Dani Lister

From: Partnership and Strategic Overview team, HIOW <psohiow@environment-agency.gov.uk>
Sent: 11 October 2023 16:46
To: Dani Lister
Cc: SSD Enquiries
Subject: Flood Risk Assessment Data for Halterworth Lane - Ref: SSD/328630
Attachments: FRA Info 328630.pdf

Dear Dani,

Please find attached the flood risk assessment information (previously Product 4) attached for your site off Halterworth Lane, Romsey as requested.

Product 5, 6 and 7 – Please use the link below to download the model reports (Product 5), model output data (product 6) and model input data (Product 7):

https://ea.sharefile.com/d-s2aaad9b4b0d34de294bc936a7c44d007

Name	Product 5
Description	Romsey Model Reports
Licence	Environment Agency Conditional Licence
Conditions	1.0 You may use the Information for your internal or personal purposes and may only sublicense others to use it if you do so under a written licence which includes the terms of these conditions and the agreement and in particular may not allow any period of use longer than the period licensed to you. 2.0 Notwithstanding the fact that the standard wording of the Environment Agency Conditional Licence indicates that it is perpetual, this Licence has a limited duration of 5 years at the end of which it will terminate automatically without notice. 3.0 We have restricted use of the Information as a result of legal restrictions placed upon us to protect the rights or confidentialities of others. In this instance it is because of third party data. If you contact us in writing (this includes email) we will, as far as confidentiality rules allow, provide you with details including, if available, how you might seek permission from a third party to extend your use rights. 4.1 The Information may contain some data that we believe is within the definition of "personal data" under the Data Protection Act 1998 but we consider that we will not be in breach of the Act if we disclose it to you with conditions set out in this condition and the conditions above. This personal data comprises names of individuals or commentary relating to property that may be owned by an individual or commentary relating to the activities of an individual. 4.2 Under the Act a person who holds and uses or passes to others personal data is responsible for any compliance with the Act and so we have no option but to warn you that this means you have responsibility to check that you are compliant with the Act in respect of this personal data.

	5.0 The location of public water supply abstraction sources must not be published to a resolution more detailed than 1km2. Information about the operation of flood assets should not be published. 6.1 Where we have supplied model data which may include model inputs or outputs you agree to supply to the Environment Agency copies of any assessments/studies and related outputs, modifications or derivatives created pursuant to the supply to you of the Information, all of which are hereinafter referred to as "the Data". 6.2 You agree, in the public interest to grant to the Environment Agency a perpetual royalty free non-exclusive licence to use the Data or any part thereof for its internal purposes or to use it in any way as part of Environment Agency derivative products which it supplies free of charge to others such as incorporation into the Environment Agency's Open Data mapping products.
Information Warnings	If we have provided climate change data, it is based on UKCP09 which has now been superseded by UKCP18. We have scheduled updates to our flood models to incorporate UKCP18 data, but until this is complete the majority of our models will not provide appropriate climate change data for use within Flood Risk Assessments. The correct allowances will need to be calculated using the following data: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances Failure to use the correct climate change data may result in us objecting to planning applications upon which we are consulted by Local Planning Authorities.
Attribution	Contains Environment Agency information © Environment Agency and/or database rights. May contain Ordnance Survey data © Crown copyright 2017 Ordnance Survey 100024198.

Name	Product 6
Description	Model Output Data for Romsey Model
Licence	Environment Agency Conditional Licence
Conditions	1.0 You may use the Information for your internal or personal purposes and may only sublicense others to use it if you do so under a written licence which includes the terms of these conditions and the agreement and in particular may not allow any period of use longer than the period licensed to you. 2.0 Notwithstanding the fact that the standard wording of the Environment Agency Conditional Licence indicates that it is perpetual, this Licence has a limited duration of 5 years at the end of which it will terminate automatically without notice. 3.0 We have restricted use of the Information as a result of legal restrictions placed upon us to protect the rights or confidentialities of others. In this instance it is because of third party data. If you contact us in writing (this includes email) we will, as far as confidentiality rules

	allow, provide you with details including, if available, how you might seek permission from a third party to extend your use rights. 4.1 The Information may contain some data that we believe is within the definition of "personal data" under the Data Protection Act 1998 but we consider that we will not be in breach of the Act if we disclose it to you with conditions set out in this condition and the conditions above. This personal data comprises names of individuals or commentary relating to property that may be owned by an individual or commentary relating to the activities of an individual. 4.2 Under the Act a person who holds and uses or passes to others personal data is responsible for any compliance with the Act and so we have no option but to warn you that this means you have responsibility to check that you are compliant with the Act in respect of this personal data. 5.0 The location of public water supply abstraction sources must not be published to a resolution more detailed than 1km2. Information about the operation of flood assets should not be published.. 6.1 Where we have supplied model data which may include model inputs or outputs you agree to supply to the Environment Agency copies of any assessments/studies and related outputs, modifications or derivatives created pursuant to the supply to you of the Information, all of which are hereinafter referred to as "the Data". 6.2 You agree, in the public interest to grant to the Environment Agency a perpetual royalty free non-exclusive licence to use the Data or any part thereof for its internal purposes or to use it in any way as part of Environment Agency derivative products which it supplies free of charge to others such as incorporation into the Environment Agency's Open Data mapping products.
Information Warnings	Please be aware that model data is not raw, factual or measured but comprises of estimations or modelled results based on the data available to us. If we have provided climate change data, it is based on UKCP09 which has now been superseded by UKCP18. We have scheduled updates to our flood models to incorporate UKCP18 data, but until this is complete the majority of our models will not provide appropriate climate change data for use within Flood Risk Assessments. The correct allowances will need to be calculated using the following data: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances Failure to use the correct climate change data may result in us objecting to planning applications upon which we are consulted by Local Planning Authorities.
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Name	Product 7
Description	Calibrated and Verified Model Input Data for Romsey Model
Licence	Environment Agency Conditional Licence

Conditions	1.0 You may use the Information for your internal or personal purposes and may only sublicense others to use it if you do so under a written licence which includes the terms of these conditions and the agreement and in particular may not allow any period of use longer than the period licensed to you. 2.0 Notwithstanding the fact that the standard wording of the Environment Agency Conditional Licence indicates that it is perpetual, this Licence has a limited duration of 5 years at the end of which it will terminate automatically without notice. 3.0 We have restricted use of the Information as a result of legal restrictions placed upon us to protect the rights or confidentialities of others. In this instance it is because of third party data. If you contact us in writing (this includes email) we will, as far as confidentiality rules allow, provide you with details including, if available, how you might seek permission from a third party to extend your use rights. 4.1 The Information may contain some data that we believe is within the definition of "personal data" under the Data Protection Act 1998 but we consider that we will not be in breach of the Act if we disclose it to you with conditions set out in this condition and the conditions above. This personal data comprises names of individuals or commentary relating to property that may be owned by an individual or commentary relating to the activities of an individual. 4.2 Under the Act a person who holds and uses or passes to others personal data is responsible for any compliance with the Act and so we have no option but to warn you that this means you have responsibility to check that you are compliant with the Act in respect of this personal data. 5.0 The location of public water supply abstraction sources must not be published to a resolution more detailed than 1km2. Information about the operation of flood assets should not be published.. 6.1 Where we have supplied model data which may include model inputs or outputs you agree to supply to the Environment Agency copies of any assessments/studies and related outputs, modifications or derivatives created pursuant to the supply to you of the Information, all of which are hereinafter referred to as "the Data". 6.2 You agree, in the public interest to grant to the Environment Agency a perpetual royalty free non-exclusive licence to use the Data or any part thereof for its internal purposes or to use it in any way as part of Environment Agency derivative products which it supplies free of charge to others such as incorporation into the Environment Agency's Open Data mapping products.
Information Warnings	If we have provided climate change data, it is based on UKCP09 which has now been superseded by UKCP18. We have scheduled updates to our flood models to incorporate UKCP18 data, but until this is complete the majority of our models will not provide appropriate climate change data for use within Flood Risk Assessments. The correct allowances will need to be calculated using the following data: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

	Failure to use the correct climate change data may result in us objecting to planning applications upon which we are consulted by Local Planning Authorities.
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The questions you have posed regarding the climate change allowances, discharge allowance and drainage strategy would fall under our pre planning advice which is a chargeable service, more information about this service can be found on our website here.

