

**Land to the west of New Barn Lane,  
North Bersted  
West Sussex**

**Foul & Surface Water Statement**

KTG/18:0047B/5529  
7<sup>th</sup> February 2019

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- 1.1 Linden Homes is seeking planning permission for the development of 37,200m<sup>2</sup> (3.72ha) of greenfield land located at New Barn Lane, North Bersted, Bognor Regis. The site is centred on National Grid Reference SU 91570 01054.
- 1.2 MJA Consulting has been appointed to prepare a suitable strategy for the disposal of surface and foul water from the proposed development incorporating the principles of Sustainable Drainage Systems (SuDS) and in accordance with Environment Agency guidance, The Building Regulations (Document H 2002) and The National Planning Policy Framework (NPPF).

**Surface Water**

- 2.1 The National Planning Policy Framework (NPPF) requires that developments do not exacerbate flood risks both to the development site and to offsite parties and land, which means there is a need to manage surface water to ensure there are no increases in peak rates and volumes of runoff as a result of the development.
- 2.2 Environment Agency guidance and government legislation such as the Flood and Water Management Act (Defra 2010) requires surface water drainage strategies for new developments to be in accordance with the ideals of 'sustainable development' via the provision of Sustainable Drainage Systems (SuDS).
- 2.3 The Building Regulations Document H (2015) and The SuDS Manual CIRIA 753 (2015) details the appropriate hierarchy of potential methods for disposing of surface water from a development:
1. A soakaway or some other adequate infiltration system, or where that is not practicable;
  2. A watercourse, or where that is not practicable;
  3. A sewer.
- 2.4 Information published by the British Geological Society (BGS) indicates that the site is anticipated to be directly underlain by the River Terrace Deposits (sand, silt and clays) overlying the Lewis Nodular Chalk Formation (chalk).

- 2.5 Onsite soakage tests using the BRE Digest 365 methodology showed the minimum infiltration rate to be  $1 \times 10^{-6}$  m/s. This is a very poor rate and therefore infiltration SuDs are deemed unsuitable to manage the storm water run-off from the proposed on site development.
- 2.6 It is proposed that surface water runoff from roofs, driveways and roads will be collected by a conventional system of guttering, downpipes and drains where it will be discharged via a surface water pipe network to either an attenuation basin/swale or attenuation tank.
- 2.7 Surface water flows will be attenuated on site with a restricted discharge rate of circa 13 l/s to match the existing greenfield rate. There will be two discharge points taking surface water offsite: The attenuation tank to the north will discharge at 3 l/s to an existing watercourse; and the attenuation tank to the south will discharge to a Southern Water existing sewer in New Barn Lane at 10 l/s. The storm water attenuated in the tank to the south will first pass through an attenuation basin/swale which will discharge water to the attenuation tank at 2 l/s.
- 2.8 All SUDS are sized to manage the 1 in 100year (1% AEP) storm event, plus an extra allowance of 40% for the predicted potential increase in peak rainfall up to 2115.
- 2.9 The proposed surface water drainage strategy offers a sustainable, safe and robust system which will afford complete flood risk protection to the new property and to existing properties and land within adjacent to the site. This is achieved by attenuating all additional runoff from impermeable surfaces, incorporating the principles of a Sustainable Drainage System (SuDS). This strategy ensures that the peak rate and volume of surface water runoff will be no greater than the existing runoff rate for the site for all rainfall events up to the 100 year +40% rainfall event.
- 2.10 The procedure for surface water management in accordance within 'Rainfall runoff management for developments' (DEFRA/EA Report – SC030219 E, 2013) states;  
*For the range of annual flow rate probabilities up to and including the 1% (1 in 100 year) annual exceedance probability event including an appropriate allowance for climate change, the post-developed rate and volume of run-off into a watercourse, sewer, or other receiving water body, should be no greater than the existing pre-developed rate of run-off for the same event.*

## **Foul Water**

- 3.1 The foul water discharge from the development will drain via gravity to an existing public sewer system located beyond the east of the site boundary, within New Barn Lane. Within the site boundary there is a pumping station which will serve a number of the properties in order to connect to the foul drainage network.
- 3.2 The development foul water network will remain private onsite. Section F4-F1 will be offered to Southern Water for adoption under a Section 104 agreement of the Water Industry Act 1991.
- 3.3 Southern Water will be consulted to ensure adequate capacity and determine a suitable point of connection with the existing foul sewer. If required, upgrading works will be carried out to the existing network to enable the proposed connection.
- 3.4 This will ensure that the proposed development has a 'no detriment' impact on the foul sewer system within the village of North Bersted and does not create a flood risk.
- 3.5 The predicted peak foul sewer discharge from the proposed properties to the existing foul sewer based on the Sewers for Adoption 7th figure (4000 l/dwelling/day) will be 4.6 l/s.

Statement prepared by

Karl T Gebhart  
**FOR MJA CONSULTING**



**Appendix A**  
**Surface Water Attenuation Calculations**

**KTG/18:0047B/5529**

|                                                 |                                                                     |                                                                                     |
|-------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| MJA Consulting                                  |                                                                     | Page 1                                                                              |
| Monarch House<br>Barton Lane<br>OX14 3NB        | New Barn Lane, N.Bersted<br>Surface Water Network<br>99 Unit Scheme |  |
| Date 20/02/2019<br>File 99 UNIT SCHEME +10%.MDX | Designed by S.Smith<br>Checked by                                   |                                                                                     |
| Innovyze                                        | Network 2017.1.2                                                    |                                                                                     |

Time Area Diagram for Storm at outfall SOUT1 (pipe S1.010)

|                |              |                |              |                |              |
|----------------|--------------|----------------|--------------|----------------|--------------|
| Time<br>(mins) | Area<br>(ha) | Time<br>(mins) | Area<br>(ha) | Time<br>(mins) | Area<br>(ha) |
| 0-4            | 0.181        | 4-8            | 0.301        | 8-12           | 0.006        |

Total Area Contributing (ha) = 0.488

Total Pipe Volume (m³) = 27.813

Time Area Diagram at outfall SSWMH (pipe S4.015)

|                |              |                |              |                |              |
|----------------|--------------|----------------|--------------|----------------|--------------|
| Time<br>(mins) | Area<br>(ha) | Time<br>(mins) | Area<br>(ha) | Time<br>(mins) | Area<br>(ha) |
| 0-4            | 0.129        | 4-8            | 0.740        | 8-12           | 0.128        |

