

**PROPOSED DEVELOPMENT AT THE PRINTWORKS,  
CARDIFF ROAD, READING**

**DRAINAGE STATEMENT  
INCORPORATING DRAINAGE MAINTENANCE  
MANAGEMENT PLAN**

Report No. 19-034/02

Prepared by

**Odyssey**

Tuscany House

White Hart Lane

Basingstoke

RG21 4AF

Tel: 01256 331144

September 2019



DOCUMENT CONTROL SHEET

Project Name                      The Printworks, Cardiff Road, Reading

Project No.                        19-034

| Rev | Issue Purpose | Author | Checked | Reviewed | Approved | Date     |
|-----|---------------|--------|---------|----------|----------|----------|
| -   | Draft         | KK     | TG      | KK       | TG       | 12/09/19 |
|     |               |        |         |          |          |          |
|     |               |        |         |          |          |          |
|     |               |        |         |          |          |          |
|     |               |        |         |          |          |          |
|     |               |        |         |          |          |          |



---

**CONTENTS**

|            |                                                                          |           |
|------------|--------------------------------------------------------------------------|-----------|
| <b>1.0</b> | <b>INTRODUCTION &amp; OVERVIEW</b>                                       | <b>1</b>  |
| 1.1        | Existing Site and Background                                             | 1         |
| 1.2        | Proposed Development                                                     | 1         |
| <b>2.0</b> | <b>EXISTING DRAINAGE</b>                                                 | <b>3</b>  |
| 2.1        | Existing Surface Water Drainage                                          | 3         |
| 2.2        | Existing Foul Water Drainage                                             | 3         |
| <b>3.0</b> | <b>PROPOSED DRAINAGE</b>                                                 | <b>4</b>  |
| 3.1        | Design Criteria                                                          | 4         |
| 3.2        | Surface Water Drainage                                                   | 4         |
| 3.3        | Foul Water Drainage                                                      | 5         |
| <b>4.0</b> | <b>EXCEEDANCE DRAINAGE</b>                                               | <b>6</b>  |
| 4.1        | Exceedance Drainage                                                      | 6         |
| <b>5.0</b> | <b>TREATMENT OF SURFACE WATER RUN-OFF</b>                                | <b>7</b>  |
| <b>6.0</b> | <b>MAINTENANCE OF PIPE SYSTEMS, GULLIES AND MANHOLES</b>                 | <b>8</b>  |
| 6.1        | Description                                                              | 8         |
| 6.2        | Pipe Systems, Gullies and Manholes: Maintenance Activities and Frequency | 8         |
| 6.3        | Pipe Systems, Gullies and Manholes: Inspection and Frequency             | 9         |
| <b>7.0</b> | <b>MAINTENANCE OF FLOW CONTROL DEVICES (HYDROBRAKE OR SIMILAR)</b>       | <b>10</b> |
| 7.1        | Description                                                              | 10        |
| 7.2        | Flow Control Devices: Maintenance Activities and Frequency               | 11        |
| 7.3        | Flow Control Devices: Inspection and Frequency                           | 11        |
| <b>8.0</b> | <b>PERMEABLE PAVING</b>                                                  | <b>12</b> |
| 8.1        | Description                                                              | 12        |
| 8.2        | Permeable paving: Maintenance Activities and Frequency                   | 12        |
| 8.3        | Permeable paving: Inspection and Frequency                               | 13        |
| <b>9.0</b> | <b>CONCLUSIONS</b>                                                       | <b>14</b> |



---

## APPENDICES

**Appendix A** Location Plan – Odyssey drawing 19-034/101

**Appendix B** Topographical Survey from “Solent Survey”

**Appendix C** Preliminary Engineering Layout - Odyssey drawing 19-034/201

**Appendix D** Thames Water Sewer Records

**Appendix E** Overland Flow Route Plan - Odyssey drawing 19-034/202

**Appendix F** Surface Water Drainage Calculations



---

## 1.0 INTRODUCTION & OVERVIEW

### 1.1 *Existing Site and Background*

- 1.1.1 Odyssey have been commissioned by Bellway Homes Ltd to prepare this report to accompany the proposed drainage strategy for the residential development site “The Printworks”, Cardiff Road, Reading. The development proposals are for 96 residential units and associated infrastructure. This report includes information regarding the background, existing drainage regime, proposed drainage regime, overland flow routes and maintenance of SuDS features.
- 1.1.2 The proposed development is located at the former Cox & Wyman site in Reading, centered on grid coordinates (470934, 174118), approximately 350 m south of the River Thames. The development site is approximately 1.33 ha and is bounded by Meadow Road to the north, Addison Road to the east, Cardiff Road to the south, and Milford Road to the west. Refer to **Appendix A** for the development site location plan.
- 1.1.3 A topographical survey was undertaken in November 2016 by Solent Survey with the surveyed levels provided in **Appendix B**. The site is relatively flat with ground levels ranging from 38.80mAOD to 38.25mAOD, with levels generally higher in the north.

### 1.2 *Proposed Development*

- 1.2.1 The proposed development includes 96 dwellings, associated car parking and landscaping. The proposed development will include approximately 1 ha of impermeable area consisting of lined permeable paved road, parking areas and roofs. The Site Layout is supplied in **Appendix C**.
- 1.2.2 Discharge of surface water from the site is to be positively provided by a mixture of private piped networks and lined permeable paving on site. Surface water is conveyed by this network to the existing adopted surface water network. The site discharges surface water via two separate connections, each restricted by a flow control chamber. The first one is located to the eastern side and the second one is on the western side of the site.
- 1.2.3 This report sets out the maintenance and management of the site’s drainage systems throughout their lifetime. Where possible drainage features will be offered to Thames Water for adoption however the drainage features that Thames Water are not adopting will be maintained under a private management agreement, who will incorporate the



---

recommendations in this document. In all cases, reference should be made to the manufacturer's inspection and maintenance recommendations. The recommendations for each system have been divided into sections which correspond to each relevant drainage type detailing:

- Description of feature
- Maintenance activities and frequency
- Inspection and frequency



---

## **2.0 EXISTING DRAINAGE**

### **2.1 *Existing Surface Water Drainage***

2.1.1 The Thames Water sewer records show existing 675mm and 225mm diameter adopted surface water sewers within Milford Road and Addison Road respectively into which it is assumed the private system connects. Thames Water asset plans are provided in **Appendix D**.

### **2.2 *Existing Foul Water Drainage***

2.2.1 The Thames Water Sewer records show existing 225mmØ adopted foul sewers located within Meadow Road and Addison Road into which it is assumed the private system connects. Thames Water asset plans are provided in **Appendix D**.



### 3.0 PROPOSED DRAINAGE

#### 3.1 *Design Criteria*

3.1.1 New foul and surface water drainage networks are proposed across the development site. The proposed foul and surface water drainage strategies are shown on the “Preliminary Engineering Layout” (Odyssey drawing 19-034/201), that can be found in **Appendix C**.

3.1.2 The design criteria applied for the proposed drainage design are as follows:

- Pipework beneath existing and proposed highways is to have a depth of at least 1.2m where possible.
- Private foul and surface water drainage is to be in accordance with Approved Document H of the Building Regulations.
- Adoptable foul and surface water drainage is to be in accordance with Sewers for Adoption 6<sup>th</sup>/7<sup>th</sup> Edition and Thames Water requirements.
- The surface water drainage system has been designed to cater for the 1 in 100 year storm event plus a 40% allowance for climate change.

#### 3.2 *Surface Water Drainage*

3.2.1 The proposed surface water drainage strategy is based upon the principles outlined in the approved Flood Risk Assessment (Project 15055, Water Environment Limited, October 2017).

3.2.2 Surface water run-off from impermeable areas of the development are to be captured by a system of lined permeable paving, and gullies and conveyed via a network of manholes and pipework to the proposed flow control chambers before discharging into the existing adopted surface sewers located to the east and west of the site.

3.2.3 The proposed drainage strategy is shown on the “Preliminary Engineering Layout” (Odyssey drawing 19-034/201) provided in **Appendix C**.

3.2.4 Surface water drainage calculations are provided in **Appendix F**.

3.2.5 The flow control chambers and connections to the existing drainage are to be offered to Thames Water for adoption.

3.2.6 Surface water features that are not adopted by Thames Water will be maintained by a private management company and subject to the maintenance schedules set out in Sections 6 to 10 of this document.



- 
- 3.2.7 The permeable paving will be constructed with a DBM layer to provide protection for construction traffic. Once the need for heavy construction vehicles has passed the DBM will be perforated in accordance with BS 7533 and the sand and blocks laid to provide the final surface finish.

### **3.3 Foul Water Drainage**

- 3.3.1 The proposed foul sewers will discharge via gravity through a new piped network to new connections located to the north and south of the site as shown on the “Preliminary Engineering Layout” (Odyssey drawing 19-034/201), provided in **Appendix C**.
- 3.3.2 New connection to the existing Thames Water sewer will be made in accordance with Section 106 of the Water Industry Act.



---

## 4.0 EXCEEDANCE DRAINAGE

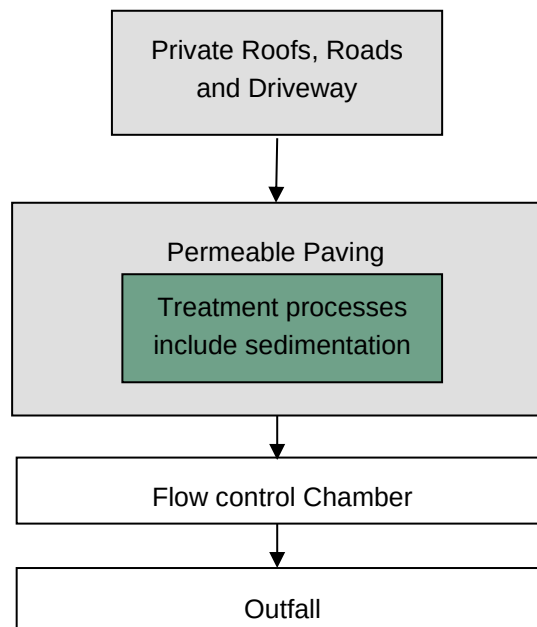
### 4.1 *Exceedance Drainage*

- 4.1.1 In the instance of a rainfall event in excess of the 1 in 100 year plus 40% climate change event, levels have been designed such that overland flow will run away from buildings and be conveyed within the main highway kerbs. Site-wide, the proposed levels follow the existing surrounding topography to replicate the existing exceedance flow regime.
- 4.1.2 Unless site constraints dictate otherwise, plot finished floor levels are proposed to be 150mm above surrounding external finished levels.
- 4.1.3 An “Overland Flow Route Plan” (Odyssey drawing 19-034/202), based upon proposed site levels is provided in **Appendix E**.
- 4.1.4 Due to existing flood zones the finished floor level for Plot 25 must maintain a minimum level of 38.45mAOD



## 5.0 TREATMENT OF SURFACE WATER RUN-OFF

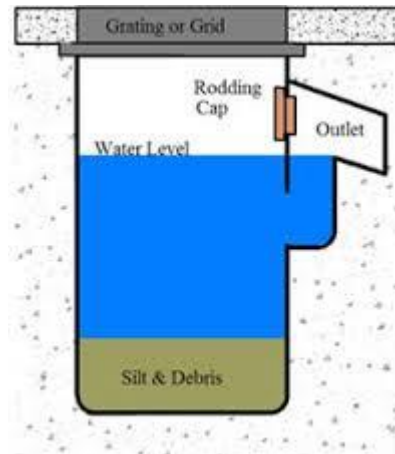
- 5.1.1 Surface water will be subject to the treatment train to cleanse run-off prior to discharge into existing watercourses. The levels of proposed treatment are indicatively shown in the diagram below.





## 6.0 MAINTENANCE OF PIPE SYSTEMS, GULLIES AND MANHOLES

### 6.1 Description



- 6.1.1 Drainage systems comprising of pipe runs, manholes and gullies are a more conventional method of draining surface water run-off from highway areas.
- 6.1.2 Surface water falling on permeable areas, such as roads and footways, drain at surface level to gullies which convey the water below ground to the main drainage network. Manholes are also provided on the main drainage system at regular intervals, changes in sewer direction, gradient or pipe diameter. This type of drainage system can be accessed from the gullies or manholes for routine inspection and maintenance.
- 6.1.3 Gullies are to be 'trapped' such that on collecting and conveying surface water they trap sediment and prevent any unpleasant odours returning from the sewers.

### 6.2 Pipe Systems, Gullies and Manholes: Maintenance Activities and Frequency

| Maintenance Category   | Maintenance Activity                                             | Comments      | Frequency                                       |
|------------------------|------------------------------------------------------------------|---------------|-------------------------------------------------|
| Routine Maintenance    | Inspect and identify any areas that are not operating correctly. | Manholes.     | Monthly (for the first 3 months) then annually. |
| Infrequent Maintenance | Clear blockages.                                                 | Piped system. | As required.                                    |



---

**6.3 Pipe Systems, Gullies and Manholes: Inspection and Frequency**

| Inspection Activity         | Comments                                                                                                                                                       | Frequency                                    |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| Clearing of gullies / sumps | Gullies found to be non-functioning/blocked on annual inspection will be noted and cleared at 6 monthly intervals. Recurring blockages should be investigated. | Annually (or 6 monthly if blocked annually). |
| Cleaning / jetting          | Pipes and manholes.                                                                                                                                            | When required.                               |



## 7.0 MAINTENANCE OF FLOW CONTROL DEVICES (HYDROBRAKE OR SIMILAR)



### 7.1 Description

- 7.1.1 A flow control device usually comprises of a fixed orifice or an alternative form of throttle such as a vortex flow control unit. Its principle function is to throttle the discharge passed down stream and thereby retain water upstream within associated storage facilities.
- 7.1.2 The vortex flow controls provide a non-linear flow curve and as such, can respond to both high and low intensity rainfall events.
- 7.1.3 This site utilizes a vortex flow control device (Hydrobrake or similar) and will usually contain a sump within the flow control chamber and associated parts for access and maintenance.
- 7.1.4 Normally, little maintenance is required as there are no moving parts within the Flow Control device and generally if blockages occur they do so at the intake and can be due to poor installation or upstream treatment of water entering the system.
- 7.1.5 The vortex flow control is to be fitted with a pivoting by-pass door, which allows the manhole chamber to be drained down should blockages occur.