Please get in touch if you have any further queries or contact us within two months if you'd like us to review the information we have sent.

Yours sincerely

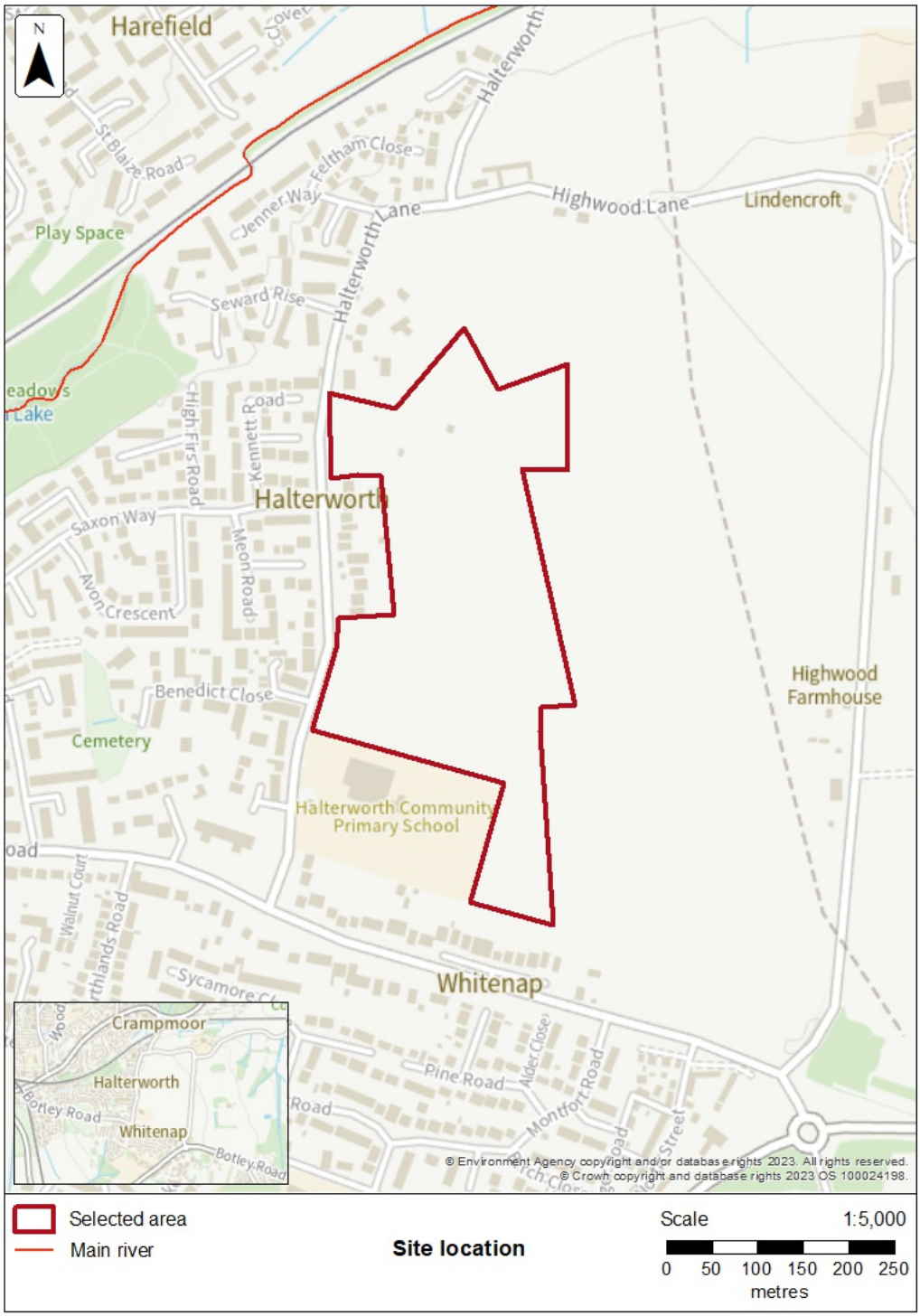
Aimee Etheridge
Partnership and Strategic Overview team, Hampshire and Isle of Wight
Environment Agency

Direct dial 020 8474 5815
Email psohiow@environment-agency.gov.uk

Flood risk assessment data

Location of site: 437428 / 121327 (shown as easting and northing coordinates)
Document created on: 11 October 2023
This information was previously known as a product 4.
Customer reference number: SSD 2 0

Map showing the location that flood risk assessment data has been requested for.



How to use this information

You can use this information as part of a flood risk assessment for a planning application. To do this, you should include it in the appendix of your flood risk assessment.

> **We recommend that you work with a flood risk consultant to get your flood risk assessment.**

Included in this document

In this document you'll find:

- how to find information about surface water and other sources of flooding
- definitions for the terminology used throughout
- flood map for planning (rivers and the sea)
- flood defences and attributes
- information to help you assess if there is a reduced flood risk from rivers and the sea because of defences
- modelled data
- information about strategic flood risk assessments
- information about this data
- information about flood risk activity permits
- help and advice

Not included in this document

This document does not include a Flood Defence Breach Hazard Map.

If your location has a reduced flood risk from rivers and sea because of defences, you need to request a Flood Defence Breach Hazard Map and information about the level of flood protection offered at your location from the Solent and South Downs Environment Agency team at ssdenquiries@environment-agency.gov.uk. This information will only be available if modelling has been carried out for breach scenarios.

Include a site location map in your request.

Information that's unavailable

This document **does not** contain:

- historic flooding
- climate change modelled data

We do not have historic flooding data for this location.

Please note that:

- flooding may have occurred that we do not have records for
- flooding can come from a range of different sources
- we can only supply flood risk data relating to floodng from rivers or the sea

You can contact your Lead Local Flood Authority or Internal Drainage Board to see if they have other relevant local flood information. Please note that some areas do not have an Internal Drainage Board.

There is not any modelled data available for this location. This is because detailed modelling hasn't been carried out in this area.

There is not any modelled climate change data for this location. This is because detailed modelling hasn't been carried out in this area. You will need to consider the latest flood risk assessment climate change allowances and factor in the new allowances to demonstrate the development will be safe from flooding.

Surface water and other sources of flooding

Use the long term flood risk service to find out about the risk of flooding from:

- surface water
- ordinary watercourses
- reservoirs

For information about sewer flooding, contact the relevant water company for the area.

About the models used

Model name: Romsey Model
Scenario(s): Defences removed fluvial,
Date: 2011

Terminology used

Annual exceedance probability (AEP)

This refers to the probability of a flood event occurring in any year. The probability is expressed as a percentage. For example, a large flood which is calculated to have a 1% chance of occuring in any one year, is described as 1% AEP.