Total Area Contributing (ha) = 0.997

Total Pipe Volume (m³) = 60.538

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|                                                 |               |                |                    |                |                                                                     |                    |           |             |             |                                                                                     |  |
|-------------------------------------------------|---------------|----------------|--------------------|----------------|---------------------------------------------------------------------|--------------------|-----------|-------------|-------------|-------------------------------------------------------------------------------------|--|
| MJA Consulting                                  |               |                |                    |                |                                                                     |                    |           |             |             | Page 2                                                                              |  |
| Monarch House<br>Barton Lane<br>OX14 3NB        |               |                |                    |                | New Barn Lane, N.Bersted<br>Surface Water Network<br>99 Unit Scheme |                    |           |             |             |  |  |
| Date 20/02/2019<br>File 99 UNIT SCHEME +10%.MDX |               |                |                    |                | Designed by S.Smith<br>Checked by                                   |                    |           |             |             |                                                                                     |  |
| Innovyze                                        |               |                |                    |                | Network 2017.1.2                                                    |                    |           |             |             |                                                                                     |  |
| <u>Existing Network Details for Storm</u>       |               |                |                    |                |                                                                     |                    |           |             |             |                                                                                     |  |
| 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                                                                        |  |
| S1.000                                          | 14.272        | 0.098          | 145.6              | 0.037          | 5.00                                                                | 0.0                | 0.600     | o           | 225         | Pipe/Conduit                                                                        |  |
| S1.001                                          | 11.982        | 0.070          | 171.2              | 0.006          | 0.00                                                                | 0.0                | 0.600     | o           | 225         | Pipe/Conduit                                                                        |  |
| S1.002                                          | 8.715         | 0.051          | 170.9              | 0.028          | 0.00                                                                | 0.0                | 0.600     | o           | 225         | Pipe/Conduit                                                                        |  |
| S1.003                                          | 33.571        | 0.134          | 250.5              | 0.026          | 0.00                                                                | 0.0                | 0.600     | o           | 300         | Pipe/Conduit                                                                        |  |
| S1.004                                          | 34.121        | 0.136          | 250.9              | 0.097          | 0.00                                                                | 0.0                | 0.600     | o           | 300         | Pipe/Conduit                                                                        |  |
| S2.000                                          | 16.790        | 0.101          | 166.2              | 0.096          | 5.00                                                                | 0.0                | 0.600     | o           | 225         | Pipe/Conduit                                                                        |  |
| S1.005                                          | 15.204        | 0.051          | 298.1              | 0.068          | 0.00                                                                | 0.0                | 0.600     | o           | 375         | Pipe/Conduit                                                                        |  |
| S1.006                                          | 24.037        | 0.080          | 300.5              | 0.033          | 0.00                                                                | 0.0                | 0.600     | o           | 375         | Pipe/Conduit                                                                        |  |
| S1.007                                          | 20.564        | 0.069          | 298.0              | 0.056          | 0.00                                                                | 0.0                | 0.600     | o           | 375         | Pipe/Conduit                                                                        |  |
| S3.000                                          | 11.124        | 0.160          | 69.5               | 0.041          | 5.00                                                                | 0.0                | 0.600     | []          | 1           | Pipe/Conduit                                                                        |  |
| S1.008                                          | 39.685        | 0.090          | 440.9              | 0.000          | 0.00                                                                | 0.0                | 0.600     | o           | 375         | Pipe/Conduit                                                                        |  |
| S1.009                                          | 20.096        | 0.055          | 365.4              | 0.000          | 0.00                                                                | 0.0                | 0.600     | o           | 375         | Pipe/Conduit                                                                        |  |
| S1.010                                          | 2.455         | 0.025          | 98.2               | 0.000          | 0.00                                                                | 0.0                | 0.600     | o           | 225         | Pipe/Conduit                                                                        |  |
| S4.000                                          | 12.033        | 0.070          | 171.9              | 0.055          | 5.00                                                                | 0.0                | 0.600     | o           | 225         | Pipe/Conduit                                                                        |  |
| S4.001                                          | 36.708        | 0.146          | 251.4              | 0.015          | 0.00                                                                | 0.0                | 0.600     | o           | 300         | Pipe/Conduit                                                                        |  |
| S4.002                                          | 35.335        | 0.142          | 248.8              | 0.100          | 0.00                                                                | 0.0                | 0.600     | o           | 300         | Pipe/Conduit                                                                        |  |
| S4.003                                          | 19.513        | 0.078          | 250.2              | 0.058          | 0.00                                                                | 0.0                | 0.600     | o           | 300         | Pipe/Conduit                                                                        |  |
| <u>Network Results Table</u>                    |               |                |                    |                |                                                                     |                    |           |             |             |                                                                                     |  |
| PN                                              | US/IL<br>(m)  | I.Area<br>(ha) | Base<br>Flow (l/s) | Vel<br>(m/s)   | Cap<br>(l/s)                                                        |                    |           |             |             |                                                                                     |  |
| S1.000                                          | 3.639         | 0.037          | 0.0                | 1.08           | 43.0                                                                |                    |           |             |             |                                                                                     |  |
| S1.001                                          | 3.561         | 0.043          | 0.0                | 1.00           | 39.6                                                                |                    |           |             |             |                                                                                     |  |
| S1.002                                          | 3.491         | 0.071          | 0.0                | 1.00           | 39.7                                                                |                    |           |             |             |                                                                                     |  |
| S1.003                                          | 3.365         | 0.097          | 0.0                | 0.99           | 69.9                                                                |                    |           |             |             |                                                                                     |  |
| S1.004                                          | 3.231         | 0.194          | 0.0                | 0.99           | 69.8                                                                |                    |           |             |             |                                                                                     |  |
| S2.000                                          | 3.271         | 0.096          | 0.0                | 1.01           | 40.2                                                                |                    |           |             |             |                                                                                     |  |
| S1.005                                          | 3.020         | 0.358          | 0.0                | 1.04           | 115.3                                                               |                    |           |             |             |                                                                                     |  |
| S1.006                                          | 2.969         | 0.391          | 0.0                | 1.04           | 114.9                                                               |                    |           |             |             |                                                                                     |  |
| S1.007                                          | 2.889         | 0.447          | 0.0                | 1.04           | 115.3                                                               |                    |           |             |             |                                                                                     |  |
| S3.000                                          | 2.980         | 0.041          | 0.0                | 3.59           | 2470.8                                                              |                    |           |             |             |                                                                                     |  |
| S1.008                                          | 2.820         | 0.488          | 0.0                | 0.86           | 94.6                                                                |                    |           |             |             |                                                                                     |  |
| S1.009                                          | 2.730         | 0.488          | 0.0                | 0.94           | 104.0                                                               |                    |           |             |             |                                                                                     |  |
| S1.010                                          | 2.625         | 0.488          | 0.0                | 1.32           | 52.5                                                                |                    |           |             |             |                                                                                     |  |
| S4.000                                          | 4.250         | 0.055          | 0.0                | 0.99           | 39.5                                                                |                    |           |             |             |                                                                                     |  |
| S4.001                                          | 4.105         | 0.070          | 0.0                | 0.99           | 69.8                                                                |                    |           |             |             |                                                                                     |  |
| S4.002                                          | 3.959         | 0.170          | 0.0                | 0.99           | 70.1                                                                |                    |           |             |             |                                                                                     |  |
| S4.003                                          | 3.817         | 0.228          | 0.0                | 0.99           | 69.9                                                                |                    |           |             |             |                                                                                     |  |
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|                                                 |               |                  |                      |                |                                                                     |                    |           |             |             |                                                                                     |  |
|-------------------------------------------------|---------------|------------------|----------------------|----------------|---------------------------------------------------------------------|--------------------|-----------|-------------|-------------|-------------------------------------------------------------------------------------|--|
| MJA Consulting                                  |               |                  |                      |                |                                                                     |                    |           |             |             | Page 3                                                                              |  |
| Monarch House<br>Barton Lane<br>OX14 3NB        |               |                  |                      |                | New Barn Lane, N.Bersted<br>Surface Water Network<br>99 Unit Scheme |                    |           |             |             |  |  |
| Date 20/02/2019<br>File 99 UNIT SCHEME +10%.MDX |               |                  |                      |                | Designed by S.Smith<br>Checked by                                   |                    |           |             |             |                                                                                     |  |
| Innovyze                                        |               |                  |                      |                | Network 2017.1.2                                                    |                    |           |             |             |                                                                                     |  |
| <u>Existing Network Details for Storm</u>       |               |                  |                      |                |                                                                     |                    |           |             |             |                                                                                     |  |
| 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                                                                        |  |
| S5.000                                          | 26.630        | 0.156            | 170.7                | 0.019          | 5.00                                                                | 0.0                | 0.600     | o           | 225         | Pipe/Conduit                                                                        |  |
| S4.004                                          | 4.522         | 0.016            | 282.6                | 0.056          | 0.00                                                                | 0.0                | 0.600     | o           | 300         | Pipe/Conduit                                                                        |  |
| S4.005                                          | 3.972         | 0.016            | 248.3                | 0.000          | 0.00                                                                | 0.0                | 0.600     | o           | 300         | Pipe/Conduit                                                                        |  |
| S4.006                                          | 50.847        | 0.160            | 317.8                | 0.000          | 0.00                                                                | 0.0                | 0.600     | o           | 300         | Pipe/Conduit                                                                        |  |
| S4.007                                          | 11.458        | 0.171            | 67.0                 | 0.080          | 0.00                                                                | 0.0                | 0.600     | o           | 300         | Pipe/Conduit                                                                        |  |
| S4.008                                          | 47.559        | 0.226            | 210.4                | 0.000          | 0.00                                                                | 0.0                | 0.600     | o           | 300         | Pipe/Conduit                                                                        |  |
| S4.009                                          | 18.888        | 0.180            | 104.9                | 0.000          | 0.00                                                                | 0.0                | 0.600     | o           | 300         | Pipe/Conduit                                                                        |  |
| S6.000                                          | 17.925        | 0.105            | 170.7                | 0.050          | 5.00                                                                | 0.0                | 0.600     | o           | 225         | Pipe/Conduit                                                                        |  |
| S6.001                                          | 51.183        | 0.204            | 250.9                | 0.090          | 0.00                                                                | 0.0                | 0.600     | o           | 300         | Pipe/Conduit                                                                        |  |
| S6.002                                          | 30.537        | 0.118            | 258.8                | 0.077          | 0.00                                                                | 0.0                | 0.600     | o           | 300         | Pipe/Conduit                                                                        |  |
| S7.000                                          | 42.349        | 0.250            | 169.4                | 0.090          | 5.00                                                                | 0.0                | 0.600     | o           | 225         | Pipe/Conduit                                                                        |  |
| S6.003                                          | 40.263        | 0.161            | 250.1                | 0.139          | 0.00                                                                | 0.0                | 0.600     | o           | 300         | Pipe/Conduit                                                                        |  |
| S6.004                                          | 4.642         | 0.027            | 171.9                | 0.132          | 0.00                                                                | 0.0                | 0.600     | o           | 300         | Pipe/Conduit                                                                        |  |
| S8.000                                          | 8.367         | 0.052            | 160.9                | 0.009          | 5.00                                                                | 0.0                | 0.600     | o           | 225         | Pipe/Conduit                                                                        |  |
| S8.001                                          | 19.737        | 0.103            | 191.6                | 0.027          | 0.00                                                                | 0.0                | 0.600     | o           | 225         | Pipe/Conduit                                                                        |  |
| <u>Network Results Table</u>                    |               |                  |                      |                |                                                                     |                    |           |             |             |                                                                                     |  |
| PN                                              | US/IL<br>(m)  | Σ I.Area<br>(ha) | Σ Base<br>Flow (l/s) | Vel<br>(m/s)   | Cap<br>(l/s)                                                        |                    |           |             |             |                                                                                     |  |
| S5.000                                          | 3.370         | 0.019            | 0.0                  | 1.00           | 39.7                                                                |                    |           |             |             |                                                                                     |  |
| S4.004                                          | 3.739         | 0.303            | 0.0                  | 0.93           | 65.8                                                                |                    |           |             |             |                                                                                     |  |
| S4.005                                          | 3.723         | 0.303            | 0.0                  | 0.93           | 70.2                                                                |                    |           |             |             |                                                                                     |  |
| S4.006                                          | 3.707         | 0.303            | 0.0                  | 0.88           | 62.0                                                                |                    |           |             |             |                                                                                     |  |
| S4.007                                          | 3.547         | 0.383            | 0.0                  | 1.92           | 136.0                                                               |                    |           |             |             |                                                                                     |  |
| S4.008                                          | 3.376         | 0.383            | 0.0                  | 1.08           | 76.3                                                                |                    |           |             |             |                                                                                     |  |
| S4.009                                          | 3.150         | 0.383            | 0.0                  | 1.53           | 108.5                                                               |                    |           |             |             |                                                                                     |  |
| S6.000                                          | 4.018         | 0.050            | 0.0                  | 1.00           | 39.7                                                                |                    |           |             |             |                                                                                     |  |
| S6.001                                          | 3.838         | 0.140            | 0.0                  | 0.93           | 69.8                                                                |                    |           |             |             |                                                                                     |  |
| S6.002                                          | 3.634         | 0.217            | 0.0                  | 0.97           | 68.8                                                                |                    |           |             |             |                                                                                     |  |
| S7.000                                          | 3.841         | 0.090            | 0.0                  | 1.00           | 39.8                                                                |                    |           |             |             |                                                                                     |  |
| S6.003                                          | 3.516         | 0.446            | 0.0                  | 0.93           | 70.0                                                                |                    |           |             |             |                                                                                     |  |
| S6.004                                          | 3.355         | 0.578            | 0.0                  | 1.20           | 84.5                                                                |                    |           |             |             |                                                                                     |  |
| S8.000                                          | 3.558         | 0.009            | 0.0                  | 1.03           | 40.9                                                                |                    |           |             |             |                                                                                     |  |
| S8.001                                          | 3.506         | 0.036            | 0.0                  | 0.94           | 37.4                                                                |                    |           |             |             |                                                                                     |  |
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|                                                 |                                                                     |                                                                                     |
|-------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| MJA Consulting                                  |                                                                     | Page 4                                                                              |
| Monarch House<br>Barton Lane<br>OX14 3NB        | New Barn Lane, N.Bersted<br>Surface Water Network<br>99 Unit Scheme |  |
| Date 20/02/2019<br>File 99 UNIT SCHEME +10%.MDX | Designed by S.Smith<br>Checked by                                   |                                                                                     |
| Innovyze                                        | Network 2017.1.2                                                    |                                                                                     |

Existing Network Details for Storm

| 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 |
|--------|---------------|-------------|----------------|----------------|----------------|--------------------|-----------|-------------|-------------|--------------|
| S6.005 | 11.934        | 0.222       | 53.8           | 0.000          | 0.00           | 0.0                | 0.600     | o           | 300         | Pipe/Conduit |
| S6.006 | 17.171        | 0.136       | 126.3          | 0.000          | 0.00           | 0.0                | 0.600     | []          | 1           | Pipe/Conduit |
|        |               |             |                |                |                |                    |           |             |             |              |
| S4.010 | 13.545        | 0.092       | 147.2          | 0.000          | 0.00           | 0.0                | 0.600     | o           | 300         | Pipe/Conduit |
| S4.011 | 15.360        | 0.082       | 187.3          | 0.000          | 0.00           | 0.0                | 0.600     | o           | 300         | Pipe/Conduit |
| S4.012 | 12.303        | 0.056       | 219.7          | 0.000          | 0.00           | 0.0                | 0.600     | o           | 300         | Pipe/Conduit |
| S4.013 | 17.628        | 0.050       | 352.6          | 0.000          | 0.00           | 0.0                | 0.600     | o           | 450         | Pipe/Conduit |
| S4.014 | 71.169        | 0.180       | 395.4          | 0.000          | 0.00           | 0.0                | 0.600     | o           | 450         | Pipe/Conduit |
| S4.015 | 4.107         | 0.010       | 410.7          | 0.000          | 0.00           | 0.0                | 0.600     | o           | 450         | Pipe/Conduit |

Network Results Table

| PN     | US/IL<br>(m) | Σ I.Area<br>(ha) | Σ Base<br>Flow (l/s) | Vel<br>(m/s) | Cap<br>(l/s) |
|--------|--------------|------------------|----------------------|--------------|--------------|
| S6.005 | 3.328        | 0.614            | 0.0                  | 2.15         | 151.9        |
| S6.006 | 3.106        | 0.614            | 0.0                  | 2.66         | 1831.2       |
|        |              |                  |                      |              |              |
| S4.010 | 2.870        | 0.997            | 0.0                  | 1.29         | 91.4         |
| S4.011 | 2.878        | 0.997            | 0.0                  | 1.15         | 81.0         |
| S4.012 | 2.756        | 0.997            | 0.0                  | 1.06         | 74.7         |
| S4.013 | 2.580        | 0.997            | 0.0                  | 1.08         | 171.3        |
| S4.014 | 2.540        | 0.997            | 0.0                  | 1.02         | 161.6        |
| S4.015 | 2.360        | 0.997            | 0.0                  | 1.00         | 158.6        |

