 480 Winter | 100              | +45%              | 100/60 Winter          |                    |                       |                  | 23.905       | 1.504        | 0.000          |
| 4.001 | 323  | 480 Winter | 100              | +45%              | 100/60 Winter          |                    |                       |                  | 23.905       | 1.555        | 0.000          |
| 4.002 | 324  | 480 Winter | 100              | +45%              | 100/60 Winter          |                    |                       |                  | 23.905       | 1.621        | 0.000          |

|                                                  |                       |                                                                                     |
|--------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                       | Page 18                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |                       |  |
| Date 01/01/0001                                  | Designed by jrattigan |                                                                                     |
| File 7778 SW NET 3 REV F.MDX                     | Checked by            |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3      |                                                                                     |

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW  
NET 3 REV F.SWS

| PN    | US/MH<br>Name | Flow /<br>Cap. | Overflow<br>(l/s) | Half Drain<br>Time<br>(mins) | Pipe<br>Flow<br>(l/s) | Status     | Level<br>Exceeded |
|-------|---------------|----------------|-------------------|------------------------------|-----------------------|------------|-------------------|
|       |               |                |                   |                              |                       |            |                   |
| 1.000 | 301           | 0.01           |                   |                              | 12.2                  | FLOOD RISK |                   |
| 1.001 | 302           | 0.04           |                   |                              | 20.0                  | SURCHARGED |                   |
| 1.002 | 303           | 0.03           |                   |                              | 22.8                  | SURCHARGED |                   |
| 1.003 | 304           | 0.04           |                   |                              | 30.2                  | FLOOD RISK |                   |
| 1.004 | 305           | 0.07           |                   |                              | 35.0                  | FLOOD RISK |                   |
| 1.005 | 306           | 0.05           |                   |                              | 38.6                  | FLOOD RISK |                   |
| 1.006 | 307           | 0.09           |                   |                              | 39.9                  | SURCHARGED |                   |
| 2.000 | 308           | 0.02           |                   | 388                          | 17.4                  | SURCHARGED |                   |
| 2.001 | 309           | 0.03           |                   |                              | 17.1                  | SURCHARGED |                   |
| 2.002 | 310           | 0.02           |                   |                              | 15.9                  | SURCHARGED |                   |
| 2.003 | 311           | 0.02           |                   |                              | 15.7                  | SURCHARGED |                   |
| 2.004 | 312           | 0.02           |                   |                              | 17.0                  | SURCHARGED |                   |
| 1.007 | 313           | 0.05           |                   |                              | 41.4                  | SURCHARGED |                   |
| 1.008 | 314           | 0.10           |                   |                              | 45.0                  | SURCHARGED |                   |
| 1.009 | 315           | 0.06           |                   | 928                          | 46.3                  | SURCHARGED |                   |
| 3.000 | 316           | 0.02           |                   |                              | 15.1                  | SURCHARGED |                   |
| 1.010 | 317           | 0.04           |                   |                              | 30.5                  | SURCHARGED |                   |
| 1.011 | 318           | 0.04           |                   |                              | 25.4                  | SURCHARGED |                   |
| 1.012 | 319           | 0.05           |                   |                              | 23.2                  | SURCHARGED |                   |
| 4.000 | 320           | 0.01           |                   |                              | 6.5                   | SURCHARGED |                   |
| 5.000 | 321           | 0.01           |                   |                              | 4.5                   | SURCHARGED |                   |
| 5.001 | 322           | 0.01           |                   |                              | 7.6                   | SURCHARGED |                   |
| 4.001 | 323           | 0.03           |                   |                              | 19.4                  | SURCHARGED |                   |
| 4.002 | 324           | 0.03           |                   |                              | 21.8                  | FLOOD RISK |                   |

|                                                  |                       |                                                                                     |
|--------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                       | Page 19                                                                             |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |                       |  |
| Date 01/01/0001                                  | Designed by jrattigan |                                                                                     |
| File 7778 SW NET 3 REV F.MDX                     | Checked by            |                                                                                     |
| Micro Drainage                                   |                       | Network 2020.1.3                                                                    |

