

RIDGE

DRAINAGE STRATEGY
MANOR FARM, AVEBURY
TRUSLOE

October 2021

MANOR FARM, AVEBURY TRUSLOE – DRAINAGE STRATEGY SAVILLS UK LIMITED

October 2021

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SECTION 1
INTRODUCTION

1. INTRODUCTION

1.1. Appointment and Brief

This surface and foul water drainage strategy (DS) has been prepared on behalf of Savills UK Limited for a proposed development at Manor Farm in Avebury Trusloe, Wiltshire, SN8 1QY. The application site is to be redeveloped to provide 6 holiday lodges. These lodges will replace a group of farm buildings.

The purpose of this document is to outline the development of the proposed DS, providing sufficient detail to enable both a thorough review of design principles adopted and further refinement of the design as part of the ongoing development of the project.

It aims to demonstrate the foul and surface water management at the Application Site, as follows:

- Provide an analysis of the impact of the proposed development on surrounding foul water infrastructure and identify the constraints present on the site in terms of suitability of conventional gravity drainage.
- Demonstrate the principles of surface water management in terms of constraints on discharge, permitted discharge rates and required volumes of attenuation (where required), describing how these can be accommodated within the development proposals.

The proposed DS outlined herein is subject to further detailed analysis at design stage.

1.2. Aims and Objectives

The DS has been prepared with reference to the following requirements:

- The DS must:
  - Ensure that flood risk to the Application Site and surrounding area is not increased over the lifetime of the Proposed Development;
  - Conform with all relevant National and Local flood risk polices;
  - Adopt current design standards; and
  - Consider long-term maintenance with respect to practicality, ownership and funding.

- The DS should:
  - Mimic the existing drainage characteristics of the Application Site as far as is practical;
  - Look for opportunities to provide a reduction in flood risk to the Application Site and the surrounding area;
  - Adhere to current best practice guidance;
  - Contribute to the enhanced amenity and aesthetic value of the Application Site; and
  - Propose opportunities for biological enhancement and provide habitats for wildlife in urban areas.

1.3. Limitations

The purpose of this report as outlined in Section 1.2, together with those related matters specifically referred to therein and it is not intended to be used for any other purposes. The report is for the sole benefit and may only be relied upon by the addressee, to whom we will owe a duty of care. The report and any part of it is confidential to the addressee and should not be disclosed to any third party for any purpose, without the prior written consent of Ridge and Partners LLP as to the form and context of such disclosure. The granting of such consent shall not entitle the third party to place reliance on the report, nor shall it confer any third-party rights pursuant to the Contracts (Rights of Third Parties) Act. The report may not be assigned to any third party.

1.4. Reference Information

The following information has been obtained and interrogated as part of this study:

- 445994_201 PROPOSED SITE LAYOUT REV 1
- 1397289-Asset Location Search-1362518(1.0).pdf
- 32C Manor Farm, Averbury Trusloe - Topographic Survey.

In addition, the following documents have been consulted:

- Communities and Local Government Document. (2019). The National Planning Policy Framework;
- Environment Agency. (2016). Flood Risk Assessments: Climate Change Allowances;
- Environment Agency. (2013). Rainfall Runoff Management for Developments;
- Environment Agency. (2019). Flood Risk Assessments: Climate Change Allowances;
- CIRIA. (2015). C753 – The SuDS Manual;
- Secretary of State. (2015). Building Regulations Approved Document H;
- British Geological Survey Online Mapping Tool;
- DEFRA / EA Interactive online mapping (magic.defra.gov.uk);
- Department for Environment, Food and Rural Affairs. (2015). Non-Statutory Technical Standards for
- Sustainable Drainage Systems;
- Department for Environment, Food and Rural Affairs & Environment Agency. (2017). Flood Risk Assessment for Planning Applications;

SECTION 2
PROJECT BACKGROUND

2. PROJECT BACKGROUND

2.1. Site Location and Existing Land Use

The site is located to the west of Marlborough and borders residential developments and greenfield. It's situated within Flood Zone 1, as noted on the Environment Agency Flood Map for Planning. The site has a level difference from north-west down to the south-east. The site area is circa 0.38 hectares. The application site is located at British National Grid co-ordinates of approximately 409519 E, 169573 N and the nearest post code is SN8 1QY. There is currently a group of farm buildings within the application site.



Figure 1 Site location

2.2. Existing Drainage Infrastructure

Records indicate that foul water from the property does not drain to the public sewer. As the application site is a farm, its understood that there are no toilets facilities/sink on the site. The Sewerage Undertaker is understood to be Thames water Ltd and review of their asset records (see appendices) suggests the following significant public infrastructure on or within close vicinity of the Application Site:

- To the Southern Boundary:
  - There is 175mm diameter foul water sewer flowing west to east just outside the application site boundary.
  - There is also 175mm foul water sewer flowing north to south

The existing site is not known to have any surface water flow restriction or benefit from SuDS features.

2.3. Topography

The site is generally flat with a gentle slope from North-west to South-east. The site drops from approximately 161.5mAoD along the western boundary with the road down to approximately 159.5mAoD. This gives an approximate gradient of 1 in 30 (3.33%).

There is a small rubble mound shown on the topographic survey within the central eastern area of the site which is approximately 1m high. It is assumed that this is an artificial mound rather than the original ground topography. "

2.4. Geology and Hydrogeology

British Geological Survey (BGS) online mapping indicates that the Application Site is largely situated on a Sedimentary bedrock (Chalk) and the map suggest that there is no records of superficial.

The Environment Agency's online mapping (Magic) suggests the underlying superficial soils is classified as **Principle** and the site is known to be located in a high groundwater vulnerability zone and classified as soluble rock risk.

BEDROCK GEOLOGY	DESCRIPTION
Unit Name	Holywell Nodular Chalk Formation
Geology Description	Hard nodular chalks with thin flaser marls and significant proportions of shell debris in part. Base marked by the interbedded coloured marl and chalk succession characteristic of the Plenus Marls Member. The Melbourne Rock Member above the base can be distinguished by its lack of shell material.
Aquifer Classification	Principle
Aquifer Description	These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifers.

2.5. Hydrology

River Kennet is the main river which is located approx. 205 m away from the application site.

Existing surface water generated by the Application Site is does not drain to the public surface water sewerage system

2.6. Proposed Development

The proposed development comprises of 6 holiday lodges with associated amenity facilities, car parking and external landscaping. The proposal looks to provide 13 parking spaces. However, the existing workshop/building 8 located on the south-east boundary of the application site will be retained and refurbished. The existing brick wall by the new proposed parking area on the western boundary of the site will be retained. There is also an existing stone wall on the west side which also will be retained and extended to the north of the site.

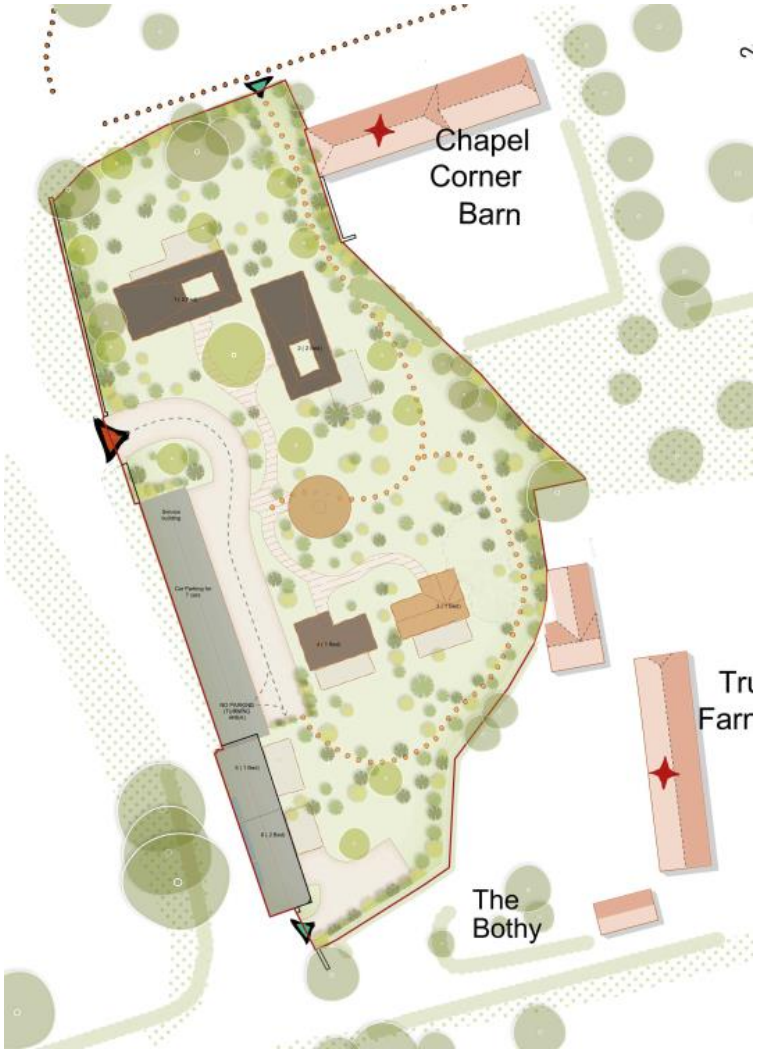


Figure 2 Site Plan

2.7. Easements and Other Constraints

Having reviewed the Topography Survey, there are the following constraints within the immediate vicinity of the application site:

- Overhead electrical cables
- Oil tank
- Water Mains

All of these services may benefit from easements and will therefore require further consideration during the ongoing course of design development.

2.8. Assessing Flood Risk

The Department for Environment, Food and Rural Affairs & Environment Agency (2017). *Flood Risk Assessment for Planning Applications* confirms that detailed flood risk assessment is required where the Application Site is:

- Located in Flood Zone 2 or 3, including minor development and change of use; or
- More than 1 hectare (Ha) in Flood Zone 1; or
- Less than 1 Ha in Flood Zone 1, including change of use in a development type to a more vulnerable class, where the development could be affected by sources of flooding other than by rivers and the sea; or
- In an area within Flood Zone 1 that has critical drainage problems as notified by the Environment Agency.

The Government's online Flood Map for Planning indicates that the Application site is predominantly situated within Flood Zone 1(as shown in figure 3). In accordance with Table 1 (Flood Zones) of the NPPF, this classifies the site of having a less than 1:1000 annual probability of river or sea flooding.

