

# T.R. Collier & Associates Limited

## Consulting Civil & Structural Engineers

Rochester House  
275 Baddow Road  
Chelmsford Essex  
CM2 7QA

Tel: 01245 500360 Fax: 01245 500390

## DESIGN INFORMATION

|                                                                                                                                                                                                                                                                                                                                                   |                |                                                                                                                                                          |        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| Job No:2607                                                                                                                                                                                                                                                                                                                                       | Date: Dec 2012 | Sheet: 1                                                                                                                                                 | By: CE |
| Job Title: Prologis Park Phase 3 Hayes<br>Surface Water Calculations (30591 Layout)                                                                                                                                                                                                                                                               |                |                                                                                                                                                          |        |
| Client: Prologis                                                                                                                                                                                                                                                                                                                                  |                | Architect: Michael Sparks Associates                                                                                                                     |        |
| Relevant British Standards, Codes of Practice and Design Standards:<br>B.S. 8301 Code of Practice for Building Drainage<br>B.S. EN 12056 Drainage to Paved Areas<br>Environment Agency PPG3<br>CIRIA Technical Note 100<br>Design & Analysis of Urban Storm Drainage - Wallingford 1-4<br>B.S. EN 1433 : 2002 Drainage Channels for Vehicle Areas |                | Building Usage:<br><br>All Pipe Design<br>Surface Water Drainage<br>Petrol Interceptors<br>Attenuation Design<br>Attenuation Design<br>Drainage Channels |        |
| Additional Specific Regulations:                                                                                                                                                                                                                                                                                                                  |                |                                                                                                                                                          |        |
| Special Considerations:<br>Surface Water Soakaways Design Criteria = 1 in 100 year Storm Returns + 20% Climate Change                                                                                                                                                                                                                             |                |                                                                                                                                                          |        |

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## QUALITY ASSURANCE PROCEDURE

| Rev. | Date | Checked | Pages | Rev. | Date | Checked | Pages |
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|      |      |         |       |      |      |         |       |

|                                                          |                                               |                                                                                     |
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| T.R. Collier & Associates Ltd                            |                                               | Page 1                                                                              |
| Rochester House<br>275 Baddow Road<br>Chelmsford CM2 7QA | Phase 3 Prologis Park<br>Unit D<br>Soakaway 1 |  |
| Date Dec 2012                                            | Designed by CE                                |                                                                                     |
| File Soakaway 1 (Unit...                                 | Checked by                                    |                                                                                     |
| Micro Drainage                                           |                                               | Source Control W.12.6.1                                                             |

Summary of Results for 100 year Return Period (+20%)

Half Drain Time : 4508 minutes.

| Storm<br>Event   | Max<br>Level<br>(m) | Max<br>Depth<br>(m) | Max<br>Infiltration<br>(l/s) | Max<br>Volume<br>(m³) | Status |
|------------------|---------------------|---------------------|------------------------------|-----------------------|--------|
| 15 min Summer    | 30.140              | 0.240               |                              | 1.5 251.2             | O K    |
| 30 min Summer    | 30.214              | 0.314               |                              | 1.5 329.1             | O K    |
| 60 min Summer    | 30.291              | 0.391               |                              | 1.5 409.8             | O K    |
| 120 min Summer   | 30.368              | 0.468               |                              | 1.6 491.0             | O K    |
| 180 min Summer   | 30.412              | 0.512               |                              | 1.6 537.0             | O K    |
| 240 min Summer   | 30.441              | 0.541               |                              | 1.6 567.6             | O K    |
| 360 min Summer   | 30.482              | 0.582               |                              | 1.6 610.2             | O K    |
| 480 min Summer   | 30.510              | 0.610               |                              | 1.6 640.2             | O K    |
| 600 min Summer   | 30.532              | 0.632               |                              | 1.6 662.3             | O K    |
| 720 min Summer   | 30.548              | 0.648               |                              | 1.6 679.4             | O K    |
| 960 min Summer   | 30.571              | 0.671               |                              | 1.6 703.5             | O K    |
| 1440 min Summer  | 30.595              | 0.695               |                              | 1.6 728.8             | O K    |
| 2160 min Summer  | 30.604              | 0.704               |                              | 1.6 738.1             | O K    |
| 2880 min Summer  | 30.596              | 0.696               |                              | 1.6 730.5             | O K    |
| 4320 min Summer  | 30.565              | 0.665               |                              | 1.6 697.1             | O K    |
| 5760 min Summer  | 30.534              | 0.634               |                              | 1.6 665.4             | O K    |
| 7200 min Summer  | 30.507              | 0.607               |                              | 1.6 636.5             | O K    |
| 8640 min Summer  | 30.481              | 0.581               |                              | 1.6 609.7             | O K    |
| 10080 min Summer | 30.457              | 0.557               |                              | 1.6 584.2             | O K    |
| 15 min Winter    | 30.168              | 0.268               |                              | 1.5 281.5             | O K    |
| 30 min Winter    | 30.252              | 0.352               |                              | 1.5 368.8             | O K    |
| 60 min Winter    | 30.338              | 0.438               |                              | 1.6 459.5             | O K    |

| Storm<br>Event   | Rain<br>(mm/hr) | Time-Peak<br>(mins) |
|------------------|-----------------|---------------------|
| 15 min Summer    | 118.417         | 19                  |
| 30 min Summer    | 77.747          | 34                  |
| 60 min Summer    | 48.611          | 64                  |
| 120 min Summer   | 29.354          | 124                 |
| 180 min Summer   | 21.556          | 184                 |
| 240 min Summer   | 17.210          | 244                 |
| 360 min Summer   | 12.501          | 364                 |
| 480 min Summer   | 9.962           | 484                 |
| 600 min Summer   | 8.347           | 602                 |
| 720 min Summer   | 7.221           | 722                 |
| 960 min Summer   | 5.740           | 962                 |
| 1440 min Summer  | 4.148           | 1442                |
| 2160 min Summer  | 2.992           | 2160                |
| 2880 min Summer  | 2.371           | 2880                |
| 4320 min Summer  | 1.705           | 3716                |
| 5760 min Summer  | 1.348           | 4440                |
| 7200 min Summer  | 1.123           | 5184                |
| 8640 min Summer  | 0.967           | 5968                |
| 10080 min Summer | 0.852           | 6768                |
| 15 min Winter    | 118.417         | 19                  |
| 30 min Winter    | 77.747          | 34                  |
| 60 min Winter    | 48.611          | 64                  |

|                                                          |                                               |                                                                                     |
|----------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------------|
| T.R. Collier & Associates Ltd                            |                                               | Page 2                                                                              |
| Rochester House<br>275 Baddow Road<br>Chelmsford CM2 7QA | Phase 3 Prologis Park<br>Unit D<br>Soakaway 1 |  |
| Date Dec 2012                                            | Designed by CE                                |                                                                                     |
| File Soakaway 1 (Unit...                                 | Checked by                                    |                                                                                     |
| Micro Drainage                                           |                                               | Source Control W.12.6.1                                                             |

Summary of Results for 100 year Return Period (+20%)

| Storm<br>Event   | Max<br>Level<br>(m) | Max<br>Depth<br>(m) | Max<br>Infiltration<br>(l/s) | Max<br>Volume<br>(m³) | Status |
|------------------|---------------------|---------------------|------------------------------|-----------------------|--------|
| 120 min Winter   | 30.425              | 0.525               |                              | 1.6 551.0             | O K    |
| 180 min Winter   | 30.475              | 0.575               |                              | 1.6 603.1             | O K    |
| 240 min Winter   | 30.508              | 0.608               |                              | 1.6 638.0             | O K    |
| 360 min Winter   | 30.555              | 0.655               |                              | 1.6 687.0             | O K    |
| 480 min Winter   | 30.588              | 0.688               |                              | 1.6 721.8             | O K    |
| 600 min Winter   | 30.613              | 0.713               |                              | 1.6 747.8             | O K    |
| 720 min Winter   | 30.632              | 0.732               |                              | 1.6 768.1             | O K    |
| 960 min Winter   | 30.661              | 0.761               |                              | 1.6 797.6             | O K    |
| 1440 min Winter  | 30.692              | 0.792               |                              | 1.6 831.0             | O K    |
| 2160 min Winter  | 30.710              | 0.810               |                              | 1.6 849.3             | O K    |
| 2880 min Winter  | 30.709              | 0.809               |                              | 1.6 848.5             | O K    |
| 4320 min Winter  | 30.682              | 0.782               |                              | 1.6 820.2             | O K    |
| 5760 min Winter  | 30.642              | 0.742               |                              | 1.6 777.7             | O K    |
| 7200 min Winter  | 30.607              | 0.707               |                              | 1.6 741.8             | O K    |
| 8640 min Winter  | 30.573              | 0.673               |                              | 1.6 705.9             | O K    |
| 10080 min Winter | 30.539              | 0.639               |                              | 1.6 670.2             | O K    |

| Storm<br>Event   | Rain<br>(mm/hr) | Time-Peak<br>(mins) |
|------------------|-----------------|---------------------|
| 120 min Winter   | 29.354          | 122                 |
| 180 min Winter   | 21.556          | 182                 |
| 240 min Winter   | 17.210          | 242                 |
| 360 min Winter   | 12.501          | 360                 |
| 480 min Winter   | 9.962           | 478                 |
| 600 min Winter   | 8.347           | 596                 |
| 720 min Winter   | 7.221           | 714                 |
| 960 min Winter   | 5.740           | 952                 |
| 1440 min Winter  | 4.148           | 1414                |
| 2160 min Winter  | 2.992           | 2116                |
| 2880 min Winter  | 2.371           | 2792                |
| 4320 min Winter  | 1.705           | 4104                |
| 5760 min Winter  | 1.348           | 4784                |
| 7200 min Winter  | 1.123           | 5552                |
| 8640 min Winter  | 0.967           | 6488                |
| 10080 min Winter | 0.852           | 7368                |

Rochester House  
275 Baddow Road  
Chelmsford CM2 7QA

Phase 3 Prologis Park  
Unit D  
Soakaway 1

Date Dec 2012

Designed by CE

File Soakaway 1 (Unit...)

