

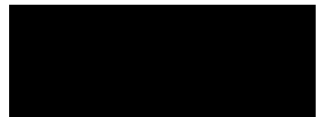
PROPOSED DEVELOPMENT AT NORTH END ROAD, YAPTON

DRAINAGE STATEMENT  
INCORPORATING DRAINAGE MAINTENANCE  
MANAGEMENT PLAN

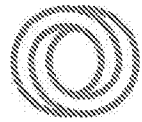
Report No. 18-343-06

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January 2020

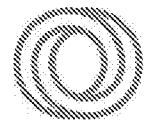


DOCUMENT CONTROL SHEET

Project Name North End Road, Yapton

Project No. 18-343

| Rev | Issue Purpose | Author | Checked | Reviewed | Approved | Date       |
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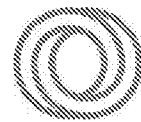
## APPENDICES

APPENDIX A - Odyssey Drawing 18-343/105

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## 1.0 INTRODUCTION

1.1 Odyssey has been commissioned by Redrow Homes to prepare this drainage report in support of their Reserved Matters (RM) application for the residential development at North End Road, Yapton. This follows the grant of outline planning permission on 15<sup>th</sup> February 2018 (Ref: Y/49/17/OUT). This report also sets out the background, existing drainage regime, proposed drainage regime, overland flow routes and maintenance of SuDS features.

1.2 The description of the development at the outline application was:

‘Outline application with some matters reserved for the demolition of all existing structures & redevelopment of the site with up to 45 dwellings (30% affordable (up to 14)) & 0.3 hectares of landscaped open space with vehicular access from Maypole Lane & pedestrian/cycle access only from North End Road. \_

1.3 The aim of this report is to support the discharge of Conditions 12 and 13 which are set out below:

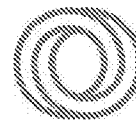
### Condition 12

‘No development shall take place until details of the implementation, maintenance and management of a sustainable drainage scheme have been submitted to and approved in writing by the LPA. The scheme shall be implemented and thereafter managed and maintained in accordance with the approved details. Those details shall include:

- i) A timetable for the scheme’s implementation; and
- ii) A management and maintenance plan for the lifetime of the development which shall include the arrangements for the adoption by any public body or statutory undertaker, or any other arrangements to secure the operation of the sustainable drainage scheme throughout its lifetime.

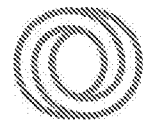
### Condition 13

‘Construction of the development shall not commence until details of the proposed means of foul water sewerage have been submitted to and approved in writing by the LPA. No dwelling shall be occupied until works for the disposal of sewerage have been fully implemented in accordance with the approved details. \_



## 2.0 EXISTING SITE

- 2.1 The proposed development site comprises of 1.8ha of greenfield land with outbuildings and is located off both Maypole Lane and North End Road to the north east of Yapton Village in West Sussex. The site is surrounded by arable land to the north, south and west, and a number of residential dwellings to the east.
- 2.2 The topographical survey shows the site to be relatively flat with a fall from north to south-west. Levels range from approximately 7.62m AOD in the north to 6.16m AOD in the south.
- 2.3 It is understood that there are no public surface water sewers in close proximity to the site and the existing drainage regime relies on surface water infiltrating through the underlying strata.
- 2.4 An intrusive ground investigation was conducted by LEAP Environmental in January 2019. A total of 17 No. trial pits were excavated throughout the development site to a maximum depth of 3.0m. The findings in their report indicate that the existing geology consists predominantly of river terrace sands and clays underlain by the chalk.
- 2.5 Infiltration testing carried out on 2 No. trial pits in accordance with BRE 365 showed the geology of the shallow soils to be unsuitable for conventional soakaways but it was indicated that deepened soakaways into more structured chalk at depth may be viable.
- 2.6 Further infiltration testing was undertaken in March 2019 on 1 No. borehole excavated to a depth of 9m. A falling head test was carried out and results identified a rate  $9.60 \times 10^{-6}$  m/s.
- 2.7 Throughout the first phase of testing, groundwater was not encountered in any of the trial pits. Groundwater was found at a depth of approximately 6.7m bgl during the excavation of the 1 No. borehole.
- 2.8 In accordance with the Arun DC requirements, winter groundwater monitoring (October to March inclusive) is currently being undertaken. Data will be provided upon completion.
- 2.9 It is also understood that there are no foul water sewers present within the site. The nearest public foul water sewer is located in North End Road and currently serves existing residential dwellings in the surrounding area.



### 3.0 PROPOSED DRAINAGE

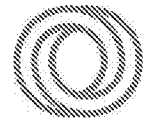
- 3.1 New foul and surface water drainage networks are proposed across the development site. The proposed foul and surface water drainage strategies are shown on Odyssey drawing 18-343/105 provided with this report in Appendix A.

#### Design Criteria

- 3.2 The design criteria applied for proposed drainage 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
  - ¿ 10% urban creep has been allowed for the dwellings' hard standing areas (roofs and garages)

#### Surface Water Drainage

- 3.3 The proposed surface water strategy has been designed in accordance with the strategy set out in the Flood Risk Assessment (FRA) submitted as part of the outline planning application for the site. The FRA identifies the potential to discharge to ground through the use of infiltration structures such as soakaways and permeable paving as a means to drain the site.
- 3.4 Based on the testing undertaken by LEAP, the site lends itself to infiltration at depth and as a result the strategy is to infiltrate surface water run-off from roads, roofs, parking bays and parking courts into the chalk strata.
- 3.5 The proposed scheme splits the development into 3 No. catchments, as shown on drawing 18-343/108 in Appendix C. Two catchments drain to cellular soakaways located within areas of public open space (POS).
- 3.6 The remaining catchment covering the access road off Maypole Lane is to discharge via kerb drainage into an infiltration trench.
- 3.7 The surface water drainage system has been designed to accommodate all rainfall events up to 1 in 100 year event plus climate change (+40%). Supporting calculations can be found within Appendix D.



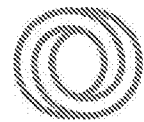
- 3.8 In some parking courts, the use of lined permeable paving system has been proposed in order to provide additional storage and treatment.
- 3.9 Surface water treatment will be provided by the permeable paving via both the grit layer and geotextile that the blocks are bedded on, as well as the underlying gravel media comprising of washed no fines material. These measures provide filtration and the breakdown of hydrocarbons as the water is conveyed through the system and into the piped network.
- 3.10 The proposed downstream defender will also provide treatment through hydrodynamic vortex separation that captures and retains sediment and pollutants from surface water runoff.

#### Urban Creep

- 3.11 The CIRIA SuDS Manual states that urban creep is defined as any increase in the impervious area that is drained to an existing drainage system without planning permission being required, and therefore without any consideration of whether the capacity of the receiving sewer system can accommodate the increased flow. An increase of 10% has been applied to areas which may be subject to urban creep; private drives and plot roof areas, to allow for future urban expansion on a local scale.

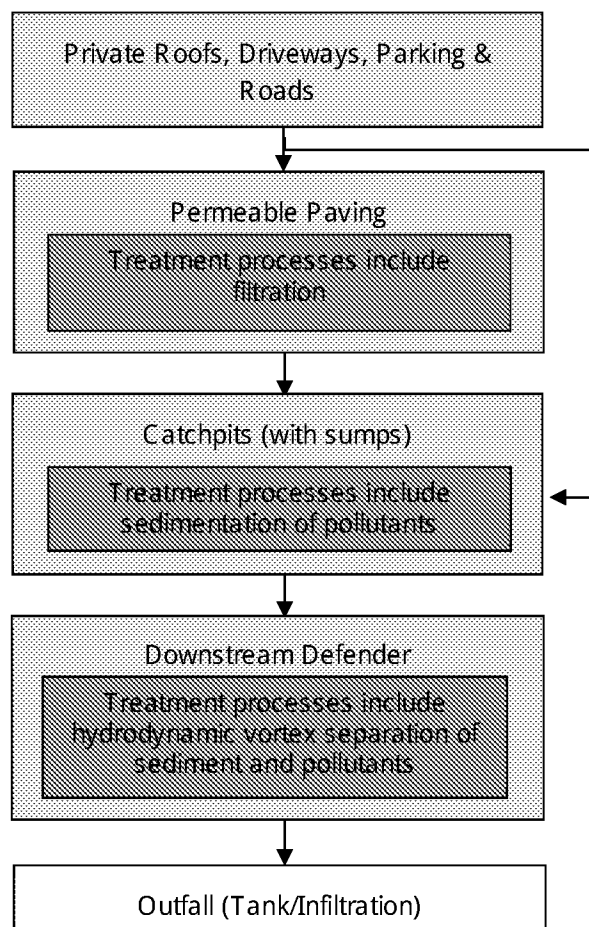
#### Foul Drainage

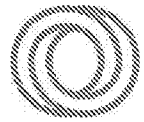
- 3.12 The proposed foul water strategy has been designed in accordance with the strategy set out in the FRA submitted as part of the outline planning application for the site.
- 3.13 It is proposed that all foul effluent created by the development will be conveyed by gravity to a pumping station located towards the south east corner east of the site. It will then be pumped via a rising main to the east before discharging into the existing Southern Water manhole 9901 in North End Road, subject to approval.
- 3.14 All drainage is to remain private and will be maintained by an appointed management company and subject to the maintenance schedules set out in Section 6 of this document.



#### 4.0 TREATMENT OF SURFACE WATER RUN-OFF

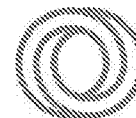
4.1 Surface water will be subject to the following treatment train prior to infiltration. The levels of proposed treatment are shown below.





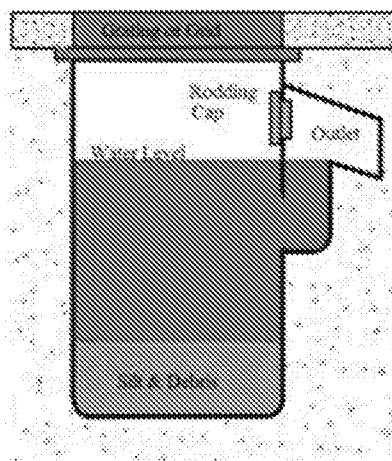
## 5.0 OVERLAND FLOW ROUTES AND EXCEEDANCE ROUTES

- 5.1 The calculations provided in Appendix D show there is no flooding for storm events up to and including the 1 in 100 year plus 40% climate change. If an event greater than the design storm, or a drainage system failure occurs levels have been designed such that overland flow will predominantly run away from buildings and be conveyed within the main highways and ultimately to the open spaces on site.
- 5.2 Overland flow routes have been shown on Odyssey drawing 18-343/107, which is supplied in Appendix B.



## 6.0 MAINTENANCE OF PIPE SYSTEMS, GULLIES AND MANHOLES

### Description



- 6.1 Drainage systems comprising of pipe runs, manholes and gullies are a more conventional method of draining surface water run-off from highway areas.
- 6.2 Surface water falling on impermeable 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.
- 6.3 Gullies are to be 'trapped' such that on collecting and conveying surface water they trap sediment and prevent any unpleasant odors returning from the sewers.

Table 6.1: Pipe Systems, Gullies and Manholes Maintenance Activities & Frequency

| Maintenance Category   | Maintenance Activity                                             | Comments              | Frequency                                       |
|------------------------|------------------------------------------------------------------|-----------------------|-------------------------------------------------|
| Routine Maintenance    | Inspect and identify any areas that are not operating correctly. | Gullies and manholes. | Monthly (for the first 3 months) then annually. |
|                        | Remove debris from gratings, sumps / silt traps.                 |                       | Annually                                        |
| Infrequent Maintenance | Clear blockages.                                                 | Piped system.         | As required.                                    |

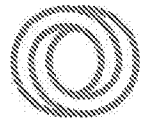
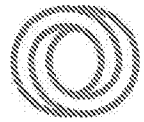
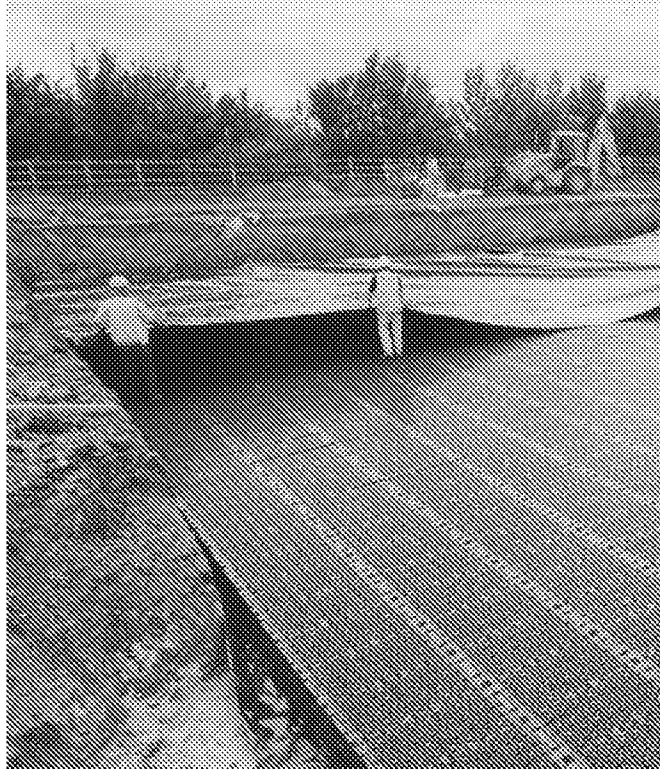


Table 6.2: Pipe Systems, Gullies and Manholes Inspection & Frequency

| 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 CELLULAR SYSTEMS



### Description

- 7.1 Cellular (or Modular) systems provide storage within a void space. They are usually built out of plastic, or other man-made materials, and can store and infiltrate (where conditions permit) run-off. Cellular systems are sub-surface components that can cater for vehicle loading, given appropriate specification and installation depth.
- 7.2 As cellular systems only offer a limited improvement in water quality, it is preferable that they form one part of a treatment train. It is important to pre-treat upstream as this will curtail sediment influx and increase the system's longevity.
- 7.3 Surface water flow to the cellular system will be via trapped gullies prior to connecting to the piped network. All manholes immediately upstream of the cellular storage structure will incorporate a silt trap / sump. The above system will offer treatment of surface water prior to entering the cellular system.