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW  
NET 3 REV F.SWS

|       |               |            |                  |                   |                        |                    |                       |                  |  | Water        | Surcharged   | Flooded        |
|-------|---------------|------------|------------------|-------------------|------------------------|--------------------|-----------------------|------------------|--|--------------|--------------|----------------|
| PN    | US/MH<br>Name | Storm      | Return<br>Period | Climate<br>Change | First (X)<br>Surcharge | First (Y)<br>Flood | First (Z)<br>Overflow | Overflow<br>Act. |  | Level<br>(m) | Depth<br>(m) | Volume<br>(m³) |
| 4.003 | 325           | 480 Winter | 100              | +45%              | 100/60 Summer          |                    |                       |                  |  | 23.906       | 1.705        | 0.000          |
| 4.004 | 326           | 480 Winter | 100              | +45%              | 100/30 Winter          |                    |                       |                  |  | 23.906       | 1.748        | 0.000          |
| 4.005 | 327           | 480 Winter | 100              | +45%              | 100/30 Winter          |                    |                       |                  |  | 23.905       | 1.784        | 0.000          |
| 6.000 | 328           | 480 Winter | 100              | +45%              | 100/30 Winter          |                    |                       |                  |  | 23.905       | 1.825        | 0.000          |
| 6.001 | 329           | 480 Winter | 100              | +45%              | 100/30 Summer          |                    |                       |                  |  | 23.905       | 1.917        | 0.000          |
| 4.006 | 330           | 480 Winter | 100              | +45%              | 100/30 Summer          |                    |                       |                  |  | 23.905       | 1.981        | 0.000          |
| 4.007 | 331           | 480 Winter | 100              | +45%              | 30/120 Winter          |                    |                       |                  |  | 23.905       | 2.087        | 0.000          |
| 1.013 | 332           | 480 Winter | 100              | +45%              | 1/15 Summer            |                    |                       |                  |  | 23.906       | 2.746        | 0.000          |

|       |       |        |          | Half Drain | Pipe  |            |          |
|-------|-------|--------|----------|------------|-------|------------|----------|
|       | US/MH | Flow / | Overflow | Time       | Flow  |            | Level    |
| PN    | Name  | Cap.   | (l/s)    | (mins)     | (l/s) | Status     | Exceeded |
| 4.003 | 325   | 0.06   |          | 711        | 36.2  | SURCHARGED |          |
| 4.004 | 326   | 0.08   |          |            | 40.3  | SURCHARGED |          |
| 4.005 | 327   | 0.03   |          |            | 27.3  | SURCHARGED |          |
| 6.000 | 328   | 0.02   |          |            | 16.6  | SURCHARGED |          |
| 6.001 | 329   | 0.05   |          |            | 33.9  | SURCHARGED |          |
| 4.006 | 330   | 0.05   |          |            | 39.4  | SURCHARGED |          |
| 4.007 | 331   | 0.06   |          |            | 46.4  | SURCHARGED |          |
| 1.013 | 332   | 0.26   |          |            | 24.8  | SURCHARGED |          |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 0                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 4 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

### STORM SEWER DESIGN by the Modified Rational Method

#### Design Criteria for 7778 - SW NET 4 REV F.SWS

Pipe Sizes 7778 - SW NET 1 REV F Manhole Sizes 7778 - SW NET 1 REV F

FSR Rainfall Model - England and Wales

|                                      |        |                                       |       |
|--------------------------------------|--------|---------------------------------------|-------|
| Return Period (years)                | 2      | PIMP (%)                              | 100   |
| M5-60 (mm)                           | 19.400 | Add Flow / Climate Change (%)         | 0     |
| Ratio R                              | 0.387  | Minimum Backdrop Height (m)           | 0.200 |
| Maximum Rainfall (mm/hr)             | 50     | Maximum Backdrop Height (m)           | 0.000 |
| Maximum Time of Concentration (mins) | 30     | Min Design Depth for Optimisation (m) | 1.200 |
| Foul Sewage (l/s/ha)                 | 0.000  | Min Vel for Auto Design only (m/s)    | 0.75  |
| Volumetric Runoff Coeff.             | 0.750  | Min Slope for Optimisation (1:X)      | 500   |