Checked by



## Micro Drainage

Source Control W.12.6.1

### Rainfall Details

|                       |                   |                       |       |
|-----------------------|-------------------|-----------------------|-------|
| Rainfall Model        | FSR               | Winter Storms         | Yes   |
| Return Period (years) | 100               | Cv (Summer)           | 0.750 |
| Region                | England and Wales | Cv (Winter)           | 0.840 |
| M5-60 (mm)            | 20.000            | Shortest Storm (mins) | 15    |
| Ratio R               | 0.400             | Longest Storm (mins)  | 10080 |
| Summer Storms         | Yes               | Climate Change %      | +20   |

Time / Area Diagram

Total Area (ha) 1.137

| Time   | Area |
|--------|------|
| (mins) | (ha) |

0-4 1.137

| T.R. Collier & Associates Ltd                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                               | Page 4                                                                              |           |           |                |           |           |                |       |        |        |       |     |        |       |        |        |  |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------------|-----------|-----------|----------------|-----------|-----------|----------------|-------|--------|--------|-------|-----|--------|-------|--------|--------|--|--|--|
| Rochester House<br>275 Baddow Road<br>Chelmsford CM2 7QA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Phase 3 Prologis Park<br>Unit D<br>Soakaway 1 |  |           |           |                |           |           |                |       |        |        |       |     |        |       |        |        |  |  |  |
| Date Dec 2012                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Designed by CE                                |                                                                                     |           |           |                |           |           |                |       |        |        |       |     |        |       |        |        |  |  |  |
| File Soakaway 1 (Unit...                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Checked by                                    |                                                                                     |           |           |                |           |           |                |       |        |        |       |     |        |       |        |        |  |  |  |
| Micro Drainage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                               | Source Control W.12.6.1                                                             |           |           |                |           |           |                |       |        |        |       |     |        |       |        |        |  |  |  |
| <p style="text-align: center;"><u>Model Details</u></p> <p style="text-align: center;">Storage is Online Cover Level (m) 32.000</p> <p style="text-align: center;"><u>Cellular Storage Structure</u></p> <p style="text-align: center;">Invert Level (m) 29.900 Safety Factor 1.0<br/> Infiltration Coefficient Base (m/hr) 0.00480 Porosity 0.95<br/> Infiltration Coefficient Side (m/hr) 0.00480</p> <table> <thead> <tr> <th>Depth (m)</th> <th>Area (m²)</th> <th>Inf. Area (m²)</th> <th>Depth (m)</th> <th>Area (m²)</th> <th>Inf. Area (m²)</th> </tr> </thead> <tbody> <tr> <td>0.000</td> <td>1104.0</td> <td>1104.0</td> <td>0.900</td> <td>0.0</td> <td>1216.0</td> </tr> <tr> <td>0.800</td> <td>1104.0</td> <td>1216.0</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> |                                               |                                                                                     | Depth (m) | Area (m²) | Inf. Area (m²) | Depth (m) | Area (m²) | Inf. Area (m²) | 0.000 | 1104.0 | 1104.0 | 0.900 | 0.0 | 1216.0 | 0.800 | 1104.0 | 1216.0 |  |  |  |
| Depth (m)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Area (m²)                                     | Inf. Area (m²)                                                                      | Depth (m) | Area (m²) | Inf. Area (m²) |           |           |                |       |        |        |       |     |        |       |        |        |  |  |  |
| 0.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1104.0                                        | 1104.0                                                                              | 0.900     | 0.0       | 1216.0         |           |           |                |       |        |        |       |     |        |       |        |        |  |  |  |
| 0.800                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1104.0                                        | 1216.0                                                                              |           |           |                |           |           |                |       |        |        |       |     |        |       |        |        |  |  |  |
| <p style="text-align: center;">©1982-2011 Micro Drainage Ltd</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                               |                                                                                     |           |           |                |           |           |                |       |        |        |       |     |        |       |        |        |  |  |  |

|                                                          |                     |                                               |                              |                                                                                     |        |
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| T.R. Collier & Associates Ltd                            |                     |                                               |                              | Page 1                                                                              |        |
| Rochester House<br>275 Baddow Road<br>Chelmsford CM2 7QA |                     | Phase 3 Prologis Park<br>Unit D<br>Soakaway 2 |                              |  |        |
| Date Dec 2012<br>File Soakaway 2 (Unit...                |                     | Designed by CE<br>Checked by                  |                              |                                                                                     |        |
| Micro Drainage                                           |                     | Source Control W.12.6.1                       |                              |                                                                                     |        |
| Summary of Results for 100 year Return Period (+20%)     |                     |                                               |                              |                                                                                     |        |
| Half Drain Time : 4275 minutes.                          |                     |                                               |                              |                                                                                     |        |
| Storm<br>Event                                           | Max<br>Level<br>(m) | Max<br>Depth<br>(m)                           | Max<br>Infiltration<br>(l/s) | Max<br>Volume<br>(m³)                                                               | Status |
| 15 min Summer                                            | 29.990              | 0.235                                         |                              | 1.0 161.0                                                                           | O K    |
| 30 min Summer                                            | 30.063              | 0.308                                         |                              | 1.0 211.0                                                                           | O K    |
| 60 min Summer                                            | 30.139              | 0.384                                         |                              | 1.0 262.7                                                                           | O K    |
| 120 min Summer                                           | 30.215              | 0.460                                         |                              | 1.0 314.7                                                                           | O K    |
| 180 min Summer                                           | 30.258              | 0.503                                         |                              | 1.0 344.0                                                                           | O K    |
| 240 min Summer                                           | 30.287              | 0.532                                         |                              | 1.0 363.6                                                                           | O K    |
| 360 min Summer                                           | 30.326              | 0.571                                         |                              | 1.1 390.7                                                                           | O K    |
| 480 min Summer                                           | 30.354              | 0.599                                         |                              | 1.1 409.7                                                                           | O K    |
| 600 min Summer                                           | 30.374              | 0.619                                         |                              | 1.1 423.7                                                                           | O K    |
| 720 min Summer                                           | 30.390              | 0.635                                         |                              | 1.1 434.4                                                                           | O K    |
| 960 min Summer                                           | 30.412              | 0.657                                         |                              | 1.1 449.4                                                                           | O K    |
| 1440 min Summer                                          | 30.435              | 0.680                                         |                              | 1.1 464.8                                                                           | O K    |
| 2160 min Summer                                          | 30.441              | 0.686                                         |                              | 1.1 469.5                                                                           | O K    |
| 2880 min Summer                                          | 30.433              | 0.678                                         |                              | 1.1 463.4                                                                           | O K    |
| 4320 min Summer                                          | 30.401              | 0.646                                         |                              | 1.1 441.6                                                                           | O K    |
| 5760 min Summer                                          | 30.371              | 0.616                                         |                              | 1.1 421.2                                                                           | O K    |
| 7200 min Summer                                          | 30.344              | 0.589                                         |                              | 1.1 402.7                                                                           | O K    |
| 8640 min Summer                                          | 30.318              | 0.563                                         |                              | 1.1 385.3                                                                           | O K    |
| 10080 min Summer                                         | 30.294              | 0.539                                         |                              | 1.1 368.8                                                                           | O K    |
| 15 min Winter                                            | 30.019              | 0.264                                         |                              | 1.0 180.4                                                                           | O K    |
| 30 min Winter                                            | 30.101              | 0.346                                         |                              | 1.0 236.5                                                                           | O K    |
| 60 min Winter                                            | 30.186              | 0.431                                         |                              | 1.0 294.5                                                                           | O K    |
| Storm<br>Event                                           |                     |                                               | Rain<br>(mm/hr)              | Time-Peak<br>(mins)                                                                 |        |
| 15 min Summer                                            |                     |                                               | 118.417                      | 19                                                                                  |        |
| 30 min Summer                                            |                     |                                               | 77.747                       | 34                                                                                  |        |
| 60 min Summer                                            |                     |                                               | 48.611                       | 64                                                                                  |        |
| 120 min Summer                                           |                     |                                               | 29.354                       | 124                                                                                 |        |
| 180 min Summer                                           |                     |                                               | 21.556                       | 184                                                                                 |        |
| 240 min Summer                                           |                     |                                               | 17.210                       | 244                                                                                 |        |
| 360 min Summer                                           |                     |                                               | 12.501                       | 364                                                                                 |        |
| 480 min Summer                                           |                     |                                               | 9.962                        | 484                                                                                 |        |
| 600 min Summer                                           |                     |                                               | 8.347                        | 602                                                                                 |        |
| 720 min Summer                                           |                     |                                               | 7.221                        | 722                                                                                 |        |
| 960 min Summer                                           |                     |                                               | 5.740                        | 962                                                                                 |        |
| 1440 min Summer                                          |                     |                                               | 4.148                        | 1442                                                                                |        |
| 2160 min Summer                                          |                     |                                               | 2.992                        | 2160                                                                                |        |
| 2880 min Summer                                          |                     |                                               | 2.371                        | 2880                                                                                |        |
| 4320 min Summer                                          |                     |                                               | 1.705                        | 3632                                                                                |        |
| 5760 min Summer                                          |                     |                                               | 1.348                        | 4376                                                                                |        |
| 7200 min Summer                                          |                     |                                               | 1.123                        | 5120                                                                                |        |
| 8640 min Summer                                          |                     |                                               | 0.967                        | 5960                                                                                |        |
| 10080 min Summer                                         |                     |                                               | 0.852                        | 6760                                                                                |        |
| 15 min Winter                                            |                     |                                               | 118.417                      | 19                                                                                  |        |
| 30 min Winter                                            |                     |                                               | 77.747                       | 34                                                                                  |        |
| 60 min Winter                                            |                     |                                               | 48.611                       | 64                                                                                  |        |
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|                                                          |                                               |                                                                                     |
|----------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------------|
| T.R. Collier & Associates Ltd                            |                                               | Page 2                                                                              |
| Rochester House<br>275 Baddow Road<br>Chelmsford CM2 7QA | Phase 3 Prologis Park<br>Unit D<br>Soakaway 2 |  |
| Date Dec 2012                                            | Designed by CE                                |                                                                                     |
| File Soakaway 2 (Unit...                                 | Checked by                                    |                                                                                     |
| Micro Drainage                                           |                                               | Source Control W.12.6.1                                                             |