## 7.2 *Flow Control Devices: Maintenance Activities and Frequency*

| Maintenance Category   | Maintenance Activity                                             | Comments                                                                          | Frequency                                          |
|------------------------|------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------|
| Routine Maintenance    | Inspect and identify any areas that are not operating correctly. | -                                                                                 | Monthly (for the first 3 months) then six monthly. |
|                        | Remove sediment from upstream silt trap (sump).                  | -                                                                                 | Six monthly, or as required.                       |
|                        | Hose down unit / chamber                                         | -                                                                                 | Six monthly, or as required.                       |
| Infrequent Maintenance | Clear blockages                                                  | Pivoting bypass door to ensure manhole can be drained in the event of a blockage. | As required.                                       |

## 7.3 *Flow Control Devices: Inspection and Frequency*

| Inspection Activity                                                                          | Comments | Frequency    |
|----------------------------------------------------------------------------------------------|----------|--------------|
| Inspect all inlets / outlets, to check they are in good condition and operating as designed. | -        | Annually.    |
| Check mechanical devices within associated chambers                                          | -        | Half yearly. |

- 7.3.1 The above maintenance and inspection regime is recommended however reference should also be made to the appropriate manufacturer's guidance and recommendations and the more frequent maintenance and inspection regime implemented.



## 8.0 PERMEABLE PAVING



### 8.1 Description

- 8.1.1 Permeable block paving allows water to pass through the gaps between the blocks into underlying sand and gravel layers allowing for the attenuation, conveyance and where possible infiltration, of surface water runoff. In the case of this site, the permeable paving is to be lined, as the geological data stated the infiltration rate of the substrata is impractical.
- 8.1.2 Permeable paving will cleanse surface water run-off. The initial cleansing occurs within the sand bedding layer where hydrocarbons are collected. The layer of geotextile below the sand acts as a secondary filter before infiltration through to the sub-base further filters the discharge before connecting into the downstream pipe network.

### 8.2 Permeable paving: Maintenance Activities and Frequency

| Maintenance Category   | Maintenance Activity                                       | Comments                                                                          | Frequency                                               |
|------------------------|------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------|
| Routine Maintenance    | Visual inspection of paving.                               | Ensure joints are kept fully filled.                                              | Monthly (depending on local environment)                |
|                        | Paving should be agitated (e.g. brushed, vacuumed, etc.)   | To ensure no vegetation of any sort is allowed to grow and develop in the joints. | Six monthly or as required (Spring and Autumn seasons). |
|                        | Paving should be inspected after any heavy precipitations. | Ensure no displacement of any organic matter into the surface of the pavement.    | As required.                                            |
| Corrective Maintenance | Inspection of outfall should be undertaken.                | Non-infiltration systems to have outfall checked for debris and blockages.        | Six monthly or as required.                             |



|  |                                                         |                                                                                                                                                                                           |                       |
|--|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
|  | Removal of weeds.                                       | To ensure weeds are killed effectively they should be actively growing so that the glyphosate will go down to the roots.<br>Glyphosate based weed killers include Roundup and Tumbleweed. | As required.          |
|  | Laying material may require cleaning and /or replacing. | Depending on the environment the permeable pavement has received and been exposed to.                                                                                                     | 25 to 30-year period. |

### 8.3 *Permeable paving: Inspection and Frequency*

| Inspection Activity                                        | Comments                                                                                          | Frequency |
|------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------|
| Visual inspection of permeable surface for poor operation. | Includes visual inspection of blocks, water ponding, weeds and to make sure joints are kept full. | Monthly.  |
| Visual inspection of outfall.                              | Includes visual inspection of control structures and outfall to check for damages and blockages.  | Monthly.  |



---

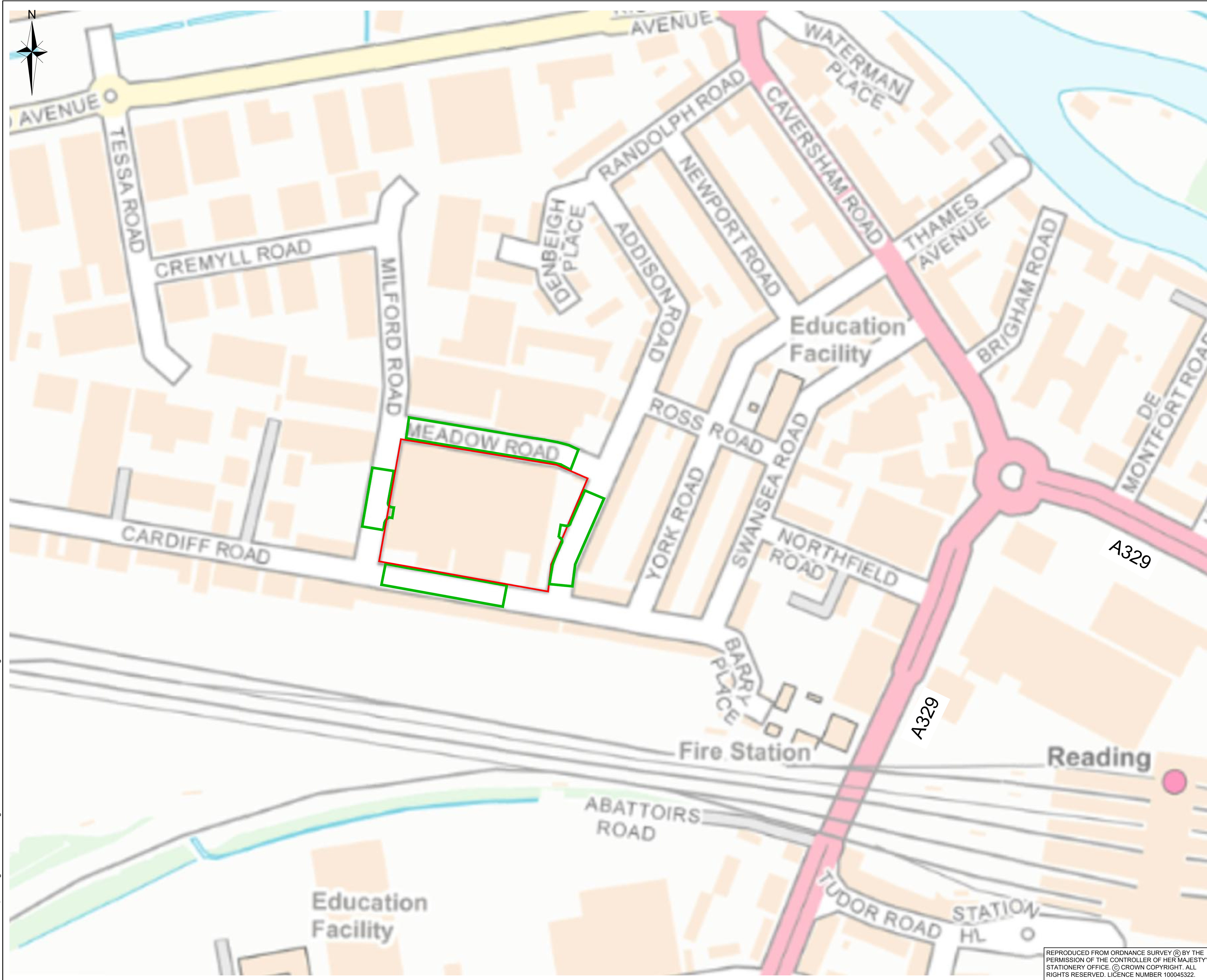
## **9.0 CONCLUSIONS**

- 9.1.1 This report has set out the proposed foul and surface water drainage for the site at Cardiff Road, Reading.
- 9.1.2 This report has described how the proposed surface water drainage systems will cater for run-off from the site for events up to and including the 1 in 100 year plus 40% climate change event, in accordance with the information provided at planning.
- 9.1.3 This report has described the proposed surface water drainage features (including SuDS features) and recommended appropriate maintenance regimes.
- 9.1.4 This report has described the existing and proposed drainage networks.
- 9.1.5 This report has shown an overland flow route if the 1 in 100 40 % climate change were to be exceeded.

## **APPENDIX A**

### **Location Plan**

P:\19-034 - Cardiff Road, Reading\Tech\Acad\Drawings\100 Series - S278\19-034-101 Location Plan.dwg



REPRODUCED FROM ORDNANCE SURVEY © BY THE  
PERMISSION OF THE CONTROLLER OF HER MAJESTY'S  
STATIONERY OFFICE. © CROWN COPYRIGHT. ALL  
RIGHTS RESERVED. LICENCE NUMBER 100045322.

- NOTES
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE MANUAL FOR CONTRACT DOCUMENTS, VOLUME 1, SPECIFICATION FOR HIGHWAY WORKS, READING COUNCIL SPECIFICATION, SEWERS FOR ADOPTION 6th / 7th EDITIONS AND ALL OTHER RELATED DRAWINGS ISSUED.
  2. DO NOT SCALE FROM THIS DRAWING. WORK FROM FIGURED DIMENSIONS ONLY.

LEGEND:

PROPOSED DEVELOPMENT BOUNDARY

EXTENT OF S278 WORKS

DRAFT

| Rev | Amendments | Dwn | Chk | App | Date |
|-----|------------|-----|-----|-----|------|
|     |            |     |     |     |      |



**ODYSSEY**  
Tuscary House  
White Hart Lane  
Basingstoke  
Hampshire RG21 4AF

Telephone: 01256 331144  
Fax: 01256 331134  
E: info@odysseyconsult.co.uk  
W: www.odysseyconsult.co.uk

Job Title

THE PRINTWORKS,  
CARDIFF ROAD, READING

Drawing Title

S278 AGREEMENT WORKS  
SITE LOCATION PLAN

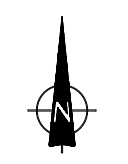
Client

**Bellway**

|                     |                          |                |
|---------------------|--------------------------|----------------|
| Scale<br>1:1250 @A1 | Date<br>AUG-19           | Designed<br>KK |
| Drawn<br>KK         | Checked<br>TR            | Approved<br>TG |
| Job No<br>19-034    | Drawing No<br>19-034/101 | Rev            |

## **APPENDIX B**

### **“Solent Survey” Topo Survey GPS Network**

[illegible]

0961/04/06/0908  
Removal of this block also removes all warranties and liabilities- copyright  
© David Newman, Newcastle or not named  
This is the drawing intended with Robert Surveys  
© Robert Surveys

---

TITLE/PROJECT

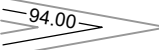
Cox & Wyman premises  
Cardiff Road  
Reading  
Berkshire  
RG1 8EX

Survey Drawing

1:200 A1L

## **APPENDIX C**

### **Preliminary Levels and Drainage Strategy Layout**

|                                                                                       |                                                                 |
|---------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| <b>KEY:</b>                                                                           | <b>SITE BOUNDARY</b>                                            |
|    | <b>PROPOSED HIGHWAY CONTOURS</b>                                |
|    | <b>PROPOSED FINISHED FLOOR LEVEL (MAOD)</b>                     |
|    | <b>PROPOSED FINISHED GARAGE LEVEL (MAOD)</b>                    |
|    | <b>EXISTING LEVEL (MAOD)</b>                                    |
|    | <b>PROPOSED SURFACE WATER SEWER AND MANHOLE</b>                 |
|    | <b>PROPOSED FOUL WATER SEWER AND MANHOLE</b>                    |
|    | <b>EXISTING SURFACE WATER SEWER AND MANHOLE</b>                 |
|    | <b>EXISTING FOUL WATER SEWER AND MANHOLE</b>                    |
|    | <b>PROPOSED SURFACE WATER FLOW CONTROL CHAMBER</b>              |
|    | <b>PROPOSED PRIVATE FOUL DRAIN</b>                              |
|    | <b>PROPOSED PRIVATE SURFACE WATER DRAIN</b>                     |
|    | <b>PRIVATE SURFACE WATER INSPECTION CHAMBER</b>                 |
|    | <b>PRIVATE FOUL INSPECTION CHAMBER</b>                          |
|    | <b>PROPOSED PERMEABLE PAVING (WITH SUBBBASE FLOW DIRECTION)</b> |
|  | <b>ROOT PROTECTION AREA (RPA). EXISTING TREE RETAINED.</b>      |