Metres above ordnance datum (mAOD)

All flood levels are given in metres above ordnance datum which is defined as the mean sea level at Newlyn, Cornwall.

Flood map for planning (rivers and the sea)

Your selected location is in flood zone 1.

Flood zone 3 shows the area at risk of flooding for an undefended flood event with a:

- 0.5% or greater probability of occurring in any year for flooding from the sea
- 1% or greater probability of occurring in any year for fluvial (river) flooding

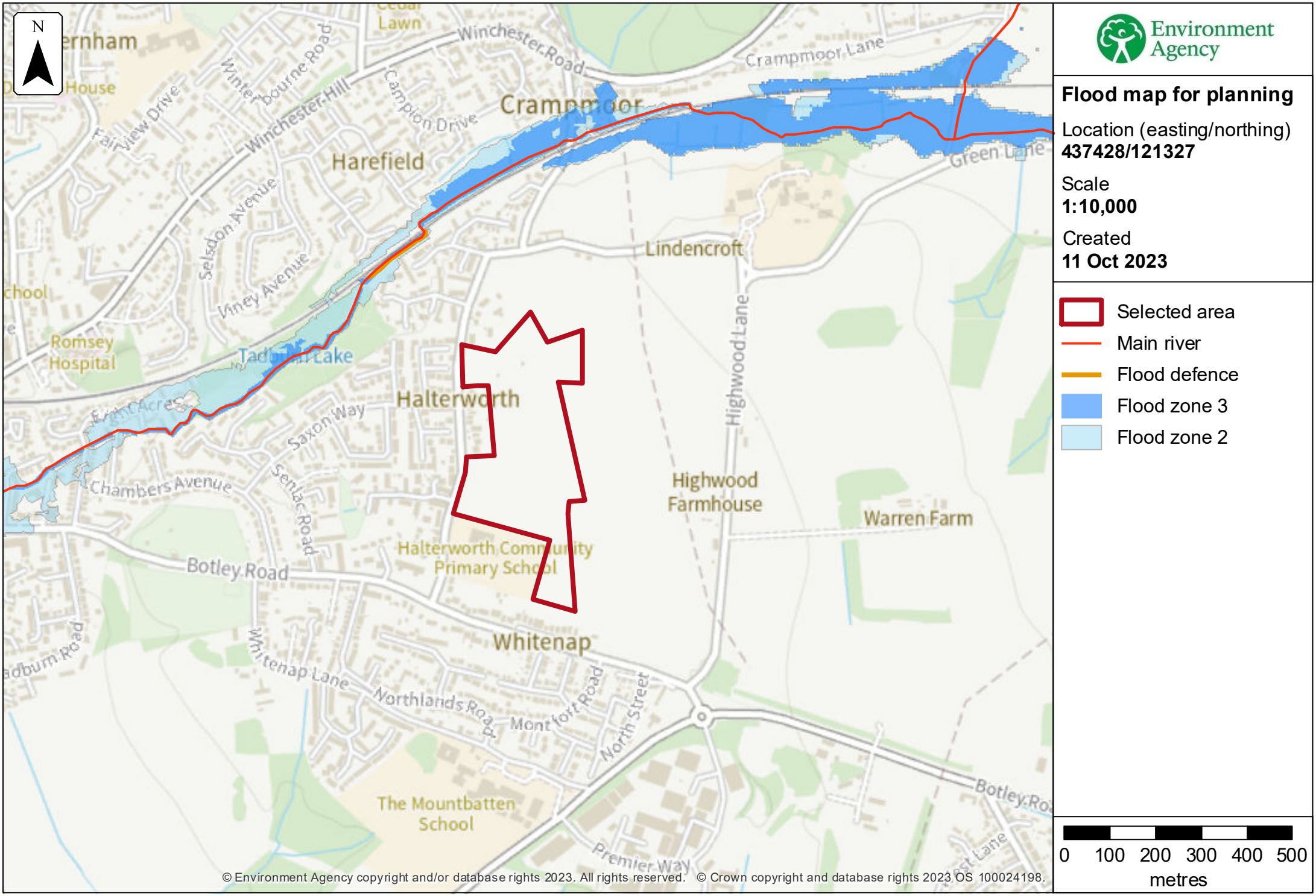
Flood zone 2 shows the area at risk of flooding for an undefended flood event with:

- between a 0.1% and 0.5% probability of occurring in any year for flooding from the sea
- between a 0.1% and 1% probability of occurring in any year for fluvial (river) flooding

It's important to remember that the flood zones on this map:

- refer to the land at risk of flooding and do not refer to individual properties
- refer to the probability of river and sea flooding, ignoring the presence of defences
- do not take into account potential impacts of climate change

This data is updated on a quarterly basis as better data becomes available.


N
Environment Agency
Flood map for planning
Location (easting/northing)
437428/121327
Scale
1:10,000
Created
11 Oct 2023
Selected area
Main river
Flood defence
Flood zone 3
Flood zone 2
0 100 200 300 400 500
metres
Crampmoor
Harefield
Halterworth
Whitenap
Lindencroft
Highwood Farmhouse
Warren Farm
Halterworth Community Primary School
The Mountbatten School
Romsey Hospital
Tadburn Lake
Winchester Road
Crampmoor Lane
Green Lane
Highwood Lane
Botley Road
Chambers Avenue
Saxon Way
Viney Avenue
Selsdon Avenue
Winterbourne Road
Winchester Hill
Campion Drive
Fair View Drive
Whitenap Lane
Northlands Road
Montfort Road
North Street
Premier Way
Senlac Road
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Flood defences and attributes