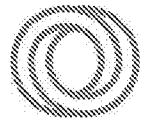
Table 7.1: Cellular System Maintenance Activities & Frequency

| 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).                                       | Remove sediment from sump when 50% volume lost.<br>N.B. Sumps must be maintained to limit sediment entry into the underground cells. | Six monthly, or as required.                       |
| Infrequent Maintenance | Clear blockage of X perforated underflow pipes (Stormcell only) by rodding / jetting. | Stormcell system (if used) should be designed with underflow pipes laid at self-cleansing velocity; reducing likelihood of blockage. | As required.                                       |
| Corrective Maintenance | Excavate, uncover & jet cells to remove sediment (Wavin Aquacell or similar).         |                                                                                                                                      | As required.                                       |

Table 7.2: Cellular System Inspection & Frequency

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

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



## 8.0 MAINTENANCE OF PERMEABLE PAVING



### Description

- 8.1 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.
- 8.2 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.
- 8.3 A cellular diffuser unit will be utilised at the outlet of each area of permeable paving to filter outflow and mitigate any 'wash-out' of the granular material.



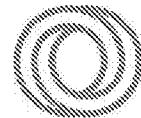
Table 8.1: Permeable Paving Maintenance Activities & Frequency

| 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.                                   |

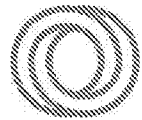
Table 8.2: Permeable Paving Inspection & Frequency

| 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 damage and blockages.   | Monthly.  |

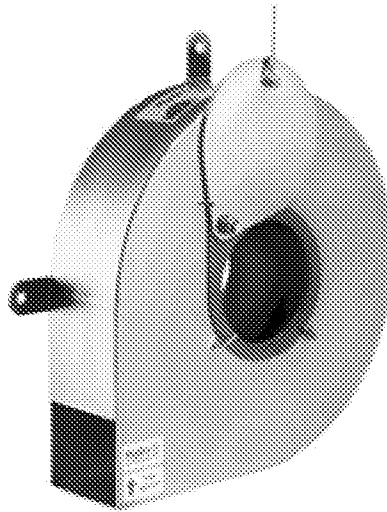
- 8.4 It is recommended that the surfaces should be regularly inspected and cleaned accordingly. Based on the results of full-scale trials carried out by Aggregate Industries, the most effective method is to use a cleaner with suction only. Even if the surface has become completely clogged, trials have shown that this method of cleaning can rehabilitate the surface to an acceptable level.



- 8.5 The maintenance and inspection regime is recommended however reference should also be made to the appropriate manufacturers guidance and recommendations and the more frequent maintenance and inspection regime implemented.



## 9.0 MAINTENANCE OF FLOW CONTROL DEVICES



### Description

- 9.1 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.
- 9.2 The vortex flow controls provide a non-linear flow curve and as such, can respond to both high and low intensity rainfall events.
- 9.3 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.



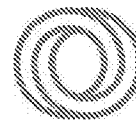
Table 9.1: Flow Control Devices Maintenance Activities & Frequency

| 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.                                       |

Table 9.2: Flow Control Inspection & Frequency

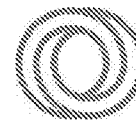
| Inspection Activity                                                                          | Comments | Frequency    |
|----------------------------------------------------------------------------------------------|----------|--------------|
| Inspect all inlets / outlets, to check they are in good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

- 9.4 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.

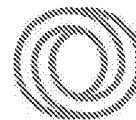


## 10.0 GLOSSARY

|                               |                                                                                                                                                               |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Amenity grass                 | Close mown grass, cut 16 times per annum to a length of 50-65mm.                                                                                              |
| Attenuation                   | Storage of runoff; used with a flow control to control discharge.                                                                                             |
| Baseflow                      | Sustained (or constant) flow required for wetlands.                                                                                                           |
| Barrier vegetation            | Vegetation to deter access.                                                                                                                                   |
| Berm                          | A mound of earth used to control flow (similar to a submerged dam or weir).                                                                                   |
| Check dam                     | Small dam used to control flow, common (for swales) where site slope exceeds 4%.                                                                              |
| Conveyance                    | Movement of runoff from one point to another.                                                                                                                 |
| Diaphragm trench              | Small trench (normally containing pea gravel) acting as a silt trap prior to sheet flow onto a filter strip.                                                  |
| Design level (or flood level) | Level of water storage within SUDS.                                                                                                                           |
| Emergent vegetation           | Vegetation which grows in water but which pierces the surface, e.g. Phragmites.                                                                               |
| Energy dissipation technique  | A method to reduce energy of water flow to prevent damage / erosion to the structure.                                                                         |
| Filter bed                    | A gravel filled base designed to ensure the base of a structure remains dry during small storm events. Similar in nature and construction to a filter trench. |
| Flow control                  | A device used to control the discharge from a structure, e.g. weir, orifice.                                                                                  |
| Flow spreading technique      | A method to reduce intensity of flow, scattering across a wider area, reducing erosion and scour.                                                             |
| Forebay                       | Small basin designed to capture and retain sediment.                                                                                                          |
| Gabion                        | Wire baskets filled with large boulders, offering reinforcement whilst allowing water to drain through.                                                       |
| Geocellular system            | Plastic storage system used to attenuate runoff.                                                                                                              |
| Geotextile                    | Synthetic permeable fabric commonly used in SUDS construction, e.g. filter trenches, helping to retain sediment.                                              |
| Groundwater recharge          | Where surface water moves downward to groundwater.                                                                                                            |
| Half drain down               | Time taken for the attenuated volume (in SUDS) to reduce to half of the storage volume by infiltration or use of flow control.                                |



|                        |                                                                                                                                                         |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hydro-Brake            | Control device to regulate flow. Uses a vortex system to achieve design flow.                                                                           |
| Infiltration           | Process by which water on the ground surface enters the soil.                                                                                           |
| Inspection chamber     | Open chamber used to assess level of sediment in the structure and assess half drain down time.                                                         |
| Long grass             | Similar to meadow grass but without wildflower mix.                                                                                                     |
| Meadow (or long) grass | Long grass with wildflower mix (sown or natural) cut 1-2 times per annum.                                                                               |
| Modular system         | See geocellular system.                                                                                                                                 |
| Overflow weir          | Type of weir (hard or soft engineered) to control flow when design level is exceeded.                                                                   |
| Penstock               | An adjustable vertical sliding plate to control flow.                                                                                                   |
| Permeable paving       | Paving designed to allow infiltration of runoff between blocks; can be designed to attenuate or allow infiltration into the ground.                     |
| Permanent water level  | Static level of water within a pond. Storage capacity is the volume above this.                                                                         |
| Point flow             | Inflow from a specific source, i.e. a pipe.                                                                                                             |
| Regional control       | Management of runoff from a site or several sites, typically a pond or wetland.                                                                         |
| Reno mattress          | Type of gabion, typically wider and shallower (in depth) than normal gabions.                                                                           |
| Rip-rap                | Rock or other material used to prevent erosion, reduce velocity and dissipate flow.                                                                     |
| Runoff                 | Surface runoff is water from rain, snow melt or other sources that flows over the land surface.                                                         |
| Safety bench           | Shallow sloped margin areas normally used around pond edges to reduce risk of falling in and allows ease of exit from the water following an emergency. |
| Scarify                | Method to break up silt deposits, remove dead grass and other organic deposits and relieves compaction of the soil surface.                             |
| Scour                  | Localised erosion usually as a result of high flows (or velocities of flow).                                                                            |
| Sediment forebay       | See forebay.                                                                                                                                            |
| Sheet flow             | Runoff that moves as overland flow in very shallow depths.                                                                                              |
| Site control           | Management of runoff from a local area or site, typically detention basins or infiltration basins.                                                      |



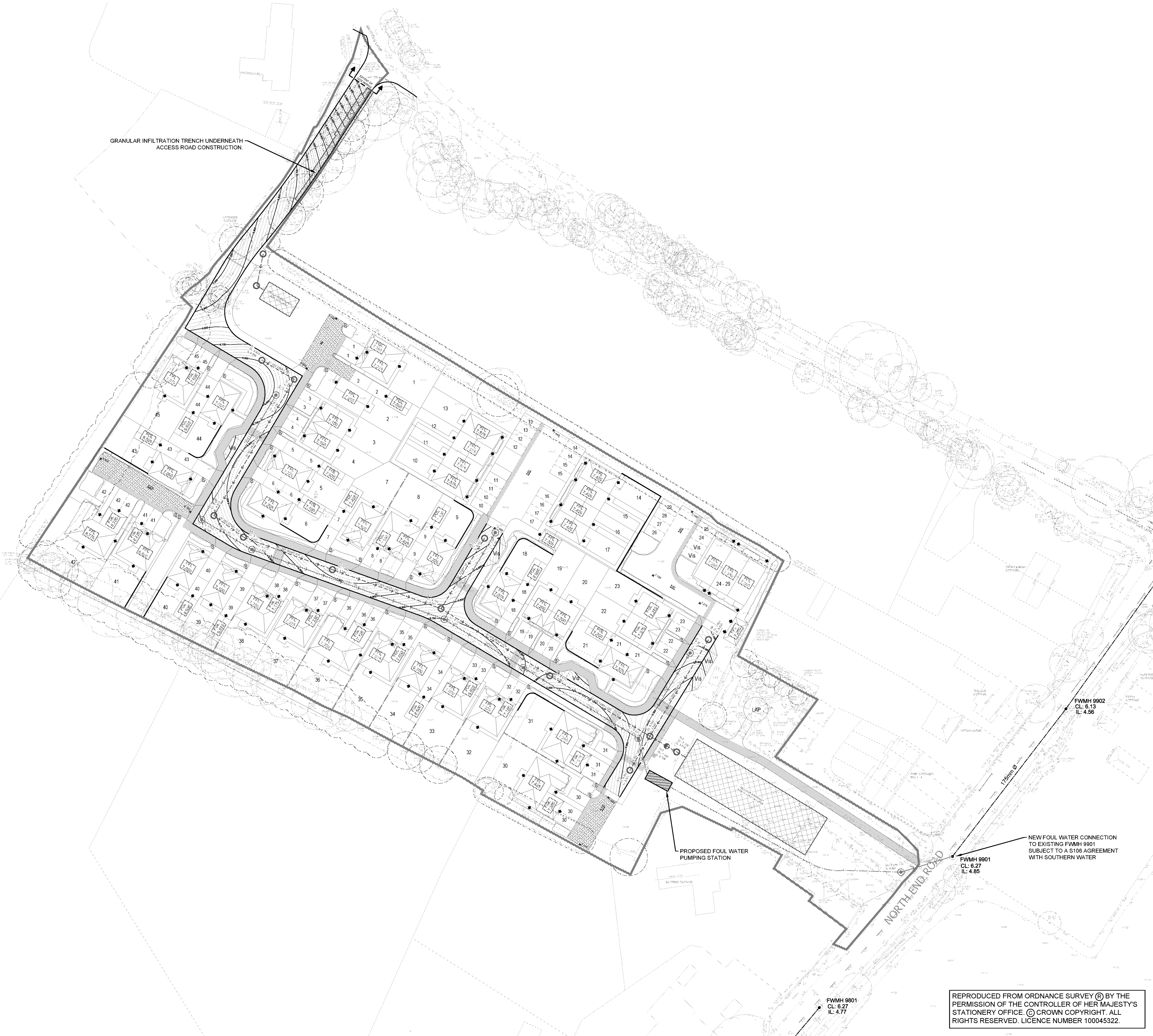
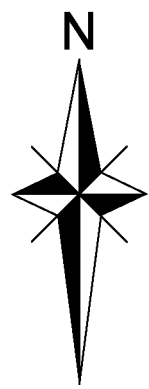
|                              |                                                                                                                     |
|------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Slotted (or perforated) pipe | Pipe usually (UPVC) with holes or slots at regular intervals allowing water to drain out or in as required.         |
| Source control               | Control of runoff at or near its source, e.g. soakaway.                                                             |
| Spike                        | Method (usually mechanical) to open up soil, improving infiltration.                                                |
| Spillway                     | Structure allowing the controlled release of water when design levels are exceeded. Can be soft or hard engineered. |
| Storage                      | See attenuation.                                                                                                    |
| Stormwater                   | An interchangeable term for surface water runoff. See runoff.                                                       |
| Surface blinding             | Blockage of the soil (normally by sediment) preventing infiltration.                                                |
| Treatment                    | Improving water quality by physical, chemical and/or biological means.                                              |
| Treatment train              | Series of SUDS component used to provide incremental water quality improvement and storage.                         |
| Void space                   | The storage volume between gravel particles (usually for filter/infiltration trenches).                             |
| Weir                         | Horizontal structure designed to control flow.                                                                      |

#### Abbreviations

|      |                                      |
|------|--------------------------------------|
| Ha   | Hectare (1ha = 10,000 square metres) |
| SUDS | Sustainable Urban Drainage Systems   |

## APPENDIX A

Odyssey Drawing 18-343/105



- NOTES**
- DO NOT SCALE FROM THIS DRAWING. WORK FROM FIGURED DIMENSIONS ONLY.
  - ALL DIMENSIONS SHOWN ON THIS DRAWING ARE IN METRES.
  - THIS DRAWING IS A PRELIMINARY REVIEW ONLY AND SUBJECT TO DETAILED DESIGN.
  - TOPOGRAPHICAL SURVEY TAKEN FROM MK SURVEYS DRAWING 28436.
  - ODYSSEY ACCEPT NO LIABILITY FOR THE ACCURACY OF SURVEY INFORMATION AND LAYOUTS SUPPLIED BY OTHERS.
  - THIS DRAWING IS BASED ON THE PLANNING LAYOUT PROVIDED BY GEOFF PERRY ASSOCIATES. DRAWING REFERENCE A855-047.
  - FOR OVERLAND FLOW ROUTES REFER TO ODYSSEY DRAWING 18-343/107.