DRAFT



Job Title

THE PRINTWORKS,  
CARDIFF ROAD, READING

Drawing Title

PRELIMINARY  
ENGINEERING LAYOUT

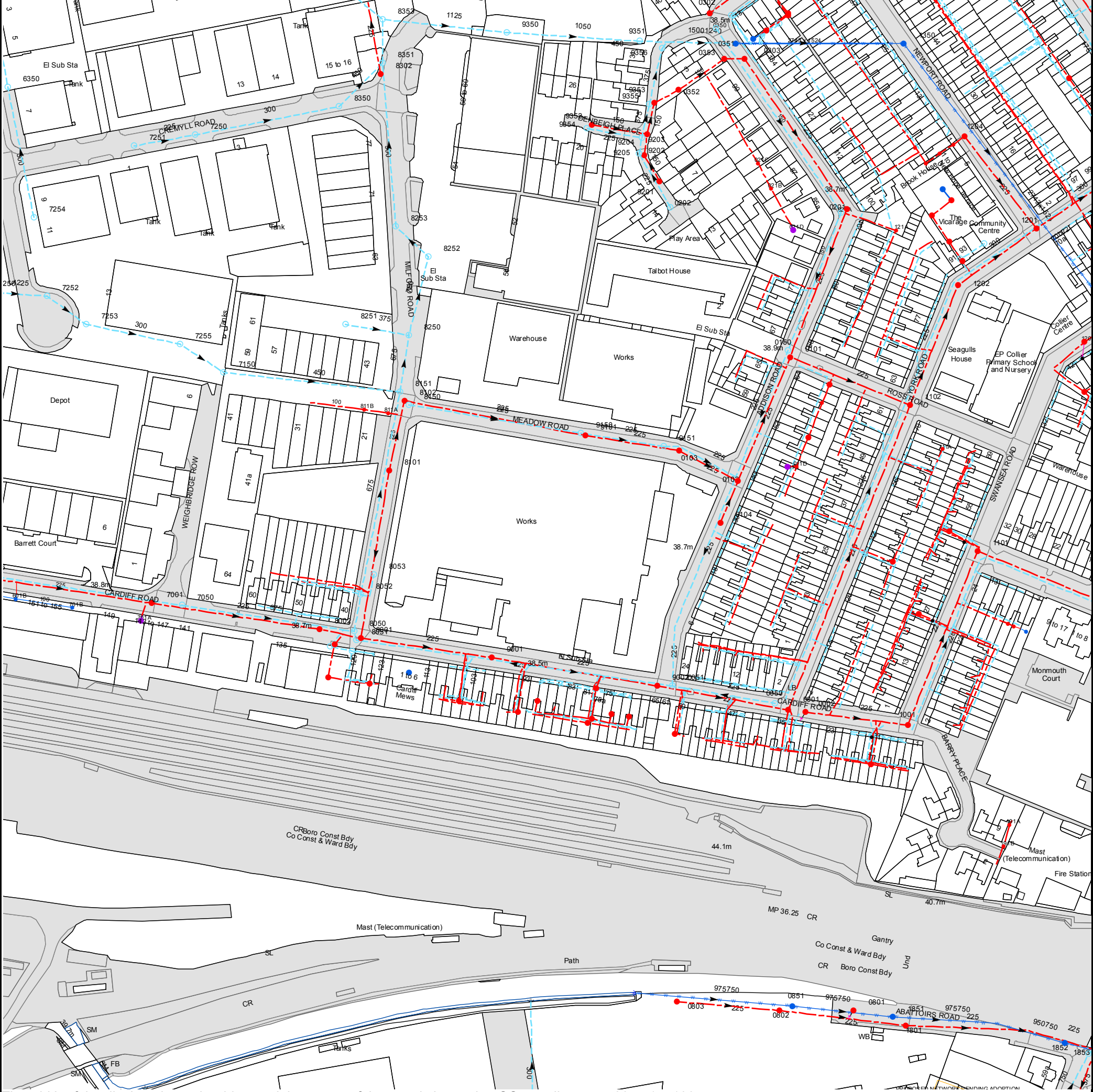
Client 

|                    |                          |                |
|--------------------|--------------------------|----------------|
| Scale<br>1:250 @A1 | Date<br>SEP-19           | Designed<br>KK |
| Drawn<br>KK        | Checked<br>TR            | Approved<br>TG |
| Job No<br>19-034   | Drawing No<br>19-034/201 | R              |

## **APPENDIX D**

### **Thames water sewer records**

Asset Location Search Sewer Map - ALS/ALS Standard/2015 3156212



The width of the displayed area is 500 m and the centre of the map is located at OS coordinates 470944,174109  
The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

Based on the Ordnance Survey Map with the Sanction of the controller of H.M. Stationery Office, License no. 100019345 Crown Copyright Reserved.

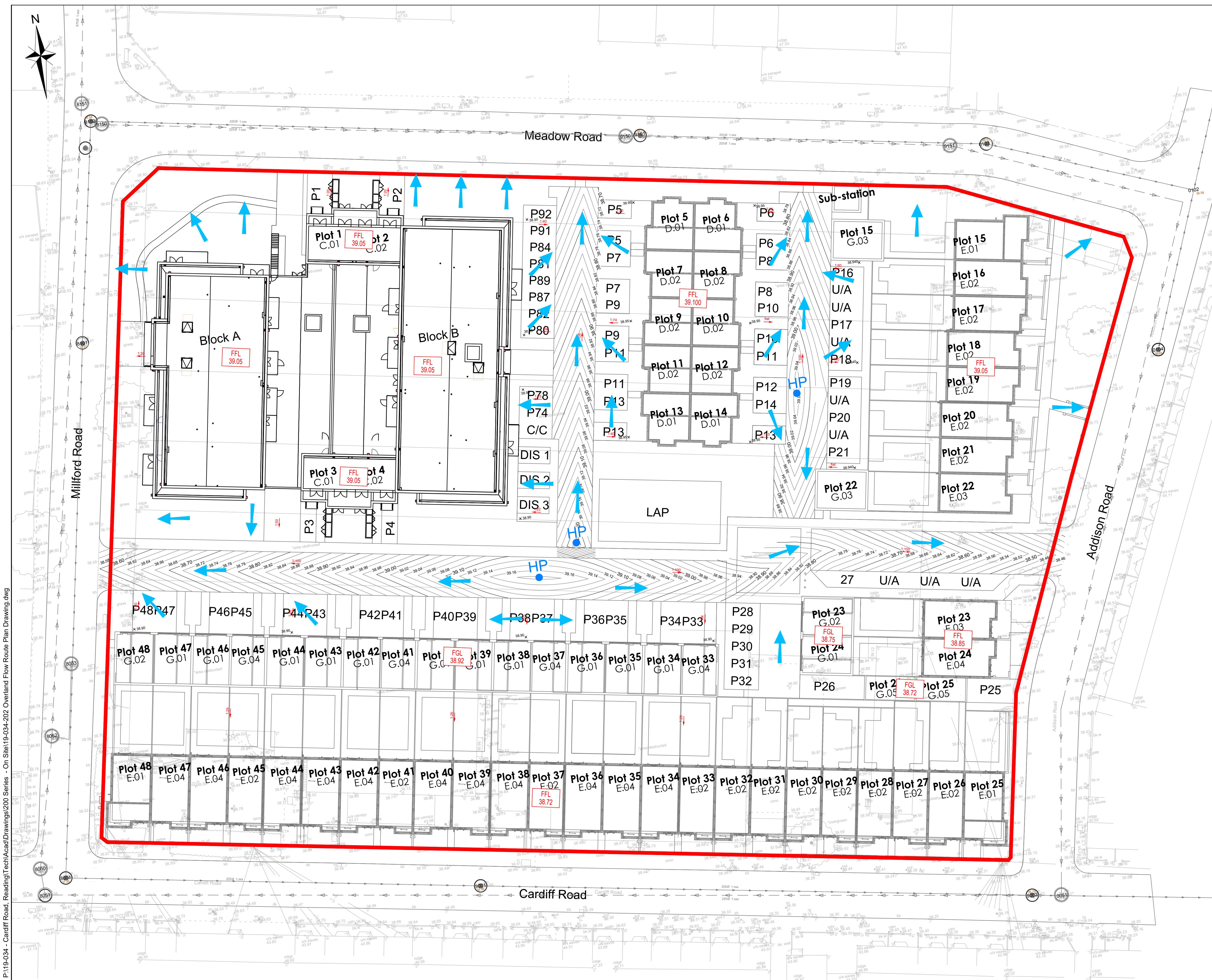
NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

| Manhole Reference | Manhole Cover Level | Manhole Invert Level |
|-------------------|---------------------|----------------------|
| 0351              | n/a                 | n/a                  |
| 9351              | 38.48               | 36.4                 |
| 03LJ              | n/a                 | n/a                  |
| 03KN              | n/a                 | n/a                  |
| 03LH              | n/a                 | n/a                  |
| 0350              | 38.63               | 37.13                |
| 03LC              | n/a                 | n/a                  |
| 03KK              | n/a                 | n/a                  |
| 03XZ              | n/a                 | n/a                  |
| 03LF              | n/a                 | n/a                  |
| 0302              | 38.47               | 36.47                |
| 12KJ              | n/a                 | n/a                  |
| 121A              | n/a                 | n/a                  |
| 021D              | n/a                 | n/a                  |
| 12KK              | n/a                 | n/a                  |
| 021A              | n/a                 | n/a                  |
| 0201              | 38.75               | 36.59                |
| 0202              | n/a                 | n/a                  |
| 12KM              | n/a                 | n/a                  |
| 021B              | n/a                 | n/a                  |
| 9201              | 38.52               | 37.56                |
| 12YR              | n/a                 | n/a                  |
| 021C              | n/a                 | n/a                  |
| 9202              | 38.4                | 37.42                |
| 9205              | 38.39               | 37.02                |
| 121C              | n/a                 | n/a                  |
| 121B              | n/a                 | n/a                  |
| 9204              | 38.59               | 36.91                |
| 9203              | 38.57               | 37.36                |
| 9354              | 38.69               | 37.13                |
| 9352              | 38.68               | 37.54                |
| 9355              | 38.42               | 36.9                 |
| 9353              | 38.42               | 37.27                |
| 0352              | 38.45               | 37.16                |
| 0353              | 38.68               | n/a                  |
| 0303              | 38.41               | 36.81                |
| 9356              | 38.46               | 36.82                |
| 1350              | n/a                 | n/a                  |
| 12KL              | n/a                 | n/a                  |
| 121D              | n/a                 | n/a                  |
| 1204              | 38.18               | 36.57                |
| 12KE              | n/a                 | n/a                  |
| 13ZR              | n/a                 | n/a                  |
| 1201              | 38.27               | 36.1                 |
| 13ZT              | n/a                 | n/a                  |
| 13ZP              | n/a                 | n/a                  |
| 9150              | 38.71               | 37.15                |
| 9101              | 38.7                | 36.71                |
| 90KL              | n/a                 | n/a                  |
| 90YW              | n/a                 | n/a                  |
| 90YV              | n/a                 | n/a                  |
| 90ZR              | n/a                 | n/a                  |
| 90ZS              | n/a                 | n/a                  |
| 9002              | 38.2                | 36.78                |
| 9151              | 38.68               | 37.03                |
| 0051              | 38.2                | 37.02                |
| 00ZY              | n/a                 | n/a                  |
| 0103              | 38.7                | 36.65                |
| 0104              | 38.74               | 36.66                |
| 0102              | 38.77               | 36.58                |
| 0050              | 38.26               | 37.04                |
| 011B              | n/a                 | n/a                  |
| 0001              | 38.31               | 36.73                |
| 0150              | 38.8                | 36.74                |
| 0101              | 38.8                | 36.46                |
| 011D              | n/a                 | n/a                  |
| 0002              | 38.28               | 36.97                |
| 0153              | n/a                 | n/a                  |
| 011E              | n/a                 | n/a                  |
| 0152              | n/a                 | n/a                  |
| 0154              | n/a                 | n/a                  |
| 00WT              | n/a                 | n/a                  |
| 1105              | n/a                 | n/a                  |
| 1001              | 38.3                | 36.93                |
| 1102              | 38.24               | 36.38                |
| 10YS              | n/a                 | n/a                  |
| 111A              | n/a                 | n/a                  |
| 11ZV              | n/a                 | n/a                  |
| 1202              | 38.19               | 36.28                |
| 12KD              | n/a                 | n/a                  |
| 12KH              | n/a                 | n/a                  |
| 1101              | 38.24               | 36.59                |
| 101A              | n/a                 | n/a                  |
| 101B              | n/a                 | n/a                  |
| 101C              | n/a                 | n/a                  |
| 1106              | n/a                 | n/a                  |
| 1203              | 38.1                | 36.1                 |
| 0803              | n/a                 | n/a                  |
| 0802              | n/a                 | n/a                  |
| 0851              | n/a                 | n/a                  |
| 0801              | n/a                 | n/a                  |

