

FLOOD RISK & DRAINAGE SUMMARY STATEMENT

GRID REF: 516358E, 232945N

LORDSHIP FARM, HOLWELL
HITCHIN, HERTFORDSHIRE

prepared for
NETHERDOWN LTD

OCTOBER 2025
REFERENCE: ST3803/FRDS-2510
REVISION 1



This report has been prepared by Stomor Ltd. based upon information obtained from others. Stomor Ltd cannot be held responsible for inaccuracies in this information.

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<i>Revision</i>	<i>Author</i>	<i>Checked by</i>	<i>Issue Date</i>
<i>0</i>	<i>KD</i>	<i>SJB</i>	<i>10.10.25</i>
<i>1</i>	<i>KD</i>	<i>SJB</i>	<i>24.10.25</i>

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- C AWS Sewer Records
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- I SuDS Maintenance Fact Sheet
- J Simple Index Approach Calculation Sheet

1. Introduction

- 1.1.1. Stomor Ltd have been commissioned by Netherdown Ltd to prepare a Flood Risk and Drainage Summary Statement associated with the proposed development at Lordship Farm, Holwell, Hitchin, Hertfordshire. A Site Location Plan is provided in **Appendix A**.
- 1.1.2. The application site is brownfield, currently comprising existing barns, with a total area of 0.45 hectares (ha).
- 1.1.3. Development proposals comprise conversion of existing listed barns and proposed 4No. barn-style dwellings, with covered parking and associated works.
- 1.1.4. A Level 1 and 2 Strategic Flood Risk Assessment (SFRA) for the area was prepared by WSP Consultants, on behalf of the North Hertfordshire Council, in November 2008. An update to the SFRA was prepared in September 2016 by North Hertfordshire District Council.
- 1.1.5. The SFRA is used as a desk-based study to map all forms of flood risk to provide an evidence base to locate new development primarily within low-risk areas. The information allows the planning authority to identify the level of detail required for the site-specific Flood Risk Assessments.

2. Site Location & Surrounding Area

- 2.1.1. The application site comprises approximately 0.45ha of brownfield land, currently comprising existing barns.
- 2.1.2. The site is located to the south of Holwell, approximately 4km to the north of Hitchin town centre.
- 2.1.3. Inspection of the topographical survey shows that the site generally falls from east to west. Surveyed ground levels range from approximately 56.91m AOD to 60.79m AOD within the site. A copy of the topographical survey is provided in **Appendix B**.
- 2.1.4. The nearest watercourse to the site is an Ordinary Watercourse, Ramerick Bottom, located approximately 130m to the west of the site.
- 2.1.5. Environment Agency (EA) catchment data identifies that the site is located within the Ivel operational catchment area, within the Anglian River Basin District.
- 2.1.6. Inspection of the British Geological Survey (BGS) website identifies that the underlying ground conditions of the site comprise West Melbury Marly Chalk Formation (chalk) at bedrock with superficial deposits of Glaciofluvial Deposits, Mid Pleistocene (sand and gravel). A small area along the south-western boundary has superficial deposits of Glaciolacustrine Deposits, Mid Pleistocene (clay and silt). In addition, inspection of the Soilscales website indicates that the site lies in a region with slightly impeded drainage.
- 2.1.7. Inspection of the EA's groundwater source protection zone data shows that the site does not lie within a Groundwater Source Protection Zone. Therefore, there should be no restrictions on the areas discharging via infiltration methods.
- 2.1.8. EA Maps identify that the site is located within a Secondary (A) Aquifer for the Superficial Drift designation and a Principal Aquifer for the Bedrock designation. The site is located within a Drinking Water Safeguard Zone (Surface Water). Groundwater vulnerability maps identify that the site is at Medium-High risk, with soluble rock risk.

3. Flood Risk

3.1. Flooding from Rivers or Sea

- 3.1.1. The Indicative Floodplain Map (**FIGURE 3.1**) obtained from the EA shows that the site lies within Flood Zone 1, land assessed to have a low probability of fluvial flooding and where all types of proposed development are permitted.



FIGURE 3.1: UK Government Flood Map for Planning

- 3.1.2. The difference between Flood Zones 1, 2 and 3 are described in Table 1: Flood Zones from the Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government Flood Risk and Coastal Change guidance (updated August 2022), summarised below:

Zone 1 Low Probability	Land assessed as having a less than 0.1% annual probability of river or sea flooding.
Zone 2 Medium Probability	Land assessed as having between a 1% and 0.1% annual probability of river flooding. or land having between a 0.5% and 0.1% annual probability of sea flooding.
Zone 3a High Probability	Land assessed as having a 1% or greater annual probability of river flooding, land having a 0.5% or greater annual probability of flooding from the sea.
Zone 3b The Functional Floodplain	Land where water from rivers or the sea has to flow or be stored in times of flood. Normally comprises land having a 3.3% or greater annual probability of flooding, or land designed to flood (such as a flood attenuation scheme).

- 3.1.3. The Flood Risk and Coastal Change Category (ID7) of the NPPG and associated documents identifies that a Flood Risk Assessment is required for areas at risk of flooding.
- 3.1.4. The Flood Risk and Coastal Change Category of the NPPG and associated documents identify that site-specific flood risk assessments should identify and assess the risks of all forms of flooding to and from the development and demonstrate how these flood risks will be managed so that the development remains safe throughout its lifetime, taking climate change into account.
- 3.1.5. The development would have a NPPF flood risk vulnerability classification of More Vulnerable. In accordance with the 2024 NPPG guidance, the sequential test should be followed in areas at risk from any sources of flooding including access routes and areas of land raising. The site is shown to be at risk from More Vulnerable. Therefore, the sequential test is likely to be required.
- 3.1.6. The nearest watercourse to the site is an Ordinary Watercourse, Ramerick Bottom, which is located approximately 130m to the west of the site
- 3.1.7. Historical fluvial flooding has not been recorded in the area.

3.2. Flooding from Land (Surface Water)

- 3.2.1. Flooding from land occurs when intense rainfall is unable to soak into the ground or enter drainage systems. Local topography and built form can have a strong influence on the direction and depth of flow.
- 3.2.2. The EA indicative surface water flood map (**FIGURE 3.2**) identifies that the site has a very low risk of surface water flooding. Very low risk means that an area has a chance of flooding less than 0.1% each year.

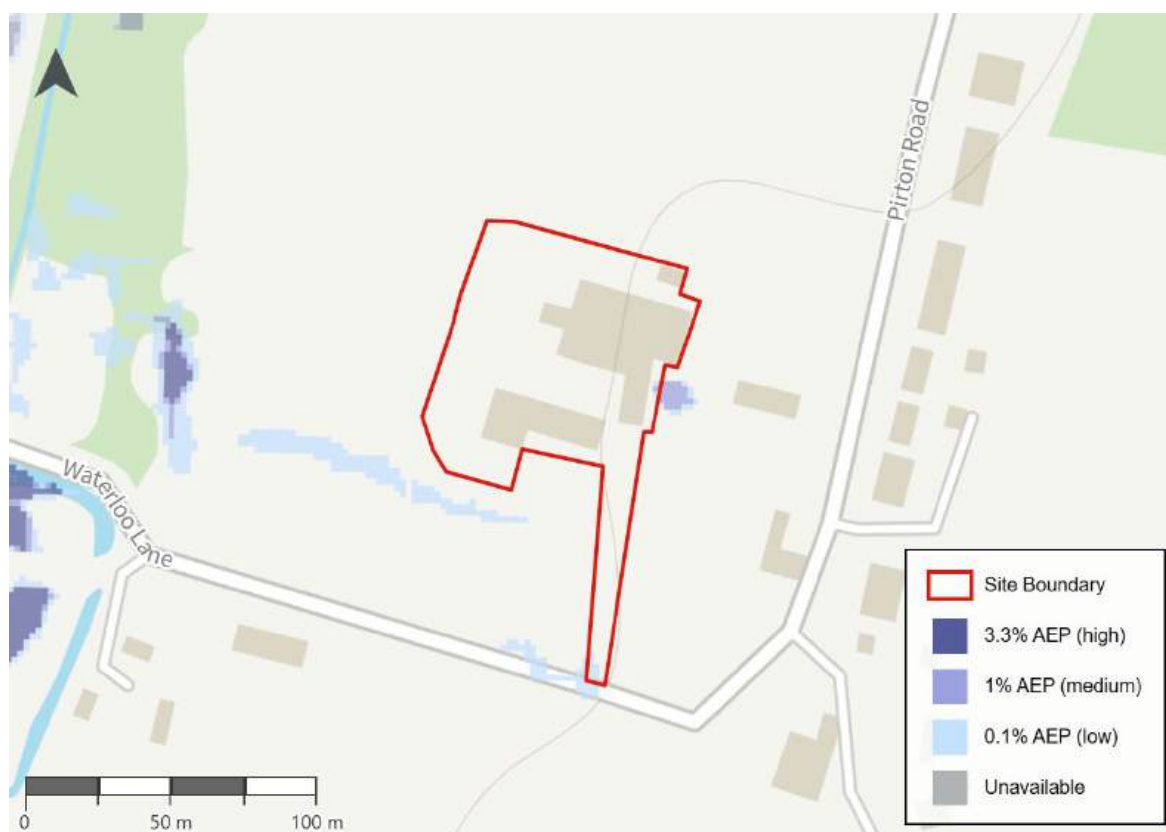


FIGURE 3.2: EA Indicative Surface Water Flood Map

3.2.3. A small localised area to the east of the boundary is at a high risk of surface water flooding, due to a low point on the topography.

3.3. Flooding from Groundwater

3.3.1. Groundwater flooding occurs when water levels in the ground rise above surface elevations. Groundwater flooding events are most likely to occur in low lying areas underlain by permeable rocks (aquifers).

3.3.2. The EA long term flood risk data identifies that groundwater flooding is unlikely in Holwell, and historic groundwater flooding has not occurred.

3.4. Flooding from Sewers

3.4.1. The SFRA identifies that there is no evidence of historic sewer flooding affecting the site.

3.5. Flooding from Reservoirs, Canals and Other Artificial Sources

3.5.1. Inspection of the EA flood maps (**FIGURE 3.3**) confirm the site is not at risk of flooding from reservoirs.



FIGURE 3.3: EA Flooding from Reservoirs, Canals and Other Artificial Sources Map

3.5.2. No other non-natural or artificial sources of flooding where water is retained above natural ground level, operational and redundant industrial processes including mining, quarrying and sand and gravel extraction, would appear to be located in the vicinity of the site which may cause increase floodwater depths or velocities.

4. Existing Drainage

4.1. Surface Water Drainage

- 4.1.1. As the site is brownfield, there is likely existing surface water drainage infrastructure in place.
- 4.1.2. Anglian Water Services (AWS) sewer records identify that there are no public surface water sewers within the vicinity of the site. A copy of AWS sewer records is provided in **Appendix C**.
- 4.1.3. Greenfield runoff rates have been calculated based upon the IH124 Method, for a development area of 0.45ha. Geotechnical information from the WRAP map of the Wallingford Procedure indicates that the underlying soil conditions would reflect Winter Rain Acceptance Potential (WRAP) Soil Class 1, which gives flow rates as follows:

Greenfield Runoff (l/s)		
1 in 1 year	Q1	0.1 l/s
1 in 30 years	Q30	0.2 l/s
1 in 100 years	Q100	0.2 l/s

- 4.1.4. The existing impermeable area of the site is approximately 0.1698ha. Surface water runoff associated with these impermeable areas would discharge at an unrestricted rate. The existing discharge rate being generated by the current impermeable areas within the site has been calculated based upon the Modified Rational Method as follows:

Existing Brownfield Area – 0.1698ha		
Storm Event	Rainfall Intensity (i)	Peak Runoff Rate
1 in 1 year	50mm/hr	23.60 l/s
1 in 30 years	126mm/hr	59.48 l/s
1 in 100 years	152mm/hr	71.75 l/s

- 4.1.5. A copy of the runoff calculation sheets are provided in **Appendix D**.

4.2. Foul Water Drainage

- 4.2.1. AWS sewer records identify a public foul water sewer running along Pirton Road to the east of the site.

5. Proposed Site Drainage

5.1. Surface Water Drainage

- 5.1.1. The existing impermeable area of the site is 0.1698ha. Based upon the current development proposals, redevelopment of the site is expected to generate an impermeable area of approximately 0.1252ha, providing a decrease of 0.0446ha.
- 5.1.2. In accordance with EA guidance, the order of consideration for the disposal of surface water runoff from a development should be as follows: infiltration methods, watercourses, then public sewer network.
- 5.1.3. Infiltration testing was undertaken at the site In January 2025. Testing indicated that infiltration would not be feasible to the north west of the site. However, rates of $2.51 \times 10^{-5} \text{m/s}$ and $2.04 \times 10^{-5} \text{m/s}$ have been identified elsewhere on the site which are feasible to allow infiltration. A copy of the BRE Digest 365 Infiltration test results are provided in **Appendix E** and a copy of the soakaway feasibility plan is provided in **Appendix F**.
- 5.1.4. A Proposed Drainage Strategy is provided in **Appendix G**. The strategy demonstrates how the proposed development can be effectively drained and the amount of storage required to avoid flooding within the site during all storms up to and including the 1 in 100-year storm event plus a 40% allowance for climate change.
- 5.1.5. The proposed drainage strategy has been modelled using Micro Drainage. Copies of Micro Drainage output files for the development are provided in **Appendix H**, demonstrating that the proposed SuDS features provide sufficient storage to avoid flooding during the 1 in 100-year storm event plus 40% allowance for climate change.
- 5.1.6. The indicative drainage strategy incorporates SuDS features which will need to have clear, enforceable maintenance regimes in place so that they provide effective flood protection and water treatment for the long term. See attached our SuDS Maintenance Fact Sheet in **Appendix I**.
- 5.1.7. The CIRIA SuDS Manual C753 promotes the use of the Simple Index Approach as a method of determining water quality risk management and is generally regarded as the accepted method within the industry.
- 5.1.8. Table 26.2 of the SuDS Manual gives pollution hazard indices for different land use classifications. Tables 26.3 and 26.4 of the SuDS Manual provides typical treatments levels from various different SuDS features discharging to surface water and to ground respectively.

- 5.1.9. To deliver adequate treatment, the selected SuDS components should have a total mitigation index that equals or is greater than the pollution hazard index. Where a single SuDS component is insufficient, additional components in a series would be required, where:

$$\text{Total SuDS mitigation index} = \text{mitigation index}_1 + 0.5 (\text{mitigation index}_2)$$

- 5.1.10. A factor of 0.5 is used to account for the reduced performance of secondary or tertiary components associated with already reduced inflow concentrations. In a series of multiple subsequent components, each is halved.
- 5.1.11. The SuDS proposed on the development would provide more than the adequate treatment for the potential pollution hazards generated by the land uses. See attached our Simple Index Approach Calculation sheet in **Appendix J**.

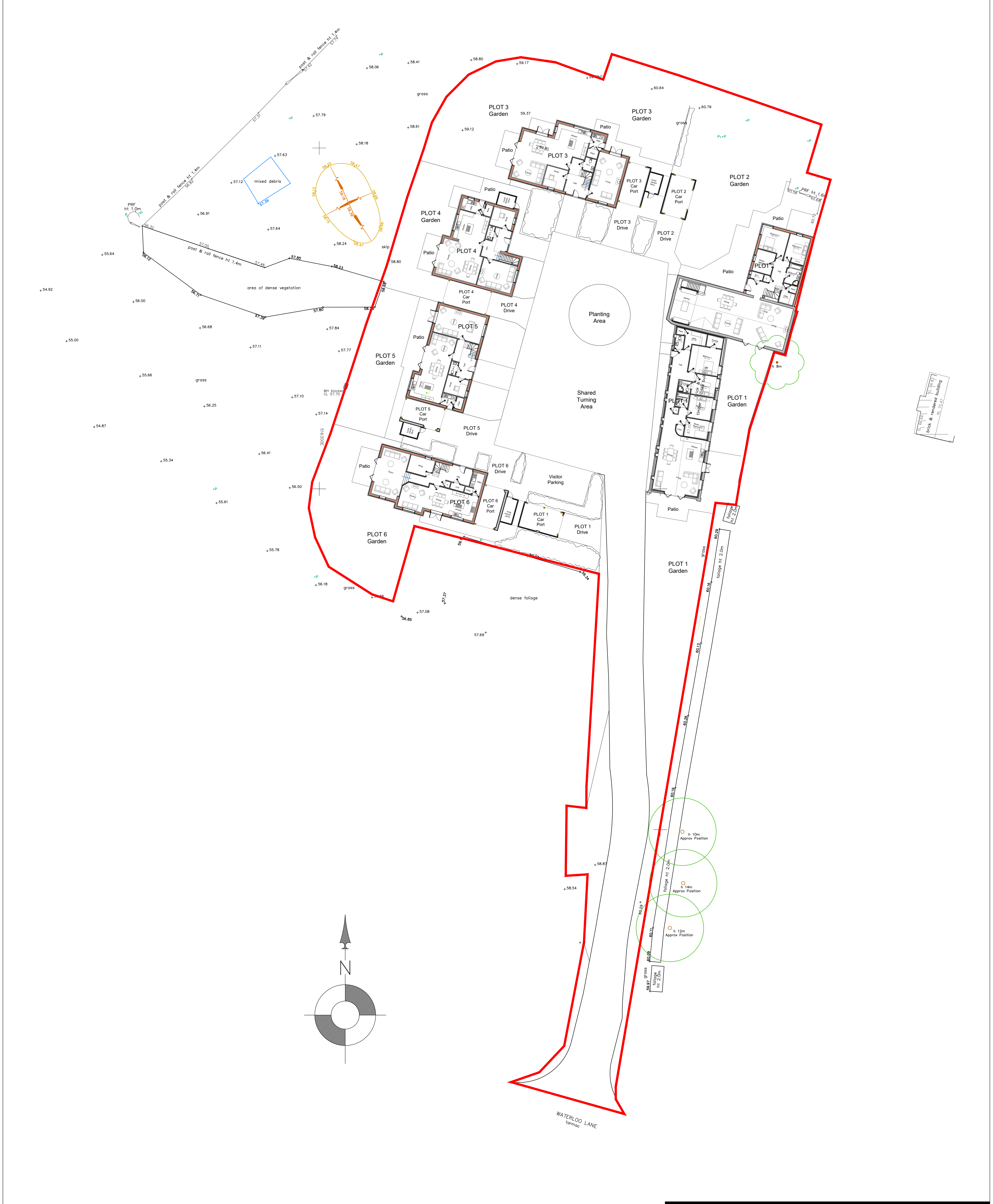
5.2. Foul Drainage

- 5.2.1. A strategy for the discharge of foul water flows from the development has been prepared and is shown in principle on the Proposed Drainage Strategy, attached in **Appendix G**. This indicative drawing aims to demonstrate that the site can be drained, based upon the current development proposals.