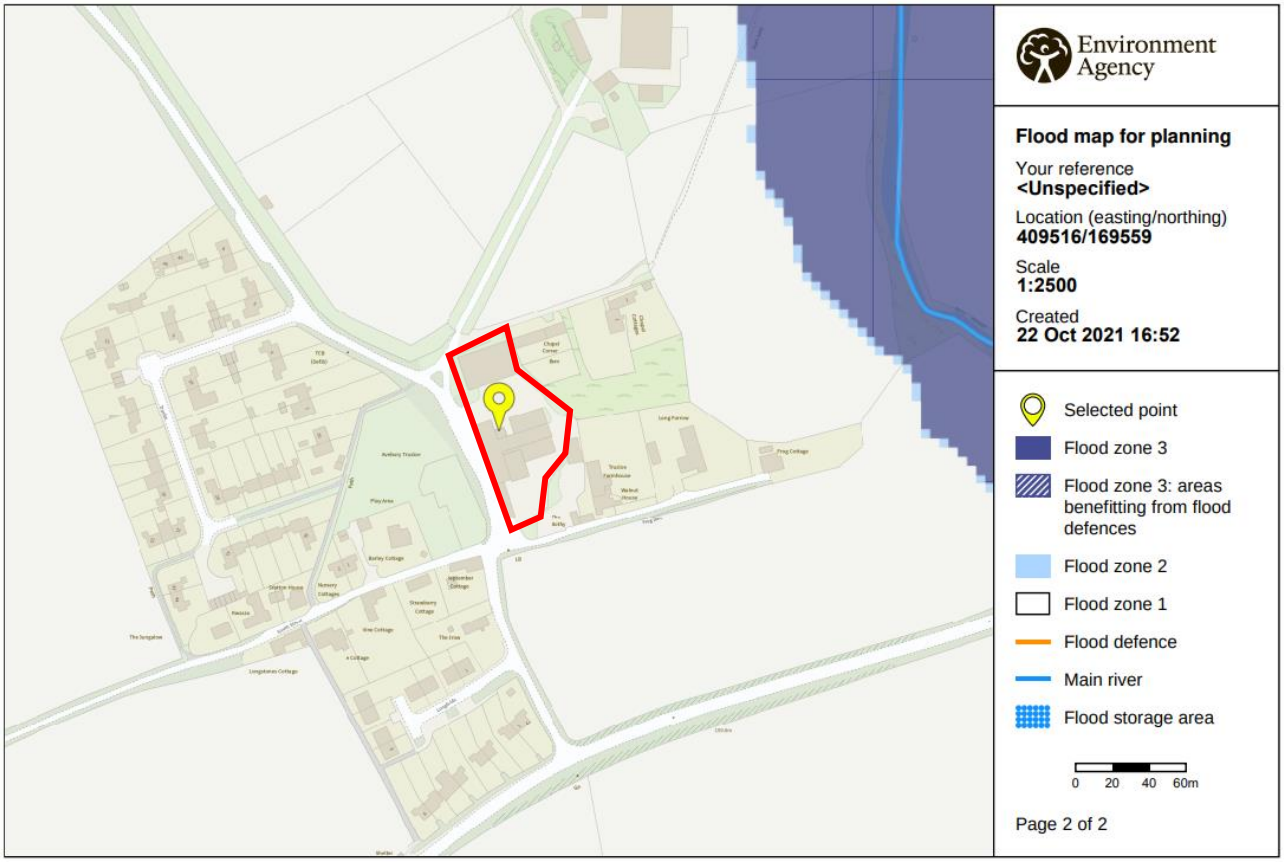


Figure 3 Flood Map showing the application site located in zone 1

An area approximately 205m to the east of the site is identified as being within Flood Zone 3. This is directly attributable to the breaching of the nearby River Kennet. Notwithstanding the above, it is not envisaged that flooding will present a significant constraint to the development of the drainage strategy.

SECTION 3

ANALYSIS OF NATIONAL AND LOCAL POLICY

3. ANALYSIS OF NATIONAL AND LOCAL POLICY

3.1. National Policy

National Planning Policy Framework (NPPF)

Communities and Local Government Document. (2020). *The National Planning Policy Framework* requires the Planning Application to demonstrate that the Proposed Development will be safe for the duration of its' design life, taking into account the vulnerability of its' users and without increasing flood risk elsewhere, and where possible, reducing flood risk overall.

Non-Statutory Technical Standards for Sustainable Drainage Systems

Department for Environment, Food and Rural Affairs. (2015). *Non-Statutory Technical Standards for Sustainable Drainage Systems* state that the peak rate of discharge from a redevelopment during the 1:1 year and 1:100 year rainfall events should be as close as reasonably practical to the corresponding greenfield runoff rate, but should never exceed that of the pre-development state.

The standards also recommend that, where reasonably practicable, the runoff volume generated from the 1:100 year, 6 hour rainfall event should be constrained to the corresponding greenfield runoff volume.

Building Regulations Approved Document H

Secretary of State. (2015). *Building Regulations Approved Document H* establishes a hierarchy for surface water disposal and encourages a SuDS approach. The hierarchy stipulates that surface water runoff which is not collected for re-use must be discharged in the following order of priority:

1. Discharge to ground via infiltration; or, where not reasonably practicable,
2. Discharge to a surface water body (i.e. river, watercourse or the like); or, where not reasonably practicable,
3. Discharge to a surface water sewer, highway drain or other surface water drainage system; or, where not reasonably practicable,
4. Discharge to a combined sewer.

3.2. Local Policy

Wiltshire Core Strategy

Core Policy 67: Flood risk

The policy states the following:

- Development proposed in Flood Zones 2 and 3 as identified within the Strategic Flood Risk Assessment will need to refer to the Strategic Housing Land Availability Assessment when providing evidence to the local planning authority in order to apply the sequential test in line with the requirements of national policy and established best practice.
- All new development will include measures to reduce the rate of rainwater run-off and improve rainwater infiltration to soil and ground (sustainable urban drainage) unless site or environmental conditions make these measures unsuitable.

The Core Strategy supports a sustainable approach to surface water drainage, and development will be expected to incorporate Sustainable Drainage Systems (SuDS) such as rainwater harvesting, green roofs, permeable paving, and ponds, wetlands and swales, wherever possible. The provision of green infrastructure, including woodland, should also be considered as a measure to reduce surface water run-off. Prospective developers will be expected to follow the 'surface water management train' approach recommended by the

Environment Agency (see Sustainable Drainage Systems: an introduction, published by the Environment Agency). In addition to the requirement for development to provide SuDS, any opportunities to reinstate or create additional natural, functional floodplain through the development process will be encouraged.

3.3. Opportunities

The redevelopment of the Application Site presents an opportunity to contribute to a reduction in flood risk by reducing the volume of water infiltrating to the ground.

The incorporation of sustainable drainage systems within the Proposed Development should seek to offer a reduction in peak runoff rates in accordance with the National and local policies described above.

Subsequently, a reduction in peak flow rates would result in a lower surface water flood risk downstream of the Proposed Development, with larger reductions providing a greater betterment.

Surface water currently generated by the Application Site is believed to discharge un-treated directly to the soakaways. Subsequently the management of surface water in accordance with the requirements of local policy and CIRIA. (2015). *C753 – The SuDS Manual* would result in an increase in the quality of the surface water generated by the Application Site as a result of the Proposed Development.

SECTION 4
FOUL WATER MANAGEMENT

4. FOUL WATER MANAGEMENT

4.1. Existing Discharge Rates and Points of Connection

The current site currently houses a number of agricultural buildings including a workshop. It is understood that there are no formal connections to the public foul sewer. However, the topographic survey identified a foul chamber near the workshop. There is potential that the workshop includes a sink which discharges into this foul chamber, but it is unknown where this chamber discharge to.

From conversation with the current owner, it is understood that the property to the North-East of the site is connected to the Public Foul Sewer. An assumed route from the property to the public foul sewer has therefore been shown on the proposal.

It has therefore been assumed that there is currently no foul flow entering the public foul sewer.

4.2. Proposed Discharge Rates and Points of Connection

The proposed development comprises of 6 holiday lodges with associated amenity facilities, car parking and external landscaping.

It is proposed to utilise a new gravity foul sewer drain from the proposed new properties which will connect into the existing foul water sewer subjected to S106 Approval. The foul water sewer will be designed and constructed in accordance with the Building Regulations Part H.

4.3. Analysis & Summary

The analysis demonstrates that the Proposed Development will generate a nett increase in foul water volume and peak flow to the public foul water sewer network, as summarised below:

DESCRIPTION	RESULT	UNIT
Existing Flow	0.00	l/s
Proposed Flow	0.28	l/s
Increase / Decrease	0.28	l/s

The increase is directly attributed to the new proposed development in which the development will contain 6 holiday lodges (1-2 bed).

SECTION 5
SURFACE WATER MANAGEMENT

5. SURFACE WATER MANAGEMENT

5.1. Existing Site Location Data

The site location and hydrological data used within this assessment is summarised as follows:

- Grid Reference: SU 09519 69573 (409519 E, 169573 N)
- Average Annual Rainfall (SAAR): 800 mm/year
- Soil Index: 0.150
- UK Hydrological Region: Region 6

5.2. Existing Total Site Area

Total existing site area is calculated as follows:

ITEM	AREA (SQ. M)	AREA (HECTARES)
Within red line boundary	3834	0.38
Totals:		**0.38**

5.3. Existing Impermeable Area & Percentages

Total impermeable areas for the existing site have been calculated as follows:

ITEM	AREA (SQ. M)	AREA (HECTARES)
Roads/Paths	1335	0.134
Buildings	1671	0.167
Grass	810	0.081
Totals:		**0.382**

Therefore, existing permeable and impermeable percentages are calculated as follows:

	IMPERMEABLE	PERMEABLE
Area (Ha)	0.301	0.081
Percentage (%)	79	21

5.4. Calculation of Greenfield Runoff Rates

Greenfield runoff rates have been estimated for the site using the methodology outlined in the Institute of Hydrology Report 124 method as set out within the Interim Code of Practice for SuDS (ICP) and Environment Agency guidance for catchment areas of 50 hectares or less.

This method of assessment is widely recognised as current best practice for estimation of catchment release rates for small catchments. Detailed calculations can be found within the appendices of this document with results summarised below.

RETURN PERIOD (1 IN X YEARS)	GREENFIELD RUN OFF RATE (L/S)
1	0.2
QBar (2.3)	0.2
30	0.4
100	0.6

5.5. Proposed Site Total Area

Total proposed site area is calculated as follows:

ITEM	AREA (SQ. M)	AREA (HECTARES)
Within red line boundary	3834	0.38
Totals:		**0.38**

5.6. Proposed Site Impermeable Area & Percentages

Total impermeable areas for the proposed site have been calculated as follows:

ITEM	AREA (SQ. M)	AREA (HECTARES)
Path/Road	683	0.068
Parking	155	0.016
Buildings	450	0.045
Totals:		**0.129**

Therefore, proposed permeable and impermeable percentages are calculated as follows:

	IMPERMEABLE	PERMEABLE
Area (Ha)	0.100	0.288
Percentage (%)	24	76
Change from Existing (%)	**-55**	**+55**

5.7. Allowance for Climate Change

Table 2 (Peak Rainfall Intensity Allowance in Small and Urban Catchments) of Environment Agency. (2019). Flood Risk Assessments: Climate Change Allowances confirms the climate change allowance of **40%** should be adopted for the Application Site, assuming a lifespan of 100 years for residential development as recommended within the NPPF.