|                                                 |            |                                                                     |                                                                                     |             |             |             |               |                    |
|-------------------------------------------------|------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------|-------------|-------------|---------------|--------------------|
| MJA Consulting                                  |            | Page 5                                                              |                                                                                     |             |             |             |               |                    |
| Monarch House<br>Barton Lane<br>OX14 3NB        |            | New Barn Lane, N.Bersted<br>Surface Water Network<br>99 Unit Scheme |  |             |             |             |               |                    |
| Date 20/02/2019<br>File 99 UNIT SCHEME +10%.MDX |            | Designed by S.Smith<br>Checked by                                   |                                                                                     |             |             |             |               |                    |
| Innovyze                                        |            | Network 2017.1.2                                                    |                                                                                     |             |             |             |               |                    |
| <u>PIPELINE SCHEDULES for Storm</u>             |            |                                                                     |                                                                                     |             |             |             |               |                    |
| <u>Upstream Manhole</u>                         |            |                                                                     |                                                                                     |             |             |             |               |                    |
| PN                                              | Hyd Sect   | Diam (mm)                                                           | MH Name                                                                             | C.Level (m) | I.Level (m) | D.Depth (m) | MH Connection | MH DIAM., L*W (mm) |
| S1.000                                          | o          | 225                                                                 | S24                                                                                 | 5.295       | 3.659       | 1.321       | Open Manhole  | 1200               |
| S1.001                                          | o          | 225                                                                 | S23                                                                                 | 5.056       | 3.561       | 1.270       | Open Manhole  | 1200               |
| S1.002                                          | o          | 225                                                                 | S22                                                                                 | 4.989       | 3.491       | 1.273       | Open Manhole  | 1200               |
| S1.003                                          | o          | 300                                                                 | S21                                                                                 | 4.864       | 3.365       | 1.199       | Open Manhole  | 1200               |
| S1.004                                          | o          | 300                                                                 | S20                                                                                 | 4.722       | 3.231       | 1.191       | Open Manhole  | 1200               |
| S2.000                                          | o          | 225                                                                 | S25                                                                                 | 4.641       | 3.271       | 1.145       | Open Manhole  | 1200               |
| S1.005                                          | o          | 375                                                                 | S19                                                                                 | 4.489       | 3.029       | 1.094       | Open Manhole  | 1200               |
| S1.006                                          | o          | 375                                                                 | S18                                                                                 | 4.389       | 2.969       | 1.045       | Open Manhole  | 1200               |
| S1.007                                          | o          | 375                                                                 | S17                                                                                 | 4.382       | 2.889       | 1.118       | Open Manhole  | 1200               |
| S3.000                                          | []         | 1                                                                   | S10                                                                                 | 4.500       | 2.980       | 0.920       | Open Manhole  | 1200               |
| S1.008                                          | o          | 375                                                                 | S16                                                                                 | 4.600       | 2.820       | 1.405       | Open Manhole  | 1200               |
| S1.009                                          | o          | 375                                                                 | S11                                                                                 | 4.600       | 2.730       | 1.495       | Open Manhole  | 1200               |
| S1.010                                          | o          | 225                                                                 | SCPM3                                                                               | 4.600       | 2.625       | 1.750       | Open Manhole  | 1200               |
| S4.000                                          | o          | 225                                                                 | S14                                                                                 | 5.393       | 4.250       | 0.918       | Open Manhole  | 1200               |
| S4.001                                          | o          | 300                                                                 | S13                                                                                 | 5.410       | 4.105       | 1.005       | Open Manhole  | 1200               |
| S4.002                                          | o          | 300                                                                 | S12                                                                                 | 5.160       | 3.959       | 0.901       | Open Manhole  | 1200               |
| <u>Downstream Manhole</u>                       |            |                                                                     |                                                                                     |             |             |             |               |                    |
| PN                                              | Length (m) | Slope (1:X)                                                         | MH Name                                                                             | C.Level (m) | I.Level (m) | D.Depth (m) | MH Connection | MH DIAM., L*W (mm) |
| S1.000                                          | 14.272     | 145.6                                                               | S23                                                                                 | 5.056       | 3.561       | 1.270       | Open Manhole  | 1200               |
| S1.001                                          | 11.982     | 171.2                                                               | S22                                                                                 | 4.989       | 3.491       | 1.273       | Open Manhole  | 1200               |
| S1.002                                          | 8.715      | 170.9                                                               | S21                                                                                 | 4.864       | 3.440       | 1.199       | Open Manhole  | 1200               |
| S1.003                                          | 33.571     | 250.5                                                               | S20                                                                                 | 4.722       | 3.231       | 1.191       | Open Manhole  | 1200               |
| S1.004                                          | 34.121     | 250.9                                                               | S19                                                                                 | 4.489       | 3.095       | 1.094       | Open Manhole  | 1200               |
| S2.000                                          | 16.790     | 166.2                                                               | S19                                                                                 | 4.489       | 3.170       | 1.094       | Open Manhole  | 1200               |
| S1.005                                          | 15.204     | 298.1                                                               | S18                                                                                 | 4.389       | 2.969       | 1.045       | Open Manhole  | 1200               |
| S1.006                                          | 24.037     | 300.5                                                               | S17                                                                                 | 4.382       | 2.889       | 1.118       | Open Manhole  | 1200               |
| S1.007                                          | 20.564     | 298.0                                                               | S16                                                                                 | 4.600       | 2.820       | 1.405       | Open Manhole  | 1200               |
| S3.000                                          | 11.124     | 69.5                                                                | S16                                                                                 | 4.600       | 2.820       | 1.180       | Open Manhole  | 1200               |
| S1.008                                          | 39.685     | 440.9                                                               | S11                                                                                 | 4.600       | 2.730       | 1.495       | Open Manhole  | 1200               |
| S1.009                                          | 20.096     | 365.4                                                               | SCPM3                                                                               | 4.600       | 2.675       | 1.550       | Open Manhole  | 1200               |
| S1.010                                          | 2.455      | 98.2                                                                | SOUT1                                                                               | 4.000       | 2.600       | 1.175       | Open Manhole  | 600                |
| S4.000                                          | 12.033     | 171.9                                                               | S13                                                                                 | 5.410       | 4.180       | 1.005       | Open Manhole  | 1200               |
| S4.001                                          | 36.708     | 251.4                                                               | S12                                                                                 | 5.160       | 3.959       | 0.901       | Open Manhole  | 1200               |
| S4.002                                          | 35.335     | 248.8                                                               | S11                                                                                 | 5.323       | 3.817       | 1.206       | Open Manhole  | 1200               |
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|                                                 |                                                                     |                                                                                     |
|-------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------|
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| Monarch House<br>Barton Lane<br>OX14 3NB        | New Barn Lane, N.Bersted<br>Surface Water Network<br>99 Unit Scheme |  |
| Date 20/02/2019<br>File 99 UNIT SCHEME +10%.MDX | Designed by S.Smith<br>Checked by                                   |                                                                                     |
| Innovyze                                        | Network 2017.1.2                                                    |                                                                                     |

PIPELINE SCHEDULES for Storm

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) |
|--------|-------------|--------------|------------|----------------|----------------|----------------|------------------|-----------------------|
| S4.003 | o           | 300          | S11        | 5.323          | 3.817          | 1.206          | Open Manhole     | 1200                  |
| S5.000 | o           | 225          | S15        | 4.950          | 3.970          | 0.755          | Open Manhole     | 1200                  |
| S4.004 | o           | 300          | S10        | 5.216          | 3.739          | 1.177          | Open Manhole     | 1200                  |
| S4.005 | o           | 300          | S29        | 5.300          | 3.723          | 1.277          | Open Manhole     | 1200                  |
| S4.006 | o           | 300          | SHW1       | 5.000          | 3.707          | 0.993          | Open Manhole     | 600                   |
| S4.007 | o           | 300          | SHW2       | 4.840          | 3.547          | 0.993          | Open Manhole     | 600                   |
| S4.008 | o           | 300          | S31/CPM2   | 5.150          | 3.376          | 1.474          | Open Manhole     | 1250                  |
| S4.009 | o           | 300          | S9         | 5.050          | 3.150          | 1.600          | Open Manhole     | 1200                  |
| S6.000 | o           | 225          | S7         | 5.150          | 4.018          | 0.907          | Open Manhole     | 1200                  |
| S6.001 | o           | 300          | S6         | 5.039          | 3.838          | 0.901          | Open Manhole     | 1200                  |
| S6.002 | o           | 300          | S5         | 4.883          | 3.634          | 0.949          | Open Manhole     | 1200                  |
| S7.000 | o           | 225          | S8         | 5.150          | 3.841          | 1.084          | Open Manhole     | 1200                  |
| S6.003 | o           | 300          | S4         | 4.781          | 3.516          | 0.965          | Open Manhole     | 1200                  |
| S6.004 | o           | 300          | S3         | 4.848          | 3.355          | 1.193          | Open Manhole     | 1200                  |
| S8.000 | o           | 225          | S2A        | 4.546          | 3.558          | 0.763          | Open Manhole     | 975 x 675             |

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) |
|--------|---------------|----------------|------------|----------------|----------------|----------------|------------------|-----------------------|
| S4.003 | 19.513        | 250.2          | S10        | 5.216          | 3.739          | 1.177          | Open Manhole     | 1200                  |
| S5.000 | 26.630        | 170.7          | S10        | 5.216          | 3.814          | 1.177          | Open Manhole     | 1200                  |
| S4.004 | 4.522         | 282.6          | S29        | 5.300          | 3.723          | 1.277          | Open Manhole     | 1200                  |
| S4.005 | 3.972         | 248.3          | SHW1       | 5.000          | 3.707          | 0.993          | Open Manhole     | 600                   |
| S4.006 | 50.847        | 317.8          | SHW2       | 4.840          | 3.547          | 0.993          | Open Manhole     | 600                   |
| S4.007 | 11.458        | 67.0           | S31/CPM2   | 5.150          | 3.376          | 1.474          | Open Manhole     | 1250                  |
| S4.008 | 47.559        | 210.4          | S9         | 5.050          | 3.150          | 1.600          | Open Manhole     | 1200                  |
| S4.009 | 18.888        | 104.9          | S25        | 4.900          | 2.970          | 1.630          | Open Manhole     | 1200                  |
| S6.000 | 17.925        | 170.7          | S6         | 5.039          | 3.913          | 0.901          | Open Manhole     | 1200                  |
| S6.001 | 51.183        | 250.9          | S5         | 4.883          | 3.634          | 0.949          | Open Manhole     | 1200                  |
| S6.002 | 30.537        | 258.8          | S4         | 4.781          | 3.516          | 0.965          | Open Manhole     | 1200                  |
| S7.000 | 42.349        | 169.4          | S4         | 4.781          | 3.591          | 0.965          | Open Manhole     | 1200                  |
| S6.003 | 40.263        | 250.1          | S3         | 4.848          | 3.355          | 1.193          | Open Manhole     | 1200                  |
| S6.004 | 4.642         | 171.9          | S1         | 4.934          | 3.328          | 1.306          | Open Manhole     | 1200                  |
| S8.000 | 8.367         | 160.9          | S2         | 4.546          | 3.506          | 0.909          | Open Manhole     | 1200                  |

|                                                 |                                                                     |                                                                                     |
|-------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------|
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| Monarch House<br>Barton Lane<br>OX14 3NB        | New Barn Lane, N.Bersted<br>Surface Water Network<br>99 Unit Scheme |  |
| Date 20/02/2019<br>File 99 UNIT SCHEME +10%.MDX | Designed by S.Smith<br>Checked by                                   |                                                                                     |
| Innovyze                                        | Network 2017.1.2                                                    |                                                                                     |

PIPELINE SCHEDULES for Storm

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) |
|--------|-------------|--------------|------------|----------------|----------------|----------------|------------------|-----------------------|
| S8.001 | o           | 225          | S2         | 4.640          | 3.506          | 9.909          | Open Manhole     | 1200                  |
| S6.005 | o           | 300          | S1         | 4.934          | 3.328          | 1.306          | Open Manhole     | 1200                  |
| S6.006 | []          | 1            | S32        | 4.950          | 3.106          | 1.244          | Open Manhole     | 1200                  |
| S4.010 | o           | 300          | S25        | 4.900          | 2.970          | 1.630          | Open Manhole     | 1200                  |
| S4.011 | o           | 300          | SCPM1      | 4.700          | 2.878          | 1.522          | Open Manhole     | 1200                  |
| S4.012 | o           | 300          | S26        | 4.229          | 2.796          | 1.133          | Open Manhole     | 1500                  |
| S4.013 | o           | 450          | S7954      | 4.250          | 2.590          | 1.210          | Open Manhole     | 1200                  |
| S4.014 | o           | 450          | S27        | 4.210          | 2.540          | 1.220          | Open Manhole     | 1500                  |
| S4.015 | o           | 450          | S28        | 3.850          | 2.360          | 1.040          | Open Manhole     | 1500                  |

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) |
|--------|---------------|----------------|------------|----------------|----------------|----------------|------------------|-----------------------|
| S8.001 | 19.737        | 191.6          | S1         | 4.934          | 3.403          | 1.306          | Open Manhole     | 1200                  |
| S6.005 | 11.934        | 53.8           | S32        | 4.950          | 3.106          | 1.544          | Open Manhole     | 1200                  |
| S6.006 | 17.171        | 126.3          | S25        | 4.900          | 2.970          | 1.330          | Open Manhole     | 1200                  |
| S4.010 | 13.545        | 147.2          | SCPM1      | 4.700          | 2.878          | 1.522          | Open Manhole     | 1200                  |
| S4.011 | 15.360        | 187.3          | S26        | 4.229          | 2.796          | 1.133          | Open Manhole     | 1500                  |
| S4.012 | 12.303        | 219.7          | S7954      | 4.250          | 2.740          | 1.210          | Open Manhole     | 1200                  |
| S4.013 | 17.628        | 352.6          | S27        | 4.210          | 2.540          | 1.220          | Open Manhole     | 1500                  |
| S4.014 | 71.169        | 395.4          | S28        | 3.850          | 2.360          | 1.040          | Open Manhole     | 1500                  |
| S4.015 | 4.107         | 410.7          | SSWMH      | 3.730          | 2.350          | 0.930          | Open Manhole     | 1200                  |