- LEGEND**
- SITE BOUNDARY
  - PROPOSED FINISHED FLOOR LEVEL (mAOD)
  - PROPOSED FINISHED GARAGE LEVEL (mAOD)
  - PROPOSED LEVEL
  - PROPOSED GRADIENT
  - STEPPED ACCESS
  - PROPOSED HIGHWAY CONTOURS.
  - INDICATIVE RETAINING WALL
  - INDICATIVE CONCRETE GRAVEL BOARD
  - FOUL SEWER AND MANHOLE (GRADIENT/PIPE SIZE)
  - SURFACE WATER SEWER AND MANHOLE (GRADIENT/PIPE SIZE)
  - EXISTING FOUL SEWER AND MANHOLE
  - DOWNSTREAM DEFENDER
  - PROPOSED CELLULAR SOAKAWAY
  - FOUL RISING MAIN
  - PROPOSED PUMPING STATION
  - PERMEABLE PAVING
  - INDICATIVE SERVICE CORRIDOR
  - TREE ROOT PROTECTION ZONE
  - GRANULAR INFILTRATION TRENCH

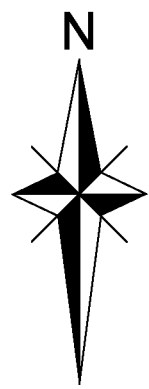
FOR PLANNING  
PURPOSES ONLY

|                                                                                                                                                                                                                                                                                                                                                         |                          |                |     |     |      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|----------------|-----|-----|------|
| Rev                                                                                                                                                                                                                                                                                                                                                     | Amendments               | Dm             | Chk | App | Date |
| <div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div>ODYSSEY</div><div><div>Tuscany House<br/>White Hart Lane<br/>Basingstoke<br/>Hampshire RG21 4AF</div><div><div>Telephone: 01256 331144<br/>Fax: 01256 331134<br/>E: info@odysseyconsult.co.uk<br/>W: www.odysseyconsult.co.uk</div></div></div></div></div> |                          |                |     |     |      |
| Job Title<br>NORTH END ROAD,<br>YAPTON                                                                                                                                                                                                                                                                                                                  |                          |                |     |     |      |
| Drawing Title<br>PRELIMINARY ENGINEERING<br>LAYOUT                                                                                                                                                                                                                                                                                                      |                          |                |     |     |      |
| Client<br>REDROW                                                                                                                                                                                                                                                                                                                                        |                          |                |     |     |      |
| Scale<br>1:500 @A1                                                                                                                                                                                                                                                                                                                                      | Date<br>JAN 2020         | Designed<br>SG |     |     |      |
| Drawn<br>JA                                                                                                                                                                                                                                                                                                                                             | Checked<br>SG            | Approved<br>LH |     |     |      |
| Job No<br>18-343                                                                                                                                                                                                                                                                                                                                        | Drawing No<br>18-393/105 | Rev            |     |     |      |

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## APPENDIX B

Odyssey Drawing 18-343/107



- NOTES**
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELATED DRAWINGS ISSUED BY THE ARCHITECT AND ENGINEER.
  - DO NOT SCALE FROM THIS DRAWING. WORK FROM FIGURED DIMENSIONS ONLY.
  - ALL DIMENSIONS SHOWN ON THIS DRAWING ARE IN METRES.
  - ODYSSEY ACCEPT NO LIABILITY FOR THE ACCURACY OF SURVEY INFORMATION AND LAYOUTS SUPPLIED BY OTHERS.
  - FOR PROPOSED SURFACE WATER DRAINAGE LAYOUT, REFER TO ODYSSEY DRAWING 18-343-105.

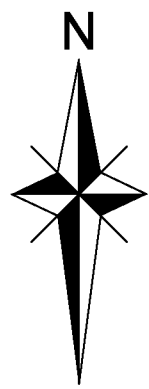
- LEGEND**
- SITE BOUNDARY
  - PROPOSED FINISHED FLOOR LEVEL (mAD)
  - PROPOSED GARAGE LEVEL (mAD)
  - PROPOSED HIGHWAY CONTOURS (20mm INTERVAL)
  - INDICATIVE DIRECTION OF OVERLAND FLOW
  - H.P. HIGH POINT
  - L.P. LOW POINT

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|                                                                                                                               |            |            |            |          |      |
|-------------------------------------------------------------------------------------------------------------------------------|------------|------------|------------|----------|------|
| Rev                                                                                                                           | Amendments | Dm         | Chk        | App      | Date |
|  <b>ODYSSEY</b>                          |            |            |            |          |      |
| <small>Tuscany House<br/>White Hart Lane<br/>Basingstoke<br/>Hampshire RG21 4AF</small>                                       |            |            |            |          |      |
| <small>Telephone: 01256 331144<br/>Fax: 01256 331134<br/>E: info@odysseyconsult.co.uk<br/>W: www.odysseyconsult.co.uk</small> |            |            |            |          |      |
| Job Title                                                                                                                     |            |            |            |          |      |
| NORTH END ROAD,<br>YAPTON                                                                                                     |            |            |            |          |      |
| Drawing Title                                                                                                                 |            |            |            |          |      |
| OVERLAND FLOW ROUTES                                                                                                          |            |            |            |          |      |
| Client                                                                                                                        |            |            |            |          |      |
|  <b>REDROW</b>                           |            |            |            |          |      |
| Scale                                                                                                                         | 1:500 @A1  | Date       | JAN 2020   | Designed | SG   |
| Drawn                                                                                                                         | LS         | Checked    | SG         | Approved | LH   |
| Job No                                                                                                                        | 18-343     | Drawing No | 18-393/107 | Rev      |      |

## APPENDIX C

Odyssey Drawing 18-343/108



P:\18-343 - North End Road, Yapton\Tech\Acad\Drawings\100 Series (RW)\18-343-108 Surface Water Catchment Plan.dwg



NOTES

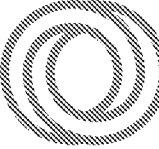
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LEGEND

- TANK 1 CATCHMENT
- TANK 2 CATCHMENT
- INFILTRATION TRENCH CATCHMENT

FOR PLANNING  
PURPOSES ONLY

| Rev | Amendments | Dm | Chk | App | Date |
|-----|------------|----|-----|-----|------|
|     |            |    |     |     |      |



**ODYSSEY**  
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W: www.odysseyconsult.co.uk

Job Title  
**NORTH END ROAD,  
YAPTON**

Drawing Title  
**SURFACE WATER  
CATCHMENT PLAN**

Client  
 **REDROW**

|                    |                          |                |
|--------------------|--------------------------|----------------|
| Scale<br>1:500 @A1 | Date<br>JAN 2020         | Designed<br>SG |
| Drawn<br>JA        | Checked<br>SG            | Approved<br>LH |
| Job No<br>18-343   | Drawing No<br>18-393/108 | Rev            |

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## APPENDIX D

### Windes Calculations

|                                 |                        |                                                                                     |
|---------------------------------|------------------------|-------------------------------------------------------------------------------------|
| Odyssey Markides                |                        | Page 1                                                                              |
| Tuscany House                   | 18-343                 |  |
| White Hart Lane                 | North End Road, Yapton |                                                                                     |
| Basingstoke RG21 4AF            | SW Network             |                                                                                     |
| Date 17/01/2020 17:31           | Designed by SG         |                                                                                     |
| File 18-343 SW DRAINAGE +UC.MDX | Checked by             |                                                                                     |
| XP Solutions                    | Network 2018.1         |                                                                                     |

### STORM SEWER DESIGN by the Modified Rational Method

#### Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

#### FEH Rainfall Model

|                                               |        |
|-----------------------------------------------|--------|
| Return Period (years)                         | 2      |
| FEH Rainfall Version                          | 1999   |
| Site Location GB 498650 101750 SU 98650 01750 |        |
| C (1km)                                       | -0.025 |
| D1 (1km)                                      | 0.390  |
| D2 (1km)                                      | 0.245  |
| D3 (1km)                                      | 0.403  |
| E (1km)                                       | 0.310  |
| F (1km)                                       | 2.321  |
| Maximum Rainfall (mm/hr)                      | 50     |
| Maximum Time of Concentration (mins)          | 30     |
| Foul Sewage (l/s/ha)                          | 0.000  |
| Volumetric Runoff Coeff.                      | 0.750  |
| PIMP (%)                                      | 100    |
| Add Flow / Climate Change (%)                 | 0      |
| Minimum Backdrop Height (m)                   | 0.200  |
| Maximum Backdrop Height (m)                   | 1.500  |
| Min Design Depth for Optimisation (m)         | 1.200  |
| Min Vel for Auto Design only (m/s)            | 1.00   |
| Min Slope for Optimisation (1:X)              | 500    |

Designed with Level Soffits

#### Network Design Table for Storm

« - Indicates pipe capacity < flow

| PN     | Length<br>(m) | Fall<br>(m) | Slope<br>(1:X) | I.Area<br>(ha) | T.E.<br>(mins) | Base<br>Flow (l/s) | k<br>(mm) | HYD<br>SECT | DIA<br>(mm) | Section      | Type | Auto<br>Design |
|--------|---------------|-------------|----------------|----------------|----------------|--------------------|-----------|-------------|-------------|--------------|------|----------------|
| S1.000 | 9.613         | 0.058       | 167.0          | 0.070          | 4.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |      |                |
| S1.001 | 40.430        | 0.170       | 238.0          | 0.078          | 0.00           | 0.0                | 0.600     | o           | 300         | Pipe/Conduit |      |                |
| S1.002 | 9.357         | 0.030       | 313.0          | 0.085          | 0.00           | 0.0                | 0.600     | o           | 375         | Pipe/Conduit |      |                |
| S1.003 | 24.238        | 0.063       | 385.0          | 0.075          | 0.00           | 0.0                | 0.600     | o           | 450         | Pipe/Conduit |      |                |
| S1.004 | 29.498        | 0.077       | 385.0          | 0.054          | 0.00           | 0.0                | 0.600     | o           | 450         | Pipe/Conduit |      |                |

#### Network Results Table

| PN     | Rain<br>(mm/hr) | T.C.<br>(mins) | US/IL Σ<br>(m) | I.Area<br>(ha) | Σ Base<br>Flow (l/s) | Foul<br>(l/s) | Add Flow<br>(l/s) | Vel<br>(m/s) | Cap<br>(l/s) | Flow<br>(l/s) |
|--------|-----------------|----------------|----------------|----------------|----------------------|---------------|-------------------|--------------|--------------|---------------|
| S1.000 | 50.00           | 4.16           | 4.889          | 0.070          | 0.0                  | 0.0           | 0.0               | 1.01         | 40.1         | 9.5           |
| S1.001 | 50.00           | 4.82           | 4.756          | 0.148          | 0.0                  | 0.0           | 0.0               | 1.01         | 71.7         | 20.0          |
| S1.002 | 50.00           | 4.98           | 4.512          | 0.233          | 0.0                  | 0.0           | 0.0               | 1.02         | 112.5        | 31.6          |
| S1.003 | 50.00           | 5.37           | 4.407          | 0.308          | 0.0                  | 0.0           | 0.0               | 1.03         | 163.8        | 41.7          |
| S1.004 | 50.00           | 5.85           | 4.344          | 0.362          | 0.0                  | 0.0           | 0.0               | 1.03         | 163.8        | 49.0          |

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|                                                          |                                                |                                                                                     |
|----------------------------------------------------------|------------------------------------------------|-------------------------------------------------------------------------------------|
| Odyssey Markides                                         |                                                | Page 2                                                                              |
| Tuscany House<br>White Hart Lane<br>Basingstoke RG21 4AF | 18-343<br>North End Road, Yapton<br>SW Network |  |
| Date 17/01/2020 17:31<br>File 18-343 SW DRAINAGE +UC.MDX | Designed by SG<br>Checked by                   |                                                                                     |
| XP Solutions                                             | Network 2018.1                                 |                                                                                     |

Network Design Table for Storm

| PN     | Length<br>(m) | Fall<br>(m) | Slope<br>(1:X) | I.Area<br>(ha) | T.E.<br>(mins) | Base<br>Flow (l/s) | k<br>(mm) | HYD<br>SECT | DIA<br>(mm) | Section Type | Auto<br>Design                                                                      |
|--------|---------------|-------------|----------------|----------------|----------------|--------------------|-----------|-------------|-------------|--------------|-------------------------------------------------------------------------------------|
| S2.000 | 21.183        | 1.138       | 18.6           | 0.108          | 4.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |  |
| S1.005 | 32.668        | 0.131       | 250.0          | 0.099          | 0.00           | 0.0                | 0.600     | o           | 450         | Pipe/Conduit |  |
| S1.006 | 29.928        | 0.120       | 250.0          | 0.090          | 0.00           | 0.0                | 0.600     | o           | 525         | Pipe/Conduit |  |
| S3.000 | 28.906        | 1.394       | 20.7           | 0.103          | 4.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |  |
| S4.000 | 10.098        | 1.184       | 8.5            | 0.049          | 4.00           | 0.0                | 0.600     | o           | 150         | Pipe/Conduit |  |
| S1.007 | 4.996         | 0.143       | 34.9           | 0.029          | 0.00           | 0.0                | 0.600     | o           | 525         | Pipe/Conduit |  |
| S1.008 | 2.954         | 0.084       | 35.2           | 0.000          | 0.00           | 0.0                | 0.600     | o           | 525         | Pipe/Conduit |  |
| S1.009 | 6.522         | 0.014       | 465.9          | 0.000          | 0.00           | 0.0                | 0.600     | o           | 150         | Pipe/Conduit |  |