| Manhole Reference                                                                                                                                                                                                                                                                                                                                                                                                      | Manhole Cover Level | Manhole Invert Level |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------------|
| 1851                                                                                                                                                                                                                                                                                                                                                                                                                   | 38.4                | n/a                  |
| 1801                                                                                                                                                                                                                                                                                                                                                                                                                   | 38.37               | 36.13                |
| 191B                                                                                                                                                                                                                                                                                                                                                                                                                   | n/a                 | n/a                  |
| 191A                                                                                                                                                                                                                                                                                                                                                                                                                   | n/a                 | n/a                  |
| 1852                                                                                                                                                                                                                                                                                                                                                                                                                   | 38.37               | n/a                  |
| 1853                                                                                                                                                                                                                                                                                                                                                                                                                   | 38.07               | 35.99                |
| 7251                                                                                                                                                                                                                                                                                                                                                                                                                   | 39.05               | n/a                  |
| 7250                                                                                                                                                                                                                                                                                                                                                                                                                   | 39.07               | n/a                  |
| 8350                                                                                                                                                                                                                                                                                                                                                                                                                   | 39.05               | 37.58                |
| 6350                                                                                                                                                                                                                                                                                                                                                                                                                   | 39.15               | 37.9                 |
| 8302                                                                                                                                                                                                                                                                                                                                                                                                                   | 39.15               | 37.86                |
| 8351                                                                                                                                                                                                                                                                                                                                                                                                                   | 39.12               | 36.52                |
| 9350                                                                                                                                                                                                                                                                                                                                                                                                                   | n/a                 | n/a                  |
| 8353                                                                                                                                                                                                                                                                                                                                                                                                                   | 39.27               | 36.51                |
| 7254                                                                                                                                                                                                                                                                                                                                                                                                                   | n/a                 | n/a                  |
| 7252                                                                                                                                                                                                                                                                                                                                                                                                                   | 39.07               | 37.78                |
| 7253                                                                                                                                                                                                                                                                                                                                                                                                                   | 39.24               | 37.55                |
| 7255                                                                                                                                                                                                                                                                                                                                                                                                                   | n/a                 | n/a                  |
| 7150                                                                                                                                                                                                                                                                                                                                                                                                                   | 39.59               | 37.22                |
| 8251                                                                                                                                                                                                                                                                                                                                                                                                                   | 38.99               | 36.64                |
| 811B                                                                                                                                                                                                                                                                                                                                                                                                                   | n/a                 | n/a                  |
| 811A                                                                                                                                                                                                                                                                                                                                                                                                                   | n/a                 | n/a                  |
| 8101                                                                                                                                                                                                                                                                                                                                                                                                                   | 38.62               | 37.22                |
| 8253                                                                                                                                                                                                                                                                                                                                                                                                                   | n/a                 | n/a                  |
| 8151                                                                                                                                                                                                                                                                                                                                                                                                                   | 38.69               | 36.89                |
| 8102                                                                                                                                                                                                                                                                                                                                                                                                                   | 38.69               | 36.94                |
| 8150                                                                                                                                                                                                                                                                                                                                                                                                                   | 38.66               | 37.31                |
| 8250                                                                                                                                                                                                                                                                                                                                                                                                                   | 38.82               | 36.57                |
| 8252                                                                                                                                                                                                                                                                                                                                                                                                                   | 38.84               | 36.68                |
| 90ZX                                                                                                                                                                                                                                                                                                                                                                                                                   | n/a                 | n/a                  |
| 90WY                                                                                                                                                                                                                                                                                                                                                                                                                   | n/a                 | n/a                  |
| 90ZV                                                                                                                                                                                                                                                                                                                                                                                                                   | n/a                 | n/a                  |
| 80YS                                                                                                                                                                                                                                                                                                                                                                                                                   | n/a                 | n/a                  |
| 80MK                                                                                                                                                                                                                                                                                                                                                                                                                   | n/a                 | n/a                  |
| 80LK                                                                                                                                                                                                                                                                                                                                                                                                                   | n/a                 | n/a                  |
| 80YP                                                                                                                                                                                                                                                                                                                                                                                                                   | n/a                 | n/a                  |
| 9001                                                                                                                                                                                                                                                                                                                                                                                                                   | 38.58               | 36.95                |
| 80MJ                                                                                                                                                                                                                                                                                                                                                                                                                   | n/a                 | n/a                  |
| 80MH                                                                                                                                                                                                                                                                                                                                                                                                                   | n/a                 | n/a                  |
| 80LJ                                                                                                                                                                                                                                                                                                                                                                                                                   | n/a                 | n/a                  |
| 8051                                                                                                                                                                                                                                                                                                                                                                                                                   | 38.56               | 37.01                |
| 8001                                                                                                                                                                                                                                                                                                                                                                                                                   | 38.64               | 37.05                |
| 8050                                                                                                                                                                                                                                                                                                                                                                                                                   | 38.63               | 36.93                |
| 8002                                                                                                                                                                                                                                                                                                                                                                                                                   | 38.72               | 37.12                |
| 701A                                                                                                                                                                                                                                                                                                                                                                                                                   | n/a                 | n/a                  |
| 701B                                                                                                                                                                                                                                                                                                                                                                                                                   | n/a                 | n/a                  |
| 7050                                                                                                                                                                                                                                                                                                                                                                                                                   | 38.66               | 37.01                |
| 7001                                                                                                                                                                                                                                                                                                                                                                                                                   | 38.72               | 37.24                |
| 601B                                                                                                                                                                                                                                                                                                                                                                                                                   | n/a                 | n/a                  |
| 8052                                                                                                                                                                                                                                                                                                                                                                                                                   | 38.63               | 36.88                |
| 8053                                                                                                                                                                                                                                                                                                                                                                                                                   | 38.6                | 37.5                 |
| The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken. |                     |                      |

## **APPENDIX E**

### **Overland Flow Route Plan Drawing**



- # NOTES
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELATED DRAWINGS ISSUED BY THE ARCHITECT AND ENGINEER, SEWERS FOR ADIPTION SIXTH/SEVENTH EDITION, READING BOROUGHCOUNCIL, STANDARDS AND BELLWAY STANDARDS.
  2. DO NOT SCALE FROM THIS DRAWING. WORK FROM FIGURED DIMENSIONS ONLY.
  3. ALL DIMENSIONS SHOWN IN METRES UNLESS NOTED OTHERWISE.
  4. ALL DIMENSIONS, LEVELS AND SURVEY GRID CO-ORDINATES ARE TO BE CHECKED ONSITE AND THE ENGINEER NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO THE COMMENCEMENT OF THE WORKS.
  5. NO DEVIATION FROM THE DETAILS SHOWN ON THIS DRAWING IS PERMITTED WITHOUT PERMISSION FROM THE ENGINEER.
  6. CONTOURS SHOWN ON THIS DRAWING ARE AT 20mm VERTICAL INTERVALS.
  7. THE TOPOGRAPHICAL SURVEY HAS BEEN PROVIDED BY SOLENT SURVEYS. DRAWING REFERENCE: 13659 51 DATED NOV 2016. AS SUCH CONVEYER DOES NOT TAKE RESPONSIBILITY FOR THE ACCURACY OF THIS INFORMATION.

LEGEND

-  DEVELOPMENT BOUNDARY  
 INDICATIVE DIRECTION OF OVERLAND FLOW  
 HIGH POINT

**DRAFT**

|      |            |      |      |           |
|------|------------|------|------|-----------|
|      |            |      |      |           |
| Rev. | Amendments | Des. | Chk. | App. Date |



Job Title

THE PRINTWORKS,  
CARDIFF ROAD, READING

Drawing Title

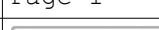
OVERLAND  
FLOW ROUTE PLAN

Client **Bellway**

|                    |                          |                |
|--------------------|--------------------------|----------------|
| Scale<br>1:250 @A1 | Date<br>SEP-19           | Designed<br>KK |
| Drawn<br>KK        | Checked<br>TR            | Approved<br>TG |
| Job No<br>19-034   | Drawing No<br>19-034/202 | Rev            |

## **APPENDIX F**

### **Surface Water Drainage Calculation**

|                                                           |                                           |                                                                                     |
|-----------------------------------------------------------|-------------------------------------------|-------------------------------------------------------------------------------------|
| Odyssey Markides                                          |                                           | Page 1                                                                              |
| Tuscany House<br>White Hart Lane<br>Basingstoke RG21 4AF  | The Printworks<br>Cardiff Road<br>Reading |  |
| Date 29/08/2019<br>File POROUS D.SRCX                     | Designed by TR<br>Checked by TR           |                                                                                     |
| XP Solutions                      Source Control 2018.1.1 |                                           |                                                                                     |

### Summary of Results for 100 year Return Period (+40%)

|       | Storm<br>Event  | Max<br>Level<br>(m) | Max<br>Depth<br>(m) | Max<br>Infiltration<br>(l/s) | Max<br>Control<br>(l/s) | Max<br>Σ Outflow<br>(l/s) | Max<br>Volume<br>(m³) | Status |
|-------|-----------------|---------------------|---------------------|------------------------------|-------------------------|---------------------------|-----------------------|--------|
|       | 15 min Summer   | 37.797              | 0.297               | 0.0                          | 5.0                     | 5.0                       | 38.1                  | O K    |
|       | 30 min Summer   | 37.867              | 0.367               | 0.0                          | 5.0                     | 5.0                       | 48.8                  | O K    |
|       | 60 min Summer   | 37.921              | 0.421               | 0.0                          | 5.0                     | 5.0                       | 56.9                  | O K    |
|       | 120 min Summer  | 37.939              | 0.439               | 0.0                          | 5.0                     | 5.0                       | 59.6                  | O K    |
|       | 180 min Summer  | 37.932              | 0.432               | 0.0                          | 5.0                     | 5.0                       | 58.6                  | O K    |
|       | 240 min Summer  | 37.918              | 0.418               | 0.0                          | 5.0                     | 5.0                       | 56.5                  | O K    |
|       | 360 min Summer  | 37.884              | 0.384               | 0.0                          | 5.0                     | 5.0                       | 51.3                  | O K    |
|       | 480 min Summer  | 37.851              | 0.351               | 0.0                          | 5.0                     | 5.0                       | 46.3                  | O K    |
|       | 600 min Summer  | 37.820              | 0.320               | 0.0                          | 5.0                     | 5.0                       | 41.6                  | O K    |
|       | 720 min Summer  | 37.791              | 0.291               | 0.0                          | 5.0                     | 5.0                       | 37.2                  | O K    |
|       | 960 min Summer  | 37.742              | 0.242               | 0.0                          | 4.9                     | 4.9                       | 29.7                  | O K    |
|       | 1440 min Summer | 37.672              | 0.172               | 0.0                          | 4.7                     | 4.7                       | 19.2                  | O K    |
|       | 2160 min Summer | 37.621              | 0.121               | 0.0                          | 4.3                     | 4.3                       | 11.4                  | O K    |
|       | 2880 min Summer | 37.601              | 0.101               | 0.0                          | 3.6                     | 3.6                       | 8.3                   | O K    |
|       | 4320 min Summer | 37.581              | 0.081               | 0.0                          | 2.7                     | 2.7                       | 5.4                   | O K    |
|       | 5760 min Summer | 37.570              | 0.070               | 0.0                          | 2.2                     | 2.2                       | 4.0                   | O K    |
|       | 7200 min Summer | 37.562              | 0.062               | 0.0                          | 1.8                     | 1.8                       | 3.2                   | O K    |
|       | 8640 min Summer | 37.557              | 0.057               | 0.0                          | 1.6                     | 1.6                       | 2.7                   | O K    |
| 10080 | min Summer      | 37.553              | 0.053               | 0.0                          | 1.4                     | 1.4                       | 2.3                   | O K    |
|       | 15 min Winter   | 37.831              | 0.331               | 0.0                          | 5.0                     | 5.0                       | 43.3                  | O K    |

|                                                             |                              |                                    |                                           |                                  |                                    |                                |                                                                                     |
|-------------------------------------------------------------|------------------------------|------------------------------------|-------------------------------------------|----------------------------------|------------------------------------|--------------------------------|-------------------------------------------------------------------------------------|
| Odyssey Markides                                            |                              |                                    |                                           |                                  |                                    |                                | Page 2                                                                              |
| Tuscany House<br>White Hart Lane<br>Basingstoke RG21 4AF    |                              |                                    | The Printworks<br>Cardiff Road<br>Reading |                                  |                                    |                                |  |
| Date 29/08/2019<br>File POROUS D.SRCX                       |                              |                                    | Designed by TR<br>Checked by TR           |                                  |                                    |                                |                                                                                     |
| XP Solutions                                                |                              |                                    | Source Control 2018.1.1                   |                                  |                                    |                                |                                                                                     |
| <u>Summary of Results for 100 year Return Period (+40%)</u> |                              |                                    |                                           |                                  |                                    |                                |                                                                                     |
| <b>Storm<br/>Event</b>                                      | <b>Max<br/>Level<br/>(m)</b> | <b>Max<br/>Depth<br/>(m)</b>       | <b>Max<br/>Infiltration<br/>(l/s)</b>     | <b>Max<br/>Control<br/>(l/s)</b> | <b>Max<br/>Σ Outflow<br/>(l/s)</b> | <b>Max<br/>Volume<br/>(m³)</b> | <b>Status</b>                                                                       |
| 30 min Winter                                               | 37.912                       | 0.412                              | 0.0                                       | 5.0                              | 5.0                                | 55.6                           | O K                                                                                 |
| 60 min Winter                                               | 37.977                       | 0.477                              | 0.0                                       | 5.0                              | 5.0                                | 65.5                           | O K                                                                                 |
| 120 min Winter                                              | 38.005                       | 0.505                              | 0.0                                       | 5.0                              | 5.0                                | 69.7                           | O K                                                                                 |
| 180 min Winter                                              | 37.993                       | 0.493                              | 0.0                                       | 5.0                              | 5.0                                | 67.8                           | O K                                                                                 |
| 240 min Winter                                              | 37.974                       | 0.474                              | 0.0                                       | 5.0                              | 5.0                                | 65.0                           | O K                                                                                 |
| 360 min Winter                                              | 37.923                       | 0.423                              | 0.0                                       | 5.0                              | 5.0                                | 57.3                           | O K                                                                                 |
| 480 min Winter                                              | 37.873                       | 0.373                              | 0.0                                       | 5.0                              | 5.0                                | 49.6                           | O K                                                                                 |
| 600 min Winter                                              | 37.825                       | 0.325                              | 0.0                                       | 5.0                              | 5.0                                | 42.4                           | O K                                                                                 |
| 720 min Winter                                              | 37.782                       | 0.282                              | 0.0                                       | 5.0                              | 5.0                                | 35.9                           | O K                                                                                 |
| 960 min Winter                                              | 37.713                       | 0.213                              | 0.0                                       | 4.9                              | 4.9                                | 25.3                           | O K                                                                                 |
| 1440 min Winter                                             | 37.631                       | 0.131                              | 0.0                                       | 4.5                              | 4.5                                | 12.9                           | O K                                                                                 |
| 2160 min Winter                                             | 37.597                       | 0.097                              | 0.0                                       | 3.4                              | 3.4                                | 7.7                            | O K                                                                                 |
| 2880 min Winter                                             | 37.581                       | 0.081                              | 0.0                                       | 2.8                              | 2.8                                | 5.5                            | O K                                                                                 |
| 4320 min Winter                                             | 37.566                       | 0.066                              | 0.0                                       | 2.0                              | 2.0                                | 3.6                            | O K                                                                                 |
| 5760 min Winter                                             | 37.557                       | 0.057                              | 0.0                                       | 1.6                              | 1.6                                | 2.7                            | O K                                                                                 |
| 7200 min Winter                                             | 37.552                       | 0.052                              | 0.0                                       | 1.3                              | 1.3                                | 2.2                            | O K                                                                                 |
| 8640 min Winter                                             | 37.547                       | 0.047                              | 0.0                                       | 1.1                              | 1.1                                | 1.8                            | O K                                                                                 |
| 10080 min Winter                                            | 37.544                       | 0.044                              | 0.0                                       | 1.0                              | 1.0                                | 1.6                            | O K                                                                                 |
|                                                             |                              |                                    |                                           |                                  |                                    |                                |                                                                                     |
| <b>Storm<br/>Event</b>                                      | <b>Rain<br/>(mm/hr)</b>      | <b>Flooded<br/>Volume<br/>(m³)</b> | <b>Discharge<br/>Volume<br/>(m³)</b>      | <b>Time-Peak<br/>(mins)</b>      |                                    |                                |                                                                                     |
| 30 min Winter                                               | 85.825                       | 0.0                                | 62.3                                      | 32                               |                                    |                                |                                                                                     |
| 60 min Winter                                               | 53.779                       | 0.0                                | 78.7                                      | 60                               |                                    |                                |                                                                                     |
| 120 min Winter                                              | 32.595                       | 0.0                                | 95.9                                      | 116                              |                                    |                                |                                                                                     |
| 180 min Winter                                              | 24.012                       | 0.0                                | 106.2                                     | 146                              |                                    |                                |                                                                                     |
| 240 min Winter                                              | 19.224                       | 0.0                                | 113.5                                     | 184                              |                                    |                                |                                                                                     |
| 360 min Winter                                              | 13.954                       | 0.0                                | 123.7                                     | 258                              |                                    |                                |                                                                                     |
| 480 min Winter                                              | 11.125                       | 0.0                                | 131.5                                     | 330                              |                                    |                                |                                                                                     |
| 600 min Winter                                              | 9.325                        | 0.0                                | 137.8                                     | 396                              |                                    |                                |                                                                                     |
| 720 min Winter                                              | 8.069                        | 0.0                                | 143.1                                     | 460                              |                                    |                                |                                                                                     |
| 960 min Winter                                              | 6.417                        | 0.0                                | 151.7                                     | 578                              |                                    |                                |                                                                                     |
| 1440 min Winter                                             | 4.640                        | 0.0                                | 164.3                                     | 792                              |                                    |                                |                                                                                     |
| 2160 min Winter                                             | 3.350                        | 0.0                                | 177.5                                     | 1128                             |                                    |                                |                                                                                     |
| 2880 min Winter                                             | 2.656                        | 0.0                                | 187.2                                     | 1476                             |                                    |                                |                                                                                     |
| 4320 min Winter                                             | 1.912                        | 0.0                                | 201.0                                     | 2204                             |                                    |                                |                                                                                     |
| 5760 min Winter                                             | 1.513                        | 0.0                                | 211.0                                     | 2936                             |                                    |                                |                                                                                     |
| 7200 min Winter                                             | 1.261                        | 0.0                                | 218.6                                     | 3600                             |                                    |                                |                                                                                     |
| 8640 min Winter                                             | 1.086                        | 0.0                                | 224.8                                     | 4400                             |                                    |                                |                                                                                     |
| 10080 min Winter                                            | 0.957                        | 0.0                                | 230.0                                     | 5104                             |                                    |                                |                                                                                     |
|                                                             |                              |                                    |                                           |                                  |                                    |                                |                                                                                     |
| ©1982-2018 Innovyze                                         |                              |                                    |                                           |                                  |                                    |                                |                                                                                     |