Free Flowing Outfall Details for Storm

| 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) |
|------------------------|-----------------|-----------------|-----------------|------------------------|-------------|-----------|
|------------------------|-----------------|-----------------|-----------------|------------------------|-------------|-----------|

|        |       |       |       |       |     |   |
|--------|-------|-------|-------|-------|-----|---|
| S1.010 | SOUT1 | 4.000 | 2.600 | 0.000 | 600 | 0 |
|--------|-------|-------|-------|-------|-----|---|

Free Flowing Outfall Details for Storm

| 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) |
|------------------------|-----------------|-----------------|-----------------|------------------------|-------------|-----------|
|------------------------|-----------------|-----------------|-----------------|------------------------|-------------|-----------|

|        |       |       |       |       |      |   |
|--------|-------|-------|-------|-------|------|---|
| S4.015 | SSWMH | 3.730 | 2.350 | 0.000 | 1200 | 0 |
|--------|-------|-------|-------|-------|------|---|



|                                                 |                                                                     |                                                                                     |
|-------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------|
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| Monarch House<br>Barton Lane<br>OX14 3NB        | New Barn Lane, N.Bersted<br>Surface Water Network<br>99 Unit Scheme |  |
| Date 20/02/2019<br>File 99 UNIT SCHEME +10%.MDX | Designed by S.Smith<br>Checked by                                   |                                                                                     |
| Innovyze<br>Network 2017.1.2                    |                                                                     |                                                                                     |

Online Controls for Storm

Hydro-Brake® Optimum Manhole: SCPM3, DS/PN: S1.010, Volume (m³): 4.3

|                                   |                            |
|-----------------------------------|----------------------------|
| Unit Reference                    | MD-SHE-0082-3000-1000-3000 |
| Design Head (m)                   | 1.000                      |
| Design Flow (l/s)                 | 3.0                        |
| Flush-Flo™                        | Calculated                 |
| Objective                         | Minimise upstream storage  |
| Application                       | Surface                    |
| Sump Available                    | Yes                        |
| Diameter (mm)                     | 82                         |
| Invert Level (m)                  | 2.625                      |
| Minimum Outlet Pipe Diameter (mm) | 100                        |
| Suggested Manhole Diameter (mm)   | 1200                       |

| Control Points            | Head (m) | Flow (l/s) |
|---------------------------|----------|------------|
| Design Point (Calculated) | 1.000    | 3.0        |
| Flush-Flo™                | 0.297    | 3.0        |
| Kick-Flo®                 | 0.623    | 2.4        |
| Mean Flow over Head Range | -        | 2.6        |

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) |
|-----------|------------|-----------|------------|-----------|------------|-----------|------------|
| 0.100     | 2.4        | 1.200     | 3.3        | 3.000     | 5.0        | 7.000     | 7.4        |
| 0.200     | 2.9        | 1.400     | 3.5        | 3.500     | 5.4        | 7.500     | 7.7        |
| 0.300     | 3.0        | 1.600     | 3.7        | 4.000     | 5.7        | 8.000     | 7.9        |
| 0.400     | 2.9        | 1.800     | 3.9        | 4.500     | 6.0        | 8.500     | 8.2        |
| 0.500     | 2.8        | 2.000     | 4.1        | 5.000     | 6.3        | 9.000     | 8.4        |
| 0.600     | 2.5        | 2.200     | 4.3        | 5.500     | 6.6        | 9.500     | 8.6        |
| 0.800     | 2.7        | 2.400     | 4.5        | 6.000     | 6.9        |           |            |
| 1.000     | 3.0        | 2.600     | 4.7        | 6.500     | 7.2        |           |            |

Hydro-Brake® Optimum Manhole: S31/CPM2, DS/PN: S4.008, Volume (m³): 2.9

|                                   |                            |
|-----------------------------------|----------------------------|
| Unit Reference                    | MD-SHE-0077-2000-0300-2000 |
| Design Head (m)                   | 0.300                      |
| Design Flow (l/s)                 | 2.0                        |
| Flush-Flo™                        | Calculated                 |
| Objective                         | Minimise upstream storage  |
| Application                       | Surface                    |
| Sump Available                    | Yes                        |
| Diameter (mm)                     | 77                         |
| Invert Level (m)                  | 3.376                      |
| Minimum Outlet Pipe Diameter (mm) | 100                        |
| Suggested Manhole Diameter (mm)   | 1200                       |

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|                                                 |                                                                     |                                                                                     |
|-------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------|
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| Monarch House<br>Barton Lane<br>OX14 3NB        | New Barn Lane, N.Bersted<br>Surface Water Network<br>99 Unit Scheme |  |
| Date 20/02/2019<br>File 99 UNIT SCHEME +10%.MDX | Designed by S.Smith<br>Checked by                                   |                                                                                     |
| Innovyze                                        | Network 2017.1.2                                                    |                                                                                     |

Hydro-Brake® Optimum Manhole: S31/CPM2, DS/PN: S4.008, Volume (m³): 2.9

| Control Points            | Head (m) | Flow (l/s) |
|---------------------------|----------|------------|
| Design Point (Calculated) | 0.300    | 2.0        |
| Flush-Flo™                | 0.113    | 2.0        |
| Kick-Flo®                 | 0.228    | 1.8        |
| Mean Flow over Head Range | -        | 1.6        |

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) |
|-----------|------------|-----------|------------|-----------|------------|-----------|------------|
| 0.100     | 2.0        | 1.200     | 3.8        | 3.000     | 5.8        | 7.000     | 8.8        |
| 0.200     | 1.9        | 1.400     | 4.1        | 3.500     | 6.2        | 7.500     | 9.1        |
| 0.300     | 2.0        | 1.600     | 4.3        | 4.000     | 6.7        | 8.000     | 9.4        |
| 0.400     | 2.3        | 1.800     | 4.6        | 4.500     | 7.1        | 8.500     | 9.7        |
| 0.500     | 2.5        | 2.000     | 4.8        | 5.000     | 7.4        | 9.000     | 10.0       |
| 0.600     | 2.7        | 2.200     | 5.0        | 5.500     | 7.8        | 9.500     | 10.3       |
| 0.800     | 3.1        | 2.400     | 5.2        | 6.000     | 8.2        |           |            |
| 1.000     | 3.5        | 2.600     | 5.4        | 6.500     | 8.5        |           |            |

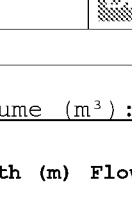
Hydro-Brake® Optimum Manhole: SCPM1, DS/PN: S4.011, Volume (m³): 2.9

|                                   |                            |
|-----------------------------------|----------------------------|
| Unit Reference                    | MD-SHE-0143-1000-1200-1000 |
| Design Head (m)                   | 1.200                      |
| Design Flow (l/s)                 | 10.0                       |
| Flush-Flo™                        | Calculated                 |
| Objective                         | Minimise upstream storage  |
| Application                       | Surface                    |
| Sump Available                    | Yes                        |
| Diameter (mm)                     | 143                        |
| Invert Level (m)                  | 2.878                      |
| Minimum Outlet Pipe Diameter (mm) | 225                        |
| Suggested Manhole Diameter (mm)   | 1200                       |

| Control Points            | Head (m) | Flow (l/s) |
|---------------------------|----------|------------|
| Design Point (Calculated) | 1.200    | 10.0       |
| Flush-Flo™                | 0.357    | 10.0       |
| Kick-Flo®                 | 0.778    | 8.2        |
| Mean Flow over Head Range | -        | 8.7        |

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) |
|-----------|------------|-----------|------------|-----------|------------|-----------|------------|
| 0.100     | 5.1        | 0.300     | 9.9        | 0.500     | 9.8        | 0.800     | 8.3        |
| 0.200     | 9.4        | 0.400     | 10.0       | 0.600     | 9.5        | 1.000     | 9.2        |

|                                                 |                                                                     |                                                                                     |
|-------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------|
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| Monarch House<br>Barton Lane<br>OX14 3NB        | New Barn Lane, N.Bersted<br>Surface Water Network<br>99 Unit Scheme |  |
| Date 20/02/2019<br>File 99 UNIT SCHEME +10%.MDX | Designed by S.Smith<br>Checked by                                   |                                                                                     |
| Innovyze                                        | Network 2017.1.2                                                    |                                                                                     |

Hydro-Brake® Optimum Manhole: SCPM1, DS/PN: S4.011, Volume (m³): 2.9

| Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) |
|-----------|------------|-----------|------------|-----------|------------|-----------|------------|
| 1.200     | 10.0       | 2.400     | 13.9       | 5.000     | 19.7       | 8.000     | 24.7       |
| 1.400     | 10.8       | 2.600     | 14.4       | 5.500     | 20.6       | 8.500     | 25.4       |
| 1.600     | 11.5       | 3.000     | 15.4       | 6.000     | 21.5       | 9.000     | 26.1       |
| 1.800     | 12.1       | 3.500     | 16.6       | 6.500     | 22.3       | 9.500     | 26.8       |
| 2.000     | 12.7       | 4.000     | 17.7       | 7.000     | 23.2       |           |            |
| 2.200     | 13.3       | 4.500     | 18.7       | 7.500     | 23.9       |           |            |

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|                                                 |                                                                     |                                                                                     |
|-------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| MJA Consulting                                  |                                                                     | Page 12                                                                             |
| Monarch House<br>Barton Lane<br>OX14 3NB        | New Barn Lane, N.Bersted<br>Surface Water Network<br>99 Unit Scheme |  |
| Date 20/02/2019<br>File 99 UNIT SCHEME +10%.MDX | Designed by S.Smith<br>Checked by                                   |                                                                                     |
| Innovyze                                        | Network 2017.1.2                                                    |                                                                                     |

Storage Structures for Storm

Cellular Storage Manhole: S10, DS/PN: S3.000

Invert Level (m) 2.980 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> ) |
|-----------|------------------------|-----------------------------|-----------|------------------------|-----------------------------|
| 0.000     | 282.0                  | 282.0                       | 0.801     | 0.0                    | 343.1                       |
| 0.800     | 282.0                  | 343.1                       |           |                        |                             |

Cellular Storage Manhole: S11, DS/PN: S1.009

Invert Level (m) 2.730 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> ) |
|-----------|------------------------|-----------------------------|-----------|------------------------|-----------------------------|
| 0.000     | 64.0                   | 64.0                        | 0.801     | 0.0                    | 90.2                        |
| 0.800     | 64.0                   | 90.2                        |           |                        |                             |

Cellular Storage Manhole: SCPM3, DS/PN: S1.010

Invert Level (m) 2.675 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> ) |
|-----------|------------------------|-----------------------------|-----------|------------------------|-----------------------------|
| 0.000     | 60.0                   | 60.0                        | 0.801     | 0.0                    | 85.6                        |
| 0.800     | 60.0                   | 85.6                        |           |                        |                             |

Tank or Pond Manhole: SHW2, DS/PN: S4.007

Invert Level (m) 3.547

| 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     | 16.0                   | 0.500     | 424.0                  | 1.000     | 674.0                  | 1.500     | 938.0                  |
| 0.100     | 18.0                   | 0.600     | 473.0                  | 1.100     | 726.0                  | 1.600     | 992.0                  |
| 0.200     | 20.0                   | 0.700     | 523.0                  | 1.200     | 778.0                  | 1.700     | 1048.0                 |
| 0.300     | 22.0                   | 0.800     | 572.0                  | 1.300     | 830.0                  | 1.800     | 1103.0                 |
| 0.400     | 376.0                  | 0.900     | 623.0                  | 1.400     | 884.0                  | 1.900     | 1159.0                 |

Cellular Storage Manhole: S25, DS/PN: S4.010

Invert Level (m) 2.970 Safety Factor 2.0  
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95  
Infiltration Coefficient Side (m/hr) 0.00000

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|                                                 |                                                                     |                                                                                     |
|-------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------|
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| Monarch House<br>Barton Lane<br>OX14 3NB        | New Barn Lane, N.Bersted<br>Surface Water Network<br>99 Unit Scheme |  |
| Date 20/02/2019<br>File 99 UNIT SCHEME +10%.MDX | Designed by S.Smith<br>Checked by                                   |                                                                                     |
| Innovyze                                        | Network 2017.1.2                                                    |                                                                                     |

Cellular Storage Manhole: S25, DS/PN: S4.010

| 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     | 360.0                  | 360.0                       | 0.801     | 0.0                    | 433.6                       |
| 0.800     | 360.0                  | 433.6                       |           |                        |                             |

Time Area Diagram at Pipe Number S2.000 for Storm

Total Area (ha) 0.096

| Time (mins) | Area (ha) | Time (mins) | Area (ha) | Time (mins) | Area (ha) |
|-------------|-----------|-------------|-----------|-------------|-----------|
| From:       | To:       | From:       | To:       | From:       | To:       |
| 0           | 4 0.020   | 8           | 12 0.020  | 16          | 20 0.031  |
| 4           | 8 0.015   | 12          | 16 0.010  |             |           |