5.3. Detailed Design and Approvals

- 5.3.1. The proposed drainage strategy is subject to approval by the LLFA, AWS and the Local Planning Authority.
- 5.3.2. Proposed detailed drainage systems will need to be modelled in Micro Drainage to confirm required pipe sizes and storage volumes.
- 5.3.3. Overland flow routes have been shown on the drainage plan through the development, to identify proposed flow paths for surface water runoff during extreme storm events. Final external levels will be designed to prevent overland flow routes from entering buildings.





Proposed Site/ Topographical Plan
Scale 1:250





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This survey is related to OSGB36(15) coordinate system by
GPS 'rapid static' methods. No scale factor has been
applied to the survey information. All horizontal distances
taken from this drawing are ground distances.

DISCLAIMERS

Every effort has been made to confirm drainage run, type and size on site, yet it is advised to check these details against statutory authority records before proceeding with any design.

KEY

Survey control station

Gate (single)

Gate (double)

Tree Spread and Girth shown to scale

Step Up

5

Banking

Foliage Line

Drainage run, direction of flow and pipe size

Approximate Position

Ramp Up

ABBREVIATIONS

Air Handling Unit	AHU	Water Meter	WM
Belisha Beacon	BB	Eaves Level	EL
Bollard	BD	Ridge Level	RL
Borehole	BH	Roof Level	RFL
BT Inspection Cover	BT	Soffit Level	SFL
Cable Television Cover	CTV	Threshold Level	THL
Drainage Channel	DC	Parapet Wall Level	PWL
Electricity Pole	EC	Finished Floor Level	FFL
Electricity Pole	EP	Head Level	HL
Earth Rod	ER	Sill Level	SL
Fire Hydrant	FH	Cover Level	CL
Gas Valve	GV	Invert Level	IL
Gate Post	GP	No Visible Pipes	NVP
Gully	GY	Unable to Lift	UTL
Inspection Cover	IC	Foul Water	FW
Junction Box	JB	Sump Level	SUL
Kerf Outlet	KO	Surface Water	SW
Lamp Post	LP	Brick Paviers	BP
Manhole	MH	Concrete	CON
Marker Post	MK	Concrete Paving Slabs	CPS
Post	P	Flower Bed	FB
Post Box	PB	Shrub Bed	SB
Pipe	PE	Tactile Paving	TAC
Road Sign	RS	Unsurfaced	US
Rooding Eye	RE	Brick Wall	BW
Marker Post	MK	Retaining Wall	RW
Sign Post	SP	Chainlink Fence	CLF
Stop Valve	SV	Chesnut Pailing Fence	CPF
Stop Tap	ST	Iron Railing Fence	IRF
Telegraph Pole	TP	Metal Security Fence	MSF
Traffic Light	TL	Post and Chain Fence	PCF
Vent Pipe	VP	Post and Wire Fence	PWF
Post and Rail Fence	PRF	Rain Water Pipe	RWP
Wooden Panel Fence	WPF	Soil Vent Pipe	SVP

Client
NETHERDOWN (HERTS) LTD

Project
**LORDSHIP FARM BARNs
PIRTON ROAD
HOLWELL**

Title
TOPOGRAPHICAL SURVEY

Drawing Number
TS24-542-1A-RevA

Revision	Description	Rev. By	Date
A	Trees removed as instructed by client	AT	JAN 2025

Scale 1:200@A1 Sheet 1 of 2

Drawn by BB	Checked by PG	Date of Survey OCT 2024
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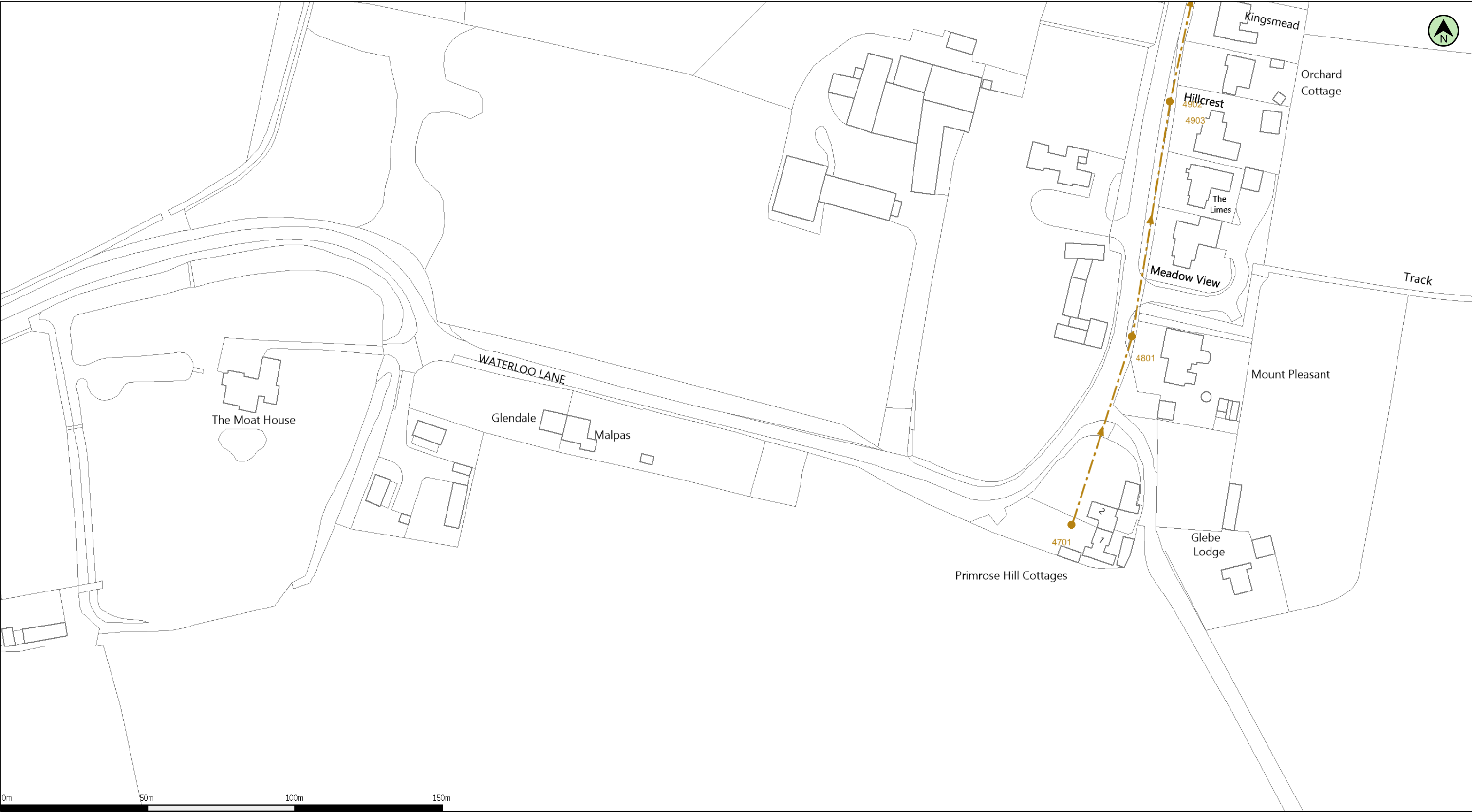


SSIP
Registered Member



Accclaim
Accreditation





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Date: 25/03/24

Scale: 1:1250

Map Centre: 516290,232826

Data updated: 29/02/24

Our Ref: 1429780 - 2

Wastewater Plan A3

This plan is provided by Anglian Water pursuant 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 2024 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		Outfall*		Sewage Treatment Works
Combined Sewer				Public Pumping Station
Final Effluent		Inlet*		Decommissioned Pumping Station
Rising Main*				
Private Sewer*		Manhole*		
Decommissioned Sewer*				

*(Colour denotes effluent type)

josh@netherdown.co.uk

Lordship Farm





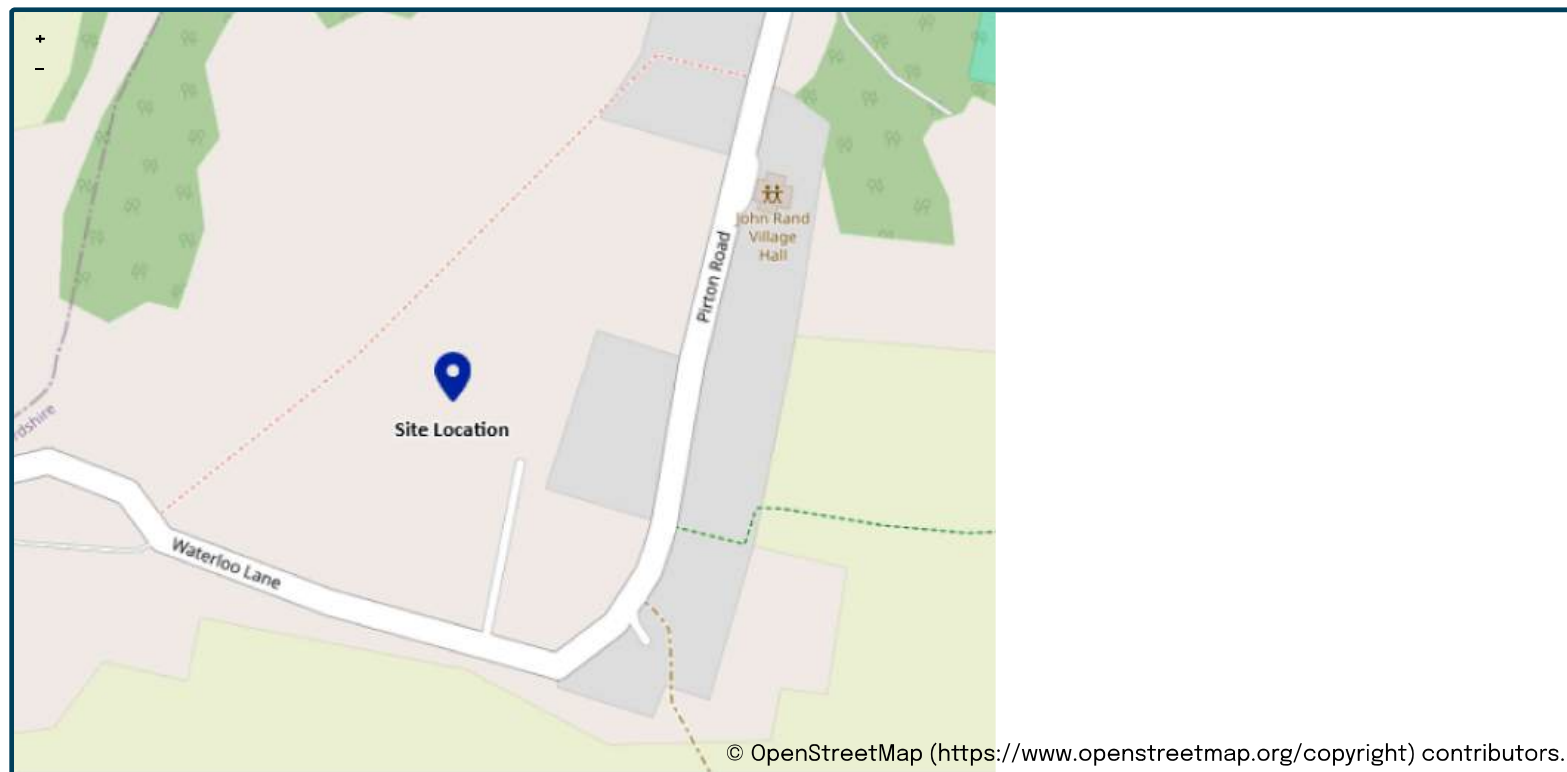
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	23/09/2025
Calculated by	Lourdes Gascon
Reference	ST-3803
Model version	2.1.2

Location

Site name	Lordship Farm
Site location	Holwell



Site easting (British National Grid)	516323
Site northing (British National Grid)	232908

Site details

Total site area (ha)	0.451	ha
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Greenfield runoff

Method

Method	IH124
--------	-------

IH124

	<u>My value</u>		<u>Map value</u>
SAAR (mm)	585 mm	☒	585
How should SPR be derived?	WRAP soil type		
WRAP soil type	1	☐	1
SPR	0.1		
QBar (IH124) (l/s)	0.06 l/s		

Growth curve factors

	<u>My value</u>		<u>Map value</u>
Hydrological region	5	☒	5
1 year growth factor	0.87		
2 year growth factor	0.89		
10 year growth factor	1.65		
30 year growth factor	2.45		
100 year growth factor	3.56		
200 year growth factor	4.21		

Results

Method	IH124	
Flow rate 1 year (l/s)	0.1	l/s
Flow rate 2 year (l/s)	0.1	l/s
Flow rate 10 years (l/s)	0.1	l/s
Flow rate 30 years (l/s)	0.2	l/s
Flow rate 100 years (l/s)	0.2	l/s
Flow rate 200 years (l/s)	0.3	l/s

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent ‘zero’ figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.1.2) developed by HR Wallingford and available at [uksuds.com](https://www.uksuds.com) (<https://www.uksuds.com/>). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at [uksuds.com/terms-conditions](https://www.uksuds.com/terms-conditions) (<https://www.uksuds.com/terms-conditions>). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

	ST 3803
Project Name	Lordship Farm
	Holwell, Hitchin
Date	Sep-25

Brownfield Runoff Calculation

Based upon the Modified Rational Method

$$Q = C \times A_p \times r$$

Q = Flow Rate in litres/second

C = Dimensionless Runoff Coefficient of 2.78

A_p = Impermeable Drained Area (ha)

r = Rainfall Intensity Rate in mm/hour; Storm Duration 6 minutes

r (1 in 1 year) 50 mm/hr

r (1 in 30 year) 126 mm/hr

r (1 in 100 year) 152 mm/hr

Brownfield Runoff Rate:

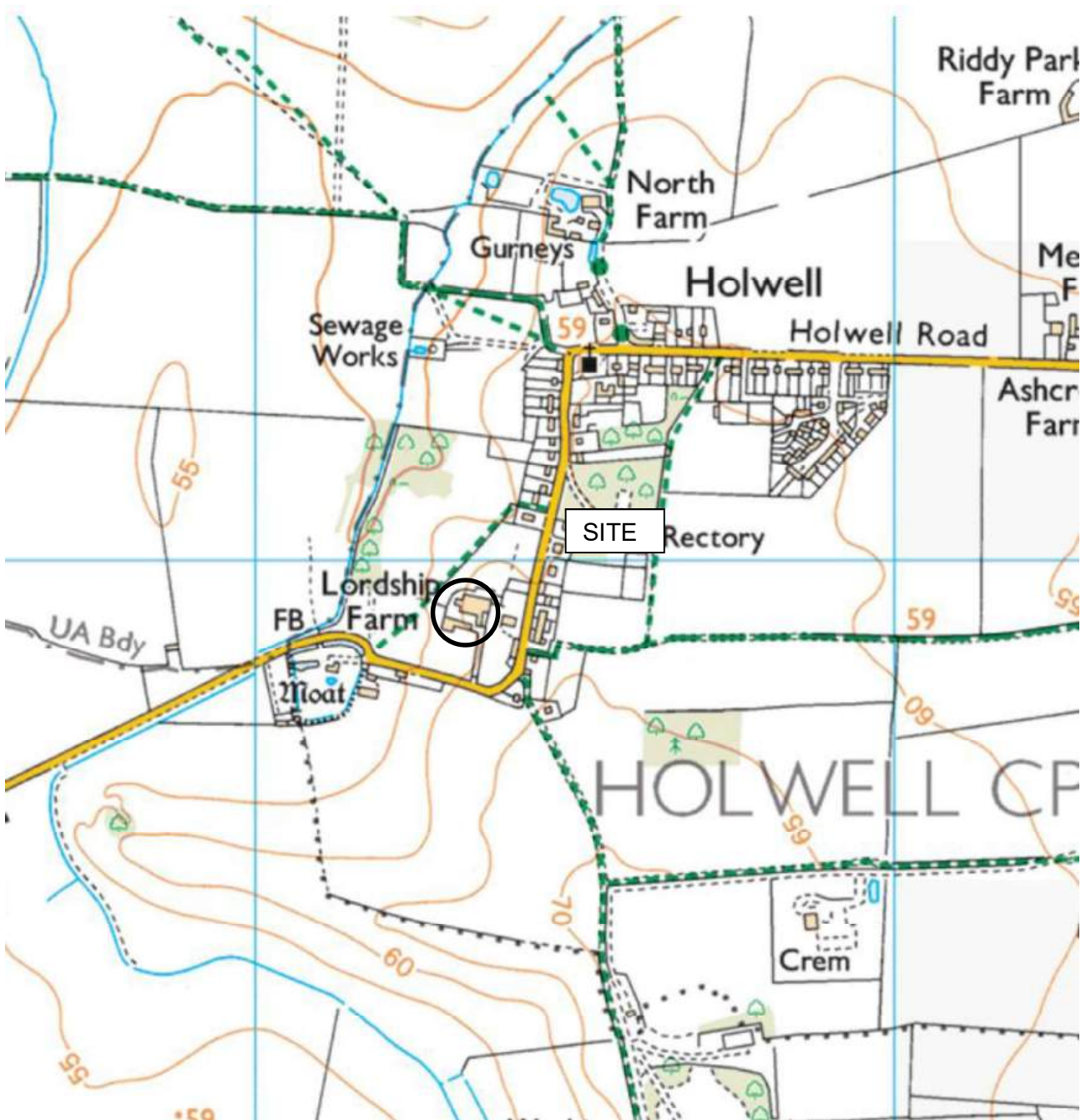
1 in 1 year $Q = 23.602$ l/s

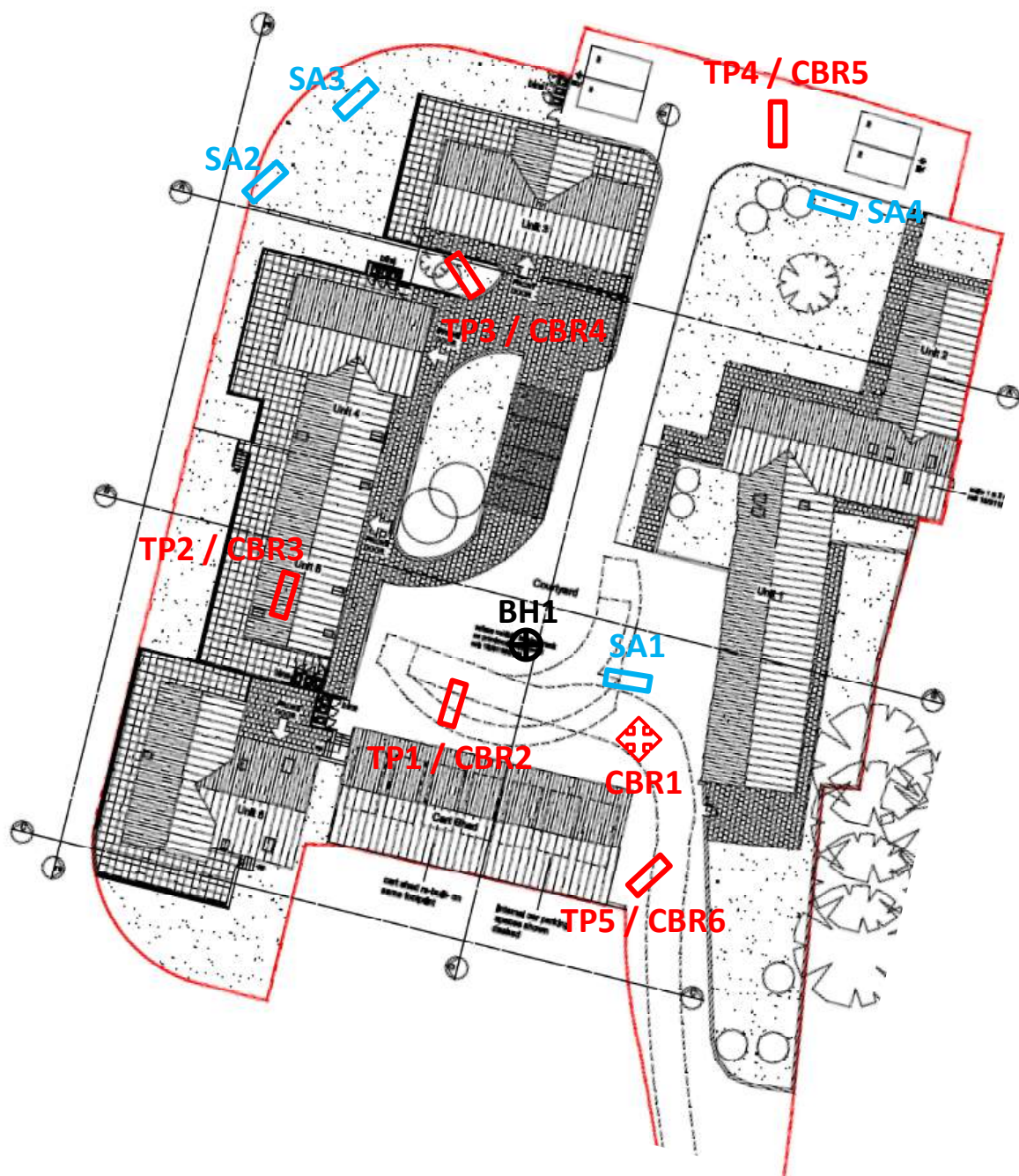
1 in 30 year $Q = 59.478$ l/s

1 in 100 year $Q = 71.751$ l/s



APPENDIX A





Key

-  Cable Percussive Borehole
-  Trial Pit / CBR Test
-  Soakaway Pit
-  CBR Test



4 Church Street
Maids Moreton
MK18 1QE

Tel:- 01280 816409
Mob:- 07858 367 125
[www. geo-integrity.co.uk](http://www.geo-integrity.co.uk)

**Exploratory Hole
Location Plan - Proposed**

**SITE:- Lordship Farm,
Waterloo Lane, Holwell**

JOB NO.:- 24-12-15

**CLIENT:- Netherdown
(Herts) Ltd**

**Drawn
HF**

**Checked
LA**

**Scale: Not To Scale, for
indicative purposes only**



www.geo-integrity.co.uk
info@geo-integrity.co.uk
01280 816409

Site

Lordship Farm, Waterloo Lane, Holwell, SG5 3SS

**Trial Pit
Number**
SA1

Machine : JCB 3CX

Method : Trial Pit

Dimensions

1.50m x 0.30m x 1.40m

Ground Level (mOD)

Client

Netherdown (Herts) Ltd.

Job Number
24-12-15

Location (Handheld GPS)

516346 F 232913 N

Dates

16/01/2025

Engineer

Lee Ashworth

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.15) 0.15	MADE GROUND - (Loose) dark brown slightly sandy GRAVEL. Gravel is fine to coarse, subangular tarmac and bituminous material		
					(0.45)	MADE GROUND - (Loose to medium dense) red brown slightly silty sandy cobbly GRAVEL. Cobbles are intact bricks		
					0.60 (0.20)	MADE GROUND - Soft greenn grey brown silty sandy CLAY		
					0.80 (0.40)	GLACIOFLUVIAL DEPOSIT Soft to firm light brown very sandy CLAY		
					1.20 (0.30)	GLACIOFLUVIAL DEPOSIT (Loose) light brown fine grained SAND with rare gravel of medium chalk and flint		
					1.50	Complete at 1.50m		

Plan	Remarks		
	Scale (approx)	Logged By	Figure No.
	1:20	HF	24-12-15.SA1



www.geo-integrity.co.uk
info@geo-integrity.co.uk
01280 816409

Site

Lordship Farm, Waterloo Lane, Holwell, SG5 3SS

**Trial Pit
Number
SA2**

Machine : JCB 3CX

Method : Trial Pit

Dimensions

1.30m x 0.40m x 1.80m

Ground Level (mOD)**Client**

Netherdown (Herts) Ltd.

**Job
Number
24-12-15**

Location (Handheld GPS)

516309 E 232956 N

Dates

16/01/2025

Engineer

Lee Ashworth

Sheet

1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.80	D				(0.35)	TOPSOIL - Loose dark brown clayey organic SILT		
					0.35	GLACIOFLUVIAL DEPOSIT Soft light brown beige orange silty slightly gravelly CLAY. Gravel is fine to coarse subangular flint and chalk. Partings of cream silt and orange sand		
					(0.75)			
					1.10	GLACIOFLUVIAL DEPOSIT Soft to firm brown beige silty sandy gravelly CLAY. Gravel is coarse rounded flint and chalk with rare cobbles of flint		
1.40	D				(0.70)			
			Water strike(1) at 1.70m.		1.80	Complete at 1.80m		▽1

Plan

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Remarks

Scale (approx)

1:20

Logged By

HF

Figure No.

24-12-15.SA2



www.geo-integrity.co.uk
info@geo-integrity.co.uk
01280 816409

Site

Lordship Farm, Waterloo Lane, Holwell, SG5 3SS

**Trial Pit
Number**
SA3

Machine : JCB 3CX

Method : Trial Pit

Dimensions

Dimensions
1.00m x 0.40m x 0.74m

Ground Level (mOD)

Client

Netherdown (Herts) Ltd.

Job Number
24-12-15

Location (Handheld GPS)

516321 F 232961 N

Dates

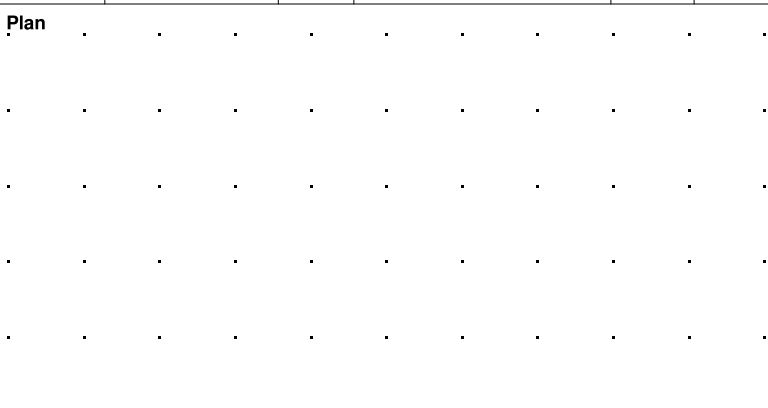
16/01/2025

Engineer

Lee Ashworth

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.20	D					MADE GROUND - Loose dark brown slightly gravelly organic SILT. Gravel is fine to coarse brick		
					(0.30)	GLACIOFLUVIAL DEPOSIT Soft to firm brown silty sandy slightly gravelly CLAY. Gravel is fine to coarse		
					0.30			
					(0.44)			
					0.74	Complete at 0.74m		

Plan 	Remarks		
	Scale (approx) 1:20	Logged By HF	Figure No. 24-12-15.SA3

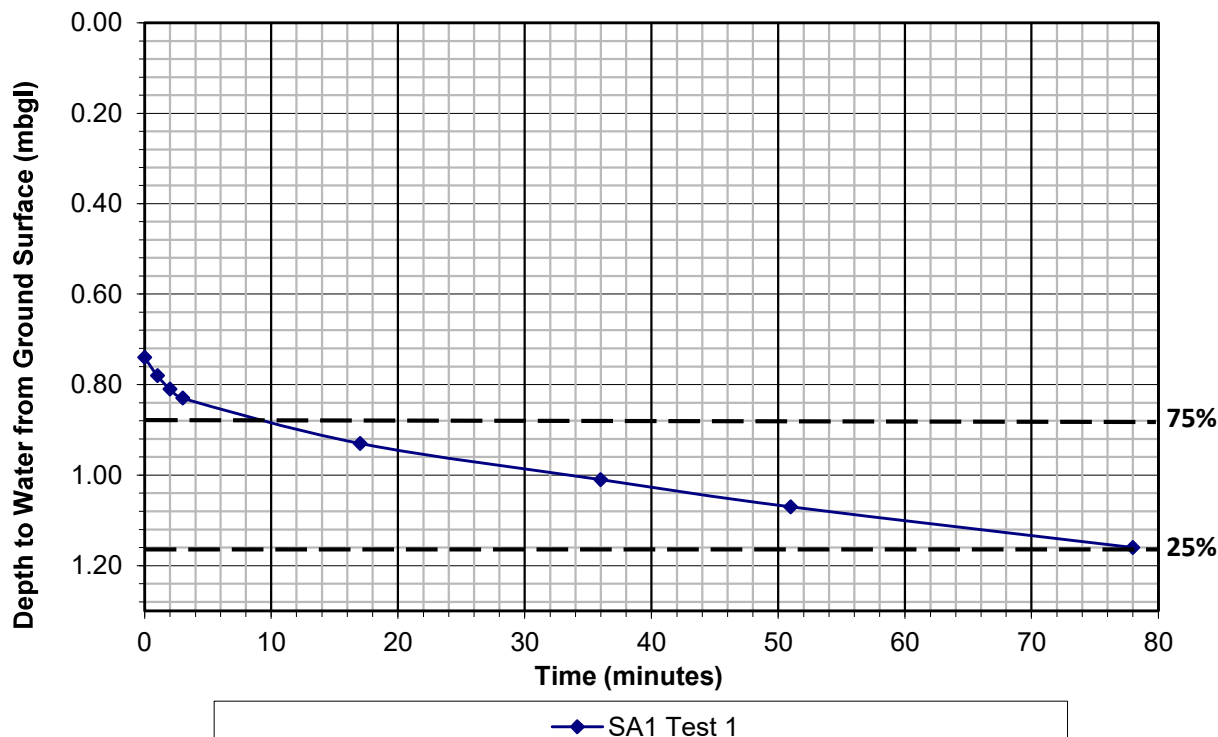
Trial Pit Infiltration Testing to BRE Digest 365

Client:	Netherdown (Herts) Ltd	Report No:	24-12-15
Site:	Lordship Farm, Waterloo Lane	Date Tested:	16/01/2025
Dimensions:	0.30m x 1.40m x 1.48m (width x length x depth)	Test Location:	SA1

Test Response Zone Description - : Glaciofluvial Deposit (Sand)

Time	Depth BGL	Time	Depth BGL	Time	Depth BGL
0	0.74	78	1.16		
1	0.78				
2	0.81				
3	0.83				
17	0.93				
36	1.01				
51	1.07				

Soil Infiltration Rate
 2.07×10^{-5} m/s



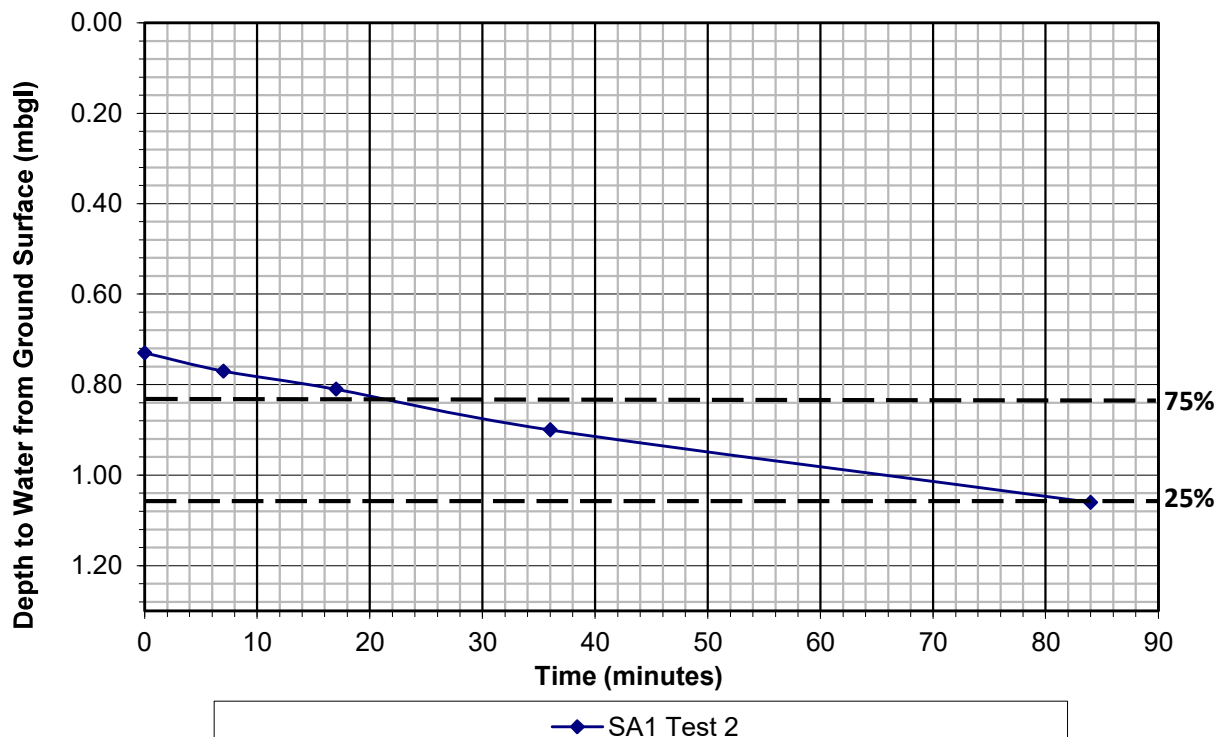
Trial Pit Infiltration Testing to BRE Digest 365

