



## **FLOOD RISK ASSESSMENT**

Fewcott Road, Fritwell

Prepared for: CALA Homes (Chiltern) Ltd  
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## Contents

1.0	Introduction .....	1
2.0	Site Description and Proposed Development .....	2
3.0	Planning Policy and Guidance .....	5
4.0	Flood Risk Assessment .....	6
5.0	Flood Risk Assessment .....	8
6.0	Surface Water Drainage Strategy .....	9
7.0	Summary and Conclusions .....	12

## Appendices

- Appendix A: Site Location Plan
- Appendix B: Topographical Survey
- Appendix C: Anglian Water Sewer Records
- Appendix D: Proposed Site Layout
- Appendix E: Environment Agency Fluvial Flood Mapping
- Appendix F: Proposed Outline Surface Water Drainage Strategy
- Appendix G: MicroDrainage Calculations

## **1.0 Introduction**

- 1.1 This Flood Risk Assessment has been prepared by Glanville Consultants on behalf of CALA Homes (Chiltern) Ltd in support of an outline planning application to develop land off Fewcott Road, Fritwell to provide 28 new homes.
- 1.2 The purpose of this document is to assess the existing level of flood risk to the site and its surroundings within the context of the development proposals and to demonstrate a suitable drainage strategy for the disposal of surface water from the site.
- 1.3 This report has been prepared in accordance with the National Planning Policy Framework (NPPF), dated February 2019, and the Planning Practice Guidance (PPG) to the NPPF.
- 1.4 This assessment was undertaken with reference to information provided and/or published by the following bodies:
  - Ordnance Survey;
  - British Geological Society;
  - Cherwell District Council; and
  - Environmental Agency.
- 1.5 This report concludes that the site is not at risk of flooding and can be developed safely without increasing flood risk elsewhere, and that the development proposals comply with relevant planning policy concerning flood risk. The report demonstrates that suitable provision for the disposal of surface water from the proposed development is capable of being provided.

## 2.0 Site Description and Proposed Development

### Site Description

- 2.1 The site is located in the village of Fritwell, approximately 7km north-west of Bicester. The approximate centre of the site is located at Ordnance Survey National Grid reference SP 52957 29070 and a nearby postcode is OX27 7QP. A site location plan is included as Appendix A.
- 2.2 The site is roughly rectangular in shape and extends to approximately 1.57ha in area. The vast majority of the land on-site was previously used as agricultural fields, with a residential dwelling and an out building located close to the sites eastern corner. The site is almost entirely lined by a combination of trees and hedgerows, with breaks for the sites access points from Fritwell Road.
- 2.3 The site is bound by Fritwell Road/Fewcott Road on the sites north-eastern boundary, residential dwellings to the north-west and agricultural fields to the south-west. A Private unmetalled track leading to Lodge Farm and a drainage ditch forms the sites south-eastern boundary. Access to the site is proposed to be gained by widening one of the sites existing access points on the north-eastern boundary.

### *Topographical Survey*

- 2.4 A copy of the detailed topographical survey of the site by Groundsurveys Ltd, drawing numbers 6028-01 and 6028-02 are included as Appendix B. The survey indicates that the site generally falls towards south of the site with levels ranging from approximately 128.20m AOD to 125.20m AOD.

### *Existing Watercourses*

- 2.5 There is a large pond located approximately 140m to the south west of the site. The closest watercourse designated by the Environment Agency (EA) as a main river is the River Cherwell and is located 3.4km to the west of the site. Existing drainage ditches are located along the sites eastern boundaries, as indicated on the topographical survey.

### *Geological Characteristics*

- 2.6 An intrusive site investigation was undertaken by The Brownfield Consultancy in November 2015 (Report ref: BC195 L001/JT). The site investigation comprised excavating fourteen trial pits across the site.
- 2.7 Made Ground was encountered in five trial pits excavated close to the sites south-western boundary, where it is believed ground levels have been previously raised. The Made Ground was proven in all trial pits to depths of between 0.80m and 1.80m below ground level (bgl). In the remaining nine trial pits, a layer of topsoil was found to superpose the bedrock geology. The bedrock geology on-site consisted of soils associated with the Great Oolite Group, and was encountered in all trial pits below either the Made Ground or topsoil. The Great Oolite soils were found to the base of all the trial pits, with no superficial deposits indicated.

- 2.8 Groundwater was encountered on-site in TP12 only. The groundwater strike occurred at a depth of 2.35m bgl, which saw moderate ingress into the granular Great Oolite. The water level rose to 2.30m bgl after half an hour.

#### Hydrological and Hydrogeological Context

- 2.9 There are no major artificial water bodies on or located in the vicinity of the site.
- 2.10 The EA defines Source Protection Zones (SPZs) for groundwater sources such as wells, boreholes and springs used for public drinking water supply. These zones show the risk of contamination from any activities that might cause pollution in the area. The SPZs mapping indicates that the site is not located within an SPZ.
- 2.11 A Nitrate Vulnerable Zone (NVZ) is a conservative designation for areas of land that drain to nitrate polluted waters or waters which could become polluted by nitrates. The NVZs mapping indicates that the site is located within an NVZ.
- 2.12 The EA defines Drinking Water Safeguard Zones (SgZs) and Drinking Water Protected Areas (DWPAs) for water sources used for public drinking water supply. SgZs define areas where additional pollution control measures are needed to avoid deterioration in water quality. DWPAs are areas where water sources need to be protected to prevent pollution. The site is not located within an SgZ or a DWPA.
- 2.13 The bedrock Aquifer Designation map published by the EA indicates that the bedrock underlying the proposed development is classed as a Principal Aquifer. Principal Aquifers indicate regions where the geology exhibits high permeability and/or provides a high level of water storage. They may also be capable of supporting water supply and may provide a source of base flow to rivers on a strategic scale.
- 2.14 The Groundwater Vulnerability map published by the EA indicates that the site is above a highly permeable major aquifer of high leaching potential.
- 2.15 Although the site is not located within an SPZ, SgZ or DWPA, given the Aquifer and Groundwater Vulnerability designations by the EA, careful consideration will be given to the surface water drainage strategy for the site. This is discussed in further detail in section 6 of this report.

#### Existing Surface Water Drainage

- 2.16 Drainage records obtained from Anglian Water are included in Appendix C. The records indicate a 300mm diameter surface water sewer passing through the site, which is understood to drain surface water run-off from the neighbouring properties in the Hodgson Close. The pipe runs in a south easterly direction to an outfall with a drainage ditch close to the sites south-eastern boundary. The headwall showing this outfall, as well a manhole from this sewer can be seen on the Topographical survey.
- 2.17 The records show only those sewers that are known to be maintained by Anglian Water, other privately owned sewers may be present in the vicinity of the site that are not shown on public records.

#### Proposed Development

- 2.18 The proposals are for the demolition of the existing buildings on the site and the erection of 28 residential units with associated access, car parking, refuse/recycling storage, infrastructure and landscaping.
- 2.19 A copy of the proposed site layout is provided in Appendix D.

### 3.0 Planning Policy and Guidance

- 3.1 Set out below is a summary of the national and local planning policy and guidance relating to flood risk and surface water management that are relevant to the development proposals.

#### National

- 3.2 At a national level, the National Planning Policy Framework (NPPF) and the Planning Practice Guidance (PPG) to the NPPF ensure flood risk is taken into account at all stages of the planning process, to avoid inappropriate development in areas at risk of flooding and to direct development towards areas at lowest flood risk. The NPPF retains a risk-based approach to the planning process and defines four Flood Zones to be used as the basis for applying the sequential test, as well as Flood Risk Vulnerability Classifications, which define the type of development that is considered appropriate within each zone.
- 3.3 The NPPF establishes the Flood Zones as the starting point for assessment with the overarching aim to steer new development to areas with the lowest probability of flooding. The Flood Zones are defined as follows:
- Flood Zone 1 (Low Probability) comprises land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%).
  - Flood Zone 2 (Medium Probability) comprises land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% – 0.1%) in any year.
  - Flood Zone 3a (High Probability) comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.
  - Flood Zone 3b (The Functional Floodplain) comprises land where water has to flow or be stored in times of flood.

#### Local Policy and Guidance

*Cherwell District Council (CDC) Strategic Flood Risk Assessment (SFRA), May 2017*

- 3.4 This SFRA was produced by CDC to inform the planning process. The SFRA included flood maps covering the entire district and summarises the flood risk from each source of flooding in the district. The site is identified in the accompanying mapping as a Level 1 SFRA site (Reference: SRFA102 & SFRA69).
- 3.5 The SFRA provides a reference and policy document to advise and inform developers of their obligations under the NPPF. The maps and accompanying report provide a sound framework enabling consistent and sustainable decisions to be made when asking future planning decisions.



## 4.0 Flood Risk Assessment

- 4.1 Flood risk to the site is considered from all likely sources of flooding, as defined in the NPPF and the PPG to the NPPF. These include fluvial, tidal, reservoir, groundwater, sewer and surface water. The following paragraphs consider flood risk to the site from all of these sources.

### Fluvial

- 4.2 The Environment Agency (EA) publishes flood zone mapping on the GOV.UK website which shows the modelled extents of fluvial flooding. The flood zone mapping indicates that the site is entirely located within Flood Zone 1, at the lowest risk of fluvial flooding. An extract from the EA mapping is included in Appendix E.
- 4.3 Table 1 of the PPG to the NPPF defines land located within Flood Zone 1 as areas which are outside the floodplain and have little or no chance of flooding.

### Tidal

- 4.4 Given that there are no tidally influenced watercourses on or within the vicinity of the site it is considered that tidal flooding is not an issue that would prevent the development of the site for its intended end use and the risk posed to the site from this source of flooding is considered to be negligible.

### Reservoir

- 4.5 The EA publishes indicative mapping on its website which shows the maximum extent of reservoir flooding in the unlikely event that a reservoir should fail. The mapping indicates the site is not at risk of reservoir flooding.

### Groundwater

- 4.6 The Level 1 SFRA includes mapping published by the EA showing areas within the district that are at an increased risk of groundwater flooding. The mapping is a strategic-scale map showing flood areas on a 1km square grid, with areas highlighted showing the proportion of the 1km grid square where geological and hydrogeological conditions indicate the possibility of groundwater emergence. The site is indicated to be in a square where less than 25% of the area within the square is at risk of flooding and so therefore is considered at low risk to flooding from this source.

### Sewer

- 4.7 The SFRA includes data from the Thames Water DG5 sewer flooding register. This register provides information on the number of recorded sewer flooding incidents on a postcode basis. There are between 10-15 recorded incidents of sewer flooding occurring in the postcode area associated with the site for the relevant time period, however these records do not necessarily represent the current or future sewer flood risk situation as maintenance work or upgrades to the network may have been undertaken since the flooding incidents occurred.

#### Surface Water

- 4.8 The Environment Agency publishes a 'Flood Risk from Surface Water' map (FRfSW) on the GOV.UK website which indicates the predicted risk of surface water flooding in the event that rainwater does not drain away through normal drainage systems or soak into the ground. The mapping indicates that the entirety of the site is considered at a very low risk of surface water flooding.

#### Historic Flooding

- 4.9 The SFRA includes mapping showing all previous instances of flooding reported to the Lead Local Flood Authority (LLFA), the EA Historic Flood Map and the Canal & River Trust. The mapping shows there are no known flooding incidents on or in the vicinity of the site.

#### Summary

- 4.10 In summary, the site is at low risk or very low risk of flooding from all sources. The proposed development of the site is therefore considered appropriate in flood risk terms according to the NPPF.

## **5.0 Flood Risk Assessment**

- 5.1 The NPPF encourages a sequential, risk-based approach to determine the suitability of land for development. This document advises that the development of sites within Flood Zone 1 should be given preference where available.
- 5.2 Table 2 of the Planning Practice Guidance (PPG) to the NPPF categorises different types of development into five flood risk vulnerability classifications:
- Essential Infrastructure;
  - Highly Vulnerable;
  - More Vulnerable;
  - Less Vulnerable; and
  - Water Compatible Development.
- 5.3 The NPPF classifies the proposed residential use of the site as being 'More Vulnerable'.
- 5.4 As discussed in Section 4, the site is located entirely within Flood Zone 1. Table 3 of the PPG states that all uses of land are appropriate for Flood Zone 1. Therefore, the proposed development use is compatible with the flood zone of the site and developing the site for its intended purpose is considered appropriate in terms of flood risk. As such, the Sequential Test and Exception Test are not required to be applied to this development.
- 5.5 The site is considered to be at low or very low risk from all other sources of flooding.

### Consideration for Flood Risk Mitigation Measures

- 5.6 Given the development is located within Flood Zone 1, flood compensation or resilience measures will not be required to mitigate against the risk of fluvial flooding.
- 5.7 The development is proposed to be accessed from Fritwell Road/Fewcott Road which is located entirely within Flood Zone 1. As such, safe, dry access and egress is capable of being provided to the entirety of the development during times of flooding.

## 6.0 Surface Water Drainage Strategy

### Sustainable Drainage

- 6.1 The PPG recommends that priority should be given to the use of sustainable drainage systems (SuDS) as they are designed to control surface water run-off where it falls and mimic natural drainage as closely as possible. SuDS also provide opportunities for the following:
- Reduce the causes and impacts of flooding
  - Remove pollutants from urban run-off at source; and
  - Combine water management with green space with benefits for amenity, recreation and wildlife.
- 6.2 SuDS encompass a wide range of drainage techniques intended to minimise the rate of discharge, volume and environmental impact of run-off. Infiltration based techniques are high up in the hierarchy of techniques available due to the ability for close to source dispersion of surface water. These techniques are considered the closest solution to mimic the natural drainage of undeveloped sites.
- 6.3 The Building Regulations part H3 stipulates that rainwater from roofs and paved areas is carried away from surface to discharge to one of the following, listed in order of priority:
- a) An adequate soakaway or some other adequate infiltration system; or, where that is not practical;
  - b) A watercourse; or, where that is not practical
  - c) A sewer.

### Proposed Surface Water Drainage Strategy

- 6.4 It is proposed to discharge surface water flows generated as a result of the development through a combination of domestic soakaways, permeable paving and restricted discharge to the drainage ditch on the south-eastern boundary of the site.
- 6.5 An intrusive site investigation conducted on-site encountered soils associated with the Great Oolite group and concluded infiltration drainage may be feasible, subject to BRE 365 testing. At the detailed design stage, infiltration testing will be undertaken and infiltration rates for the site will be calculated in accordance with the guidance given in BRE 365. The estimated size of the infiltration devices included in this drainage strategy assumes that the underlying ground conditions will support infiltration at a relatively conservative rate of  $2 \times 10^{-5}$  m/s.
- 6.6 The domestic soakaway's will be constructed in accordance with Building Regulations part H, which states soakaway's must be installed at a minimum distance of 5m from building foundations.
- 6.7 Properties where there is insufficient area to maintain the 5.0m stand-off for domestic soakaways will discharge to either neighbouring/shared soakaways or the drainage ditch on the south-eastern boundary. Surface water attenuation will be provided for each property prior to discharge to the ditch within a lined porous sub-base constructed beneath the resident's car parking spaces.