Network Results Table

| PN     | Rain<br>(mm/hr) | T.C.<br>(mins) | US/IL<br>(m) | I.Area<br>(ha) | Base<br>Flow (l/s) | Foul<br>(l/s) | Add Flow<br>(l/s) | Vel<br>(m/s) | Cap<br>(l/s) | Flow<br>(l/s) |
|--------|-----------------|----------------|--------------|----------------|--------------------|---------------|-------------------|--------------|--------------|---------------|
| S2.000 | 50.00           | 4.12           | 5.630        | 0.108          | 0.0                | 0.0           | 0.0               | 3.05         | 121.2        | 14.6          |
| S1.005 | 50.00           | 6.27           | 4.267        | 0.569          | 0.0                | 0.0           | 0.0               | 1.28         | 203.8        | 77.0          |
| S1.006 | 50.00           | 6.62           | 4.061        | 0.659          | 0.0                | 0.0           | 0.0               | 1.41         | 305.7        | 89.2          |
| S3.000 | 50.00           | 4.17           | 5.636        | 0.103          | 0.0                | 0.0           | 0.0               | 2.89         | 114.8        | 13.9          |
| S4.000 | 50.00           | 4.05           | 5.501        | 0.049          | 0.0                | 0.0           | 0.0               | 3.47         | 61.3         | 6.6           |
| S1.007 | 50.00           | 6.65           | 3.942        | 0.840          | 0.0                | 0.0           | 0.0               | 3.80         | 822.3        | 113.7         |
| S1.008 | 50.00           | 6.66           | 3.799        | 0.840          | 0.0                | 0.0           | 0.0               | 3.79         | 819.6        | 113.7         |
| S1.009 | 49.06           | 6.90           | 6.800        | 0.840          | 0.0                | 0.0           | 0.0               | 0.46         | 8.1          | 113.7         |

| Odyssey Markides                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |              |               |                    |                                                |                           |                        | Page 3                                                                              |                           |                        |               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------|---------------|--------------------|------------------------------------------------|---------------------------|------------------------|-------------------------------------------------------------------------------------|---------------------------|------------------------|---------------|
| Tuscany House<br>White Hart Lane<br>Basingstoke RG21 4AF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           |              |               |                    | 18-343<br>North End Road, Yapton<br>SW Network |                           |                        |  |                           |                        |               |
| Date 17/01/2020 17:31                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |           |              |               |                    | Designed by SG                                 |                           |                        |                                                                                     |                           |                        |               |
| File 18-343 SW DRAINAGE +UC.MDX                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |              |               |                    | Checked by                                     |                           |                        |                                                                                     |                           |                        |               |
| XP Solutions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |              |               |                    | Network 2018.1                                 |                           |                        |                                                                                     |                           |                        |               |
| <u>Manhole Schedules for Storm</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |           |              |               |                    |                                                |                           |                        |                                                                                     |                           |                        |               |
| MH Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | MH CL (m) | MH Depth (m) | MH Connection | MH Diam., L*W (mm) | PN                                             | Pipe Out Invert Level (m) | Pipe Out Diameter (mm) | PN                                                                                  | Pipes In Invert Level (m) | Pipes In Diameter (mm) | Backdrop (mm) |
| S1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 6.614     | 1.725        | Open Manhole  | 1200               | S1.000                                         | 4.889                     | 225                    |                                                                                     |                           |                        |               |
| S2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 6.731     | 1.975        | Open Manhole  | 1200               | S1.001                                         | 4.756                     | 300                    | S1.000                                                                              | 4.831                     | 225                    |               |
| S3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 6.687     | 2.175        | Open Manhole  | 1350               | S1.002                                         | 4.512                     | 375                    | S1.001                                                                              | 4.587                     | 300                    |               |
| S4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 6.778     | 2.371        | Open Manhole  | 1350               | S1.003                                         | 4.407                     | 450                    | S1.002                                                                              | 4.482                     | 375                    |               |
| S5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 7.042     | 2.698        | Open Manhole  | 1350               | S1.004                                         | 4.344                     | 450                    | S1.003                                                                              | 4.344                     | 450                    |               |
| S6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 7.055     | 1.425        | Open Manhole  | 1200               | S2.000                                         | 5.630                     | 225                    |                                                                                     |                           |                        |               |
| S7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 6.770     | 2.503        | Open Manhole  | 1350               | S1.005                                         | 4.267                     | 450                    | S1.004                                                                              | 4.267                     | 450                    |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |              |               |                    |                                                |                           |                        | S2.000                                                                              | 4.492                     | 225                    |               |
| S8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 6.912     | 2.851        | Open Manhole  | 1500               | S1.006                                         | 4.061                     | 525                    | S1.005                                                                              | 4.136                     | 450                    |               |
| S9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 7.061     | 1.425        | Open Manhole  | 1200               | S3.000                                         | 5.636                     | 225                    |                                                                                     |                           |                        |               |
| S10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 6.851     | 1.350        | Open Manhole  | 1200               | S4.000                                         | 5.501                     | 150                    |                                                                                     |                           |                        |               |
| S11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 6.760     | 2.818        | Open Manhole  | 1500               | S1.007                                         | 3.942                     | 525                    | S1.006                                                                              | 3.942                     | 525                    |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |              |               |                    |                                                |                           |                        | S3.000                                                                              | 4.242                     | 225                    |               |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |              |               |                    |                                                |                           |                        | S4.000                                                                              | 4.317                     | 150                    |               |
| S12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 7.100     | 3.301        | Open Manhole  | 1500               | S1.008                                         | 3.799                     | 525                    | S1.007                                                                              | 3.799                     | 525                    |               |
| S13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 7.100     | 3.385        | Open Manhole  | 1500               | S1.009                                         | 6.800                     | 150                    | S1.008                                                                              | 3.715                     | 525                    |               |
| S                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 7.000     | 0.214        | Open Manhole  | 0                  |                                                | OUTFALL                   |                        | S1.009                                                                              | 6.786                     | 150                    |               |
| <u>Simulation Criteria for Storm</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |           |              |               |                    |                                                |                           |                        |                                                                                     |                           |                        |               |
| Volumetric Runoff Coeff 0.750      Additional Flow - % of Total Flow 0.000<br>Areal Reduction Factor 1.000      MADD Factor * 10m³/ha Storage 2.000<br>Hot Start (mins) 0      Inlet Coefficient 0.800<br>Hot Start Level (mm) 0      Flow per Person per Day (l/per/day) 0.000<br>Manhole Headloss Coeff (Global) 0.500      Run Time (mins) 60<br>Foul Sewage per hectare (l/s) 0.000      Output Interval (mins) 1<br><br>Number of Input Hydrographs 0      Number of Storage Structures 1<br>Number of Online Controls 0      Number of Time/Area Diagrams 0<br>Number of Offline Controls 0      Number of Real Time Controls 0 |           |              |               |                    |                                                |                           |                        |                                                                                     |                           |                        |               |
| <u>Synthetic Rainfall Details</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |              |               |                    |                                                |                           |                        |                                                                                     |                           |                        |               |
| Rainfall Model      FEH<br>Return Period (years)      2<br>FEH Rainfall Version      1999<br>Site Location GB 498650 101750 SU 98650 01750<br>C (1km)      -0.025<br>D1 (1km)      0.390<br>D2 (1km)      0.245<br>D3 (1km)      0.403<br>E (1km)      0.310                                                                                                                                                                                                                                                                                                                                                                          |           |              |               |                    |                                                |                           |                        |                                                                                     |                           |                        |               |
| ©1982-2018 Innovyze                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |              |               |                    |                                                |                           |                        |                                                                                     |                           |                        |               |

|                                                                                                                                                                                                                                                                                                                                                                                                 |                                                |                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|-------------------------------------------------------------------------------------|
| Odyssey Markides                                                                                                                                                                                                                                                                                                                                                                                |                                                | Page 4                                                                              |
| Tuscany House<br>White Hart Lane<br>Basingstoke RG21 4AF                                                                                                                                                                                                                                                                                                                                        | 18-343<br>North End Road, Yapton<br>SW Network |  |
| Date 17/01/2020 17:31                                                                                                                                                                                                                                                                                                                                                                           | Designed by SG                                 |                                                                                     |
| File 18-343 SW DRAINAGE +UC.MDX                                                                                                                                                                                                                                                                                                                                                                 | Checked by                                     |                                                                                     |
| XP Solutions                                                                                                                                                                                                                                                                                                                                                                                    | Network 2018.1                                 |                                                                                     |
| <p style="text-align: center;"><u>Synthetic Rainfall Details</u></p> <p style="text-align: right;">F (1km) 2.321</p> <p style="text-align: right;">Summer Storms Yes</p> <p style="text-align: right;">Winter Storms Yes</p> <p style="text-align: right;">Cv (Summer) 0.750</p> <p style="text-align: right;">Cv (Winter) 0.840</p> <p style="text-align: right;">Storm Duration (mins) 30</p> |                                                |                                                                                     |
| ©1982-2018 Innovyze                                                                                                                                                                                                                                                                                                                                                                             |                                                |                                                                                     |

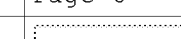
|                                 |                        |                                                                                     |
|---------------------------------|------------------------|-------------------------------------------------------------------------------------|
| Odyssey Markides                |                        | Page 5                                                                              |
| Tuscany House                   | 18-343                 |  |
| White Hart Lane                 | North End Road, Yapton |                                                                                     |
| Basingstoke RG21 4AF            | SW Network             |                                                                                     |
| Date 17/01/2020 17:31           | Designed by SG         |                                                                                     |
| File 18-343 SW DRAINAGE +UC.MDX | Checked by             |                                                                                     |
| XP Solutions                    | Network 2018.1         |                                                                                     |

Storage Structures for Storm

Cellular Storage Manhole: S13, DS/PN: S1.009

Invert Level (m) 2.800 Safety Factor 2.0  
Infiltration Coefficient Base (m/hr) 0.06876 Porosity 0.95  
Infiltration Coefficient Side (m/hr) 0.00000

| Depth (m) | Area (m <sup>2</sup> ) | Inf. Area (m <sup>2</sup> ) | Depth (m) | Area (m <sup>2</sup> ) | Inf. Area (m <sup>2</sup> ) |
|-----------|------------------------|-----------------------------|-----------|------------------------|-----------------------------|
| 0.000     | 429.0                  | 408.0                       | 1.601     | 0.0                    | 539.2                       |
| 1.600     | 429.0                  | 539.2                       |           |                        |                             |

|                                 |                        |                                                                                     |
|---------------------------------|------------------------|-------------------------------------------------------------------------------------|
| Odyssey Markides                |                        | Page 6                                                                              |
| Tuscany House                   | 18-343                 |  |
| White Hart Lane                 | North End Road, Yapton |                                                                                     |
| Basingstoke RG21 4AF            | SW Network             |                                                                                     |
| Date 17/01/2020 17:31           | Designed by SG         |                                                                                     |
| File 18-343 SW DRAINAGE +UC.MDX | Checked by             |                                                                                     |
| XP Solutions                    | Network 2018.1         |                                                                                     |

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

### Simulation Criteria

|                                 |       |                                     |       |
|---------------------------------|-------|-------------------------------------|-------|
| Areal Reduction Factor          | 1.000 | Additional Flow - % of Total Flow   | 0.000 |
| Hot Start (mins)                | 0     | MADD Factor * 10m³/ha Storage       | 2.000 |
| Hot Start Level (mm)            | 0     | Inlet Coeffiecient                  | 0.800 |
| Manhole Headloss Coeff (Global) | 0.500 | Flow per Person per Day (l/per/day) | 0.000 |
| Foul Sewage per hectare (l/s)   | 0.000 |                                     |       |

|                             |   |                              |   |
|-----------------------------|---|------------------------------|---|
| Number of Input Hydrographs | 0 | Number of Storage Structures | 1 |
| Number of Online Controls   | 0 | Number of Time/Area Diagrams | 0 |
| Number of Offline Controls  | 0 | Number of Real Time Controls | 0 |

### Synthetic Rainfall Details

|                      |                                 |
|----------------------|---------------------------------|
| Rainfall Model       | FEH                             |
| FEH Rainfall Version | 1999                            |
| Site Location        | GB 498650 101750 SU 98650 01750 |
| C (1km)              | -0.025                          |
| D1 (1km)             | 0.390                           |
| D2 (1km)             | 0.245                           |
| D3 (1km)             | 0.403                           |
| E (1km)              | 0.310                           |
| F (1km)              | 2.321                           |
| Cv (Summer)          | 0.750                           |
| Cv (Winter)          | 0.840                           |

| Site | Location | GB | 498650 | 101750 | SU | 98650 | 01750  |
|------|----------|----|--------|--------|----|-------|--------|
|      | C (1km)  |    |        |        |    |       | -0.025 |
|      | D1 (1km) |    |        |        |    |       | 0.390  |
|      | D2 (1km) |    |        |        |    |       | 0.245  |
|      | D3 (1km) |    |        |        |    |       | 0.403  |
|      | E (1km)  |    |        |        |    |       | 0.310  |
|      | F (1km)  |    |        |        |    |       | 2.321  |
| Cv   | (Summer) |    |        |        |    |       | 0.750  |
| Cv   | (Winter) |    |        |        |    |       | 0.840  |

|         |        |
|---------|--------|
| C (1km) | -0.025 |
|---------|--------|

|          |       |
|----------|-------|
| D1 (1km) | 0.390 |
|----------|-------|

|          |       |
|----------|-------|
| D2 (1km) | 0.245 |
|----------|-------|

|          |       |
|----------|-------|
| D3 (1km) | 0.403 |
|----------|-------|

|         |       |
|---------|-------|
| E (1km) | 0.310 |
|---------|-------|

|         |       |
|---------|-------|
| F (1km) | 2.321 |
|---------|-------|

|             |       |
|-------------|-------|
| Cv (Summer) | 0.750 |
|-------------|-------|

|             |       |
|-------------|-------|
| Cv (Winter) | 0.840 |
|-------------|-------|