Time Area Diagram at Pipe Number S4.002 for Storm

Total Area (ha) 0.100

| Time (mins) | Area (ha) | Time (mins) | Area (ha) | Time (mins) | Area (ha) |
|-------------|-----------|-------------|-----------|-------------|-----------|
| From:       | To:       | From:       | To:       | From:       | To:       |
| 0           | 4 0.020   | 8           | 12 0.020  | 16          | 20 0.030  |
| 4           | 8 0.015   | 12          | 16 0.015  |             |           |

Time Area Diagram at Pipe Number S6.001 for Storm

Total Area (ha) 0.090

| Time (mins) | Area (ha) | Time (mins) | Area (ha) | Time (mins) | Area (ha) |
|-------------|-----------|-------------|-----------|-------------|-----------|
| From:       | To:       | From:       | To:       | From:       | To:       |
| 0           | 4 0.020   | 8           | 12 0.020  | 16          | 20 0.015  |
| 4           | 8 0.020   | 12          | 16 0.015  |             |           |

Time Area Diagram at Pipe Number S7.000 for Storm

Total Area (ha) 0.090

| Time (mins) | Area (ha) | Time (mins) | Area (ha) | Time (mins) | Area (ha) |
|-------------|-----------|-------------|-----------|-------------|-----------|
| From:       | To:       | From:       | To:       | From:       | To:       |
| 0           | 4 0.020   | 8           | 12 0.020  | 16          | 20 0.030  |
| 4           | 8 0.010   | 12          | 16 0.010  |             |           |

Time Area Diagram at Pipe Number S6.003 for Storm

Total Area (ha) 0.139

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| MJA Consulting                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                     | Page 14                                                                             |                |                |                |      |             |      |                |                |                |                |                |                |           |            |             |  |  |  |           |             |  |  |  |  |             |      |             |      |             |      |                |                |                |                |                |                |           |            |             |  |  |  |           |             |  |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------|----------------|----------------|------|-------------|------|----------------|----------------|----------------|----------------|----------------|----------------|-----------|------------|-------------|--|--|--|-----------|-------------|--|--|--|--|-------------|------|-------------|------|-------------|------|----------------|----------------|----------------|----------------|----------------|----------------|-----------|------------|-------------|--|--|--|-----------|-------------|--|--|--|--|
| Monarch House<br>Barton Lane<br>OX14 3NB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | New Barn Lane, N.Bersted<br>Surface Water Network<br>99 Unit Scheme |  |                |                |                |      |             |      |                |                |                |                |                |                |           |            |             |  |  |  |           |             |  |  |  |  |             |      |             |      |             |      |                |                |                |                |                |                |           |            |             |  |  |  |           |             |  |  |  |  |
| Date 20/02/2019<br>File 99 UNIT SCHEME +10%.MDX                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Designed by S.Smith<br>Checked by                                   |                                                                                     |                |                |                |      |             |      |                |                |                |                |                |                |           |            |             |  |  |  |           |             |  |  |  |  |             |      |             |      |             |      |                |                |                |                |                |                |           |            |             |  |  |  |           |             |  |  |  |  |
| Innovyze                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Network 2017.1.2                                                    |                                                                                     |                |                |                |      |             |      |                |                |                |                |                |                |           |            |             |  |  |  |           |             |  |  |  |  |             |      |             |      |             |      |                |                |                |                |                |                |           |            |             |  |  |  |           |             |  |  |  |  |
| <p><u>Time Area Diagram at Pipe Number S6.003 for Storm</u></p> <table><tr><th>Time (mins)</th><th>Area</th><th>Time (mins)</th><th>Area</th><th>Time (mins)</th><th>Area</th></tr><tr><th>From: To: (ha)</th><th>From: To: (ha)</th><th>From: To: (ha)</th><th>From: To: (ha)</th><th>From: To: (ha)</th><th>From: To: (ha)</th></tr><tr><td>0 4 0.025</td><td>8 12 0.025</td><td>16 20 0.029</td><td></td><td></td><td></td></tr><tr><td>4 8 0.030</td><td>12 16 0.030</td><td></td><td></td><td></td><td></td></tr></table> <p><u>Time Area Diagram at Pipe Number S6.004 for Storm</u></p> <p>Total Area (ha) 0.132</p> <table><tr><th>Time (mins)</th><th>Area</th><th>Time (mins)</th><th>Area</th><th>Time (mins)</th><th>Area</th></tr><tr><th>From: To: (ha)</th><th>From: To: (ha)</th><th>From: To: (ha)</th><th>From: To: (ha)</th><th>From: To: (ha)</th><th>From: To: (ha)</th></tr><tr><td>0 4 0.025</td><td>8 12 0.025</td><td>16 20 0.032</td><td></td><td></td><td></td></tr><tr><td>4 8 0.025</td><td>12 16 0.025</td><td></td><td></td><td></td><td></td></tr></table> |                                                                     |                                                                                     | Time (mins)    | Area           | Time (mins)    | Area | Time (mins) | Area | From: To: (ha) | From: To: (ha) | From: To: (ha) | From: To: (ha) | From: To: (ha) | From: To: (ha) | 0 4 0.025 | 8 12 0.025 | 16 20 0.029 |  |  |  | 4 8 0.030 | 12 16 0.030 |  |  |  |  | Time (mins) | Area | Time (mins) | Area | Time (mins) | Area | From: To: (ha) | From: To: (ha) | From: To: (ha) | From: To: (ha) | From: To: (ha) | From: To: (ha) | 0 4 0.025 | 8 12 0.025 | 16 20 0.032 |  |  |  | 4 8 0.025 | 12 16 0.025 |  |  |  |  |
| Time (mins)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Area                                                                | Time (mins)                                                                         | Area           | Time (mins)    | Area           |      |             |      |                |                |                |                |                |                |           |            |             |  |  |  |           |             |  |  |  |  |             |      |             |      |             |      |                |                |                |                |                |                |           |            |             |  |  |  |           |             |  |  |  |  |
| From: To: (ha)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | From: To: (ha)                                                      | From: To: (ha)                                                                      | From: To: (ha) | From: To: (ha) | From: To: (ha) |      |             |      |                |                |                |                |                |                |           |            |             |  |  |  |           |             |  |  |  |  |             |      |             |      |             |      |                |                |                |                |                |                |           |            |             |  |  |  |           |             |  |  |  |  |
| 0 4 0.025                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 8 12 0.025                                                          | 16 20 0.029                                                                         |                |                |                |      |             |      |                |                |                |                |                |                |           |            |             |  |  |  |           |             |  |  |  |  |             |      |             |      |             |      |                |                |                |                |                |                |           |            |             |  |  |  |           |             |  |  |  |  |
| 4 8 0.030                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 12 16 0.030                                                         |                                                                                     |                |                |                |      |             |      |                |                |                |                |                |                |           |            |             |  |  |  |           |             |  |  |  |  |             |      |             |      |             |      |                |                |                |                |                |                |           |            |             |  |  |  |           |             |  |  |  |  |
| Time (mins)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Area                                                                | Time (mins)                                                                         | Area           | Time (mins)    | Area           |      |             |      |                |                |                |                |                |                |           |            |             |  |  |  |           |             |  |  |  |  |             |      |             |      |             |      |                |                |                |                |                |                |           |            |             |  |  |  |           |             |  |  |  |  |
| From: To: (ha)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | From: To: (ha)                                                      | From: To: (ha)                                                                      | From: To: (ha) | From: To: (ha) | From: To: (ha) |      |             |      |                |                |                |                |                |                |           |            |             |  |  |  |           |             |  |  |  |  |             |      |             |      |             |      |                |                |                |                |                |                |           |            |             |  |  |  |           |             |  |  |  |  |
| 0 4 0.025                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 8 12 0.025                                                          | 16 20 0.032                                                                         |                |                |                |      |             |      |                |                |                |                |                |                |           |            |             |  |  |  |           |             |  |  |  |  |             |      |             |      |             |      |                |                |                |                |                |                |           |            |             |  |  |  |           |             |  |  |  |  |
| 4 8 0.025                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 12 16 0.025                                                         |                                                                                     |                |                |                |      |             |      |                |                |                |                |                |                |           |            |             |  |  |  |           |             |  |  |  |  |             |      |             |      |             |      |                |                |                |                |                |                |           |            |             |  |  |  |           |             |  |  |  |  |
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|                                                 |                                                                     |                                                                                     |
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| Monarch House<br>Barton Lane<br>OX14 3NB        | New Barn Lane, N.Bersted<br>Surface Water Network<br>99 Unit Scheme |  |
| Date 20/02/2019<br>File 99 UNIT SCHEME +10%.MDX | Designed by S.Smith<br>Checked by                                   |                                                                                     |
| Innovyze                                        | Network 2017.1.2                                                    |                                                                                     |

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)  
for Storm

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 Storage Structures 5  
Number of Online Controls 3    Number of Time/Area Diagrams 6  
Number of Offline Controls 0    Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model    FSR    Ratio R 0.350  
Region England and Wales Cv (Summer) 0.750  
M5-60 (mm)    19.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)    300.0  
Analysis Timestep 2.5 Second Increment (Extended)  
DTS Status    ON  
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, 40

| 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. | Water<br>Level<br>(m) |
|--------|---------------|------------|------------------|-------------------|------------------------|--------------------|-----------------------|------------------|-----------------------|
| S1.000 | S24           | 15 Winter  | 1                | +0%               | 100/15 Summer          |                    |                       |                  | 3.712                 |
| S1.001 | S23           | 15 Winter  | 1                | +0%               | 100/15 Summer          |                    |                       |                  | 3.621                 |
| S1.002 | S22           | 15 Winter  | 1                | +0%               | 100/15 Summer          |                    |                       |                  | 3.569                 |
| S1.003 | S21           | 15 Winter  | 1                | +0%               | 100/15 Summer          |                    |                       |                  | 3.448                 |
| S1.004 | S20           | 15 Winter  | 1                | +0%               | 100/15 Summer          |                    |                       |                  | 3.348                 |
| S2.000 | S25           | 30 Winter  | 1                | +0%               | 100/15 Summer          |                    |                       |                  | 3.327                 |
| S1.005 | S19           | 15 Winter  | 1                | +0%               | 100/15 Summer          |                    |                       |                  | 3.171                 |
| S1.006 | S18           | 15 Winter  | 1                | +0%               | 100/15 Summer          |                    |                       |                  | 3.124                 |
| S1.007 | S17           | 15 Winter  | 1                | +0%               | 100/15 Summer          |                    |                       |                  | 3.054                 |
| S3.000 | S10           | 240 Winter | 1                | +0%               | 100/240 Winter         |                    |                       |                  | 3.003                 |
| S1.008 | S16           | 180 Winter | 1                | +0%               | 30/180 Winter          |                    |                       |                  | 3.005                 |
| S1.009 | S11           | 180 Winter | 1                | +0%               | 30/60 Summer           |                    |                       |                  | 3.003                 |
| S1.010 | SCPM3         | 180 Winter | 1                | +0%               | 1/15 Summer            |                    |                       |                  | 3.001                 |
| S4.000 | S14           | 15 Winter  | 1                | +0%               | 100/15 Summer          |                    |                       |                  | 4.319                 |
| S4.001 | S13           | 15 Winter  | 1                | +0%               | 100/15 Summer          |                    |                       |                  | 4.178                 |
| S4.002 | S12           | 15 Winter  | 1                | +0%               | 30/15 Winter           |                    |                       |                  | 4.047                 |
| S4.003 | S11           | 120 Winter | 1                | +0%               | 30/15 Summer           |                    |                       |                  | 3.966                 |
| S5.000 | S15           | 15 Winter  | 1                | +0%               | 30/60 Winter           |                    |                       |                  | 4.008                 |

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|                                                 |                                                                     |                                                                                     |
|-------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------|
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| Monarch House<br>Barton Lane<br>OX14 3NB        | New Barn Lane, N.Bersted<br>Surface Water Network<br>99 Unit Scheme |  |
| Date 20/02/2019<br>File 99 UNIT SCHEME +10%.MDX | Designed by S.Smith<br>Checked by                                   |                                                                                     |
| Innovyze                                        | Network 2017.1.2                                                    |                                                                                     |