Designed with Level Soffits

#### Network Design Table for 7778 - SW NET 4 REV F.SWS

| PN    | Length<br>(m) | Fall<br>(m) | Slope<br>(1:X) | I.Area<br>(ha) | T.E.<br>(mins) | Base<br>Flow (l/s) | k<br>(mm) | HYD<br>SECT | DIA<br>(mm) | Section Type | Auto<br>Design                                                                        |
|-------|---------------|-------------|----------------|----------------|----------------|--------------------|-----------|-------------|-------------|--------------|---------------------------------------------------------------------------------------|
| 1.000 | 23.708        | 0.060       | 395.1          | 0.042          | 5.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |
| 2.000 | 10.750        | 0.027       | 398.1          | 0.045          | 5.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |
| 1.001 | 20.778        | 0.052       | 399.6          | 0.091          | 0.00           | 0.0                | 0.600     | o           | 900         | Pipe/Conduit |  |
| 1.002 | 24.581        | 2.235       | 11.0           | 0.094          | 0.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |  |

#### Network Results Table

| PN    | Rain<br>(mm/hr) | T.C.<br>(mins) | US/IL<br>(m) | E I.Area<br>(ha) | E Base<br>Flow (l/s) | Foul<br>(l/s) | Add Flow<br>(l/s) | Vel<br>(m/s) | Cap<br>(l/s) | Flow<br>(l/s) |
|-------|-----------------|----------------|--------------|------------------|----------------------|---------------|-------------------|--------------|--------------|---------------|
| 1.000 | 50.00           | 5.25           | 21.693       | 0.042            | 0.0                  | 0.0           | 0.0               | 1.57         | 998.8        | 5.7           |
| 2.000 | 50.00           | 5.11           | 21.660       | 0.045            | 0.0                  | 0.0           | 0.0               | 1.56         | 995.0        | 6.1           |
| 1.001 | 50.00           | 5.47           | 21.633       | 0.178            | 0.0                  | 0.0           | 0.0               | 1.56         | 993.2        | 24.1          |
| 1.002 | 50.00           | 5.58           | 21.581       | 0.272            | 0.0                  | 0.0           | 0.0               | 3.97         | 157.8        | 36.8          |

|                                                  |  |                                  |
|--------------------------------------------------|--|----------------------------------|
| Coopers                                          |  | Page 1                           |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU |  | Cherryfield Drive<br>Kirkby      |
| Date 23/04/2024<br>File 7778 SW NET 4 REV F.MDX  |  | Designed by JAR<br>Checked by AJ |
| Micro Drainage                                   |  | Network 2020.1.3                 |



Manhole Schedules for 7778 - SW NET 4 REV F.SWS

| MH Name | MH CL (m) | MH Depth (m) | MH Connection | MH Diam., L*W (mm) | PN    | Pipe Out Invert Level (m) | Diameter (mm) | PN    | Pipes In Invert Level (m) | Diameter (mm) | Backdrop (mm) |
|---------|-----------|--------------|---------------|--------------------|-------|---------------------------|---------------|-------|---------------------------|---------------|---------------|
| 401     | 25.410    | 3.717        | Open Manhole  | 2400               | 1.000 | 21.693                    | 900           |       |                           |               |               |
| 402     | 24.869    | 3.209        | Open Manhole  | 2400               | 2.000 | 21.660                    | 900           |       |                           |               |               |
| 403     | 25.115    | 3.482        | Open Manhole  | 2400               | 1.001 | 21.633                    | 900           | 1.000 | 21.633                    | 900           |               |
| 404     | 25.150    | 3.569        | Open Manhole  | 2400               | 1.002 | 21.581                    | 225           | 2.000 | 21.633                    | 900           |               |
| 405     | 23.293    | 3.947        | Open Manhole  | 0                  |       | OUTFALL                   |               | 1.001 | 21.581                    | 900           |               |
|         |           |              |               |                    |       |                           |               | 1.002 | 19.346                    | 225           |               |

| MH Name | Manhole Easting (m) | Manhole Northing (m) | Intersection Easting (m) | Intersection Northing (m) | Manhole Access | Layout (North) |
|---------|---------------------|----------------------|--------------------------|---------------------------|----------------|----------------|
| 401     | 340884.038          | 398690.334           | 340884.038               | 398690.334                | Required       |                |
| 402     | 340882.303          | 398716.307           | 340882.303               | 398716.307                | Required       |                |
| 403     | 340892.367          | 398712.530           | 340892.367               | 398712.530                | Required       |                |
| 404     | 340899.667          | 398731.983           | 340899.667               | 398731.983                | Required       |                |
| 405     | 340908.304          | 398754.997           |                          |                           | No Entry       |                |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 2                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 4 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