Client:	Netherdown (Herts) Ltd	Report No:	24-12-15
Site:	Lordship Farm, Waterloo Lane	Date Tested:	16/01/2025
Dimensions:	0.30m x 1.40m x 1.48m (width x length x depth)	Test Location:	SA1

Test Response Zone Description - : Glaciofluvial Deposit (Sand)

Time	Depth BGL	Time	Depth BGL	Time	Depth BGL
0	0.73				
7	0.77				
17	0.81				
36	0.90				
84	1.06				

Soil Infiltration Rate
 2.11×10^{-5} m/s



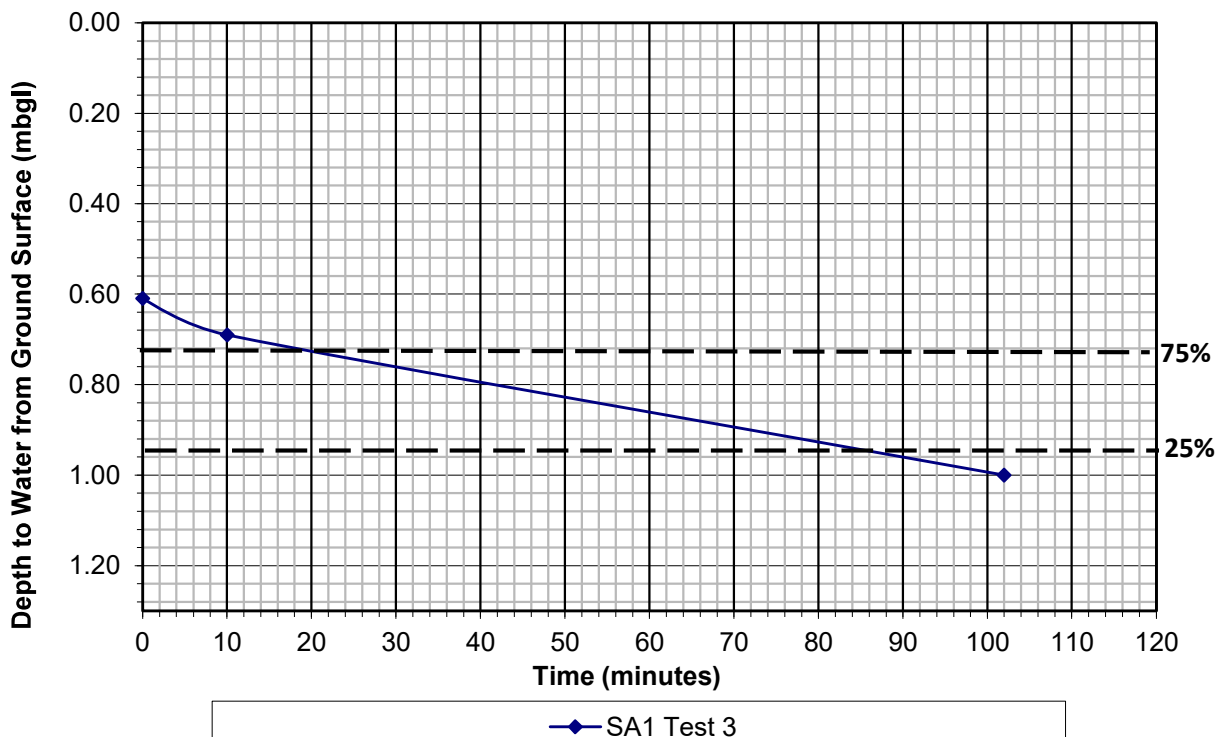
Trial Pit Infiltration Testing to BRE Digest 365

Client:	Netherdown (Herts) Ltd	Report No:	24-12-15
Site:	Lordship Farm, Waterloo Lane	Date Tested:	16/01/2025
Dimensions:	0.30m x 1.40m x 1.48m (width x length x depth)	Test Location:	SA1

Test Response Zone Description - : Glaciofluvial Deposit (Sand)

Time	Depth BGL	Time	Depth BGL	Time	Depth BGL
0	0.61				
10	0.69				
102	1.00				

Soil Infiltration Rate
 2.04×10^{-5} m/s



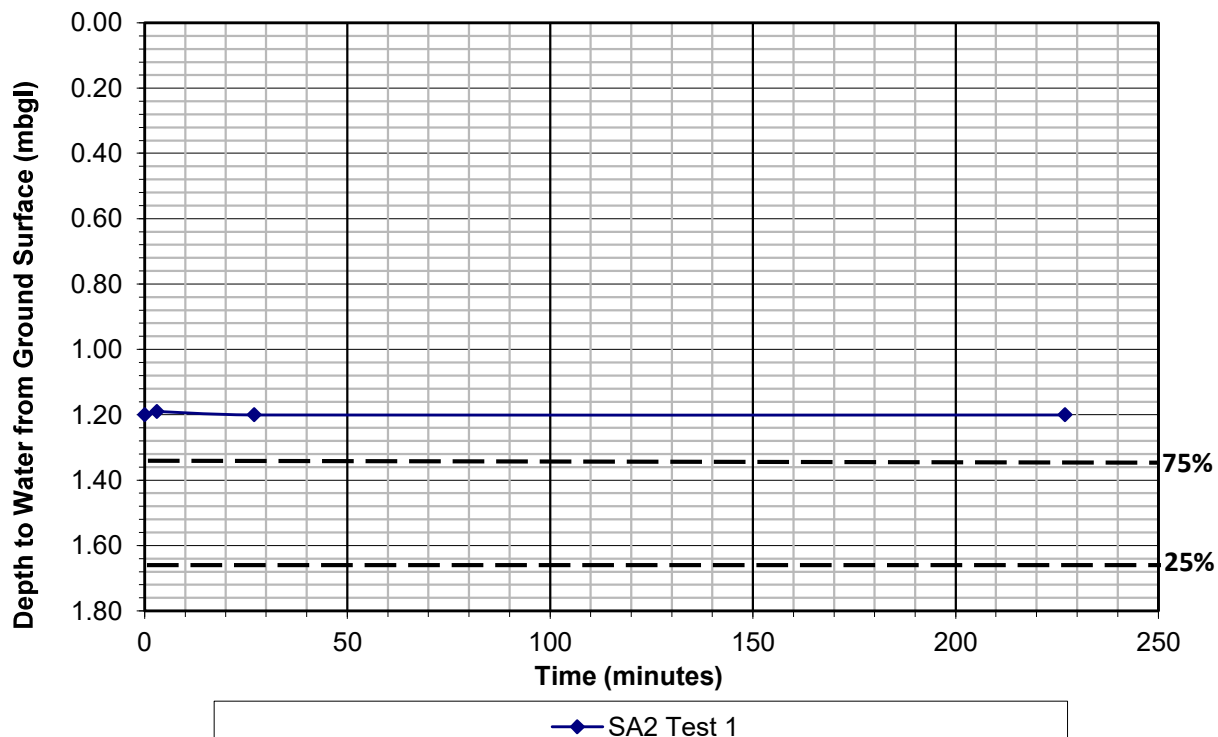
Trial Pit Infiltration Testing to BRE Digest 365

Client:	Netherdown (Herts) Ltd	Report No:	24-12-15
Site:	Lordship Farm, Waterloo Lane	Date Tested:	16/01/2025
Dimensions:	0.40m x 1.30m x 1.80m (width x length x depth)	Test Location:	SA2

Test Response Zone Description - : Glaciofluvial Deposit (Clay)

Time	Depth BGL	Time	Depth BGL	Time	Depth BGL
0	1.20				
3	1.19				
27	1.20				
227	1.20				

Unable to Calculate Soil Infiltration Rate
Insufficient Drop in Water Levels



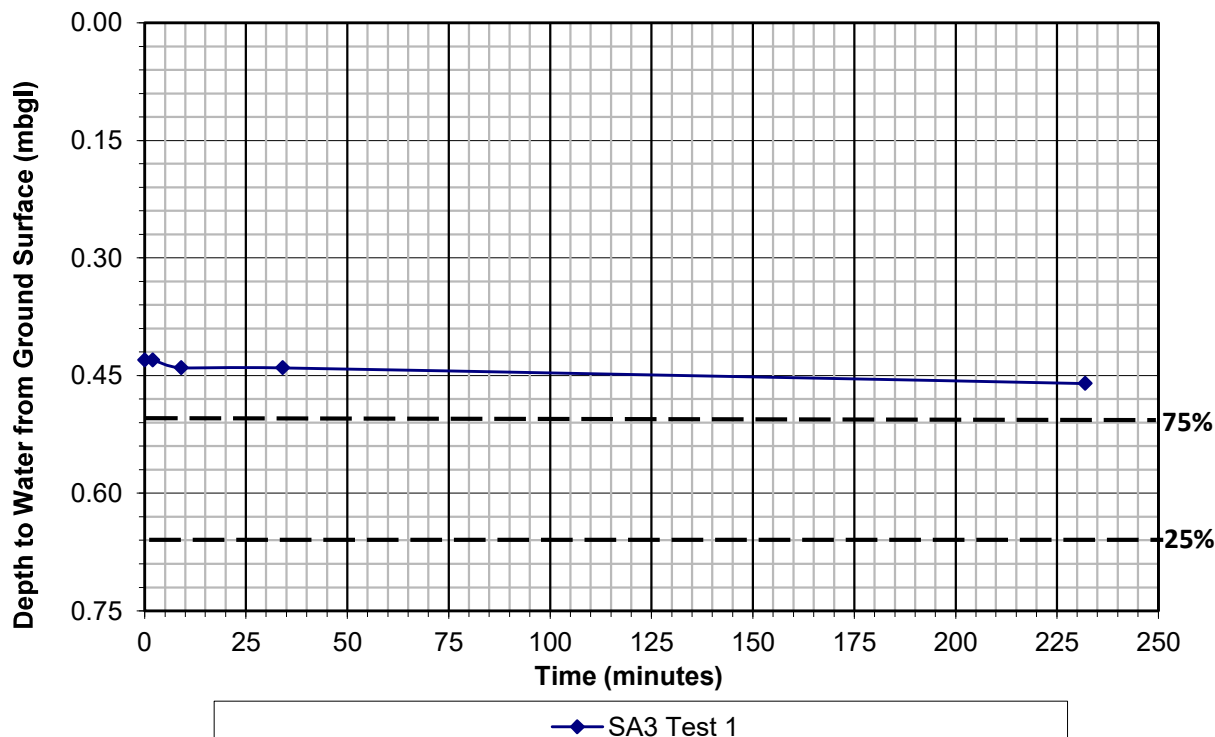
Trial Pit Infiltration Testing to BRE Digest 365

Client:	Netherdown (Herts) Ltd	Report No:	24-12-15
Site:	Lordship Farm, Waterloo Lane	Date Tested:	16/01/2025
Dimensions:	0.40m x 1.00m x 0.74m (width x length x depth)	Test Location:	SA3

Test Response Zone Description - : Glaciofluvial Deposit (Clay)

Time	Depth BGL	Time	Depth BGL	Time	Depth BGL
0	0.43				
2	0.43				
9	0.44				
34	0.44				
232	0.46				

**Unable to Calculate Soil Infiltration Rate
Insufficient drop in water levels**



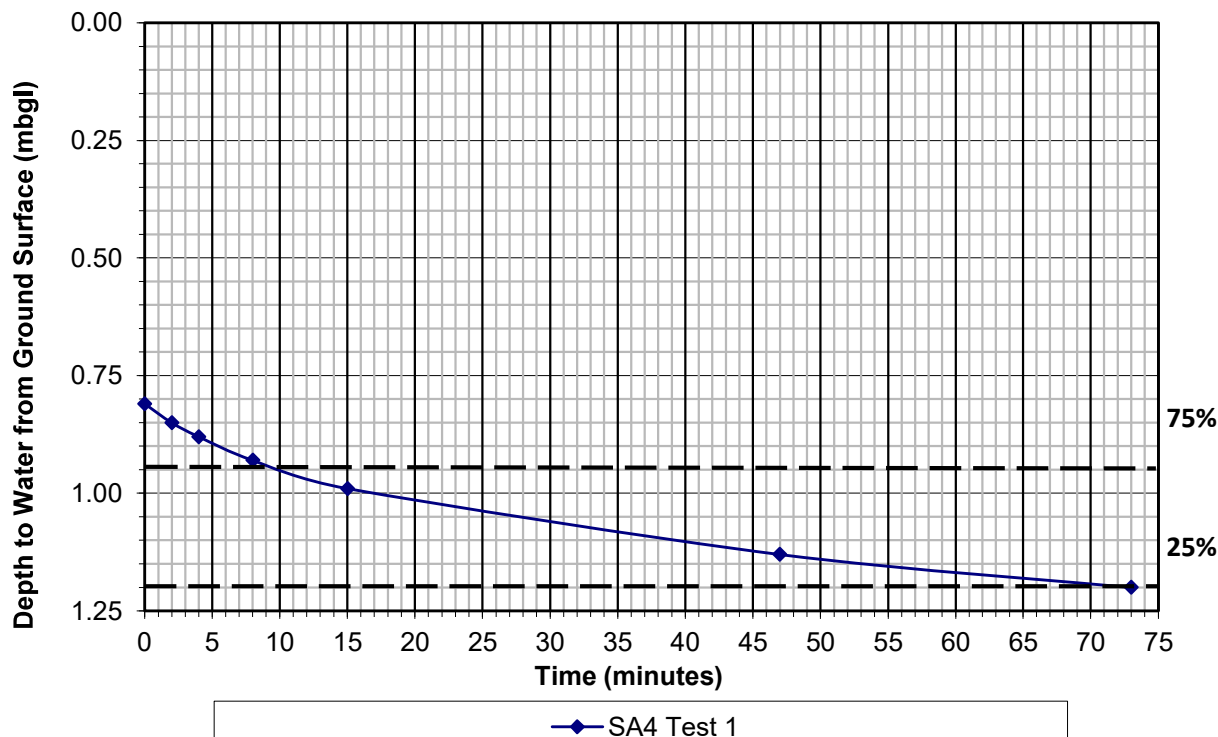
Trial Pit Infiltration Testing to BRE Digest 365

Client:	Netherdown (Herts) Ltd	Report No:	24-12-15
Site:	Lordship Farm, Waterloo Lane	Date Tested:	16/01/2025
Dimensions:	0.30m x 1.40m x 1.48m (width x length x depth)	Test Location:	SA4

Test Response Zone Description - : Glaciofluvial Deposit (Sand)

Time	Depth BGL	Time	Depth BGL	Time	Depth BGL
0	0.74	78	1.16		
1	0.78				
2	0.81				
3	0.83				
17	0.93				
36	1.01				
51	1.07				