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF

Analysis Timestep    Fine Inertia Status OFF

DTS Status ON

Profile(s) Summer and Winter

Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440

Return Period(s) (years) 1, 30, 100

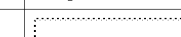
|                    |          |
|--------------------|----------|
| Climate Change (%) | 0, 0, 40 |
|--------------------|----------|

|        |       |       |        |         |           |           |           |          | Water |
|--------|-------|-------|--------|---------|-----------|-----------|-----------|----------|-------|
|        | US/MH |       | Return | Climate | First (X) | First (Y) | First (Z) | Overflow | Level |
| PN     | Name  | Storm | Period | Change  | Surcharge | Flood     | Overflow  | Act.     | (m)   |
| S1.000 | S1    | 15    | Summer | 1       | +0%       | 100/15    | Summer    |          | 4.964 |
| S1.001 | S2    | 15    | Winter | 1       | +0%       | 100/15    | Summer    |          | 4.853 |
| S1.002 | S3    | 15    | Winter | 1       | +0%       | 100/15    | Summer    |          | 4.646 |
| S1.003 | S4    | 15    | Winter | 1       | +0%       | 100/15    | Summer    |          | 4.559 |
| S1.004 | S5    | 15    | Winter | 1       | +0%       | 100/15    | Summer    |          | 4.502 |
| S2.000 | S6    | 15    | Winter | 1       | +0%       | 100/15    | Summer    |          | 5.680 |
| S1.005 | S7    | 15    | Winter | 1       | +0%       | 100/15    | Summer    |          | 4.429 |
| S1.006 | S8    | 15    | Winter | 1       | +0%       | 100/15    | Summer    |          | 4.228 |
| S3.000 | S9    | 15    | Winter | 1       | +0%       |           |           |          | 5.685 |
| S4.000 | S10   | 15    | Winter | 1       | +0%       |           |           |          | 5.533 |
| S1.007 | S11   | 15    | Winter | 1       | +0%       | 100/15    | Summer    |          | 4.116 |
| S1.008 | S12   | 15    | Winter | 1       | +0%       | 100/15    | Summer    |          | 3.987 |
| S1.009 | S13   | 480   | Winter | 1       | +0%       |           |           |          | 3.011 |

|                                 |                        |                                                                                     |
|---------------------------------|------------------------|-------------------------------------------------------------------------------------|
| Odyssey Markides                |                        | Page 7                                                                              |
| Tuscany House                   | 18-343                 |  |
| White Hart Lane                 | North End Road, Yapton |                                                                                     |
| Basingstoke RG21 4AF            | SW Network             |                                                                                     |
| Date 17/01/2020 17:31           | Designed by SG         |                                                                                     |
| File 18-343 SW DRAINAGE +UC.MDX | Checked by             |                                                                                     |
| XP Solutions                    | Network 2018.1         |                                                                                     |

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

| PN     | US/MH<br>Name | Surcharged Flooded |                | Flow /<br>Cap. | Overflow<br>(l/s) | Pipe<br>Flow<br>(l/s) | Status | Level<br>Exceeded |
|--------|---------------|--------------------|----------------|----------------|-------------------|-----------------------|--------|-------------------|
|        |               | Depth<br>(m)       | Volume<br>(m³) |                |                   |                       |        |                   |
| S1.000 | S1            | -0.150             | 0.000          | 0.24           |                   | 8.0                   | OK     |                   |
| S1.001 | S2            | -0.204             | 0.000          | 0.22           |                   | 14.7                  | OK     |                   |
| S1.002 | S3            | -0.240             | 0.000          | 0.28           |                   | 22.3                  | OK     |                   |
| S1.003 | S4            | -0.298             | 0.000          | 0.21           |                   | 28.3                  | OK     |                   |
| S1.004 | S5            | -0.292             | 0.000          | 0.23           |                   | 32.5                  | OK     |                   |
| S2.000 | S6            | -0.175             | 0.000          | 0.11           |                   | 12.3                  | OK     |                   |
| S1.005 | S7            | -0.288             | 0.000          | 0.28           |                   | 49.4                  | OK     |                   |
| S1.006 | S8            | -0.358             | 0.000          | 0.22           |                   | 55.7                  | OK     |                   |
| S3.000 | S9            | -0.176             | 0.000          | 0.11           |                   | 11.8                  | OK     |                   |
| S4.000 | S10           | -0.118             | 0.000          | 0.10           |                   | 5.6                   | OK     |                   |
| S1.007 | S11           | -0.350             | 0.000          | 0.24           |                   | 70.3                  | OK     |                   |
| S1.008 | S12           | -0.337             | 0.000          | 0.28           |                   | 70.0                  | OK     |                   |
| S1.009 | S13           | -3.939             | 0.000          | 0.00           |                   | 0.0                   | OK     |                   |

|                                 |                        |                                                                                     |
|---------------------------------|------------------------|-------------------------------------------------------------------------------------|
| Odyssey Markides                |                        | Page 8                                                                              |
| Tuscany House                   | 18-343                 |  |
| White Hart Lane                 | North End Road, Yapton |                                                                                     |
| Basingstoke RG21 4AF            | SW Network             |                                                                                     |
| Date 17/01/2020 17:31           | Designed by SG         |                                                                                     |
| File 18-343 SW DRAINAGE +UC.MDX | Checked by             |                                                                                     |
| XP Solutions                    | Network 2018.1         |                                                                                     |

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

### Simulation Criteria

|                             |   |                              |   |
|-----------------------------|---|------------------------------|---|
| Number of Input Hydrographs | 0 | Number of Storage Structures | 1 |
| Number of Online Controls   | 0 | Number of Time/Area Diagrams | 0 |
| Number of Offline Controls  | 0 | Number of Real Time Controls | 0 |

### Synthetic Rainfall Details

```
Margin for Flood Risk Warning (mm) 300.0      DVD Status OFF
      Analysis Timestep      Fine Inertia Status OFF
      DTS Status      ON
```

|                          |                                           |
|--------------------------|-------------------------------------------|
| Profile(s)               | Summer and Winter                         |
| Duration(s) (mins)       | 15, 30, 60, 120, 240, 360, 480, 960, 1440 |
| Return Period(s) (years) | 1, 30, 100                                |
| Climate Change (%)       | 0, 0, 40                                  |

|        |       |            |        |         |               |           |           |          | Water |
|--------|-------|------------|--------|---------|---------------|-----------|-----------|----------|-------|
|        | US/MH |            | Return | Climate | First (X)     | First (Y) | First (Z) | Overflow | Level |
| PN     | Name  | Storm      | Period | Change  | Surcharge     | Flood     | Overflow  | Act.     | (m)   |
| S1.000 | S1    | 15 Summer  | 30     | +0%     | 100/15 Summer |           |           |          | 5.038 |
| S1.001 | S2    | 15 Summer  | 30     | +0%     | 100/15 Summer |           |           |          | 4.963 |
| S1.002 | S3    | 15 Winter  | 30     | +0%     | 100/15 Summer |           |           |          | 4.825 |
| S1.003 | S4    | 15 Winter  | 30     | +0%     | 100/15 Summer |           |           |          | 4.758 |
| S1.004 | S5    | 15 Winter  | 30     | +0%     | 100/15 Summer |           |           |          | 4.710 |
| S2.000 | S6    | 15 Winter  | 30     | +0%     | 100/15 Summer |           |           |          | 5.723 |
| S1.005 | S7    | 15 Winter  | 30     | +0%     | 100/15 Summer |           |           |          | 4.645 |
| S1.006 | S8    | 15 Winter  | 30     | +0%     | 100/15 Summer |           |           |          | 4.419 |
| S3.000 | S9    | 15 Winter  | 30     | +0%     |               |           |           |          | 5.728 |
| S4.000 | S10   | 15 Winter  | 30     | +0%     |               |           |           |          | 5.560 |
| S1.007 | S11   | 15 Winter  | 30     | +0%     | 100/15 Summer |           |           |          | 4.324 |
| S1.008 | S12   | 15 Winter  | 30     | +0%     | 100/15 Summer |           |           |          | 4.219 |
| S1.009 | S13   | 480 Winter | 30     | +0%     |               |           |           |          | 3.505 |

|                                                          |                                                |                                                                                     |
|----------------------------------------------------------|------------------------------------------------|-------------------------------------------------------------------------------------|
| Odyssey Markides                                         |                                                | Page 9                                                                              |
| Tuscany House<br>White Hart Lane<br>Basingstoke RG21 4AF | 18-343<br>North End Road, Yapton<br>SW Network |  |
| Date 17/01/2020 17:31                                    | Designed by SG                                 |                                                                                     |
| File 18-343 SW DRAINAGE +UC.MDX                          | Checked by                                     |                                                                                     |
| XP Solutions                                             | Network 2018.1                                 |                                                                                     |

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

| PN     | US/MH<br>Name | Surcharged Flooded |                | Flow /<br>Cap. | Overflow<br>(l/s) | Pipe<br>Flow<br>(l/s) | Status | Level<br>Exceeded |
|--------|---------------|--------------------|----------------|----------------|-------------------|-----------------------|--------|-------------------|
|        |               | Depth<br>(m)       | Volume<br>(m³) |                |                   |                       |        |                   |
| S1.000 | S1            | -0.076             | 0.000          | 0.77           |                   | 25.7                  | OK     |                   |
| S1.001 | S2            | -0.094             | 0.000          | 0.77           |                   | 51.6                  | OK     |                   |
| S1.002 | S3            | -0.062             | 0.000          | 1.00           |                   | 79.9                  | OK     |                   |
| S1.003 | S4            | -0.098             | 0.000          | 0.75           |                   | 103.0                 | OK     |                   |
| S1.004 | S5            | -0.084             | 0.000          | 0.83           |                   | 117.3                 | OK     |                   |
| S2.000 | S6            | -0.132             | 0.000          | 0.36           |                   | 39.6                  | OK     |                   |
| S1.005 | S7            | -0.072             | 0.000          | 0.99           |                   | 176.1                 | OK     |                   |
| S1.006 | S8            | -0.167             | 0.000          | 0.78           |                   | 199.3                 | OK     |                   |
| S3.000 | S9            | -0.133             | 0.000          | 0.35           |                   | 37.8                  | OK     |                   |
| S4.000 | S10           | -0.091             | 0.000          | 0.33           |                   | 18.0                  | OK     |                   |
| S1.007 | S11           | -0.142             | 0.000          | 0.86           |                   | 248.2                 | OK     |                   |
| S1.008 | S12           | -0.104             | 0.000          | 1.00           |                   | 248.4                 | OK     |                   |
| S1.009 | S13           | -3.445             | 0.000          | 0.00           |                   | 0.0                   | OK     |                   |

|                                 |                        |                                                                                     |
|---------------------------------|------------------------|-------------------------------------------------------------------------------------|
| Odyssey Markides                |                        | Page 10                                                                             |
| Tuscany House                   | 18-343                 |  |
| White Hart Lane                 | North End Road, Yapton |                                                                                     |
| Basingstoke RG21 4AF            | SW Network             |                                                                                     |
| Date 17/01/2020 17:31           | Designed by SG         |                                                                                     |
| File 18-343 SW DRAINAGE +UC.MDX | Checked by             |                                                                                     |
| XP Solutions                    | Network 2018.1         |                                                                                     |

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

Simulation Criteria

Areal Reduction Factor 1.000    Additional Flow - % of Total Flow 0.000  
 Hot Start (mins) 0    MADD Factor \* 10m<sup>3</sup>/ha Storage 2.000  
 Hot Start Level (mm) 0    Inlet Coefficient 0.800  
 Manhole Headloss Coeff (Global) 0.500    Flow per Person per Day (l/per/day) 0.000  
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0    Number of Storage Structures 1  
 Number of Online Controls 0    Number of Time/Area Diagrams 0  
 Number of Offline Controls 0    Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH  
 FEH Rainfall Version 1999  
 Site Location GB 498650 101750 SU 98650 01750  
 C (1km) -0.025  
 D1 (1km) 0.390  
 D2 (1km) 0.245  
 D3 (1km) 0.403  
 E (1km) 0.310  
 F (1km) 2.321  
 Cv (Summer) 0.750  
 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0    DVD Status OFF  
 Analysis Timestep Fine Inertia Status OFF  
 DTS Status ON

Profile(s) Summer and Winter  
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440  
 Return Period(s) (years) 1, 30, 100  
 Climate Change (%) 0, 0, 40

| US/MH  |      | Return Climate |        | First (X) | First (Y)     | First (Z) | Overflow | Water |
|--------|------|----------------|--------|-----------|---------------|-----------|----------|-------|
| PN     | Name | Storm          | Period | Change    | Surcharge     | Flood     | Overflow | Level |
|        |      |                |        |           |               |           | Act.     | (m)   |
| S1.000 | S1   | 15 Winter      | 100    | +40%      | 100/15 Summer |           |          | 6.613 |
| S1.001 | S2   | 15 Winter      | 100    | +40%      | 100/15 Summer |           |          | 6.520 |
| S1.002 | S3   | 15 Winter      | 100    | +40%      | 100/15 Summer |           |          | 6.214 |
| S1.003 | S4   | 15 Winter      | 100    | +40%      | 100/15 Summer |           |          | 6.088 |
| S1.004 | S5   | 15 Winter      | 100    | +40%      | 100/15 Summer |           |          | 5.975 |
| S2.000 | S6   | 15 Winter      | 100    | +40%      | 100/15 Summer |           |          | 6.231 |
| S1.005 | S7   | 15 Winter      | 100    | +40%      | 100/15 Summer |           |          | 5.799 |
| S1.006 | S8   | 15 Winter      | 100    | +40%      | 100/15 Summer |           |          | 5.326 |
| S3.000 | S9   | 15 Winter      | 100    | +40%      |               |           |          | 5.785 |
| S4.000 | S10  | 15 Winter      | 100    | +40%      |               |           |          | 5.594 |
| S1.007 | S11  | 15 Winter      | 100    | +40%      | 100/15 Summer |           |          | 5.052 |
| S1.008 | S12  | 15 Winter      | 100    | +40%      | 100/15 Summer |           |          | 4.629 |
| S1.009 | S13  | 960 Winter     | 100    | +40%      |               |           |          | 4.371 |

|                                                          |                                                |                                                                                     |
|----------------------------------------------------------|------------------------------------------------|-------------------------------------------------------------------------------------|
| Odyssey Markides                                         |                                                | Page 11                                                                             |
| Tuscany House<br>White Hart Lane<br>Basingstoke RG21 4AF | 18-343<br>North End Road, Yapton<br>SW Network |  |
| Date 17/01/2020 17:31                                    | Designed by SG                                 |                                                                                     |
| File 18-343 SW DRAINAGE +UC.MDX                          | Checked by                                     |                                                                                     |
| XP Solutions                                             | Network 2018.1                                 |                                                                                     |