Summary of Results for 100 year Return Period (+20%)

| Storm<br>Event   | Max<br>Level<br>(m) | Max<br>Depth<br>(m) | Max<br>Infiltration<br>(l/s) | Max<br>Volume<br>(m³) | Status |
|------------------|---------------------|---------------------|------------------------------|-----------------------|--------|
| 120 min Winter   | 30.271              | 0.516               |                              | 1.0 353.1             | O K    |
| 180 min Winter   | 30.320              | 0.565               |                              | 1.1 386.4             | O K    |
| 240 min Winter   | 30.352              | 0.597               |                              | 1.1 408.7             | O K    |
| 360 min Winter   | 30.398              | 0.643               |                              | 1.1 439.9             | O K    |
| 480 min Winter   | 30.430              | 0.675               |                              | 1.1 462.0             | O K    |
| 600 min Winter   | 30.454              | 0.699               |                              | 1.1 478.4             | O K    |
| 720 min Winter   | 30.473              | 0.718               |                              | 1.1 491.2             | O K    |
| 960 min Winter   | 30.500              | 0.745               |                              | 1.1 509.7             | O K    |
| 1440 min Winter  | 30.530              | 0.775               |                              | 1.1 530.2             | O K    |
| 2160 min Winter  | 30.545              | 0.790               |                              | 1.1 540.6             | O K    |
| 2880 min Winter  | 30.543              | 0.788               |                              | 1.1 538.9             | O K    |
| 4320 min Winter  | 30.513              | 0.758               |                              | 1.1 518.7             | O K    |
| 5760 min Winter  | 30.474              | 0.719               |                              | 1.1 491.6             | O K    |
| 7200 min Winter  | 30.440              | 0.685               |                              | 1.1 468.2             | O K    |
| 8640 min Winter  | 30.405              | 0.650               |                              | 1.1 444.6             | O K    |
| 10080 min Winter | 30.371              | 0.616               |                              | 1.1 421.3             | O K    |

| Storm<br>Event   | Rain<br>(mm/hr) | Time-Peak<br>(mins) |
|------------------|-----------------|---------------------|
| 120 min Winter   | 29.354          | 122                 |
| 180 min Winter   | 21.556          | 182                 |
| 240 min Winter   | 17.210          | 242                 |
| 360 min Winter   | 12.501          | 360                 |
| 480 min Winter   | 9.962           | 478                 |
| 600 min Winter   | 8.347           | 596                 |
| 720 min Winter   | 7.221           | 714                 |
| 960 min Winter   | 5.740           | 950                 |
| 1440 min Winter  | 4.148           | 1414                |
| 2160 min Winter  | 2.992           | 2100                |
| 2880 min Winter  | 2.371           | 2792                |
| 4320 min Winter  | 1.705           | 4064                |
| 5760 min Winter  | 1.348           | 4664                |
| 7200 min Winter  | 1.123           | 5544                |
| 8640 min Winter  | 0.967           | 6408                |
| 10080 min Winter | 0.852           | 7360                |

Rochester House  
275 Baddow Road  
Chelmsford CM2 7QA

Phase 3 Prologis Park  
Unit D  
Soakaway 2

|      |          |
|------|----------|
| Date | Dec 2012 |
|------|----------|

Designed by CE

File Soakaway 2 (Unit...)

Checked by

Micro Drainage

Source Control W.12.6.1



### Rainfall Details

|                       |                   |                       |       |
|-----------------------|-------------------|-----------------------|-------|
| Rainfall Model        | FSR               | Winter Storms         | Yes   |
| Return Period (years) | 100               | Cv (Summer)           | 0.750 |
| Region                | England and Wales | Cv (Winter)           | 0.840 |
| M5-60 (mm)            | 20.000            | Shortest Storm (mins) | 15    |
| Ratio R               | 0.400             | Longest Storm (mins)  | 10080 |
| Summer Storms         | Yes               | Climate Change %      | +20   |

Time / Area Diagram

Total Area (ha) 0.729

| Time   | Area |
|--------|------|
| (mins) | (ha) |

0-4 0.729

| T.R. Collier & Associates Ltd                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                               | Page 4                                                                              |           |           |                |           |           |                |       |       |       |       |     |       |       |       |       |  |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------------|-----------|-----------|----------------|-----------|-----------|----------------|-------|-------|-------|-------|-----|-------|-------|-------|-------|--|--|--|
| Rochester House<br>275 Baddow Road<br>Chelmsford CM2 7QA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Phase 3 Prologis Park<br>Unit D<br>Soakaway 2 |  |           |           |                |           |           |                |       |       |       |       |     |       |       |       |       |  |  |  |
| Date Dec 2012<br>File Soakaway 2 (Unit...                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Designed by CE<br>Checked by                  |                                                                                     |           |           |                |           |           |                |       |       |       |       |     |       |       |       |       |  |  |  |
| Micro Drainage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                               | Source Control W.12.6.1                                                             |           |           |                |           |           |                |       |       |       |       |     |       |       |       |       |  |  |  |
| <p style="text-align: center;"><u>Model Details</u></p> <p style="text-align: center;">Storage is Online Cover Level (m) 31.815</p> <p style="text-align: center;"><u>Cellular Storage Structure</u></p> <p style="text-align: center;">Invert Level (m) 29.755 Safety Factor 1.0<br/> Infiltration Coefficient Base (m/hr) 0.00480 Porosity 0.95<br/> Infiltration Coefficient Side (m/hr) 0.00480</p> <table border="1"> <thead> <tr> <th>Depth (m)</th> <th>Area (m²)</th> <th>Inf. Area (m²)</th> <th>Depth (m)</th> <th>Area (m²)</th> <th>Inf. Area (m²)</th> </tr> </thead> <tbody> <tr> <td>0.000</td> <td>720.0</td> <td>720.0</td> <td>0.900</td> <td>0.0</td> <td>820.8</td> </tr> <tr> <td>0.800</td> <td>720.0</td> <td>820.8</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> |                                               |                                                                                     | Depth (m) | Area (m²) | Inf. Area (m²) | Depth (m) | Area (m²) | Inf. Area (m²) | 0.000 | 720.0 | 720.0 | 0.900 | 0.0 | 820.8 | 0.800 | 720.0 | 820.8 |  |  |  |
| Depth (m)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Area (m²)                                     | Inf. Area (m²)                                                                      | Depth (m) | Area (m²) | Inf. Area (m²) |           |           |                |       |       |       |       |     |       |       |       |       |  |  |  |
| 0.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 720.0                                         | 720.0                                                                               | 0.900     | 0.0       | 820.8          |           |           |                |       |       |       |       |     |       |       |       |       |  |  |  |
| 0.800                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 720.0                                         | 820.8                                                                               |           |           |                |           |           |                |       |       |       |       |     |       |       |       |       |  |  |  |
| ©1982-2011 Micro Drainage Ltd                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                               |                                                                                     |           |           |                |           |           |                |       |       |       |       |     |       |       |       |       |  |  |  |