# PIPELINE SCHEDULES for 7778 - SW NET 4 REV F.SWS

## Upstream Manhole

| PN    | Hyd<br>Sect | Diam<br>(mm) | MH<br>Name | C.Level<br>(m) | I.Level<br>(m) | D.Depth<br>(m) | MH<br>Connection | MH DIAM., L*W<br>(mm) |
|-------|-------------|--------------|------------|----------------|----------------|----------------|------------------|-----------------------|
| 1.000 | o           | 900          | 401        | 25.410         | 21.693         | 2.817          | Open Manhole     | 2400                  |
| 2.000 | o           | 900          | 402        | 24.869         | 21.660         | 2.309          | Open Manhole     | 2400                  |
| 1.001 | o           | 900          | 403        | 25.115         | 21.633         | 2.582          | Open Manhole     | 2400                  |
| 1.002 | o           | 225          | 404        | 25.150         | 21.581         | 3.344          | Open Manhole     | 2400                  |

## Downstream Manhole

| PN    | Length<br>(m) | Slope<br>(1:X) | MH<br>Name | C.Level<br>(m) | I.Level<br>(m) | D.Depth<br>(m) | MH<br>Connection | MH DIAM., L*W<br>(mm) |
|-------|---------------|----------------|------------|----------------|----------------|----------------|------------------|-----------------------|
| 1.000 | 23.708        | 395.1          | 403        | 25.115         | 21.633         | 2.582          | Open Manhole     | 2400                  |
| 2.000 | 10.750        | 398.1          | 403        | 25.115         | 21.633         | 2.582          | Open Manhole     | 2400                  |
| 1.001 | 20.778        | 399.6          | 404        | 25.150         | 21.581         | 2.669          | Open Manhole     | 2400                  |
| 1.002 | 24.581        | 11.0           | 405        | 23.293         | 19.346         | 3.722          | Open Manhole     | 0                     |

# Free Flowing Outfall Details for 7778 - SW NET 4 REV F.SWS

| Outfall<br>Pipe Number | Outfall<br>Name | C. Level<br>(m) | I. Level<br>(m) | Min<br>I. Level<br>(m) | D,L<br>(mm) | W<br>(mm) |
|------------------------|-----------------|-----------------|-----------------|------------------------|-------------|-----------|
|------------------------|-----------------|-----------------|-----------------|------------------------|-------------|-----------|

|       |     |        |        |       |   |   |
|-------|-----|--------|--------|-------|---|---|
| 1.002 | 405 | 23.293 | 19.346 | 0.000 | 0 | 0 |
|-------|-----|--------|--------|-------|---|---|

# Simulation Criteria for 7778 - SW NET 4 REV F.SWS

|                                 |       |                                     |       |
|---------------------------------|-------|-------------------------------------|-------|
| Volumetric Runoff Coeff         | 0.750 | Additional Flow - % of Total Flow   | 0.000 |
| Areal Reduction Factor          | 1.000 | MADD Factor * 10m³/ha Storage       | 2.000 |
| Hot Start (mins)                | 0     | Inlet Coefficient                   | 0.800 |
| Hot Start Level (mm)            | 0     | Flow per Person per Day (l/per/day) | 0.000 |
| Manhole Headloss Coeff (Global) | 0.500 | Run Time (mins)                     | 60    |
| Foul Sewage per hectare (l/s)   | 0.000 | Output Interval (mins)              | 1     |

Number of Input Hydrographs 0    Number of Offline Controls 0    Number of Time/Area Diagrams 0  
Number of Online Controls 1    Number of Storage Structures 1    Number of Real Time Controls 0

## Synthetic Rainfall Details

|                       |                   |                       |        |
|-----------------------|-------------------|-----------------------|--------|
| Rainfall Model        | FSR               | Profile Type          | Summer |
| Return Period (years) | 2                 | Cv (Summer)           | 0.750  |
| Region                | England and Wales | Cv (Winter)           | 0.840  |
| M5-60 (mm)            | 19.400            | Storm Duration (mins) | 30     |
| Ratio R               | 0.387             |                       |        |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 3                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 4 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   |                             | Network 2020.1.3                                                                    |