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)  
for Storm

| PN     | US/MH<br>Name | Surcharged Flooded |                | Pipe           |                   | Status     | Level<br>Exceeded |
|--------|---------------|--------------------|----------------|----------------|-------------------|------------|-------------------|
|        |               | Depth<br>(m)       | Volume<br>(m³) | Flow /<br>Cap. | Overflow<br>(l/s) |            |                   |
| S1.000 | S24           | -0.172             | 0.000          | 0.12           | 4.7               | OK         |                   |
| S1.001 | S23           | -0.165             | 0.000          | 0.16           | 5.3               | OK         |                   |
| S1.002 | S22           | -0.147             | 0.000          | 0.26           | 8.3               | OK         |                   |
| S1.003 | S21           | -0.217             | 0.000          | 0.17           | 10.8              | OK         |                   |
| S1.004 | S20           | -0.183             | 0.000          | 0.32           | 20.5              | OK         |                   |
| S2.000 | S25           | -0.169             | 0.000          | 0.14           | 5.1               | OK         |                   |
| S1.005 | S19           | -0.224             | 0.000          | 0.33           | 30.7              | OK         |                   |
| S1.006 | S18           | -0.220             | 0.000          | 0.34           | 33.4              | OK         |                   |
| S1.007 | S17           | -0.210             | 0.000          | 0.39           | 37.9              | OK         |                   |
| S3.000 | S10           | -0.577             | 0.000          | 0.00           | 1.8               | OK         |                   |
| S1.008 | S16           | -0.190             | 0.000          | 0.18           | 15.8              | OK         |                   |
| S1.009 | S11           | -0.102             | 0.000          | 0.11           | 9.5               | OK         |                   |
| S1.010 | SCPM3         | 0.151              | 0.000          | 0.10           | 3.0               | SURCHARGED |                   |
| S4.000 | S14           | -0.156             | 0.000          | 0.20           | 6.9               | OK         |                   |
| S4.001 | S13           | -0.227             | 0.000          | 0.13           | 8.4               | OK         |                   |
| S4.002 | S12           | -0.212             | 0.000          | 0.19           | 12.1              | OK         |                   |
| S4.003 | S11           | -0.151             | 0.000          | 0.15           | 9.0               | OK         |                   |
| S5.000 | S15           | -0.187             | 0.000          | 0.06           | 2.4               | OK         |                   |

|                                                 |                                                                     |                                                                                     |
|-------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------|
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| Monarch House<br>Barton Lane<br>OX14 3NB        | New Barn Lane, N.Bersted<br>Surface Water Network<br>99 Unit Scheme |  |
| Date 20/02/2019<br>File 99 UNIT SCHEME +10%.MDX | Designed by S.Smith<br>Checked by                                   |                                                                                     |
| Innovyze                                        | Network 2017.1.2                                                    |                                                                                     |

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)  
for Storm

| 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. |
|--------|---------------|------------|------------------|-------------------|------------------------|--------------------|-----------------------|------------------|
| S4.004 | S10           | 180 Winter | 1                | +0%               | 30/15 Summer           |                    |                       |                  |
| S4.005 | S29           | 180 Winter | 1                | +0%               | 30/15 Summer           |                    |                       |                  |
| S4.006 | SHW1          | 180 Winter | 1                | +0%               | 30/15 Summer           |                    |                       |                  |
| S4.007 | SHW2          | 180 Winter | 1                | +0%               | 1/15 Summer            |                    |                       |                  |
| S4.008 | S31/CPM2      | 180 Winter | 1                | +0%               | 1/15 Summer            |                    |                       |                  |
| S4.009 | S9            | 180 Winter | 1                | +0%               | 100/30 Summer          |                    |                       |                  |
| S6.000 | S7            | 15 Winter  | 1                | +0%               | 100/15 Summer          |                    |                       |                  |
| S6.001 | S6            | 15 Winter  | 1                | +0%               | 100/15 Summer          |                    |                       |                  |
| S6.002 | S5            | 15 Winter  | 1                | +0%               | 100/15 Summer          |                    |                       |                  |
| S7.000 | S8            | 30 Winter  | 1                | +0%               | 100/15 Summer          |                    |                       |                  |
| S6.003 | S4            | 30 Winter  | 1                | +0%               | 30/15 Winter           |                    |                       |                  |
| S6.004 | S3            | 30 Winter  | 1                | +0%               | 30/15 Summer           |                    |                       |                  |
| S8.000 | S2A           | 15 Winter  | 1                | +0%               | 100/60 Winter          |                    |                       |                  |
| S8.001 | S2            | 15 Winter  | 1                | +0%               | 100/30 Winter          |                    |                       |                  |
| S6.005 | S1            | 30 Winter  | 1                | +0%               | 100/15 Winter          |                    |                       |                  |
| S6.006 | S32           | 30 Winter  | 1                | +0%               | 100/120 Winter         |                    |                       |                  |
| S4.010 | S25           | 180 Winter | 1                | +0%               | 30/60 Summer           |                    |                       |                  |
| S4.011 | SCPM1         | 180 Winter | 1                | +0%               | 30/15 Winter           |                    |                       |                  |
| S4.012 | S26           | 180 Winter | 1                | +0%               |                        |                    |                       |                  |
| S4.013 | S7954         | 180 Winter | 1                | +0%               |                        |                    |                       |                  |
| S4.014 | S27           | 180 Winter | 1                | +0%               |                        |                    |                       |                  |
| S4.015 | S28           | 180 Winter | 1                | +0%               |                        |                    |                       |                  |

| PN     | US/MH<br>Name | Water<br>Level<br>(m) | Surcharged<br>Depth<br>(m) | Flooded<br>Volume<br>(m³) | Pipe<br>Flow /<br>Overflow<br>Cap. (l/s) | Pipe<br>Flow<br>(l/s) | Status     | Level<br>Exceeded |
|--------|---------------|-----------------------|----------------------------|---------------------------|------------------------------------------|-----------------------|------------|-------------------|
| S4.004 | S10           | 3.961                 | -0.078                     | 0.000                     | 0.20                                     | 9.3                   | OK         |                   |
| S4.005 | S29           | 3.960                 | -0.063                     | 0.000                     | 0.19                                     | 9.2                   | OK         |                   |
| S4.006 | SHW1          | 3.959                 | -0.048                     | 0.000                     | 0.16                                     | 9.1                   | OK         |                   |
| S4.007 | SHW2          | 3.955                 | 0.108                      | 0.000                     | 0.04                                     | 3.8                   | SURCHARGED |                   |
| S4.008 | S31/CPM2      | 3.960                 | 0.284                      | 0.000                     | 0.04                                     | 2.7                   | SURCHARGED |                   |
| S4.009 | S9            | 3.184                 | -0.266                     | 0.000                     | 0.03                                     | 2.7                   | OK         |                   |
| S6.000 | S7            | 4.082                 | -0.161                     | 0.000                     | 0.17                                     | 6.2                   | OK         |                   |
| S6.001 | S6            | 3.917                 | -0.221                     | 0.000                     | 0.16                                     | 10.3                  | OK         |                   |
| S6.002 | S5            | 3.743                 | -0.191                     | 0.000                     | 0.28                                     | 17.6                  | OK         |                   |
| S7.000 | S8            | 3.895                 | -0.171                     | 0.000                     | 0.13                                     | 4.9                   | OK         |                   |
| S6.003 | S4            | 3.653                 | -0.163                     | 0.000                     | 0.43                                     | 27.8                  | OK         |                   |
| S6.004 | S3            | 3.529                 | -0.126                     | 0.000                     | 0.64                                     | 35.0                  | OK         |                   |
| S8.000 | S2A           | 3.585                 | -0.198                     | 0.000                     | 0.04                                     | 1.1                   | OK         |                   |
| S8.001 | S2            | 3.558                 | -0.173                     | 0.000                     | 0.12                                     | 4.0                   | OK         |                   |
| S6.005 | S1            | 3.444                 | -0.184                     | 0.000                     | 0.32                                     | 37.4                  | OK         |                   |
| S6.006 | S32           | 3.142                 | -0.564                     | 0.000                     | 0.04                                     | 37.4                  | OK         |                   |
| S4.010 | S25           | 3.124                 | -0.146                     | 0.000                     | 0.13                                     | 9.7                   | OK         |                   |
| S4.011 | SCPM1         | 3.115                 | -0.063                     | 0.000                     | 0.14                                     | 9.6                   | OK         |                   |
| S4.012 | S26           | 2.875                 | -0.221                     | 0.000                     | 0.16                                     | 9.6                   | OK         |                   |
| S4.013 | S7954         | 2.670                 | -0.370                     | 0.000                     | 0.07                                     | 9.6                   | OK         |                   |

|                                                 |                                                                     |                                                                                     |
|-------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| MJA Consulting                                  |                                                                     | Page 18                                                                             |
| Monarch House<br>Barton Lane<br>OX14 3NB        | New Barn Lane, N.Bersted<br>Surface Water Network<br>99 Unit Scheme |  |
| Date 20/02/2019<br>File 99 UNIT SCHEME +10%.MDX | Designed by S.Smith<br>Checked by                                   |                                                                                     |
| Innovyze                                        | Network 2017.1.2                                                    |                                                                                     |

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1)  
for Storm

| PN     | US/MH<br>Name | Water Surcharged |              | Flooded        |                | Pipe              |               | Status | Level<br>Exceeded |
|--------|---------------|------------------|--------------|----------------|----------------|-------------------|---------------|--------|-------------------|
|        |               | Level<br>(m)     | Depth<br>(m) | Volume<br>(m³) | Flow /<br>Cap. | Overflow<br>(l/s) | Flow<br>(l/s) |        |                   |
| S4.014 | S27           | 2.614            | -0.376       | 0.000          | 0.06           |                   | 9.6           | OK     |                   |
| S4.015 | S28           | 2.445            | -0.365       | 0.000          | 0.08           |                   | 9.6           | OK     |                   |

|                                                 |  |                                                                     |  |
|-------------------------------------------------|--|---------------------------------------------------------------------|--|
| MJA Consulting                                  |  | Page 19                                                             |  |
| Monarch House<br>Barton Lane<br>OX14 3NB        |  | New Barn Lane, N.Bersted<br>Surface Water Network<br>99 Unit Scheme |  |
| Date 20/02/2019<br>File 99 UNIT SCHEME +10%.MDX |  | Designed by S.Smith<br>Checked by                                   |  |
| Innovyze                                        |  | Network 2017.1.2                                                    |  |

**30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)**  
for Storm

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 Storage Structures 5  
Number of Online Controls 3    Number of Time/Area Diagrams 6  
Number of Offline Controls 0    Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model    FSR    Ratio R 0.350  
Region England and Wales Cv (Summer) 0.750  
M5-60 (mm)    19.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0  
Analysis Timestep 2.5 Second Increment (Extended)  
DTS Status ON  
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, 40

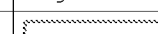
| PN     | US/MH Name | Storm      | Return Period | Climate Change | First (X) Surchage | First (Y) Flood | First (Z) Overflow | Overflow Act. | Water Level (m) |
|--------|------------|------------|---------------|----------------|--------------------|-----------------|--------------------|---------------|-----------------|
| S1.000 | S24        | 15 Winter  | 30            | +0%            | 100/15 Summer      |                 |                    |               | 3.744           |
| S1.001 | S23        | 15 Winter  | 30            | +0%            | 100/15 Summer      |                 |                    |               | 3.665           |
| S1.002 | S22        | 15 Winter  | 30            | +0%            | 100/15 Summer      |                 |                    |               | 3.632           |
| S1.003 | S21        | 15 Winter  | 30            | +0%            | 100/15 Summer      |                 |                    |               | 3.517           |
| S1.004 | S20        | 15 Winter  | 30            | +0%            | 100/15 Summer      |                 |                    |               | 3.460           |
| S2.000 | S25        | 30 Winter  | 30            | +0%            | 100/15 Summer      |                 |                    |               | 3.363           |
| S1.005 | S19        | 15 Winter  | 30            | +0%            | 100/15 Summer      |                 |                    |               | 3.330           |
| S1.006 | S18        | 15 Winter  | 30            | +0%            | 100/15 Summer      |                 |                    |               | 3.287           |
| S1.007 | S17        | 360 Winter | 30            | +0%            | 100/15 Summer      |                 |                    |               | 3.230           |
| S3.000 | S10        | 360 Winter | 30            | +0%            | 100/240 Winter     |                 |                    |               | 3.228           |
| S1.008 | S16        | 360 Winter | 30            | +0%            | 30/180 Winter      |                 |                    |               | 3.228           |
| S1.009 | S11        | 360 Winter | 30            | +0%            | 30/60 Summer       |                 |                    |               | 3.226           |
| S1.010 | SCPM3      | 360 Winter | 30            | +0%            | 1/15 Summer        |                 |                    |               | 3.224           |
| S4.000 | S14        | 15 Winter  | 30            | +0%            | 100/15 Summer      |                 |                    |               | 4.364           |
| S4.001 | S13        | 30 Winter  | 30            | +0%            | 100/15 Summer      |                 |                    |               | 4.330           |
| S4.002 | S12        | 30 Winter  | 30            | +0%            | 30/15 Winter       |                 |                    |               | 4.317           |
| S4.003 | S11        | 60 Winter  | 30            | +0%            | 30/15 Summer       |                 |                    |               | 4.283           |
| S5.000 | S15        | 60 Winter  | 30            | +0%            | 30/60 Winter       |                 |                    |               | 4.221           |