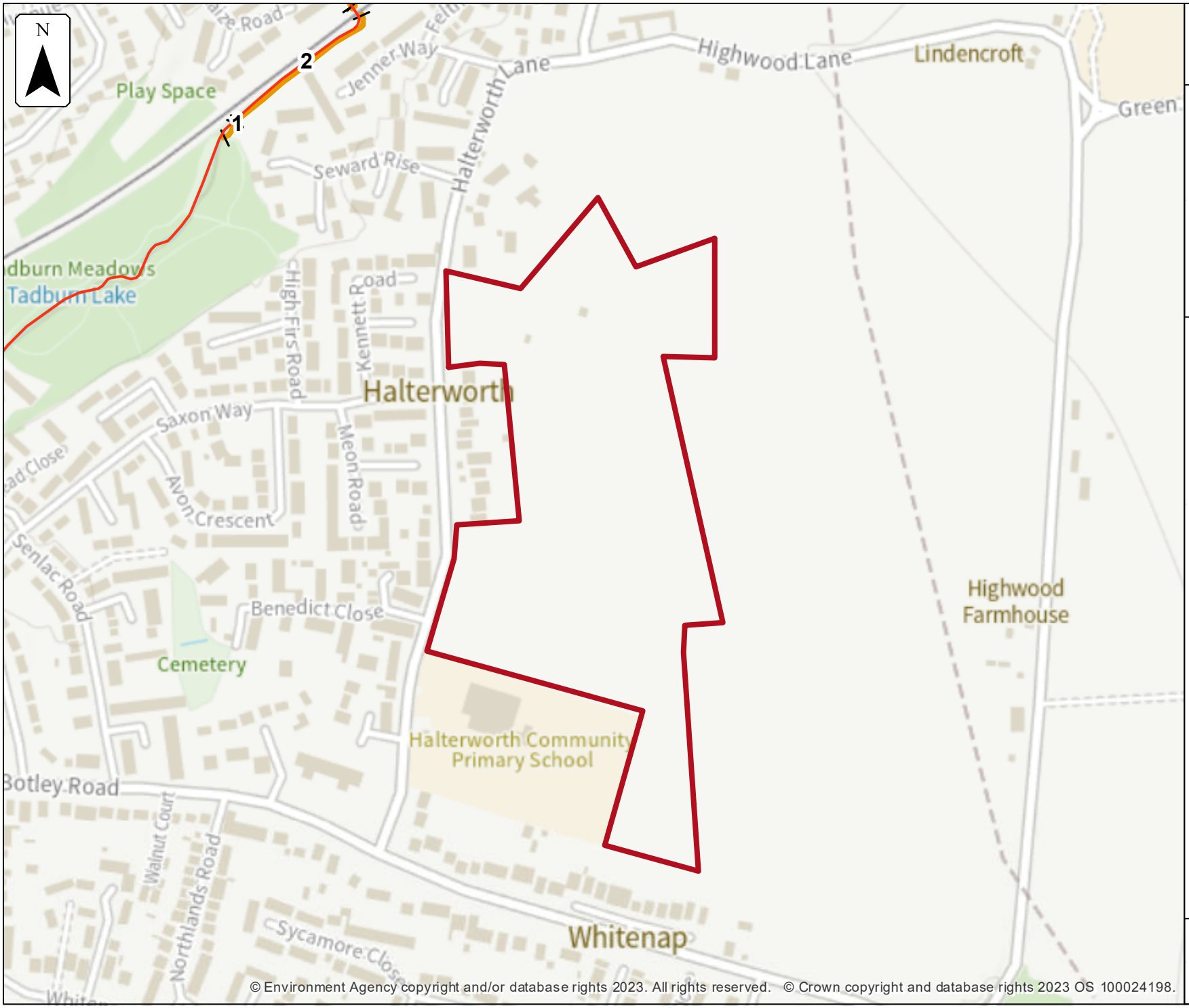
The flood defences map shows the location of the flood defences present.

The flood defences data table shows the type of defences, their condition and the standard of protection. It shows the height above sea level of the top of the flood defence (crest level). The height is In mAOD which is the metres above the mean sea level at Newlyn, Cornwall.

It's important to remember that flood defence data may not be updated on a regular basis. The information here is based on the best available data.

Use this information:

- to help you assess if there is a reduced flood risk for this location because of defences
- with any information in the modelled data section to find out the impact of defences on flood risk



Environment Agency

Flood defences

Location (easting/northing)
437428/121327

Scale
1:5,000

Created
11 Oct 2023

- Selected area
- Main river
- Flood defence

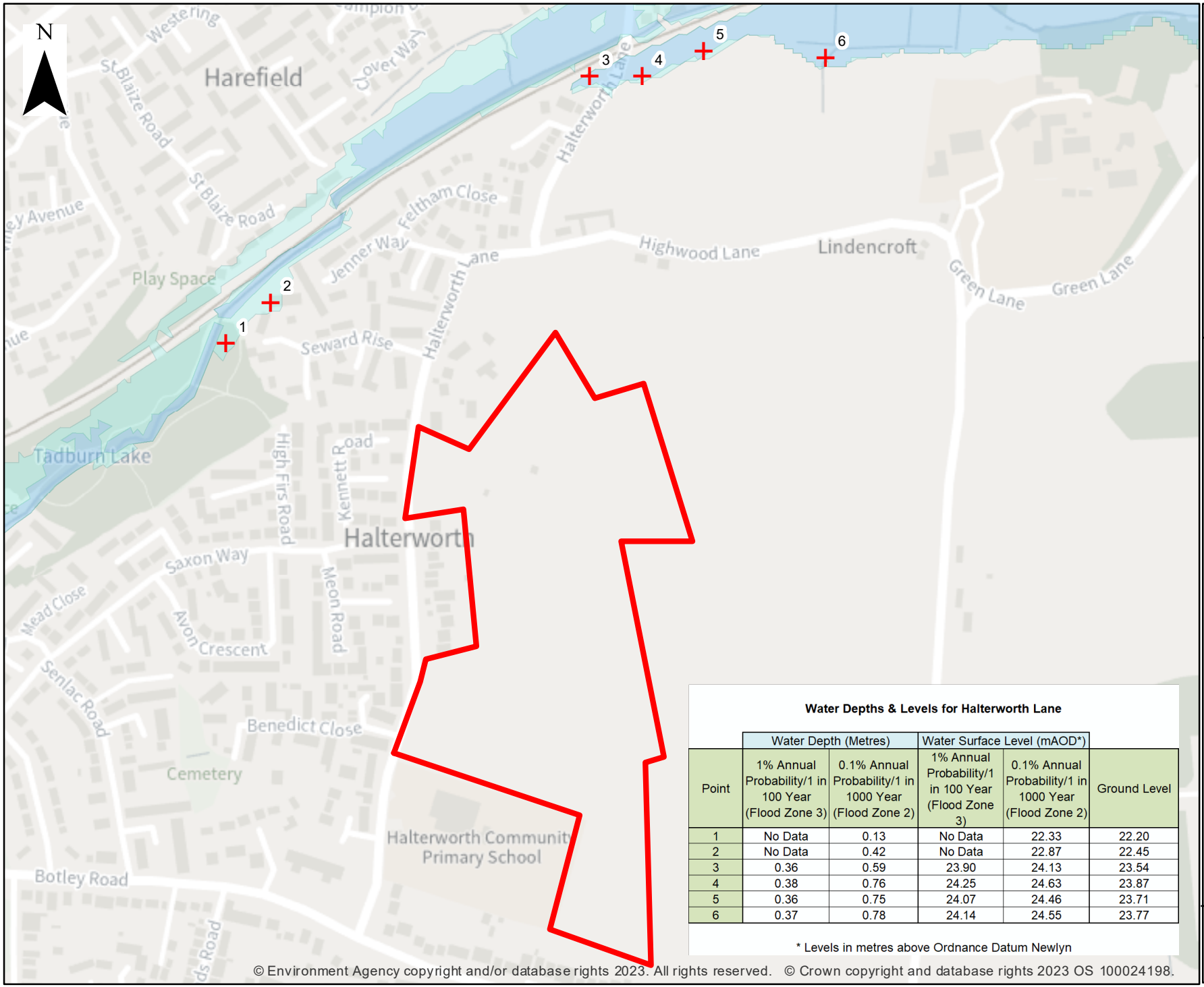
0 50 100 150 200 250
metres

Flood defences data

Label	Asset ID	Asset Type	Standard of protection (years)	Current condition	Downstream actual crest level (mAOD)	Upstream actual crest level (mAOD)	Effective crest level (mAOD)
1	510876	Embankment		Good			
2	20748	Wall	20	Fair	22.10	2.70	

Any blank cells show where a particular value has not been recorded for an asset.