5.8. SuDS Management Train & Proposed SuDS Features

In accordance with the discharge hierarchy identified in Section 3, surface water generated by the Proposed Development should be discharged to the ground via infiltration, where practicable to do so. It is highly recommended that on-site infiltration testing is undertaken in advance of any construction work commencing on site, when planning permission is approved, in order to validate this assumption.

The underlying soils present at the Application Site are known to be suitable for soakaways due to the existing onsite soakaways performing as required and therefore discharge of surface water via infiltration-based SuDS features (i.e., soakaways, infiltration basins or permeable paving) is considered appropriate.

With this in consideration, it is proposed that the Application Site will dispose of surface water to ground using soakaways, permeable paving for the parking area and Permeable Resin Bound Gravel for the footpaths. The roof drainage from the proposed buildings will be collected via surface water drains which will be discharged into the new proposed soakaways

The Construction Industry Research and Information association's (CIRIA) SuDS (Sustainable urban Drainage System) design guide states that typical rate for this type of ground is between than 3×10^{-8} and 3×10^{-6} m/s. A value of 3×10^{-6} m/s has been assumed for the site as soakaways are known to already be effective for the sites drainage.

5.9. Proposed infiltration design

The site will be split into two catchments, catchments A (north) and B (south). Each catchment will connect into separate new soakaways which will be within the same area as the existing soakaways.

Access road will contain traditional gullies which will connect to the permeable paving.

Outline infiltration design has been undertaken using the Quick Storage Estimate tool within Microdrainage. Trench soakaways are Proposed for Catchment A(North) and Catchment B(South). These catchments are designed to deal with the 1 in 100 yr + 40 % events. The southern Soakaway is design for the 1 in 10 yr event and drains down by half in 24hours however, for the 1 in 100 yr + 40% event the drain down time slightly exceeds the 24 hours.

The access track and parking area will drain to the sub-base of the parking area which will need to include a minimum 800mm no fines layer to infiltrate to ground. This is designed to cater for the 1 in 10 year event with no flooding and will drain down 50% within 24 hours. The sub-base is sized to contain the 1 in 100 yr event however, the 1 in 100 yr event + 40 % allowance for climate change will flood circa 10 m^3. This equates to 18mm over the road and parking area which will be contained within the kerb lines and not present a risk to the habitable dwellings. There will also still be safe access and egress from the site during these events due to the proposed levels across the site.
The below table confirms the typical size required to deal with the proposed impermeable area each catchment to cater for the 1in 100 yr. +40 % CC event. The proposed parking areas will be built with a permeable subbase to infiltrate to ground, and the access road will have standard gullies. This is likely to take

the form of a standard block paving permeable system for the parking areas and traditional gulley system for the access roads.

CATCHMENT AREA	IMPERMEABLE AREA (M^2)	SOAKAWAY DESIGN
Catchment A (North)	222	Proposed Trench Soakaway 3m wide x 13m long
Catchment B (South)	404	Proposed Trench Soakaway 4.2m wide x 16 m long
Path (Resin Bound Gravel)	285	Discharges to surrounding soft
Access Road	398	Traditional gullies connecting to permeable paving in parking area
Permeable Paving (Parking) below covered area	155	800mm deep permeable paving build up with no fine stone 30% min voids.

5.10. Water Quality

The Proposed Development intends to construct new surface water drains and associated drainage networks.

Car parking areas are understood to be to serve residents only and of an insufficient area to constitute a requirement for hydrocarbon interceptors.

This new construction to modern standards is likely to reduce the risk of overall pollutant loading and therefore the vulnerability of water quality within the wider surface water catchment is low and indeed reduced by the Proposed Development.

5.11. Summary

Surface Water management is summarised as follows:

- The underlying soils present at the Application Site suggest they are suitable for soakaways and as such the surface water strategy is proposed to manage water in this way.
- The scheme proposes a high reduction in impermeable area and a high increase in permeable area.
- Surface water will be managed through permeable paving, standard gullies and Trench soakaways catering for storm events up to the 1 in 100 yr +40 % event.

With the above in consideration, the Proposed Development would therefore contribute to a reduction in flood risk associated with the exceedance of the public sewerage network within the vicinity of the Application Site, by providing a significant reduction in peak discharge rates and avoiding an increase in total runoff volume.

SECTION 6

OUTLINE OWNERSHIP AND MAINTENANCE SCHEDULE

6. OUTLINE OWNERSHIP AND MAINTENANCE SCHEDULE

To ensure the long-term performance of the proposed DS, the on-site drainage system will be owned and maintained by the site operator or a maintenance company (MC) in accordance with the indicative schedule below:

ELEMENT / DRAINAGE COMPONENT	OWNERSHIP	MAINTENANCE REQUIREMENTS
Catchpit Manholes	Site Operator / MC	To be monitored for silt build-up and cleaned as required using suction methods. **Inspection annually and before / after extreme storm events**.
Permeable paving	Site Operator / MC	Non-aggressive brushing of the whole surface (avoiding disruption of the jointing material, with suction rates adjusted, based on a trial), either manually or mechanically carried out annually. Top up of the gritstone may be required after cleaning. Weed control – excessive weed growth can be managed by localised spot-treatment with weed killers, in accordance with suppliers' recommendations. **Inspection annually**.
Rain Water Pipes	Site Operator / MC	Clearance of leaves / debris from guttering and hopper inlets. Rodding points provided to clear blockages via conventional rodding methods. **Inspection annually and before / after extreme storm events.**
Soil Vent Piles / "Stub Stacks"	Site Operator / MC	Rodding points to be provided to clear blockages via conventional rodding methods. **Inspection annually**.
Gullies (Internal & External)	Site Operator / MC	To be monitored for silt build-up and cleaned as required. Where provided, ensure air traps are primed and sealed to prevent smells. **Inspection quarterly.**
Below Ground Pipework Generally	Site Operator / MC	To be inspected for reduction in cross-sectional area (i.e. due to blockage, silt or debris build-up, root ingress etc) general condition of materials, pipe displacement and the like. **Inspection annually and where appropriate before / after extreme storm events**.
Manholes / Inspection Chambers Generally	Site Operator / MC	To be inspected for debris and integrity of chambers and covers generally. **Inspection annually and where appropriate before / after extreme storm events.**

Soakaways	Site Operator / MC	To be inspected for sediment and debris in pre-treatment components and floor of inspection tube or chamber and inside of concrete manhole rings. Check to ensure emptying is occuring. **Inspection annually and as required.**

SECTION 7
CONCLUSIONS

7. CONCLUSIONS

- The scheme proposes redevelopment of the site to provide 6 holiday lodges which will include pavilion with associated amenity facilities, car parking and external landscaping, and retaining of some existing walls and building 8. The lodges will replace a group of farm buildings.

- Due to the nature of the underlying soils at the site, the incorporation of soakaways and other infiltration devices is considered to be practicable.

- The scheme proposes a high reduction in impermeable area and a high increase in permeable area.

- Surface water will be managed through permeable paving, standard gullies soakaways.

- Foul Water will be connected to existing foul drains which serve Chapel Corner Barn and it is anticipated the small increase in flow will be easily accommodate in the existing foul sewer network.

- It should be noted that this strategy presents one possible solution to demonstrate that the Proposed Development can be sustainably drained and should not be interpreted as the definitive solution.

APPENDIX A

EXISTING SITE PLAN / SURVEYS

DTS

"Quality to Build on"

CHAPEL COTTAGES

Ridge 163.56

Ridge 162.39

169620mN

169600mN

169580mN

169560mN

169540mN

169520mN

409480mE

409500mE

409520mE

409540mE

409560mE

Gate

Gate

Grass

Tarmac

Grass

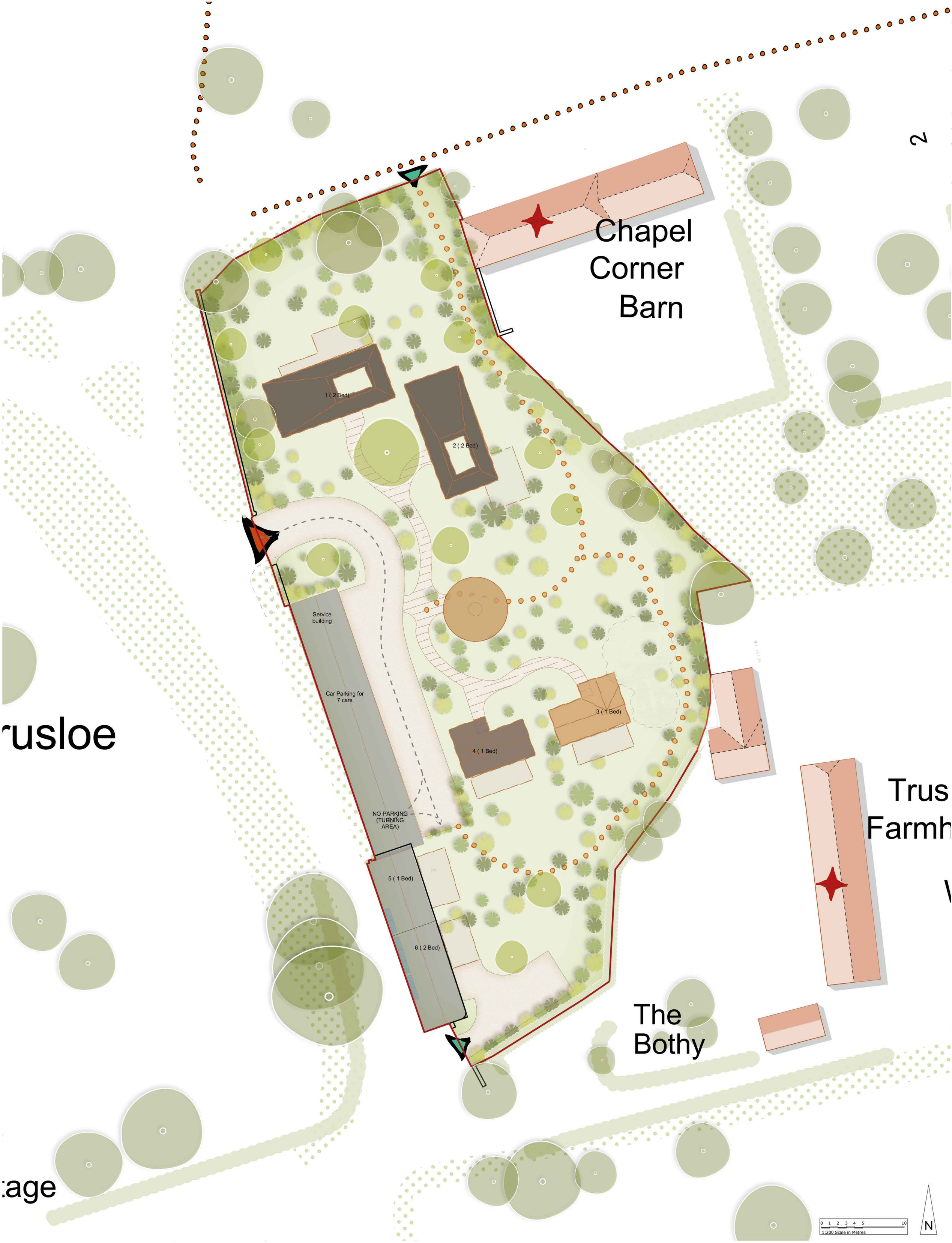
GP

Grass

Grass

Grass

APPENDIX B PLAN
PROPOSED SITE



FIRST FLOOR PLAN

1:200

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REVISIONS REV	DESCRIPTION	BY	CHECK	DATE
A	MINOR DESIGN CHANGES	DWS	GP	26.11.21
B	MINOR DESIGN CHANGES	DWS	GP	29.11.21
C	BOUNDARY AND MINOR DESIGN CHANGES	DWS	GP	18.01.22
D	LANDSCAPE UPDATED	DWS	GP	28.01.22