|                                                          |                                           |                                                                                     |
|----------------------------------------------------------|-------------------------------------------|-------------------------------------------------------------------------------------|
| Odyssey Markides                                         |                                           | Page 3                                                                              |
| Tuscany House<br>White Hart Lane<br>Basingstoke RG21 4AF | The Printworks<br>Cardiff Road<br>Reading |  |
| Date 29/08/2019<br>File POROUS D.SRCX                    | Designed by TR<br>Checked by TR           |                                                                                     |
| XP Solutions Source Control 2018.1.1                     |                                           |                                                                                     |

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)            | 19.000            | Shortest Storm (mins) | 15    |
| Ratio R               | 0.400             | Longest Storm (mins)  | 10080 |
| Summer Storms         | Yes               | Climate Change %      | +40   |

Time Area Diagram

Total Area (ha) 0.180

| Time (mins) |     | Area  |
|-------------|-----|-------|
| From:       | To: | (ha)  |
| 0           | 4   | 0.180 |

©1982-2018 Innovyze

|                                                          |                                           |                                                                                     |
|----------------------------------------------------------|-------------------------------------------|-------------------------------------------------------------------------------------|
| Odyssey Markides                                         |                                           | Page 4                                                                              |
| Tuscany House<br>White Hart Lane<br>Basingstoke RG21 4AF | The Printworks<br>Cardiff Road<br>Reading |  |
| Date 29/08/2019<br>File POROUS D.SRCX                    | Designed by TR<br>Checked by TR           |                                                                                     |
| XP Solutions                                             |                                           |                                                                                     |
| Source Control 2018.1.1                                  |                                           |                                                                                     |

#### Model Details

Storage is Online Cover Level (m) 38.500

#### Porous Car Park Structure

|                                      |         |                         |       |
|--------------------------------------|---------|-------------------------|-------|
| Infiltration Coefficient Base (m/hr) | 0.00000 | Width (m)               | 55.0  |
| Membrane Percolation (mm/hr)         | 1000    | Length (m)              | 9.2   |
| Max Percolation (l/s)                | 140.6   | Slope (1:X)             | 100.0 |
| Safety Factor                        | 2.0     | Depression Storage (mm) | 5     |
| Porosity                             | 0.30    | Evaporation (mm/day)    | 3     |
| Invert Level (m)                     | 37.500  | Membrane Depth (m)      | 290   |

#### Hydro-Brake® Optimum Outflow Control

|                                   |                            |
|-----------------------------------|----------------------------|
| Unit Reference                    | MD-SHE-0105-5000-1000-5000 |
| Design Head (m)                   | 1.000                      |
| Design Flow (l/s)                 | 5.0                        |
| Flush-Flo™                        | Calculated                 |
| Objective                         | Minimise upstream storage  |
| Application                       | Surface                    |
| Sump Available                    | Yes                        |
| Diameter (mm)                     | 105                        |
| Invert Level (m)                  | 37.500                     |
| Minimum Outlet Pipe Diameter (mm) | 150                        |
| Suggested Manhole Diameter (mm)   | 1200                       |

| Control Points            | Head (m) | Flow (l/s) |
|---------------------------|----------|------------|
| Design Point (Calculated) | 1.000    | 5.0        |
| Flush-Flo™                | 0.296    | 5.0        |
| Kick-Flo®                 | 0.637    | 4.1        |
| Mean Flow over Head Range | -        | 4.3        |

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

| Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) |
|-----------|------------|-----------|------------|-----------|------------|-----------|------------|
| 0.100     | 3.6        | 1.200     | 5.4        | 3.000     | 8.4        | 7.000     | 12.5       |
| 0.200     | 4.8        | 1.400     | 5.8        | 3.500     | 9.0        | 7.500     | 12.9       |
| 0.300     | 5.0        | 1.600     | 6.2        | 4.000     | 9.6        | 8.000     | 13.3       |
| 0.400     | 4.9        | 1.800     | 6.6        | 4.500     | 10.1       | 8.500     | 13.7       |
| 0.500     | 4.7        | 2.000     | 6.9        | 5.000     | 10.6       | 9.000     | 14.1       |
| 0.600     | 4.3        | 2.200     | 7.2        | 5.500     | 11.1       | 9.500     | 14.5       |
| 0.800     | 4.5        | 2.400     | 7.5        | 6.000     | 11.6       |           |            |
| 1.000     | 5.0        | 2.600     | 7.8        | 6.500     | 12.1       |           |            |

|                                                                                                          |               |                     |                         |                   |                     |                                                                                     |        |
|----------------------------------------------------------------------------------------------------------|---------------|---------------------|-------------------------|-------------------|---------------------|-------------------------------------------------------------------------------------|--------|
| Odyssey Markides                                                                                         |               |                     |                         | Page 1            |                     |                                                                                     |        |
| Tuscany House                                                                                            |               |                     | The Printworks          |                   |                     |  |        |
| White Hart Lane                                                                                          |               |                     | Cardiff Road            |                   |                     |                                                                                     |        |
| Basingstoke RG21 4AF                                                                                     |               |                     | Reading                 |                   |                     |                                                                                     |        |
| Date 29/08/2019                                                                                          |               |                     | Designed by TR          |                   |                     |                                                                                     |        |
| File POROUS C.SRCX                                                                                       |               |                     | Checked by TG           |                   |                     |                                                                                     |        |
| XP Solutions                                                                                             |               |                     | Source Control 2018.1.1 |                   |                     |                                                                                     |        |
| <p><u>Summary of Results for 100 year Return Period (+40%)</u></p> <p>Half Drain Time : 685 minutes.</p> |               |                     |                         |                   |                     |                                                                                     |        |
| Storm Event                                                                                              | Max Level (m) | Max Depth (m)       | Max Infiltration (l/s)  | Max Control (l/s) | Max Σ Outflow (l/s) | Max Volume (m³)                                                                     | Status |
| 15 min Summer                                                                                            | 38.159        | 0.259               | 0.0                     | 0.9               | 0.9                 | 38.7                                                                                | O K    |
| 30 min Summer                                                                                            | 38.228        | 0.328               | 0.0                     | 1.1               | 1.1                 | 51.3                                                                                | O K    |
| 60 min Summer                                                                                            | 38.298        | 0.398               | 0.0                     | 1.2               | 1.2                 | 63.9                                                                                | O K    |
| 120 min Summer                                                                                           | 38.362        | 0.462               | 0.0                     | 1.3               | 1.3                 | 75.6                                                                                | O K    |
| 180 min Summer                                                                                           | 38.393        | 0.493               | 0.0                     | 1.3               | 1.3                 | 81.2                                                                                | O K    |
| 240 min Summer                                                                                           | 38.409        | 0.509               | 0.0                     | 1.3               | 1.3                 | 84.2                                                                                | O K    |
| 360 min Summer                                                                                           | 38.421        | 0.521               | 0.0                     | 1.3               | 1.3                 | 86.4                                                                                | O K    |
| 480 min Summer                                                                                           | 38.423        | 0.523               | 0.0                     | 1.3               | 1.3                 | 86.7                                                                                | O K    |
| 600 min Summer                                                                                           | 38.421        | 0.521               | 0.0                     | 1.3               | 1.3                 | 86.4                                                                                | O K    |
| 720 min Summer                                                                                           | 38.418        | 0.518               | 0.0                     | 1.3               | 1.3                 | 85.9                                                                                | O K    |
| 960 min Summer                                                                                           | 38.411        | 0.511               | 0.0                     | 1.3               | 1.3                 | 84.5                                                                                | O K    |
| 1440 min Summer                                                                                          | 38.391        | 0.491               | 0.0                     | 1.3               | 1.3                 | 80.9                                                                                | O K    |
| 2160 min Summer                                                                                          | 38.356        | 0.456               | 0.0                     | 1.2               | 1.2                 | 74.6                                                                                | O K    |
| 2880 min Summer                                                                                          | 38.323        | 0.423               | 0.0                     | 1.2               | 1.2                 | 68.6                                                                                | O K    |
| 4320 min Summer                                                                                          | 38.267        | 0.367               | 0.0                     | 1.1               | 1.1                 | 58.3                                                                                | O K    |
| 5760 min Summer                                                                                          | 38.221        | 0.321               | 0.0                     | 1.0               | 1.0                 | 50.1                                                                                | O K    |
| 7200 min Summer                                                                                          | 38.184        | 0.284               | 0.0                     | 1.0               | 1.0                 | 43.3                                                                                | O K    |
| 8640 min Summer                                                                                          | 38.153        | 0.253               | 0.0                     | 0.9               | 0.9                 | 37.7                                                                                | O K    |
| 10080 min Summer                                                                                         | 38.127        | 0.227               | 0.0                     | 0.9               | 0.9                 | 33.0                                                                                | O K    |
| 15 min Winter                                                                                            | 38.187        | 0.287               | 0.0                     | 1.0               | 1.0                 | 43.7                                                                                | O K    |
| Storm Event                                                                                              | Rain (mm/hr)  | Flooded Volume (m³) | Discharge Volume (m³)   | Time-Peak (mins)  |                     |                                                                                     |        |
| 15 min Summer                                                                                            | 130.597       | 0.0                 | 39.3                    | 19                |                     |                                                                                     |        |
| 30 min Summer                                                                                            | 85.825        | 0.0                 | 52.5                    | 34                |                     |                                                                                     |        |
| 60 min Summer                                                                                            | 53.779        | 0.0                 | 66.7                    | 64                |                     |                                                                                     |        |
| 120 min Summer                                                                                           | 32.595        | 0.0                 | 81.4                    | 122               |                     |                                                                                     |        |
| 180 min Summer                                                                                           | 24.012        | 0.0                 | 90.2                    | 182               |                     |                                                                                     |        |
| 240 min Summer                                                                                           | 19.224        | 0.0                 | 96.4                    | 242               |                     |                                                                                     |        |
| 360 min Summer                                                                                           | 13.954        | 0.0                 | 105.1                   | 360               |                     |                                                                                     |        |
| 480 min Summer                                                                                           | 11.125        | 0.0                 | 111.8                   | 466               |                     |                                                                                     |        |
| 600 min Summer                                                                                           | 9.325         | 0.0                 | 117.2                   | 512               |                     |                                                                                     |        |
| 720 min Summer                                                                                           | 8.069         | 0.0                 | 121.7                   | 572               |                     |                                                                                     |        |
| 960 min Summer                                                                                           | 6.417         | 0.0                 | 129.0                   | 696               |                     |                                                                                     |        |
| 1440 min Summer                                                                                          | 4.640         | 0.0                 | 138.6                   | 968               |                     |                                                                                     |        |
| 2160 min Summer                                                                                          | 3.350         | 0.0                 | 150.7                   | 1384              |                     |                                                                                     |        |
| 2880 min Summer                                                                                          | 2.656         | 0.0                 | 158.7                   | 1788              |                     |                                                                                     |        |
| 4320 min Summer                                                                                          | 1.912         | 0.0                 | 170.1                   | 2592              |                     |                                                                                     |        |
| 5760 min Summer                                                                                          | 1.513         | 0.0                 | 178.1                   | 3344              |                     |                                                                                     |        |
| 7200 min Summer                                                                                          | 1.261         | 0.0                 | 184.2                   | 4104              |                     |                                                                                     |        |
| 8640 min Summer                                                                                          | 1.086         | 0.0                 | 189.0                   | 4840              |                     |                                                                                     |        |
| 10080 min Summer                                                                                         | 0.957         | 0.0                 | 192.8                   | 5552              |                     |                                                                                     |        |
| 15 min Winter                                                                                            | 130.597       | 0.0                 | 44.4                    | 19                |                     |                                                                                     |        |
| ©1982-2018 Innovzyze                                                                                     |               |                     |                         |                   |                     |                                                                                     |        |