20110 Romsey Model Flood Levels Centred on Grid Ref: SU 37429 21354



Water Depths & Levels for Halterworth Lane

Point	Water Depth (Metres)		Water Surface Level (mAOD*)		Ground Level
	1% Annual Probability/1 in 100 Year (Flood Zone 3)	0.1% Annual Probability/1 in 1000 Year (Flood Zone 2)	1% Annual Probability/1 in 100 Year (Flood Zone 3)	0.1% Annual Probability/1 in 1000 Year (Flood Zone 2)	
1	No Data	0.13	No Data	22.33	22.20
2	No Data	0.42	No Data	22.87	22.45
3	0.36	0.59	23.90	24.13	23.54
4	0.38	0.76	24.25	24.63	23.87
5	0.36	0.75	24.07	24.46	23.71
6	0.37	0.78	24.14	24.55	23.77

* Levels in metres above Ordnance Datum Newlyn

Environment Agency

Flood Levels Map

Location (easting/northing)
437429 / 121354

Scale
1:5,767

Created
11th October 2023

Legend

- Location Point
- Site Boundary
- flood_zone_3
- flood_zone_2

Meters
0 25 50 100 150 200

Strategic flood risk assessments

We recommend that you check the relevant local authority's strategic flood risk assessment (SFRA) as part of your work to prepare a site specific flood risk assessment.

This should give you information about:

- the potential impacts of climate change in this catchment
- areas defined as functional floodplain
- flooding from other sources, such as surface water, ground water and reservoirs

About this data

This data has been generated by strategic scale flood models and is not intended for use at the individual property scale. If you're intending to use this data as part of a flood risk assessment, please include an appropriate modelling tolerance as part of your assessment. The Environment Agency regularly updates its modelling. We recommend that you check the data provided is the most recent, before submitting your flood risk assessment.

Flood risk activity permits

Under the Environmental Permitting (England and Wales) Regulations 2016 some developments may require an environmental permit for flood risk activities from the Environment Agency. This includes any permanent or temporary works that are in, over, under, or nearby a designated main river or flood defence structure.

Find out more about flood risk activity permits

Help and advice

Contact the Solent and South Downs Environment Agency team at ssdenquiries@environment-agency.gov.uk for:

- more information about getting a product 5, 6, 7 or 8
- general help and advice about the site you're requesting data for

Appendix 4 – BGS Borehole Records

S-325E/107

Contract Name	HALTERWORTH	Borehole No. 1
		Sheet 2 of 2

Method of boring
Diameter

Ground level
Start
Finish

Daily progress	Water levels	In-situ tests	Samples	Depth (m)	Reduced level (m O.D.)	Thickness (m)	Description of Strata
						2.35	Very dense fine light brown sand
1/9		N=86	BJ				
1/9				10.95	15.31		Bottom of Borehole

10
11
12

Notes

SU32SE/108

Contract Name	HALTERWORTH	Borehole No. 2
		Sheet 1 of 1

Method of boring	Shell and Auger	Ground level	31.21 m OD
Diameter	200 mm nominal	Start	10.8.78
		Finish	11.8.78

Daily progress	Water levels	In-situ tests	Samples	Depth (m)	Reduced level (m O.D.)	Thickness (m)	Description of Strata
			B			0.35	Topsoil
			U	0.35	30.86	0.40	Firm brown sandy clay
				0.75	30.46		
		N=11	BJ	0.90	30.31	0.15	Medium dense brown sand with pockets of brown clay
						0.60	Firm light grey silty clay with brown sand pockets
			J	1.50	29.71		
			U	1.60	29.61	0.10	Medium dense grey silty sand
						0.60	Firm brown/grey mottled clay
11/8	▽	10/8	J	2.20	29.01		
	▽		J	2.40	28.81	0.20	Firm grey/light brown mottled sandy clay
	10/8	N=7	BJ				
		N=8	BJ			2.65	Loose to medium dense light brown silty sand with layers of dark and light brown/green mottled silty sandy clay and with a brown sandstone layer
		N=6	BJ				
		N=13	BJ				
				5.05	26.16		
				5.15	26.06	0.10	Firm brown/green mottled sandy clay
			J			0.25	Firm light grey/brown mottled clay with pockets of light brown sand
			U	5.40	25.81	0.70	Soft green/brown mottled clayey silty sand
				6.10	25.11		
			J				
			U			3.55	Firm grey silty sandy clay with light grey silt lenses
10/8							
			J				
			U				
			J				
11/8			U	9.65	21.56		
				10.00	21.21	0.35	Firm brown sandy clay
11/8							Bottom of Borehole

Notes

Water struck at 2.40. Rose to 1.10 after 20 minutes

Terresearch Limited	Report No. S.28/583	Appendix 1 Sheet 3

SU32SE / 118

Contract Name	HALTERWORTH	Borehole No. 12
		Sheet 1 of 1

Method of boring	Shell and Auger	Ground level	33.77 m OD
Diameter	200 mm nominal	Start	11.8.78
		Finish	12.8.78

Daily progress	Water levels	In-situ tests	Samples	Depth (m)	Reduced level (m O.D.)	Thickness (m)	Description of Strata
						0.30	Topsoil
			J U	0.30	33.47	0.90	Very stiff friable laminated brown and grey clay ith layers of grey silt and brown sand
			J	1.20	32.57		
	▽ 11/8			1.30	32.47	0.10	Brown sand
			U			2.10	Firm organic light grey silty clay with layers of grey sand and occasional medium gravel size flint stones
	▼ 12/8 ▽ 12/8						
				3.40	30.37		
		N=11	BJ				
11/8			J U				
						4.80	Firm green/brown mottled silty sandy clay with pockets of coarse brown sand
		N=20	BJ				
			J				
			U				
		N=19	BJ				
			U	8.20	25.57		
			J			1.80	Firm grey sandy silty clay with layers of grey sand
12/8			U				
			J	10.00	23.77		