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|                                                 |                                                                     |                                                                                     |
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| MJA Consulting                                  |                                                                     | Page 20                                                                             |
| Monarch House<br>Barton Lane<br>OX14 3NB        | New Barn Lane, N.Bersted<br>Surface Water Network<br>99 Unit Scheme |  |
| Date 20/02/2019<br>File 99 UNIT SCHEME +10%.MDX | Designed by S.Smith<br>Checked by                                   |                                                                                     |
| Innovyze                                        | Network 2017.1.2                                                    |                                                                                     |

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)  
for Storm

| PN     | US/MH<br>Name | Surcharged Flooded |                | Pipe           |                   | Status     | Level<br>Exceeded |
|--------|---------------|--------------------|----------------|----------------|-------------------|------------|-------------------|
|        |               | Depth<br>(m)       | Volume<br>(m³) | Flow /<br>Cap. | Overflow<br>(l/s) |            |                   |
| S1.000 | S24           | -0.140             | 0.000          | 0.30           | 11.4              | OK         |                   |
| S1.001 | S23           | -0.121             | 0.000          | 0.39           | 13.2              | OK         |                   |
| S1.002 | S22           | -0.084             | 0.000          | 0.69           | 22.0              | OK         |                   |
| S1.003 | S21           | -0.148             | 0.000          | 0.47           | 29.9              | OK         |                   |
| S1.004 | S20           | -0.071             | 0.000          | 0.91           | 58.1              | OK         |                   |
| S2.000 | S25           | -0.133             | 0.000          | 0.35           | 12.6              | OK         |                   |
| S1.005 | S19           | -0.065             | 0.000          | 0.88           | 81.7              | OK         |                   |
| S1.006 | S18           | -0.057             | 0.000          | 0.88           | 86.6              | OK         |                   |
| S1.007 | S17           | -0.034             | 0.000          | 0.21           | 20.6              | OK         |                   |
| S3.000 | S10           | -0.352             | 0.000          | 0.00           | 1.9               | OK         |                   |
| S1.008 | S16           | 0.033              | 0.000          | 0.17           | 14.9              | SURCHARGED |                   |
| S1.009 | S11           | 0.121              | 0.000          | 0.10           | 8.4               | SURCHARGED |                   |
| S1.010 | SCPM3         | 0.374              | 0.000          | 0.10           | 3.0               | SURCHARGED |                   |
| S4.000 | S14           | -0.111             | 0.000          | 0.50           | 16.9              | OK         |                   |
| S4.001 | S13           | -0.075             | 0.000          | 0.26           | 16.8              | OK         |                   |
| S4.002 | S12           | 0.058              | 0.000          | 0.35           | 22.4              | SURCHARGED |                   |
| S4.003 | S11           | 0.166              | 0.000          | 0.44           | 26.9              | SURCHARGED |                   |
| S5.000 | S15           | 0.026              | 0.000          | 0.08           | 2.8               | SURCHARGED |                   |

|                                                 |                                                                     |                                                                                     |
|-------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| MJA Consulting                                  |                                                                     | Page 21                                                                             |
| Monarch House<br>Barton Lane<br>OX14 3NB        | New Barn Lane, N.Bersted<br>Surface Water Network<br>99 Unit Scheme |  |
| Date 20/02/2019<br>File 99 UNIT SCHEME +10%.MDX | Designed by S.Smith<br>Checked by                                   |                                                                                     |
| Innovyze                                        | Network 2017.1.2                                                    |                                                                                     |

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)  
for Storm

| 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. |
|--------|---------------|------------|------------------|-------------------|------------------------|--------------------|-----------------------|------------------|
| S4.004 | S10           | 60 Winter  | 30               | +0%               | 30/15 Summer           |                    |                       |                  |
| S4.005 | S29           | 60 Winter  | 30               | +0%               | 30/15 Summer           |                    |                       |                  |
| S4.006 | SHW1          | 240 Winter | 30               | +0%               | 30/15 Summer           |                    |                       |                  |
| S4.007 | SHW2          | 240 Winter | 30               | +0%               | 1/15 Summer            |                    |                       |                  |
| S4.008 | S31/CPM2      | 240 Winter | 30               | +0%               | 1/15 Summer            |                    |                       |                  |
| S4.009 | S9            | 180 Winter | 30               | +0%               | 100/30 Summer          |                    |                       |                  |
| S6.000 | S7            | 15 Winter  | 30               | +0%               | 100/15 Summer          |                    |                       |                  |
| S6.001 | S6            | 15 Winter  | 30               | +0%               | 100/15 Summer          |                    |                       |                  |
| S6.002 | S5            | 30 Winter  | 30               | +0%               | 100/15 Summer          |                    |                       |                  |
| S7.000 | S8            | 30 Winter  | 30               | +0%               | 100/15 Summer          |                    |                       |                  |
| S6.003 | S4            | 30 Winter  | 30               | +0%               | 30/15 Winter           |                    |                       |                  |
| S6.004 | S3            | 30 Winter  | 30               | +0%               | 30/15 Summer           |                    |                       |                  |
| S8.000 | S2A           | 15 Winter  | 30               | +0%               | 100/60 Winter          |                    |                       |                  |
| S8.001 | S2            | 15 Winter  | 30               | +0%               | 100/30 Winter          |                    |                       |                  |
| S6.005 | S1            | 30 Winter  | 30               | +0%               | 100/15 Winter          |                    |                       |                  |
| S6.006 | S32           | 180 Winter | 30               | +0%               | 100/120 Winter         |                    |                       |                  |
| S4.010 | S25           | 180 Winter | 30               | +0%               | 30/60 Summer           |                    |                       |                  |
| S4.011 | SCPM1         | 180 Winter | 30               | +0%               | 30/15 Winter           |                    |                       |                  |
| S4.012 | S26           | 720 Winter | 30               | +0%               |                        |                    |                       |                  |
| S4.013 | S7954         | 720 Winter | 30               | +0%               |                        |                    |                       |                  |
| S4.014 | S27           | 720 Winter | 30               | +0%               |                        |                    |                       |                  |
| S4.015 | S28           | 720 Winter | 30               | +0%               |                        |                    |                       |                  |

| PN     | US/MH<br>Name | Water<br>Level<br>(m) | Surcharged<br>Depth<br>(m) | Flooded<br>Volume<br>(m³) | Pipe<br>Flow /<br>Overflow<br>Cap. (l/s) | Pipe<br>Flow<br>(l/s) | Status     | Level<br>Exceeded |
|--------|---------------|-----------------------|----------------------------|---------------------------|------------------------------------------|-----------------------|------------|-------------------|
| S4.004 | S10           | 4.219                 | 0.180                      | 0.000                     | 0.76                                     | 35.9                  | SURCHARGED |                   |
| S4.005 | S29           | 4.161                 | 0.138                      | 0.000                     | 0.74                                     | 35.8                  | SURCHARGED |                   |
| S4.006 | SHW1          | 4.116                 | 0.109                      | 0.000                     | 0.32                                     | 18.8                  | SURCHARGED |                   |
| S4.007 | SHW2          | 4.112                 | 0.265                      | 0.000                     | 0.04                                     | 4.6                   | SURCHARGED |                   |
| S4.008 | S31/CPM2      | 4.117                 | 0.441                      | 0.000                     | 0.04                                     | 3.0                   | SURCHARGED |                   |
| S4.009 | S9            | 3.394                 | -0.056                     | 0.000                     | 0.03                                     | 3.2                   | OK         |                   |
| S6.000 | S7            | 4.122                 | -0.121                     | 0.000                     | 0.43                                     | 15.2                  | OK         |                   |
| S6.001 | S6            | 3.967                 | -0.171                     | 0.000                     | 0.38                                     | 25.1                  | OK         |                   |
| S6.002 | S5            | 3.902                 | -0.032                     | 0.000                     | 0.61                                     | 38.4                  | OK         |                   |
| S7.000 | S8            | 3.928                 | -0.138                     | 0.000                     | 0.32                                     | 12.1                  | OK         |                   |
| S6.003 | S4            | 3.843                 | 0.027                      | 0.000                     | 0.91                                     | 59.5                  | SURCHARGED |                   |
| S6.004 | S3            | 3.708                 | 0.054                      | 0.000                     | 1.41                                     | 77.5                  | SURCHARGED |                   |
| S8.000 | S2A           | 3.611                 | -0.172                     | 0.000                     | 0.09                                     | 2.8                   | OK         |                   |
| S8.001 | S2            | 3.597                 | -0.134                     | 0.000                     | 0.34                                     | 11.5                  | OK         |                   |
| S6.005 | S1            | 3.512                 | -0.116                     | 0.000                     | 0.69                                     | 81.8                  | OK         |                   |
| S6.006 | S32           | 3.391                 | -0.315                     | 0.000                     | 0.05                                     | 46.3                  | OK         |                   |
| S4.010 | S25           | 3.391                 | 0.121                      | 0.000                     | 0.14                                     | 10.8                  | SURCHARGED |                   |
| S4.011 | SCPM1         | 3.400                 | 0.222                      | 0.000                     | 0.15                                     | 10.0                  | SURCHARGED |                   |
| S4.012 | S26           | 2.877                 | -0.219                     | 0.000                     | 0.16                                     | 10.0                  | OK         |                   |
| S4.013 | S7954         | 2.671                 | -0.369                     | 0.000                     | 0.07                                     | 10.0                  | OK         |                   |

|                                                 |                                                                     |                                                                                     |
|-------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| MJA Consulting                                  |                                                                     | Page 22                                                                             |
| Monarch House<br>Barton Lane<br>OX14 3NB        | New Barn Lane, N.Bersted<br>Surface Water Network<br>99 Unit Scheme |  |
| Date 20/02/2019<br>File 99 UNIT SCHEME +10%.MDX | Designed by S.Smith<br>Checked by                                   |                                                                                     |
| Innovyze                                        | Network 2017.1.2                                                    |                                                                                     |

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)  
for Storm

| PN     | US/MH<br>Name | Water Surcharged |              | Flooded        |                | Pipe              |               | Status | Level<br>Exceeded |
|--------|---------------|------------------|--------------|----------------|----------------|-------------------|---------------|--------|-------------------|
|        |               | Level<br>(m)     | Depth<br>(m) | Volume<br>(m³) | Flow /<br>Cap. | Overflow<br>(l/s) | Flow<br>(l/s) |        |                   |
| S4.014 | S27           | 2.615            | -0.375       | 0.000          | 0.07           |                   | 10.0          | OK     |                   |
| S4.015 | S28           | 2.447            | -0.363       | 0.000          | 0.08           |                   | 10.0          | OK     |                   |

|                                                 |                                                                     |                                                                                     |
|-------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| MJA Consulting                                  |                                                                     | Page 23                                                                             |
| Monarch House<br>Barton Lane<br>OX14 3NB        | New Barn Lane, N.Bersted<br>Surface Water Network<br>99 Unit Scheme |  |
| Date 20/02/2019<br>File 99 UNIT SCHEME +10%.MDX | Designed by S.Smith<br>Checked by                                   |                                                                                     |
| Innovyze                                        | Network 2017.1.2                                                    |                                                                                     |