- 6.8 The outline surface water drainage strategy is illustrated on the drawing included in Appendix F. Supporting MicroDrainage calculations are provided in Appendix G. These demonstrate that the attenuation proposed can provide storage up to and including the 1 in 100 year + 40% climate change storm event without flooding from surface water.
- 6.9 The internal highway through the development will be constructed using permeable paving with a deepened sub-base, which will allow this area to drain under its own footprint via infiltration to the underlying geology. In order to size the sub-base of this feature, a 20m long and 4.8m wide section of road has been used in the MicroDrainage Calculations.

#### Pollution Control

- 6.10 Pollution control measures are designed to minimise the transmittal of any pollutants collected by run-off flowing over hard surfaces to the receiving geology or watercourse.
- 6.11 Run-off from road and driveways will drain via permeable paving, which is effective at removing pollutants such as hydrocarbons. Ciria C753 provides guidance on pollution control measures; run-off from residential roofs is considered to have a low hazard potential. Run-off from the lightly trafficked roads will also drain via permeable paving which is effective at removing pollutants such as hydrocarbons.
- 6.12 An appropriate buffer zone between the base of any infiltration features and groundwater levels will also be provided, affording protection the groundwater. As such, discharging surface water run-off generated by the development via the proposed strategy is considered to provide a suitable level of protection against pollution.

#### Maintenance

- 6.13 All new surface water infrastructure will be constructed in accordance with Sewers for Adoption, Building Regulations and best practice as appropriate.
- 6.14 The drainage system would remain under private ownership and be maintained by a management company. All drainage located within private areas will be the responsibility of the property owner or will be maintained by a private management company as appropriate.
- 6.15 Suitable maintenance regimes for SuDS, incorporating advice from system manufacturers and installers, will be developed by the site management company and implemented prior to occupation of the development. A summary of typical items is included in Table 1 overleaf.

*Table 1: SuDS Maintenance Schedule*

Drainage Feature	Inspection and Maintenance	Frequency
Permeable pavements	Brushing and vacuuming of surface to remove detrimental materials such as debris, dirt and sediment.	Annually
	Stabilise / mow adjacent verges, and remove weeds from pavement surface.	Occasional (as required)
	Ensure paving dewaterers after rain and between storms: check joints for sedimentation; mechanically clean or jet wash and sweep surface free from silt, etc; refill joints with sealing grit.	As required
	Inspect and repair any rutting and cracked or broken blocks, and replace lost jointing material.	Occasional (as required)
	Rehabilitate surface and upper substructure.	Occasional (every 10-15 years)
Geocellular storage tank*	Ensure inlets and pre-treatment structures are clear and free of debris.	Annually
Hardstanding areas	Sweep regularly to prevent silt being washed off the surface.	Frequently

\*Refer to manufacturer's guidance for specific maintenance instructions.

## **7.0 Summary and Conclusions**

- 7.1 This Flood Risk Assessment has been prepared by Glanville Consultants on behalf of CALA Homes (Chiltern) Ltd in support of an outline planning application to develop land off Fewcott Road, Fritwell to provide 28 new homes.
- 7.2 This site-specific Flood Risk Assessment has been prepared in accordance with the requirements of National and Local Planning Policy and concludes that the site is at low risk of flooding from all sources and can be developed safely without increasing flood risk elsewhere. This report has undertaken an assessment considering flood risk from all identifiable sources, including an allowance for climate change.
- 7.3 An intrusive site investigation undertaken on-site encountered a bedrock geology of Great Oolite Group soils. At detailed design stage, further site investigation work will be undertaken, incorporating percolation testing to BRE 365.
- 7.4 The proposed surface water drainage strategy strives to utilise sustainable drainage techniques in accordance with the guidance described in CIRIA C753 and employs soakaways and permeable paving to disperse surface water run-off and to provide attenuation. Where domestic soakaways could not be incorporated into the strategy, properties will discharge to the drainage ditch located adjacent to the south-eastern boundary at a restricted rate.
- 7.5 Infiltration and attenuation features will provide storage up to and including the 1 in 100 year +40% climate change storm event without flooding from surface water.

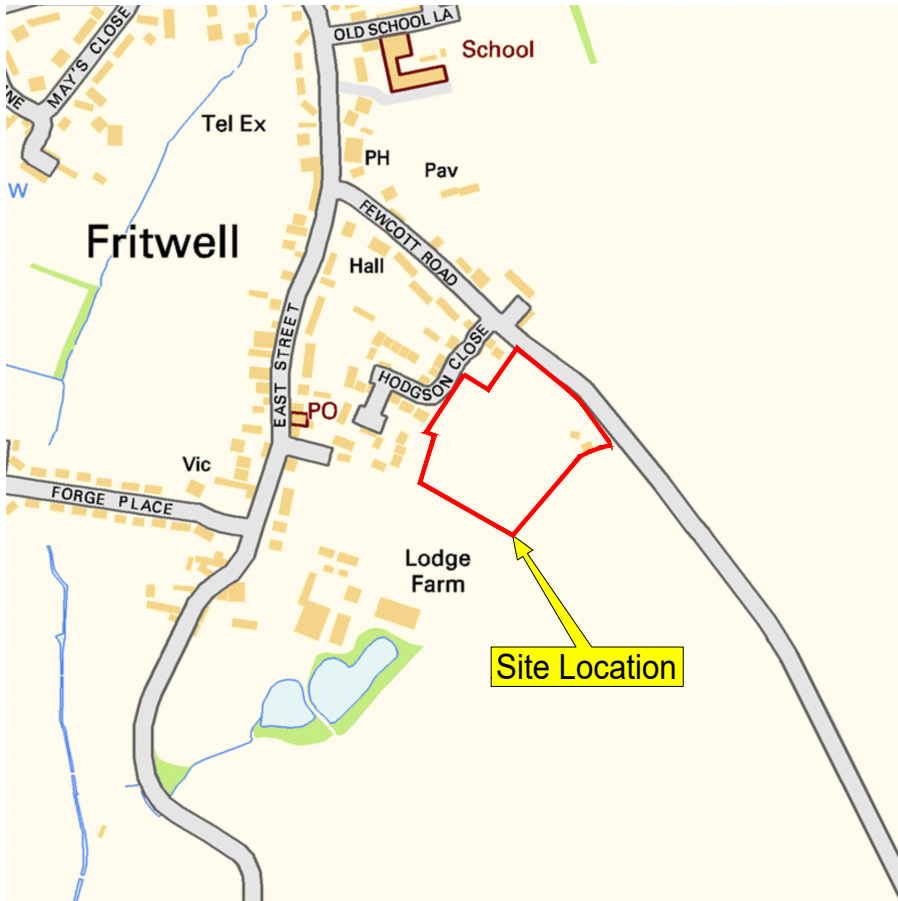
### Conclusion

- 7.6 In conclusion, this report has demonstrated that the proposed residential development:
- Is in accordance with the National Planning Policy Framework;
  - Will not be at an unacceptable risk from fluvial flooding;
  - Will not increase flood risk elsewhere; and
  - Will employ a surface water drainage strategy based on the principles of sustainable drainage.
- 7.7 On this basis, the proposals are considered to fully comply with National, Regional and Local planning policy.

## **Appendices**



**Appendix A**  
**Site Location Plan**



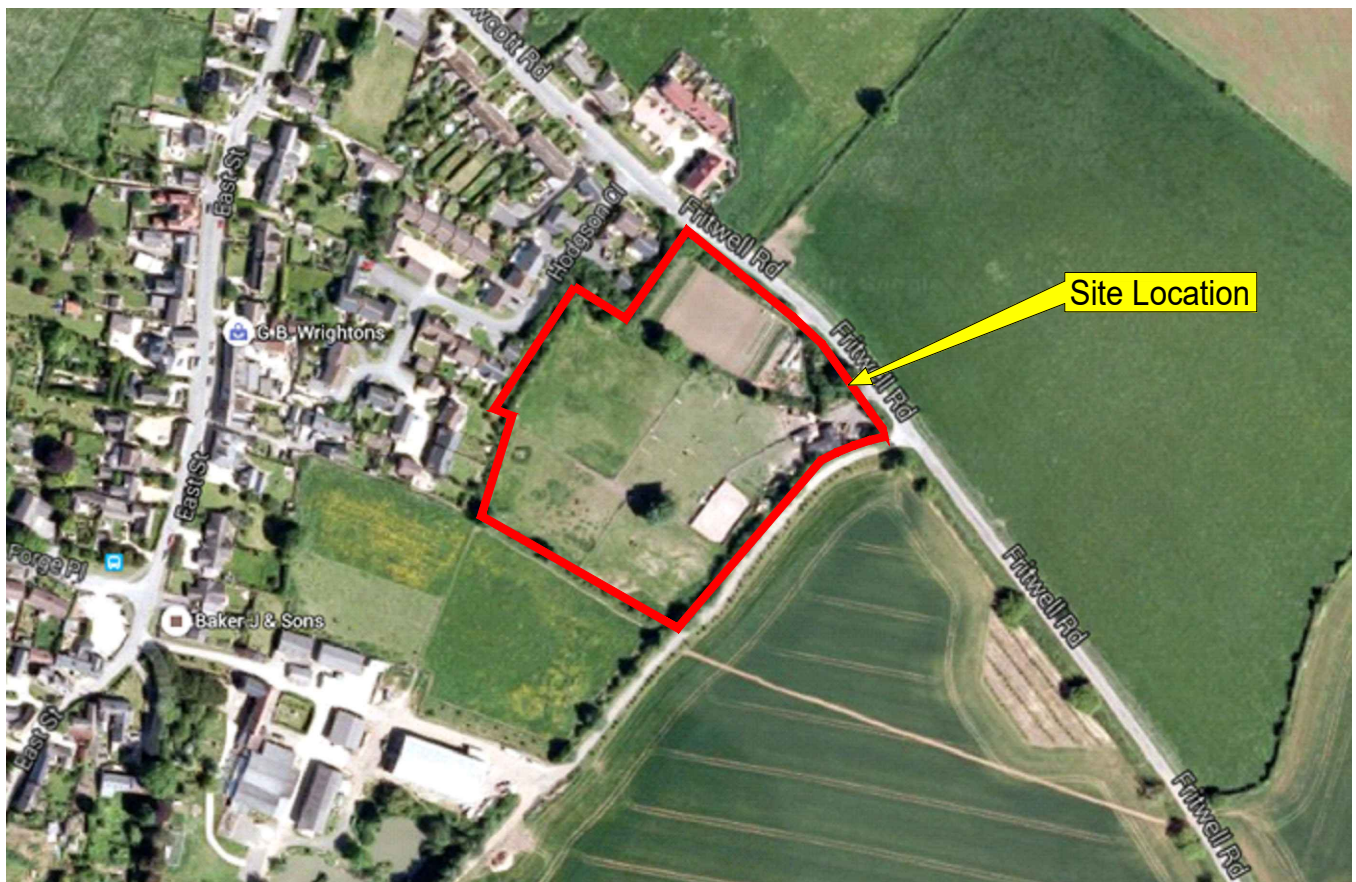
## NOTES

1. This drawing is to be read in conjunction with all relevant documents and specifications.
2. Dimensions not to be scaled.