INSTRUCTION _ DWG _ REV: 445994_301 Rev D
SCALES @ A1: 1:200
WORK STAGE: 3-DEVELOPED DESIGN
ISSUE STATUS: PLANNING
DRAWN BY: DWS
CHECKED BY: GP
DATE: 1.11.21

PROJECT TITLE
MANOR FARM
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CLIENT
BUTLER BROS LTD

DRAWING TITLE
PROPOSED SITE AND ROOF PLAN

BIM ISSUE REFERENCE
BUT -SAV- - - -A-445994_301 Rev D

savills

APPENDIX C

THAMES WATER ASSET PLANS

Asset location search

Property Searches

Ridge and Partners LLP
Partnership House Partnership House

WINCHESTER
SO23 7RX

Search address supplied Butler Bros (Avebury) Ltd
Manor Farm
Avebury Trusloe
Marlborough
SN8 1QY

Your reference 16583

Our reference ALS/ALS Standard/2021_4526456

Search date 21 October 2021

Knowledge of features below the surface is essential for every development

The benefits of this knowledge not only include ensuring due diligence and avoiding risk, but also being able to ascertain the feasibility of any development.

Did you know that Thames Water Property Searches can also provide a variety of utility searches including a more comprehensive view of utility providers' assets (across up to 35-45 different providers), as well as more focused searches relating to specific major utility companies such as National Grid (gas and electric).

Contact us to find out more.

Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW
DX 151280 Slough 13

searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk

0800 009 4540

Asset location search

Property Searches

Search address supplied: Butler Bros (Avebury) Ltd, Manor Farm, Avebury Trusloe, Marlborough, SN8 1QY

Dear Sir / Madam

An Asset Location Search is recommended when undertaking a site development. It is essential to obtain information on the size and location of clean water and sewerage assets to safeguard against expensive damage and allow cost-effective service design.

The following records were searched in compiling this report: - the map of public sewers & the map of waterworks. Thames Water Utilities Ltd (TWUL) holds all of these.

This searchprovides maps showing the position, size of Thames Water assets close to the proposed development and also manhole cover and invert levels, where available.

Please note that none of the charges made for this report relate to the provision of Ordnance Survey mapping information. The replies contained in this letter are given following inspection of the public service records available to this company. No responsibility can be accepted for any error or omission in the replies.

You should be aware that the information contained on these plans is current only on the day that the plans are issued. The plans should only be used for the duration of the work that is being carried out at the present time. Under no circumstances should this data be copied or transmitted to parties other than those for whom the current work is being carried out.

Thames Water do update these service plans on a regular basis and failure to observe the above conditions could lead to damage arising to new or diverted services at a later date.

Contact Us

If you have any further queries regarding this enquiry please feel free to contact a member of the team on 0800 009 4540, or use the address below:

Thames Water Utilities Ltd
Property Searches
PO Box 3189
Slough
SL1 4WW

Email: searches@thameswater.co.uk
Web: www.thameswater-propertysearches.co.uk

Asset location search

Thames Water Property Searches

Waste Water Services

Please provide a copy extract from the public sewer map.

Enclosed is a map showing the approximate lines of our sewers. Our plans do not show sewer connections from individual properties or any sewers not owned by Thames Water unless specifically annotated otherwise. Records such as "private" pipework are in some cases available from the Building Control Department of the relevant Local Authority.

Where the Local Authority does not hold such plans it might be advisable to consult the property deeds for the site or contact neighbouring landowners.

This report relates only to sewerage apparatus of Thames Water Utilities Ltd, it does not disclose details of cables and or communications equipment that may be running through or around such apparatus.

The sewer level information contained in this response represents all of the level data available in our existing records. Should you require any further Information, please refer to the relevant section within the 'Further Contacts' page found later in this document.

For your guidance:

- The Company is not generally responsible for rivers, watercourses, ponds, culverts or highway drains. If any of these are shown on the copy extract they are shown for information only.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an ‘as constructed’ record. It is recommended these details be checked with the developer.

Clean Water Services

Please provide a copy extract from the public water main map.

Enclosed is a map showing the approximate positions of our water mains and associated apparatus. Please note that records are not kept of the positions of individual domestic supplies.

For your information, there will be a pressure of at least 10m head at the outside stop valve. If you would like to know the static pressure, please contact our Customer Centre on 0800 316 9800. The Customer Centre can also arrange for a full flow and

pressure test to be carried out for a fee.

For your guidance:

- Assets other than vested water mains may be shown on the plan, for information only.
- If an extract of the public water main record is enclosed, this will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

Payment for this Search

A charge will be added to your suppliers account.

Further contacts:

Waste Water queries

Should you require verification of the invert levels of public sewers, by site measurement, you will need to approach the relevant Thames Water Area Network Office for permission to lift the appropriate covers. This permission will usually involve you completing a TWOSA form. For further information please contact our Customer Centre on Tel: 0845 920 0800. Alternatively, a survey can be arranged, for a fee, through our Customer Centre on the above number.

If you have any questions regarding sewer connections, budget estimates, diversions, building over issues or any other questions regarding operational issues please direct them to our service desk. Which can be contacted by writing to:

Developer Services (Waste Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

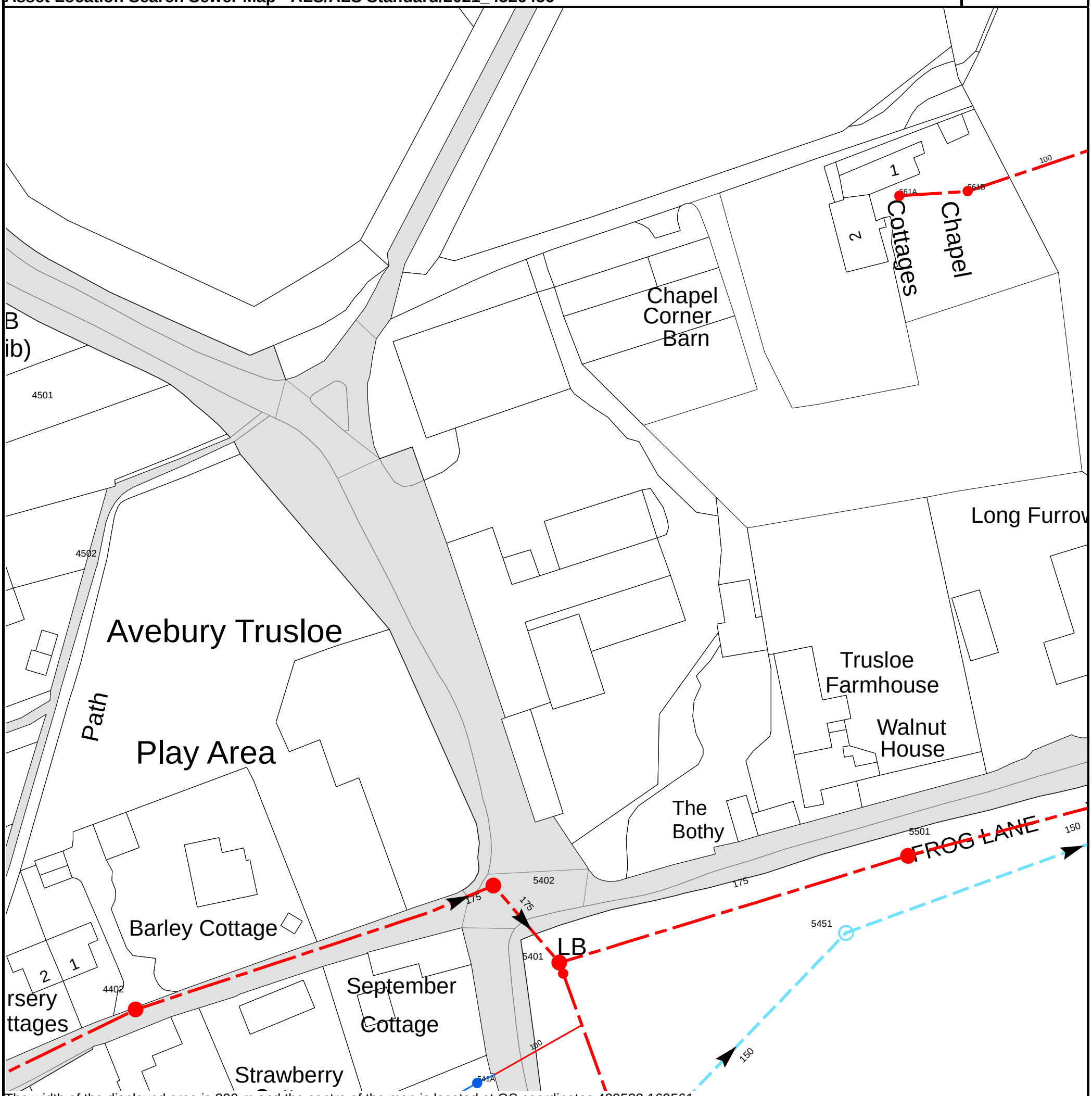
Clean Water queries

Should you require any advice concerning clean water operational issues or clean water connections, please contact:

Developer Services (Clean Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

Asset Location Search Sewer Map - ALS/ALS Standard/2021_4526456



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 409522,169561

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

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

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

Manhole Reference	Manhole Cover Level	Manhole Invert Level
561A	n/a	n/a
5501	157.8	155.17
561B	n/a	n/a
5402	160.34	158.65
5451	158.27	156.75
541A	n/a	n/a
4402	164.1	161.32
5401	160.97	157.93

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

ALS Sewer Map Key

Public Sewer Types (Operated & Maintained by Thames Water)

Foul: A sewer designed to convey waste water from domestic and industrial sources to a treatment works.