Bottom of Borehole

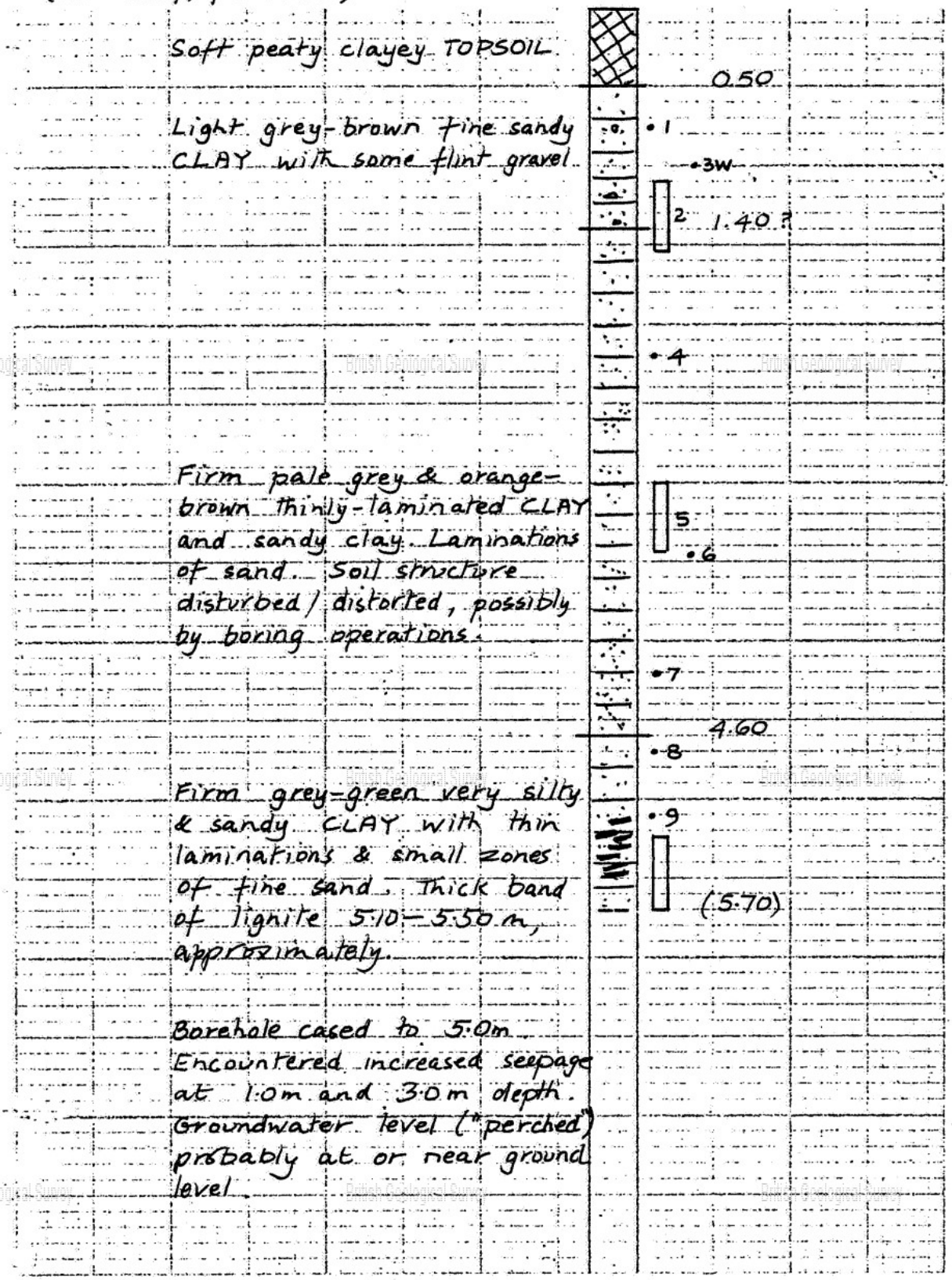
12/8

Notes

Terresearch Limited	Report No. S.28/583	Appendix 1 Sheet 14

SITE Halterworth Farm, Romsey, Hants. FIG. 4c

BOREHOLE 3 DIAMETER 150 mm DEPTH 5·70 m DATE 31/5/78
(near scarp, field 0355)



100 mm dia. core sample — NR ... non-recovery of sample

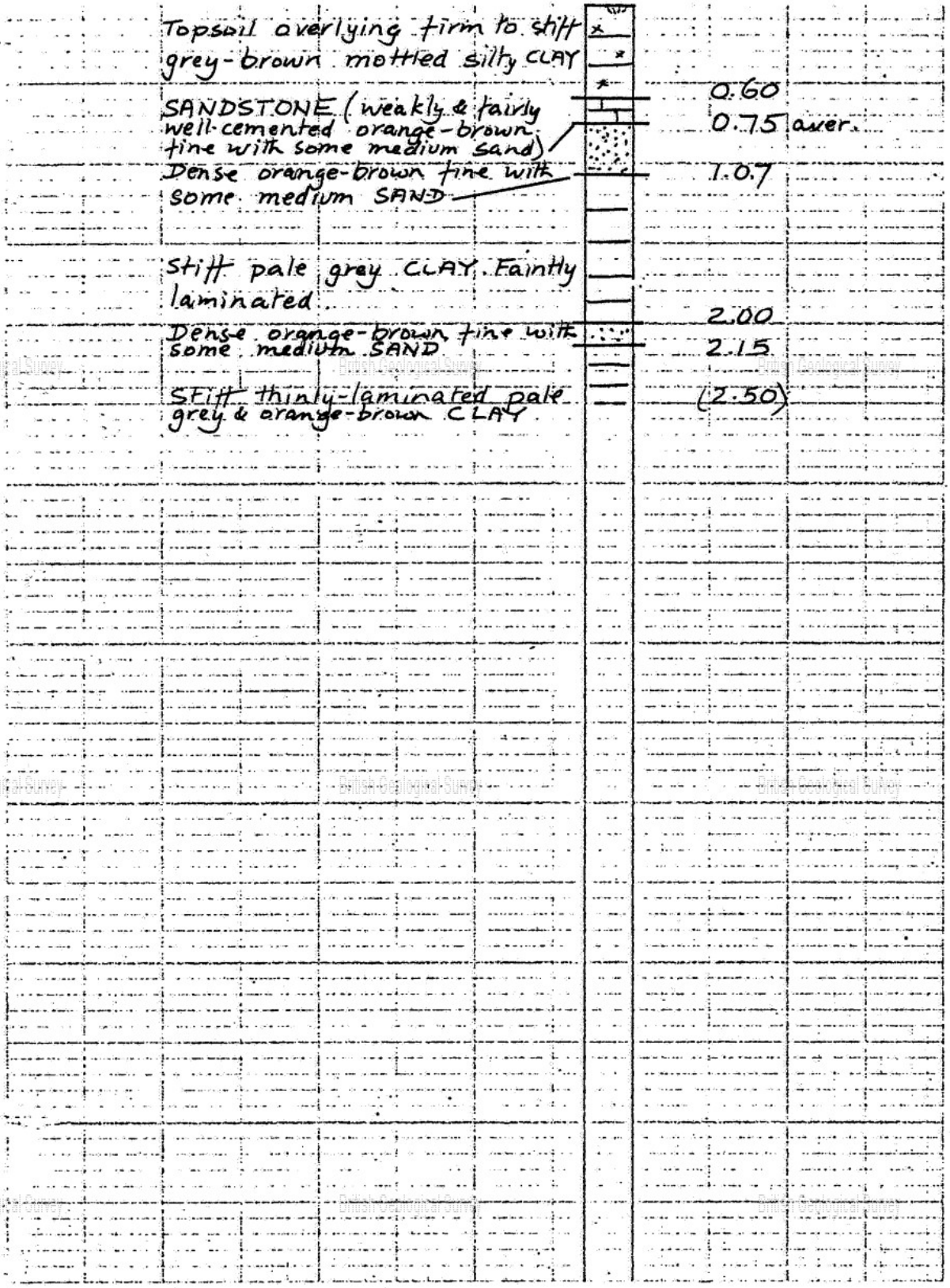
o disturbed sample — oW .... water sample

I N blows/ft in standard penetration test

Scale: 1 in for 1 m

SITE Halterworth Farm, Romsey, Hants. FIG. 5c

~~BOREHOLE~~ TP3 ~~DIAMETER~~ mm DEPTH 2·50 m DATE 26/5/78



[ ] ... mm dia. core sample

NR ... non-recovery of sample

o disturbed sample

oW .... water sample

I N blows/ft in standard penetration test

Scale: 1 in for 1 m

543 28E/10

Contract Name	HALTERWORTH	Borehole No. 1
		Sheet 1 of 2

Method of boring	Shell and Auger	Ground level	26.26 m OD
Diameter	200 mm nominal	Start	30.8.78
		Finish	1.9.78

