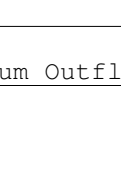


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| 3E Consulting Engineers Ltd                                                                   |  |                                                                                                     |  |                                     |  | Page 1                                                                              |  |    |  |
| 4 Calder Close<br>Wakefield<br>WF4 3BA                                                        |  |                                                                                                     |  |                                     |  |  |  |    |  |
| Date 12/06/2017 11:32                                                                         |  | Designed by john.mitchell                                                                           |  |                                     |  |                                                                                     |  |    |  |
| File Full SW Model.MDX                                                                        |  | Checked by                                                                                          |  |                                     |  |                                                                                     |  |    |  |
| Micro Drainage                                                                                |  |                                                                                                     |  | Network 2017.1.1                    |  |                                                                                     |  |    |  |
| <u>1 year Return Period Summary of Critical Results by Maximum Outflow (Rank 1) for Storm</u> |  |                                                                                                     |  |                                     |  |                                                                                     |  |    |  |
| 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                                                        |  | 0  |  |
| Number of Online Controls                                                                     |  |                                                                                                     |  | 1                                   |  | Number of Time/Area Diagrams                                                        |  | 0  |  |
| Number of Offline Controls                                                                    |  |                                                                                                     |  | 0                                   |  | Number of Real Time Controls                                                        |  | 0  |  |
| <u>Synthetic Rainfall Details</u>                                                             |  |                                                                                                     |  |                                     |  |                                                                                     |  |    |  |
| Rainfall Model                                                                                |  | FSR                                                                                                 |  | Ratio R                             |  | 0.339                                                                               |  |    |  |
| 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                               |  | DVD Status                                                                          |  | ON |  |
| Analysis Timestep                                                                             |  |                                                                                                     |  | Fine Inertia                        |  | Status                                                                              |  | ON |  |
| DTS 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, 5760, 7200, 8640, 10080 |  |                                     |  |                                                                                     |  |    |  |
| Return Period(s) (years)                                                                      |  | 1, 30, 100                                                                                          |  |                                     |  |                                                                                     |  |    |  |
| Climate Change (%)                                                                            |  | 0, 0, 40                                                                                            |  |                                     |  |                                                                                     |  |    |  |
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| 3E Consulting Engineers Ltd                     |  | Page 2                                                                              |
| 4 Calder Close<br>Wakefield<br>WF4 3BA          |  |  |
| Date 12/06/2017 11:32<br>File Full SW Model.MDX |  |                                                                                     |
| Designed by john.mitchell<br>Checked by         |  |                                                                                     |
| Micro Drainage                                  |  | Network 2017.1.1                                                                    |

30 year Return Period Summary of Critical Results by Maximum Outflow (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 | 0 |
| Number of Online Controls   | 1 | Number of Time/Area Diagrams | 0 |
| Number of Offline Controls  | 0 | Number of Real Time Controls | 0 |

Synthetic Rainfall Details

|                |                   |             |       |
|----------------|-------------------|-------------|-------|
| Rainfall Model | FSR               | Ratio R     | 0.339 |
| 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 | DVD Status     | ON |
| Analysis Timestep                  | Fine  | Inertia Status | ON |
| DTS Status                         | ON    |                |    |

Profile(s)

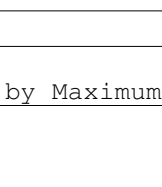
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|--------------------------|-----------------------------------------------------------------------------------------------------|
| Duration(s) (mins)       | 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080 |
| 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. |
|-------|------------|-----------|---------------|----------------|-----------------|-----------------|--------------------|---------------|
| 1.000 | 1          | 15 Winter | 30            | +0%            | 100/15 Summer   |                 |                    |               |
| 1.001 | 2          | 15 Winter | 30            | +0%            |                 |                 |                    |               |
| 1.002 | 3          | 15 Winter | 30            | +0%            | 100/30 Summer   |                 |                    |               |
| 1.003 | 4          | 30 Summer | 30            | +0%            | 100/30 Summer   | 100/120 Winter  |                    |               |
| 2.000 | 5          | 15 Winter | 30            | +0%            |                 |                 |                    |               |
| 1.004 | 5          | 60 Winter | 30            | +0%            | 1/15 Summer     |                 |                    |               |