Surface Water: A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.

Combined: A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.

Trunk Surface Water

Trunk Foul

Storm Relief

Trunk Combined

Vent Pipe

Bio-solids (Sludge)

Proposed Thames Surface Water Sewer

Proposed Thames Water Foul Sewer

Gallery

Foul Rising Main

Surface Water Rising Main

Combined Rising Main

Sludge Rising Main

Proposed Thames Water Rising Main

Vacuum

Sewer Fittings

A feature in a sewer that does not affect the flow in the pipe. Example: a vent is a fitting as the function of a vent is to release excess gas.

Air Valve

Dam Chase

Fitting

Meter

Vent Column

Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer. Example: A hydrobrake limits the flow passing downstream.

Control Valve

Drop Pipe

Ancillary

Weir

End Items

End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol, Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.

Outfall

Undefined End

Inlet

Other Symbols

Symbols used on maps which do not fall under other general categories

Public/Private Pumping Station

Change of characteristic indicator (C.O.C.I.)

Invert Level

Summit

Areas

Lines denoting areas of underground surveys, etc.

Agreement

Operational Site

Chamber

Tunnel

Conduit Bridge

Other Sewer Types (Not Operated or Maintained by Thames Water)

Foul Sewer

Surface Water Sewer

Combined Sewer

Gulley

Culverted Watercourse

Proposed

Abandoned Sewer

Notes:

1) All levels associated with the plans are to Ordnance Datum Newlyn.

2) All measurements on the plans are metric.

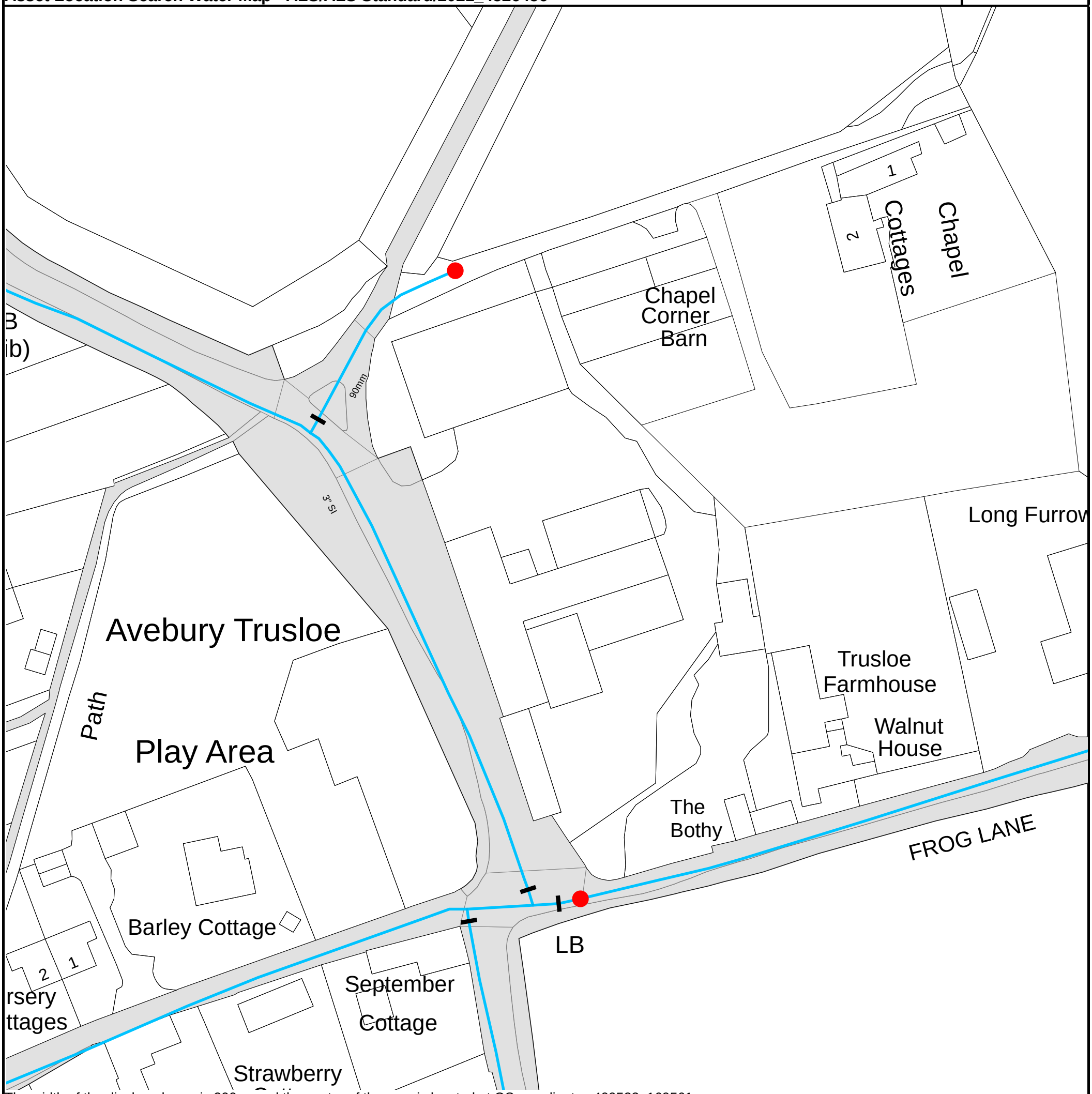
3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate direction of flow.

4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.

5) 'na' or '0' on a manhole level indicates that data is unavailable.

6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in milimetres. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology present on the plan, please contact a member of Property Searches on 0800 009 4540.

Asset Location Search Water Map - ALS/ALS Standard/2021_4526456



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 409522, 169561.

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

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

ALS Water Map Key

Water Pipes (Operated & Maintained by Thames Water)

4"

Distribution Main: The most common pipe shown on water maps. With few exceptions, domestic connections are only made to distribution mains.

16"

Trunk Main: A main carrying water from a source of supply to a treatment plant or reservoir, or from one treatment plant or reservoir to another. Also a main transferring water in bulk to smaller water mains used for supplying individual customers.

3" SUPPLY

Supply Main: A supply main indicates that the water main is used as a supply for a single property or group of properties.

3" FIRE

Fire Main: Where a pipe is used as a fire supply, the word FIRE will be displayed along the pipe.

3" METERED

Metered Pipe: A metered main indicates that the pipe in question supplies water for a single property or group of properties and that quantity of water passing through the pipe is metered even though there may be no meter symbol shown.

Transmission Tunnel: A very large diameter water pipe. Most tunnels are buried very deep underground. These pipes are not expected to affect the structural integrity of buildings shown on the map provided.

Proposed Main: A main that is still in the planning stages or in the process of being laid. More details of the proposed main and its reference number are generally included near the main.

Valves

- General Purpose Valve
- Air Valve
- Pressure Control Valve
- Customer Valve

Hydrants

- Single Hydrant

Meters

- Meter

End Items

Symbol indicating what happens at the end of a water main.

- Blank Flange
- Capped End
- Emptying Pit
- Undefined End
- Manifold
- Customer Supply
- Fire Supply

Operational Sites

- Booster Station
- Other
- Other (Proposed)
- Pumping Station
- Service Reservoir
- Shaft Inspection
- Treatment Works
- Unknown
- Water Tower

Other Symbols

- Data Logger

PIPE DIAMETER	DEPTH BELOW GROUND
Up to 300mm (12")	900mm (3')
300mm - 600mm (12" - 24")	1100mm (3' 8")
600mm and bigger (24" plus)	1200mm (4')

Other Water Pipes (Not Operated or Maintained by Thames Water)

Other Water Company Main: Occasionally other water company water pipes may overlap the border of our clean water coverage area. These mains are denoted in purple and in most cases have the owner of the pipe displayed along them.

Private Main: Indiates that the water main in question is not owned by Thames Water. These mains normally have text associated with them indicating the diameter and owner of the pipe.

Terms and Conditions

All sales are made in accordance with Thames Water Utilities Limited (TWUL) standard terms and conditions unless previously agreed in writing.

1. All goods remain in the property of Thames Water Utilities Ltd until full payment is received.
2. Provision of service will be in accordance with all legal requirements and published TWUL policies.
3. All invoices are strictly due for payment 14 days from due date of the invoice. Any other terms must be accepted/agreed in writing prior to provision of goods or service, or will be held to be invalid.
4. Thames Water does not accept post-dated cheques-any cheques received will be processed for payment on date of receipt.
5. In case of dispute TWUL`s terms and conditions shall apply.
6. Penalty interest may be invoked by TWUL in the event of unjustifiable payment delay. Interest charges will be in line with UK Statute Law 'The Late Payment of Commercial Debts (Interest) Act 1998'.
7. Interest will be charged in line with current Court Interest Charges, if legal action is taken.
8. A charge may be made at the discretion of the company for increased administration costs.

A copy of Thames Water's standard terms and conditions are available from the Commercial Billing Team (cashoperations@thameswater.co.uk).

We publish several Codes of Practice including a guaranteed standards scheme. You can obtain copies of these leaflets by calling us on 0800 316 9800

If you are unhappy with our service you can speak to your original goods or customer service provider. If you are not satisfied with the response, your complaint will be reviewed by the Customer Services Director. You can write to her at: Thames Water Utilities Ltd. PO Box 492, Swindon, SN38 8TU.

If the Goods or Services covered by this invoice falls under the regulation of the 1991 Water Industry Act, and you remain dissatisfied you can refer your complaint to Consumer Council for Water on 0121 345 1000 or write to them at Consumer Council for Water, 1st Floor, Victoria Square House, Victoria Square, Birmingham, B2 4AJ.

Ways to pay your bill

Credit Card	**BACS Payment**	**Telephone Banking**	**Cheque**
Call **0800 009 4540** quoting your invoice number starting CBA or ADS / OSS	Account number **90478703** Sort code **60-00-01** A remittance advice must be sent to: **Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW.** or email **ps.billing@thameswater.co.uk**	By calling your bank and quoting: Account number **90478703** Sort code **60-00-01** and your invoice number	Made payable to '**Thames Water Utilities Ltd**' Write your Thames Water account number on the back. Send to: **Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW** or by DX to **151280 Slough 13**

Thames Water Utilities Ltd Registered in England & Wales No. 2366661 Registered Office Clearwater Court, Vastern Rd, Reading, Berks, RG1 8DB.