|                                                          |                     |                                               |                              |                                                                                     |        |
|----------------------------------------------------------|---------------------|-----------------------------------------------|------------------------------|-------------------------------------------------------------------------------------|--------|
| T.R. Collier & Associates Ltd                            |                     |                                               |                              | Page 1                                                                              |        |
| Rochester House<br>275 Baddow Road<br>Chelmsford CM2 7QA |                     | Phase 3 Prologis Park<br>Unit C<br>Soakaway 3 |                              |  |        |
| Date Dec 2012                                            |                     | Designed by CE                                |                              |                                                                                     |        |
| File Soakaway 3 (Unit...                                 |                     | Checked by                                    |                              |                                                                                     |        |
| Micro Drainage                                           |                     | Source Control W.12.6.1                       |                              |                                                                                     |        |
| Summary of Results for 100 year Return Period (+20%)     |                     |                                               |                              |                                                                                     |        |
| Half Drain Time : 4338 minutes.                          |                     |                                               |                              |                                                                                     |        |
| Storm<br>Event                                           | Max<br>Level<br>(m) | Max<br>Depth<br>(m)                           | Max<br>Infiltration<br>(l/s) | Max<br>Volume<br>(m³)                                                               | Status |
| 15 min Summer                                            | 30.140              | 0.240                                         |                              | 0.7 120.4                                                                           | O K    |
| 30 min Summer                                            | 30.214              | 0.314                                         |                              | 0.7 157.7                                                                           | O K    |
| 60 min Summer                                            | 30.292              | 0.392                                         |                              | 0.8 196.4                                                                           | O K    |
| 120 min Summer                                           | 30.369              | 0.469                                         |                              | 0.8 235.3                                                                           | O K    |
| 180 min Summer                                           | 30.413              | 0.513                                         |                              | 0.8 257.3                                                                           | O K    |
| 240 min Summer                                           | 30.442              | 0.542                                         |                              | 0.8 271.9                                                                           | O K    |
| 360 min Summer                                           | 30.483              | 0.583                                         |                              | 0.8 292.3                                                                           | O K    |
| 480 min Summer                                           | 30.511              | 0.611                                         |                              | 0.8 306.5                                                                           | O K    |
| 600 min Summer                                           | 30.532              | 0.632                                         |                              | 0.8 317.0                                                                           | O K    |
| 720 min Summer                                           | 30.548              | 0.648                                         |                              | 0.8 325.1                                                                           | O K    |
| 960 min Summer                                           | 30.571              | 0.671                                         |                              | 0.8 336.5                                                                           | O K    |
| 1440 min Summer                                          | 30.594              | 0.694                                         |                              | 0.8 348.2                                                                           | O K    |
| 2160 min Summer                                          | 30.602              | 0.702                                         |                              | 0.8 352.0                                                                           | O K    |
| 2880 min Summer                                          | 30.593              | 0.693                                         |                              | 0.8 347.8                                                                           | O K    |
| 4320 min Summer                                          | 30.561              | 0.661                                         |                              | 0.8 331.7                                                                           | O K    |
| 5760 min Summer                                          | 30.531              | 0.631                                         |                              | 0.8 316.6                                                                           | O K    |
| 7200 min Summer                                          | 30.504              | 0.604                                         |                              | 0.8 302.8                                                                           | O K    |
| 8640 min Summer                                          | 30.478              | 0.578                                         |                              | 0.8 290.0                                                                           | O K    |
| 10080 min Summer                                         | 30.454              | 0.554                                         |                              | 0.8 277.8                                                                           | O K    |
| 15 min Winter                                            | 30.169              | 0.269                                         |                              | 0.7 134.9                                                                           | O K    |
| 30 min Winter                                            | 30.252              | 0.352                                         |                              | 0.8 176.8                                                                           | O K    |
| 60 min Winter                                            | 30.339              | 0.439                                         |                              | 0.8 220.2                                                                           | O K    |
| Storm<br>Event                                           | Rain<br>(mm/hr)     |                                               | Time-Peak<br>(mins)          |                                                                                     |        |
| 15 min Summer                                            | 118.417             |                                               | 19                           |                                                                                     |        |
| 30 min Summer                                            | 77.747              |                                               | 34                           |                                                                                     |        |
| 60 min Summer                                            | 48.611              |                                               | 64                           |                                                                                     |        |
| 120 min Summer                                           | 29.354              |                                               | 124                          |                                                                                     |        |
| 180 min Summer                                           | 21.556              |                                               | 184                          |                                                                                     |        |
| 240 min Summer                                           | 17.210              |                                               | 244                          |                                                                                     |        |
| 360 min Summer                                           | 12.501              |                                               | 364                          |                                                                                     |        |
| 480 min Summer                                           | 9.962               |                                               | 484                          |                                                                                     |        |
| 600 min Summer                                           | 8.347               |                                               | 602                          |                                                                                     |        |
| 720 min Summer                                           | 7.221               |                                               | 722                          |                                                                                     |        |
| 960 min Summer                                           | 5.740               |                                               | 962                          |                                                                                     |        |
| 1440 min Summer                                          | 4.148               |                                               | 1442                         |                                                                                     |        |
| 2160 min Summer                                          | 2.992               |                                               | 2160                         |                                                                                     |        |
| 2880 min Summer                                          | 2.371               |                                               | 2880                         |                                                                                     |        |
| 4320 min Summer                                          | 1.705               |                                               | 3672                         |                                                                                     |        |
| 5760 min Summer                                          | 1.348               |                                               | 4384                         |                                                                                     |        |
| 7200 min Summer                                          | 1.123               |                                               | 5120                         |                                                                                     |        |
| 8640 min Summer                                          | 0.967               |                                               | 5960                         |                                                                                     |        |
| 10080 min Summer                                         | 0.852               |                                               | 6760                         |                                                                                     |        |
| 15 min Winter                                            | 118.417             |                                               | 19                           |                                                                                     |        |
| 30 min Winter                                            | 77.747              |                                               | 34                           |                                                                                     |        |
| 60 min Winter                                            | 48.611              |                                               | 64                           |                                                                                     |        |
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|                                                          |                                               |                                                                                     |
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| T.R. Collier & Associates Ltd                            |                                               | Page 2                                                                              |
| Rochester House<br>275 Baddow Road<br>Chelmsford CM2 7QA | Phase 3 Prologis Park<br>Unit C<br>Soakaway 3 |  |
| Date Dec 2012                                            | Designed by CE                                |                                                                                     |
| File Soakaway 3 (Unit...                                 | Checked by                                    |                                                                                     |
| Micro Drainage                                           |                                               | Source Control W.12.6.1                                                             |

Summary of Results for 100 year Return Period (+20%)

| Storm<br>Event   | Max<br>Level<br>(m) | Max<br>Depth<br>(m) | Max<br>Infiltration<br>(l/s) | Max<br>Volume<br>(m³) | Status |
|------------------|---------------------|---------------------|------------------------------|-----------------------|--------|
| 120 min Winter   | 30.426              | 0.526               | 0.8                          | 264.1                 | O K    |
| 180 min Winter   | 30.476              | 0.576               | 0.8                          | 289.0                 | O K    |
| 240 min Winter   | 30.509              | 0.609               | 0.8                          | 305.7                 | O K    |
| 360 min Winter   | 30.556              | 0.656               | 0.8                          | 329.0                 | O K    |
| 480 min Winter   | 30.589              | 0.689               | 0.8                          | 345.6                 | O K    |
| 600 min Winter   | 30.614              | 0.714               | 0.8                          | 358.0                 | O K    |
| 720 min Winter   | 30.633              | 0.733               | 0.8                          | 367.6                 | O K    |
| 960 min Winter   | 30.661              | 0.761               | 0.8                          | 381.5                 | O K    |
| 1440 min Winter  | 30.692              | 0.792               | 0.8                          | 397.1                 | O K    |
| 2160 min Winter  | 30.708              | 0.808               | 0.8                          | 405.2                 | O K    |
| 2880 min Winter  | 30.706              | 0.806               | 0.8                          | 404.2                 | O K    |
| 4320 min Winter  | 30.677              | 0.777               | 0.8                          | 389.6                 | O K    |
| 5760 min Winter  | 30.637              | 0.737               | 0.8                          | 369.6                 | O K    |
| 7200 min Winter  | 30.602              | 0.702               | 0.8                          | 352.3                 | O K    |
| 8640 min Winter  | 30.568              | 0.668               | 0.8                          | 334.9                 | O K    |
| 10080 min Winter | 30.533              | 0.633               | 0.8                          | 317.7                 | O K    |

| Storm<br>Event   | Rain<br>(mm/hr) | Time-Peak<br>(mins) |
|------------------|-----------------|---------------------|
| 120 min Winter   | 29.354          | 122                 |
| 180 min Winter   | 21.556          | 182                 |
| 240 min Winter   | 17.210          | 242                 |
| 360 min Winter   | 12.501          | 360                 |
| 480 min Winter   | 9.962           | 478                 |
| 600 min Winter   | 8.347           | 596                 |
| 720 min Winter   | 7.221           | 714                 |
| 960 min Winter   | 5.740           | 950                 |
| 1440 min Winter  | 4.148           | 1414                |
| 2160 min Winter  | 2.992           | 2100                |
| 2880 min Winter  | 2.371           | 2792                |
| 4320 min Winter  | 1.705           | 4064                |
| 5760 min Winter  | 1.348           | 4672                |
| 7200 min Winter  | 1.123           | 5544                |
| 8640 min Winter  | 0.967           | 6480                |
| 10080 min Winter | 0.852           | 7360                |





|                                                          |                     |                                               |                              |                                                                                     |        |
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| T.R. Collier & Associates Ltd                            |                     |                                               |                              | Page 1                                                                              |        |
| Rochester House<br>275 Baddow Road<br>Chelmsford CM2 7QA |                     | Phase 3 Prologis Park<br>Unit C<br>Soakaway 4 |                              |  |        |
| Date Dec 2012                                            |                     | Designed by CE                                |                              |                                                                                     |        |
| File Soakaway 4 (Unit...                                 |                     | Checked by                                    |                              |                                                                                     |        |
| Micro Drainage                                           |                     | Source Control W.12.6.1                       |                              |                                                                                     |        |
| Summary of Results for 100 year Return Period (+20%)     |                     |                                               |                              |                                                                                     |        |
| Half Drain Time : 3584 minutes.                          |                     |                                               |                              |                                                                                     |        |
| Storm<br>Event                                           | Max<br>Level<br>(m) | Max<br>Depth<br>(m)                           | Max<br>Infiltration<br>(l/s) | Max<br>Volume<br>(m³)                                                               | Status |
| 15 min Summer                                            | 30.342              | 0.242                                         | 0.3                          | 51.5                                                                                | O K    |
| 30 min Summer                                            | 30.417              | 0.317                                         | 0.3                          | 67.4                                                                                | O K    |
| 60 min Summer                                            | 30.494              | 0.394                                         | 0.4                          | 83.9                                                                                | O K    |
| 120 min Summer                                           | 30.572              | 0.472                                         | 0.4                          | 100.4                                                                               | O K    |
| 180 min Summer                                           | 30.616              | 0.516                                         | 0.4                          | 109.7                                                                               | O K    |
| 240 min Summer                                           | 30.644              | 0.544                                         | 0.4                          | 115.9                                                                               | O K    |
| 360 min Summer                                           | 30.684              | 0.584                                         | 0.4                          | 124.3                                                                               | O K    |
| 480 min Summer                                           | 30.712              | 0.612                                         | 0.4                          | 130.2                                                                               | O K    |
| 600 min Summer                                           | 30.732              | 0.632                                         | 0.4                          | 134.4                                                                               | O K    |
| 720 min Summer                                           | 30.747              | 0.647                                         | 0.4                          | 137.6                                                                               | O K    |
| 960 min Summer                                           | 30.767              | 0.667                                         | 0.4                          | 141.9                                                                               | O K    |
| 1440 min Summer                                          | 30.785              | 0.685                                         | 0.4                          | 145.8                                                                               | O K    |
| 2160 min Summer                                          | 30.786              | 0.686                                         | 0.4                          | 146.0                                                                               | O K    |
| 2880 min Summer                                          | 30.772              | 0.672                                         | 0.4                          | 142.9                                                                               | O K    |
| 4320 min Summer                                          | 30.741              | 0.641                                         | 0.4                          | 136.3                                                                               | O K    |
| 5760 min Summer                                          | 30.711              | 0.611                                         | 0.4                          | 130.0                                                                               | O K    |
| 7200 min Summer                                          | 30.683              | 0.583                                         | 0.4                          | 124.0                                                                               | O K    |
| 8640 min Summer                                          | 30.657              | 0.557                                         | 0.4                          | 118.4                                                                               | O K    |
| 10080 min Summer                                         | 30.632              | 0.532                                         | 0.4                          | 113.1                                                                               | O K    |
| 15 min Winter                                            | 30.371              | 0.271                                         | 0.3                          | 57.7                                                                                | O K    |
| 30 min Winter                                            | 30.455              | 0.355                                         | 0.4                          | 75.5                                                                                | O K    |
| 60 min Winter                                            | 30.542              | 0.442                                         | 0.4                          | 94.1                                                                                | O K    |
| Storm<br>Event                                           | Rain<br>(mm/hr)     |                                               | Time-Peak<br>(mins)          |                                                                                     |        |
| 15 min Summer                                            | 118.417             |                                               | 19                           |                                                                                     |        |
| 30 min Summer                                            | 77.747              |                                               | 34                           |                                                                                     |        |
| 60 min Summer                                            | 48.611              |                                               | 64                           |                                                                                     |        |
| 120 min Summer                                           | 29.354              |                                               | 124                          |                                                                                     |        |
| 180 min Summer                                           | 21.556              |                                               | 184                          |                                                                                     |        |
| 240 min Summer                                           | 17.210              |                                               | 244                          |                                                                                     |        |
| 360 min Summer                                           | 12.501              |                                               | 364                          |                                                                                     |        |
| 480 min Summer                                           | 9.962               |                                               | 482                          |                                                                                     |        |
| 600 min Summer                                           | 8.347               |                                               | 602                          |                                                                                     |        |
| 720 min Summer                                           | 7.221               |                                               | 722                          |                                                                                     |        |
| 960 min Summer                                           | 5.740               |                                               | 962                          |                                                                                     |        |
| 1440 min Summer                                          | 4.148               |                                               | 1442                         |                                                                                     |        |
| 2160 min Summer                                          | 2.992               |                                               | 2160                         |                                                                                     |        |
| 2880 min Summer                                          | 2.371               |                                               | 2684                         |                                                                                     |        |
| 4320 min Summer                                          | 1.705               |                                               | 3372                         |                                                                                     |        |
| 5760 min Summer                                          | 1.348               |                                               | 4144                         |                                                                                     |        |
| 7200 min Summer                                          | 1.123               |                                               | 4968                         |                                                                                     |        |
| 8640 min Summer                                          | 0.967               |                                               | 5792                         |                                                                                     |        |
| 10080 min Summer                                         | 0.852               |                                               | 6560                         |                                                                                     |        |
| 15 min Winter                                            | 118.417             |                                               | 19                           |                                                                                     |        |
| 30 min Winter                                            | 77.747              |                                               | 34                           |                                                                                     |        |
| 60 min Winter                                            | 48.611              |                                               | 64                           |                                                                                     |        |
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|                                                          |                                               |                                                                                     |
|----------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------------|
| T.R. Collier & Associates Ltd                            |                                               | Page 2                                                                              |
| Rochester House<br>275 Baddow Road<br>Chelmsford CM2 7QA | Phase 3 Prologis Park<br>Unit C<br>Soakaway 4 |  |
| Date Dec 2012                                            | Designed by CE                                |                                                                                     |
| File Soakaway 4 (Unit...                                 | Checked by                                    |                                                                                     |
| Micro Drainage                                           |                                               | Source Control W.12.6.1                                                             |