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

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 Storage Structures 5  
 Number of Online Controls 3    Number of Time/Area Diagrams 6  
 Number of Offline Controls 0    Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model    FSR    Ratio R 0.350  
 Region England and Wales Cv (Summer) 0.750  
 M5-60 (mm)    19.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0  
 Analysis Timestep 2.5 Second Increment (Extended)  
 DTS Status ON  
 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, 40

| PN     | US/MH Name | Storm      | Return Period | Climate Change | First (X) Surge | First (Y) Flood | First (Z) Overflow | Overflow Act. | Water Level (m) |
|--------|------------|------------|---------------|----------------|-----------------|-----------------|--------------------|---------------|-----------------|
| S1.000 | S24        | 15 Winter  | 100           | +40%           | 100/15 Summer   |                 |                    |               | 4.215           |
| S1.001 | S23        | 15 Winter  | 100           | +40%           | 100/15 Summer   |                 |                    |               | 4.157           |
| S1.002 | S22        | 15 Winter  | 100           | +40%           | 100/15 Summer   |                 |                    |               | 4.098           |
| S1.003 | S21        | 15 Winter  | 100           | +40%           | 100/15 Summer   |                 |                    |               | 4.024           |
| S1.004 | S20        | 15 Winter  | 100           | +40%           | 100/15 Summer   |                 |                    |               | 3.940           |
| S2.000 | S25        | 15 Winter  | 100           | +40%           | 100/15 Summer   |                 |                    |               | 3.722           |
| S1.005 | S19        | 600 Winter | 100           | +40%           | 100/15 Summer   |                 |                    |               | 3.743           |
| S1.006 | S18        | 480 Winter | 100           | +40%           | 100/15 Summer   |                 |                    |               | 3.748           |
| S1.007 | S17        | 600 Winter | 100           | +40%           | 100/15 Summer   |                 |                    |               | 3.759           |
| S3.000 | S10        | 600 Winter | 100           | +40%           | 100/240 Winter  |                 |                    |               | 3.688           |
| S1.008 | S16        | 600 Winter | 100           | +40%           | 30/180 Winter   |                 |                    |               | 3.830           |
| S1.009 | S11        | 720 Winter | 100           | +40%           | 30/60 Summer    |                 |                    |               | 3.997           |
| S1.010 | SCPM3      | 720 Winter | 100           | +40%           | 1/15 Summer     |                 |                    |               | 4.045           |
| S4.000 | S14        | 15 Winter  | 100           | +40%           | 100/15 Summer   |                 |                    |               | 4.885           |
| S4.001 | S13        | 30 Winter  | 100           | +40%           | 100/15 Summer   |                 |                    |               | 4.829           |
| S4.002 | S12        | 30 Winter  | 100           | +40%           | 30/15 Winter    |                 |                    |               | 4.759           |
| S4.003 | S11        | 30 Winter  | 100           | +40%           | 30/15 Summer    |                 |                    |               | 4.673           |
| S5.000 | S15        | 30 Winter  | 100           | +40%           | 30/60 Winter    |                 |                    |               | 4.604           |

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|                                                 |                                                                     |                                                                                     |
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| Monarch House<br>Barton Lane<br>OX14 3NB        | New Barn Lane, N.Bersted<br>Surface Water Network<br>99 Unit Scheme |  |
| Date 20/02/2019<br>File 99 UNIT SCHEME +10%.MDX | Designed by S.Smith<br>Checked by                                   |                                                                                     |
| Innovyze                                        | Network 2017.1.2                                                    |                                                                                     |

100 year Return Period Summary of Critical Results by Maximum Level (Rank  
1) for Storm

| PN     | US/MH<br>Name | Surcharged Flooded |                | Flow /<br>Cap. | Overflow<br>(l/s) | Pipe<br>Flow<br>(l/s) | Status     | Level<br>Exceeded |
|--------|---------------|--------------------|----------------|----------------|-------------------|-----------------------|------------|-------------------|
|        |               | Depth<br>(m)       | Volume<br>(m³) |                |                   |                       |            |                   |
| S1.000 | S24           | 0.331              | 0.000          | 0.49           |                   | 18.3                  | SURCHARGED |                   |
| S1.001 | S23           | 0.371              | 0.000          | 0.64           |                   | 21.8                  | SURCHARGED |                   |
| S1.002 | S22           | 0.382              | 0.000          | 1.06           |                   | 33.6                  | SURCHARGED |                   |
| S1.003 | S21           | 0.359              | 0.000          | 0.69           |                   | 44.1                  | SURCHARGED |                   |
| S1.004 | S20           | 0.409              | 0.000          | 1.31           |                   | 83.9                  | SURCHARGED |                   |
| S2.000 | S25           | 0.226              | 0.000          | 0.61           |                   | 21.7                  | SURCHARGED |                   |
| S1.005 | S19           | 0.348              | 0.000          | 0.23           |                   | 20.8                  | SURCHARGED |                   |
| S1.006 | S18           | 0.404              | 0.000          | 0.26           |                   | 26.1                  | SURCHARGED |                   |
| S1.007 | S17           | 0.495              | 0.000          | 0.26           |                   | 25.2                  | SURCHARGED |                   |
| S3.000 | S10           | 0.108              | 0.000          | 0.04           |                   | 41.7                  | SURCHARGED |                   |
| S1.008 | S16           | 0.635              | 0.000          | 0.45           |                   | 39.0                  | SURCHARGED |                   |
| S1.009 | S11           | 0.892              | 0.000          | 0.18           |                   | 15.7                  | SURCHARGED |                   |
| S1.010 | SCPM3         | 1.195              | 0.000          | 0.11           |                   | 3.3                   | SURCHARGED |                   |
| S4.000 | S14           | 0.410              | 0.000          | 0.82           |                   | 27.8                  | SURCHARGED |                   |
| S4.001 | S13           | 0.424              | 0.000          | 0.38           |                   | 24.5                  | SURCHARGED |                   |
| S4.002 | S12           | 0.500              | 0.000          | 0.72           |                   | 46.7                  | SURCHARGED |                   |
| S4.003 | S11           | 0.556              | 0.000          | 1.02           |                   | 62.2                  | SURCHARGED |                   |
| S5.000 | S15           | 0.409              | 0.000          | 0.17           |                   | 6.3                   | SURCHARGED |                   |

|                                                 |                                                                     |                                                                                     |
|-------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------|
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| Monarch House<br>Barton Lane<br>OX14 3NB        | New Barn Lane, N.Bersted<br>Surface Water Network<br>99 Unit Scheme |  |
| Date 20/02/2019<br>File 99 UNIT SCHEME +10%.MDX | Designed by S.Smith<br>Checked by                                   |                                                                                     |
| Innovyze                                        | Network 2017.1.2                                                    |                                                                                     |

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

| PN     | US/MH Name | Storm      | Return Period | Climate Change | First (X) Surge | First (Y) Flood | First (Z) Overflow | Overflow Act. |
|--------|------------|------------|---------------|----------------|-----------------|-----------------|--------------------|---------------|
| S4.004 | S10        | 30 Winter  | 100           | +40%           | 30/15 Summer    |                 |                    |               |
| S4.005 | S29        | 30 Winter  | 100           | +40%           | 30/15 Summer    |                 |                    |               |
| S4.006 | SHW1       | 480 Winter | 100           | +40%           | 30/15 Summer    |                 |                    |               |
| S4.007 | SHW2       | 480 Winter | 100           | +40%           | 1/15 Summer     |                 |                    |               |
| S4.008 | S31/CPM2   | 480 Winter | 100           | +40%           | 1/15 Summer     |                 |                    |               |
| S4.009 | S9         | 240 Winter | 100           | +40%           | 100/30 Summer   |                 |                    |               |
| S6.000 | S7         | 30 Winter  | 100           | +40%           | 100/15 Summer   |                 |                    |               |
| S6.001 | S6         | 30 Winter  | 100           | +40%           | 100/15 Summer   |                 |                    |               |
| S6.002 | S5         | 30 Winter  | 100           | +40%           | 100/15 Summer   |                 |                    |               |
| S7.000 | S8         | 30 Winter  | 100           | +40%           | 100/15 Summer   |                 |                    |               |
| S6.003 | S4         | 30 Winter  | 100           | +40%           | 30/15 Winter    |                 |                    |               |
| S6.004 | S3         | 240 Winter | 100           | +40%           | 30/15 Summer    |                 |                    |               |
| S8.000 | S2A        | 240 Winter | 100           | +40%           | 100/60 Winter   |                 |                    |               |
| S8.001 | S2         | 240 Winter | 100           | +40%           | 100/30 Winter   |                 |                    |               |
| S6.005 | S1         | 240 Winter | 100           | +40%           | 100/15 Winter   |                 |                    |               |
| S6.006 | S32        | 240 Winter | 100           | +40%           | 100/120 Winter  |                 |                    |               |
| S4.010 | S25        | 240 Winter | 100           | +40%           | 30/60 Summer    |                 |                    |               |
| S4.011 | SCPM1      | 240 Winter | 100           | +40%           | 30/15 Winter    |                 |                    |               |
| S4.012 | S26        | 240 Winter | 100           | +40%           |                 |                 |                    |               |
| S4.013 | S7954      | 240 Winter | 100           | +40%           |                 |                 |                    |               |
| S4.014 | S27        | 240 Winter | 100           | +40%           |                 |                 |                    |               |
| S4.015 | S28        | 240 Winter | 100           | +40%           |                 |                 |                    |               |

| PN     | US/MH Name | Water Level (m) | Surcharged Depth (m) | Flooded Volume (m³) | Flow / Cap. | Overflow (l/s) | Pipe Flow (l/s) | Status     | Level Exceeded |
|--------|------------|-----------------|----------------------|---------------------|-------------|----------------|-----------------|------------|----------------|
| S4.004 | S10        | 4.590           | 0.551                | 0.000               | 1.81        |                | 85.8            | SURCHARGED |                |
| S4.005 | S29        | 4.474           | 0.451                | 0.000               | 1.76        |                | 85.4            | SURCHARGED |                |
| S4.006 | SHW1       | 4.363           | 0.356                | 0.000               | 0.33        |                | 19.6            | SURCHARGED |                |
| S4.007 | SHW2       | 4.360           | 0.513                | 0.000               | 0.04        |                | 4.4             | SURCHARGED |                |
| S4.008 | S31/CPM2   | 4.364           | 0.688                | 0.000               | 0.04        |                | 3.2             | SURCHARGED |                |
| S4.009 | S9         | 4.358           | 0.908                | 0.000               | 0.03        |                | 2.9             | SURCHARGED |                |
| S6.000 | S7         | 4.621           | 0.378                | 0.000               | 0.62        |                | 21.9            | SURCHARGED |                |
| S6.001 | S6         | 4.600           | 0.462                | 0.000               | 0.53        |                | 35.2            | SURCHARGED |                |
| S6.002 | S5         | 4.510           | 0.576                | 0.000               | 0.91        |                | 57.2            | SURCHARGED |                |
| S7.000 | S8         | 4.498           | 0.432                | 0.000               | 0.64        |                | 24.1            | SURCHARGED |                |
| S6.003 | S4         | 4.426           | 0.610                | 0.000               | 1.60        |                | 103.7           | SURCHARGED |                |
| S6.004 | S3         | 4.372           | 0.717                | 0.000               | 1.20        |                | 66.0            | SURCHARGED |                |
| S8.000 | S2A        | 4.370           | 0.587                | 0.000               | 0.03        |                | 1.1             | FLOOD RISK |                |
| S8.001 | S2         | 4.369           | 0.638                | 0.000               | 0.13        |                | 4.2             | FLOOD RISK |                |
| S6.005 | S1         | 4.368           | 0.740                | 0.000               | 0.59        |                | 69.3            | SURCHARGED |                |
| S6.006 | S32        | 4.360           | 0.654                | 0.000               | 0.07        |                | 68.7            | SURCHARGED |                |
| S4.010 | S25        | 4.359           | 1.089                | 0.000               | 0.16        |                | 11.8            | SURCHARGED |                |
| S4.011 | SCPM1      | 4.349           | 1.171                | 0.000               | 0.16        |                | 11.0            | SURCHARGED |                |
| S4.012 | S26        | 2.882           | -0.214               | 0.000               | 0.18        |                | 11.0            | OK         |                |
| S4.013 | S7954      | 2.676           | -0.364               | 0.000               | 0.08        |                | 11.0            | OK         |                |

|                                                 |                                                                     |                                                                                     |
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| Monarch House<br>Barton Lane<br>OX14 3NB        | New Barn Lane, N.Bersted<br>Surface Water Network<br>99 Unit Scheme |  |
| Date 20/02/2019<br>File 99 UNIT SCHEME +10%.MDX | Designed by S.Smith<br>Checked by                                   |                                                                                     |
| Innovyze                                        | Network 2017.1.2                                                    |                                                                                     |

100 year Return Period Summary of Critical Results by Maximum Level (Rank  
1) for Storm

| PN     | US/MH<br>Name | Water Surcharged |              | Flooded        |                | Pipe              |               | Status | Level<br>Exceeded |
|--------|---------------|------------------|--------------|----------------|----------------|-------------------|---------------|--------|-------------------|
|        |               | Level<br>(m)     | Depth<br>(m) | Volume<br>(m³) | Flow /<br>Cap. | Overflow<br>(l/s) | Flow<br>(l/s) |        |                   |
| S4.014 | S27           | 2.620            | -0.370       | 0.000          | 0.07           |                   | 11.0          | OK     |                   |
| S4.015 | S28           | 2.452            | -0.358       | 0.000          | 0.09           |                   | 11.0          | OK     |                   |