## LOCATION

Address: Fewcott Road  
Fritwell  
Oxfordshire  
OX27 7QA

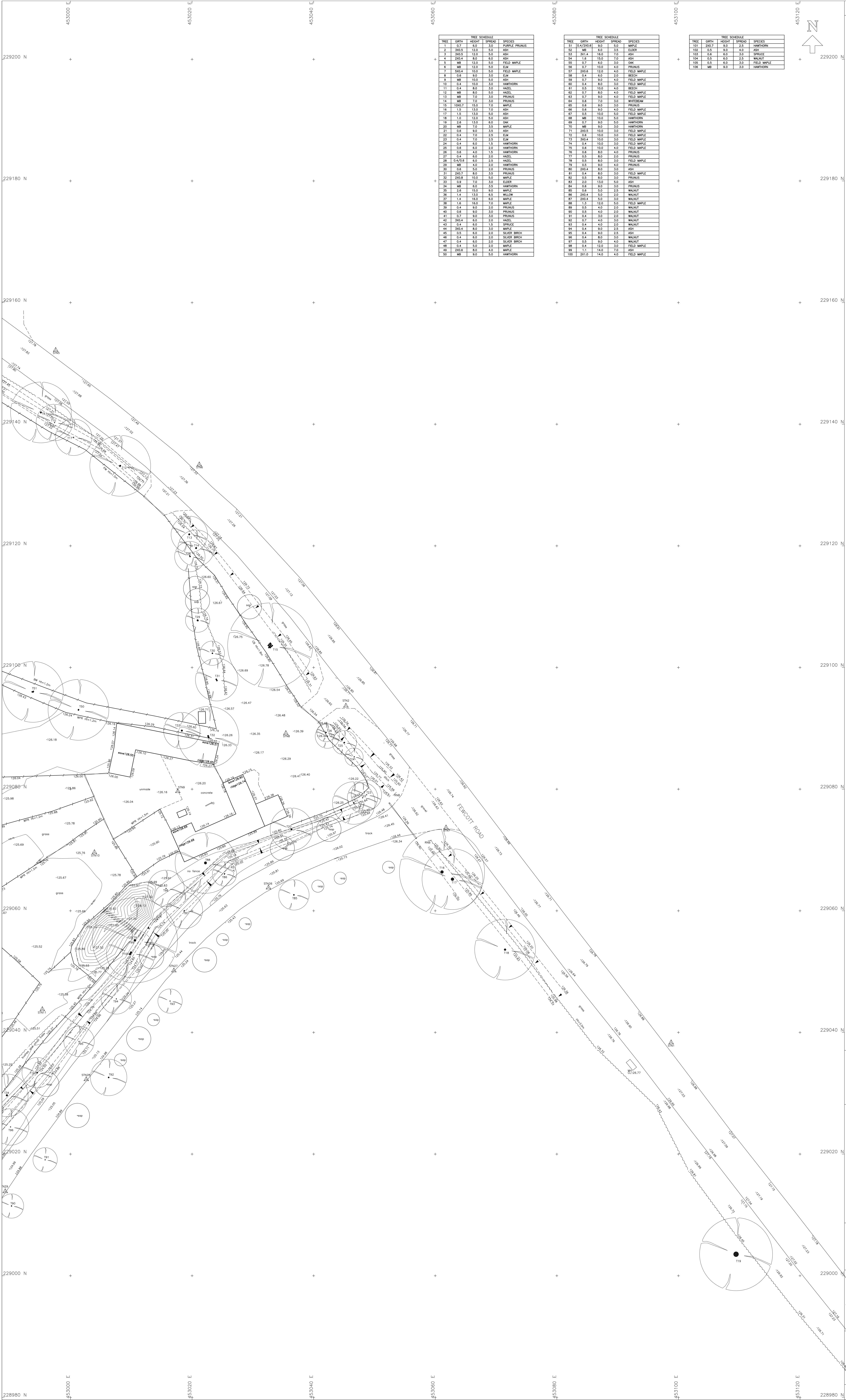
Grid reference: SP 52957 29070



**Appendix B**  
**Topographical Survey**







TREE SCHEDULE				
TREE	GIRTH	HEIGHT	SPREAD	SPECIES
1	0.1	6.0	3.0	PURNICE PRUNUS
2	2X0.5	12.0	5.0	ASH
3	2X0.5	12.0	5.0	ASH
4	2X0.4	8.0	6.0	ASH
5	MB	12.0	5.0	FIELD MAPLE
6	MB	12.0	5.0	ELM
7	2X0.4	10.0	5.0	FIELD MAPLE
8	0.4	9.0	3.0	ELM
9	MB	10.0	5.0	ASH
10	0.4	10.0	3.0	HAWTHORN
11	0.4	8.0	3.0	HAZEL
12	MB	8.0	5.0	HAZEL
13	MB	7.0	3.0	PRUNUS
14	MB	7.0	3.0	PRUNUS
15	10X0.7	15.0	7.0	MAPLE
16	1.5	13.0	7.0	ASH
17	1.5	13.0	5.0	ASH
18	1.0	12.0	5.0	ASH
19	2.8	13.0	6.0	OSH
20	MB	7.0	3.5	MAPLE
21	0.4	9.0	3.5	ASH
22	0.4	7.0	2.5	ELM
23	0.4	7.0	2.5	ELM
24	0.4	6.0	1.5	HAWTHORN
25	0.6	6.0	2.0	HAWTHORN
26	0.6	4.0	1.5	HAWTHORN
27	0.4	6.0	2.0	HAZEL
28	0.4/0.6	6.0	2.0	HAZEL
29	MB	4.0	2.0	HAWTHORN
30	0.4	5.0	2.0	PRUNUS
31	2X0.7	8.0	3.5	PRUNUS
32	2X0.8	10.0	5.0	MAPLE
33	0.8	7.0	3.0	ELDER
34	MB	6.0	3.5	HAWTHORN
35	2.6	15.0	9.0	MAPLE
36	1.4	13.0	6.0	MAPLE
37	1.4	16.0	6.0	MAPLE
38	1.6	16.0	7.0	MAPLE
39	0.4	9.0	2.0	PRUNUS
40	0.6	8.0	3.0	PRUNUS
41	0.7	9.0	3.0	PRUNUS
42	2X0.4	6.0	2.0	HAZEL
43	0.4	6.0	1.5	SPRUCE
44	2X0.4	8.0	3.0	MAPLE
45	0.5	6.0	2.0	SILVER BIRCH
46	0.4	6.0	2.0	SILVER BIRCH
47	0.4	6.0	2.0	SILVER BIRCH
48	0.4	5.0	2.0	MAPLE
49	2X0.8	8.0	4.0	MAPLE
50	MB	9.0	5.0	HAWTHORN

TREE SCHEDULE				
TREE	GIRTH	HEIGHT	SPREAD	SPECIES
51	1.4/2X0.4	9.0	5.0	MAPLE
52	MB	6.0	3.5	ELDER
53	2X1.4	16.0	7.0	ASH
54	1.8	15.0	7.0	ASH
55	0.7	6.0	3.0	OSH
56	0.7	10.0	4.0	PRUNUS
57	2X0.8	12.0	4.0	FIELD MAPLE
58	0.4	6.0	2.0	BETCH
59	0.7	9.0	4.0	FIELD MAPLE
60	0.4	8.0	3.0	FIELD MAPLE
61	0.5	10.0	4.0	BETCH
62	0.7	8.0	4.0	FIELD MAPLE
63	0.7	9.0	4.0	FIELD MAPLE
64	0.6	7.0	3.0	WINTERHAM
65	0.6	9.0	3.0	PRUNUS
66	0.6	8.0	4.0	FIELD MAPLE
67	0.5	10.0	5.0	FIELD MAPLE
68	MB	10.0	5.0	HAWTHORN
69	9.0	9.0	5.0	HAWTHORN
70	MB	9.0	3.0	HAWTHORN
71	2X0.5	10.0	3.0	FIELD MAPLE
72	0.6	10.0	3.0	FIELD MAPLE
73	3X0.4	10.0	3.0	FIELD MAPLE
74	0.4	10.0	3.0	FIELD MAPLE
75	0.6	10.0	4.0	FIELD MAPLE
76	0.6	8.0	4.0	PRUNUS
77	0.5	8.0	2.0	PRUNUS
78	0.5	8.0	3.0	FIELD MAPLE
79	0.5	8.0	4.0	PRUNUS
80	2X0.4	8.0	3.0	ASH
81	0.4	8.0	3.0	FIELD MAPLE
82	0.5	8.0	3.0	PRUNUS
83	2.0	13.0	5.0	ASH
84	0.6	9.0	3.0	PRUNUS
85	0.6	5.0	2.5	WALNUT
86	2X0.4	5.0	2.0	WALNUT
87	2X0.4	5.0	3.0	WALNUT
88	1.3	13.0	5.0	FIELD MAPLE
89	0.5	4.0	2.0	WALNUT
90	0.5	4.0	2.0	WALNUT
91	0.4	3.0	2.0	WALNUT
92	0.7	4.0	3.0	WALNUT
93	0.4	4.0	2.0	WALNUT
94	0.4	9.0	2.5	ASH
95	0.4	9.0	2.5	ASH
96	0.4	8.0	3.0	WALNUT
97	0.5	8.0	4.0	WALNUT
98	0.4	12.0	3.0	FIELD MAPLE
99	1.1	14.0	7.0	ASH
100	2X1.0	14.0	4.0	FIELD MAPLE

TREE SCHEDULE				
TREE	GIRTH	HEIGHT	SPREAD	SPECIES
101	2X0.7	9.0	2.5	HAWTHORN
102	0.5	6.0	4.0	ASH
103	0.6	6.0	3.0	SPRUCE
104	0.5	6.0	2.5	WALNUT
105	0.5	6.0	3.0	FIELD MAPLE
106	MB	9.0	3.0	HAWTHORN

LEGEND

SURVEY CONTROL

FEATURE STYLES

FEATURE ABBREVIATIONS

FENCE

HEDGE

FWS

SWS

WATER

POWER LINE

TELECOM LINE

ELECTRIC MAIN

GAS MAIN

EMBANKMENT

FENCE TYPES

AV

BS

BT

CB

CL

CTD

EC

EP

FI

FL

GM

GS

IL

IS

KLS

LB

LP

MKR

MP

MB

P

RI

RG

RNB

RS

RW

SC

SL

TP

TB

TJB

TL

V

VP

WL

WM

WO

WV

DATUM - ORDNANCE SURVEY NATIONAL GRID (OSTN02)  
LEVELS - ORDNANCE SURVEY (OSDM02)

SURVEY CONTROL		
1	453008.788	229008.304
2	453008.788	229008.304
3	453008.788	229008.304
4	453008.788	229008.304
5	453008.788	229008.304
6	453008.788	229008.304
7	453008.788	229008.304
8	453008.788	229008.304
9	453008.788	229008.304
10	453008.788	229008.304
11	453008.788	229008.304
12	453008.788	229008.304
13	453008.788	229008.304
14	453008.788	229008.304
15	453008.788	229008.304
16	453008.788	229008.304
17	453008.788	229008.304
18	453008.788	229008.304
19	453008.788	229008.304
20	453008.788	229008.304
21	453008.788	229008.304
22	453008.788	229008.304
23	453008.788	229008.304
24	453008.788	229008.304
25	453008.788	229008.304
26	453008.788	229008.304
27	453008.788	229008.304
28	453008.788	229008.304
29	453008.788	229008.304
30	453008.788	229008.304

**Appendix C**  
**Anglian Water Sewer Records**





(c) Crown copyright and database rights 2016 Ordnance Survey 100022432

Date: 15/06/16

Scale: 1:1250

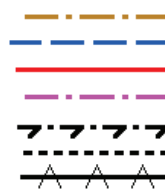
Map Centre: 452945,229073

Data updated: 04/12/15 Our Ref: 188740 - 1

Wastewater Plan A4

This plan is provided by Anglian Water pursuant to its obligations under the Water Industry Act 1991 sections 198 or 199. It must be used in conjunction with any search results attached. The information on this plan is based on data currently recorded but position must be regarded as approximate. Service pipes, private sewers and drains are generally not shown. Users of this map are strongly advised to commission their own survey of the area shown on the plan before carrying out any works. The actual position of all apparatus MUST be established by trial holes. No liability whatsoever, including liability for negligence, is accepted by Anglian Water for any error or inaccuracy or omission, including the failure to accurately record, or record at all, the location of any water main, discharge pipe, sewer or disposal main or any item of apparatus. This information is valid for the date printed. This plan is produced by Anglian Water Services Limited (c) Crown copyright and database rights 2016 Ordnance Survey 100022432. This map is to be used for the purposes of viewing the location of Anglian Water plant only. Any other uses of the map data or further copies is not permitted. This notice is not intended to exclude or restrict liability for death or personal injury resulting from negligence.

Foul Sewer  
Surface Sewer  
Combined Sewer  
Final Effluent  
Rising Main  
(Colour denotes effluent type)  
Private Sewer  
(Colour denotes effluent type)  
Decommissioned Sewer  
(Colour denotes effluent type)



Outfall  
(Colour denotes effluent type)  
Inlet  
(Colour denotes effluent type)  
Manhole  
(Colour denotes effluent type)  
Sewage Treatment Works  
Pumping Station



dwigston@glanvillegroup.com

CV8160423

love every drop  
anglianwater





**Appendix D**  
**Proposed Site Layout**







**Appendix E**

**Environment Agency Fluvial Flood Mapping**

# Flood map for planning

Your reference  
**8180850\_EAFM**

Location (easting/northing)  
**452964/229076**

Created  
**15 Mar 2019 4:30**

**Your selected location is in flood zone 1, an area with a low probability of flooding.**

## This means:

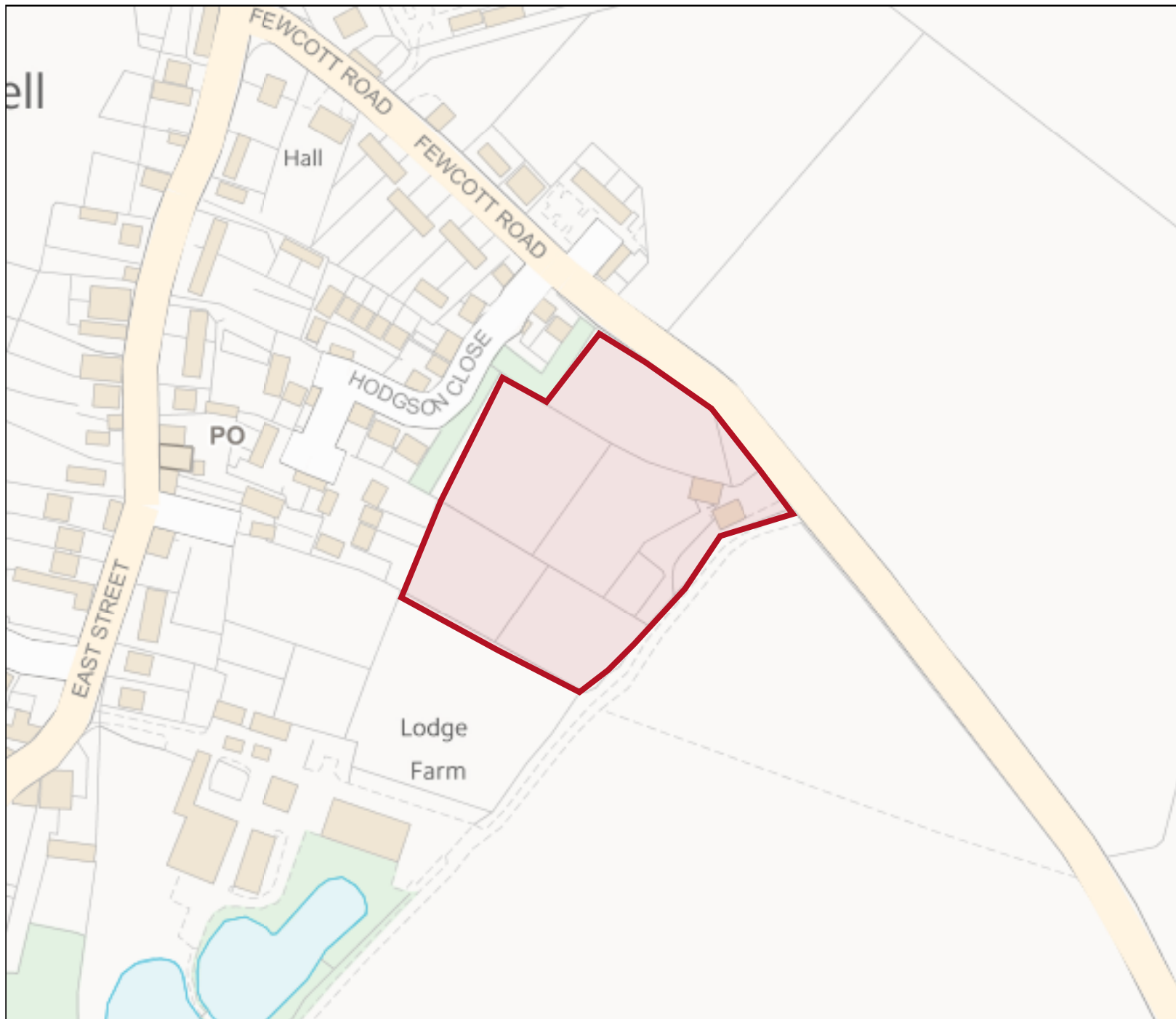
- you don't need to do a flood risk assessment if your development is smaller than 1 hectare and not affected by other sources of flooding
- you may need to do a flood risk assessment if your development is larger than 1 hectare or affected by other sources of flooding or in an area with critical drainage problems

## Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

The Open Government Licence sets out the terms and conditions for using government data.  
<https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>