  

Summary of Results for 100 year Return Period (+20%)

| Storm Event      | Max Level (m) | Max Depth (m) | Max Infiltration (l/s) | Max Volume (m³) | Status |
|------------------|---------------|---------------|------------------------|-----------------|--------|
| 120 min Winter   | 30.630        | 0.530         | 0.4                    | 112.7           | O K    |
| 180 min Winter   | 30.679        | 0.579         | 0.4                    | 123.2           | O K    |
| 240 min Winter   | 30.712        | 0.612         | 0.4                    | 130.2           | O K    |
| 360 min Winter   | 30.758        | 0.658         | 0.4                    | 140.0           | O K    |
| 480 min Winter   | 30.790        | 0.690         | 0.4                    | 146.8           | O K    |
| 600 min Winter   | 30.813        | 0.713         | 0.4                    | 151.8           | O K    |
| 720 min Winter   | 30.831        | 0.731         | 0.4                    | 155.6           | O K    |
| 960 min Winter   | 30.856        | 0.756         | 0.4                    | 161.0           | O K    |
| 1440 min Winter  | 30.882        | 0.782         | 0.4                    | 166.5           | O K    |
| 2160 min Winter  | 30.891        | 0.791         | 0.4                    | 168.3           | O K    |
| 2880 min Winter  | 30.882        | 0.782         | 0.4                    | 166.4           | O K    |
| 4320 min Winter  | 30.843        | 0.743         | 0.4                    | 158.1           | O K    |
| 5760 min Winter  | 30.807        | 0.707         | 0.4                    | 150.5           | O K    |
| 7200 min Winter  | 30.771        | 0.671         | 0.4                    | 142.7           | O K    |
| 8640 min Winter  | 30.734        | 0.634         | 0.4                    | 134.9           | O K    |
| 10080 min Winter | 30.698        | 0.598         | 0.4                    | 127.3           | O K    |

  

| Storm Event      | Rain (mm/hr) | Time-Peak (mins) |
|------------------|--------------|------------------|
| 120 min Winter   | 29.354       | 122              |
| 180 min Winter   | 21.556       | 182              |
| 240 min Winter   | 17.210       | 242              |
| 360 min Winter   | 12.501       | 360              |
| 480 min Winter   | 9.962        | 478              |
| 600 min Winter   | 8.347        | 596              |
| 720 min Winter   | 7.221        | 714              |
| 960 min Winter   | 5.740        | 946              |
| 1440 min Winter  | 4.148        | 1412             |
| 2160 min Winter  | 2.992        | 2096             |
| 2880 min Winter  | 2.371        | 2740             |
| 4320 min Winter  | 1.705        | 3588             |
| 5760 min Winter  | 1.348        | 4432             |
| 7200 min Winter  | 1.123        | 5336             |
| 8640 min Winter  | 0.967        | 6232             |
| 10080 min Winter | 0.852        | 7160             |

  

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|                                                          |                                               |                                                                                     |
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| T.R. Collier & Associates Ltd                            |                                               | Page 3                                                                              |
| Rochester House<br>275 Baddow Road<br>Chelmsford CM2 7QA | Phase 3 Prologis Park<br>Unit C<br>Soakaway 4 |  |
| Date Dec 2012<br>File Soakaway 4 (Unit...                | Designed by CE<br>Checked by                  |                                                                                     |
| Micro Drainage Source Control W.12.6.1                   |                                               |                                                                                     |
| <u>Rainfall Details</u>                                  |                                               |                                                                                     |
| Rainfall Model                                           | FSR                                           | Winter Storms Yes                                                                   |
| Return Period (years)                                    | 100                                           | Cv (Summer) 0.750                                                                   |
| Region England and Wales                                 |                                               | Cv (Winter) 0.840                                                                   |
| M5-60 (mm)                                               | 20.000                                        | Shortest Storm (mins) 15                                                            |
| Ratio R                                                  | 0.400                                         | Longest Storm (mins) 10080                                                          |
| Summer Storms                                            | Yes                                           | Climate Change % +20                                                                |
| <u>Time / Area Diagram</u>                               |                                               |                                                                                     |
| Total Area (ha) 0.233                                    |                                               |                                                                                     |
| Time<br>(mins)                                           | Area<br>(ha)                                  |                                                                                     |
| 0-4                                                      | 0.233                                         |                                                                                     |
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|                                                          |                                                      |                                                                                     |
|----------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------------------------------------|
| T.R. Collier & Associates Ltd                            |                                                      | Page 1                                                                              |
| Rochester House<br>275 Baddow Road<br>Chelmsford CM2 7QA | Phase 3 Prologis Park<br>Access Road 1<br>Soakaway 5 |  |
| Date Dec 2012<br>File Soakaway 5 (Road...                | Designed by CE<br>Checked by                         |                                                                                     |
| Micro Drainage                                           | Source Control W.12.6.1                              |                                                                                     |

### Summary of Results for 100 year Return Period (+20%)

Half Drain Time : 2898 minutes.

| Storm Event      | Max Level (m) | Max Depth (m) | Max Infiltration (l/s) | Max Volume (m <sup>3</sup> ) | Status |
|------------------|---------------|---------------|------------------------|------------------------------|--------|
| 15 min Summer    | 30.149        | 0.249         | 0.1                    | 19.9                         | O K    |
| 30 min Summer    | 30.226        | 0.326         | 0.2                    | 26.0                         | O K    |
| 60 min Summer    | 30.306        | 0.406         | 0.2                    | 32.4                         | O K    |
| 120 min Summer   | 30.385        | 0.485         | 0.2                    | 38.7                         | O K    |
| 180 min Summer   | 30.429        | 0.529         | 0.2                    | 42.2                         | O K    |
| 240 min Summer   | 30.458        | 0.558         | 0.2                    | 44.6                         | O K    |
| 360 min Summer   | 30.498        | 0.598         | 0.2                    | 47.7                         | O K    |
| 480 min Summer   | 30.524        | 0.624         | 0.2                    | 49.8                         | O K    |
| 600 min Summer   | 30.543        | 0.643         | 0.2                    | 51.3                         | O K    |
| 720 min Summer   | 30.557        | 0.657         | 0.2                    | 52.4                         | O K    |
| 960 min Summer   | 30.575        | 0.675         | 0.2                    | 53.8                         | O K    |
| 1440 min Summer  | 30.587        | 0.687         | 0.2                    | 54.8                         | O K    |
| 2160 min Summer  | 30.578        | 0.678         | 0.2                    | 54.1                         | O K    |
| 2880 min Summer  | 30.564        | 0.664         | 0.2                    | 53.0                         | O K    |
| 4320 min Summer  | 30.532        | 0.632         | 0.2                    | 50.5                         | O K    |
| 5760 min Summer  | 30.501        | 0.601         | 0.2                    | 48.0                         | O K    |
| 7200 min Summer  | 30.472        | 0.572         | 0.2                    | 45.6                         | O K    |
| 8640 min Summer  | 30.444        | 0.544         | 0.2                    | 43.4                         | O K    |
| 10080 min Summer | 30.418        | 0.518         | 0.2                    | 41.3                         | O K    |
| 15 min Winter    | 30.179        | 0.279         | 0.1                    | 22.3                         | O K    |
| 30 min Winter    | 30.265        | 0.365         | 0.2                    | 29.2                         | O K    |
| 60 min Winter    | 30.355        | 0.455         | 0.2                    | 36.3                         | O K    |