|                                                                                                |                              |                                    |                                           |                                  |                                    |                                                                                     |               |
|------------------------------------------------------------------------------------------------|------------------------------|------------------------------------|-------------------------------------------|----------------------------------|------------------------------------|-------------------------------------------------------------------------------------|---------------|
| Odyssey Markides                                                                               |                              |                                    |                                           |                                  |                                    | Page 2                                                                              |               |
| Tuscany House<br>White Hart Lane<br>Basingstoke RG21 4AF                                       |                              |                                    | The Printworks<br>Cardiff Road<br>Reading |                                  |                                    |  |               |
| Date 29/08/2019<br>File POROUS C.SRCX                                                          |                              |                                    | Designed by TR<br>Checked by TG           |                                  |                                    |                                                                                     |               |
| XP Solutions                                                                                   |                              |                                    | Source Control 2018.1.1                   |                                  |                                    |                                                                                     |               |
| <p style="text-align: center;"><u>Summary of Results for 100 year Return Period (+40%)</u></p> |                              |                                    |                                           |                                  |                                    |                                                                                     |               |
| <b>Storm<br/>Event</b>                                                                         | <b>Max<br/>Level<br/>(m)</b> | <b>Max<br/>Depth<br/>(m)</b>       | <b>Max<br/>Infiltration<br/>(l/s)</b>     | <b>Max<br/>Control<br/>(l/s)</b> | <b>Max<br/>Σ Outflow<br/>(l/s)</b> | <b>Max<br/>Volume<br/>(m³)</b>                                                      | <b>Status</b> |
| 30 min Winter                                                                                  | 38.265                       | 0.365                              | 0.0                                       | 1.1                              | 1.1                                | 57.9                                                                                | O K           |
| 60 min Winter                                                                                  | 38.343                       | 0.443                              | 0.0                                       | 1.2                              | 1.2                                | 72.2                                                                                | O K           |
| 120 min Winter                                                                                 | 38.416                       | 0.516                              | 0.0                                       | 1.3                              | 1.3                                | 85.5                                                                                | O K           |
| 180 min Winter                                                                                 | 38.452                       | 0.552                              | 0.0                                       | 1.4                              | 1.4                                | 92.1                                                                                | O K           |
| 240 min Winter                                                                                 | 38.472                       | 0.572                              | 0.0                                       | 1.4                              | 1.4                                | 95.7                                                                                | O K           |
| 360 min Winter                                                                                 | 38.489                       | 0.589                              | 0.0                                       | 1.4                              | 1.4                                | 98.8                                                                                | O K           |
| 480 min Winter                                                                                 | 38.494                       | 0.594                              | 0.0                                       | 1.4                              | 1.4                                | 99.7                                                                                | O K           |
| 600 min Winter                                                                                 | 38.492                       | 0.592                              | 0.0                                       | 1.4                              | 1.4                                | 99.3                                                                                | O K           |
| 720 min Winter                                                                                 | 38.486                       | 0.586                              | 0.0                                       | 1.4                              | 1.4                                | 98.2                                                                                | O K           |
| 960 min Winter                                                                                 | 38.476                       | 0.576                              | 0.0                                       | 1.4                              | 1.4                                | 96.5                                                                                | O K           |
| 1440 min Winter                                                                                | 38.448                       | 0.548                              | 0.0                                       | 1.4                              | 1.4                                | 91.3                                                                                | O K           |
| 2160 min Winter                                                                                | 38.399                       | 0.499                              | 0.0                                       | 1.3                              | 1.3                                | 82.4                                                                                | O K           |
| 2880 min Winter                                                                                | 38.352                       | 0.452                              | 0.0                                       | 1.2                              | 1.2                                | 73.8                                                                                | O K           |
| 4320 min Winter                                                                                | 38.272                       | 0.372                              | 0.0                                       | 1.1                              | 1.1                                | 59.2                                                                                | O K           |
| 5760 min Winter                                                                                | 38.210                       | 0.310                              | 0.0                                       | 1.0                              | 1.0                                | 48.0                                                                                | O K           |
| 7200 min Winter                                                                                | 38.162                       | 0.262                              | 0.0                                       | 0.9                              | 0.9                                | 39.3                                                                                | O K           |
| 8640 min Winter                                                                                | 38.124                       | 0.224                              | 0.0                                       | 0.9                              | 0.9                                | 32.3                                                                                | O K           |
| 10080 min Winter                                                                               | 38.093                       | 0.193                              | 0.0                                       | 0.8                              | 0.8                                | 26.8                                                                                | O K           |
| <br>                                                                                           |                              |                                    |                                           |                                  |                                    |                                                                                     |               |
| <b>Storm<br/>Event</b>                                                                         | <b>Rain<br/>(mm/hr)</b>      | <b>Flooded<br/>Volume<br/>(m³)</b> | <b>Discharge<br/>Volume<br/>(m³)</b>      | <b>Time-Peak<br/>(mins)</b>      |                                    |                                                                                     |               |
| 30 min Winter                                                                                  | 85.825                       | 0.0                                | 59.0                                      | 33                               |                                    |                                                                                     |               |
| 60 min Winter                                                                                  | 53.779                       | 0.0                                | 75.0                                      | 62                               |                                    |                                                                                     |               |
| 120 min Winter                                                                                 | 32.595                       | 0.0                                | 91.6                                      | 120                              |                                    |                                                                                     |               |
| 180 min Winter                                                                                 | 24.012                       | 0.0                                | 101.4                                     | 178                              |                                    |                                                                                     |               |
| 240 min Winter                                                                                 | 19.224                       | 0.0                                | 108.4                                     | 236                              |                                    |                                                                                     |               |
| 360 min Winter                                                                                 | 13.954                       | 0.0                                | 118.2                                     | 350                              |                                    |                                                                                     |               |
| 480 min Winter                                                                                 | 11.125                       | 0.0                                | 125.7                                     | 460                              |                                    |                                                                                     |               |
| 600 min Winter                                                                                 | 9.325                        | 0.0                                | 131.7                                     | 566                              |                                    |                                                                                     |               |
| 720 min Winter                                                                                 | 8.069                        | 0.0                                | 136.8                                     | 648                              |                                    |                                                                                     |               |
| 960 min Winter                                                                                 | 6.417                        | 0.0                                | 144.9                                     | 742                              |                                    |                                                                                     |               |
| 1440 min Winter                                                                                | 4.640                        | 0.0                                | 152.7                                     | 1052                             |                                    |                                                                                     |               |
| 2160 min Winter                                                                                | 3.350                        | 0.0                                | 169.5                                     | 1492                             |                                    |                                                                                     |               |
| 2880 min Winter                                                                                | 2.656                        | 0.0                                | 178.6                                     | 1928                             |                                    |                                                                                     |               |
| 4320 min Winter                                                                                | 1.912                        | 0.0                                | 191.5                                     | 2764                             |                                    |                                                                                     |               |
| 5760 min Winter                                                                                | 1.513                        | 0.0                                | 200.7                                     | 3520                             |                                    |                                                                                     |               |
| 7200 min Winter                                                                                | 1.261                        | 0.0                                | 207.8                                     | 4320                             |                                    |                                                                                     |               |
| 8640 min Winter                                                                                | 1.086                        | 0.0                                | 213.4                                     | 5016                             |                                    |                                                                                     |               |
| 10080 min Winter                                                                               | 0.957                        | 0.0                                | 218.0                                     | 5752                             |                                    |                                                                                     |               |
| <br>                                                                                           |                              |                                    |                                           |                                  |                                    |                                                                                     |               |
| ©1982-2018 Innovyze                                                                            |                              |                                    |                                           |                                  |                                    |                                                                                     |               |



|                                                          |                                           |                                                                                     |
|----------------------------------------------------------|-------------------------------------------|-------------------------------------------------------------------------------------|
| Odyssey Markides                                         |                                           | Page 4                                                                              |
| Tuscany House<br>White Hart Lane<br>Basingstoke RG21 4AF | The Printworks<br>Cardiff Road<br>Reading |  |
| Date 29/08/2019<br>File POROUS C.SRCX                    | Designed by TR<br>Checked by TG           |                                                                                     |
| XP Solutions Source Control 2018.1.1                     |                                           |                                                                                     |

Model Details

Storage is Online Cover Level (m) 38.900

Porous Car Park Structure

|                                      |         |                         |       |
|--------------------------------------|---------|-------------------------|-------|
| Infiltration Coefficient Base (m/hr) | 0.00000 | Width (m)               | 47.0  |
| Membrane Percolation (mm/hr)         | 1000    | Length (m)              | 12.9  |
| Max Percolation (l/s)                | 168.4   | Slope (1:X)             | 140.0 |
| Safety Factor                        | 2.0     | Depression Storage (mm) | 5     |
| Porosity                             | 0.30    | Evaporation (mm/day)    | 3     |
| Invert Level (m)                     | 37.900  | Membrane Depth (m)      | 290   |