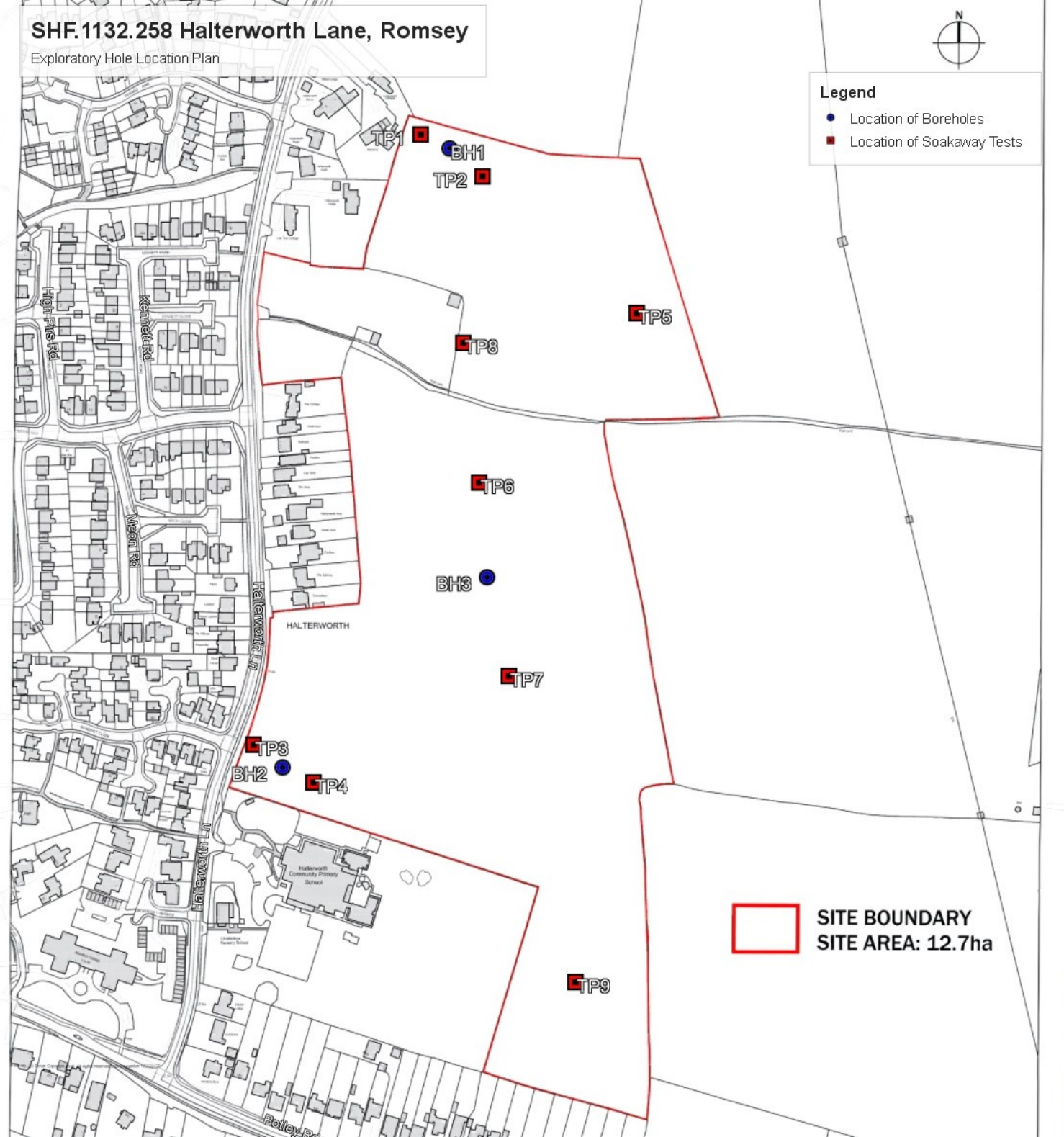
Daily progress	Water levels	In-situ tests	Samples	Depth (m)	Reduced level (m O.D.)	Thickness (m)	Description of Strata
			BW	0.45	25.81	0.45	Topsoil
			B			0.40	Loose flint gravel in a matrix of grey sandy clay
		N=9	B	0.85	25.41	0.70	Loose flint gravel in a matrix of brown sandy clay
			B	1.55	24.71	0.40	Loose flint gravel with a little brown sand
30/8		N=9	B	1.95	24.31	0.55	Loose flint gravel with some cobbles and with a little brown sand
			B U	2.50	23.76	0.70	Firm green/brown/grey mottled clayey silty sand with occasional fine gravel size stones
			J	3.20	23.06		
		N=12	BJ			3.60	Medium dense grey-green clayey silty sand
			J				
			U				
		N=13	BJ				
			J	6.80	19.46		
			U			1.80	Firm grey clayey silty sand with layers of light brown sand
			J				
31/8			U	8.60	17.66		
		N=81	BJ				Very dense fine light brown sand

Contd/..

Notes: Waiting for "special" tractor 30 hours

Morning water level 0.25 and 10.05 m above ground level on 31.8.78 and 1.9.78 respectively.

Appendix 5 – Soakaway Testing Results


SHF.1132.258 Halterworth Lane, Romsey
Exploratory Hole Location Plan
N
Legend
Location of Boreholes
Location of Soakaway Tests
TP1
BH1
TP2
TP5
TP8
TP6
BH3
TP7
TP3
BH2
TP4
TP9
SITE BOUNDARY
SITE AREA: 12.7ha
High Firs Rd
Kennett Rd
Wason Rd
Halterworth Ln
HALTERWORTH
Halterworth Community Primary School
Botley Rd

Enzygo Ltd
Tel: 01454 269237
Fax: 01454 269760
Web: www.enzygo.com

Site: Halterworth Lane, Romsey

BH1

Job No	Dates	Ground Level (m)	Co-Ordinates
SHF.1132.258	Start 30-10-23 Finish 30-10-23		

Client: Gladman Develpoments

Sheet: 1 of 1

Well	Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
					0.40			Grass over brown slightly silty slightly sandy slightly gravelly TOPSOIL. Gravel is angular to subangular fine to medium of sandstone and flint. Sand is fine to coarse.
					1.60			Brown slightly clayey very sandy angular to subangular fine to coarse GRAVEL of flint and sandstone. Sand is fine to coarse. [River Terrace Deposits]
	▽	3.00	SPT	N=14				Stiff yellow slightly silty sandy CLAY. Sand is fine to coarse. [Head]
					5.70			
		6.00	SPT	N=18	6.00			Medium dense dark bluish grey silty very clayey fine to coarse SAND. [Earnley Sand Formation]
								Dense grey silty very cleyey fine to coarse SAND. [Earnley Sand Formation]
		9.00	SPT	N=35				
	▽	12.00	SPT	N=29	12.00			Borehole completed at 12.00m.
					{12.50}			

0 1 2 3 4 5 6 7 8 9 10 11 12

General Remarks

1. Hand excavated inspection pit from ground level to 1.00m begl.
2. Densities and soil consistencies are based on insitu tests.
3. No visual or olfactory evidence of contamination observed.
4. Groundwater was encoutered.
5. SPT - Standard Penetration Test; N - Number of blows.
6. Install details: 50mm plain pipe concrete raised cover from 0.00m begl to 2.00m begl; Bentonite seal between 0.20m begl to 2.00m begl; 50mm slotted pipe with gravel between 2.00m begl to 10.00m begl.