| Storm Event      | Rain (mm/hr) | Time-Peak (mins) |
|------------------|--------------|------------------|
| 15 min Summer    | 118.417      | 19               |
| 30 min Summer    | 77.747       | 34               |
| 60 min Summer    | 48.611       | 64               |
| 120 min Summer   | 29.354       | 124              |
| 180 min Summer   | 21.556       | 184              |
| 240 min Summer   | 17.210       | 244              |
| 360 min Summer   | 12.501       | 364              |
| 480 min Summer   | 9.962        | 482              |
| 600 min Summer   | 8.347        | 602              |
| 720 min Summer   | 7.221        | 722              |
| 960 min Summer   | 5.740        | 962              |
| 1440 min Summer  | 4.148        | 1440             |
| 2160 min Summer  | 2.992        | 2056             |
| 2880 min Summer  | 2.371        | 2392             |
| 4320 min Summer  | 1.705        | 3116             |
| 5760 min Summer  | 1.348        | 3928             |
| 7200 min Summer  | 1.123        | 4760             |
| 8640 min Summer  | 0.967        | 5616             |
| 10080 min Summer | 0.852        | 6448             |
| 15 min Winter    | 118.417      | 19               |
| 30 min Winter    | 77.747       | 34               |
| 60 min Winter    | 48.611       | 64               |

|                                                          |                     |                                                      |                              |                                                                                     |        |
|----------------------------------------------------------|---------------------|------------------------------------------------------|------------------------------|-------------------------------------------------------------------------------------|--------|
| T.R. Collier & Associates Ltd                            |                     |                                                      |                              | Page 2                                                                              |        |
| Rochester House<br>275 Baddow Road<br>Chelmsford CM2 7QA |                     | Phase 3 Prologis Park<br>Access Road 1<br>Soakaway 5 |                              |  |        |
| Date Dec 2012                                            |                     | Designed by CE                                       |                              |                                                                                     |        |
| File Soakaway 5 (Road...                                 |                     | Checked by                                           |                              |                                                                                     |        |
| Micro Drainage                                           |                     | Source Control W.12.6.1                              |                              |                                                                                     |        |
| Summary of Results for 100 year Return Period (+20%)     |                     |                                                      |                              |                                                                                     |        |
| Storm<br>Event                                           | Max<br>Level<br>(m) | Max<br>Depth<br>(m)                                  | Max<br>Infiltration<br>(l/s) | Max<br>Volume<br>(m³)                                                               | Status |
| 120 min Winter                                           | 30.444              | 0.544                                                | 0.2                          | 43.4                                                                                | O K    |
| 180 min Winter                                           | 30.495              | 0.595                                                | 0.2                          | 47.4                                                                                | O K    |
| 240 min Winter                                           | 30.528              | 0.628                                                | 0.2                          | 50.1                                                                                | O K    |
| 360 min Winter                                           | 30.573              | 0.673                                                | 0.2                          | 53.7                                                                                | O K    |
| 480 min Winter                                           | 30.604              | 0.704                                                | 0.2                          | 56.2                                                                                | O K    |
| 600 min Winter                                           | 30.627              | 0.727                                                | 0.2                          | 58.0                                                                                | O K    |
| 720 min Winter                                           | 30.643              | 0.743                                                | 0.2                          | 59.3                                                                                | O K    |
| 960 min Winter                                           | 30.666              | 0.766                                                | 0.2                          | 61.1                                                                                | O K    |
| 1440 min Winter                                          | 30.685              | 0.785                                                | 0.2                          | 62.6                                                                                | O K    |
| 2160 min Winter                                          | 30.684              | 0.784                                                | 0.2                          | 62.6                                                                                | O K    |
| 2880 min Winter                                          | 30.667              | 0.767                                                | 0.2                          | 61.2                                                                                | O K    |
| 4320 min Winter                                          | 30.628              | 0.728                                                | 0.2                          | 58.1                                                                                | O K    |
| 5760 min Winter                                          | 30.588              | 0.688                                                | 0.2                          | 54.9                                                                                | O K    |
| 7200 min Winter                                          | 30.548              | 0.648                                                | 0.2                          | 51.7                                                                                | O K    |
| 8640 min Winter                                          | 30.509              | 0.609                                                | 0.2                          | 48.6                                                                                | O K    |
| 10080 min Winter                                         | 30.471              | 0.571                                                | 0.2                          | 45.6                                                                                | O K    |
| Storm<br>Event                                           | Rain<br>(mm/hr)     |                                                      | Time-Peak<br>(mins)          |                                                                                     |        |
| 120 min Winter                                           | 29.354              |                                                      | 122                          |                                                                                     |        |
| 180 min Winter                                           | 21.556              |                                                      | 182                          |                                                                                     |        |
| 240 min Winter                                           | 17.210              |                                                      | 240                          |                                                                                     |        |
| 360 min Winter                                           | 12.501              |                                                      | 358                          |                                                                                     |        |
| 480 min Winter                                           | 9.962               |                                                      | 476                          |                                                                                     |        |
| 600 min Winter                                           | 8.347               |                                                      | 594                          |                                                                                     |        |
| 720 min Winter                                           | 7.221               |                                                      | 710                          |                                                                                     |        |
| 960 min Winter                                           | 5.740               |                                                      | 942                          |                                                                                     |        |
| 1440 min Winter                                          | 4.148               |                                                      | 1400                         |                                                                                     |        |
| 2160 min Winter                                          | 2.992               |                                                      | 2056                         |                                                                                     |        |
| 2880 min Winter                                          | 2.371               |                                                      | 2680                         |                                                                                     |        |
| 4320 min Winter                                          | 1.705               |                                                      | 3328                         |                                                                                     |        |
| 5760 min Winter                                          | 1.348               |                                                      | 4264                         |                                                                                     |        |
| 7200 min Winter                                          | 1.123               |                                                      | 5184                         |                                                                                     |        |
| 8640 min Winter                                          | 0.967               |                                                      | 6056                         |                                                                                     |        |
| 10080 min Winter                                         | 0.852               |                                                      | 6960                         |                                                                                     |        |
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| T.R. Collier & Associates Ltd                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                      | Page 4                                                                              |           |           |                |           |           |                |       |      |      |       |     |       |       |      |       |  |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------------------------------------|-----------|-----------|----------------|-----------|-----------|----------------|-------|------|------|-------|-----|-------|-------|------|-------|--|--|--|
| Rochester House<br>275 Baddow Road<br>Chelmsford CM2 7QA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Phase 3 Prologis Park<br>Access Road 1<br>Soakaway 5 |  |           |           |                |           |           |                |       |      |      |       |     |       |       |      |       |  |  |  |
| Date Dec 2012                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Designed by CE                                       |                                                                                     |           |           |                |           |           |                |       |      |      |       |     |       |       |      |       |  |  |  |
| File Soakaway 5 (Road...                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Checked by                                           |                                                                                     |           |           |                |           |           |                |       |      |      |       |     |       |       |      |       |  |  |  |
| Micro Drainage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      | Source Control W.12.6.1                                                             |           |           |                |           |           |                |       |      |      |       |     |       |       |      |       |  |  |  |
| <u>Model Details</u><br><br>Storage is Online Cover Level (m) 31.900<br><br><u>Cellular Storage Structure</u><br><br>Invert Level (m) 29.900 Safety Factor 1.0<br>Infiltration Coefficient Base (m/hr) 0.00480 Porosity 0.95<br>Infiltration Coefficient Side (m/hr) 0.00480<br><br><table> <thead> <tr> <th>Depth (m)</th> <th>Area (m²)</th> <th>Inf. Area (m²)</th> <th>Depth (m)</th> <th>Area (m²)</th> <th>Inf. Area (m²)</th> </tr> </thead> <tbody> <tr> <td>0.000</td> <td>84.0</td> <td>84.0</td> <td>0.900</td> <td>0.0</td> <td>154.4</td> </tr> <tr> <td>0.800</td> <td>84.0</td> <td>154.4</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> |                                                      |                                                                                     | Depth (m) | Area (m²) | Inf. Area (m²) | Depth (m) | Area (m²) | Inf. Area (m²) | 0.000 | 84.0 | 84.0 | 0.900 | 0.0 | 154.4 | 0.800 | 84.0 | 154.4 |  |  |  |
| Depth (m)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Area (m²)                                            | Inf. Area (m²)                                                                      | Depth (m) | Area (m²) | Inf. Area (m²) |           |           |                |       |      |      |       |     |       |       |      |       |  |  |  |
| 0.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 84.0                                                 | 84.0                                                                                | 0.900     | 0.0       | 154.4          |           |           |                |       |      |      |       |     |       |       |      |       |  |  |  |
| 0.800                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 84.0                                                 | 154.4                                                                               |           |           |                |           |           |                |       |      |      |       |     |       |       |      |       |  |  |  |
| ©1982-2011 Micro Drainage Ltd                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                      |                                                                                     |           |           |                |           |           |                |       |      |      |       |     |       |       |      |       |  |  |  |