Soil Infiltration Rate
 2.51×10^{-5} m/s



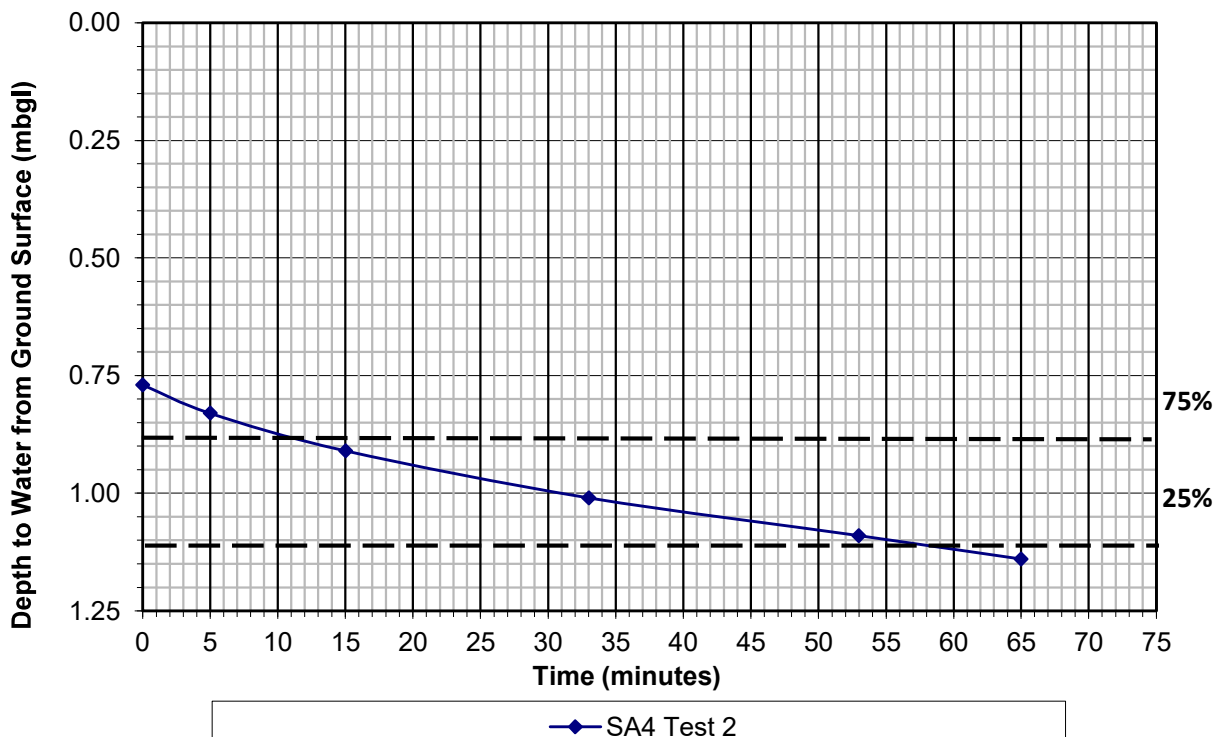
Trial Pit Infiltration Testing to BRE Digest 365

Client:	Netherdown (Herts) Ltd	Report No:	24-12-15
Site:	Lordship Farm, Waterloo Lane	Date Tested:	16/01/2025
Dimensions:	0.30m x 1.40m x 1.48m (width x length x depth)	Test Location:	SA4

Test Response Zone Description - : Glaciofluvial Deposit (Sand)

Time	Depth BGL	Time	Depth BGL	Time	Depth BGL
0	0.73				
7	0.77				
17	0.81				
36	0.90				
84	1.06				

Soil Infiltration Rate
 3.23×10^{-5} m/s



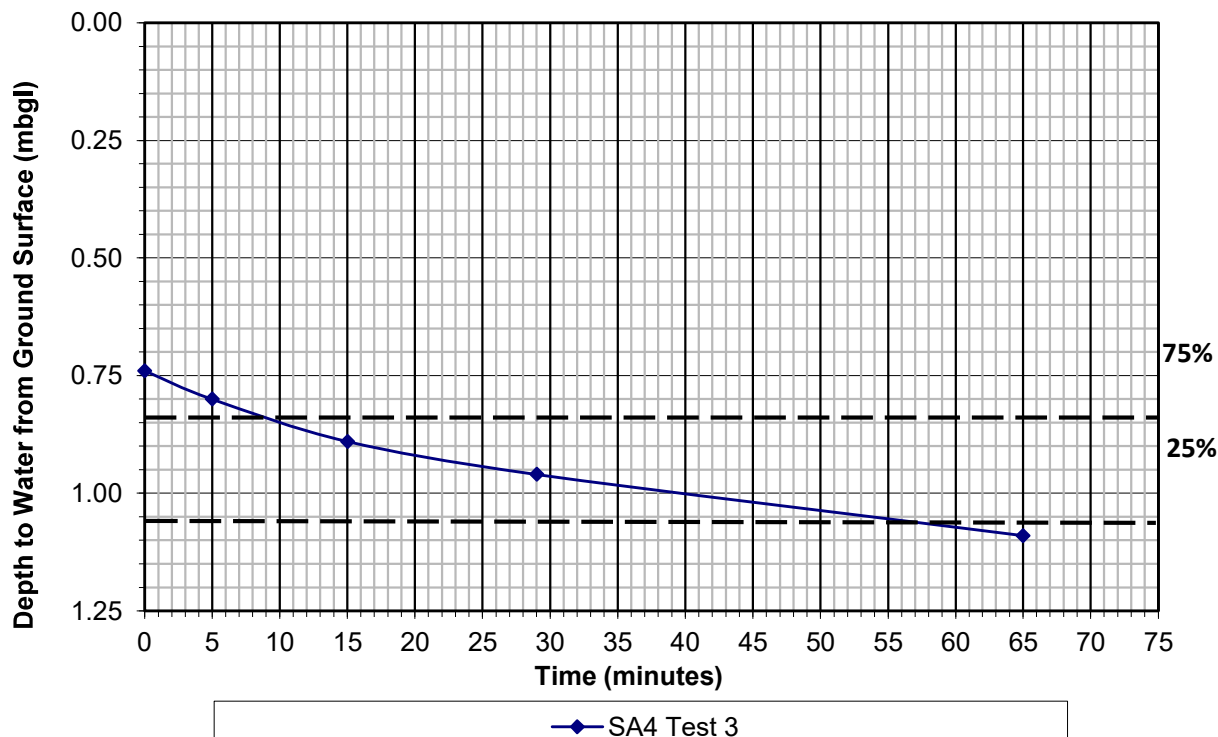
Trial Pit Infiltration Testing to BRE Digest 365

Client:	Netherdown (Herts) Ltd	Report No:	24-12-15
Site:	Lordship Farm, Waterloo Lane	Date Tested:	16/01/2025
Dimensions:	0.30m x 1.40m x 1.48m (width x length x depth)	Test Location:	SA4

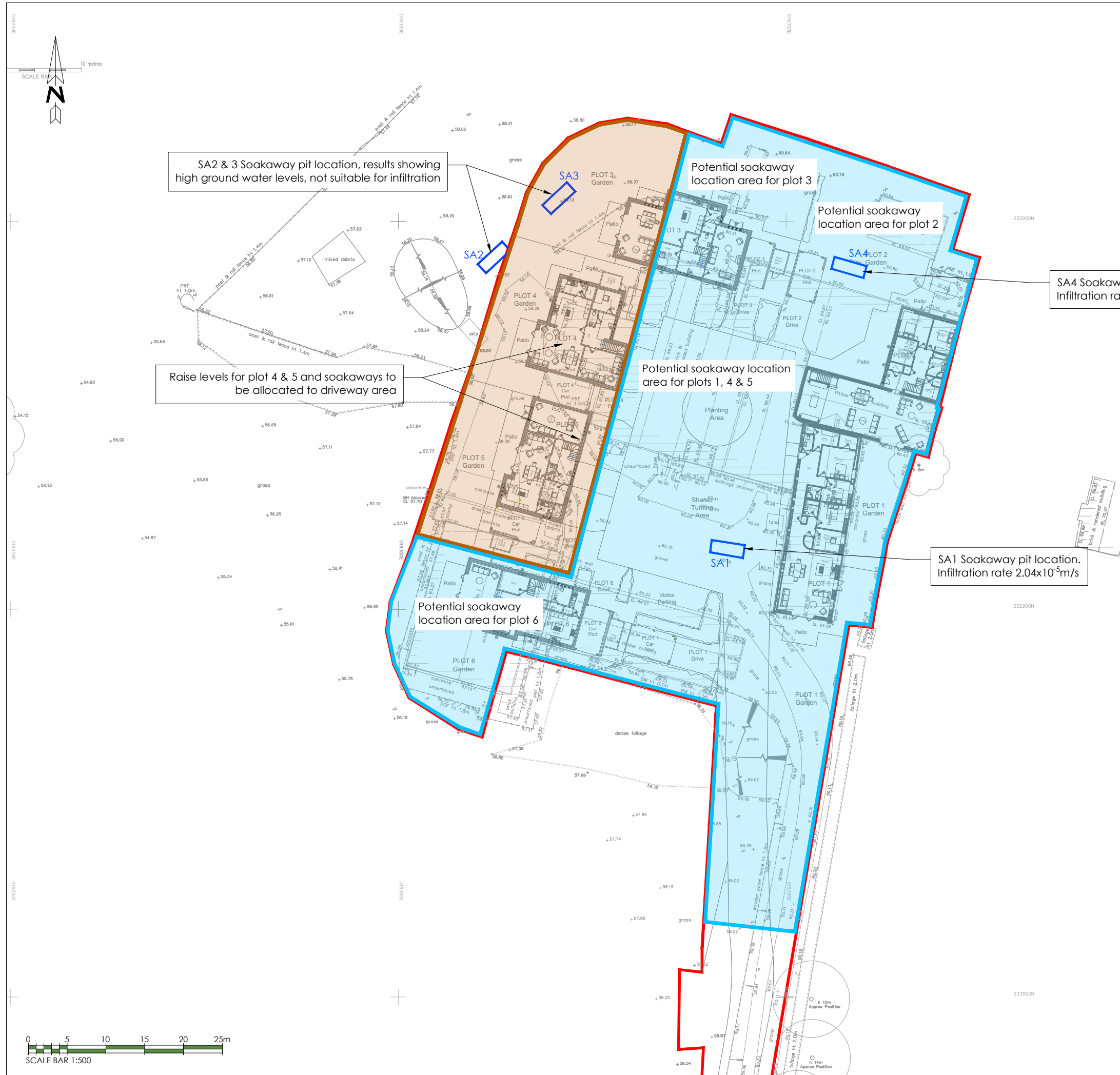
Test Response Zone Description - : Glaciofluvial Deposit (Sand)

Time	Depth BGL	Time	Depth BGL	Time	Depth BGL
0	0.61				
10	0.69				
102	1.00				

Soil Infiltration Rate
 3.01×10^{-5} m/s







KEY

SITE BOUNDARY

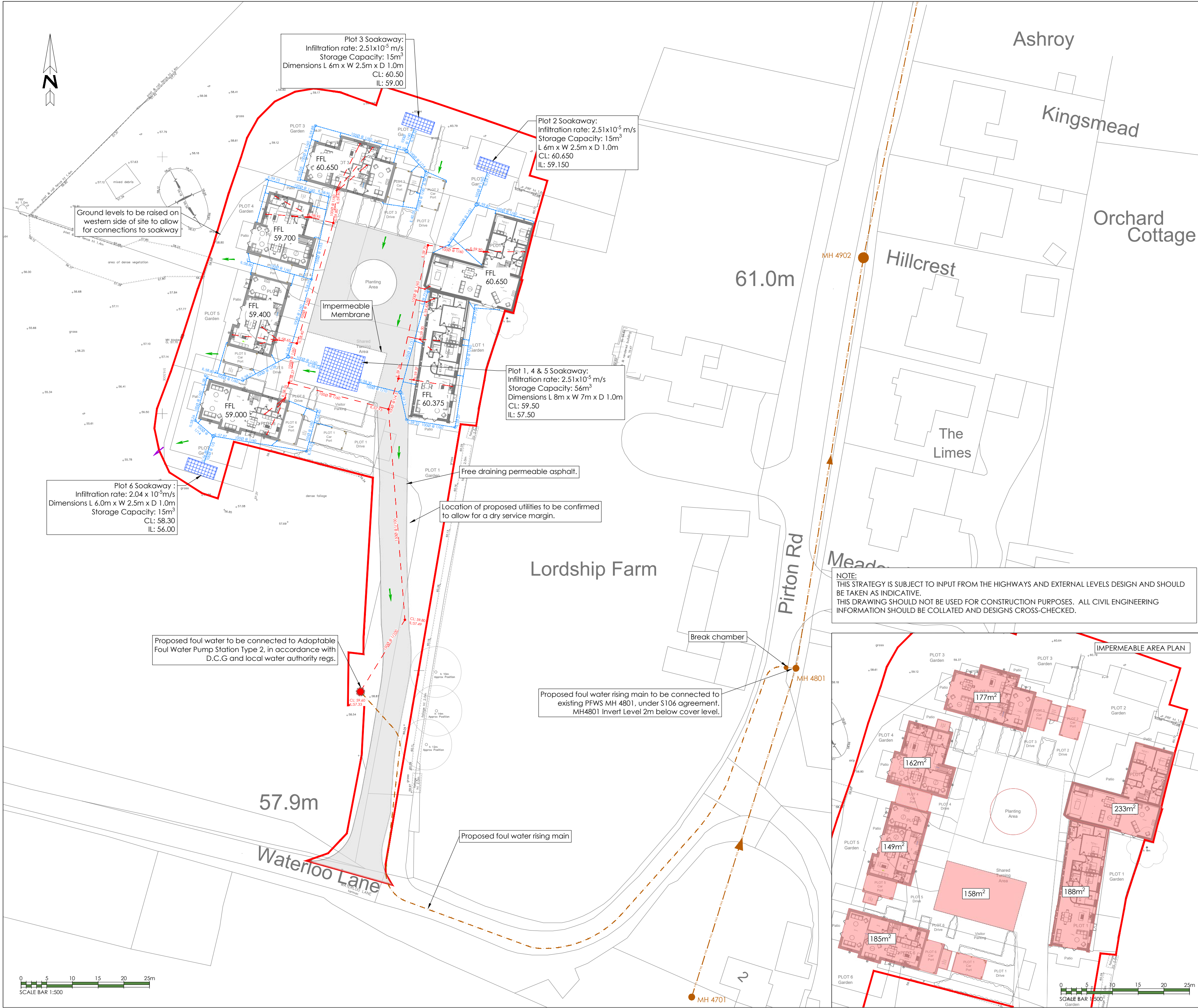
INFILTRATION TEST LOCATION

ESTIMATED AREA SUITABLE FOR INFILTRATION

ESTIMATED AREA NOT SUITABLE FOR INFILTRATION

A	Site Boundary updated	23.10.25	LGM	SJB	-
Rev	Description	Date	Drawn	Checked	Apvd.
Project					
Lordship Farm, Holwell					
Drawing Description					
Soakaway Feasibility Review Plan					
Project Number		Drawing Number			
ST-3803		300-A			
Scale	Date	Drawn	Checked	Approved	
1:500@A3	24.09.25	LGM	SJB	SJB	
Client		Architect			
Netherdown Ltd					
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KEY

- SITE BOUNDARY
- EXISTING PUBLIC FOUL WATER SEWER
- OVERLAND FLOW ROUTES
- EXCEEDANCE FLOW ROUTES
- SURFACE WATER PRIVATE PIPE
- RODDING EYE
- RAIN WATER PIPE CONNECTION
- 450-600mm INSPECTION CHAMBER 1.2m - 3m DEEP
- CATCHPIT INSPECTION CHAMBER
- FOUL WATER PRIVATE PIPE
- FOUL WATER DRAINAGE POINT
- 315mm INSPECTION CHAMBER
- 450-600mm INSPECTION CHAMBER 1.2m - 3m DEEP
- PROPOSED FOUL WATER MANHOLE
- PROPOSED FOUL WATER RISING MAIN
- PROPOSED PERMEABLE ASPHALT
- IMPERMEABLE AREA
- INDICATIVE FINISHED FLOOR LEVEL
- SOAKAWAY TANK