## Flood map for planning

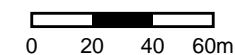
Your reference  
**8180850\_EAFM**

Location (easting/northing)  
**452964/229076**

Scale  
**1:2500**

Created  
**15 Mar 2019 4:30**

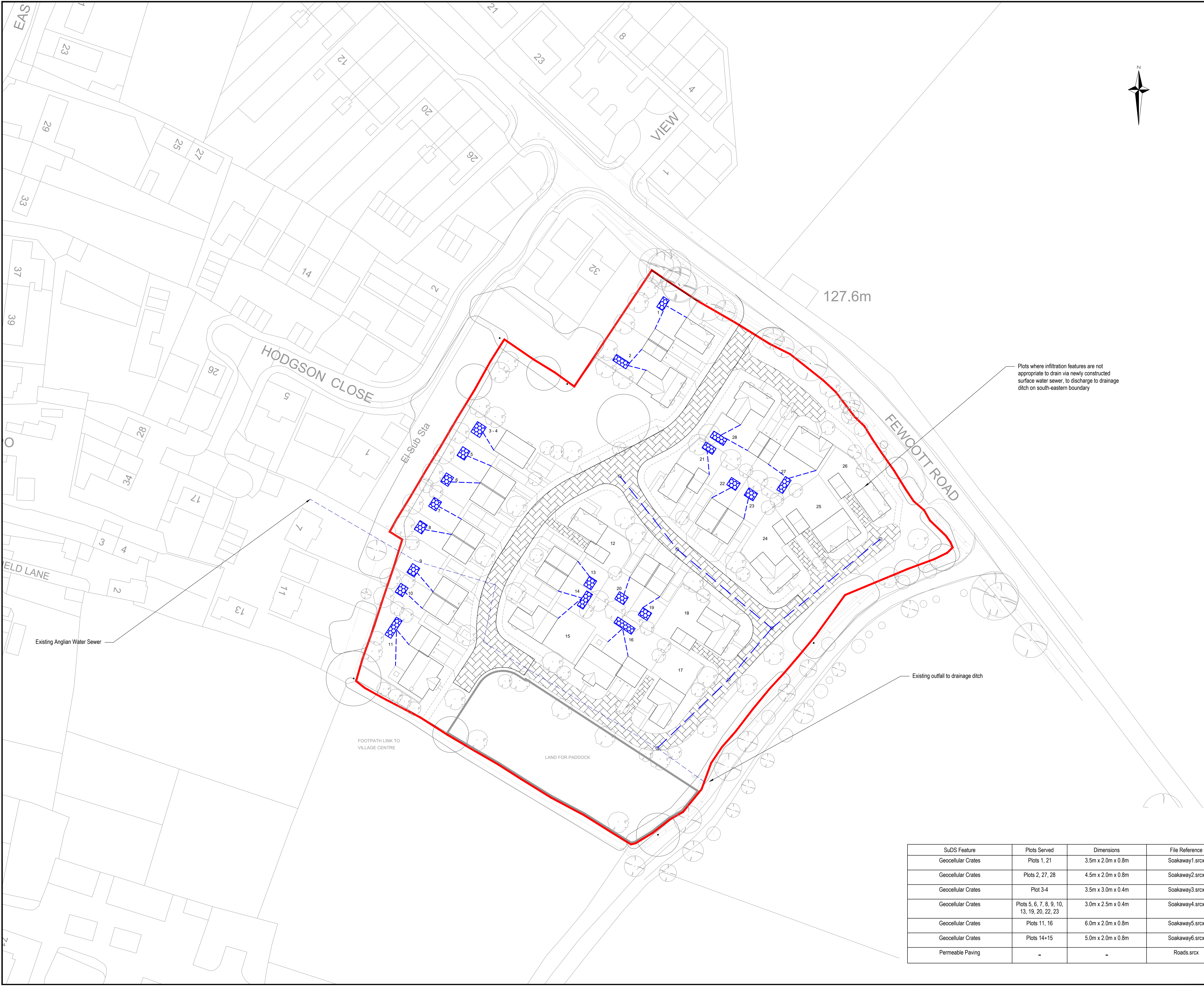
-  Selected area
-  Flood zone 3
-  Flood zone 3: areas benefitting from flood defences
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Flood storage area



## **Appendix F**

### **Proposed Outline Surface Water Drainage Strategy**





NOTES

1.

Dimensions not to be scaled.

2.

Outline Layout taken from CALA Homes Drawing No: PL.02 rev. G

KEY

Approximate site boundary

Permeable paving

Proposed permeable paving with lined sub-base

Geocellular crate soakaway

Proposed surface water sewer

Existing Anglian Water sewer

Proposed Surface Water Manhole

Plots where infiltration features are not appropriate to drain via newly constructed surface water sewer, to discharge to drainage ditch on south-eastern boundary

Existing Anglian Water Sewer

Existing outfall to drainage ditch

FOOTPATH LINK TO VILLAGE CENTRE

LAND FOR Paddock

SuDS Feature	Plots Served	Dimensions	File Reference
Geocellular Crates	Plots 1, 21	3.5m x 2.0m x 0.8m	Soakaway1.srcx
Geocellular Crates	Plots 2, 27, 28	4.5m x 2.0m x 0.8m	Soakaway2.srcx
Geocellular Crates	Plot 3-4	3.5m x 3.0m x 0.4m	Soakaway3.srcx
Geocellular Crates	Plots 5, 6, 7, 8, 9, 10, 13, 19, 20, 22, 23	3.0m x 2.5m x 0.4m	Soakaway4.srcx
Geocellular Crates	Plots 11, 16	6.0m x 2.0m x 0.8m	Soakaway5.srcx
Geocellular Crates	Plots 14+15	5.0m x 2.0m x 0.8m	Soakaway6.srcx
Permeable Paving	-	-	Roads.srcx

Glanville

Cornerstone House  
62 Foxhall Road, Didcot  
Oxon, OX11 7AD  
Tel: (01235) 515550 Fax: (01235) 817799  
postbox@glanvillegroup.com www.glanvillegroup.com

Client :

CALA Homes (Chiltern) Ltd

Project :

Fewcott Road, Fritwell

Title :

Outline Surface Water Drainage Strategy

Project Engineer :

S McNair

Scale :

1:500 @ A1

Project Director :

K Rayner

Date :

March 2019


Status :


PRELIMINARY




**Appendix G**  
**MicroDrainage Calculations**



Glanville Consultants				Page 1																																																																																																																																																																																																																			
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD																																																																																																																																																																																																																							
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Micro Drainage		Source Control 2018.1.1																																																																																																																																																																																																																					
<p>Summary of Results for 100 year Return Period (+40%)</p> <p>Half Drain Time : 451 minutes.</p> <table><thead><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></thead><tbody><tr><td>15 min Summer</td><td>126.144</td><td>0.344</td><td>0.1</td><td>2.3</td><td>O K</td></tr><tr><td>30 min Summer</td><td>126.245</td><td>0.445</td><td>0.1</td><td>3.0</td><td>O K</td></tr><tr><td>60 min Summer</td><td>126.340</td><td>0.540</td><td>0.1</td><td>3.6</td><td>O K</td></tr><tr><td>120 min Summer</td><td>126.419</td><td>0.619</td><td>0.1</td><td>4.1</td><td>O K</td></tr><tr><td>180 min Summer</td><td>126.448</td><td>0.648</td><td>0.1</td><td>4.3</td><td>O K</td></tr><tr><td>240 min Summer</td><td>126.457</td><td>0.657</td><td>0.1</td><td>4.4</td><td>O K</td></tr><tr><td>360 min Summer</td><td>126.454</td><td>0.654</td><td>0.1</td><td>4.4</td><td>O K</td></tr><tr><td>480 min Summer</td><td>126.448</td><td>0.648</td><td>0.1</td><td>4.3</td><td>O K</td></tr><tr><td>600 min Summer</td><td>126.440</td><td>0.640</td><td>0.1</td><td>4.3</td><td>O K</td></tr><tr><td>720 min Summer</td><td>126.430</td><td>0.630</td><td>0.1</td><td>4.2</td><td>O K</td></tr><tr><td>960 min Summer</td><td>126.408</td><td>0.608</td><td>0.1</td><td>4.0</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>126.361</td><td>0.561</td><td>0.1</td><td>3.7</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>126.298</td><td>0.498</td><td>0.1</td><td>3.3</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>126.244</td><td>0.444</td><td>0.1</td><td>3.0</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>126.159</td><td>0.359</td><td>0.1</td><td>2.4</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>126.093</td><td>0.293</td><td>0.1</td><td>2.0</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>126.041</td><td>0.241</td><td>0.1</td><td>1.6</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>125.999</td><td>0.199</td><td>0.1</td><td>1.3</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>125.965</td><td>0.165</td><td>0.1</td><td>1.1</td><td>O K</td></tr><tr><td>15 min Winter</td><td>126.186</td><td>0.386</td><td>0.1</td><td>2.6</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>139.350</td><td>0.0</td><td>22</td></tr><tr><td>30 min Summer</td><td>91.106</td><td>0.0</td><td>37</td></tr><tr><td>60 min Summer</td><td>56.713</td><td>0.0</td><td>66</td></tr><tr><td>120 min Summer</td><td>34.106</td><td>0.0</td><td>124</td></tr><tr><td>180 min Summer</td><td>24.997</td><td>0.0</td><td>182</td></tr><tr><td>240 min Summer</td><td>19.934</td><td>0.0</td><td>240</td></tr><tr><td>360 min Summer</td><td>14.444</td><td>0.0</td><td>314</td></tr><tr><td>480 min Summer</td><td>11.493</td><td>0.0</td><td>376</td></tr><tr><td>600 min Summer</td><td>9.620</td><td>0.0</td><td>438</td></tr><tr><td>720 min Summer</td><td>8.314</td><td>0.0</td><td>506</td></tr><tr><td>960 min Summer</td><td>6.600</td><td>0.0</td><td>646</td></tr><tr><td>1440 min Summer</td><td>4.760</td><td>0.0</td><td>922</td></tr><tr><td>2160 min Summer</td><td>3.427</td><td>0.0</td><td>1324</td></tr><tr><td>2880 min Summer</td><td>2.712</td><td>0.0</td><td>1732</td></tr><tr><td>4320 min Summer</td><td>1.948</td><td>0.0</td><td>2508</td></tr><tr><td>5760 min Summer</td><td>1.538</td><td>0.0</td><td>3232</td></tr><tr><td>7200 min Summer</td><td>1.281</td><td>0.0</td><td>3968</td></tr><tr><td>8640 min Summer</td><td>1.102</td><td>0.0</td><td>4680</td></tr><tr><td>10080 min Summer</td><td>0.970</td><td>0.0</td><td>5448</td></tr><tr><td>15 min Winter</td><td>139.350</td><td>0.0</td><td>22</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	126.144	0.344	0.1	2.3	O K	30 min Summer	126.245	0.445	0.1	3.0	O K	60 min Summer	126.340	0.540	0.1	3.6	O K	120 min Summer	126.419	0.619	0.1	4.1	O K	180 min Summer	126.448	0.648	0.1	4.3	O K	240 min Summer	126.457	0.657	0.1	4.4	O K	360 min Summer	126.454	0.654	0.1	4.4	O K	480 min Summer	126.448	0.648	0.1	4.3	O K	600 min Summer	126.440	0.640	0.1	4.3	O K	720 min Summer	126.430	0.630	0.1	4.2	O K	960 min Summer	126.408	0.608	0.1	4.0	O K	1440 min Summer	126.361	0.561	0.1	3.7	O K	2160 min Summer	126.298	0.498	0.1	3.3	O K	2880 min Summer	126.244	0.444	0.1	3.0	O K	4320 min Summer	126.159	0.359	0.1	2.4	O K	5760 min Summer	126.093	0.293	0.1	2.0	O K	7200 min Summer	126.041	0.241	0.1	1.6	O K	8640 min Summer	125.999	0.199	0.1	1.3	O K	10080 min Summer	125.965	0.165	0.1	1.1	O K	15 min Winter	126.186	0.386	0.1	2.6	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	139.350	0.0	22	30 min Summer	91.106	0.0	37	60 min Summer	56.713	0.0	66	120 min Summer	34.106	0.0	124	180 min Summer	24.997	0.0	182	240 min Summer	19.934	0.0	240	360 min Summer	14.444	0.0	314	480 min Summer	11.493	0.0	376	600 min Summer	9.620	0.0	438	720 min Summer	8.314	0.0	506	960 min Summer	6.600	0.0	646	1440 min Summer	4.760	0.0	922	2160 min Summer	3.427	0.0	1324	2880 min Summer	2.712	0.0	1732	4320 min Summer	1.948	0.0	2508	5760 min Summer	1.538	0.0	3232	7200 min Summer	1.281	0.0	3968	8640 min Summer	1.102	0.0	4680	10080 min Summer	0.970	0.0	5448	15 min Winter	139.350	0.0	22
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Glanville Consultants				Page 2	
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD					
Date 23/09/2019 16:00 File Soakaway1.SRCX		Designed by Shaque Checked by			
Micro Drainage		Source Control 2018.1.1			
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	126.299	0.499	0.1	3.3	O K
60 min Winter	126.408	0.608	0.1	4.0	O K
120 min Winter	126.499	0.699	0.1	4.6	O K
180 min Winter	126.535	0.735	0.1	4.9	O K
240 min Winter	126.548	0.748	0.1	5.0	O K
360 min Winter	126.548	0.748	0.1	5.0	O K
480 min Winter	126.537	0.737	0.1	4.9	O K
600 min Winter	126.527	0.727	0.1	4.8	O K
720 min Winter	126.514	0.714	0.1	4.7	O K
960 min Winter	126.482	0.682	0.1	4.5	O K
1440 min Winter	126.416	0.616	0.1	4.1	O K
2160 min Winter	126.326	0.526	0.1	3.5	O K
2880 min Winter	126.253	0.453	0.1	3.0	O K
4320 min Winter	126.139	0.339	0.1	2.3	O K
5760 min Winter	126.056	0.256	0.1	1.7	O K
7200 min Winter	125.992	0.192	0.1	1.3	O K
8640 min Winter	125.943	0.143	0.1	1.0	O K
10080 min Winter	125.905	0.105	0.0	0.7	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	91.106	0.0	36		
60 min Winter	56.713	0.0	64		
120 min Winter	34.106	0.0	122		
180 min Winter	24.997	0.0	178		
240 min Winter	19.934	0.0	234		
360 min Winter	14.444	0.0	340		
480 min Winter	11.493	0.0	388		
600 min Winter	9.620	0.0	462		
720 min Winter	8.314	0.0	540		
960 min Winter	6.600	0.0	694		
1440 min Winter	4.760	0.0	994		
2160 min Winter	3.427	0.0	1424		
2880 min Winter	2.712	0.0	1824		
4320 min Winter	1.948	0.0	2636		
5760 min Winter	1.538	0.0	3400		
7200 min Winter	1.281	0.0	4112		
8640 min Winter	1.102	0.0	4840		
10080 min Winter	0.970	0.0	5544		
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Glanville Consultants		Page 3
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD		
Date 23/09/2019 16:00 File Soakaway1.SRCX	Designed by Shaque Checked by	
Micro Drainage		Source Control 2018.1.1

Rainfall Details


Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.410	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.009

Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)
0            4	0.005	4            8	0.004

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Glanville Consultants		Page 4
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD		
Date 23/09/2019 16:00 File Soakaway1.SRCX	Designed by Shaque Checked by	
Micro Drainage		Source Control 2018.1.1

Model Details


Storage is Online Cover Level (m) 127.000


Cellular Storage Structure


Invert Level (m) 125.800 Safety Factor 2.0  
Infiltration Coefficient Base (m/hr) 0.03600 Porosity 0.95  
Infiltration Coefficient Side (m/hr) 0.07200

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	7.0	7.0	0.801	0.0	15.8
0.800	7.0	15.8			