|                                                          |                     |                                                      |                              |                                                                                     |        |
|----------------------------------------------------------|---------------------|------------------------------------------------------|------------------------------|-------------------------------------------------------------------------------------|--------|
| T.R. Collier & Associates Ltd                            |                     |                                                      |                              | Page 1                                                                              |        |
| Rochester House<br>275 Baddow Road<br>Chelmsford CM2 7QA |                     | Phase 3 Prologis Park<br>Access Road 2<br>Soakaway 6 |                              |  |        |
| Date Dec 2012                                            |                     | Designed by CE                                       |                              |                                                                                     |        |
| File Soakaway 6 (Road...                                 |                     | Checked by                                           |                              |                                                                                     |        |
| Micro Drainage                                           |                     | Source Control W.12.6.1                              |                              |                                                                                     |        |
| Summary of Results for 100 year Return Period (+20%)     |                     |                                                      |                              |                                                                                     |        |
| Half Drain Time : 2738 minutes.                          |                     |                                                      |                              |                                                                                     |        |
| Storm<br>Event                                           | Max<br>Level<br>(m) | Max<br>Depth<br>(m)                                  | Max<br>Infiltration<br>(l/s) | Max<br>Volume<br>(m³)                                                               | Status |
| 15 min Summer                                            | 30.128              | 0.228                                                | 0.2                          | 26.0                                                                                | O K    |
| 30 min Summer                                            | 30.199              | 0.299                                                | 0.2                          | 34.1                                                                                | O K    |
| 60 min Summer                                            | 30.272              | 0.372                                                | 0.2                          | 42.4                                                                                | O K    |
| 120 min Summer                                           | 30.345              | 0.445                                                | 0.2                          | 50.7                                                                                | O K    |
| 180 min Summer                                           | 30.385              | 0.485                                                | 0.2                          | 55.3                                                                                | O K    |
| 240 min Summer                                           | 30.411              | 0.511                                                | 0.2                          | 58.3                                                                                | O K    |
| 360 min Summer                                           | 30.447              | 0.547                                                | 0.3                          | 62.3                                                                                | O K    |
| 480 min Summer                                           | 30.471              | 0.571                                                | 0.3                          | 65.1                                                                                | O K    |
| 600 min Summer                                           | 30.487              | 0.587                                                | 0.3                          | 67.0                                                                                | O K    |
| 720 min Summer                                           | 30.500              | 0.600                                                | 0.3                          | 68.3                                                                                | O K    |
| 960 min Summer                                           | 30.514              | 0.614                                                | 0.3                          | 70.0                                                                                | O K    |
| 1440 min Summer                                          | 30.524              | 0.624                                                | 0.3                          | 71.1                                                                                | O K    |
| 2160 min Summer                                          | 30.513              | 0.613                                                | 0.3                          | 69.9                                                                                | O K    |
| 2880 min Summer                                          | 30.499              | 0.599                                                | 0.3                          | 68.3                                                                                | O K    |
| 4320 min Summer                                          | 30.469              | 0.569                                                | 0.3                          | 64.8                                                                                | O K    |
| 5760 min Summer                                          | 30.439              | 0.539                                                | 0.2                          | 61.4                                                                                | O K    |
| 7200 min Summer                                          | 30.411              | 0.511                                                | 0.2                          | 58.2                                                                                | O K    |
| 8640 min Summer                                          | 30.384              | 0.484                                                | 0.2                          | 55.2                                                                                | O K    |
| 10080 min Summer                                         | 30.360              | 0.460                                                | 0.2                          | 52.4                                                                                | O K    |
| 15 min Winter                                            | 30.156              | 0.256                                                | 0.2                          | 29.2                                                                                | O K    |
| 30 min Winter                                            | 30.235              | 0.335                                                | 0.2                          | 38.2                                                                                | O K    |
| 60 min Winter                                            | 30.317              | 0.417                                                | 0.2                          | 47.5                                                                                | O K    |
| Storm<br>Event                                           | Rain<br>(mm/hr)     |                                                      | Time-Peak<br>(mins)          |                                                                                     |        |
| 15 min Summer                                            | 118.417             |                                                      | 19                           |                                                                                     |        |
| 30 min Summer                                            | 77.747              |                                                      | 34                           |                                                                                     |        |
| 60 min Summer                                            | 48.611              |                                                      | 64                           |                                                                                     |        |
| 120 min Summer                                           | 29.354              |                                                      | 124                          |                                                                                     |        |
| 180 min Summer                                           | 21.556              |                                                      | 184                          |                                                                                     |        |
| 240 min Summer                                           | 17.210              |                                                      | 244                          |                                                                                     |        |
| 360 min Summer                                           | 12.501              |                                                      | 362                          |                                                                                     |        |
| 480 min Summer                                           | 9.962               |                                                      | 482                          |                                                                                     |        |
| 600 min Summer                                           | 8.347               |                                                      | 602                          |                                                                                     |        |
| 720 min Summer                                           | 7.221               |                                                      | 722                          |                                                                                     |        |
| 960 min Summer                                           | 5.740               |                                                      | 962                          |                                                                                     |        |
| 1440 min Summer                                          | 4.148               |                                                      | 1440                         |                                                                                     |        |
| 2160 min Summer                                          | 2.992               |                                                      | 2012                         |                                                                                     |        |
| 2880 min Summer                                          | 2.371               |                                                      | 2336                         |                                                                                     |        |
| 4320 min Summer                                          | 1.705               |                                                      | 3108                         |                                                                                     |        |
| 5760 min Summer                                          | 1.348               |                                                      | 3920                         |                                                                                     |        |
| 7200 min Summer                                          | 1.123               |                                                      | 4752                         |                                                                                     |        |
| 8640 min Summer                                          | 0.967               |                                                      | 5536                         |                                                                                     |        |
| 10080 min Summer                                         | 0.852               |                                                      | 6360                         |                                                                                     |        |
| 15 min Winter                                            | 118.417             |                                                      | 19                           |                                                                                     |        |
| 30 min Winter                                            | 77.747              |                                                      | 34                           |                                                                                     |        |
| 60 min Winter                                            | 48.611              |                                                      | 64                           |                                                                                     |        |
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| T.R. Collier & Associates Ltd                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                      | Page 2                                                                              |                              |                       |                     |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
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| Rochester House<br>275 Baddow Road<br>Chelmsford CM2 7QA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Phase 3 Prologis Park<br>Access Road 2<br>Soakaway 6 |  |                              |                       |                     |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| Date Dec 2012<br>File Soakaway 6 (Road...                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Designed by CE<br>Checked by                         |                                                                                     |                              |                       |                     |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| Micro Drainage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                      | Source Control W.12.6.1                                                             |                              |                       |                     |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| <p align="center"><u>Summary of Results for 100 year Return Period (+20%)</u></p> <table border="1"> <thead> <tr> <th>Storm<br/>Event</th> <th>Max<br/>Level<br/>(m)</th> <th>Max<br/>Depth<br/>(m)</th> <th>Max<br/>Infiltration<br/>(l/s)</th> <th>Max<br/>Volume<br/>(m³)</th> <th>Status</th> </tr> </thead> <tbody> <tr><td>120 min Winter</td><td>30.399</td><td>0.499</td><td>0.2</td><td>56.9</td><td>O K</td></tr> <tr><td>180 min Winter</td><td>30.445</td><td>0.545</td><td>0.3</td><td>62.1</td><td>O K</td></tr> <tr><td>240 min Winter</td><td>30.475</td><td>0.575</td><td>0.3</td><td>65.5</td><td>O K</td></tr> <tr><td>360 min Winter</td><td>30.516</td><td>0.616</td><td>0.3</td><td>70.2</td><td>O K</td></tr> <tr><td>480 min Winter</td><td>30.544</td><td>0.644</td><td>0.3</td><td>73.4</td><td>O K</td></tr> <tr><td>600 min Winter</td><td>30.564</td><td>0.664</td><td>0.3</td><td>75.7</td><td>O K</td></tr> <tr><td>720 min Winter</td><td>30.579</td><td>0.679</td><td>0.3</td><td>77.4</td><td>O K</td></tr> <tr><td>960 min Winter</td><td>30.598</td><td>0.698</td><td>0.3</td><td>79.6</td><td>O K</td></tr> <tr><td>1440 min Winter</td><td>30.614</td><td>0.714</td><td>0.3</td><td>81.3</td><td>O K</td></tr> <tr><td>2160 min Winter</td><td>30.610</td><td>0.710</td><td>0.3</td><td>80.9</td><td>O K</td></tr> <tr><td>2880 min Winter</td><td>30.591</td><td>0.691</td><td>0.3</td><td>78.8</td><td>O K</td></tr> <tr><td>4320 min Winter</td><td>30.554</td><td>0.654</td><td>0.3</td><td>74.6</td><td>O K</td></tr> <tr><td>5760 min Winter</td><td>30.516</td><td>0.616</td><td>0.3</td><td>70.2</td><td>O K</td></tr> <tr><td>7200 min Winter</td><td>30.476</td><td>0.576</td><td>0.3</td><td>65.7</td><td>O K</td></tr> <tr><td>8640 min Winter</td><td>30.439</td><td>0.539</td><td>0.2</td><td>61.4</td><td>O K</td></tr> <tr><td>10080 min Winter</td><td>30.403</td><td>0.503</td><td>0.2</td><td>57.3</td><td>O K</td></tr> </tbody> </table><br><table border="1"> <thead> <tr> <th>Storm<br/>Event</th> <th>Rain<br/>(mm/hr)</th> <th>Time-Peak<br/>(mins)</th> </tr> </thead> <tbody> <tr><td>120 min Winter</td><td>29.354</td><td>122</td></tr> <tr><td>180 min Winter</td><td>21.556</td><td>182</td></tr> <tr><td>240 min Winter</td><td>17.210</td><td>240</td></tr> <tr><td>360 min Winter</td><td>12.501</td><td>358</td></tr> <tr><td>480 min Winter</td><td>9.962</td><td>476</td></tr> <tr><td>600 min Winter</td><td>8.347</td><td>594</td></tr> <tr><td>720 min Winter</td><td>7.221</td><td>710</td></tr> <tr><td>960 min Winter</td><td>5.740</td><td>942</td></tr> <tr><td>1440 min Winter</td><td>4.148</td><td>1398</td></tr> <tr><td>2160 min Winter</td><td>2.992</td><td>2056</td></tr> <tr><td>2880 min Winter</td><td>2.371</td><td>2652</td></tr> <tr><td>4320 min Winter</td><td>1.705</td><td>3288</td></tr> <tr><td>5760 min Winter</td><td>1.348</td><td>4216</td></tr> <tr><td>7200 min Winter</td><td>1.123</td><td>5120</td></tr> <tr><td>8640 min Winter</td><td>0.967</td><td>6048</td></tr> <tr><td>10080 min Winter</td><td>0.852</td><td>6864</td></tr> </tbody> </table> |                                                      |                                                                                     | Storm<br>Event               | Max<br>Level<br>(m)   | Max<br>Depth<br>(m) | Max<br>Infiltration<br>(l/s) | Max<br>Volume<br>(m³) | Status | 120 min Winter | 30.399 | 0.499 | 0.2 | 56.9 | O K | 180 min Winter | 30.445 | 0.545 | 0.3 | 62.1 | O K | 240 min Winter | 30.475 | 0.575 | 0.3 | 65.5 | O K | 360 min Winter | 30.516 | 0.616 | 0.3 | 70.2 | O K | 480 min Winter | 30.544 | 0.644 | 0.3 | 73.4 | O K | 600 min Winter | 30.564 | 0.664 | 0.3 | 75.7 | O K | 720 min Winter | 30.579 | 0.679 | 0.3 | 77.4 | O K | 960 min Winter | 30.598 | 0.698 | 0.3 | 79.6 | O K | 1440 min Winter | 30.614 | 0.714 | 0.3 | 81.3 | O K | 2160 min Winter | 30.610 | 0.710 | 0.3 | 80.9 | O K | 2880 min Winter | 30.591 | 0.691 | 0.3 | 78.8 | O K | 4320 min Winter | 30.554 | 0.654 | 0.3 | 74.6 | O K | 5760 min Winter | 30.516 | 0.616 | 0.3 | 70.2 | O K | 7200 min Winter | 30.476 | 0.576 | 0.3 | 65.7 | O K | 8640 min Winter | 30.439 | 0.539 | 0.2 | 61.4 | O K | 10080 min Winter | 30.403 | 0.503 | 0.2 | 57.3 | O K | Storm<br>Event | Rain<br>(mm/hr) | Time-Peak<br>(mins) | 120 min Winter | 29.354 | 122 | 180 min Winter | 21.556 | 182 | 240 min Winter | 17.210 | 240 | 360 min Winter | 12.501 | 358 | 480 min Winter | 9.962 | 476 | 600 min Winter | 8.347 | 594 | 720 min Winter | 7.221 | 710 | 960 min Winter | 5.740 | 942 | 1440 min Winter | 4.148 | 1398 | 2160 min Winter | 2.992 | 2056 | 2880 min Winter | 2.371 | 2652 | 4320 min Winter | 1.705 | 3288 | 5760 min Winter | 1.348 | 4216 | 7200 min Winter | 1.123 | 5120 | 8640 min Winter | 0.967 | 6048 | 10080 min Winter | 0.852 | 6864 |