APPENDIX D
SURFACE WATER CALCULATIONS

ICP SUDS Mean Annual Flood

Input

Return Period (years)	100	Soil	0.150
Area (ha)	0.380	Urban	0.000
SAAR (mm)	800	Region Number	Region 6

Results l/s

QBAR Rural	0.2
QBAR Urban	0.2
Q100 years	0.6
Q1 year	0.2
Q30 years	0.4
Q100 years	0.6

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

Half Drain Time : 1241 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	157.472	0.472	0.1	5.5	O K
30 min Summer	157.625	0.625	0.1	7.3	O K
60 min Summer	157.783	0.783	0.1	9.2	O K
120 min Summer	157.937	0.937	0.1	11.0	O K
180 min Summer	158.017	1.017	0.1	11.9	O K
240 min Summer	158.065	1.065	0.1	12.5	O K
360 min Summer	158.128	1.128	0.1	13.2	O K
480 min Summer	158.160	1.160	0.1	13.6	O K
600 min Summer	158.177	1.177	0.1	13.8	O K
720 min Summer	158.182	1.182	0.1	13.8	O K
960 min Summer	158.175	1.175	0.1	13.7	O K
1440 min Summer	158.148	1.148	0.1	13.4	O K
2160 min Summer	158.096	1.096	0.1	12.8	O K
2880 min Summer	158.043	1.043	0.1	12.2	O K
4320 min Summer	157.945	0.945	0.1	11.1	O K
5760 min Summer	157.859	0.859	0.1	10.0	O K
7200 min Summer	157.780	0.780	0.1	9.1	O K
8640 min Summer	157.710	0.710	0.1	8.3	O K
10080 min Summer	157.646	0.646	0.1	7.6	O K
15 min Winter	157.529	0.529	0.1	6.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	136.042	0.0	27
30 min Summer	90.457	0.0	41
60 min Summer	57.296	0.0	70
120 min Summer	34.998	0.0	130
180 min Summer	25.835	0.0	188
240 min Summer	20.679	0.0	248
360 min Summer	15.149	0.0	366
480 min Summer	12.125	0.0	484
600 min Summer	10.193	0.0	602
720 min Summer	8.841	0.0	722
960 min Summer	7.057	0.0	898
1440 min Summer	5.127	0.0	1130
2160 min Summer	3.718	0.0	1520
2880 min Summer	2.956	0.0	1936
4320 min Summer	2.136	0.0	2768
5760 min Summer	1.695	0.0	3576
7200 min Summer	1.415	0.0	4392
8640 min Summer	1.222	0.0	5184
10080 min Summer	1.080	0.0	5952
15 min Winter	136.042	0.0	26

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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	157.701	0.701	0.1	8.2	O K
60 min Winter	157.879	0.879	0.1	10.3	O K
120 min Winter	158.055	1.055	0.1	12.3	O K
180 min Winter	158.147	1.147	0.1	13.4	O K
240 min Winter	158.203	1.203	0.1	14.1	O K
360 min Winter	158.279	1.279	0.1	15.0	O K
480 min Winter	158.321	1.321	0.1	15.5	O K
600 min Winter	158.344	1.344	0.1	15.7	O K
720 min Winter	158.356	1.356	0.1	15.9	O K
960 min Winter	158.358	1.358	0.1	15.9	O K
1440 min Winter	158.322	1.322	0.1	15.5	O K
2160 min Winter	158.262	1.262	0.1	14.8	O K
2880 min Winter	158.188	1.188	0.1	13.9	O K
4320 min Winter	158.048	1.048	0.1	12.3	O K
5760 min Winter	157.922	0.922	0.1	10.8	O K
7200 min Winter	157.810	0.810	0.1	9.5	O K
8640 min Winter	157.709	0.709	0.1	8.3	O K
10080 min Winter	157.621	0.621	0.1	7.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	90.457	0.0	41
60 min Winter	57.296	0.0	70
120 min Winter	34.998	0.0	128
180 min Winter	25.835	0.0	186
240 min Winter	20.679	0.0	244
360 min Winter	15.149	0.0	360
480 min Winter	12.125	0.0	474
600 min Winter	10.193	0.0	588
720 min Winter	8.841	0.0	700
960 min Winter	7.057	0.0	918
1440 min Winter	5.127	0.0	1174
2160 min Winter	3.718	0.0	1628
2880 min Winter	2.956	0.0	2084
4320 min Winter	2.136	0.0	2988
5760 min Winter	1.695	0.0	3864
7200 min Winter	1.415	0.0	4688
8640 min Winter	1.222	0.0	5528
10080 min Winter	1.080	0.0	6264

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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)	20.200	Shortest Storm (mins)	15
Ratio R	0.371	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.022

Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)
0	4	0.007	4	8	0.007	8	12	0.007

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Model Details

Storage is Online Cover Level (m) 160.000

Trench Soakaway Structure

Infiltration Coefficient Base (m/hr)	0.01080	Trench Width (m)	3.0
Infiltration Coefficient Side (m/hr)	0.01080	Trench Length (m)	13.0
Safety Factor	2.0	Slope (1:X)	0.0
Porosity	0.30	Cap Volume Depth (m)	0.000
Invert Level (m)	157.000	Cap Infiltration Depth (m)	0.000

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Summary of Results for 10 year Return Period (+40%)

Half Drain Time : 1044 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	157.301	0.301	0.1	6.1	O K
30 min Summer	157.391	0.391	0.1	7.9	O K
60 min Summer	157.484	0.484	0.1	9.8	O K
120 min Summer	157.578	0.578	0.1	11.7	O K
180 min Summer	157.630	0.630	0.1	12.7	O K
240 min Summer	157.663	0.663	0.1	13.4	O K
360 min Summer	157.705	0.705	0.1	14.2	O K
480 min Summer	157.726	0.726	0.1	14.6	O K
600 min Summer	157.737	0.737	0.1	14.9	O K
720 min Summer	157.740	0.740	0.1	14.9	O K
960 min Summer	157.737	0.737	0.1	14.8	O K
1440 min Summer	157.722	0.722	0.1	14.6	O K
2160 min Summer	157.693	0.693	0.1	14.0	O K
2880 min Summer	157.661	0.661	0.1	13.3	O K
4320 min Summer	157.599	0.599	0.1	12.1	O K
5760 min Summer	157.539	0.539	0.1	10.9	O K
7200 min Summer	157.483	0.483	0.1	9.7	O K
8640 min Summer	157.431	0.431	0.1	8.7	O K
10080 min Summer	157.383	0.383	0.1	7.7	O K
15 min Winter	157.338	0.338	0.1	6.8	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	82.713	0.0	26
30 min Summer	54.065	0.0	41
60 min Summer	33.942	0.0	70
120 min Summer	20.778	0.0	128
180 min Summer	15.465	0.0	186
240 min Summer	12.503	0.0	246
360 min Summer	9.261	0.0	364
480 min Summer	7.476	0.0	482
600 min Summer	6.329	0.0	602
720 min Summer	5.522	0.0	720
960 min Summer	4.452	0.0	834
1440 min Summer	3.283	0.0	1086
2160 min Summer	2.419	0.0	1492
2880 min Summer	1.947	0.0	1908
4320 min Summer	1.433	0.0	2728
5760 min Summer	1.153	0.0	3528
7200 min Summer	0.973	0.0	4328
8640 min Summer	0.848	0.0	5104
10080 min Summer	0.755	0.0	5856
15 min Winter	82.713	0.0	26

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Summary of Results for 10 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	157.439	0.439	0.1	8.9	O K
60 min Winter	157.545	0.545	0.1	11.0	O K
120 min Winter	157.652	0.652	0.1	13.1	O K
180 min Winter	157.713	0.713	0.1	14.4	O K
240 min Winter	157.752	0.752	0.1	15.2	O K
360 min Winter	157.803	0.803	0.1	16.2	O K
480 min Winter	157.832	0.832	0.2	16.8	O K
600 min Winter	157.848	0.848	0.2	17.1	O K
720 min Winter	157.856	0.856	0.2	17.3	O K
960 min Winter	157.857	0.857	0.2	17.3	O K
1440 min Winter	157.837	0.837	0.2	16.9	O K
2160 min Winter	157.797	0.797	0.1	16.1	O K
2880 min Winter	157.750	0.750	0.1	15.1	O K
4320 min Winter	157.654	0.654	0.1	13.2	O K
5760 min Winter	157.562	0.562	0.1	11.3	O K
7200 min Winter	157.478	0.478	0.1	9.6	O K
8640 min Winter	157.401	0.401	0.1	8.1	O K
10080 min Winter	157.333	0.333	0.1	6.7	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	54.065	0.0	40
60 min Winter	33.942	0.0	68
120 min Winter	20.778	0.0	126
180 min Winter	15.465	0.0	184
240 min Winter	12.503	0.0	242
360 min Winter	9.261	0.0	358
480 min Winter	7.476	0.0	472
600 min Winter	6.329	0.0	584
720 min Winter	5.522	0.0	696
960 min Winter	4.452	0.0	912
1440 min Winter	3.283	0.0	1144
2160 min Winter	2.419	0.0	1608
2880 min Winter	1.947	0.0	2076
4320 min Winter	1.433	0.0	2948
5760 min Winter	1.153	0.0	3808
7200 min Winter	0.973	0.0	4616
8640 min Winter	0.848	0.0	5376
10080 min Winter	0.755	0.0	6160

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Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	10	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.200	Shortest Storm (mins)	15
Ratio R	0.371	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.040

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.020	4	8	0.010	8	12	0.010

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Model Details

Storage is Online Cover Level (m) 160.000

Trench Soakaway Structure

Infiltration Coefficient Base (m/hr)	0.01080	Trench Width (m)	4.2
Infiltration Coefficient Side (m/hr)	0.01080	Trench Length (m)	16.0
Safety Factor	2.0	Slope (1:X)	0.0
Porosity	0.30	Cap Volume Depth (m)	0.000
Invert Level (m)	157.000	Cap Infiltration Depth (m)	0.000