| 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 |
|-------|------------|-----------------|----------------------|---------------------|-------------|----------------|-----------------|------------|----------------|
| 1.000 | 1          | 188.408         | -0.042               | 0.000               | 0.61        |                | 4.2             | OK         |                |
| 1.001 | 2          | 188.098         | -0.077               | 0.000               | 0.12        |                | 4.2             | OK         |                |
| 1.002 | 3          | 186.142         | -0.328               | 0.000               | 0.02        |                | 5.8             | OK         |                |
| 1.003 | 4          | 186.163         | -0.237               | 0.000               | 0.01        |                | 1.2             | OK         | 1              |
| 2.000 | 5          | 188.455         | -0.095               | 0.000               | 0.28        |                | 10.2            | OK         |                |
| 1.004 | 5          | 186.235         | 0.325                | 0.000               | 0.13        |                | 1.8             | SURCHARGED |                |

|                                                      |                                         |                                                                                     |
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| 3E Consulting Engineers Ltd                          |                                         | Page 3                                                                              |
| 4 Calder Close<br>Wakefield<br>WF4 3BA               |                                         |  |
| Date 12/06/2017 11:32<br>File Full SW Model.MDX      | Designed by john.mitchell<br>Checked by |                                                                                     |
| Micro Drainage                      Network 2017.1.1 |                                         |                                                                                     |

### 100 year Return Period Summary of Critical Results by Maximum Outflow (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 | 0 |
| Number of Online Controls   | 1 | Number of Time/Area Diagrams | 0 |
| Number of Offline Controls  | 0 | Number of Real Time Controls | 0 |

#### Synthetic Rainfall Details

|                |                   |             |       |
|----------------|-------------------|-------------|-------|
| Rainfall Model | FSR               | Ratio R     | 0.339 |
| 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 | DVD Status     | ON |
| Analysis Timestep                  | Fine  | Inertia Status | ON |
| DTS Status                         | ON    |                |    |

#### Profile(s)

|                          |                                                                                                     |
|--------------------------|-----------------------------------------------------------------------------------------------------|
| Duration(s) (mins)       | 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080 |
| 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. |
|-------|------------|------------|---------------|----------------|-----------------|-----------------|--------------------|---------------|
| 1.000 | 1          | 15 Winter  | 100           | +40%           | 100/15 Summer   |                 |                    |               |
| 1.001 | 2          | 15 Winter  | 100           | +40%           |                 |                 |                    |               |
| 1.002 | 3          | 15 Winter  | 100           | +40%           | 100/30 Summer   |                 |                    |               |
| 1.003 | 4          | 60 Winter  | 100           | +40%           | 100/30 Summer   | 100/120 Winter  |                    |               |
| 2.000 | 5          | 15 Winter  | 100           | +40%           |                 |                 |                    |               |
| 1.004 | 5          | 120 Winter | 100           | +40%           | 1/15 Summer     |                 |                    |               |

| PN    | US/MH Name | Water Level (m) | Surcharged Depth (m) | Flooded Volume (m³) | Flow / Cap. (l/s) | Overflow (l/s) | Pipe Flow (l/s) | Status     | Level Exceeded |
|-------|------------|-----------------|----------------------|---------------------|-------------------|----------------|-----------------|------------|----------------|
| 1.000 | 1          | 188.509         | 0.059                | 0.000               | 1.10              |                | 7.5             | SURCHARGED |                |
| 1.001 | 2          | 188.106         | -0.069               | 0.000               | 0.21              |                | 7.5             | OK         |                |
| 1.002 | 3          | 186.392         | -0.078               | 0.000               | 0.04              |                | 10.3            | OK         |                |
| 1.003 | 4          | 187.231         | 0.831                | 0.000               | 0.01              |                | 1.9             | FLOOD RISK | 1              |
| 2.000 | 5          | 188.477         | -0.073               | 0.000               | 0.51              |                | 18.6            | OK         |                |
| 1.004 | 5          | 187.332         | 1.422                | 0.000               | 0.23              |                | 3.3             | SURCHARGED |                |

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