Online Controls for 7778 - SW NET 4 REV F.SWS

Hydro-Brake® Optimum Manhole: 404, DS/PN: 1.002, Volume (m³): 27.8

|                                   |                            |
|-----------------------------------|----------------------------|
| Unit Reference                    | MD-SHE-0100-5000-1400-5000 |
| Design Head (m)                   | 1.400                      |
| Design Flow (l/s)                 | 5.0                        |
| Flush-Flo™                        | Calculated                 |
| Objective                         | Minimise upstream storage  |
| Application                       | Surface                    |
| Sump Available                    | Yes                        |
| Diameter (mm)                     | 100                        |
| Invert Level (m)                  | 21.581                     |
| Minimum Outlet Pipe Diameter (mm) | 150                        |
| Suggested Manhole Diameter (mm)   | 1200                       |

| Control Points            | Head (m) | Flow (l/s) | Control Points            | Head (m) | Flow (l/s) |
|---------------------------|----------|------------|---------------------------|----------|------------|
| Design Point (Calculated) | 1.400    | 5.0        | Kick-Flo®                 | 0.855    | 4.0        |
| Flush-Flo™                | 0.416    | 5.0        | Mean Flow over Head Range | -        | 4.4        |

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

| Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) |
|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|
| 0.100     | 3.3        | 0.800     | 4.3        | 2.000     | 5.9        | 4.000     | 8.2        | 7.000     | 10.7       |
| 0.200     | 4.6        | 1.000     | 4.3        | 2.200     | 6.2        | 4.500     | 8.6        | 7.500     | 11.0       |
| 0.300     | 4.9        | 1.200     | 4.7        | 2.400     | 6.4        | 5.000     | 9.1        | 8.000     | 11.4       |
| 0.400     | 5.0        | 1.400     | 5.0        | 2.600     | 6.7        | 5.500     | 9.5        | 8.500     | 11.7       |
| 0.500     | 5.0        | 1.600     | 5.3        | 3.000     | 7.1        | 6.000     | 9.9        | 9.000     | 12.0       |
| 0.600     | 4.9        | 1.800     | 5.6        | 3.500     | 7.7        | 6.500     | 10.3       | 9.500     | 12.3       |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 4                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 4 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   |                             | Network 2020.1.3                                                                    |

Storage Structures for 7778 - SW NET 4 REV F.SWS

Cellular Storage Manhole: 402, DS/PN: 2.000

Invert Level (m) 22.800 Safety Factor 2.0  
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95  
Infiltration Coefficient Side (m/hr) 0.00000

| 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     | 65.0                   | 65.0                        | 0.800     | 65.0                   | 93.8                        | 0.900     | 0.0                    | 93.8                        |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 5                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 4 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   | Network 2020.1.3            |                                                                                     |

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW NET  
4 REV F.SWS

Simulation Criteria

Areal Reduction Factor 1.000    Additional Flow - % of Total Flow 0.000  
 Hot Start (mins) 0    MADD Factor \* 10m³/ha Storage 2.000  
 Hot Start Level (mm) 0    Inlet Coefficient 0.800  
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000  
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0    Number of Offline Controls 0    Number of Time/Area Diagrams 0  
 Number of Online Controls 1    Number of Storage Structures 1    Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model    FSR M5-60 (mm) 19.400 Cv (Summer) 0.750  
 Region England and Wales    Ratio R 0.387 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0  
 Analysis Timestep 2.5 Second Increment (Extended)  
 DTS Status OFF  
 DVD Status ON  
 Inertia Status ON

Profile(s) Summer and Winter  
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960,  
 1440, 2160, 2880, 4320  
 Return Period(s) (years) 1, 30, 100  
 Climate Change (%) 0, 0, 45

|       |       |           |        |        |         |              |           |           | Water    | Surcharged | Flooded |        |
|-------|-------|-----------|--------|--------|---------|--------------|-----------|-----------|----------|------------|---------|--------|
|       | US/MH |           |        | Return | Climate | First (X)    | First (Y) | First (Z) | Overflow | Level      | Depth   | Volume |
| PN    | Name  | Storm     | Period | Change |         | Surcharge    | Flood     | Overflow  | Act.     | (m)        | (m)     | (m³)   |
| 1.000 | 401   | 60 Winter |        | 1      | +0%     | 30/60 Winter |           |           |          | 21.990     | -0.603  | 0.000  |
| 2.000 | 402   | 60 Winter |        | 1      | +0%     | 30/60 Winter |           |           |          | 21.990     | -0.570  | 0.000  |
| 1.001 | 403   | 60 Winter |        | 1      | +0%     | 30/60 Winter |           |           |          | 21.990     | -0.543  | 0.000  |
| 1.002 | 404   | 60 Winter |        | 1      | +0%     | 1/15 Summer  |           |           |          | 21.990     | 0.184   | 0.000  |