Orifice Outflow Control

Diameter (m) 0.030 Discharge Coefficient 0.600 Invert Level (m) 37.900

©1982-2018 Innovyze

| Odyssey Markides                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |               |                     | Page 1                  |                   |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------------|-------------------------|-------------------|---------------------|-----------------|-------------|---------------|---------------|------------------------|-------------------|---------------------|-----------------|--------|---------------|--------|-------|-----|------|------|------|-----|---------------|--------|-------|-----|------|------|------|-----|---------------|--------|-------|-----|------|------|------|-----|----------------|--------|-------|-----|------|------|------|-----|----------------|--------|-------|-----|------|------|------|-----|----------------|--------|-------|-----|------|------|------|-----|----------------|--------|-------|-----|------|------|------|-----|----------------|--------|-------|-----|------|------|------|-----|----------------|--------|-------|-----|------|------|------|-----|----------------|--------|-------|-----|------|------|------|-----|----------------|--------|-------|-----|-----|-----|------|-----|-----------------|--------|-------|-----|-----|-----|------|-----|-----------------|--------|-------|-----|-----|-----|------|-----|-----------------|--------|-------|-----|-----|-----|------|-----|-----------------|--------|-------|-----|-----|-----|------|-----|-----------------|--------|-------|-----|-----|-----|-----|-----|-----------------|--------|-------|-----|-----|-----|-----|-----|-----------------|--------|-------|-----|-----|-----|-----|-----|------------------|--------|-------|-----|-----|-----|-----|-----|---------------|--------|-------|-----|------|------|------|-----|-------------|--------------|---------------------|-----------------------|------------------|---------------|---------|-----|------|----|---------------|--------|-----|------|----|---------------|--------|-----|------|----|----------------|--------|-----|------|----|----------------|--------|-----|------|-----|----------------|--------|-----|-------|-----|----------------|--------|-----|-------|-----|----------------|--------|-----|-------|-----|----------------|-------|-----|-------|-----|----------------|-------|-----|-------|-----|----------------|-------|-----|-------|-----|-----------------|-------|-----|-------|-----|-----------------|-------|-----|-------|------|-----------------|-------|-----|-------|------|-----------------|-------|-----|-------|------|-----------------|-------|-----|-------|------|-----------------|-------|-----|-------|------|-----------------|-------|-----|-------|------|------------------|-------|-----|-------|------|---------------|---------|-----|------|----|
| Tuscany House                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |               |                     | The Printworks          |                   |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| White Hart Lane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |               |                     | Cardiff Road            |                   |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| Basingstoke RG21 4AF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |                     | Reading                 |                   |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| Date 29/08/2019                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |               |                     | Designed by TR          |                   |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| File POROUS B.SRCX                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |               |                     | Checked by TG           |                   |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| XP Solutions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |                     | Source Control 2018.1.1 |                   |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| <div>Summary of Results for 100 year Return Period (+40%)</div> <div>Half Drain Time : 28 minutes.</div> <table><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Control (l/s)</th><th>Max Σ Outflow (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr><tr><td>15 min Summer</td><td>38.411</td><td>0.211</td><td>0.0</td><td>17.1</td><td>17.1</td><td>35.5</td><td>O K</td></tr><tr><td>30 min Summer</td><td>38.447</td><td>0.247</td><td>0.0</td><td>19.5</td><td>19.5</td><td>41.8</td><td>O K</td></tr><tr><td>60 min Summer</td><td>38.466</td><td>0.266</td><td>0.0</td><td>20.5</td><td>20.5</td><td>45.3</td><td>O K</td></tr><tr><td>120 min Summer</td><td>38.459</td><td>0.259</td><td>0.0</td><td>20.1</td><td>20.1</td><td>43.9</td><td>O K</td></tr><tr><td>180 min Summer</td><td>38.439</td><td>0.239</td><td>0.0</td><td>19.0</td><td>19.0</td><td>40.5</td><td>O K</td></tr><tr><td>240 min Summer</td><td>38.420</td><td>0.220</td><td>0.0</td><td>17.9</td><td>17.9</td><td>37.1</td><td>O K</td></tr><tr><td>360 min Summer</td><td>38.393</td><td>0.193</td><td>0.0</td><td>15.2</td><td>15.2</td><td>32.4</td><td>O K</td></tr><tr><td>480 min Summer</td><td>38.375</td><td>0.175</td><td>0.0</td><td>13.1</td><td>13.1</td><td>29.0</td><td>O K</td></tr><tr><td>600 min Summer</td><td>38.361</td><td>0.161</td><td>0.0</td><td>11.5</td><td>11.5</td><td>26.6</td><td>O K</td></tr><tr><td>720 min Summer</td><td>38.350</td><td>0.150</td><td>0.0</td><td>10.3</td><td>10.3</td><td>24.6</td><td>O K</td></tr><tr><td>960 min Summer</td><td>38.334</td><td>0.134</td><td>0.0</td><td>8.6</td><td>8.6</td><td>21.7</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>38.312</td><td>0.112</td><td>0.0</td><td>6.4</td><td>6.4</td><td>17.8</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>38.292</td><td>0.092</td><td>0.0</td><td>4.9</td><td>4.9</td><td>14.3</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>38.282</td><td>0.082</td><td>0.0</td><td>4.0</td><td>4.0</td><td>12.6</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>38.272</td><td>0.072</td><td>0.0</td><td>2.9</td><td>2.9</td><td>10.8</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>38.264</td><td>0.064</td><td>0.0</td><td>2.3</td><td>2.3</td><td>9.3</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>38.258</td><td>0.058</td><td>0.0</td><td>1.9</td><td>1.9</td><td>8.2</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>38.253</td><td>0.053</td><td>0.0</td><td>1.6</td><td>1.6</td><td>7.4</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>38.250</td><td>0.050</td><td>0.0</td><td>1.5</td><td>1.5</td><td>6.9</td><td>O K</td></tr><tr><td>15 min Winter</td><td>38.437</td><td>0.237</td><td>0.0</td><td>18.9</td><td>18.9</td><td>40.1</td><td>O K</td></tr></table> <table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Discharge Volume (m³)</th><th>Time-Peak (mins)</th></tr><tr><td>15 min Summer</td><td>130.597</td><td>0.0</td><td>43.0</td><td>16</td></tr><tr><td>30 min Summer</td><td>85.825</td><td>0.0</td><td>57.5</td><td>24</td></tr><tr><td>60 min Summer</td><td>53.779</td><td>0.0</td><td>72.8</td><td>42</td></tr><tr><td>120 min Summer</td><td>32.595</td><td>0.0</td><td>88.8</td><td>74</td></tr><tr><td>180 min Summer</td><td>24.012</td><td>0.0</td><td>98.4</td><td>106</td></tr><tr><td>240 min Summer</td><td>19.224</td><td>0.0</td><td>105.2</td><td>136</td></tr><tr><td>360 min Summer</td><td>13.954</td><td>0.0</td><td>114.6</td><td>198</td></tr><tr><td>480 min Summer</td><td>11.125</td><td>0.0</td><td>121.9</td><td>258</td></tr><tr><td>600 min Summer</td><td>9.325</td><td>0.0</td><td>127.8</td><td>320</td></tr><tr><td>720 min Summer</td><td>8.069</td><td>0.0</td><td>132.7</td><td>382</td></tr><tr><td>960 min Summer</td><td>6.417</td><td>0.0</td><td>140.6</td><td>502</td></tr><tr><td>1440 min Summer</td><td>4.640</td><td>0.0</td><td>152.3</td><td>748</td></tr><tr><td>2160 min Summer</td><td>3.350</td><td>0.0</td><td>164.4</td><td>1104</td></tr><tr><td>2880 min Summer</td><td>2.656</td><td>0.0</td><td>173.2</td><td>1468</td></tr><tr><td>4320 min Summer</td><td>1.912</td><td>0.0</td><td>185.8</td><td>2204</td></tr><tr><td>5760 min Summer</td><td>1.513</td><td>0.0</td><td>194.7</td><td>2936</td></tr><tr><td>7200 min Summer</td><td>1.261</td><td>0.0</td><td>201.5</td><td>3672</td></tr><tr><td>8640 min Summer</td><td>1.086</td><td>0.0</td><td>206.9</td><td>4400</td></tr><tr><td>10080 min Summer</td><td>0.957</td><td>0.0</td><td>211.3</td><td>5104</td></tr><tr><td>15 min Winter</td><td>130.597</td><td>0.0</td><td>48.6</td><td>16</td></tr></table> |               |                     |                         |                   |                     |                 | Storm Event | Max Level (m) | Max Depth (m) | Max Infiltration (l/s) | Max Control (l/s) | Max Σ Outflow (l/s) | Max Volume (m³) | Status | 15 min Summer | 38.411 | 0.211 | 0.0 | 17.1 | 17.1 | 35.5 | O K | 30 min Summer | 38.447 | 0.247 | 0.0 | 19.5 | 19.5 | 41.8 | O K | 60 min Summer | 38.466 | 0.266 | 0.0 | 20.5 | 20.5 | 45.3 | O K | 120 min Summer | 38.459 | 0.259 | 0.0 | 20.1 | 20.1 | 43.9 | O K | 180 min Summer | 38.439 | 0.239 | 0.0 | 19.0 | 19.0 | 40.5 | O K | 240 min Summer | 38.420 | 0.220 | 0.0 | 17.9 | 17.9 | 37.1 | O K | 360 min Summer | 38.393 | 0.193 | 0.0 | 15.2 | 15.2 | 32.4 | O K | 480 min Summer | 38.375 | 0.175 | 0.0 | 13.1 | 13.1 | 29.0 | O K | 600 min Summer | 38.361 | 0.161 | 0.0 | 11.5 | 11.5 | 26.6 | O K | 720 min Summer | 38.350 | 0.150 | 0.0 | 10.3 | 10.3 | 24.6 | O K | 960 min Summer | 38.334 | 0.134 | 0.0 | 8.6 | 8.6 | 21.7 | O K | 1440 min Summer | 38.312 | 0.112 | 0.0 | 6.4 | 6.4 | 17.8 | O K | 2160 min Summer | 38.292 | 0.092 | 0.0 | 4.9 | 4.9 | 14.3 | O K | 2880 min Summer | 38.282 | 0.082 | 0.0 | 4.0 | 4.0 | 12.6 | O K | 4320 min Summer | 38.272 | 0.072 | 0.0 | 2.9 | 2.9 | 10.8 | O K | 5760 min Summer | 38.264 | 0.064 | 0.0 | 2.3 | 2.3 | 9.3 | O K | 7200 min Summer | 38.258 | 0.058 | 0.0 | 1.9 | 1.9 | 8.2 | O K | 8640 min Summer | 38.253 | 0.053 | 0.0 | 1.6 | 1.6 | 7.4 | O K | 10080 min Summer | 38.250 | 0.050 | 0.0 | 1.5 | 1.5 | 6.9 | O K | 15 min Winter | 38.437 | 0.237 | 0.0 | 18.9 | 18.9 | 40.1 | O K | Storm Event | Rain (mm/hr) | Flooded Volume (m³) | Discharge Volume (m³) | Time-Peak (mins) | 15 min Summer | 130.597 | 0.0 | 43.0 | 16 | 30 min Summer | 85.825 | 0.0 | 57.5 | 24 | 60 min Summer | 53.779 | 0.0 | 72.8 | 42 | 120 min Summer | 32.595 | 0.0 | 88.8 | 74 | 180 min Summer | 24.012 | 0.0 | 98.4 | 106 | 240 min Summer | 19.224 | 0.0 | 105.2 | 136 | 360 min Summer | 13.954 | 0.0 | 114.6 | 198 | 480 min Summer | 11.125 | 0.0 | 121.9 | 258 | 600 min Summer | 9.325 | 0.0 | 127.8 | 320 | 720 min Summer | 8.069 | 0.0 | 132.7 | 382 | 960 min Summer | 6.417 | 0.0 | 140.6 | 502 | 1440 min Summer | 4.640 | 0.0 | 152.3 | 748 | 2160 min Summer | 3.350 | 0.0 | 164.4 | 1104 | 2880 min Summer | 2.656 | 0.0 | 173.2 | 1468 | 4320 min Summer | 1.912 | 0.0 | 185.8 | 2204 | 5760 min Summer | 1.513 | 0.0 | 194.7 | 2936 | 7200 min Summer | 1.261 | 0.0 | 201.5 | 3672 | 8640 min Summer | 1.086 | 0.0 | 206.9 | 4400 | 10080 min Summer | 0.957 | 0.0 | 211.3 | 5104 | 15 min Winter | 130.597 | 0.0 | 48.6 | 16 |
| Storm Event                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Max Level (m) | Max Depth (m)       | Max Infiltration (l/s)  | Max Control (l/s) | Max Σ Outflow (l/s) | Max Volume (m³) | Status      |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 15 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 38.411        | 0.211               | 0.0                     | 17.1              | 17.1                | 35.5            | O K         |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 30 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 38.447        | 0.247               | 0.0                     | 19.5              | 19.5                | 41.8            | O K         |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 60 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 38.466        | 0.266               | 0.0                     | 20.5              | 20.5                | 45.3            | O K         |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 120 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 38.459        | 0.259               | 0.0                     | 20.1              | 20.1                | 43.9            | O K         |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 180 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 38.439        | 0.239               | 0.0                     | 19.0              | 19.0                | 40.5            | O K         |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 240 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 38.420        | 0.220               | 0.0                     | 17.9              | 17.9                | 37.1            | O K         |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 360 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 38.393        | 0.193               | 0.0                     | 15.2              | 15.2                | 32.4            | O K         |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 480 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 38.375        | 0.175               | 0.0                     | 13.1              | 13.1                | 29.0            | O K         |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 600 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 38.361        | 0.161               | 0.0                     | 11.5              | 11.5                | 26.6            | O K         |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 720 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 38.350        | 0.150               | 0.0                     | 10.3              | 10.3                | 24.6            | O K         |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 960 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 38.334        | 0.134               | 0.0                     | 8.6               | 8.6                 | 21.7            | O K         |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 1440 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 38.312        | 0.112               | 0.0                     | 6.4               | 6.4                 | 17.8            | O K         |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 2160 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 38.292        | 0.092               | 0.0                     | 4.9               | 4.9                 | 14.3            | O K         |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 2880 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 38.282        | 0.082               | 0.0                     | 4.0               | 4.0                 | 12.6            | O K         |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 4320 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 38.272        | 0.072               | 0.0                     | 2.9               | 2.9                 | 10.8            | O K         |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 5760 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 38.264        | 0.064               | 0.0                     | 2.3               | 2.3                 | 9.3             | O K         |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 7200 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 38.258        | 0.058               | 0.0                     | 1.9               | 1.9                 | 8.2             | O K         |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 8640 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 38.253        | 0.053               | 0.0                     | 1.6               | 1.6                 | 7.4             | O K         |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 10080 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 38.250        | 0.050               | 0.0                     | 1.5               | 1.5                 | 6.9             | O K         |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 15 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 38.437        | 0.237               | 0.0                     | 18.9              | 18.9                | 40.1            | O K         |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| Storm Event                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Rain (mm/hr)  | Flooded Volume (m³) | Discharge Volume (m³)   | Time-Peak (mins)  |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 15 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 130.597       | 0.0                 | 43.0                    | 16                |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 30 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 85.825        | 0.0                 | 57.5                    | 24                |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 60 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 53.779        | 0.0                 | 72.8                    | 42                |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 120 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 32.595        | 0.0                 | 88.8                    | 74                |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 180 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 24.012        | 0.0                 | 98.4                    | 106               |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 240 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 19.224        | 0.0                 | 105.2                   | 136               |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 360 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 13.954        | 0.0                 | 114.6                   | 198               |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 480 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 11.125        | 0.0                 | 121.9                   | 258               |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 600 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 9.325         | 0.0                 | 127.8                   | 320               |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 720 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 8.069         | 0.0                 | 132.7                   | 382               |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 960 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 6.417         | 0.0                 | 140.6                   | 502               |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 1440 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 4.640         | 0.0                 | 152.3                   | 748               |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 2160 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 3.350         | 0.0                 | 164.4                   | 1104              |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 2880 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 2.656         | 0.0                 | 173.2                   | 1468              |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 4320 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1.912         | 0.0                 | 185.8                   | 2204              |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 5760 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1.513         | 0.0                 | 194.7                   | 2936              |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 7200 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1.261         | 0.0                 | 201.5                   | 3672              |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 8640 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1.086         | 0.0                 | 206.9                   | 4400              |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 10080 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.957         | 0.0                 | 211.3                   | 5104              |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| 15 min Winter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 130.597       | 0.0                 | 48.6                    | 16                |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |
| ©1982-2018 Innovyze                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |                     |                         |                   |                     |                 |             |               |               |                        |                   |                     |                 |        |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |               |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |      |      |      |     |                |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |      |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                 |        |       |     |     |     |     |     |                  |        |       |     |     |     |     |     |               |        |       |     |      |      |      |     |             |              |                     |                       |                  |               |         |     |      |    |               |        |     |      |    |               |        |     |      |    |                |        |     |      |    |                |        |     |      |     |                |        |     |       |     |                |        |     |       |     |                |        |     |       |     |                |       |     |       |     |                |       |     |       |     |                |       |     |       |     |                 |       |     |       |     |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                 |       |     |       |      |                  |       |     |       |      |               |         |     |      |    |