NOTES

- ALL DRAINAGE WORKS ARE TO COMPLY WITH BUILDING REGULATIONS, PART H.
- SURFACE WATER FROM PRIVATE AREAS TO HAVE ADEQUATE MEASURES OF INTERCEPTION TO PREVENT WATER ENTERING THE ADAPTABLE HIGHWAY.
- ALL PRECAST CONCRETE UNITS ARE TO BE TO BS 5911 (CLASS 3 SULPHATE RESISTANT CEMENT).
- ALL PROPOSED MANHOLE COVERS AND FRAMES ARE TO BE DUCTILE IRON COMPLYING WITH BS EN 124.
- ALL RWP, SWP AND FOUL DRAINAGE POSITIONS, INCLUDING UNDERSLAB GULLIES, ARE TO BE CONFIRMED BY THE ARCHITECT.
- WHERE RWP'S STUB STACKS AND SWP'S ARE CONNECTED DIRECT TO THE DRAIN, RODDING ACCESS PLATES ARE TO BE PROVIDED.
- ALL PIPES TO BE 1000 UNLESS NOTE OTHERWISE EXCEPT FOR ROAD GULLY CONNECTIONS WHICH ARE TO BE 1500.
- ALL PIPES, CHAMBERS & FITTINGS TO BE INSTALLED BEDDED & BACKFILLED IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.
- RAINWATER DOWNPIPES SHALL BE CONNECTED DIRECTLY INTO SURFACE WATER DRAINS VIA 60/100mm ADAPTORS, REMOVABLE TO ALLOW FOR RODDING. ALL BACK INLET GULLIES ARE TO BE REMOVABLE. POSITION OF PRIVATE GULLIES ARE NOMINAL ONLY & SHOULD BE ADJUSTED AS NECESSARY TO REFLECT LOW POINTS ON SITE.
- ALL DRAINS IN THE VICINITY OF EXISTING OR PROPOSED TREES TO BE CONSTRUCTED IN ACCORDANCE WITH REQUIREMENTS OF CURRENT TREE STANDARDS.
- ANY TRAFFIC MANAGEMENT REQUIRED TO UNDERTAKE WORKS IN THE PUBLIC HIGHWAY MUST BE APPROVED BY THE LOCAL AUTHORITY PRIOR TO THEIR WORKS COMMENCING.
- ALL WORKS IN THE PUBLIC HIGHWAY MUST BE CARRIED OUT WITH THE PRIOR APPROVAL AND TO THE SATISFACTION OF THE LOCAL AUTHORITY.
- THE CONTRACTOR IS TO LIAISE WITH WATER AUTHORITY ENGINEER, AFFORDING THEIR REASONABLE NOTICE TO INSPECT THE WORKS DURING CONSTRUCTION.
- THE CONTRACTOR IS TO ALLOW FOR JET WASHING ALL LENGTHS OF EXISTING SEWERS WHICH ARE TO BE RETAINED.
- THE CONTRACTOR IS TO COMPLY WITH THE 'NEW ROAD AND STREET' WORKS ACT: 1991 FOR ALL WORKS IN THE PUBLIC HIGHWAY.
- THE CONTRACTOR MUST CHECK THE LEVELS AND CONDITION OF ALL EXISTING DRAINAGE OUTFALLS PRIOR TO CONSTRUCTION OF ANY DRAINAGE, UNLESS OTHERWISE AGREED, TO ENSURE THE PROPOSED DESIGN MAY BE ACHIEVED. ANY DISCREPANCIES MUST BE REPORTED TO STOMOR LTD IMMEDIATELY.
- CONTRACTOR IS TO ALLOW FOR ALL ABANDONED DRAINAGE RUNS, REMOVED TREES AND MANHOLES / SOAKAWAYS / GULLIES TO BE BACK-FILLED WITH WELL COMPACTED TYPE 1 GRANULAR MATERIAL TO FORMATION LEVEL TO ENSURE FULL CONSTRUCTION DEPTH ABOVE.
- ALL BURIED MANHOLES IDENTIFIED ON SITE TO BE NOTIFIED TO STOMOR LTD WITH INVERT LEVELS.
- PRIOR TO COMMENCING WORKS THE CONTRACTOR IS TO REVIEW THE ENVIRONMENTAL ASSESSMENT REPORT.
- PRIOR TO COMMENCING WORKS THE CONTRACTOR IS TO REVIEW THE GROUND INVESTIGATION REPORT.

BURIED SERVICES

- PRIOR TO ANY WORKS BEING UNDERTAKEN, THE CONTRACTOR IS TO REFER TO UTILITIES RECORDS TO IDENTIFY APPROXIMATE LOCATION OF BURIED SERVICES.
- HAND DUG TRIAL HOLES SHOULD BE CARRIED OUT IN ORDER TO IDENTIFY EXACT POSITION AND DEPTH, WITH REASONABLE NOTICE GIVEN TO STATUTORY UNDERTAKERS AS APPROPRIATE PRIOR TO CARRYING OUT ANY EXCAVATIONS.
- LOCATIONS AND DEPTHS OF EXISTING SERVICES TO BE CONFIRMED TO THE ENGINEER PRIOR TO WORKS BEING CARRIED OUT.
- APPROPRIATE PERMITS TO WORK WILL BE REQUIRED TO CARRY OUT ANY WORK IN THE HIGHWAY INCLUDING TRIAL HOLES.

HOTSPOT PROTOCOL

- THERE IS A POSSIBILITY THAT AN UNKNOWN AREA OF SOIL CONTAMINATION MAY BE ENCOUNTERED DURING CONSTRUCTION/GROUNDWORKS WORKS.
- SHOULD AN AREA OF CONTAMINATION BE IDENTIFIED BY VISUAL OR OLFATORY MEANS THE FOLLOWING PROCEDURE WILL BE FOLLOWED:-
 - IMMEDIATELY STOP ALL WORKS IN THE AREA WHERE CONTAMINATION IS SUSPECTED.
 - IMMEDIATELY INFORM THE SITE PROJECT MANAGER.

SUBJECT TO LOCAL WATER AUTHORITY APPROVAL

- NO CONSTRUCTION SHOULD BE UNDERTAKEN PRIOR TO RECEIPT OF TECHNICAL APPROVAL FOR THE DESIGN AND APPROPRIATE AGREEMENTS AND PERMITS TO WORK IN PLACE. ANY WORK UNDERTAKEN PRIOR TO TECHNICAL APPROVAL AND AGREEMENTS BEING IN PLACE WILL BE CARRIED OUT AT CONTRACTORS OWN RISK.
- INVERT LEVELS OF EXISTING SEWERS TO BE CONFIRMED AT ALL POINTS OF CONNECTION TO PUBLIC SEWERS PRIOR TO CONSTRUCTION OF ON-SITE DRAINAGE.
- ALL EXISTING SERVICES BOX COVERS ARE TO BE ADJUSTED TO TIE IN WITH THE RE-PAID CARRIAGEWAY AND FOOTWAY LEVELS AS NECESSARY.

NOTE:
THIS STRATEGY IS SUBJECT TO INPUT FROM THE HIGHWAYS AND EXTERNAL LEVELS DESIGN AND SHOULD BE TAKEN AS INDICATIVE.
THIS DRAWING SHOULD NOT BE USED FOR CONSTRUCTION PURPOSES. ALL CIVIL ENGINEERING INFORMATION SHOULD BE COLLATED AND DESIGNS CROSS-CHECKED.

IMPERMEABLE AREA PLAN

A	Site Boundary and access road updated.	23.10.25	LGM	SJB	-
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Rev	Description	Date	Drawn	Checked	Apvd.
Project	Lordship Farm, Holwell				

Drawing Description

Proposed Drainage Strategy

Project Number	Drawing Number
ST-3803	500-A

Scale	Date	Drawn	Checked	Approved
1:500@A2	02.10.25	LGM	SJB	SJB

Client Architect

NETHERDOWN
DISTINCTIVE NEW HOMES SINCE 1977

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32 Beehive Lane Welwyn Garden City Herts AL7 4BQ																																																																																																																																																																																																			
Date 07/10/2025 17:19 File PLOT 1-4-5.SRCX		Designed by Lourdes Checked by																																																																																																																																																																																																	
Micro Drainage		Source Control 2020.1																																																																																																																																																																																																	
<u>Summary of Results for 100 year Return Period (+40%)</u> Half Drain Time : 440 minutes. <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>57.951</td><td>0.451</td><td>0.9</td><td>24.0</td><td>O K</td></tr><tr><td>30 min Summer</td><td>58.074</td><td>0.574</td><td>0.9</td><td>30.5</td><td>O K</td></tr><tr><td>60 min Summer</td><td>58.185</td><td>0.685</td><td>1.0</td><td>36.4</td><td>O K</td></tr><tr><td>120 min Summer</td><td>58.332</td><td>0.832</td><td>1.0</td><td>44.2</td><td>O K</td></tr><tr><td>180 min Summer</td><td>58.398</td><td>0.898</td><td>1.0</td><td>47.8</td><td>O K</td></tr><tr><td>240 min Summer</td><td>58.425</td><td>0.925</td><td>1.1</td><td>49.2</td><td>O K</td></tr><tr><td>360 min Summer</td><td>58.422</td><td>0.922</td><td>1.0</td><td>49.0</td><td>O K</td></tr><tr><td>480 min Summer</td><td>58.393</td><td>0.893</td><td>1.0</td><td>47.5</td><td>O K</td></tr><tr><td>600 min Summer</td><td>58.360</td><td>0.860</td><td>1.0</td><td>45.7</td><td>O K</td></tr><tr><td>720 min Summer</td><td>58.326</td><td>0.826</td><td>1.0</td><td>43.9</td><td>O K</td></tr><tr><td>960 min Summer</td><td>58.261</td><td>0.761</td><td>1.0</td><td>40.5</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>58.153</td><td>0.653</td><td>0.9</td><td>34.7</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>58.026</td><td>0.526</td><td>0.9</td><td>28.0</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>57.927</td><td>0.427</td><td>0.9</td><td>22.7</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>57.786</td><td>0.286</td><td>0.8</td><td>15.2</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>57.692</td><td>0.192</td><td>0.8</td><td>10.2</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>57.630</td><td>0.130</td><td>0.8</td><td>6.9</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>57.589</td><td>0.089</td><td>0.7</td><td>4.8</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>138.867</td><td>0.0</td><td>26</td></tr><tr><td>30 min Summer</td><td>89.402</td><td>0.0</td><td>40</td></tr><tr><td>60 min Summer</td><td>54.828</td><td>0.0</td><td>68</td></tr><tr><td>120 min Summer</td><td>34.890</td><td>0.0</td><td>126</td></tr><tr><td>180 min Summer</td><td>26.292</td><td>0.0</td><td>184</td></tr><tr><td>240 min Summer</td><td>21.279</td><td>0.0</td><td>244</td></tr><tr><td>360 min Summer</td><td>15.513</td><td>0.0</td><td>352</td></tr><tr><td>480 min Summer</td><td>12.254</td><td>0.0</td><td>404</td></tr><tr><td>600 min Summer</td><td>10.151</td><td>0.0</td><td>466</td></tr><tr><td>720 min Summer</td><td>8.679</td><td>0.0</td><td>528</td></tr><tr><td>960 min Summer</td><td>6.744</td><td>0.0</td><td>662</td></tr><tr><td>1440 min Summer</td><td>4.706</td><td>0.0</td><td>932</td></tr><tr><td>2160 min Summer</td><td>3.287</td><td>0.0</td><td>1332</td></tr><tr><td>2880 min Summer</td><td>2.562</td><td>0.0</td><td>1728</td></tr><tr><td>4320 min Summer</td><td>1.835</td><td>0.0</td><td>2468</td></tr><tr><td>5760 min Summer</td><td>1.470</td><td>0.0</td><td>3176</td></tr><tr><td>7200 min Summer</td><td>1.253</td><td>0.0</td><td>3888</td></tr><tr><td>8640 min Summer</td><td>1.110</td><td>0.0</td><td>4504</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	57.951	0.451	0.9	24.0	O K	30 min Summer	58.074	0.574	0.9	30.5	O K	60 min Summer	58.185	0.685	1.0	36.4	O K	120 min Summer	58.332	0.832	1.0	44.2	O K	180 min Summer	58.398	0.898	1.0	47.8	O K	240 min Summer	58.425	0.925	1.1	49.2	O K	360 min Summer	58.422	0.922	1.0	49.0	O K	480 min Summer	58.393	0.893	1.0	47.5	O K	600 min Summer	58.360	0.860	1.0	45.7	O K	720 min Summer	58.326	0.826	1.0	43.9	O K	960 min Summer	58.261	0.761	1.0	40.5	O K	1440 min Summer	58.153	0.653	0.9	34.7	O K	2160 min Summer	58.026	0.526	0.9	28.0	O K	2880 min Summer	57.927	0.427	0.9	22.7	O K	4320 min Summer	57.786	0.286	0.8	15.2	O K	5760 min Summer	57.692	0.192	0.8	10.2	O K	7200 min Summer	57.630	0.130	0.8	6.9	O K	8640 min Summer	57.589	0.089	0.7	4.8	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	138.867	0.0	26	30 min Summer	89.402	0.0	40	60 min Summer	54.828	0.0	68	120 min Summer	34.890	0.0	126	180 min Summer	26.292	0.0	184	240 min Summer	21.279	0.0	244	360 min Summer	15.513	0.0	352	480 min Summer	12.254	0.0	404	600 min Summer	10.151	0.0	466	720 min Summer	8.679	0.0	528	960 min Summer	6.744	0.0	662	1440 min Summer	4.706	0.0	932	2160 min Summer	3.287	0.0	1332	2880 min Summer	2.562	0.0	1728	4320 min Summer	1.835	0.0	2468	5760 min Summer	1.470	0.0	3176	7200 min Summer	1.253	0.0	3888	8640 min Summer	1.110	0.0	4504
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240 min Summer	58.425	0.925	1.1	49.2	O K																																																																																																																																																																																														
360 min Summer	58.422	0.922	1.0	49.0	O K																																																																																																																																																																																														
480 min Summer	58.393	0.893	1.0	47.5	O K																																																																																																																																																																																														
600 min Summer	58.360	0.860	1.0	45.7	O K																																																																																																																																																																																														
720 min Summer	58.326	0.826	1.0	43.9	O K																																																																																																																																																																																														
960 min Summer	58.261	0.761	1.0	40.5	O K																																																																																																																																																																																														
1440 min Summer	58.153	0.653	0.9	34.7	O K																																																																																																																																																																																														
2160 min Summer	58.026	0.526	0.9	28.0	O K																																																																																																																																																																																														
2880 min Summer	57.927	0.427	0.9	22.7	O K																																																																																																																																																																																														
4320 min Summer	57.786	0.286	0.8	15.2	O K																																																																																																																																																																																														
5760 min Summer	57.692	0.192	0.8	10.2	O K																																																																																																																																																																																														
7200 min Summer	57.630	0.130	0.8	6.9	O K																																																																																																																																																																																														
8640 min Summer	57.589	0.089	0.7	4.8	O K																																																																																																																																																																																														
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)																																																																																																																																																																																																
15 min Summer	138.867	0.0	26																																																																																																																																																																																																
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60 min Summer	54.828	0.0	68																																																																																																																																																																																																
120 min Summer	34.890	0.0	126																																																																																																																																																																																																
180 min Summer	26.292	0.0	184																																																																																																																																																																																																
240 min Summer	21.279	0.0	244																																																																																																																																																																																																
360 min Summer	15.513	0.0	352																																																																																																																																																																																																
480 min Summer	12.254	0.0	404																																																																																																																																																																																																
600 min Summer	10.151	0.0	466																																																																																																																																																																																																
720 min Summer	8.679	0.0	528																																																																																																																																																																																																
960 min Summer	6.744	0.0	662																																																																																																																																																																																																
1440 min Summer	4.706	0.0	932																																																																																																																																																																																																
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2880 min Summer	2.562	0.0	1728																																																																																																																																																																																																
4320 min Summer	1.835	0.0	2468																																																																																																																																																																																																
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8640 min Summer	1.110	0.0	4504																																																																																																																																																																																																
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32 Beehive Lane Welwyn Garden City Herts AL7 4BQ					
Date 07/10/2025 17:19		Designed by Lourdes			
File PLOT 1-4-5.SRCX		Checked by			
Micro Drainage		Source Control 2020.1			
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
10080 min Summer	57.564	0.064	0.7	3.4	O K
15 min Winter	57.951	0.451	0.9	24.0	O K
30 min Winter	58.075	0.575	0.9	30.6	O K
60 min Winter	58.187	0.687	1.0	36.5	O K
120 min Winter	58.335	0.835	1.0	44.4	O K
180 min Winter	58.403	0.903	1.0	48.0	O K
240 min Winter	58.432	0.932	1.1	49.6	O K
360 min Winter	58.433	0.933	1.1	49.6	O K
480 min Winter	58.399	0.899	1.0	47.8	O K
600 min Winter	58.362	0.862	1.0	45.8	O K
720 min Winter	58.323	0.823	1.0	43.8	O K
960 min Winter	58.246	0.746	1.0	39.7	O K
1440 min Winter	58.107	0.607	0.9	32.3	O K
2160 min Winter	57.940	0.440	0.9	23.4	O K
2880 min Winter	57.811	0.311	0.8	16.6	O K
4320 min Winter	57.639	0.139	0.8	7.4	O K
5760 min Winter	57.554	0.054	0.7	2.8	O K
7200 min Winter	57.544	0.044	0.6	2.3	O K
8640 min Winter	57.539	0.039	0.6	2.1	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
10080 min Summer	1.009	0.0	5160		
15 min Winter	138.867	0.0	26		
30 min Winter	89.402	0.0	40		
60 min Winter	54.828	0.0	68		
120 min Winter	34.890	0.0	124		
180 min Winter	26.292	0.0	182		
240 min Winter	21.279	0.0	238		
360 min Winter	15.513	0.0	348		
480 min Winter	12.254	0.0	446		
600 min Winter	10.151	0.0	478		
720 min Winter	8.679	0.0	554		
960 min Winter	6.744	0.0	706		
1440 min Winter	4.706	0.0	1000		
2160 min Winter	3.287	0.0	1412		
2880 min Winter	2.562	0.0	1796		
4320 min Winter	1.835	0.0	2508		
5760 min Winter	1.470	0.0	3008		
7200 min Winter	1.253	0.0	3672		
8640 min Winter	1.110	0.0	4408		
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32 Beehive Lane Welwyn Garden City Herts AL7 4BQ																						
Date 07/10/2025 17:19 File PLOT 1-4-5.SRCX	Designed by Lourdes Checked by																					
Micro Drainage		Source Control 2020.1																				
Summary of Results for 100 year Return Period (+40%) <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>10080 min Winter</td><td>57.535</td><td>0.035</td><td>0.5</td><td>1.9</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>10080 min Winter</td><td>1.009</td><td>0.0</td><td>5144</td></tr></tbody></table>			Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	10080 min Winter	57.535	0.035	0.5	1.9	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	10080 min Winter	1.009	0.0	5144
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status																	
10080 min Winter	57.535	0.035	0.5	1.9	O K																	
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)																			
10080 min Winter	1.009	0.0	5144																			
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32 Beehive Lane Welwyn Garden City Herts AL7 4BQ		
Date 07/10/2025 17:19 File PLOT 1-4-5.SRCX	Designed by Lourdes Checked by	
Micro Drainage Source Control 2020.1		