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

| PN     | US/MH<br>Name | Surcharged Flooded |                | Flow /<br>Cap. | Overflow<br>(l/s) | Pipe<br>Flow<br>(l/s) | Status     | Level<br>Exceeded |
|--------|---------------|--------------------|----------------|----------------|-------------------|-----------------------|------------|-------------------|
|        |               | Depth<br>(m)       | Volume<br>(m³) |                |                   |                       |            |                   |
| S1.000 | S1            | 1.499              | 0.000          | 1.26           |                   | 42.0                  | FLOOD RISK |                   |
| S1.001 | S2            | 1.464              | 0.000          | 1.31           |                   | 87.4                  | FLOOD RISK |                   |
| S1.002 | S3            | 1.327              | 0.000          | 1.71           |                   | 136.5                 | SURCHARGED |                   |
| S1.003 | S4            | 1.231              | 0.000          | 1.32           |                   | 180.4                 | SURCHARGED |                   |
| S1.004 | S5            | 1.181              | 0.000          | 1.50           |                   | 210.5                 | SURCHARGED |                   |
| S2.000 | S6            | 0.376              | 0.000          | 0.72           |                   | 79.2                  | SURCHARGED |                   |
| S1.005 | S7            | 1.082              | 0.000          | 1.87           |                   | 331.7                 | SURCHARGED |                   |
| S1.006 | S8            | 0.740              | 0.000          | 1.49           |                   | 381.1                 | SURCHARGED |                   |
| S3.000 | S9            | -0.076             | 0.000          | 0.75           |                   | 80.3                  | OK         |                   |
| S4.000 | S10           | -0.057             | 0.000          | 0.70           |                   | 38.2                  | OK         |                   |
| S1.007 | S11           | 0.586              | 0.000          | 1.69           |                   | 490.2                 | SURCHARGED |                   |
| S1.008 | S12           | 0.306              | 0.000          | 1.96           |                   | 487.6                 | SURCHARGED |                   |
| S1.009 | S13           | -2.579             | 0.000          | 0.00           |                   | 0.0                   | OK         |                   |

|                                                                                                                                                                |               |                        |                        |                                                                                     |        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------------------|------------------------|-------------------------------------------------------------------------------------|--------|
| Odyssey Markides                                                                                                                                               |               |                        |                        | Page 1                                                                              |        |
| Tuscany House                                                                                                                                                  |               | 18-343                 |                        |  |        |
| White Hart Lane                                                                                                                                                |               | North End Road, Yapton |                        |                                                                                     |        |
| Basingstoke RG21 4AF                                                                                                                                           |               | Tank 2                 |                        |                                                                                     |        |
| Date 17/01/2020 16:01                                                                                                                                          |               | Designed by JH         |                        |                                                                                     |        |
| File 18-343 TANK 2.SRCX                                                                                                                                        |               | Checked by             |                        |                                                                                     |        |
| XP Solutions                                                                                                                                                   |               | Source Control 2018.1  |                        |                                                                                     |        |
| <p><u>Summary of Results for 100 year Return Period (+40%)</u></p> <p>Half Drain Time exceeds 7 days.</p> <p>Outflow is too low. Design is unsatisfactory.</p> |               |                        |                        |                                                                                     |        |
| Storm Event                                                                                                                                                    | Max Level (m) | Max Depth (m)          | Max Infiltration (l/s) | Max Volume (m³)                                                                     | Status |
| 15 min Summer                                                                                                                                                  | 2.907         | 0.107                  | 0.0                    | 4.6                                                                                 | O K    |
| 30 min Summer                                                                                                                                                  | 2.929         | 0.129                  | 0.0                    | 5.5                                                                                 | O K    |
| 60 min Summer                                                                                                                                                  | 2.956         | 0.156                  | 0.0                    | 6.7                                                                                 | O K    |
| 120 min Summer                                                                                                                                                 | 2.988         | 0.188                  | 0.0                    | 8.0                                                                                 | O K    |
| 180 min Summer                                                                                                                                                 | 3.010         | 0.210                  | 0.0                    | 9.0                                                                                 | O K    |
| 240 min Summer                                                                                                                                                 | 3.026         | 0.226                  | 0.0                    | 9.7                                                                                 | O K    |
| 360 min Summer                                                                                                                                                 | 3.052         | 0.252                  | 0.0                    | 10.8                                                                                | O K    |
| 480 min Summer                                                                                                                                                 | 3.072         | 0.272                  | 0.0                    | 11.6                                                                                | O K    |
| 600 min Summer                                                                                                                                                 | 3.088         | 0.288                  | 0.0                    | 12.3                                                                                | O K    |
| 720 min Summer                                                                                                                                                 | 3.102         | 0.302                  | 0.0                    | 12.9                                                                                | O K    |
| 960 min Summer                                                                                                                                                 | 3.112         | 0.312                  | 0.0                    | 13.3                                                                                | O K    |
| 1440 min Summer                                                                                                                                                | 3.124         | 0.324                  | 0.0                    | 13.9                                                                                | O K    |
| 2160 min Summer                                                                                                                                                | 3.136         | 0.336                  | 0.0                    | 14.3                                                                                | O K    |
| 2880 min Summer                                                                                                                                                | 3.142         | 0.342                  | 0.0                    | 14.6                                                                                | O K    |
| 4320 min Summer                                                                                                                                                | 3.173         | 0.373                  | 0.0                    | 15.9                                                                                | O K    |
| 5760 min Summer                                                                                                                                                | 3.194         | 0.394                  | 0.0                    | 16.8                                                                                | O K    |
| 7200 min Summer                                                                                                                                                | 3.209         | 0.409                  | 0.0                    | 17.5                                                                                | O K    |
| 8640 min Summer                                                                                                                                                | 3.220         | 0.420                  | 0.0                    | 18.0                                                                                | O K    |
| 10080 min Summer                                                                                                                                               | 3.228         | 0.428                  | 0.0                    | 18.3                                                                                | O K    |
| Storm Event                                                                                                                                                    | Rain (mm/hr)  | Flooded Volume (m³)    | Time-Peak (mins)       |                                                                                     |        |
| 15 min Summer                                                                                                                                                  | 162.161       | 0.0                    | 19                     |                                                                                     |        |
| 30 min Summer                                                                                                                                                  | 98.106        | 0.0                    | 34                     |                                                                                     |        |
| 60 min Summer                                                                                                                                                  | 59.354        | 0.0                    | 64                     |                                                                                     |        |
| 120 min Summer                                                                                                                                                 | 35.909        | 0.0                    | 124                    |                                                                                     |        |
| 180 min Summer                                                                                                                                                 | 26.763        | 0.0                    | 184                    |                                                                                     |        |
| 240 min Summer                                                                                                                                                 | 21.725        | 0.0                    | 244                    |                                                                                     |        |
| 360 min Summer                                                                                                                                                 | 16.191        | 0.0                    | 364                    |                                                                                     |        |
| 480 min Summer                                                                                                                                                 | 13.143        | 0.0                    | 484                    |                                                                                     |        |
| 600 min Summer                                                                                                                                                 | 11.180        | 0.0                    | 604                    |                                                                                     |        |
| 720 min Summer                                                                                                                                                 | 9.796         | 0.0                    | 724                    |                                                                                     |        |
| 960 min Summer                                                                                                                                                 | 7.627         | 0.0                    | 964                    |                                                                                     |        |
| 1440 min Summer                                                                                                                                                | 5.360         | 0.0                    | 1444                   |                                                                                     |        |
| 2160 min Summer                                                                                                                                                | 3.767         | 0.0                    | 2164                   |                                                                                     |        |
| 2880 min Summer                                                                                                                                                | 2.933         | 0.0                    | 2884                   |                                                                                     |        |
| 4320 min Summer                                                                                                                                                | 2.197         | 0.0                    | 4324                   |                                                                                     |        |
| 5760 min Summer                                                                                                                                                | 1.790         | 0.0                    | 5768                   |                                                                                     |        |
| 7200 min Summer                                                                                                                                                | 1.527         | 0.0                    | 7200                   |                                                                                     |        |
| 8640 min Summer                                                                                                                                                | 1.341         | 0.0                    | 8640                   |                                                                                     |        |
| 10080 min Summer                                                                                                                                               | 1.202         | 0.0                    | 10080                  |                                                                                     |        |
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|                                                             |                     |                           |                              |                                                                                     |        |
|-------------------------------------------------------------|---------------------|---------------------------|------------------------------|-------------------------------------------------------------------------------------|--------|
| Odyssey Markides                                            |                     |                           |                              | Page 2                                                                              |        |
| Tuscany House                                               |                     | 18-343                    |                              |  |        |
| White Hart Lane                                             |                     | North End Road, Yapton    |                              |                                                                                     |        |
| Basingstoke RG21 4AF                                        |                     | Tank 2                    |                              |                                                                                     |        |
| Date 17/01/2020 16:01                                       |                     | Designed by JH            |                              |                                                                                     |        |
| File 18-343 TANK 2.SRCX                                     |                     | Checked by                |                              |                                                                                     |        |
| XP Solutions                                                |                     | Source Control 2018.1     |                              |                                                                                     |        |
| <u>Summary of Results for 100 year Return Period (+40%)</u> |                     |                           |                              |                                                                                     |        |
| Storm<br>Event                                              | Max<br>Level<br>(m) | Max<br>Depth<br>(m)       | Max<br>Infiltration<br>(l/s) | Max<br>Volume<br>(m³)                                                               | Status |
| 15 min Winter                                               | 2.919               | 0.119                     | 0.0                          | 5.1                                                                                 | O K    |
| 30 min Winter                                               | 2.944               | 0.144                     | 0.0                          | 6.2                                                                                 | O K    |
| 60 min Winter                                               | 2.974               | 0.174                     | 0.0                          | 7.5                                                                                 | O K    |
| 120 min Winter                                              | 3.011               | 0.211                     | 0.0                          | 9.0                                                                                 | O K    |
| 180 min Winter                                              | 3.035               | 0.235                     | 0.0                          | 10.0                                                                                | O K    |
| 240 min Winter                                              | 3.054               | 0.254                     | 0.0                          | 10.9                                                                                | O K    |
| 360 min Winter                                              | 3.083               | 0.283                     | 0.0                          | 12.1                                                                                | O K    |
| 480 min Winter                                              | 3.105               | 0.305                     | 0.0                          | 13.0                                                                                | O K    |
| 600 min Winter                                              | 3.124               | 0.324                     | 0.0                          | 13.8                                                                                | O K    |
| 720 min Winter                                              | 3.139               | 0.339                     | 0.0                          | 14.5                                                                                | O K    |
| 960 min Winter                                              | 3.150               | 0.350                     | 0.0                          | 15.0                                                                                | O K    |
| 1440 min Winter                                             | 3.165               | 0.365                     | 0.0                          | 15.6                                                                                | O K    |
| 2160 min Winter                                             | 3.178               | 0.378                     | 0.0                          | 16.2                                                                                | O K    |
| 2880 min Winter                                             | 3.186               | 0.386                     | 0.0                          | 16.5                                                                                | O K    |
| 4320 min Winter                                             | 3.223               | 0.423                     | 0.0                          | 18.1                                                                                | O K    |
| 5760 min Winter                                             | 3.248               | 0.448                     | 0.0                          | 19.2                                                                                | O K    |
| 7200 min Winter                                             | 3.267               | 0.467                     | 0.0                          | 20.0                                                                                | O K    |
| 8640 min Winter                                             | 3.281               | 0.481                     | 0.0                          | 20.6                                                                                | O K    |
| 10080 min Winter                                            | 3.292               | 0.492                     | 0.0                          | 21.0                                                                                | O K    |
| Storm<br>Event                                              | Rain<br>(mm/hr)     | Flooded<br>Volume<br>(m³) | Time-Peak<br>(mins)          |                                                                                     |        |
| 15 min Winter                                               | 162.161             | 0.0                       | 19                           |                                                                                     |        |
| 30 min Winter                                               | 98.106              | 0.0                       | 34                           |                                                                                     |        |
| 60 min Winter                                               | 59.354              | 0.0                       | 64                           |                                                                                     |        |
| 120 min Winter                                              | 35.909              | 0.0                       | 124                          |                                                                                     |        |
| 180 min Winter                                              | 26.763              | 0.0                       | 184                          |                                                                                     |        |
| 240 min Winter                                              | 21.725              | 0.0                       | 242                          |                                                                                     |        |
| 360 min Winter                                              | 16.191              | 0.0                       | 362                          |                                                                                     |        |
| 480 min Winter                                              | 13.143              | 0.0                       | 482                          |                                                                                     |        |
| 600 min Winter                                              | 11.180              | 0.0                       | 602                          |                                                                                     |        |
| 720 min Winter                                              | 9.796               | 0.0                       | 720                          |                                                                                     |        |
| 960 min Winter                                              | 7.627               | 0.0                       | 960                          |                                                                                     |        |
| 1440 min Winter                                             | 5.360               | 0.0                       | 1430                         |                                                                                     |        |
| 2160 min Winter                                             | 3.767               | 0.0                       | 2140                         |                                                                                     |        |
| 2880 min Winter                                             | 2.933               | 0.0                       | 2852                         |                                                                                     |        |
| 4320 min Winter                                             | 2.197               | 0.0                       | 4276                         |                                                                                     |        |
| 5760 min Winter                                             | 1.790               | 0.0                       | 5656                         |                                                                                     |        |
| 7200 min Winter                                             | 1.527               | 0.0                       | 7064                         |                                                                                     |        |
| 8640 min Winter                                             | 1.341               | 0.0                       | 8464                         |                                                                                     |        |
| 10080 min Winter                                            | 1.202               | 0.0                       | 9872                         |                                                                                     |        |
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|                                                          |                                            |                                                                                     |
|----------------------------------------------------------|--------------------------------------------|-------------------------------------------------------------------------------------|
| Odyssey Markides                                         |                                            | Page 3                                                                              |
| Tuscany House<br>White Hart Lane<br>Basingstoke RG21 4AF | 18-343<br>North End Road, Yapton<br>Tank 2 |  |
| Date 17/01/2020 16:01<br>File 18-343 TANK 2.SRCX         | Designed by JH<br>Checked by               |                                                                                     |
| XP Solutions Source Control 2018.1                       |                                            |                                                                                     |