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

Half Drain Time : 1498 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	157.498	0.498	0.1	10.0	O K
30 min Summer	157.660	0.660	0.1	13.3	O K
60 min Summer	157.829	0.829	0.2	16.7	O K
120 min Summer	157.994	0.994	0.2	20.0	O K
180 min Summer	158.083	1.083	0.2	21.8	O K
240 min Summer	158.136	1.136	0.2	22.9	O K
360 min Summer	158.209	1.209	0.2	24.4	O K
480 min Summer	158.251	1.251	0.2	25.2	O K
600 min Summer	158.275	1.275	0.2	25.7	O K
720 min Summer	158.287	1.287	0.2	25.9	O K
960 min Summer	158.290	1.290	0.2	26.0	O K
1440 min Summer	158.264	1.264	0.2	25.5	O K
2160 min Summer	158.213	1.213	0.2	24.5	O K
2880 min Summer	158.160	1.160	0.2	23.4	O K
4320 min Summer	158.063	1.063	0.2	21.4	O K
5760 min Summer	157.976	0.976	0.2	19.7	O K
7200 min Summer	157.896	0.896	0.2	18.1	O K
8640 min Summer	157.823	0.823	0.2	16.6	O K
10080 min Summer	157.756	0.756	0.1	15.2	O K
15 min Winter	157.559	0.559	0.1	11.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	136.042	0.0	26
30 min Summer	90.457	0.0	41
60 min Summer	57.296	0.0	70
120 min Summer	34.998	0.0	130
180 min Summer	25.835	0.0	188
240 min Summer	20.679	0.0	248
360 min Summer	15.149	0.0	366
480 min Summer	12.125	0.0	484
600 min Summer	10.193	0.0	602
720 min Summer	8.841	0.0	722
960 min Summer	7.057	0.0	960
1440 min Summer	5.127	0.0	1214
2160 min Summer	3.718	0.0	1588
2880 min Summer	2.956	0.0	1992
4320 min Summer	2.136	0.0	2816
5760 min Summer	1.695	0.0	3640
7200 min Summer	1.415	0.0	4464
8640 min Summer	1.222	0.0	5272
10080 min Summer	1.080	0.0	6056
15 min Winter	136.042	0.0	26

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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	157.741	0.741	0.1	14.9	O K
60 min Winter	157.931	0.931	0.2	18.8	O K
120 min Winter	158.119	1.119	0.2	22.6	O K
180 min Winter	158.220	1.220	0.2	24.6	O K
240 min Winter	158.283	1.283	0.2	25.9	O K
360 min Winter	158.370	1.370	0.2	27.6	O K
480 min Winter	158.421	1.421	0.2	28.7	O K
600 min Winter	158.453	1.453	0.2	29.3	O K
720 min Winter	158.473	1.473	0.2	29.7	O K
960 min Winter	158.487	1.487	0.2	30.0	O K
1440 min Winter	158.466	1.466	0.2	29.5	O K
2160 min Winter	158.405	1.405	0.2	28.3	O K
2880 min Winter	158.337	1.337	0.2	27.0	O K
4320 min Winter	158.198	1.198	0.2	24.2	O K
5760 min Winter	158.072	1.072	0.2	21.6	O K
7200 min Winter	157.955	0.955	0.2	19.3	O K
8640 min Winter	157.849	0.849	0.2	17.1	O K
10080 min Winter	157.754	0.754	0.1	15.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	90.457	0.0	41
60 min Winter	57.296	0.0	70
120 min Winter	34.998	0.0	128
180 min Winter	25.835	0.0	184
240 min Winter	20.679	0.0	242
360 min Winter	15.149	0.0	360
480 min Winter	12.125	0.0	476
600 min Winter	10.193	0.0	590
720 min Winter	8.841	0.0	704
960 min Winter	7.057	0.0	928
1440 min Winter	5.127	0.0	1348
2160 min Winter	3.718	0.0	1676
2880 min Winter	2.956	0.0	2140
4320 min Winter	2.136	0.0	3068
5760 min Winter	1.695	0.0	3928
7200 min Winter	1.415	0.0	4768
8640 min Winter	1.222	0.0	5624
10080 min Winter	1.080	0.0	6456

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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)	20.200	Shortest Storm (mins)	15
Ratio R	0.371	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.040

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.020	4	8	0.010	8	12	0.010

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Model Details

Storage is Online Cover Level (m) 160.000

Trench Soakaway Structure

Infiltration Coefficient Base (m/hr)	0.01080	Trench Width (m)	4.2
Infiltration Coefficient Side (m/hr)	0.01080	Trench Length (m)	16.0
Safety Factor	2.0	Slope (1:X)	0.0
Porosity	0.30	Cap Volume Depth (m)	0.000
Invert Level (m)	157.000	Cap Infiltration Depth (m)	0.000

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

Half Drain Time : 1772 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	159.537	0.337	0.2	13.1	O K
30 min Summer	159.652	0.452	0.2	17.6	O K
60 min Summer	159.772	0.572	0.2	22.3	Flood Risk
120 min Summer	159.891	0.691	0.2	26.9	Flood Risk
180 min Summer	159.954	0.754	0.2	29.4	Flood Risk
240 min Summer	159.993	0.793	0.2	30.9	Flood Risk
360 min Summer	160.002	0.802	0.2	33.0	FLOOD
480 min Summer	160.003	0.803	0.2	34.3	FLOOD
600 min Summer	160.004	0.804	0.2	35.0	FLOOD
720 min Summer	160.004	0.804	0.2	35.5	FLOOD
960 min Summer	160.005	0.805	0.2	35.7	FLOOD
1440 min Summer	160.004	0.804	0.2	34.9	FLOOD
2160 min Summer	160.002	0.802	0.2	33.1	FLOOD
2880 min Summer	160.000	0.800	0.2	31.5	FLOOD
4320 min Summer	159.930	0.730	0.2	28.5	Flood Risk
5760 min Summer	159.857	0.657	0.2	25.6	Flood Risk
7200 min Summer	159.787	0.587	0.2	22.9	Flood Risk
8640 min Summer	159.722	0.522	0.2	20.4	Flood Risk
10080 min Summer	159.661	0.461	0.2	18.0	O K
15 min Winter	159.580	0.380	0.2	14.8	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	136.042	0.0	27
30 min Summer	90.457	0.0	41
60 min Summer	57.296	0.0	70
120 min Summer	34.998	0.0	130
180 min Summer	25.835	0.0	190
240 min Summer	20.679	0.0	250
360 min Summer	15.149	1.8	368
480 min Summer	12.125	3.1	486
600 min Summer	10.193	3.8	606
720 min Summer	8.841	4.3	724
960 min Summer	7.057	4.5	962
1440 min Summer	5.127	3.7	1396
2160 min Summer	3.718	1.9	1712
2880 min Summer	2.956	0.3	2084
4320 min Summer	2.136	0.0	2900
5760 min Summer	1.695	0.0	3696
7200 min Summer	1.415	0.0	4480
8640 min Summer	1.222	0.0	5280
10080 min Summer	1.080	0.0	6056
15 min Winter	136.042	0.0	26

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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	159.710	0.510	0.2	19.9	Flood Risk
60 min Winter	159.845	0.645	0.2	25.2	Flood Risk
120 min Winter	159.980	0.780	0.2	30.4	Flood Risk
180 min Winter	160.002	0.802	0.2	33.3	FLOOD
240 min Winter	160.004	0.804	0.2	35.0	FLOOD
360 min Winter	160.006	0.806	0.2	37.6	FLOOD
480 min Winter	160.008	0.808	0.2	39.1	FLOOD
600 min Winter	160.009	0.809	0.2	40.1	FLOOD
720 min Winter	160.010	0.810	0.2	40.8	FLOOD
960 min Winter	160.010	0.810	0.2	41.4	FLOOD
1440 min Winter	160.010	0.810	0.2	41.2	FLOOD
2160 min Winter	160.008	0.808	0.2	39.1	FLOOD
2880 min Winter	160.006	0.806	0.2	36.9	FLOOD
4320 min Winter	160.001	0.801	0.2	32.6	FLOOD
5760 min Winter	159.926	0.726	0.2	28.3	Flood Risk
7200 min Winter	159.819	0.619	0.2	24.1	Flood Risk
8640 min Winter	159.720	0.520	0.2	20.3	Flood Risk
10080 min Winter	159.628	0.428	0.2	16.7	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	90.457	0.0	41
60 min Winter	57.296	0.0	70
120 min Winter	34.998	0.0	128
180 min Winter	25.835	2.1	186
240 min Winter	20.679	3.8	244
360 min Winter	15.149	6.4	362
480 min Winter	12.125	7.9	478
600 min Winter	10.193	8.9	596
720 min Winter	8.841	9.6	710
960 min Winter	7.057	10.2	940
1440 min Winter	5.127	10.0	1386
2160 min Winter	3.718	7.9	1996
2880 min Winter	2.956	5.7	2252
4320 min Winter	2.136	1.4	3160
5760 min Winter	1.695	0.0	4040
7200 min Winter	1.415	0.0	4896
8640 min Winter	1.222	0.0	5704
10080 min Winter	1.080	0.0	6456

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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)	20.200	Shortest Storm (mins)	15
Ratio R	0.371	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.055

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.020	4	8	0.015	8	12	0.020

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Model Details

Storage is Online Cover Level (m) 160.000

Porous Car Park Structure

Infiltration Coefficient Base (m/hr)	0.01080	Width (m)	5.0
Membrane Percolation (mm/hr)	1000	Length (m)	26.0
Max Percolation (l/s)	36.1	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	159.200	Membrane Depth (m)	0

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Summary of Results for 10 year Return Period (+40%)

Half Drain Time : 1044 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	157.301	0.301	0.1	6.1	O K
30 min Summer	157.391	0.391	0.1	7.9	O K
60 min Summer	157.484	0.484	0.1	9.8	O K
120 min Summer	157.578	0.578	0.1	11.7	O K
180 min Summer	157.630	0.630	0.1	12.7	O K
240 min Summer	157.663	0.663	0.1	13.4	O K
360 min Summer	157.705	0.705	0.1	14.2	O K
480 min Summer	157.726	0.726	0.1	14.6	O K
600 min Summer	157.737	0.737	0.1	14.9	O K
720 min Summer	157.740	0.740	0.1	14.9	O K
960 min Summer	157.737	0.737	0.1	14.8	O K
1440 min Summer	157.722	0.722	0.1	14.6	O K
2160 min Summer	157.693	0.693	0.1	14.0	O K
2880 min Summer	157.661	0.661	0.1	13.3	O K
4320 min Summer	157.599	0.599	0.1	12.1	O K
5760 min Summer	157.539	0.539	0.1	10.9	O K
7200 min Summer	157.483	0.483	0.1	9.7	O K
8640 min Summer	157.431	0.431	0.1	8.7	O K
10080 min Summer	157.383	0.383	0.1	7.7	O K
15 min Winter	157.338	0.338	0.1	6.8	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	82.713	0.0	26
30 min Summer	54.065	0.0	41
60 min Summer	33.942	0.0	70
120 min Summer	20.778	0.0	128
180 min Summer	15.465	0.0	186
240 min Summer	12.503	0.0	246
360 min Summer	9.261	0.0	364
480 min Summer	7.476	0.0	482
600 min Summer	6.329	0.0	602
720 min Summer	5.522	0.0	720
960 min Summer	4.452	0.0	834
1440 min Summer	3.283	0.0	1086
2160 min Summer	2.419	0.0	1492
2880 min Summer	1.947	0.0	1908
4320 min Summer	1.433	0.0	2728
5760 min Summer	1.153	0.0	3528
7200 min Summer	0.973	0.0	4328
8640 min Summer	0.848	0.0	5104
10080 min Summer	0.755	0.0	5856
15 min Winter	82.713	0.0	26