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Glanville Consultants				Page 1																																																																																																																																																																																																																			
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD																																																																																																																																																																																																																							
Date 23/09/2019 16:08 File Soakaway2.SRCX		Designed by Shaque Checked by																																																																																																																																																																																																																					
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<p>Summary of Results for 100 year Return Period (+40%)</p> <p>Half Drain Time : 464 minutes.</p> <table><thead><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></thead><tbody><tr><td>15 min Summer</td><td>126.158</td><td>0.358</td><td>0.1</td><td>3.1</td><td>O K</td></tr><tr><td>30 min Summer</td><td>126.262</td><td>0.462</td><td>0.1</td><td>4.0</td><td>O K</td></tr><tr><td>60 min Summer</td><td>126.362</td><td>0.562</td><td>0.1</td><td>4.8</td><td>O K</td></tr><tr><td>120 min Summer</td><td>126.446</td><td>0.646</td><td>0.1</td><td>5.5</td><td>O K</td></tr><tr><td>180 min Summer</td><td>126.478</td><td>0.678</td><td>0.1</td><td>5.8</td><td>O K</td></tr><tr><td>240 min Summer</td><td>126.490</td><td>0.690</td><td>0.1</td><td>5.9</td><td>O K</td></tr><tr><td>360 min Summer</td><td>126.489</td><td>0.689</td><td>0.1</td><td>5.9</td><td>O K</td></tr><tr><td>480 min Summer</td><td>126.483</td><td>0.683</td><td>0.1</td><td>5.8</td><td>O K</td></tr><tr><td>600 min Summer</td><td>126.475</td><td>0.675</td><td>0.1</td><td>5.8</td><td>O K</td></tr><tr><td>720 min Summer</td><td>126.466</td><td>0.666</td><td>0.1</td><td>5.7</td><td>O K</td></tr><tr><td>960 min Summer</td><td>126.444</td><td>0.644</td><td>0.1</td><td>5.5</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>126.397</td><td>0.597</td><td>0.1</td><td>5.1</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>126.333</td><td>0.533</td><td>0.1</td><td>4.6</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>126.279</td><td>0.479</td><td>0.1</td><td>4.1</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>126.190</td><td>0.390</td><td>0.1</td><td>3.3</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>126.122</td><td>0.322</td><td>0.1</td><td>2.7</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>126.067</td><td>0.267</td><td>0.1</td><td>2.3</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>126.022</td><td>0.222</td><td>0.1</td><td>1.9</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>125.985</td><td>0.185</td><td>0.1</td><td>1.6</td><td>O K</td></tr><tr><td>15 min Winter</td><td>126.201</td><td>0.401</td><td>0.1</td><td>3.4</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>139.350</td><td>0.0</td><td>22</td></tr><tr><td>30 min Summer</td><td>91.106</td><td>0.0</td><td>37</td></tr><tr><td>60 min Summer</td><td>56.713</td><td>0.0</td><td>66</td></tr><tr><td>120 min Summer</td><td>34.106</td><td>0.0</td><td>124</td></tr><tr><td>180 min Summer</td><td>24.997</td><td>0.0</td><td>182</td></tr><tr><td>240 min Summer</td><td>19.934</td><td>0.0</td><td>242</td></tr><tr><td>360 min Summer</td><td>14.444</td><td>0.0</td><td>326</td></tr><tr><td>480 min Summer</td><td>11.493</td><td>0.0</td><td>384</td></tr><tr><td>600 min Summer</td><td>9.620</td><td>0.0</td><td>448</td></tr><tr><td>720 min Summer</td><td>8.314</td><td>0.0</td><td>514</td></tr><tr><td>960 min Summer</td><td>6.600</td><td>0.0</td><td>652</td></tr><tr><td>1440 min Summer</td><td>4.760</td><td>0.0</td><td>926</td></tr><tr><td>2160 min Summer</td><td>3.427</td><td>0.0</td><td>1340</td></tr><tr><td>2880 min Summer</td><td>2.712</td><td>0.0</td><td>1732</td></tr><tr><td>4320 min Summer</td><td>1.948</td><td>0.0</td><td>2512</td></tr><tr><td>5760 min Summer</td><td>1.538</td><td>0.0</td><td>3280</td></tr><tr><td>7200 min Summer</td><td>1.281</td><td>0.0</td><td>4032</td></tr><tr><td>8640 min Summer</td><td>1.102</td><td>0.0</td><td>4752</td></tr><tr><td>10080 min Summer</td><td>0.970</td><td>0.0</td><td>5448</td></tr><tr><td>15 min Winter</td><td>139.350</td><td>0.0</td><td>22</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	126.158	0.358	0.1	3.1	O K	30 min Summer	126.262	0.462	0.1	4.0	O K	60 min Summer	126.362	0.562	0.1	4.8	O K	120 min Summer	126.446	0.646	0.1	5.5	O K	180 min Summer	126.478	0.678	0.1	5.8	O K	240 min Summer	126.490	0.690	0.1	5.9	O K	360 min Summer	126.489	0.689	0.1	5.9	O K	480 min Summer	126.483	0.683	0.1	5.8	O K	600 min Summer	126.475	0.675	0.1	5.8	O K	720 min Summer	126.466	0.666	0.1	5.7	O K	960 min Summer	126.444	0.644	0.1	5.5	O K	1440 min Summer	126.397	0.597	0.1	5.1	O K	2160 min Summer	126.333	0.533	0.1	4.6	O K	2880 min Summer	126.279	0.479	0.1	4.1	O K	4320 min Summer	126.190	0.390	0.1	3.3	O K	5760 min Summer	126.122	0.322	0.1	2.7	O K	7200 min Summer	126.067	0.267	0.1	2.3	O K	8640 min Summer	126.022	0.222	0.1	1.9	O K	10080 min Summer	125.985	0.185	0.1	1.6	O K	15 min Winter	126.201	0.401	0.1	3.4	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	139.350	0.0	22	30 min Summer	91.106	0.0	37	60 min Summer	56.713	0.0	66	120 min Summer	34.106	0.0	124	180 min Summer	24.997	0.0	182	240 min Summer	19.934	0.0	242	360 min Summer	14.444	0.0	326	480 min Summer	11.493	0.0	384	600 min Summer	9.620	0.0	448	720 min Summer	8.314	0.0	514	960 min Summer	6.600	0.0	652	1440 min Summer	4.760	0.0	926	2160 min Summer	3.427	0.0	1340	2880 min Summer	2.712	0.0	1732	4320 min Summer	1.948	0.0	2512	5760 min Summer	1.538	0.0	3280	7200 min Summer	1.281	0.0	4032	8640 min Summer	1.102	0.0	4752	10080 min Summer	0.970	0.0	5448	15 min Winter	139.350	0.0	22
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status																																																																																																																																																																																																																		
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Glanville Consultants				Page 2	
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD					
Date 23/09/2019 16:08 File Soakaway2.SRCX		Designed by Shaque Checked by			
Micro Drainage		Source Control 2018.1.1			
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	126.319	0.519	0.1	4.4	O K
60 min Winter	126.432	0.632	0.1	5.4	O K
120 min Winter	126.529	0.729	0.1	6.2	O K
180 min Winter	126.569	0.769	0.1	6.6	O K
240 min Winter	126.585	0.785	0.1	6.7	O K
360 min Winter	126.588	0.788	0.1	6.7	O K
480 min Winter	126.577	0.777	0.1	6.6	O K
600 min Winter	126.568	0.768	0.1	6.6	O K
720 min Winter	126.556	0.756	0.1	6.5	O K
960 min Winter	126.525	0.725	0.1	6.2	O K
1440 min Winter	126.459	0.659	0.1	5.6	O K
2160 min Winter	126.369	0.569	0.1	4.9	O K
2880 min Winter	126.293	0.493	0.1	4.2	O K
4320 min Winter	126.174	0.374	0.1	3.2	O K
5760 min Winter	126.086	0.286	0.1	2.4	O K
7200 min Winter	126.018	0.218	0.1	1.9	O K
8640 min Winter	125.965	0.165	0.1	1.4	O K
10080 min Winter	125.923	0.123	0.1	1.1	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	91.106	0.0	36		
60 min Winter	56.713	0.0	64		
120 min Winter	34.106	0.0	122		
180 min Winter	24.997	0.0	180		
240 min Winter	19.934	0.0	236		
360 min Winter	14.444	0.0	344		
480 min Winter	11.493	0.0	400		
600 min Winter	9.620	0.0	468		
720 min Winter	8.314	0.0	546		
960 min Winter	6.600	0.0	700		
1440 min Winter	4.760	0.0	998		
2160 min Winter	3.427	0.0	1432		
2880 min Winter	2.712	0.0	1848		
4320 min Winter	1.948	0.0	2640		
5760 min Winter	1.538	0.0	3408		
7200 min Winter	1.281	0.0	4176		
8640 min Winter	1.102	0.0	4920		
10080 min Winter	0.970	0.0	5552		
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Glanville Consultants		Page 3
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD		
Date 23/09/2019 16:08 File Soakaway2.SRCX	Designed by Shaque Checked by	
Micro Drainage Source Control 2018.1.1		

Rainfall Details


Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.410	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram


Total Area (ha) 0.012


Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)
0 4	0.006	4 8	0.006

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Glanville Consultants		Page 4																		
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD																				
Date 23/09/2019 16:08 File Soakaway2.SRCX	Designed by Shaque Checked by																			
Micro Drainage		Source Control 2018.1.1																		
<p style="text-align: center;"><u>Model Details</u></p> <p style="text-align: center;">Storage is Online Cover Level (m) 127.000</p> <p style="text-align: center;"><u>Cellular Storage Structure</u></p> <p style="text-align: center;">Invert Level (m) 125.800 Safety Factor 2.0  Infiltration Coefficient Base (m/hr) 0.03600 Porosity 0.95  Infiltration Coefficient Side (m/hr) 0.07200</p> <table border="1"> <thead> <tr> <th>Depth (m)</th> <th>Area (m<sup>2</sup>)</th> <th>Inf. Area (m<sup>2</sup>)</th> <th>Depth (m)</th> <th>Area (m<sup>2</sup>)</th> <th>Inf. Area (m<sup>2</sup>)</th> </tr> </thead> <tbody> <tr> <td>0.000</td> <td>9.0</td> <td>9.0</td> <td>0.801</td> <td>0.0</td> <td>19.4</td> </tr> <tr> <td>0.800</td> <td>9.0</td> <td>19.4</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>			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	9.0	9.0	0.801	0.0	19.4	0.800	9.0	19.4			
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> )															
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Glanville Consultants				Page 1																																																																																																																																																																																																																			
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Summer</td><td>126.114</td><td>0.314</td><td>0.1</td><td>3.1</td><td>O K</td></tr><tr><td>600 min Summer</td><td>126.107</td><td>0.307</td><td>0.1</td><td>3.1</td><td>O K</td></tr><tr><td>720 min Summer</td><td>126.099</td><td>0.299</td><td>0.1</td><td>3.0</td><td>O K</td></tr><tr><td>960 min Summer</td><td>126.083</td><td>0.283</td><td>0.1</td><td>2.8</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>126.052</td><td>0.252</td><td>0.1</td><td>2.5</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>126.012</td><td>0.212</td><td>0.1</td><td>2.1</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>125.978</td><td>0.178</td><td>0.1</td><td>1.8</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>125.926</td><td>0.126</td><td>0.1</td><td>1.3</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>125.889</td><td>0.089</td><td>0.1</td><td>0.9</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>125.865</td><td>0.065</td><td>0.1</td><td>0.6</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>125.851</td><td>0.051</td><td>0.1</td><td>0.5</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>125.845</td><td>0.045</td><td>0.1</td><td>0.5</td><td>O K</td></tr><tr><td>15 min Winter</td><td>125.999</td><td>0.199</td><td>0.1</td><td>2.0</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>139.350</td><td>0.0</td><td>22</td></tr><tr><td>30 min Summer</td><td>91.106</td><td>0.0</td><td>37</td></tr><tr><td>60 min Summer</td><td>56.713</td><td>0.0</td><td>66</td></tr><tr><td>120 min Summer</td><td>34.106</td><td>0.0</td><td>124</td></tr><tr><td>180 min Summer</td><td>24.997</td><td>0.0</td><td>182</td></tr><tr><td>240 min Summer</td><td>19.934</td><td>0.0</td><td>240</td></tr><tr><td>360 min Summer</td><td>14.444</td><td>0.0</td><td>296</td></tr><tr><td>480 min Summer</td><td>11.493</td><td>0.0</td><td>358</td></tr><tr><td>600 min Summer</td><td>9.620</td><td>0.0</td><td>424</td></tr><tr><td>720 min Summer</td><td>8.314</td><td>0.0</td><td>494</td></tr><tr><td>960 min Summer</td><td>6.600</td><td>0.0</td><td>630</td></tr><tr><td>1440 min Summer</td><td>4.760</td><td>0.0</td><td>906</td></tr><tr><td>2160 min Summer</td><td>3.427</td><td>0.0</td><td>1300</td></tr><tr><td>2880 min Summer</td><td>2.712</td><td>0.0</td><td>1680</td></tr><tr><td>4320 min Summer</td><td>1.948</td><td>0.0</td><td>2424</td></tr><tr><td>5760 min Summer</td><td>1.538</td><td>0.0</td><td>3112</td></tr><tr><td>7200 min Summer</td><td>1.281</td><td>0.0</td><td>3816</td></tr><tr><td>8640 min Summer</td><td>1.102</td><td>0.0</td><td>4416</td></tr><tr><td>10080 min Summer</td><td>0.970</td><td>0.0</td><td>5144</td></tr><tr><td>15 min Winter</td><td>139.350</td><td>0.0</td><td>22</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	125.977	0.177	0.1	1.8	O K	30 min Summer	126.028	0.228	0.1	2.3	O K	60 min Summer	126.075	0.275	0.1	2.7	O K	120 min Summer	126.112	0.312	0.1	3.1	O K	180 min Summer	126.124	0.324	0.1	3.2	O K	240 min Summer	126.125	0.325	0.1	3.2	O K	360 min Summer	126.120	0.320	0.1	3.2	O K	480 min Summer	126.114	0.314	0.1	3.1	O K	600 min Summer	126.107	0.307	0.1	3.1	O K	720 min Summer	126.099	0.299	0.1	3.0	O K	960 min Summer	126.083	0.283	0.1	2.8	O K	1440 min Summer	126.052	0.252	0.1	2.5	O K	2160 min Summer	126.012	0.212	0.1	2.1	O K	2880 min Summer	125.978	0.178	0.1	1.8	O K	4320 min Summer	125.926	0.126	0.1	1.3	O K	5760 min Summer	125.889	0.089	0.1	0.9	O K	7200 min Summer	125.865	0.065	0.1	0.6	O K	8640 min Summer	125.851	0.051	0.1	0.5	O K	10080 min Summer	125.845	0.045	0.1	0.5	O K	15 min Winter	125.999	0.199	0.1	2.0	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	139.350	0.0	22	30 min Summer	91.106	0.0	37	60 min Summer	56.713	0.0	66	120 min Summer	34.106	0.0	124	180 min Summer	24.997	0.0	182	240 min Summer	19.934	0.0	240	360 min Summer	14.444	0.0	296	480 min Summer	11.493	0.0	358	600 min Summer	9.620	0.0	424	720 min Summer	8.314	0.0	494	960 min Summer	6.600	0.0	630	1440 min Summer	4.760	0.0	906	2160 min Summer	3.427	0.0	1300	2880 min Summer	2.712	0.0	1680	4320 min Summer	1.948	0.0	2424	5760 min Summer	1.538	0.0	3112	7200 min Summer	1.281	0.0	3816	8640 min Summer	1.102	0.0	4416	10080 min Summer	0.970	0.0	5144	15 min Winter	139.350	0.0	22
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Glanville Consultants				Page 2	
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD					
Date 23/09/2019 15:50 File SOAKAWAY3.SRCX		Designed by Shaque Checked by			
Micro Drainage		Source Control 2018.1.1			
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	126.056	0.256	0.1	2.6	O K
60 min Winter	126.110	0.310	0.1	3.1	O K
120 min Winter	126.154	0.354	0.1	3.5	O K
180 min Winter	126.169	0.369	0.1	3.7	O K
240 min Winter	126.172	0.372	0.1	3.7	O K
360 min Winter	126.166	0.366	0.1	3.7	O K
480 min Winter	126.158	0.358	0.1	3.6	O K
600 min Winter	126.149	0.349	0.1	3.5	O K
720 min Winter	126.138	0.338	0.1	3.4	O K
960 min Winter	126.115	0.315	0.1	3.1	O K
1440 min Winter	126.071	0.271	0.1	2.7	O K
2160 min Winter	126.013	0.213	0.1	2.1	O K
2880 min Winter	125.966	0.166	0.1	1.7	O K
4320 min Winter	125.897	0.097	0.1	1.0	O K
5760 min Winter	125.855	0.055	0.1	0.6	O K
7200 min Winter	125.844	0.044	0.1	0.4	O K
8640 min Winter	125.838	0.038	0.0	0.4	O K
10080 min Winter	125.834	0.034	0.0	0.3	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	91.106	0.0	36		
60 min Winter	56.713	0.0	64		
120 min Winter	34.106	0.0	122		
180 min Winter	24.997	0.0	178		
240 min Winter	19.934	0.0	234		
360 min Winter	14.444	0.0	334		
480 min Winter	11.493	0.0	378		
600 min Winter	9.620	0.0	456		
720 min Winter	8.314	0.0	532		
960 min Winter	6.600	0.0	684		
1440 min Winter	4.760	0.0	972		
2160 min Winter	3.427	0.0	1388		
2880 min Winter	2.712	0.0	1784		
4320 min Winter	1.948	0.0	2508		
5760 min Winter	1.538	0.0	3112		
7200 min Winter	1.281	0.0	3680		
8640 min Winter	1.102	0.0	4416		
10080 min Winter	0.970	0.0	5144		
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Glanville Consultants		Page 4
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD		
Date 23/09/2019 15:50 File SOAKAWAY3.SRCX	Designed by Shaque Checked by	
Micro Drainage		Source Control 2018.1.1