Rainfall Details

|                       |                                 |
|-----------------------|---------------------------------|
| Rainfall Model        | FEH                             |
| Return Period (years) | 100                             |
| FEH Rainfall Version  | 1999                            |
| Site Location         | GB 498650 101750 SU 98650 01750 |
| C (1km)               | -0.025                          |
| D1 (1km)              | 0.390                           |
| D2 (1km)              | 0.245                           |
| D3 (1km)              | 0.403                           |
| E (1km)               | 0.310                           |
| F (1km)               | 2.321                           |
| Summer Storms         | Yes                             |
| Winter Storms         | Yes                             |
| Cv (Summer)           | 0.750                           |
| Cv (Winter)           | 0.840                           |
| Shortest Storm (mins) | 15                              |
| Longest Storm (mins)  | 10080                           |
| Climate Change %      | +40                             |

Time Area Diagram

Total Area (ha) 0.015

| Time (mins) | Area     |
|-------------|----------|
| From:       | To: (ha) |
| 0           | 4 0.015  |

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|                         |                        |                                                                                     |
|-------------------------|------------------------|-------------------------------------------------------------------------------------|
| Odyssey Markides        |                        | Page 4                                                                              |
| Tuscany House           | 18-343                 |  |
| White Hart Lane         | North End Road, Yapton |                                                                                     |
| Basingstoke RG21 4AF    | Tank 2                 |                                                                                     |
| Date 17/01/2020 16:01   | Designed by JH         |                                                                                     |
| File 18-343 TANK 2.SRCX | Checked by             |                                                                                     |
| XP Solutions            |                        | Source Control 2018.1                                                               |

Model Details

Storage is Online Cover Level (m) 6.900

Cellular Storage Structure

Invert Level (m) 2.800 Safety Factor 2.0

Infiltration Coefficient Base (m/hr) 0.00138 Porosity 0.95

Infiltration Coefficient Side (m/hr) 0.00000

| Depth (m) | Area (m <sup>2</sup> ) | Inf. Area (m <sup>2</sup> ) | Depth (m) | Area (m <sup>2</sup> ) | Inf. Area (m <sup>2</sup> ) |
|-----------|------------------------|-----------------------------|-----------|------------------------|-----------------------------|
| 0.000     | 45.0                   | 45.0                        | 0.501     | 0.0                    | 59.0                        |
| 0.500     | 45.0                   | 59.0                        |           |                        |                             |

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| Odyssey Markides                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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            |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |     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---------------|--------|-----|----|---------------|--------|-----|----|----------------|--------|-----|-----|----------------|--------|-----|-----|----------------|--------|-----|-----|----------------|--------|-----|-----|----------------|--------|-----|-----|----------------|--------|-----|-----|----------------|-------|-----|-----|----------------|-------|-----|-----|-----------------|-------|-----|------|-----------------|-------|-----|------|-----------------|-------|-----|------|-----------------|-------|-----|------|-----------------|-------|-----|------|-----------------|-------|-----|------|-----------------|-------|-----|------|------------------|-------|-----|-------|
| Tuscany House                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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   |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                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| White Hart Lane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |               | North End Road, Yapton |                        |                                                                                     |        |             |               |               |                        |                 |        |               |       |       |     |     |     |               |       |       |     |     |     |               |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |     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| Basingstoke RG21 4AF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |               | Infiltration Trench    |                        |                                                                                     |        |             |               |               |                        |                 |        |               |       |       |     |     |     |               |       |       |     |     |     |               |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |     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| Date 17/01/2020 10:08                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               | Designed by JH         |                        |                                                                                     |        |             |               |               |                        |                 |        |               |       |       |     |     |     |               |       |       |     |     |     |               |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |     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| File 18-343 INFILTRATION TRE...                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |               | Checked by             |                        |                                                                                     |        |             |               |               |                        |                 |        |               |       |       |     |     |     |               |       |       |     |     |     |               |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| XP Solutions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           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            |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| <p><u>Summary of Results for 100 year Return Period (+40%)</u></p> <p>Half Drain Time exceeds 7 days.</p> <p>Outflow is too low. Design is unsatisfactory.</p> <table><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr><tr><td>15 min Summer</td><td>4.000</td><td>0.580</td><td>0.0</td><td>7.6</td><td>O K</td></tr><tr><td>30 min Summer</td><td>4.076</td><td>0.656</td><td>0.0</td><td>9.2</td><td>O K</td></tr><tr><td>60 min Summer</td><td>4.167</td><td>0.747</td><td>0.0</td><td>11.1</td><td>O K</td></tr><tr><td>120 min Summer</td><td>4.276</td><td>0.856</td><td>0.0</td><td>13.4</td><td>O K</td></tr><tr><td>180 min Summer</td><td>4.350</td><td>0.930</td><td>0.0</td><td>14.9</td><td>O K</td></tr><tr><td>240 min Summer</td><td>4.407</td><td>0.987</td><td>0.0</td><td>16.1</td><td>O K</td></tr><tr><td>360 min Summer</td><td>4.495</td><td>1.075</td><td>0.0</td><td>18.0</td><td>O K</td></tr><tr><td>480 min Summer</td><td>4.562</td><td>1.142</td><td>0.0</td><td>19.4</td><td>O K</td></tr><tr><td>600 min Summer</td><td>4.618</td><td>1.198</td><td>0.0</td><td>20.6</td><td>O K</td></tr><tr><td>720 min Summer</td><td>4.665</td><td>1.245</td><td>0.0</td><td>21.6</td><td>O K</td></tr><tr><td>960 min Summer</td><td>4.697</td><td>1.277</td><td>0.0</td><td>22.2</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>4.741</td><td>1.321</td><td>0.0</td><td>23.1</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>4.779</td><td>1.359</td><td>0.0</td><td>24.0</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>4.802</td><td>1.382</td><td>0.0</td><td>24.4</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>4.910</td><td>1.490</td><td>0.0</td><td>26.7</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>4.983</td><td>1.563</td><td>0.0</td><td>28.2</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>5.037</td><td>1.617</td><td>0.0</td><td>29.4</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>5.077</td><td>1.657</td><td>0.0</td><td>30.2</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>5.107</td><td>1.687</td><td>0.0</td><td>30.8</td><td>O K</td></tr></table><br><table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr><tr><td>15 min Summer</td><td>162.161</td><td>0.0</td><td>19</td></tr><tr><td>30 min Summer</td><td>98.106</td><td>0.0</td><td>34</td></tr><tr><td>60 min Summer</td><td>59.354</td><td>0.0</td><td>64</td></tr><tr><td>120 min Summer</td><td>35.909</td><td>0.0</td><td>124</td></tr><tr><td>180 min Summer</td><td>26.763</td><td>0.0</td><td>184</td></tr><tr><td>240 min Summer</td><td>21.725</td><td>0.0</td><td>244</td></tr><tr><td>360 min Summer</td><td>16.191</td><td>0.0</td><td>364</td></tr><tr><td>480 min Summer</td><td>13.143</td><td>0.0</td><td>484</td></tr><tr><td>600 min Summer</td><td>11.180</td><td>0.0</td><td>604</td></tr><tr><td>720 min Summer</td><td>9.796</td><td>0.0</td><td>724</td></tr><tr><td>960 min Summer</td><td>7.627</td><td>0.0</td><td>964</td></tr><tr><td>1440 min Summer</td><td>5.360</td><td>0.0</td><td>1444</td></tr><tr><td>2160 min Summer</td><td>3.767</td><td>0.0</td><td>2164</td></tr><tr><td>2880 min Summer</td><td>2.933</td><td>0.0</td><td>2884</td></tr><tr><td>4320 min Summer</td><td>2.197</td><td>0.0</td><td>4324</td></tr><tr><td>5760 min Summer</td><td>1.790</td><td>0.0</td><td>5768</td></tr><tr><td>7200 min Summer</td><td>1.527</td><td>0.0</td><td>7200</td></tr><tr><td>8640 min Summer</td><td>1.341</td><td>0.0</td><td>8640</td></tr><tr><td>10080 min Summer</td><td>1.202</td><td>0.0</td><td>10080</td></tr></table> |               |                        |                        |                                                                                     |        | Storm Event | Max Level (m) | Max Depth (m) | Max Infiltration (l/s) | Max Volume (m³) | Status | 15 min Summer | 4.000 | 0.580 | 0.0 | 7.6 | O K | 30 min Summer | 4.076 | 0.656 | 0.0 | 9.2 | O K | 60 min Summer | 4.167 | 0.747 | 0.0 | 11.1 | O K | 120 min Summer | 4.276 | 0.856 | 0.0 | 13.4 | O K | 180 min Summer | 4.350 | 0.930 | 0.0 | 14.9 | O K | 240 min Summer | 4.407 | 0.987 | 0.0 | 16.1 | O K | 360 min Summer | 4.495 | 1.075 | 0.0 | 18.0 | O K | 480 min Summer | 4.562 | 1.142 | 0.0 | 19.4 | O K | 600 min Summer | 4.618 | 1.198 | 0.0 | 20.6 | O K | 720 min Summer | 4.665 | 1.245 | 0.0 | 21.6 | O K | 960 min Summer | 4.697 | 1.277 | 0.0 | 22.2 | O K | 1440 min Summer | 4.741 | 1.321 | 0.0 | 23.1 | O K | 2160 min Summer | 4.779 | 1.359 | 0.0 | 24.0 | O K | 2880 min Summer | 4.802 | 1.382 | 0.0 | 24.4 | O K | 4320 min Summer | 4.910 | 1.490 | 0.0 | 26.7 | O K | 5760 min Summer | 4.983 | 1.563 | 0.0 | 28.2 | O K | 7200 min Summer | 5.037 | 1.617 | 0.0 | 29.4 | O K | 8640 min Summer | 5.077 | 1.657 | 0.0 | 30.2 | O K | 10080 min Summer | 5.107 | 1.687 | 0.0 | 30.8 | O K | Storm Event | Rain (mm/hr) | Flooded Volume (m³) | Time-Peak (mins) | 15 min Summer | 162.161 | 0.0 | 19 | 30 min Summer | 98.106 | 0.0 | 34 | 60 min Summer | 59.354 | 0.0 | 64 | 120 min Summer | 35.909 | 0.0 | 124 | 180 min Summer | 26.763 | 0.0 | 184 | 240 min Summer | 21.725 | 0.0 | 244 | 360 min Summer | 16.191 | 0.0 | 364 | 480 min Summer | 13.143 | 0.0 | 484 | 600 min Summer | 11.180 | 0.0 | 604 | 720 min Summer | 9.796 | 0.0 | 724 | 960 min Summer | 7.627 | 0.0 | 964 | 1440 min Summer | 5.360 | 0.0 | 1444 | 2160 min Summer | 3.767 | 0.0 | 2164 | 2880 min Summer | 2.933 | 0.0 | 2884 | 4320 min Summer | 2.197 | 0.0 | 4324 | 5760 min Summer | 1.790 | 0.0 | 5768 | 7200 min Summer | 1.527 | 0.0 | 7200 | 8640 min Summer | 1.341 | 0.0 | 8640 | 10080 min Summer | 1.202 | 0.0 | 10080 |
| Storm Event                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Max Level (m) | Max Depth (m)          | Max Infiltration (l/s) | Max Volume (m³)                                                                     | Status |             |               |               |                        |                 |        |               |       |       |     |     |     |               |       |       |     |     |     |               |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| 15 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 4.000         | 0.580                  | 0.0                    | 7.6                                                                                 | O K    |             |               |               |                        |                 |        |               |       |       |     |     |     |               |       |       |     |     |     |               |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| 30 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 4.076         | 0.656                  | 0.0                    | 9.2                                                                                 | O K    |             |               |               |                        |                 |        |               |       |       |     |     |     |               |       |       |     |     |     |               |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| 60 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 4.167         | 0.747                  | 0.0                    | 11.1                                                                                | O K    |             |               |               |                        |                 |        |               |       |       |     |     |     |               |       |       |     |     |     |               |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| 120 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 4.276         | 0.856                  | 0.0                    | 13.4                                                                                | O K    |             |               |               |                        |                 |        |               |       |       |     |     |     |               |       |       |     |     |     |               |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| 180 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 4.350         | 0.930                  | 0.0                    | 14.9                                                                                | O K    |             |               |               |                        |                 |        |               |       |       |     |     |     |               |       |       |     |     |     |               |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| 240 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 4.407         | 0.987                  | 0.0                    | 16.1                                                                                | O K    |             |               |               |                        |                 |        |               |       |       |     |     |     |               |       |       |     |     |     |               |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| 360 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 4.495         | 1.075                  | 0.0                    | 18.0                                                                                | O K    |             |               |               |                        |                 |        |               |       |       |     |     |     |               |       |       |     |     |     |               |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| 480 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 4.562         | 1.142                  | 0.0                    | 19.4                                                                                | O K    |             |               |               |                        |                 |        |               |       |       |     |     |     |               |       |       |     |     |     |               |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |     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| 600 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 4.618         | 1.198                  | 0.0                    | 20.6                                                                                | O K    |             |               |               |                        |                 |        |               |       |       |     |     |     |               |       |       |     |     |     |               |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| 720 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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            |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| 960 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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            |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| 1440 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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            |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| 2160 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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            |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| 2880 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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            |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| 4320 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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            |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| 5760 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 4.983         | 1.563                  | 0.0                    | 28.2                                                                                | O K    |             |               |               |                        |                 |        |               |       |       |     |     |     |               |       |       |     |     |     |               |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| 7200 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 5.037         | 1.617                  | 0.0                    | 29.4                                                                                | O K    |             |               |               |                        |                 |        |               |       |       |     |     |     |               |       |       |     |     |     |               |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| 8640 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 5.077         | 1.657                  | 0.0                    | 30.2                                                                                | O K    |             |               |               |                        |                 |        |               |       |       |     |     |     |               |       |       |     |     |     |               |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| 10080 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 5.107         | 1.687                  | 0.0                    | 30.8                                                                                | O K    |             |               |               |                        |                 |        |               |       |       |     |     |     |               |       |       |     |     |     |               |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| Storm Event                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Rain (mm/hr)  | Flooded Volume (m³)    | Time-Peak (mins)       |                                                                                     |        |             |               |               |                        |                 |        |               |       |       |     |     |     |               |       |       |     |     |     |               |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| 15 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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            |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| 30 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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            |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |     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| 60 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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            |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |     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| 120 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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            |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |     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| 180 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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            |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |     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| 240 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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            |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |     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| 360 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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            |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |     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| 480 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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            |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |     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| 600 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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            |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |     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| 720 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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            |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |     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| 960 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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            |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |     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| 1440 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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            |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| 2160 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 3.767         | 0.0                    | 2164                   |                                                                                     |        |             |               |               |                        |                 |        |               |       |       |     |     |     |               |       |       |     |     |     |               |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| 2880 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2.933         | 0.0                    | 2884                   |                                                                                     |        |             |               |               |                        |                 |        |               |       |       |     |     |     |               |       |       |     |     |     |               |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| 4320 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2.197         | 0.0                    | 4324                   |                                                                                     |        |             |               |               |                        |                 |        |               |       |       |     |     |     |               |       |       |     |     |     |               |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| 5760 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1.790         | 0.0                    | 5768                   |                                                                                     |        |             |               |               |                        |                 |        |               |       |       |     |     |     |               |       |       |     |     |     |               |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| 7200 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1.527         | 0.0                    | 7200                   |                                                                                     |        |             |               |               |                        |                 |        |               |       |       |     |     |     |               |       |       |     |     |     |               |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| 8640 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1.341         | 0.0                    | 8640                   |                                                                                     |        |             |               |               |                        |                 |        |               |       |       |     |     |     |               |       |       |     |     |     |               |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| 10080 min Summer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1.202         | 0.0                    | 10080                  |                                                                                     |        |             |               |               |                        |                 |        |               |       |       |     |     |     |               |       |       |     |     |     |               |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                 |       |       |     |      |     |                  |       |       |     |      |     |             |              |                     |                  |               |         |     |    |               |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |
| ©1982-2018 Innovyze                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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          |        |     |    |               |        |     |    |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |        |     |     |                |       |     |     |                |       |     |     |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                 |       |     |      |                  |       |     |       |

