

|                                                    |                                       |                                                                                     |
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| Archibald Shaw Limited                             |                                       | Page 1                                                                              |
| One Little London<br>Chichester<br>Sussex PO19 1PP | ELM GROVE<br>NORTH PIPE NETWORK<br>M1 |  |
| Date Jan. 2023<br>File NORTH M1.sws                | Designed By PF<br>Checked By          |                                                                                     |
| Micro Drainage                                     | System1 W.11.2                        |                                                                                     |

### STORM SEWER DESIGN by the Modified Rational Method

#### Global Variables

Pipe Size File C:\Program Files\Micro Drainage Ltd\WinDes\STANDARD.PIP  
Manhole Size File C:\Program Files\Micro Drainage Ltd\WinDes\STANDARD.MHS

Location - England & Wales

|                                      |        |
|--------------------------------------|--------|
| Return Period (years)                | 1      |
| M5-60 (mm)                           | 20.000 |
| Ratio R                              | 0.350  |
| Maximum Rainfall (mm/hr)             | 50     |
| Foul Sewage (l/s/ha)                 | 0.00   |
| Overflow Setting (*Foul only)        | 0      |
| Volumetric Runoff Coeff.             | 1.00   |
| Add Flow / Climate Change (%)        | 0      |
| Minimum Backdrop Height (m)          | 0.200  |
| Maximum Backdrop Height (m)          | 1.500  |
| Min Cover Depth for Optimisation (m) | 0.100  |
| Min Vel for Auto Design Only (m/s)   | 1.00   |
| Min Slope for Optimisation (1:X)     | 500    |
| Minimum Outfall Invert (m)           | 0.000  |
| Ground Level at Outfall (m)          | 0.000  |
| Outfall Manhole Name                 |        |
| Outfall Manhole Dia/Length (mm)      | 0      |
| Outfall Manhole Width (mm)           | 0      |

Designed with Level Soffits

#### Network Design Table

| PN    | Length<br>(m) | Fall<br>(m) | Slope<br>(1:X) | Area<br>(ha) | T.E.<br>(mins) | DWF<br>(l/s) | k<br>(mm) | HYD<br>SECT | DIA<br>(mm) |
|-------|---------------|-------------|----------------|--------------|----------------|--------------|-----------|-------------|-------------|
| 1.000 | 30.38         | 0.135       | 225.0          | 0.027        | 5.00           | 0.0          | 0.600     | o           | 225         |
| 1.001 | 13.14         | 0.180       | 73.0           | 0.012        | 0.00           | 0.0          | 0.600     | o           | 225         |

#### Network Results Table

| PN    | Rain<br>(mm/hr) | T.C.<br>(mins) | US/IL<br>(m) | E.Area<br>(ha) | E.DWF<br>(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 | 48.8            | 5.6            | 6.165        | 0.027          | 0.0            | 0.0           | 0.0               | 0.87         | 34.5         | 4.8           |
| 1.001 | 48.3            | 5.7            | 6.030        | 0.039          | 0.0            | 0.0           | 0.0               | 1.53         | 60.9         | 6.8           |

|                                                    |                                       |                                                                                     |
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| Micro Drainage                                     | System1 W.11.2                        |                                                                                     |

Time Area Diagram

| Time From<br>(mins) | Time To<br>(mins) | Area<br>(ha) |
|---------------------|-------------------|--------------|
| 0                   | 4                 | 0.029        |
| 4                   | 8                 | 0.010        |

Total Area Contributing (ha) = 0.039

Total Pipe Volume (m<sup>3</sup>) = 1.730

|                                                    |                                       |                                                                                     |
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| Micro Drainage                                     | System1 W.11.2                        |                                                                                     |

### PIPELINE SCHEDULES

#### Upstream Manhole

| PN    | Hyd<br>Sect | Diam<br>(mm) | MH No. | C.Level<br>(m) | I.Level<br>(m) | C.Depth<br>(m) | MH DIAM., L*W<br>(mm) |
|-------|-------------|--------------|--------|----------------|----------------|----------------|-----------------------|
| 1.000 | o           | 225          | 1      | 6.500          | 6.165          | 0.110          | 1050                  |
| 1.001 | o           | 225          | 2      | 6.500          | 6.030          | 0.245          | 1050                  |

#### Downstream Manhole

| PN    | Length<br>(m) | Slope<br>(1:X) | MH No. | C.Level<br>(m) | I.Level<br>(m) | C.Depth<br>(m) | MH DIAM., L*W<br>(mm) |
|-------|---------------|----------------|--------|----------------|----------------|----------------|-----------------------|
| 1.000 | 30.38         | 225.0          | 2      | 6.500          | 6.030          | 0.245          | 1050                  |
| 1.001 | 13.14         | 73.0           |        | 0.000          | 5.850          | -6.075         | 0                     |

MANHOLE SCHEDULES

| M/Ho1e<br>Number | Cover<br>Level<br>(m) | M/Ho1e<br>Depth<br>(m) | M/Ho1e<br>Diam., L*W<br>(mm) | PN    | Pipes Out<br>IL.(m) | D (mm) | PN    | Pipes In<br>IL.(m) | D (mm) |
|------------------|-----------------------|------------------------|------------------------------|-------|---------------------|--------|-------|--------------------|--------|
| 1                | 6.500                 | 0.335                  | 1050                         | 1.000 | 6.165               | 225    |       |                    |        |
| 2                | 6.500                 | 0.470                  | 1050                         | 1.001 | 6.030               | 225    | 1.000 | 6.030              | 225    |
|                  | 0.000                 | -5.850                 | 0                            |       | OUTFALL             |        | 1.001 | 5.850              | 225    |