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 516348 232888 TL 16348 32888
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.072

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)	From: To:	(ha)
0 4	0.024	4 8	0.024	8 12	0.024

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32 Beehive Lane																				
Welwyn Garden City																				
Herts AL7 4BQ																				
Date 07/10/2025 17:19	Designed by Lourdes																			
File PLOT 1-4-5.SRCX	Checked by																			
Micro Drainage	Source Control 2020.1																			
<u>Model Details</u> Storage is Online Cover Level (m) 59.500 <u>Cellular Storage Structure</u> Invert Level (m) 57.500 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.09036 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.09036 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr><tr><td>0.000</td><td>56.0</td><td>56.0</td><td>1.001</td><td>0.0</td><td>86.0</td></tr><tr><td>1.000</td><td>56.0</td><td>86.0</td><td></td><td></td><td></td></tr></table>			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	56.0	56.0	1.001	0.0	86.0	1.000	56.0	86.0			
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)															
0.000	56.0	56.0	1.001	0.0	86.0															
1.000	56.0	86.0																		
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Summary of Results for 100 year Return Period (+40%) Half Drain Time : 340 minutes. <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>59.640</td><td>0.490</td><td>0.3</td><td>7.0</td><td>O K</td></tr><tr><td>30 min Summer</td><td>59.772</td><td>0.622</td><td>0.3</td><td>8.9</td><td>O K</td></tr><tr><td>60 min Summer</td><td>59.888</td><td>0.738</td><td>0.3</td><td>10.5</td><td>O K</td></tr><tr><td>120 min Summer</td><td>60.037</td><td>0.887</td><td>0.4</td><td>12.6</td><td>O K</td></tr><tr><td>180 min Summer</td><td>60.097</td><td>0.947</td><td>0.4</td><td>13.5</td><td>O K</td></tr><tr><td>240 min Summer</td><td>60.116</td><td>0.966</td><td>0.4</td><td>13.8</td><td>O K</td></tr><tr><td>360 min Summer</td><td>60.105</td><td>0.955</td><td>0.4</td><td>13.6</td><td>O K</td></tr><tr><td>480 min Summer</td><td>60.076</td><td>0.926</td><td>0.4</td><td>13.2</td><td>O K</td></tr><tr><td>600 min Summer</td><td>60.041</td><td>0.891</td><td>0.4</td><td>12.7</td><td>O K</td></tr><tr><td>720 min Summer</td><td>60.005</td><td>0.855</td><td>0.4</td><td>12.2</td><td>O K</td></tr><tr><td>960 min Summer</td><td>59.935</td><td>0.785</td><td>0.4</td><td>11.2</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>59.819</td><td>0.669</td><td>0.3</td><td>9.5</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>59.687</td><td>0.537</td><td>0.3</td><td>7.7</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>59.587</td><td>0.437</td><td>0.3</td><td>6.2</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>59.450</td><td>0.300</td><td>0.3</td><td>4.3</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>59.360</td><td>0.210</td><td>0.2</td><td>3.0</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>59.299</td><td>0.149</td><td>0.2</td><td>2.1</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>59.257</td><td>0.107</td><td>0.2</td><td>1.5</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>138.867</td><td>0.0</td><td>26</td></tr><tr><td>30 min Summer</td><td>89.402</td><td>0.0</td><td>40</td></tr><tr><td>60 min Summer</td><td>54.828</td><td>0.0</td><td>68</td></tr><tr><td>120 min Summer</td><td>34.890</td><td>0.0</td><td>126</td></tr><tr><td>180 min Summer</td><td>26.292</td><td>0.0</td><td>182</td></tr><tr><td>240 min Summer</td><td>21.279</td><td>0.0</td><td>240</td></tr><tr><td>360 min Summer</td><td>15.513</td><td>0.0</td><td>302</td></tr><tr><td>480 min Summer</td><td>12.254</td><td>0.0</td><td>364</td></tr><tr><td>600 min Summer</td><td>10.151</td><td>0.0</td><td>430</td></tr><tr><td>720 min Summer</td><td>8.679</td><td>0.0</td><td>498</td></tr><tr><td>960 min Summer</td><td>6.744</td><td>0.0</td><td>636</td></tr><tr><td>1440 min Summer</td><td>4.706</td><td>0.0</td><td>910</td></tr><tr><td>2160 min Summer</td><td>3.287</td><td>0.0</td><td>1304</td></tr><tr><td>2880 min Summer</td><td>2.562</td><td>0.0</td><td>1684</td></tr><tr><td>4320 min Summer</td><td>1.835</td><td>0.0</td><td>2428</td></tr><tr><td>5760 min Summer</td><td>1.470</td><td>0.0</td><td>3168</td></tr><tr><td>7200 min Summer</td><td>1.253</td><td>0.0</td><td>3832</td></tr><tr><td>8640 min Summer</td><td>1.110</td><td>0.0</td><td>4576</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	59.640	0.490	0.3	7.0	O K	30 min Summer	59.772	0.622	0.3	8.9	O K	60 min Summer	59.888	0.738	0.3	10.5	O K	120 min Summer	60.037	0.887	0.4	12.6	O K	180 min Summer	60.097	0.947	0.4	13.5	O K	240 min Summer	60.116	0.966	0.4	13.8	O K	360 min Summer	60.105	0.955	0.4	13.6	O K	480 min Summer	60.076	0.926	0.4	13.2	O K	600 min Summer	60.041	0.891	0.4	12.7	O K	720 min Summer	60.005	0.855	0.4	12.2	O K	960 min Summer	59.935	0.785	0.4	11.2	O K	1440 min Summer	59.819	0.669	0.3	9.5	O K	2160 min Summer	59.687	0.537	0.3	7.7	O K	2880 min Summer	59.587	0.437	0.3	6.2	O K	4320 min Summer	59.450	0.300	0.3	4.3	O K	5760 min Summer	59.360	0.210	0.2	3.0	O K	7200 min Summer	59.299	0.149	0.2	2.1	O K	8640 min Summer	59.257	0.107	0.2	1.5	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	138.867	0.0	26	30 min Summer	89.402	0.0	40	60 min Summer	54.828	0.0	68	120 min Summer	34.890	0.0	126	180 min Summer	26.292	0.0	182	240 min Summer	21.279	0.0	240	360 min Summer	15.513	0.0	302	480 min Summer	12.254	0.0	364	600 min Summer	10.151	0.0	430	720 min Summer	8.679	0.0	498	960 min Summer	6.744	0.0	636	1440 min Summer	4.706	0.0	910	2160 min Summer	3.287	0.0	1304	2880 min Summer	2.562	0.0	1684	4320 min Summer	1.835	0.0	2428	5760 min Summer	1.470	0.0	3168	7200 min Summer	1.253	0.0	3832	8640 min Summer	1.110	0.0	4576
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4320 min Summer	1.835	0.0	2428																																																																																																																																																																																																
5760 min Summer	1.470	0.0	3168																																																																																																																																																																																																
7200 min Summer	1.253	0.0	3832																																																																																																																																																																																																
8640 min Summer	1.110	0.0	4576																																																																																																																																																																																																
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32 Beehive Lane Welwyn Garden City Herts AL7 4BQ					
Date 24/09/2025 14:02		Designed by Lourdes			
File Plot 2.SRCX		Checked by			
Micro Drainage		Source Control 2020.1			
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
10080 min Summer	59.230	0.080	0.2	1.1	O K
15 min Winter	59.640	0.490	0.3	7.0	O K
30 min Winter	59.772	0.622	0.3	8.9	O K
60 min Winter	59.890	0.740	0.3	10.5	O K
120 min Winter	60.041	0.891	0.4	12.7	O K
180 min Winter	60.104	0.954	0.4	13.6	O K
240 min Winter	60.126	0.976	0.4	13.9	O K
360 min Winter	60.111	0.961	0.4	13.7	O K
480 min Winter	60.078	0.928	0.4	13.2	O K
600 min Winter	60.037	0.887	0.4	12.6	O K
720 min Winter	59.994	0.844	0.4	12.0	O K
960 min Winter	59.908	0.758	0.4	10.8	O K
1440 min Winter	59.762	0.612	0.3	8.7	O K
2160 min Winter	59.594	0.444	0.3	6.3	O K
2880 min Winter	59.471	0.321	0.3	4.6	O K
4320 min Winter	59.310	0.160	0.2	2.3	O K
5760 min Winter	59.219	0.069	0.2	1.0	O K
7200 min Winter	59.196	0.046	0.2	0.7	O K
8640 min Winter	59.191	0.041	0.2	0.6	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
10080 min Summer	1.009	0.0	5248		
15 min Winter	138.867	0.0	26		
30 min Winter	89.402	0.0	39		
60 min Winter	54.828	0.0	68		
120 min Winter	34.890	0.0	124		
180 min Winter	26.292	0.0	180		
240 min Winter	21.279	0.0	234		
360 min Winter	15.513	0.0	332		
480 min Winter	12.254	0.0	378		
600 min Winter	10.151	0.0	454		
720 min Winter	8.679	0.0	532		
960 min Winter	6.744	0.0	682		
1440 min Winter	4.706	0.0	970		
2160 min Winter	3.287	0.0	1380		
2880 min Winter	2.562	0.0	1764		
4320 min Winter	1.835	0.0	2476		
5760 min Winter	1.470	0.0	3112		
7200 min Winter	1.253	0.0	3680		
8640 min Winter	1.110	0.0	4360		
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32 Beehive Lane Welwyn Garden City Herts AL7 4BQ																						
Date 24/09/2025 14:02 File Plot 2.SRCX	Designed by Lourdes Checked by																					
Micro Drainage		Source Control 2020.1																				
Summary of Results for 100 year Return Period (+40%) <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>10080 min Winter</td><td>59.188</td><td>0.038</td><td>0.2</td><td>0.5</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>10080 min Winter</td><td>1.009</td><td>0.0</td><td>5128</td></tr></tbody></table>			Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	10080 min Winter	59.188	0.038	0.2	0.5	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	10080 min Winter	1.009	0.0	5128
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status																	
10080 min Winter	59.188	0.038	0.2	0.5	O K																	
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10080 min Winter	1.009	0.0	5128																			
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Date 24/09/2025 14:02 File Plot 2.SRCX	Designed by Lourdes Checked by	
Micro Drainage Source Control 2020.1		

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 516348 232888 TL 16348 32888
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.021

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

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Date 24/09/2025 14:02 File Plot 2.SRCX	Designed by Lourdes Checked by	
Micro Drainage Source Control 2020.1		

Model Details

Storage is Online Cover Level (m) 60.650

Cellular Storage Structure

Invert Level (m) 59.150 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.09036 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.09036

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	15.0	15.0	1.001	0.0	32.0
1.000	15.0	32.0			

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Summary of Results for 100 year Return Period (+40%) Half Drain Time : 329 minutes. <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>59.466</td><td>0.466</td><td>0.3</td><td>6.6</td><td>O K</td></tr><tr><td>30 min Summer</td><td>59.591</td><td>0.591</td><td>0.3</td><td>8.4</td><td>O K</td></tr><tr><td>60 min Summer</td><td>59.701</td><td>0.701</td><td>0.3</td><td>10.0</td><td>O K</td></tr><tr><td>120 min Summer</td><td>59.841</td><td>0.841</td><td>0.4</td><td>12.0</td><td>O K</td></tr><tr><td>180 min Summer</td><td>59.897</td><td>0.897</td><td>0.4</td><td>12.8</td><td>O K</td></tr><tr><td>240 min Summer</td><td>59.913</td><td>0.913</td><td>0.4</td><td>13.0</td><td>O K</td></tr><tr><td>360 min Summer</td><td>59.902</td><td>0.902</td><td>0.4</td><td>12.9</td><td>O K</td></tr><tr><td>480 min Summer</td><td>59.873</td><td>0.873</td><td>0.4</td><td>12.4</td><td>O K</td></tr><tr><td>600 min Summer</td><td>59.839</td><td>0.839</td><td>0.4</td><td>12.0</td><td>O K</td></tr><tr><td>720 min Summer</td><td>59.804</td><td>0.804</td><td>0.4</td><td>11.5</td><td>O K</td></tr><tr><td>960 min Summer</td><td>59.736</td><td>0.736</td><td>0.3</td><td>10.5</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>59.624</td><td>0.624</td><td>0.3</td><td>8.9</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>59.497</td><td>0.497</td><td>0.3</td><td>7.1</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>59.401</td><td>0.401</td><td>0.3</td><td>5.7</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>59.269</td><td>0.269</td><td>0.2</td><td>3.8</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>59.184</td><td>0.184</td><td>0.2</td><td>2.6</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>59.127</td><td>0.127</td><td>0.2</td><td>1.8</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>59.090</td><td>0.090</td><td>0.2</td><td>1.3</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>138.867</td><td>0.0</td><td>26</td></tr><tr><td>30 min Summer</td><td>89.402</td><td>0.0</td><td>40</td></tr><tr><td>60 min Summer</td><td>54.828</td><td>0.0</td><td>68</td></tr><tr><td>120 min Summer</td><td>34.890</td><td>0.0</td><td>126</td></tr><tr><td>180 min Summer</td><td>26.292</td><td>0.0</td><td>182</td></tr><tr><td>240 min Summer</td><td>21.279</td><td>0.0</td><td>240</td></tr><tr><td>360 min Summer</td><td>15.513</td><td>0.0</td><td>298</td></tr><tr><td>480 min Summer</td><td>12.254</td><td>0.0</td><td>362</td></tr><tr><td>600 min Summer</td><td>10.151</td><td>0.0</td><td>428</td></tr><tr><td>720 min Summer</td><td>8.679</td><td>0.0</td><td>496</td></tr><tr><td>960 min Summer</td><td>6.744</td><td>0.0</td><td>634</td></tr><tr><td>1440 min Summer</td><td>4.706</td><td>0.0</td><td>906</td></tr><tr><td>2160 min Summer</td><td>3.287</td><td>0.0</td><td>1300</td></tr><tr><td>2880 min Summer</td><td>2.562</td><td>0.0</td><td>1680</td></tr><tr><td>4320 min Summer</td><td>1.835</td><td>0.0</td><td>2424</td></tr><tr><td>5760 min Summer</td><td>1.470</td><td>0.0</td><td>3120</td></tr><tr><td>7200 min Summer</td><td>1.253</td><td>0.0</td><td>3824</td></tr><tr><td>8640 min Summer</td><td>1.110</td><td>0.0</td><td>4504</td></tr></tbody></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	59.466	0.466	0.3	6.6	O K	30 min Summer	59.591	0.591	0.3	8.4	O K	60 min Summer	59.701	0.701	0.3	10.0	O K	120 min Summer	59.841	0.841	0.4	12.0	O K	180 min Summer	59.897	0.897	0.4	12.8	O K	240 min Summer	59.913	0.913	0.4	13.0	O K	360 min Summer	59.902	0.902	0.4	12.9	O K	480 min Summer	59.873	0.873	0.4	12.4	O K	600 min Summer	59.839	0.839	0.4	12.0	O K	720 min Summer	59.804	0.804	0.4	11.5	O K	960 min Summer	59.736	0.736	0.3	10.5	O K	1440 min Summer	59.624	0.624	0.3	8.9	O K	2160 min Summer	59.497	0.497	0.3	7.1	O K	2880 min Summer	59.401	0.401	0.3	5.7	O K	4320 min Summer	59.269	0.269	0.2	3.8	O K	5760 min Summer	59.184	0.184	0.2	2.6	O K	7200 min Summer	59.127	0.127	0.2	1.8	O K	8640 min Summer	59.090	0.090	0.2	1.3	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	138.867	0.0	26	30 min Summer	89.402	0.0	40	60 min Summer	54.828	0.0	68	120 min Summer	34.890	0.0	126	180 min Summer	26.292	0.0	182	240 min Summer	21.279	0.0	240	360 min Summer	15.513	0.0	298	480 min Summer	12.254	0.0	362	600 min Summer	10.151	0.0	428	720 min Summer	8.679	0.0	496	960 min Summer	6.744	0.0	634	1440 min Summer	4.706	0.0	906	2160 min Summer	3.287	0.0	1300	2880 min Summer	2.562	0.0	1680	4320 min Summer	1.835	0.0	2424	5760 min Summer	1.470	0.0	3120	7200 min Summer	1.253	0.0	3824	8640 min Summer	1.110	0.0	4504
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status																																																																																																																																																																																														
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Date 24/09/2025 16:07		Designed by Lourdes			
File PLOT 3.SRCX		Checked by			
Micro Drainage		Source Control 2020.1			
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
10080 min Summer	59.066	0.066	0.2	0.9	O K
15 min Winter	59.466	0.466	0.3	6.6	O K
30 min Winter	59.592	0.592	0.3	8.4	O K
60 min Winter	59.703	0.703	0.3	10.0	O K
120 min Winter	59.845	0.845	0.4	12.0	O K
180 min Winter	59.904	0.904	0.4	12.9	O K
240 min Winter	59.923	0.923	0.4	13.1	O K
360 min Winter	59.906	0.906	0.4	12.9	O K
480 min Winter	59.874	0.874	0.4	12.5	O K
600 min Winter	59.834	0.834	0.4	11.9	O K
720 min Winter	59.792	0.792	0.4	11.3	O K
960 min Winter	59.709	0.709	0.3	10.1	O K
1440 min Winter	59.567	0.567	0.3	8.1	O K
2160 min Winter	59.405	0.405	0.3	5.8	O K
2880 min Winter	59.287	0.287	0.2	4.1	O K
4320 min Winter	59.134	0.134	0.2	1.9	O K
5760 min Winter	59.055	0.055	0.2	0.8	O K
7200 min Winter	59.044	0.044	0.2	0.6	O K
8640 min Winter	59.039	0.039	0.2	0.6	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
10080 min Summer	1.009	0.0	5160		
15 min Winter	138.867	0.0	26		
30 min Winter	89.402	0.0	39		
60 min Winter	54.828	0.0	68		
120 min Winter	34.890	0.0	124		
180 min Winter	26.292	0.0	180		
240 min Winter	21.279	0.0	234		
360 min Winter	15.513	0.0	328		
480 min Winter	12.254	0.0	376		
600 min Winter	10.151	0.0	454		
720 min Winter	8.679	0.0	530		
960 min Winter	6.744	0.0	680		
1440 min Winter	4.706	0.0	968		
2160 min Winter	3.287	0.0	1372		
2880 min Winter	2.562	0.0	1760		
4320 min Winter	1.835	0.0	2468		
5760 min Winter	1.470	0.0	3016		
7200 min Winter	1.253	0.0	3672		
8640 min Winter	1.110	0.0	4392		
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Date 24/09/2025 16:07 File PLOT 3.SRCX	Designed by Lourdes Checked by																					
Micro Drainage		Source Control 2020.1																				
Summary of Results for 100 year Return Period (+40%) <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>10080 min Winter</td><td>59.036</td><td>0.036</td><td>0.1</td><td>0.5</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>10080 min Winter</td><td>1.009</td><td>0.0</td><td>5064</td></tr></tbody></table>			Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	10080 min Winter	59.036	0.036	0.1	0.5	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	10080 min Winter	1.009	0.0	5064
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status																	
10080 min Winter	59.036	0.036	0.1	0.5	O K																	
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)																			
10080 min Winter	1.009	0.0	5064																			
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32 Beehive Lane Welwyn Garden City Herts AL7 4BQ		
Date 24/09/2025 16:07 File PLOT 3.SRCX	Designed by Lourdes Checked by	
Micro Drainage Source Control 2020.1		