| Odyssey Markides                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                           | Page 3                                                                              |                |     |               |     |                       |     |             |       |        |                   |             |       |            |        |                       |    |         |       |                      |       |               |     |                  |     |             |  |      |       |     |      |   |   |       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------------------------------------------------------------------|----------------|-----|---------------|-----|-----------------------|-----|-------------|-------|--------|-------------------|-------------|-------|------------|--------|-----------------------|----|---------|-------|----------------------|-------|---------------|-----|------------------|-----|-------------|--|------|-------|-----|------|---|---|-------|
| Tuscany House<br>White Hart Lane<br>Basingstoke RG21 4AF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | The Printworks<br>Cardiff Road<br>Reading |  |                |     |               |     |                       |     |             |       |        |                   |             |       |            |        |                       |    |         |       |                      |       |               |     |                  |     |             |  |      |       |     |      |   |   |       |
| Date 29/08/2019<br>File POROUS B.SRCX                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Designed by TR<br>Checked by TG           |                                                                                     |                |     |               |     |                       |     |             |       |        |                   |             |       |            |        |                       |    |         |       |                      |       |               |     |                  |     |             |  |      |       |     |      |   |   |       |
| XP Solutions Source Control 2018.1.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                           |                                                                                     |                |     |               |     |                       |     |             |       |        |                   |             |       |            |        |                       |    |         |       |                      |       |               |     |                  |     |             |  |      |       |     |      |   |   |       |
| <p style="text-align: center;"><u>Rainfall Details</u></p> <table> <tr> <td>Rainfall Model</td> <td>FSR</td> <td>Winter Storms</td> <td>Yes</td> </tr> <tr> <td>Return Period (years)</td> <td>100</td> <td>Cv (Summer)</td> <td>0.750</td> </tr> <tr> <td>Region</td> <td>England and Wales</td> <td>Cv (Winter)</td> <td>0.840</td> </tr> <tr> <td>M5-60 (mm)</td> <td>19.000</td> <td>Shortest Storm (mins)</td> <td>15</td> </tr> <tr> <td>Ratio R</td> <td>0.400</td> <td>Longest Storm (mins)</td> <td>10080</td> </tr> <tr> <td>Summer Storms</td> <td>Yes</td> <td>Climate Change %</td> <td>+40</td> </tr> </table> <p style="text-align: center;"><u>Time Area Diagram</u></p> <p>Total Area (ha) 0.188</p> <table> <thead> <tr> <th colspan="2">Time (mins)</th> <th>Area</th> </tr> <tr> <th>From:</th> <th>To:</th> <th>(ha)</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>4</td> <td>0.188</td> </tr> </tbody> </table> |                                           |                                                                                     | 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) | 19.000 | Shortest Storm (mins) | 15 | Ratio R | 0.400 | Longest Storm (mins) | 10080 | Summer Storms | Yes | Climate Change % | +40 | Time (mins) |  | Area | From: | To: | (ha) | 0 | 4 | 0.188 |
| 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)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 19.000                                    | Shortest Storm (mins)                                                               | 15             |     |               |     |                       |     |             |       |        |                   |             |       |            |        |                       |    |         |       |                      |       |               |     |                  |     |             |  |      |       |     |      |   |   |       |
| Ratio R                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.400                                     | Longest Storm (mins)                                                                | 10080          |     |               |     |                       |     |             |       |        |                   |             |       |            |        |                       |    |         |       |                      |       |               |     |                  |     |             |  |      |       |     |      |   |   |       |
| Summer Storms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Yes                                       | Climate Change %                                                                    | +40            |     |               |     |                       |     |             |       |        |                   |             |       |            |        |                       |    |         |       |                      |       |               |     |                  |     |             |  |      |       |     |      |   |   |       |
| Time (mins)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                           | Area                                                                                |                |     |               |     |                       |     |             |       |        |                   |             |       |            |        |                       |    |         |       |                      |       |               |     |                  |     |             |  |      |       |     |      |   |   |       |
| From:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | To:                                       | (ha)                                                                                |                |     |               |     |                       |     |             |       |        |                   |             |       |            |        |                       |    |         |       |                      |       |               |     |                  |     |             |  |      |       |     |      |   |   |       |
| 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 4                                         | 0.188                                                                               |                |     |               |     |                       |     |             |       |        |                   |             |       |            |        |                       |    |         |       |                      |       |               |     |                  |     |             |  |      |       |     |      |   |   |       |
| ©1982-2018 Innovyze                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                           |                                                                                     |                |     |               |     |                       |     |             |       |        |                   |             |       |            |        |                       |    |         |       |                      |       |               |     |                  |     |             |  |      |       |     |      |   |   |       |

|                                                          |                                           |                                                                                     |
|----------------------------------------------------------|-------------------------------------------|-------------------------------------------------------------------------------------|
| Odyssey Markides                                         |                                           | Page 4                                                                              |
| Tuscany House<br>White Hart Lane<br>Basingstoke RG21 4AF | The Printworks<br>Cardiff Road<br>Reading |  |
| Date 29/08/2019<br>File POROUS B.SRCX                    | Designed by TR<br>Checked by TG           |                                                                                     |
| XP Solutions Source Control 2018.1.1                     |                                           |                                                                                     |

Model Details

Storage is Online Cover Level (m) 39.200

Porous Car Park Structure

|                                      |         |                         |       |
|--------------------------------------|---------|-------------------------|-------|
| Infiltration Coefficient Base (m/hr) | 0.00000 | Width (m)               | 52.0  |
| Membrane Percolation (mm/hr)         | 1000    | Length (m)              | 11.4  |
| Max Percolation (l/s)                | 164.7   | Slope (1:X)             | 500.0 |
| Safety Factor                        | 2.0     | Depression Storage (mm) | 5     |
| Porosity                             | 0.30    | Evaporation (mm/day)    | 3     |
| Invert Level (m)                     | 38.200  | Membrane Depth (m)      | 290   |

Orifice Outflow Control

Diameter (m) 0.150 Discharge Coefficient 0.600 Invert Level (m) 38.200

©1982-2018 Innovyze

Odyssey Markides

Page 1

Tuscany House  
White Hart Lane  
Basingstoke RG21 4AF

The Printworks,  
Cardiff Road  
Reading

Date 29/08/2019  
File POROUS A.SRCX

Designed by TR  
Checked by TG

XP Solutions

Source Control 2018.1.1

Micro  
Drainage

Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 73 minutes.

| Storm<br>Event   | Max<br>Level<br>(m) | Max<br>Depth<br>(m) | Max<br>Infiltration<br>(l/s) | Max<br>Control<br>(l/s) | Max<br>Σ Outflow<br>(l/s) | Max<br>Volume<br>(m³) | Status |
|------------------|---------------------|---------------------|------------------------------|-------------------------|---------------------------|-----------------------|--------|
| 15 min Summer    | 37.931              | 0.281               | 0.0                          | 13.0                    | 13.0                      | 69.2                  | O K    |
| 30 min Summer    | 37.986              | 0.336               | 0.0                          | 13.0                    | 13.0                      | 86.0                  | O K    |
| 60 min Summer    | 38.013              | 0.363               | 0.0                          | 13.0                    | 13.0                      | 94.3                  | O K    |
| 120 min Summer   | 38.002              | 0.352               | 0.0                          | 13.0                    | 13.0                      | 90.8                  | O K    |
| 180 min Summer   | 37.983              | 0.333               | 0.0                          | 13.0                    | 13.0                      | 84.9                  | O K    |
| 240 min Summer   | 37.960              | 0.310               | 0.0                          | 13.0                    | 13.0                      | 78.2                  | O K    |
| 360 min Summer   | 37.915              | 0.265               | 0.0                          | 13.0                    | 13.0                      | 64.2                  | O K    |
| 480 min Summer   | 37.873              | 0.223               | 0.0                          | 13.0                    | 13.0                      | 51.6                  | O K    |
| 600 min Summer   | 37.836              | 0.186               | 0.0                          | 13.0                    | 13.0                      | 40.3                  | O K    |
| 720 min Summer   | 37.804              | 0.154               | 0.0                          | 13.0                    | 13.0                      | 30.6                  | O K    |
| 960 min Summer   | 37.756              | 0.106               | 0.0                          | 12.9                    | 12.9                      | 15.9                  | O K    |
| 1440 min Summer  | 37.687              | 0.037               | 0.0                          | 12.4                    | 12.4                      | 1.9                   | O K    |
| 2160 min Summer  | 37.650              | 0.000               | 0.0                          | 9.5                     | 9.5                       | 0.0                   | O K    |
| 2880 min Summer  | 37.650              | 0.000               | 0.0                          | 7.5                     | 7.5                       | 0.0                   | O K    |
| 4320 min Summer  | 37.650              | 0.000               | 0.0                          | 5.4                     | 5.4                       | 0.0                   | O K    |
| 5760 min Summer  | 37.650              | 0.000               | 0.0                          | 4.3                     | 4.3                       | 0.0                   | O K    |
| 7200 min Summer  | 37.650              | 0.000               | 0.0                          | 3.5                     | 3.5                       | 0.0                   | O K    |
| 8640 min Summer  | 37.650              | 0.000               | 0.0                          | 3.1                     | 3.1                       | 0.0                   | O K    |
| 10080 min Summer | 37.650              | 0.000               | 0.0                          | 2.7                     | 2.7                       | 0.0                   | O K    |
| 15 min Winter    | 37.963              | 0.313               | 0.0                          | 13.0                    | 13.0                      | 79.1                  | O K    |

| Storm<br>Event   | Rain<br>(mm/hr) | Flooded<br>Volume<br>(m³) | Discharge<br>Volume<br>(m³) | Time-Peak<br>(mins) |
|------------------|-----------------|---------------------------|-----------------------------|---------------------|
| 15 min Summer    | 130.597         | 0.0                       | 79.8                        | 17                  |
| 30 min Summer    | 85.825          | 0.0                       | 106.7                       | 32                  |
| 60 min Summer    | 53.779          | 0.0                       | 135.1                       | 60                  |
| 120 min Summer   | 32.595          | 0.0                       | 165.2                       | 92                  |
| 180 min Summer   | 24.012          | 0.0                       | 182.0                       | 126                 |
| 240 min Summer   | 19.224          | 0.0                       | 195.0                       | 160                 |
| 360 min Summer   | 13.954          | 0.0                       | 212.7                       | 226                 |
| 480 min Summer   | 11.125          | 0.0                       | 226.0                       | 290                 |
| 600 min Summer   | 9.325           | 0.0                       | 237.0                       | 352                 |
| 720 min Summer   | 8.069           | 0.0                       | 246.3                       | 412                 |
| 960 min Summer   | 6.417           | 0.0                       | 260.8                       | 522                 |
| 1440 min Summer  | 4.640           | 0.0                       | 282.6                       | 736                 |
| 2160 min Summer  | 3.350           | 0.0                       | 305.1                       | 0                   |
| 2880 min Summer  | 2.656           | 0.0                       | 321.5                       | 0                   |
| 4320 min Summer  | 1.912           | 0.0                       | 345.0                       | 0                   |
| 5760 min Summer  | 1.513           | 0.0                       | 361.8                       | 0                   |
| 7200 min Summer  | 1.261           | 0.0                       | 374.6                       | 0                   |
| 8640 min Summer  | 1.086           | 0.0                       | 384.8                       | 0                   |
| 10080 min Summer | 0.957           | 0.0                       | 393.3                       | 0                   |
| 15 min Winter    | 130.597         | 0.0                       | 90.0                        | 17                  |

©1982-2018 Innovyze



|                                                          |                                            |                                                                                     |
|----------------------------------------------------------|--------------------------------------------|-------------------------------------------------------------------------------------|
| Odyssey Markides                                         |                                            | Page 3                                                                              |
| Tuscany House<br>White Hart Lane<br>Basingstoke RG21 4AF | The Printworks,<br>Cardiff Road<br>Reading |  |
| Date 29/08/2019<br>File POROUS A.SRCX                    | Designed by TR<br>Checked by TG            |                                                                                     |
| XP Solutions Source Control 2018.1.1                     |                                            |                                                                                     |

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)            | 19.000            | Shortest Storm (mins) | 15    |
| Ratio R               | 0.400             | Longest Storm (mins)  | 10080 |
| Summer Storms         | Yes               | Climate Change %      | +40   |

Time Area Diagram

Total Area (ha) 0.348

| Time (mins) |     | Area  |
|-------------|-----|-------|
| From:       | To: | (ha)  |
| 0           | 4   | 0.348 |

©1982-2018 Innovyze

|                                                          |                                            |                                                                                     |
|----------------------------------------------------------|--------------------------------------------|-------------------------------------------------------------------------------------|
| Odyssey Markides                                         |                                            | Page 4                                                                              |
| Tuscany House<br>White Hart Lane<br>Basingstoke RG21 4AF | The Printworks,<br>Cardiff Road<br>Reading |  |
| Date 29/08/2019<br>File POROUS A.SRCX                    | Designed by TR<br>Checked by TG            |                                                                                     |
| XP Solutions                                             |                                            |                                                                                     |
| Source Control 2018.1.1                                  |                                            |                                                                                     |

#### Model Details

Storage is Online Cover Level (m) 38.650

#### Porous Car Park Structure

|                                      |         |                         |       |
|--------------------------------------|---------|-------------------------|-------|
| Infiltration Coefficient Base (m/hr) | 0.00000 | Width (m)               | 86.0  |
| Membrane Percolation (mm/hr)         | 1000    | Length (m)              | 11.8  |
| Max Percolation (l/s)                | 281.9   | Slope (1:X)             | 110.0 |
| Safety Factor                        | 2.0     | Depression Storage (mm) | 5     |
| Porosity                             | 0.30    | Evaporation (mm/day)    | 3     |
| Invert Level (m)                     | 37.650  | Membrane Depth (m)      | 290   |

#### Hydro-Brake® Optimum Outflow Control

|                                   |                            |
|-----------------------------------|----------------------------|
| Unit Reference                    | MD-SHE-0164-1300-1000-1300 |
| Design Head (m)                   | 1.000                      |
| Design Flow (l/s)                 | 13.0                       |
| Flush-Flo™                        | Calculated                 |
| Objective                         | Minimise upstream storage  |
| Application                       | Surface                    |
| Sump Available                    | Yes                        |
| Diameter (mm)                     | 164                        |
| Invert Level (m)                  | 37.500                     |
| Minimum Outlet Pipe Diameter (mm) | 225                        |
| Suggested Manhole Diameter (mm)   | 1200                       |

| Control Points            | Head (m) | Flow (l/s) |
|---------------------------|----------|------------|
| Design Point (Calculated) | 1.000    | 13.0       |
| Flush-Flo™                | 0.312    | 13.0       |
| Kick-Flo®                 | 0.691    | 10.9       |
| Mean Flow over Head Range | -        | 11.1       |

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

| Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) |
|-----------|------------|-----------|------------|-----------|------------|-----------|------------|
| 0.100     | 5.9        | 1.200     | 14.2       | 3.000     | 21.9       | 7.000     | 33.0       |
| 0.200     | 12.6       | 1.400     | 15.2       | 3.500     | 23.6       | 7.500     | 34.1       |
| 0.300     | 13.0       | 1.600     | 16.2       | 4.000     | 25.2       | 8.000     | 35.2       |
| 0.400     | 12.9       | 1.800     | 17.2       | 4.500     | 26.6       | 8.500     | 36.2       |
| 0.500     | 12.6       | 2.000     | 18.1       | 5.000     | 28.0       | 9.000     | 37.2       |
| 0.600     | 12.1       | 2.200     | 18.9       | 5.500     | 29.3       | 9.500     | 38.2       |
| 0.800     | 11.7       | 2.400     | 19.7       | 6.000     | 30.6       |           |            |
| 1.000     | 13.0       | 2.600     | 20.5       | 6.500     | 31.8       |           |            |