Model Details


Storage is Online Cover Level (m) 127.000


Cellular Storage Structure


Invert Level (m) 125.800 Safety Factor 2.0  
Infiltration Coefficient Base (m/hr) 0.03600 Porosity 0.95  
Infiltration Coefficient Side (m/hr) 0.07200

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	10.5	10.5	0.401	0.0	15.7
0.400	10.5	15.7			

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Summer</td><td>126.108</td><td>0.308</td><td>0.1</td><td>2.2</td><td>O K</td></tr><tr><td>600 min Summer</td><td>126.101</td><td>0.301</td><td>0.1</td><td>2.1</td><td>O K</td></tr><tr><td>720 min Summer</td><td>126.093</td><td>0.293</td><td>0.1</td><td>2.1</td><td>O K</td></tr><tr><td>960 min Summer</td><td>126.076</td><td>0.276</td><td>0.1</td><td>2.0</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>126.045</td><td>0.245</td><td>0.1</td><td>1.7</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>126.004</td><td>0.204</td><td>0.1</td><td>1.5</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>125.971</td><td>0.171</td><td>0.1</td><td>1.2</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>125.920</td><td>0.120</td><td>0.1</td><td>0.9</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>125.885</td><td>0.085</td><td>0.0</td><td>0.6</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>125.862</td><td>0.062</td><td>0.0</td><td>0.4</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>125.850</td><td>0.050</td><td>0.0</td><td>0.4</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>125.844</td><td>0.044</td><td>0.0</td><td>0.3</td><td>O K</td></tr><tr><td>15 min Winter</td><td>125.998</td><td>0.198</td><td>0.1</td><td>1.4</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>139.350</td><td>0.0</td><td>22</td></tr><tr><td>30 min Summer</td><td>91.106</td><td>0.0</td><td>36</td></tr><tr><td>60 min Summer</td><td>56.713</td><td>0.0</td><td>64</td></tr><tr><td>120 min Summer</td><td>34.106</td><td>0.0</td><td>122</td></tr><tr><td>180 min Summer</td><td>24.997</td><td>0.0</td><td>182</td></tr><tr><td>240 min Summer</td><td>19.934</td><td>0.0</td><td>230</td></tr><tr><td>360 min Summer</td><td>14.444</td><td>0.0</td><td>286</td></tr><tr><td>480 min Summer</td><td>11.493</td><td>0.0</td><td>348</td></tr><tr><td>600 min Summer</td><td>9.620</td><td>0.0</td><td>416</td></tr><tr><td>720 min Summer</td><td>8.314</td><td>0.0</td><td>486</td></tr><tr><td>960 min Summer</td><td>6.600</td><td>0.0</td><td>624</td></tr><tr><td>1440 min Summer</td><td>4.760</td><td>0.0</td><td>896</td></tr><tr><td>2160 min Summer</td><td>3.427</td><td>0.0</td><td>1296</td></tr><tr><td>2880 min Summer</td><td>2.712</td><td>0.0</td><td>1672</td></tr><tr><td>4320 min Summer</td><td>1.948</td><td>0.0</td><td>2384</td></tr><tr><td>5760 min Summer</td><td>1.538</td><td>0.0</td><td>3112</td></tr><tr><td>7200 min Summer</td><td>1.281</td><td>0.0</td><td>3752</td></tr><tr><td>8640 min Summer</td><td>1.102</td><td>0.0</td><td>4408</td></tr><tr><td>10080 min Summer</td><td>0.970</td><td>0.0</td><td>5144</td></tr><tr><td>15 min Winter</td><td>139.350</td><td>0.0</td><td>22</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	125.977	0.177	0.1	1.3	O K	30 min Summer	126.027	0.227	0.1	1.6	O K	60 min Summer	126.074	0.274	0.1	2.0	O K	120 min Summer	126.109	0.309	0.1	2.2	O K	180 min Summer	126.119	0.319	0.1	2.3	O K	240 min Summer	126.119	0.319	0.1	2.3	O K	360 min Summer	126.115	0.315	0.1	2.2	O K	480 min Summer	126.108	0.308	0.1	2.2	O K	600 min Summer	126.101	0.301	0.1	2.1	O K	720 min Summer	126.093	0.293	0.1	2.1	O K	960 min Summer	126.076	0.276	0.1	2.0	O K	1440 min Summer	126.045	0.245	0.1	1.7	O K	2160 min Summer	126.004	0.204	0.1	1.5	O K	2880 min Summer	125.971	0.171	0.1	1.2	O K	4320 min Summer	125.920	0.120	0.1	0.9	O K	5760 min Summer	125.885	0.085	0.0	0.6	O K	7200 min Summer	125.862	0.062	0.0	0.4	O K	8640 min Summer	125.850	0.050	0.0	0.4	O K	10080 min Summer	125.844	0.044	0.0	0.3	O K	15 min Winter	125.998	0.198	0.1	1.4	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	139.350	0.0	22	30 min Summer	91.106	0.0	36	60 min Summer	56.713	0.0	64	120 min Summer	34.106	0.0	122	180 min Summer	24.997	0.0	182	240 min Summer	19.934	0.0	230	360 min Summer	14.444	0.0	286	480 min Summer	11.493	0.0	348	600 min Summer	9.620	0.0	416	720 min Summer	8.314	0.0	486	960 min Summer	6.600	0.0	624	1440 min Summer	4.760	0.0	896	2160 min Summer	3.427	0.0	1296	2880 min Summer	2.712	0.0	1672	4320 min Summer	1.948	0.0	2384	5760 min Summer	1.538	0.0	3112	7200 min Summer	1.281	0.0	3752	8640 min Summer	1.102	0.0	4408	10080 min Summer	0.970	0.0	5144	15 min Winter	139.350	0.0	22
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180 min Summer	126.119	0.319	0.1	2.3	O K																																																																																																																																																																																																																		
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Glanville Consultants				Page 2	
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD					
Date 23/09/2019 15:45 File SOAKAWAY4.SRCX		Designed by Shaque Checked by			
Micro Drainage		Source Control 2018.1.1			
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	126.056	0.256	0.1	1.8	O K
60 min Winter	126.109	0.309	0.1	2.2	O K
120 min Winter	126.151	0.351	0.1	2.5	O K
180 min Winter	126.164	0.364	0.1	2.6	O K
240 min Winter	126.166	0.366	0.1	2.6	O K
360 min Winter	126.159	0.359	0.1	2.6	O K
480 min Winter	126.151	0.351	0.1	2.5	O K
600 min Winter	126.141	0.341	0.1	2.4	O K
720 min Winter	126.129	0.329	0.1	2.3	O K
960 min Winter	126.106	0.306	0.1	2.2	O K
1440 min Winter	126.060	0.260	0.1	1.9	O K
2160 min Winter	126.003	0.203	0.1	1.4	O K
2880 min Winter	125.957	0.157	0.1	1.1	O K
4320 min Winter	125.891	0.091	0.0	0.6	O K
5760 min Winter	125.853	0.053	0.0	0.4	O K
7200 min Winter	125.843	0.043	0.0	0.3	O K
8640 min Winter	125.837	0.037	0.0	0.3	O K
10080 min Winter	125.833	0.033	0.0	0.2	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	91.106	0.0	36		
60 min Winter	56.713	0.0	64		
120 min Winter	34.106	0.0	120		
180 min Winter	24.997	0.0	178		
240 min Winter	19.934	0.0	232		
360 min Winter	14.444	0.0	298		
480 min Winter	11.493	0.0	372		
600 min Winter	9.620	0.0	448		
720 min Winter	8.314	0.0	526		
960 min Winter	6.600	0.0	674		
1440 min Winter	4.760	0.0	966		
2160 min Winter	3.427	0.0	1368		
2880 min Winter	2.712	0.0	1760		
4320 min Winter	1.948	0.0	2468		
5760 min Winter	1.538	0.0	3056		
7200 min Winter	1.281	0.0	3744		
8640 min Winter	1.102	0.0	4488		
10080 min Winter	0.970	0.0	5136		
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Glanville Consultants		Page 3
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD		
Date 23/09/2019 15:45 File SOAKAWAY4.SRCX	Designed by Shaque Checked by	
Micro Drainage		Source Control 2018.1.1

Rainfall Details


Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.410	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.005

Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)
0	4 0.003	4	8 0.002

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Glanville Consultants		Page 4
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD		
Date 23/09/2019 15:45 File SOAKAWAY4.SRCX	Designed by Shaque Checked by	
Micro Drainage		Source Control 2018.1.1

Model Details

Storage is Online Cover Level (m) 127.000


Cellular Storage Structure


Invert Level (m) 125.800 Safety Factor 2.0  
Infiltration Coefficient Base (m/hr) 0.03600 Porosity 0.95  
Infiltration Coefficient Side (m/hr) 0.07200


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	7.5	7.5	0.401	0.0	11.9
0.400	7.5	11.9			