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 516348 232888 TL 16348 32888
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.020

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

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Date 24/09/2025 16:07 File PLOT 3.SRCX	Designed by Lourdes Checked by	
Micro Drainage		Source Control 2020.1

Model Details

Storage is Online Cover Level (m) 60.500

Cellular Storage Structure

Invert Level (m) 59.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.09036 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.09036

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	15.0	15.0	1.001	0.0	32.0
1.000	15.0	32.0			

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Micro Drainage		Source Control 2020.1																																																																																																																																																																																																	
Summary of Results for 100 year Return Period (+40%) Half Drain Time : 409 minutes. <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>56.445</td><td>0.445</td><td>0.2</td><td>6.3</td><td>O K</td></tr><tr><td>30 min Summer</td><td>56.567</td><td>0.567</td><td>0.3</td><td>8.1</td><td>O K</td></tr><tr><td>60 min Summer</td><td>56.676</td><td>0.676</td><td>0.3</td><td>9.6</td><td>O K</td></tr><tr><td>120 min Summer</td><td>56.819</td><td>0.819</td><td>0.3</td><td>11.7</td><td>O K</td></tr><tr><td>180 min Summer</td><td>56.882</td><td>0.882</td><td>0.3</td><td>12.6</td><td>O K</td></tr><tr><td>240 min Summer</td><td>56.907</td><td>0.907</td><td>0.3</td><td>12.9</td><td>O K</td></tr><tr><td>360 min Summer</td><td>56.903</td><td>0.903</td><td>0.3</td><td>12.9</td><td>O K</td></tr><tr><td>480 min Summer</td><td>56.880</td><td>0.880</td><td>0.3</td><td>12.5</td><td>O K</td></tr><tr><td>600 min Summer</td><td>56.851</td><td>0.851</td><td>0.3</td><td>12.1</td><td>O K</td></tr><tr><td>720 min Summer</td><td>56.821</td><td>0.821</td><td>0.3</td><td>11.7</td><td>O K</td></tr><tr><td>960 min Summer</td><td>56.760</td><td>0.760</td><td>0.3</td><td>10.8</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>56.658</td><td>0.658</td><td>0.3</td><td>9.4</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>56.542</td><td>0.542</td><td>0.2</td><td>7.7</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>56.453</td><td>0.453</td><td>0.2</td><td>6.4</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>56.328</td><td>0.328</td><td>0.2</td><td>4.7</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>56.243</td><td>0.243</td><td>0.2</td><td>3.5</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>56.184</td><td>0.184</td><td>0.2</td><td>2.6</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>56.141</td><td>0.141</td><td>0.2</td><td>2.0</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>138.867</td><td>0.0</td><td>26</td></tr><tr><td>30 min Summer</td><td>89.402</td><td>0.0</td><td>40</td></tr><tr><td>60 min Summer</td><td>54.828</td><td>0.0</td><td>68</td></tr><tr><td>120 min Summer</td><td>34.890</td><td>0.0</td><td>126</td></tr><tr><td>180 min Summer</td><td>26.292</td><td>0.0</td><td>184</td></tr><tr><td>240 min Summer</td><td>21.279</td><td>0.0</td><td>242</td></tr><tr><td>360 min Summer</td><td>15.513</td><td>0.0</td><td>324</td></tr><tr><td>480 min Summer</td><td>12.254</td><td>0.0</td><td>384</td></tr><tr><td>600 min Summer</td><td>10.151</td><td>0.0</td><td>446</td></tr><tr><td>720 min Summer</td><td>8.679</td><td>0.0</td><td>514</td></tr><tr><td>960 min Summer</td><td>6.744</td><td>0.0</td><td>652</td></tr><tr><td>1440 min Summer</td><td>4.706</td><td>0.0</td><td>924</td></tr><tr><td>2160 min Summer</td><td>3.287</td><td>0.0</td><td>1324</td></tr><tr><td>2880 min Summer</td><td>2.562</td><td>0.0</td><td>1712</td></tr><tr><td>4320 min Summer</td><td>1.835</td><td>0.0</td><td>2468</td></tr><tr><td>5760 min Summer</td><td>1.470</td><td>0.0</td><td>3184</td></tr><tr><td>7200 min Summer</td><td>1.253</td><td>0.0</td><td>3896</td></tr><tr><td>8640 min Summer</td><td>1.110</td><td>0.0</td><td>4592</td></tr></table>						Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	15 min Summer	56.445	0.445	0.2	6.3	O K	30 min Summer	56.567	0.567	0.3	8.1	O K	60 min Summer	56.676	0.676	0.3	9.6	O K	120 min Summer	56.819	0.819	0.3	11.7	O K	180 min Summer	56.882	0.882	0.3	12.6	O K	240 min Summer	56.907	0.907	0.3	12.9	O K	360 min Summer	56.903	0.903	0.3	12.9	O K	480 min Summer	56.880	0.880	0.3	12.5	O K	600 min Summer	56.851	0.851	0.3	12.1	O K	720 min Summer	56.821	0.821	0.3	11.7	O K	960 min Summer	56.760	0.760	0.3	10.8	O K	1440 min Summer	56.658	0.658	0.3	9.4	O K	2160 min Summer	56.542	0.542	0.2	7.7	O K	2880 min Summer	56.453	0.453	0.2	6.4	O K	4320 min Summer	56.328	0.328	0.2	4.7	O K	5760 min Summer	56.243	0.243	0.2	3.5	O K	7200 min Summer	56.184	0.184	0.2	2.6	O K	8640 min Summer	56.141	0.141	0.2	2.0	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	15 min Summer	138.867	0.0	26	30 min Summer	89.402	0.0	40	60 min Summer	54.828	0.0	68	120 min Summer	34.890	0.0	126	180 min Summer	26.292	0.0	184	240 min Summer	21.279	0.0	242	360 min Summer	15.513	0.0	324	480 min Summer	12.254	0.0	384	600 min Summer	10.151	0.0	446	720 min Summer	8.679	0.0	514	960 min Summer	6.744	0.0	652	1440 min Summer	4.706	0.0	924	2160 min Summer	3.287	0.0	1324	2880 min Summer	2.562	0.0	1712	4320 min Summer	1.835	0.0	2468	5760 min Summer	1.470	0.0	3184	7200 min Summer	1.253	0.0	3896	8640 min Summer	1.110	0.0	4592
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32 Beehive Lane Welwyn Garden City Herts AL7 4BQ					
Date 02/10/2025 10:36		Designed by Lourdes			
File PLOT 6.SRCX		Checked by			
Micro Drainage		Source Control 2020.1			
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
10080 min Summer	56.110	0.110	0.2	1.6	O K
15 min Winter	56.446	0.446	0.2	6.3	O K
30 min Winter	56.567	0.567	0.3	8.1	O K
60 min Winter	56.677	0.677	0.3	9.7	O K
120 min Winter	56.822	0.822	0.3	11.7	O K
180 min Winter	56.887	0.887	0.3	12.6	O K
240 min Winter	56.914	0.914	0.3	13.0	O K
360 min Winter	56.913	0.913	0.3	13.0	O K
480 min Winter	56.883	0.883	0.3	12.6	O K
600 min Winter	56.851	0.851	0.3	12.1	O K
720 min Winter	56.816	0.816	0.3	11.6	O K
960 min Winter	56.744	0.744	0.3	10.6	O K
1440 min Winter	56.616	0.616	0.3	8.8	O K
2160 min Winter	56.467	0.467	0.2	6.7	O K
2880 min Winter	56.355	0.355	0.2	5.1	O K
4320 min Winter	56.202	0.202	0.2	2.9	O K
5760 min Winter	56.106	0.106	0.2	1.5	O K
7200 min Winter	56.054	0.054	0.2	0.8	O K
8640 min Winter	56.046	0.046	0.1	0.6	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
10080 min Summer	1.009	0.0	5344		
15 min Winter	138.867	0.0	26		
30 min Winter	89.402	0.0	40		
60 min Winter	54.828	0.0	68		
120 min Winter	34.890	0.0	124		
180 min Winter	26.292	0.0	180		
240 min Winter	21.279	0.0	236		
360 min Winter	15.513	0.0	344		
480 min Winter	12.254	0.0	392		
600 min Winter	10.151	0.0	466		
720 min Winter	8.679	0.0	544		
960 min Winter	6.744	0.0	696		
1440 min Winter	4.706	0.0	990		
2160 min Winter	3.287	0.0	1408		
2880 min Winter	2.562	0.0	1800		
4320 min Winter	1.835	0.0	2552		
5760 min Winter	1.470	0.0	3232		
7200 min Winter	1.253	0.0	3752		
8640 min Winter	1.110	0.0	4408		
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32 Beehive Lane Welwyn Garden City Herts AL7 4BQ																						
Date 02/10/2025 10:36 File PLOT 6.SRCX	Designed by Lourdes Checked by																					
Micro Drainage		Source Control 2020.1																				
Summary of Results for 100 year Return Period (+40%) <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>10080 min Winter</td><td>56.042</td><td>0.042</td><td>0.1</td><td>0.6</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>10080 min Winter</td><td>1.009</td><td>0.0</td><td>5080</td></tr></tbody></table>			Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	10080 min Winter	56.042	0.042	0.1	0.6	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)	10080 min Winter	1.009	0.0	5080
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status																	
10080 min Winter	56.042	0.042	0.1	0.6	O K																	
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)																			
10080 min Winter	1.009	0.0	5080																			
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Micro Drainage Source Control 2020.1		

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 516348 232888 TL 16348 32888
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.019

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From:	To:	From:	To:	From:	To:
0	4 0.006	4	8 0.006	8	12 0.006

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Micro Drainage		Source Control 2020.1

Model Details

Storage is Online Cover Level (m) 58.300

Cellular Storage Structure

Invert Level (m) 56.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.07344 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.07344

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	15.0	15.0	1.001	0.0	32.0
1.000	15.0	32.0			

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Fact Sheet:

Maintenance of Drainage Features

The design process should consider the maintenance of the components (access, waste management etc.) including any corrective maintenance to repair defects or improve performance of SuDS. Inlets, outlets, control structures or other below ground features should be as shallow as reasonably possible to allow easy access for maintenance and to reduce safety risks, while ensuring that sufficient depth is maintained for structural stability.

A SuDS Management Plan must be provided prior to the first occupation which will identify the following:

- The function of SuDS;
- How and why it works on the site;
- Impacts on amenity and wildlife, indicating how they can be enhanced;
- Health and safety issues;
- Long-term expectations for the SuDS on site.

Usually, SuDS components are on or near the surface and most can be managed using landscape maintenance techniques. Typical inspection and maintenance requirements for surface SuDS features are identified below:



Activity	Indicative frequency	Typical tasks
Routine/regular maintenance	Monthly (for normal care of SuDS)	• litter picking • grass cutting (cuttings to compost, wildlife piles or removed from site) Height and frequency dependent upon amenity of grass area. • inspection of inlets, outlets and control structures.
Occasional maintenance	Annually (dependent on the design)	• silt control around components • vegetation management around components • suction sweeping of permeable paving in autumn after leaf fall • silt and debris removal from inlets, outlets, gratings, catchpits, control chambers, soakaways and cellular storage. • trim wet swale or pond edges in September to October or 3-year rotation for wildlife value • wetland vegetation to be cut to 30% height annually and to 100mm on a 3-year rotation • remove overhanging trees or growth within SuDS features
Remedial maintenance	As required (tasks to repair problems due to damage or vandalism)	• inlet/outlet repair • erosion repairs • reinstatement of edgings • reinstatement following pollution • removal of silt build-up.

For below-ground SuDS such as permeable paving, the manufacturer or designer should provide maintenance advice. This should include routine and long-term actions that can be incorporated into the SuDS Management Plan.

Funding for the maintenance of SuDS systems on the site should be resolved at the start of the development process.





SUMMARY TABLE		DESIGN CONDITIONS			
		1	2	3	4
Land Use Type	Residential parking				
Pollution Hazard Level	Low				
Pollution Hazard Indices					
TSS	0.5				
Metals	0.4				
Hydrocarbons	0.4				
SuDS components proposed					
Component 1	None				
Component 2	None				
Component 3	None				
SuDS Pollution Mitigation Indices					
TSS	0				
Metals	0				
Hydrocarbons	0				
Groundwater protection type	Pervious pavement underlain by 300 mm minimum depth of soils with good contamination attenuation potential	All designs must include a minimum of 1 m unsaturated depth of subsoil or aquifer material between the infiltration surface and the maximum likely groundwater level. Infiltration components should always be preceded by upstream component(s) that trap(s) silt, or designed specifically to retain sediment in a separate lined zone, easily accessible for maintenance, such that the sediment will not be re-suspended in subsequent events	The permeable pavement must include a suitable filtration layer provides treatment and must include a geotextile at the base separating the foundation from the sub-grade. The underlying soils must provide good contaminant attenuation potential (eg as recommended in Sniffer 2008 (a) and (b) / Scott Wilson (2010) or other appropriate guidance). Alternative depth and soil combinations must provide equivalent protection to the underlying groundwater		
Groundwater protection Pollution Mitigation Indices					
TSS	0.7				
Metals	0.6				
Hydrocarbons	0.7				
Combined Pollution Mitigation Indices		0.7			
TSS		0.6			
Metals		0.7			
Hydrocarbons					
Acceptability of Pollution Mitigation					
TSS	Sufficient				
Metals	Sufficient				
Hydrocarbons	Sufficient				

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