|                                                                    |                     |                           |                              |                                                                                     |        |
|--------------------------------------------------------------------|---------------------|---------------------------|------------------------------|-------------------------------------------------------------------------------------|--------|
| Odyssey Markides                                                   |                     |                           |                              | Page 2                                                                              |        |
| Tuscany House                                                      |                     | 18-343                    |                              |  |        |
| White Hart Lane                                                    |                     | North End Road, Yapton    |                              |                                                                                     |        |
| Basingstoke RG21 4AF                                               |                     | Infiltration Trench       |                              |                                                                                     |        |
| Date 17/01/2020 10:08                                              |                     | Designed by JH            |                              |                                                                                     |        |
| File 18-343 INFILTRATION TRE...                                    |                     | Checked by                |                              |                                                                                     |        |
| XP Solutions                                                       |                     | Source Control 2018.1     |                              |                                                                                     |        |
| <p><u>Summary of Results for 100 year Return Period (+40%)</u></p> |                     |                           |                              |                                                                                     |        |
| Storm<br>Event                                                     | Max<br>Level<br>(m) | Max<br>Depth<br>(m)       | Max<br>Infiltration<br>(l/s) | Max<br>Volume<br>(m³)                                                               | Status |
| 15 min Winter                                                      | 4.044               | 0.624                     | 0.0                          | 8.5                                                                                 | O K    |
| 30 min Winter                                                      | 4.128               | 0.708                     | 0.0                          | 10.3                                                                                | O K    |
| 60 min Winter                                                      | 4.230               | 0.810                     | 0.0                          | 12.4                                                                                | O K    |
| 120 min Winter                                                     | 4.353               | 0.933                     | 0.0                          | 15.0                                                                                | O K    |
| 180 min Winter                                                     | 4.436               | 1.016                     | 0.0                          | 16.7                                                                                | O K    |
| 240 min Winter                                                     | 4.500               | 1.080                     | 0.0                          | 18.1                                                                                | O K    |
| 360 min Winter                                                     | 4.599               | 1.179                     | 0.0                          | 20.2                                                                                | O K    |
| 480 min Winter                                                     | 4.675               | 1.255                     | 0.0                          | 21.8                                                                                | O K    |
| 600 min Winter                                                     | 4.737               | 1.317                     | 0.0                          | 23.1                                                                                | O K    |
| 720 min Winter                                                     | 4.791               | 1.371                     | 0.0                          | 24.2                                                                                | O K    |
| 960 min Winter                                                     | 4.828               | 1.408                     | 0.0                          | 25.0                                                                                | O K    |
| 1440 min Winter                                                    | 4.878               | 1.458                     | 0.0                          | 26.0                                                                                | O K    |
| 2160 min Winter                                                    | 4.924               | 1.504                     | 0.0                          | 27.0                                                                                | O K    |
| 2880 min Winter                                                    | 4.953               | 1.533                     | 0.0                          | 27.6                                                                                | O K    |
| 4320 min Winter                                                    | 5.079               | 1.659                     | 0.0                          | 30.2                                                                                | O K    |
| 5760 min Winter                                                    | 5.168               | 1.748                     | 0.0                          | 32.1                                                                                | O K    |
| 7200 min Winter                                                    | 5.234               | 1.814                     | 0.0                          | 33.5                                                                                | O K    |
| 8640 min Winter                                                    | 5.285               | 1.865                     | 0.0                          | 34.6                                                                                | O K    |
| 10080 min Winter                                                   | 5.325               | 1.905                     | 0.0                          | 35.4                                                                                | O K    |
| Storm<br>Event                                                     | Rain<br>(mm/hr)     | Flooded<br>Volume<br>(m³) | Time-Peak<br>(mins)          |                                                                                     |        |
| 15 min Winter                                                      | 162.161             | 0.0                       | 19                           |                                                                                     |        |
| 30 min Winter                                                      | 98.106              | 0.0                       | 34                           |                                                                                     |        |
| 60 min Winter                                                      | 59.354              | 0.0                       | 64                           |                                                                                     |        |
| 120 min Winter                                                     | 35.909              | 0.0                       | 124                          |                                                                                     |        |
| 180 min Winter                                                     | 26.763              | 0.0                       | 184                          |                                                                                     |        |
| 240 min Winter                                                     | 21.725              | 0.0                       | 242                          |                                                                                     |        |
| 360 min Winter                                                     | 16.191              | 0.0                       | 362                          |                                                                                     |        |
| 480 min Winter                                                     | 13.143              | 0.0                       | 482                          |                                                                                     |        |
| 600 min Winter                                                     | 11.180              | 0.0                       | 602                          |                                                                                     |        |
| 720 min Winter                                                     | 9.796               | 0.0                       | 722                          |                                                                                     |        |
| 960 min Winter                                                     | 7.627               | 0.0                       | 960                          |                                                                                     |        |
| 1440 min Winter                                                    | 5.360               | 0.0                       | 1430                         |                                                                                     |        |
| 2160 min Winter                                                    | 3.767               | 0.0                       | 2144                         |                                                                                     |        |
| 2880 min Winter                                                    | 2.933               | 0.0                       | 2852                         |                                                                                     |        |
| 4320 min Winter                                                    | 2.197               | 0.0                       | 4276                         |                                                                                     |        |
| 5760 min Winter                                                    | 1.790               | 0.0                       | 5656                         |                                                                                     |        |
| 7200 min Winter                                                    | 1.527               | 0.0                       | 7064                         |                                                                                     |        |
| 8640 min Winter                                                    | 1.341               | 0.0                       | 8472                         |                                                                                     |        |
| 10080 min Winter                                                   | 1.202               | 0.0                       | 9880                         |                                                                                     |        |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                        |                                                                                     |                                      |         |                  |     |                                      |         |                   |      |               |     |             |      |          |      |                      |       |                  |       |                            |       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-------------------------------------------------------------------------------------|--------------------------------------|---------|------------------|-----|--------------------------------------|---------|-------------------|------|---------------|-----|-------------|------|----------|------|----------------------|-------|------------------|-------|----------------------------|-------|
| Odyssey Markides                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                        | Page 4                                                                              |                                      |         |                  |     |                                      |         |                   |      |               |     |             |      |          |      |                      |       |                  |       |                            |       |
| Tuscany House                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 18-343                 |  |                                      |         |                  |     |                                      |         |                   |      |               |     |             |      |          |      |                      |       |                  |       |                            |       |
| White Hart Lane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | North End Road, Yapton |                                                                                     |                                      |         |                  |     |                                      |         |                   |      |               |     |             |      |          |      |                      |       |                  |       |                            |       |
| Basingstoke RG21 4AF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Infiltration Trench    |                                                                                     |                                      |         |                  |     |                                      |         |                   |      |               |     |             |      |          |      |                      |       |                  |       |                            |       |
| Date 17/01/2020 10:08                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Designed by JH         |                                                                                     |                                      |         |                  |     |                                      |         |                   |      |               |     |             |      |          |      |                      |       |                  |       |                            |       |
| File 18-343 INFILTRATION TRE...                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Checked by             |                                                                                     |                                      |         |                  |     |                                      |         |                   |      |               |     |             |      |          |      |                      |       |                  |       |                            |       |
| XP Solutions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Source Control 2018.1  |                                                                                     |                                      |         |                  |     |                                      |         |                   |      |               |     |             |      |          |      |                      |       |                  |       |                            |       |
| <p style="text-align: center;"><u>Model Details</u></p> <p style="text-align: center;">Storage is Online Cover Level (m) 6.000</p> <p style="text-align: center;"><u>Infiltration Trench Structure</u></p> <table> <tr> <td>Infiltration Coefficient Base (m/hr)</td> <td>0.00138</td> <td>Trench Width (m)</td> <td>2.0</td> </tr> <tr> <td>Infiltration Coefficient Side (m/hr)</td> <td>0.00000</td> <td>Trench Length (m)</td> <td>35.0</td> </tr> <tr> <td>Safety Factor</td> <td>2.0</td> <td>Slope (1:X)</td> <td>80.0</td> </tr> <tr> <td>Porosity</td> <td>0.30</td> <td>Cap Volume Depth (m)</td> <td>2.000</td> </tr> <tr> <td>Invert Level (m)</td> <td>3.420</td> <td>Cap Infiltration Depth (m)</td> <td>0.000</td> </tr> </table> |                        |                                                                                     | Infiltration Coefficient Base (m/hr) | 0.00138 | Trench Width (m) | 2.0 | Infiltration Coefficient Side (m/hr) | 0.00000 | Trench Length (m) | 35.0 | Safety Factor | 2.0 | Slope (1:X) | 80.0 | Porosity | 0.30 | Cap Volume Depth (m) | 2.000 | Invert Level (m) | 3.420 | Cap Infiltration Depth (m) | 0.000 |
| Infiltration Coefficient Base (m/hr)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0.00138                | Trench Width (m)                                                                    | 2.0                                  |         |                  |     |                                      |         |                   |      |               |     |             |      |          |      |                      |       |                  |       |                            |       |
| Infiltration Coefficient Side (m/hr)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0.00000                | Trench Length (m)                                                                   | 35.0                                 |         |                  |     |                                      |         |                   |      |               |     |             |      |          |      |                      |       |                  |       |                            |       |
| Safety Factor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2.0                    | Slope (1:X)                                                                         | 80.0                                 |         |                  |     |                                      |         |                   |      |               |     |             |      |          |      |                      |       |                  |       |                            |       |
| Porosity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 0.30                   | Cap Volume Depth (m)                                                                | 2.000                                |         |                  |     |                                      |         |                   |      |               |     |             |      |          |      |                      |       |                  |       |                            |       |
| Invert Level (m)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 3.420                  | Cap Infiltration Depth (m)                                                          | 0.000                                |         |                  |     |                                      |         |                   |      |               |     |             |      |          |      |                      |       |                  |       |                            |       |
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