| Storm<br>Event                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Max<br>Level<br>(m)                                  | Max<br>Depth<br>(m)                                                                 | Max<br>Infiltration<br>(l/s) | Max<br>Volume<br>(m³) | Status              |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 120 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 30.399                                               | 0.499                                                                               | 0.2                          | 56.9                  | O K                 |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 180 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 30.445                                               | 0.545                                                                               | 0.3                          | 62.1                  | O K                 |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 240 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 30.475                                               | 0.575                                                                               | 0.3                          | 65.5                  | O K                 |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 360 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 30.516                                               | 0.616                                                                               | 0.3                          | 70.2                  | O K                 |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 480 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 30.544                                               | 0.644                                                                               | 0.3                          | 73.4                  | O K                 |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 600 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 30.564                                               | 0.664                                                                               | 0.3                          | 75.7                  | O K                 |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 720 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 30.579                                               | 0.679                                                                               | 0.3                          | 77.4                  | O K                 |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 960 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 30.598                                               | 0.698                                                                               | 0.3                          | 79.6                  | O K                 |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 1440 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 30.614                                               | 0.714                                                                               | 0.3                          | 81.3                  | O K                 |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 2160 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 30.610                                               | 0.710                                                                               | 0.3                          | 80.9                  | O K                 |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 2880 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 30.591                                               | 0.691                                                                               | 0.3                          | 78.8                  | O K                 |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 4320 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 30.554                                               | 0.654                                                                               | 0.3                          | 74.6                  | O K                 |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 5760 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 30.516                                               | 0.616                                                                               | 0.3                          | 70.2                  | O K                 |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 7200 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 30.476                                               | 0.576                                                                               | 0.3                          | 65.7                  | O K                 |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 8640 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 30.439                                               | 0.539                                                                               | 0.2                          | 61.4                  | O K                 |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 10080 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 30.403                                               | 0.503                                                                               | 0.2                          | 57.3                  | O K                 |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| Storm<br>Event                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Rain<br>(mm/hr)                                      | Time-Peak<br>(mins)                                                                 |                              |                       |                     |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 120 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 29.354                                               | 122                                                                                 |                              |                       |                     |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 180 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 21.556                                               | 182                                                                                 |                              |                       |                     |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 240 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 17.210                                               | 240                                                                                 |                              |                       |                     |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 360 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 12.501                                               | 358                                                                                 |                              |                       |                     |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 480 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 9.962                                                | 476                                                                                 |                              |                       |                     |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 600 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 8.347                                                | 594                                                                                 |                              |                       |                     |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 720 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 7.221                                                | 710                                                                                 |                              |                       |                     |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 960 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 5.740                                                | 942                                                                                 |                              |                       |                     |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 1440 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 4.148                                                | 1398                                                                                |                              |                       |                     |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 2160 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2.992                                                | 2056                                                                                |                              |                       |                     |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 2880 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2.371                                                | 2652                                                                                |                              |                       |                     |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 4320 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1.705                                                | 3288                                                                                |                              |                       |                     |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 5760 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1.348                                                | 4216                                                                                |                              |                       |                     |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 7200 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1.123                                                | 5120                                                                                |                              |                       |                     |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 8640 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 0.967                                                | 6048                                                                                |                              |                       |                     |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
| 10080 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0.852                                                | 6864                                                                                |                              |                       |                     |                              |                       |        |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                 |        |       |     |      |     |                  |        |       |     |      |     |                |                 |                     |                |        |     |                |        |     |                |        |     |                |        |     |                |       |     |                |       |     |                |       |     |                |       |     |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                 |       |      |                  |       |      |
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|                                                          |                                                      |                                                                                     |
|----------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------------------------------------|
| T.R. Collier & Associates Ltd                            |                                                      | Page 3                                                                              |
| Rochester House<br>275 Baddow Road<br>Chelmsford CM2 7QA | Phase 3 Prologis Park<br>Access Road 2<br>Soakaway 6 |  |
| Date Dec 2012                                            | Designed by CE                                       |                                                                                     |
| File Soakaway 6 (Road...                                 | Checked by                                           |                                                                                     |
| Micro Drainage                                           |                                                      | Source Control W.12.6.1                                                             |
| <u>Rainfall Details</u>                                  |                                                      |                                                                                     |
| Rainfall Model                                           | FSR                                                  | Winter Storms Yes                                                                   |
| Return Period (years)                                    | 100                                                  | Cv (Summer) 0.750                                                                   |
| Region England and Wales                                 |                                                      | Cv (Winter) 0.840                                                                   |
| M5-60 (mm)                                               | 20.000                                               | Shortest Storm (mins) 15                                                            |
| Ratio R                                                  | 0.400                                                | Longest Storm (mins) 10080                                                          |
| Summer Storms                                            | Yes                                                  | Climate Change % +20                                                                |
| <u>Time / Area Diagram</u>                               |                                                      |                                                                                     |
| Total Area (ha) 0.118                                    |                                                      |                                                                                     |
| Time                                                     | Area                                                 |                                                                                     |
| (mins)                                                   | (ha)                                                 |                                                                                     |
| 0-4                                                      | 0.118                                                |                                                                                     |
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| T.R. Collier & Associates Ltd                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                      | Page 4                                                                              |           |           |                |           |           |                |       |       |       |       |     |       |       |       |       |  |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------------------------------------|-----------|-----------|----------------|-----------|-----------|----------------|-------|-------|-------|-------|-----|-------|-------|-------|-------|--|--|--|
| Rochester House<br>275 Baddow Road<br>Chelmsford CM2 7QA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Phase 3 Prologis Park<br>Access Road 2<br>Soakaway 6 |  |           |           |                |           |           |                |       |       |       |       |     |       |       |       |       |  |  |  |
| Date Dec 2012                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Designed by CE                                       |                                                                                     |           |           |                |           |           |                |       |       |       |       |     |       |       |       |       |  |  |  |
| File Soakaway 6 (Road...                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Checked by                                           |                                                                                     |           |           |                |           |           |                |       |       |       |       |     |       |       |       |       |  |  |  |
| Micro Drainage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                      | Source Control W.12.6.1                                                             |           |           |                |           |           |                |       |       |       |       |     |       |       |       |       |  |  |  |
| <u>Model Details</u><br><br>Storage is Online Cover Level (m) 31.900<br><br><u>Cellular Storage Structure</u><br><br>Invert Level (m) 29.900 Safety Factor 1.0<br>Infiltration Coefficient Base (m/hr) 0.00480 Porosity 0.95<br>Infiltration Coefficient Side (m/hr) 0.00480<br><br><table> <thead> <tr> <th>Depth (m)</th> <th>Area (m²)</th> <th>Inf. Area (m²)</th> <th>Depth (m)</th> <th>Area (m²)</th> <th>Inf. Area (m²)</th> </tr> </thead> <tbody> <tr> <td>0.000</td> <td>120.0</td> <td>120.0</td> <td>0.900</td> <td>0.0</td> <td>219.2</td> </tr> <tr> <td>0.800</td> <td>120.0</td> <td>219.2</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> |                                                      |                                                                                     | Depth (m) | Area (m²) | Inf. Area (m²) | Depth (m) | Area (m²) | Inf. Area (m²) | 0.000 | 120.0 | 120.0 | 0.900 | 0.0 | 219.2 | 0.800 | 120.0 | 219.2 |  |  |  |
| Depth (m)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Area (m²)                                            | Inf. Area (m²)                                                                      | Depth (m) | Area (m²) | Inf. Area (m²) |           |           |                |       |       |       |       |     |       |       |       |       |  |  |  |
| 0.000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 120.0                                                | 120.0                                                                               | 0.900     | 0.0       | 219.2          |           |           |                |       |       |       |       |     |       |       |       |       |  |  |  |
| 0.800                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 120.0                                                | 219.2                                                                               |           |           |                |           |           |                |       |       |       |       |     |       |       |       |       |  |  |  |
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