| US/MH |      | Flow / Overflow |                | Half Drain  | Pipe       | Level      |          |
|-------|------|-----------------|----------------|-------------|------------|------------|----------|
| PN    | Name | Flow Cap.       | Overflow (l/s) | Time (mins) | Flow (l/s) | Status     | Exceeded |
| 1.000 | 401  | 0.00            |                |             | 1.7        | OK         |          |
| 2.000 | 402  | 0.00            |                | 41          | 1.9        | OK         |          |
| 1.001 | 403  | 0.01            |                |             | 3.8        | OK         |          |
| 1.002 | 404  | 0.03            |                |             | 5.0        | SURCHARGED |          |

|                                                  |                             |                                                                                     |
|--------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------|
| Coopers                                          |                             | Page 6                                                                              |
| Park House<br>Sandpiper Court<br>Chester CH4 9QU | Cherryfield Drive<br>Kirkby |  |
| Date 23/04/2024                                  | Designed by JAR             |                                                                                     |
| File 7778 SW NET 4 REV F.MDX                     | Checked by AJ               |                                                                                     |
| Micro Drainage                                   |                             | Network 2020.1.3                                                                    |

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for 7778 - SW NET 4 REV F.SWS

Simulation Criteria

Areal Reduction Factor 1.000    Additional Flow - % of Total Flow 0.000  
 Hot Start (mins) 0    MADD Factor \* 10m³/ha Storage 2.000  
 Hot Start Level (mm) 0    Inlet Coefficient 0.800  
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000  
 Foul Sewage per hectare (l/s) 0.000  
  
 Number of Input Hydrographs 0    Number of Offline Controls 0    Number of Time/Area Diagrams 0  
 Number of Online Controls 1    Number of Storage Structures 1    Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model    FSR M5-60 (mm) 19.400 Cv (Summer) 0.750  
 Region England and Wales    Ratio R 0.387 Cv (Winter) 0.840  
  
 Margin for Flood Risk Warning (mm) 300.0  
 Analysis Timestep 2.5 Second Increment (Extended)  
     DTS Status OFF  
     DVD Status ON  
     Inertia Status ON  
  
 Profile(s) Summer and Winter  
 Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320  
 Return Period(s) (years) 1, 30, 100  
 Climate Change (%) 0, 0, 45

|       |       |       |        |        |         |           |           |           | Water    | Surcharged | Flooded |        |
|-------|-------|-------|--------|--------|---------|-----------|-----------|-----------|----------|------------|---------|--------|
|       | US/MH |       |        | Return | Climate | First (X) | First (Y) | First (Z) | Overflow | Level      | Depth   | Volume |
| PN    | Name  | Storm |        | Period | Change  | Surcharge | Flood     | Overflow  | Act.     | (m)        | (m)     | (m³)   |
| 1.000 | 401   | 120   | Winter | 30     | +0%     | 30/60     | Winter    |           |          | 22.789     | 0.196   | 0.000  |
| 2.000 | 402   | 120   | Winter | 30     | +0%     | 30/60     | Winter    |           |          | 22.789     | 0.229   | 0.000  |
| 1.001 | 403   | 120   | Winter | 30     | +0%     | 30/60     | Winter    |           |          | 22.789     | 0.256   | 0.000  |
| 1.002 | 404   | 120   | Winter | 30     | +0%     | 1/15      | Summer    |           |          | 22.789     | 0.983   | 0.000  |

|       |            |             | Half Drain     | Pipe        |            |                |
|-------|------------|-------------|----------------|-------------|------------|----------------|
| PN    | US/MH Name | Flow / Cap. | Overflow (l/s) | Time (mins) | Flow (l/s) | Level Exceeded |
| 1.000 | 401        | 0.00        |                |             | 2.6        | SURCHARGED     |
| 2.000 | 402        | 0.01        |                | 97          | 2.9        | SURCHARGED     |
| 1.001 | 403        | 0.01        |                |             | 3.6        | SURCHARGED     |
| 1.002 | 404        | 0.03        |                |             | 5.0        | SURCHARGED     |