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Summary of Results for 10 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	157.439	0.439	0.1	8.9	O K
60 min Winter	157.545	0.545	0.1	11.0	O K
120 min Winter	157.652	0.652	0.1	13.1	O K
180 min Winter	157.713	0.713	0.1	14.4	O K
240 min Winter	157.752	0.752	0.1	15.2	O K
360 min Winter	157.803	0.803	0.1	16.2	O K
480 min Winter	157.832	0.832	0.2	16.8	O K
600 min Winter	157.848	0.848	0.2	17.1	O K
720 min Winter	157.856	0.856	0.2	17.3	O K
960 min Winter	157.857	0.857	0.2	17.3	O K
1440 min Winter	157.837	0.837	0.2	16.9	O K
2160 min Winter	157.797	0.797	0.1	16.1	O K
2880 min Winter	157.750	0.750	0.1	15.1	O K
4320 min Winter	157.654	0.654	0.1	13.2	O K
5760 min Winter	157.562	0.562	0.1	11.3	O K
7200 min Winter	157.478	0.478	0.1	9.6	O K
8640 min Winter	157.401	0.401	0.1	8.1	O K
10080 min Winter	157.333	0.333	0.1	6.7	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	54.065	0.0	40
60 min Winter	33.942	0.0	68
120 min Winter	20.778	0.0	126
180 min Winter	15.465	0.0	184
240 min Winter	12.503	0.0	242
360 min Winter	9.261	0.0	358
480 min Winter	7.476	0.0	472
600 min Winter	6.329	0.0	584
720 min Winter	5.522	0.0	696
960 min Winter	4.452	0.0	912
1440 min Winter	3.283	0.0	1144
2160 min Winter	2.419	0.0	1608
2880 min Winter	1.947	0.0	2076
4320 min Winter	1.433	0.0	2948
5760 min Winter	1.153	0.0	3808
7200 min Winter	0.973	0.0	4616
8640 min Winter	0.848	0.0	5376
10080 min Winter	0.755	0.0	6160

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Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	10	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.200	Shortest Storm (mins)	15
Ratio R	0.371	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.040

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.020	4	8	0.010	8	12	0.010

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Model Details

Storage is Online Cover Level (m) 160.000

Trench Soakaway Structure

Infiltration Coefficient Base (m/hr)	0.01080	Trench Width (m)	4.2
Infiltration Coefficient Side (m/hr)	0.01080	Trench Length (m)	16.0
Safety Factor	2.0	Slope (1:X)	0.0
Porosity	0.30	Cap Volume Depth (m)	0.000
Invert Level (m)	157.000	Cap Infiltration Depth (m)	0.000

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

Half Drain Time : 1498 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	157.498	0.498	0.1	10.0	O K
30 min Summer	157.660	0.660	0.1	13.3	O K
60 min Summer	157.829	0.829	0.2	16.7	O K
120 min Summer	157.994	0.994	0.2	20.0	O K
180 min Summer	158.083	1.083	0.2	21.8	O K
240 min Summer	158.136	1.136	0.2	22.9	O K
360 min Summer	158.209	1.209	0.2	24.4	O K
480 min Summer	158.251	1.251	0.2	25.2	O K
600 min Summer	158.275	1.275	0.2	25.7	O K
720 min Summer	158.287	1.287	0.2	25.9	O K
960 min Summer	158.290	1.290	0.2	26.0	O K
1440 min Summer	158.264	1.264	0.2	25.5	O K
2160 min Summer	158.213	1.213	0.2	24.5	O K
2880 min Summer	158.160	1.160	0.2	23.4	O K
4320 min Summer	158.063	1.063	0.2	21.4	O K
5760 min Summer	157.976	0.976	0.2	19.7	O K
7200 min Summer	157.896	0.896	0.2	18.1	O K
8640 min Summer	157.823	0.823	0.2	16.6	O K
10080 min Summer	157.756	0.756	0.1	15.2	O K
15 min Winter	157.559	0.559	0.1	11.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	136.042	0.0	26
30 min Summer	90.457	0.0	41
60 min Summer	57.296	0.0	70
120 min Summer	34.998	0.0	130
180 min Summer	25.835	0.0	188
240 min Summer	20.679	0.0	248
360 min Summer	15.149	0.0	366
480 min Summer	12.125	0.0	484
600 min Summer	10.193	0.0	602
720 min Summer	8.841	0.0	722
960 min Summer	7.057	0.0	960
1440 min Summer	5.127	0.0	1214
2160 min Summer	3.718	0.0	1588
2880 min Summer	2.956	0.0	1992
4320 min Summer	2.136	0.0	2816
5760 min Summer	1.695	0.0	3640
7200 min Summer	1.415	0.0	4464
8640 min Summer	1.222	0.0	5272
10080 min Summer	1.080	0.0	6056
15 min Winter	136.042	0.0	26

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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	157.741	0.741	0.1	14.9	O K
60 min Winter	157.931	0.931	0.2	18.8	O K
120 min Winter	158.119	1.119	0.2	22.6	O K
180 min Winter	158.220	1.220	0.2	24.6	O K
240 min Winter	158.283	1.283	0.2	25.9	O K
360 min Winter	158.370	1.370	0.2	27.6	O K
480 min Winter	158.421	1.421	0.2	28.7	O K
600 min Winter	158.453	1.453	0.2	29.3	O K
720 min Winter	158.473	1.473	0.2	29.7	O K
960 min Winter	158.487	1.487	0.2	30.0	O K
1440 min Winter	158.466	1.466	0.2	29.5	O K
2160 min Winter	158.405	1.405	0.2	28.3	O K
2880 min Winter	158.337	1.337	0.2	27.0	O K
4320 min Winter	158.198	1.198	0.2	24.2	O K
5760 min Winter	158.072	1.072	0.2	21.6	O K
7200 min Winter	157.955	0.955	0.2	19.3	O K
8640 min Winter	157.849	0.849	0.2	17.1	O K
10080 min Winter	157.754	0.754	0.1	15.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	90.457	0.0	41
60 min Winter	57.296	0.0	70
120 min Winter	34.998	0.0	128
180 min Winter	25.835	0.0	184
240 min Winter	20.679	0.0	242
360 min Winter	15.149	0.0	360
480 min Winter	12.125	0.0	476
600 min Winter	10.193	0.0	590
720 min Winter	8.841	0.0	704
960 min Winter	7.057	0.0	928
1440 min Winter	5.127	0.0	1348
2160 min Winter	3.718	0.0	1676
2880 min Winter	2.956	0.0	2140
4320 min Winter	2.136	0.0	3068
5760 min Winter	1.695	0.0	3928
7200 min Winter	1.415	0.0	4768
8640 min Winter	1.222	0.0	5624
10080 min Winter	1.080	0.0	6456

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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)	20.200	Shortest Storm (mins)	15
Ratio R	0.371	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.040

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.020	4	8	0.010	8	12	0.010

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Model Details

Storage is Online Cover Level (m) 160.000

Trench Soakaway Structure

Infiltration Coefficient Base (m/hr)	0.01080	Trench Width (m)	4.2
Infiltration Coefficient Side (m/hr)	0.01080	Trench Length (m)	16.0
Safety Factor	2.0	Slope (1:X)	0.0
Porosity	0.30	Cap Volume Depth (m)	0.000
Invert Level (m)	157.000	Cap Infiltration Depth (m)	0.000

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APPENDIX E

BELOW GROUND DRAINAGE STRATEGY

EXISTING FOUL WATER SEWER FROM CHAPEL CORNER BARN TO PUBLIC FOUL WATER SEWER

PROPOSED NEW CONNECTION TO PUBLIC SEWER SUBJECT TO S106 APPLICATION

Chapel Corner Barn

The Bothy

1 (2 Bed)

2 (2 Bed)

3 (1 Bed)

4 (1 Bed)

5 (1 Bed)

6 (2 Bed)

Service building

Car Parking for 7 cars

NO PARKING (TURNING AREA)

SOAKAWAYS TO BE DUG OUT & REPLACED. SOAKAWAY TESTS TO BRE365 TO BE UNDERTAKEN TO DETERMINE EXACT SIZE REQUIRED.

SOAKAWAYS TO BE DUG OUT & REPLACED. SOAKAWAY TESTS TO BRE365 TO BE UNDERTAKEN TO DETERMINE EXACT SIZE REQUIRED.

EXISTING FOUL DRAINAGE RUN TO BE CCTV'd FOR CONDITION & RELAID WHERE NECESSARY

FOUL WATER SEWER FROM THAMES WATER RECORDS

FOUL WATER SEWER FROM THAMES WATER RECORDS

FROG LANE

FIRST FLOOR PLAN

SCALE 1:1200

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EXTERNAL REFERENCES:

THIS INFORMATION & RIDGE & PARTNERS LLP CIVIL 3D MODEL & ASSOCIATED 3D OUTPUTS ARE BASED UPON THE FOLLOWING INFORMATION FROM THE DESIGN TEAM

ARCHITECT REFERENCE:
- **SAVILLS DWG No.** 445994_201 Rev B (DATED 21/09/2021)

SURVEY REFERENCE:
- **DIGITAL TERRAIN SURVEYS LLP DWG No.** DTS230920-32C (DATED 09/2020)

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THIS INFORMATION IS CURRENT PRIOR TO CONSTRUCTION

LEGEND

- SITE BOUNDARY
- PRIVATE FOUL DRAIN
- PRIVATE S.W. DRAIN
- EXISTING MANHOLE
- MANHOLE
- MANHOLE WITH BACKDROP
- RWP — RAINWATER PIPE
- EXISTING SOAKAWAY
- ASSUMED EXISTING DRAIN
- FOUL WATER SEWER FROM THAMES WATER RECORDS
- SURFACE WATER SEWER FROM THAMES WATER RECORDS
- PROPOSED ASPHALT
- PROPOSED PERMEABLE PAVING
- PROPOSED RESIN BONDED GRAVEL

REV	DESCRIPTION	DATE	DRAWN
A	LAYOUT UPDATED	11/03/2022	JM
-	INITIAL ISSUE	27/10/2021	JM

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IN ASSOCIATION WITH:

PROJECT:
MANOR FARM
AVEBURY TRUSLOE

TITLE:
DRAINAGE STRATEGY

TECH:	CSE:	ICSE:	SCALE: 1:200 @ A1
JM			INITIAL ISSUE: 27/10/2021

STATUS: PRELIMINARY

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