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Glanville Consultants				Page 1																																																																																																																																																																																																																			
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD																																																																																																																																																																																																																							
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<p>Summary of Results for 100 year Return Period (+40%)</p> <p>Half Drain Time : 494 minutes.</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>126.158</td><td>0.358</td><td>0.1</td><td>4.1</td><td>O K</td></tr><tr><td>30 min Summer</td><td>126.263</td><td>0.463</td><td>0.1</td><td>5.3</td><td>O K</td></tr><tr><td>60 min Summer</td><td>126.363</td><td>0.563</td><td>0.2</td><td>6.4</td><td>O K</td></tr><tr><td>120 min Summer</td><td>126.448</td><td>0.648</td><td>0.2</td><td>7.4</td><td>O K</td></tr><tr><td>180 min Summer</td><td>126.483</td><td>0.683</td><td>0.2</td><td>7.8</td><td>O K</td></tr><tr><td>240 min Summer</td><td>126.496</td><td>0.696</td><td>0.2</td><td>7.9</td><td>O K</td></tr><tr><td>360 min Summer</td><td>126.496</td><td>0.696</td><td>0.2</td><td>7.9</td><td>O K</td></tr><tr><td>480 min Summer</td><td>126.491</td><td>0.691</td><td>0.2</td><td>7.9</td><td>O K</td></tr><tr><td>600 min Summer</td><td>126.483</td><td>0.683</td><td>0.2</td><td>7.8</td><td>O K</td></tr><tr><td>720 min Summer</td><td>126.474</td><td>0.674</td><td>0.2</td><td>7.7</td><td>O K</td></tr><tr><td>960 min Summer</td><td>126.453</td><td>0.653</td><td>0.2</td><td>7.4</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>126.407</td><td>0.607</td><td>0.2</td><td>6.9</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>126.344</td><td>0.544</td><td>0.1</td><td>6.2</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>126.289</td><td>0.489</td><td>0.1</td><td>5.6</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>126.201</td><td>0.401</td><td>0.1</td><td>4.6</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>126.131</td><td>0.331</td><td>0.1</td><td>3.8</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>126.076</td><td>0.276</td><td>0.1</td><td>3.1</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>126.030</td><td>0.230</td><td>0.1</td><td>2.6</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>125.991</td><td>0.191</td><td>0.1</td><td>2.2</td><td>O K</td></tr><tr><td>15 min Winter</td><td>126.201</td><td>0.401</td><td>0.1</td><td>4.6</td><td>O K</td></tr></table> <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>139.350</td><td>0.0</td><td>22</td></tr><tr><td>30 min Summer</td><td>91.106</td><td>0.0</td><td>37</td></tr><tr><td>60 min Summer</td><td>56.713</td><td>0.0</td><td>66</td></tr><tr><td>120 min Summer</td><td>34.106</td><td>0.0</td><td>124</td></tr><tr><td>180 min Summer</td><td>24.997</td><td>0.0</td><td>184</td></tr><tr><td>240 min Summer</td><td>19.934</td><td>0.0</td><td>242</td></tr><tr><td>360 min Summer</td><td>14.444</td><td>0.0</td><td>338</td></tr><tr><td>480 min Summer</td><td>11.493</td><td>0.0</td><td>392</td></tr><tr><td>600 min Summer</td><td>9.620</td><td>0.0</td><td>454</td></tr><tr><td>720 min Summer</td><td>8.314</td><td>0.0</td><td>520</td></tr><tr><td>960 min Summer</td><td>6.600</td><td>0.0</td><td>658</td></tr><tr><td>1440 min Summer</td><td>4.760</td><td>0.0</td><td>930</td></tr><tr><td>2160 min Summer</td><td>3.427</td><td>0.0</td><td>1344</td></tr><tr><td>2880 min Summer</td><td>2.712</td><td>0.0</td><td>1736</td></tr><tr><td>4320 min Summer</td><td>1.948</td><td>0.0</td><td>2512</td></tr><tr><td>5760 min Summer</td><td>1.538</td><td>0.0</td><td>3288</td></tr><tr><td>7200 min Summer</td><td>1.281</td><td>0.0</td><td>4032</td></tr><tr><td>8640 min Summer</td><td>1.102</td><td>0.0</td><td>4752</td></tr><tr><td>10080 min Summer</td><td>0.970</td><td>0.0</td><td>5448</td></tr><tr><td>15 min Winter</td><td>139.350</td><td>0.0</td><td>22</td></tr></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	126.158	0.358	0.1	4.1	O K	30 min Summer	126.263	0.463	0.1	5.3	O K	60 min Summer	126.363	0.563	0.2	6.4	O K	120 min Summer	126.448	0.648	0.2	7.4	O K	180 min Summer	126.483	0.683	0.2	7.8	O K	240 min Summer	126.496	0.696	0.2	7.9	O K	360 min Summer	126.496	0.696	0.2	7.9	O K	480 min Summer	126.491	0.691	0.2	7.9	O K	600 min Summer	126.483	0.683	0.2	7.8	O K	720 min Summer	126.474	0.674	0.2	7.7	O K	960 min Summer	126.453	0.653	0.2	7.4	O K	1440 min Summer	126.407	0.607	0.2	6.9	O K	2160 min Summer	126.344	0.544	0.1	6.2	O K	2880 min Summer	126.289	0.489	0.1	5.6	O K	4320 min Summer	126.201	0.401	0.1	4.6	O K	5760 min Summer	126.131	0.331	0.1	3.8	O K	7200 min Summer	126.076	0.276	0.1	3.1	O K	8640 min Summer	126.030	0.230	0.1	2.6	O K	10080 min Summer	125.991	0.191	0.1	2.2	O K	15 min Winter	126.201	0.401	0.1	4.6	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	139.350	0.0	22	30 min Summer	91.106	0.0	37	60 min Summer	56.713	0.0	66	120 min Summer	34.106	0.0	124	180 min Summer	24.997	0.0	184	240 min Summer	19.934	0.0	242	360 min Summer	14.444	0.0	338	480 min Summer	11.493	0.0	392	600 min Summer	9.620	0.0	454	720 min Summer	8.314	0.0	520	960 min Summer	6.600	0.0	658	1440 min Summer	4.760	0.0	930	2160 min Summer	3.427	0.0	1344	2880 min Summer	2.712	0.0	1736	4320 min Summer	1.948	0.0	2512	5760 min Summer	1.538	0.0	3288	7200 min Summer	1.281	0.0	4032	8640 min Summer	1.102	0.0	4752	10080 min Summer	0.970	0.0	5448	15 min Winter	139.350	0.0	22
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status																																																																																																																																																																																																																		
15 min Summer	126.158	0.358	0.1	4.1	O K																																																																																																																																																																																																																		
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720 min Summer	126.474	0.674	0.2	7.7	O K																																																																																																																																																																																																																		
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2160 min Summer	126.344	0.544	0.1	6.2	O K																																																																																																																																																																																																																		
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30 min Summer	91.106	0.0	37																																																																																																																																																																																																																				
60 min Summer	56.713	0.0	66																																																																																																																																																																																																																				
120 min Summer	34.106	0.0	124																																																																																																																																																																																																																				
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Glanville Consultants				Page 2	
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD					
Date 23/09/2019 16:19 File Soakaway5.SRCX		Designed by Shaque Checked by			
Micro Drainage		Source Control 2018.1.1			
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	126.320	0.520	0.1	5.9	O K
60 min Winter	126.433	0.633	0.2	7.2	O K
120 min Winter	126.532	0.732	0.2	8.3	O K
180 min Winter	126.573	0.773	0.2	8.8	O K
240 min Winter	126.591	0.791	0.2	9.0	O K
360 min Winter	126.597	0.797	0.2	9.1	O K
480 min Winter	126.587	0.787	0.2	9.0	O K
600 min Winter	126.578	0.778	0.2	8.9	O K
720 min Winter	126.566	0.766	0.2	8.7	O K
960 min Winter	126.538	0.738	0.2	8.4	O K
1440 min Winter	126.473	0.673	0.2	7.7	O K
2160 min Winter	126.384	0.584	0.2	6.7	O K
2880 min Winter	126.308	0.508	0.1	5.8	O K
4320 min Winter	126.187	0.387	0.1	4.4	O K
5760 min Winter	126.097	0.297	0.1	3.4	O K
7200 min Winter	126.028	0.228	0.1	2.6	O K
8640 min Winter	125.973	0.173	0.1	2.0	O K
10080 min Winter	125.929	0.129	0.1	1.5	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	91.106	0.0	36		
60 min Winter	56.713	0.0	66		
120 min Winter	34.106	0.0	122		
180 min Winter	24.997	0.0	180		
240 min Winter	19.934	0.0	236		
360 min Winter	14.444	0.0	346		
480 min Winter	11.493	0.0	440		
600 min Winter	9.620	0.0	474		
720 min Winter	8.314	0.0	550		
960 min Winter	6.600	0.0	706		
1440 min Winter	4.760	0.0	1010		
2160 min Winter	3.427	0.0	1444		
2880 min Winter	2.712	0.0	1852		
4320 min Winter	1.948	0.0	2676		
5760 min Winter	1.538	0.0	3456		
7200 min Winter	1.281	0.0	4184		
8640 min Winter	1.102	0.0	4928		
10080 min Winter	0.970	0.0	5648		
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Glanville Consultants		Page 3
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD		
Date 23/09/2019 16:19 File Soakaway5.SRCX	Designed by Shaque Checked by	
Micro Drainage		Source Control 2018.1.1

Rainfall Details


Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.410	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40


Time Area Diagram


Total Area (ha) 0.016


Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)
0 4	0.008	4 8	0.008

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Glanville Consultants		Page 4																		
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD																				
Date 23/09/2019 16:19 File Soakaway5.SRCX	Designed by Shaque Checked by																			
Micro Drainage	Source Control 2018.1.1																			
<div>Model Details</div> <div>Storage is Online Cover Level (m) 127.000</div> <div>Cellular Storage Structure</div> <div>Invert Level (m) 125.800 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.03600 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.07200</div> <table><thead><tr><th>Depth (m)</th><th>Area (m<sup>2</sup>)</th><th>Inf. Area (m<sup>2</sup>)</th><th>Depth (m)</th><th>Area (m<sup>2</sup>)</th><th>Inf. Area (m<sup>2</sup>)</th></tr></thead><tbody><tr><td>0.000</td><td>12.0</td><td>12.0</td><td>0.801</td><td>0.0</td><td>24.8</td></tr><tr><td>0.800</td><td>12.0</td><td>24.8</td><td></td><td></td><td></td></tr></tbody></table>			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	12.0	12.0	0.801	0.0	24.8	0.800	12.0	24.8			
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	12.0	12.0	0.801	0.0	24.8															
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©1982-2018 Innovyze																				

Glanville Consultants				Page 1																																																																																																																																																																																																																			
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD																																																																																																																																																																																																																							
Date 23/09/2019 16:14 File Soakaway6.SRCX		Designed by Shaque Checked by																																																																																																																																																																																																																					
Micro Drainage		Source Control 2018.1.1																																																																																																																																																																																																																					
<p>Summary of Results for 100 year Return Period (+40%)</p> <p>Half Drain Time : 472 minutes.</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>126.149</td><td>0.349</td><td>0.1</td><td>3.3</td><td>O K</td></tr><tr><td>30 min Summer</td><td>126.251</td><td>0.451</td><td>0.1</td><td>4.3</td><td>O K</td></tr><tr><td>60 min Summer</td><td>126.348</td><td>0.548</td><td>0.1</td><td>5.2</td><td>O K</td></tr><tr><td>120 min Summer</td><td>126.430</td><td>0.630</td><td>0.1</td><td>6.0</td><td>O K</td></tr><tr><td>180 min Summer</td><td>126.462</td><td>0.662</td><td>0.1</td><td>6.3</td><td>O K</td></tr><tr><td>240 min Summer</td><td>126.474</td><td>0.674</td><td>0.1</td><td>6.4</td><td>O K</td></tr><tr><td>360 min Summer</td><td>126.473</td><td>0.673</td><td>0.1</td><td>6.4</td><td>O K</td></tr><tr><td>480 min Summer</td><td>126.467</td><td>0.667</td><td>0.1</td><td>6.3</td><td>O K</td></tr><tr><td>600 min Summer</td><td>126.459</td><td>0.659</td><td>0.1</td><td>6.3</td><td>O K</td></tr><tr><td>720 min Summer</td><td>126.450</td><td>0.650</td><td>0.1</td><td>6.2</td><td>O K</td></tr><tr><td>960 min Summer</td><td>126.428</td><td>0.628</td><td>0.1</td><td>6.0</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>126.383</td><td>0.583</td><td>0.1</td><td>5.5</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>126.320</td><td>0.520</td><td>0.1</td><td>4.9</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>126.267</td><td>0.467</td><td>0.1</td><td>4.4</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>126.180</td><td>0.380</td><td>0.1</td><td>3.6</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>126.112</td><td>0.312</td><td>0.1</td><td>3.0</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>126.058</td><td>0.258</td><td>0.1</td><td>2.5</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>126.014</td><td>0.214</td><td>0.1</td><td>2.0</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>125.978</td><td>0.178</td><td>0.1</td><td>1.7</td><td>O K</td></tr><tr><td>15 min Winter</td><td>126.191</td><td>0.391</td><td>0.1</td><td>3.7</td><td>O K</td></tr></table> <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>139.350</td><td>0.0</td><td>22</td></tr><tr><td>30 min Summer</td><td>91.106</td><td>0.0</td><td>37</td></tr><tr><td>60 min Summer</td><td>56.713</td><td>0.0</td><td>66</td></tr><tr><td>120 min Summer</td><td>34.106</td><td>0.0</td><td>124</td></tr><tr><td>180 min Summer</td><td>24.997</td><td>0.0</td><td>184</td></tr><tr><td>240 min Summer</td><td>19.934</td><td>0.0</td><td>242</td></tr><tr><td>360 min Summer</td><td>14.444</td><td>0.0</td><td>330</td></tr><tr><td>480 min Summer</td><td>11.493</td><td>0.0</td><td>386</td></tr><tr><td>600 min Summer</td><td>9.620</td><td>0.0</td><td>450</td></tr><tr><td>720 min Summer</td><td>8.314</td><td>0.0</td><td>516</td></tr><tr><td>960 min Summer</td><td>6.600</td><td>0.0</td><td>654</td></tr><tr><td>1440 min Summer</td><td>4.760</td><td>0.0</td><td>928</td></tr><tr><td>2160 min Summer</td><td>3.427</td><td>0.0</td><td>1340</td></tr><tr><td>2880 min Summer</td><td>2.712</td><td>0.0</td><td>1732</td></tr><tr><td>4320 min Summer</td><td>1.948</td><td>0.0</td><td>2512</td></tr><tr><td>5760 min Summer</td><td>1.538</td><td>0.0</td><td>3280</td></tr><tr><td>7200 min Summer</td><td>1.281</td><td>0.0</td><td>4032</td></tr><tr><td>8640 min Summer</td><td>1.102</td><td>0.0</td><td>4752</td></tr><tr><td>10080 min Summer</td><td>0.970</td><td>0.0</td><td>5448</td></tr><tr><td>15 min Winter</td><td>139.350</td><td>0.0</td><td>22</td></tr></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	126.149	0.349	0.1	3.3	O K	30 min Summer	126.251	0.451	0.1	4.3	O K	60 min Summer	126.348	0.548	0.1	5.2	O K	120 min Summer	126.430	0.630	0.1	6.0	O K	180 min Summer	126.462	0.662	0.1	6.3	O K	240 min Summer	126.474	0.674	0.1	6.4	O K	360 min Summer	126.473	0.673	0.1	6.4	O K	480 min Summer	126.467	0.667	0.1	6.3	O K	600 min Summer	126.459	0.659	0.1	6.3	O K	720 min Summer	126.450	0.650	0.1	6.2	O K	960 min Summer	126.428	0.628	0.1	6.0	O K	1440 min Summer	126.383	0.583	0.1	5.5	O K	2160 min Summer	126.320	0.520	0.1	4.9	O K	2880 min Summer	126.267	0.467	0.1	4.4	O K	4320 min Summer	126.180	0.380	0.1	3.6	O K	5760 min Summer	126.112	0.312	0.1	3.0	O K	7200 min Summer	126.058	0.258	0.1	2.5	O K	8640 min Summer	126.014	0.214	0.1	2.0	O K	10080 min Summer	125.978	0.178	0.1	1.7	O K	15 min Winter	126.191	0.391	0.1	3.7	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	139.350	0.0	22	30 min Summer	91.106	0.0	37	60 min Summer	56.713	0.0	66	120 min Summer	34.106	0.0	124	180 min Summer	24.997	0.0	184	240 min Summer	19.934	0.0	242	360 min Summer	14.444	0.0	330	480 min Summer	11.493	0.0	386	600 min Summer	9.620	0.0	450	720 min Summer	8.314	0.0	516	960 min Summer	6.600	0.0	654	1440 min Summer	4.760	0.0	928	2160 min Summer	3.427	0.0	1340	2880 min Summer	2.712	0.0	1732	4320 min Summer	1.948	0.0	2512	5760 min Summer	1.538	0.0	3280	7200 min Summer	1.281	0.0	4032	8640 min Summer	1.102	0.0	4752	10080 min Summer	0.970	0.0	5448	15 min Winter	139.350	0.0	22
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status																																																																																																																																																																																																																		
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960 min Summer	126.428	0.628	0.1	6.0	O K																																																																																																																																																																																																																		
1440 min Summer	126.383	0.583	0.1	5.5	O K																																																																																																																																																																																																																		
2160 min Summer	126.320	0.520	0.1	4.9	O K																																																																																																																																																																																																																		
2880 min Summer	126.267	0.467	0.1	4.4	O K																																																																																																																																																																																																																		
4320 min Summer	126.180	0.380	0.1	3.6	O K																																																																																																																																																																																																																		
5760 min Summer	126.112	0.312	0.1	3.0	O K																																																																																																																																																																																																																		
7200 min Summer	126.058	0.258	0.1	2.5	O K																																																																																																																																																																																																																		
8640 min Summer	126.014	0.214	0.1	2.0	O K																																																																																																																																																																																																																		
10080 min Summer	125.978	0.178	0.1	1.7	O K																																																																																																																																																																																																																		
15 min Winter	126.191	0.391	0.1	3.7	O K																																																																																																																																																																																																																		
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)																																																																																																																																																																																																																				
15 min Summer	139.350	0.0	22																																																																																																																																																																																																																				
30 min Summer	91.106	0.0	37																																																																																																																																																																																																																				
60 min Summer	56.713	0.0	66																																																																																																																																																																																																																				
120 min Summer	34.106	0.0	124																																																																																																																																																																																																																				
180 min Summer	24.997	0.0	184																																																																																																																																																																																																																				
240 min Summer	19.934	0.0	242																																																																																																																																																																																																																				
360 min Summer	14.444	0.0	330																																																																																																																																																																																																																				
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960 min Summer	6.600	0.0	654																																																																																																																																																																																																																				
1440 min Summer	4.760	0.0	928																																																																																																																																																																																																																				
2160 min Summer	3.427	0.0	1340																																																																																																																																																																																																																				
2880 min Summer	2.712	0.0	1732																																																																																																																																																																																																																				
4320 min Summer	1.948	0.0	2512																																																																																																																																																																																																																				
5760 min Summer	1.538	0.0	3280																																																																																																																																																																																																																				
7200 min Summer	1.281	0.0	4032																																																																																																																																																																																																																				
8640 min Summer	1.102	0.0	4752																																																																																																																																																																																																																				
10080 min Summer	0.970	0.0	5448																																																																																																																																																																																																																				
15 min Winter	139.350	0.0	22																																																																																																																																																																																																																				
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Glanville Consultants				Page 2	
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD					
Date 23/09/2019 16:14 File Soakaway6.SRCX		Designed by Shaque Checked by			
Micro Drainage		Source Control 2018.1.1			
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	126.306	0.506	0.1	4.8	O K
60 min Winter	126.416	0.616	0.1	5.9	O K
120 min Winter	126.511	0.711	0.1	6.8	O K
180 min Winter	126.550	0.750	0.2	7.1	O K
240 min Winter	126.566	0.766	0.2	7.3	O K
360 min Winter	126.570	0.770	0.2	7.3	O K
480 min Winter	126.559	0.759	0.2	7.2	O K
600 min Winter	126.550	0.750	0.2	7.1	O K
720 min Winter	126.538	0.738	0.2	7.0	O K
960 min Winter	126.509	0.709	0.1	6.7	O K
1440 min Winter	126.444	0.644	0.1	6.1	O K
2160 min Winter	126.356	0.556	0.1	5.3	O K
2880 min Winter	126.281	0.481	0.1	4.6	O K
4320 min Winter	126.164	0.364	0.1	3.5	O K
5760 min Winter	126.077	0.277	0.1	2.6	O K
7200 min Winter	126.010	0.210	0.1	2.0	O K
8640 min Winter	125.957	0.157	0.1	1.5	O K
10080 min Winter	125.916	0.116	0.1	1.1	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	91.106	0.0	36		
60 min Winter	56.713	0.0	66		
120 min Winter	34.106	0.0	122		
180 min Winter	24.997	0.0	180		
240 min Winter	19.934	0.0	236		
360 min Winter	14.444	0.0	344		
480 min Winter	11.493	0.0	404		
600 min Winter	9.620	0.0	470		
720 min Winter	8.314	0.0	548		
960 min Winter	6.600	0.0	702		
1440 min Winter	4.760	0.0	1000		
2160 min Winter	3.427	0.0	1432		
2880 min Winter	2.712	0.0	1848		
4320 min Winter	1.948	0.0	2640		
5760 min Winter	1.538	0.0	3408		
7200 min Winter	1.281	0.0	4176		
8640 min Winter	1.102	0.0	4920		
10080 min Winter	0.970	0.0	5552		
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Glanville Consultants		Page 3
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD		
Date 23/09/2019 16:14 File Soakaway6.SRCX	Designed by Shaque Checked by	
Micro Drainage		Source Control 2018.1.1

Rainfall Details


Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.410	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram


Total Area (ha) 0.013


Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)
0	4 0.006	4	8 0.007


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Glanville Consultants		Page 4																		
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD																				
Date 23/09/2019 16:14 File Soakaway6.SRCX	Designed by Shaque Checked by																			
Micro Drainage		Source Control 2018.1.1																		
<p style="text-align: center;"><u>Model Details</u></p> <p style="text-align: center;">Storage is Online Cover Level (m) 127.000</p> <p style="text-align: center;"><u>Cellular Storage Structure</u></p> <p style="text-align: center;">Invert Level (m) 125.800 Safety Factor 2.0  Infiltration Coefficient Base (m/hr) 0.03600 Porosity 0.95  Infiltration Coefficient Side (m/hr) 0.07200</p> <table border="1"> <thead> <tr> <th>Depth (m)</th> <th>Area (m<sup>2</sup>)</th> <th>Inf. Area (m<sup>2</sup>)</th> <th>Depth (m)</th> <th>Area (m<sup>2</sup>)</th> <th>Inf. Area (m<sup>2</sup>)</th> </tr> </thead> <tbody> <tr> <td>0.000</td> <td>10.0</td> <td>10.0</td> <td>0.801</td> <td>0.0</td> <td>21.2</td> </tr> <tr> <td>0.800</td> <td>10.0</td> <td>21.2</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>			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	10.0	10.0	0.801	0.0	21.2	0.800	10.0	21.2			
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	10.0	10.0	0.801	0.0	21.2															
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©1982-2018 Innovyze																				



Glanville Consultants				Page 1																																																																																																																																																																																																																			
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD																																																																																																																																																																																																																							
Date 23/09/2019 17:31 File Roads.SRCX		Designed by Shaque Checked by																																																																																																																																																																																																																					
Micro Drainage		Source Control 2018.1.1																																																																																																																																																																																																																					
<p>Summary of Results for 100 year Return Period (+40%)</p> <p>Half Drain Time : 38 minutes.</p> <table><thead><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></thead><tbody><tr><td>15 min Summer</td><td>125.635</td><td>0.185</td><td>0.6</td><td>1.8</td><td>O K</td></tr><tr><td>30 min Summer</td><td>125.656</td><td>0.206</td><td>0.7</td><td>2.2</td><td>O K</td></tr><tr><td>60 min Summer</td><td>125.666</td><td>0.216</td><td>0.8</td><td>2.5</td><td>O K</td></tr><tr><td>120 min Summer</td><td>125.665</td><td>0.215</td><td>0.8</td><td>2.4</td><td>O K</td></tr><tr><td>180 min Summer</td><td>125.657</td><td>0.207</td><td>0.7</td><td>2.3</td><td>O K</td></tr><tr><td>240 min Summer</td><td>125.648</td><td>0.198</td><td>0.7</td><td>2.1</td><td>O K</td></tr><tr><td>360 min Summer</td><td>125.629</td><td>0.179</td><td>0.6</td><td>1.7</td><td>O K</td></tr><tr><td>480 min Summer</td><td>125.614</td><td>0.164</td><td>0.6</td><td>1.4</td><td>O K</td></tr><tr><td>600 min Summer</td><td>125.601</td><td>0.151</td><td>0.5</td><td>1.2</td><td>O K</td></tr><tr><td>720 min Summer</td><td>125.590</td><td>0.140</td><td>0.5</td><td>1.0</td><td>O K</td></tr><tr><td>960 min Summer</td><td>125.572</td><td>0.122</td><td>0.4</td><td>0.8</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>125.548</td><td>0.098</td><td>0.3</td><td>0.5</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>125.525</td><td>0.075</td><td>0.3</td><td>0.3</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>125.511</td><td>0.061</td><td>0.2</td><td>0.2</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>125.497</td><td>0.047</td><td>0.2</td><td>0.1</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>125.492</td><td>0.042</td><td>0.1</td><td>0.1</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>125.488</td><td>0.038</td><td>0.1</td><td>0.1</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>125.485</td><td>0.035</td><td>0.1</td><td>0.1</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>125.483</td><td>0.033</td><td>0.1</td><td>0.1</td><td>O K</td></tr><tr><td>15 min Winter</td><td>125.649</td><td>0.199</td><td>0.7</td><td>2.1</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Summer</td><td>139.350</td><td>0.0</td><td>17</td></tr><tr><td>30 min Summer</td><td>91.106</td><td>0.0</td><td>29</td></tr><tr><td>60 min Summer</td><td>56.713</td><td>0.0</td><td>44</td></tr><tr><td>120 min Summer</td><td>34.106</td><td>0.0</td><td>78</td></tr><tr><td>180 min Summer</td><td>24.997</td><td>0.0</td><td>112</td></tr><tr><td>240 min Summer</td><td>19.934</td><td>0.0</td><td>146</td></tr><tr><td>360 min Summer</td><td>14.444</td><td>0.0</td><td>208</td></tr><tr><td>480 min Summer</td><td>11.493</td><td>0.0</td><td>270</td></tr><tr><td>600 min Summer</td><td>9.620</td><td>0.0</td><td>332</td></tr><tr><td>720 min Summer</td><td>8.314</td><td>0.0</td><td>392</td></tr><tr><td>960 min Summer</td><td>6.600</td><td>0.0</td><td>510</td></tr><tr><td>1440 min Summer</td><td>4.760</td><td>0.0</td><td>750</td></tr><tr><td>2160 min Summer</td><td>3.427</td><td>0.0</td><td>1104</td></tr><tr><td>2880 min Summer</td><td>2.712</td><td>0.0</td><td>1468</td></tr><tr><td>4320 min Summer</td><td>1.948</td><td>0.0</td><td>2184</td></tr><tr><td>5760 min Summer</td><td>1.538</td><td>0.0</td><td>2936</td></tr><tr><td>7200 min Summer</td><td>1.281</td><td>0.0</td><td>3672</td></tr><tr><td>8640 min Summer</td><td>1.102</td><td>0.0</td><td>4296</td></tr><tr><td>10080 min Summer</td><td>0.970</td><td>0.0</td><td>5120</td></tr><tr><td>15 min Winter</td><td>139.350</td><td>0.0</td><td>17</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	125.635	0.185	0.6	1.8	O K	30 min Summer	125.656	0.206	0.7	2.2	O K	60 min Summer	125.666	0.216	0.8	2.5	O K	120 min Summer	125.665	0.215	0.8	2.4	O K	180 min Summer	125.657	0.207	0.7	2.3	O K	240 min Summer	125.648	0.198	0.7	2.1	O K	360 min Summer	125.629	0.179	0.6	1.7	O K	480 min Summer	125.614	0.164	0.6	1.4	O K	600 min Summer	125.601	0.151	0.5	1.2	O K	720 min Summer	125.590	0.140	0.5	1.0	O K	960 min Summer	125.572	0.122	0.4	0.8	O K	1440 min Summer	125.548	0.098	0.3	0.5	O K	2160 min Summer	125.525	0.075	0.3	0.3	O K	2880 min Summer	125.511	0.061	0.2	0.2	O K	4320 min Summer	125.497	0.047	0.2	0.1	O K	5760 min Summer	125.492	0.042	0.1	0.1	O K	7200 min Summer	125.488	0.038	0.1	0.1	O K	8640 min Summer	125.485	0.035	0.1	0.1	O K	10080 min Summer	125.483	0.033	0.1	0.1	O K	15 min Winter	125.649	0.199	0.7	2.1	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	139.350	0.0	17	30 min Summer	91.106	0.0	29	60 min Summer	56.713	0.0	44	120 min Summer	34.106	0.0	78	180 min Summer	24.997	0.0	112	240 min Summer	19.934	0.0	146	360 min Summer	14.444	0.0	208	480 min Summer	11.493	0.0	270	600 min Summer	9.620	0.0	332	720 min Summer	8.314	0.0	392	960 min Summer	6.600	0.0	510	1440 min Summer	4.760	0.0	750	2160 min Summer	3.427	0.0	1104	2880 min Summer	2.712	0.0	1468	4320 min Summer	1.948	0.0	2184	5760 min Summer	1.538	0.0	2936	7200 min Summer	1.281	0.0	3672	8640 min Summer	1.102	0.0	4296	10080 min Summer	0.970	0.0	5120	15 min Winter	139.350	0.0	17
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8640 min Summer	1.102	0.0	4296																																																																																																																																																																																																																				
10080 min Summer	0.970	0.0	5120																																																																																																																																																																																																																				
15 min Winter	139.350	0.0	17																																																																																																																																																																																																																				
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Glanville Consultants				Page 2	
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD					
Date 23/09/2019 17:31 File Roads.SRCX		Designed by Shaque Checked by			
Micro Drainage		Source Control 2018.1.1			
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	125.671	0.221	0.8	2.6	O K
60 min Winter	125.681	0.231	0.8	2.8	O K
120 min Winter	125.675	0.225	0.8	2.7	O K
180 min Winter	125.662	0.212	0.7	2.4	O K
240 min Winter	125.649	0.199	0.7	2.1	O K
360 min Winter	125.624	0.174	0.6	1.6	O K
480 min Winter	125.604	0.154	0.5	1.2	O K
600 min Winter	125.587	0.137	0.5	1.0	O K
720 min Winter	125.574	0.124	0.4	0.8	O K
960 min Winter	125.553	0.103	0.4	0.6	O K
1440 min Winter	125.527	0.077	0.3	0.3	O K
2160 min Winter	125.506	0.056	0.2	0.2	O K
2880 min Winter	125.497	0.047	0.2	0.1	O K
4320 min Winter	125.490	0.040	0.1	0.1	O K
5760 min Winter	125.486	0.036	0.1	0.1	O K
7200 min Winter	125.482	0.032	0.1	0.1	O K
8640 min Winter	125.480	0.030	0.1	0.0	O K
10080 min Winter	125.478	0.028	0.1	0.0	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	91.106	0.0	30		
60 min Winter	56.713	0.0	48		
120 min Winter	34.106	0.0	84		
180 min Winter	24.997	0.0	120		
240 min Winter	19.934	0.0	154		
360 min Winter	14.444	0.0	218		
480 min Winter	11.493	0.0	280		
600 min Winter	9.620	0.0	342		
720 min Winter	8.314	0.0	400		
960 min Winter	6.600	0.0	520		
1440 min Winter	4.760	0.0	752		
2160 min Winter	3.427	0.0	1104		
2880 min Winter	2.712	0.0	1468		
4320 min Winter	1.948	0.0	2200		
5760 min Winter	1.538	0.0	2904		
7200 min Winter	1.281	0.0	3544		
8640 min Winter	1.102	0.0	4312		
10080 min Winter	0.970	0.0	5152		
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Glanville Consultants		Page 3
Cornerstone Court 62 Foxhall Road Didcot OX11 7AD		
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Micro Drainage		Source Control 2018.1.1

Rainfall Details


Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.410	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.010

Time (mins)	Area
From:	To: (ha)
0	4 0.010

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Cornerstone Court 62 Foxhall Road Didcot OX11 7AD																										
Date 23/09/2019 17:31 File Roads.SRCX	Designed by Shaque Checked by																									
Micro Drainage Source Control 2018.1.1																										
<p style="text-align: center;"><u>Model Details</u></p> <p style="text-align: center;">Storage is Online Cover Level (m) 125.950</p> <p style="text-align: center;"><u>Porous Car Park Structure</u></p> <table> <tr> <td>Infiltration Coefficient Base (m/hr)</td> <td>0.07200</td> <td>Width (m)</td> <td>4.8</td> </tr> <tr> <td>Membrane Percolation (mm/hr)</td> <td>1000</td> <td>Length (m)</td> <td>20.0</td> </tr> <tr> <td>Max Percolation (l/s)</td> <td>26.7</td> <td>Slope (1:X)</td> <td>73.0</td> </tr> <tr> <td>Safety Factor</td> <td>2.0</td> <td>Depression Storage (mm)</td> <td>5</td> </tr> <tr> <td>Porosity</td> <td>0.30</td> <td>Evaporation (mm/day)</td> <td>3</td> </tr> <tr> <td>Invert Level (m)</td> <td>125.450</td> <td>Membrane Depth (m)</td> <td>0</td> </tr> </table>			Infiltration Coefficient Base (m/hr)	0.07200	Width (m)	4.8	Membrane Percolation (mm/hr)	1000	Length (m)	20.0	Max Percolation (l/s)	26.7	Slope (1:X)	73.0	Safety Factor	2.0	Depression Storage (mm)	5	Porosity	0.30	Evaporation (mm/day)	3	Invert Level (m)	125.450	Membrane Depth (m)	0
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