Groundwater

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)
	3.00 12.00		

All dimensions in metres
Scale 1:78.125

Logged By: RF

Enzygo Ltd
Tel: 01454 269237
Fax: 01454 269760
Web: www.enzygo.com

Site: Halterworth Lane, Romsey

BH2

Job No	Dates	Ground Level (m)	Co-Ordinates
SHF.1132.258	Start 31-10-23 Finish 01-11-23		

Client: Gladman Develpoments

Sheet: 1 of 1

Well	Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
					0.20			Grass over brown slightly silty slightly sandy slightly gravelly TOPSOIL. Gravel is angular to subangular fine to medium of sandstone and flint. Sand is fine to coarse.
								Brown slightly clayey very sandy angular to subangular fine to coarse GRAVEL of flint and sandstone. Sand is fine to coarse. [River Terrace Deposits]
		3.00	SPT	N=19	3.00			
					3.60			Stiff yellow slightly silty sandy CLAY. Sand is fine to coarse. [Head]
	▽							Medium dense dark bluish grey silty very clayey fine to coarse SAND. [Earnley Sand Formation]
					5.00			Dense grey silty very cleyey fine to coarse SAND. [Earnley Sand Formation]
		6.00	SPT	N=31				
	▽	9.00	SPT	N=33				
		10.50	SPT	N=42	10.50			Borehole completed at 10.50m.
					{12.50}			

0 1 2 3 4 5 6 7 8 9 10 11 12

General Remarks

1. Hand excavated inspection pit from ground level to 1.00m begl.
2. D - Disturbed Sample; ES - Environmental Sample; B - Bulk Sample.
3. Densities and soil consistencies are based on insitu tests.
4. No visual or olfactory evidence of contamination observed.
5. Groundwater was not encoutered.
6. SPT - Standard Penetration Test; N - Number of blows.
7. Backfilled with arisings

Groundwater

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)
	4.00 9.00	4.20	

All dimensions in metres
Scale 1:78.125

Logged By: RF

Enzygo Ltd
Tel: 01454 269237
Fax: 01454 269760
Web: www.enzygo.com

Site: Halterworth Lane, Romsey

BH3

Job No	Dates	Ground Level (m)	Co-Ordinates
SHF.1132.258	Start 30-10-23 Finish 31-10-23		

Client: Gladman Develpoments

Sheet: 1 of 1

Well	Water Levels	Samples & In Situ Testing: Depth (m)	No/Type	Results	Depth (m)	Level (mAD)	Legend	Stratum Description
					0.30			Grass over brown slightly silty slightly sandy slightly gravelly TOPSOIL. Gravel is angular to subangular fine to medium of sandstone and flint. Sand is fine to coarse.
								Brown slightly clayey very sandy angular to subangular fine to coarse GRAVEL of flint and sandstone. Sand is fine to coarse. [River Terrace Deposits]
		3.00	SPT	N=19				
	▽				3.40			Stiff yellow slightly silty sandy CLAY. Sand is fine to coarse. [Head]
					4.70			Medium dense dark bluish grey silty very clayey fine to coarse SAND. [Earnley Sand Formation]
		6.00	SPT	N=19	6.20			Dense grey silty very clayey fine to coarse SAND. [Earnley Sand Formation]
	▽	9.00	SPT	N=31				
		12.00	SPT	N=34	12.00			Borehole completed at 12.00m.
					{12.50}			

0 1 2 3 4 5 6 7 8 9 10 11 12

General Remarks

1. Hand excavated inspection pit from ground level to 1.00m begl.
2. D - Disturbed Sample; ES - Environmental Sample; B - Bulk Sample.
3. Densities and soil consistencies are based on insitu tests.
4. No visual or olfactory evidence of contamination observed.
5. Groundwater was not encoutered.
6. SPT - Standard Penetration Test; N - Number of blows.
7. Install details: 50mm plain pipe concrete flush cover from 0.00m begl to 1.00m begl; Bentonite seal between 0.20m begl to 1.00m begl; 50mm slotted pipe with gravel between 1.00m begl to 3.00m begl.

Groundwater

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)
	4.00 9.20	4.00	

All dimensions in metres
Scale 1:78.125

Logged By: RF

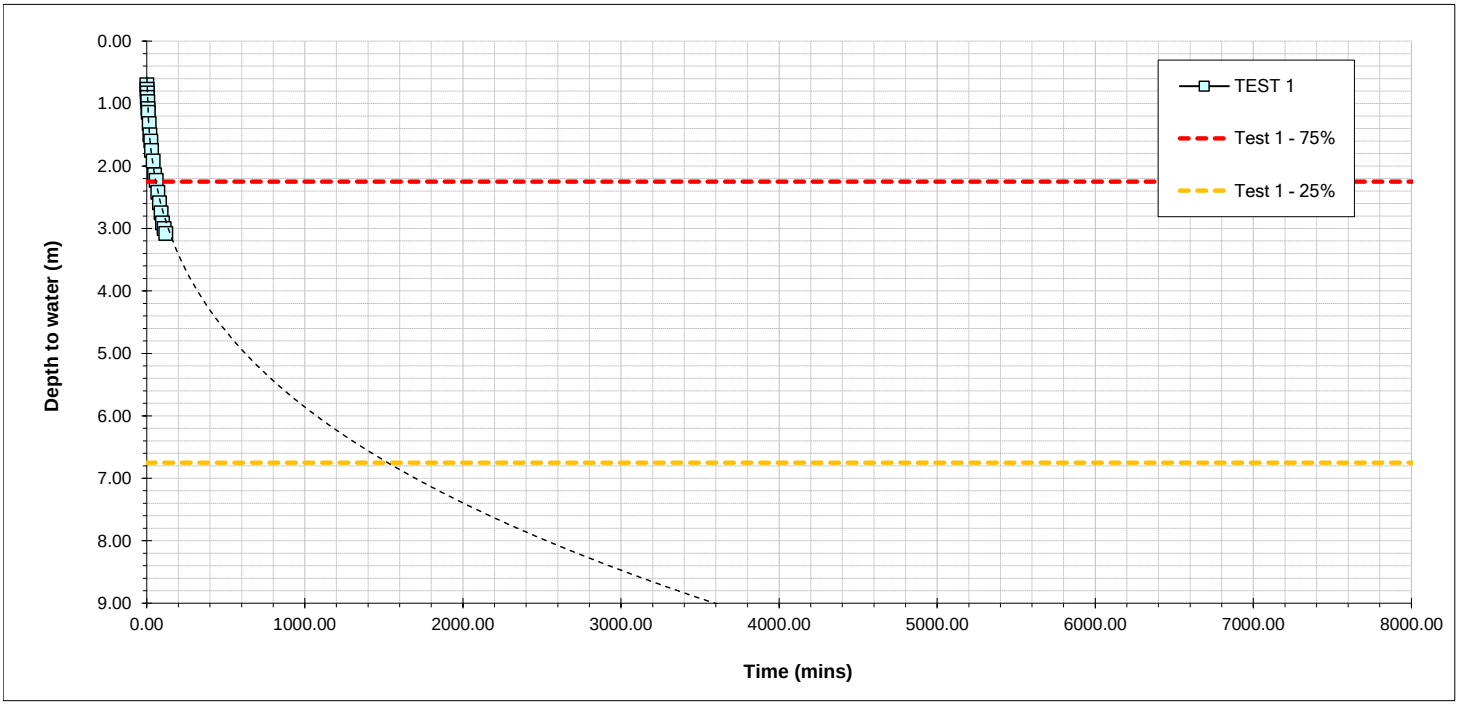
Site.....	Halterworth Lane, Romsey		Soakaway Number.....	BH3	
Job Number.....	SHF.1132.258		Diameter	0.15	m
Date of Test.....	31/10/2023		Casing Depth	4.00	m
			Borehole Depth.....	9.00	m
BOREHOLE SOIL INFILTRATION RATE TEST			Groundwater Level.....	Dry	m
See B.R.E. Digest 365, 1991, Soakaway Design.					

Remarks -
Please refer to BH3 log for ground conditions. Data has been extrapolated due to time constraints.

TEST 1		TEST 2		TEST 3	
Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)
0.0	0.00				
1.0	0.70				
2.0	0.77				
3.0	0.83				
4.0	0.90				
10.0	1.14				
15.0	1.32				
20.0	1.50				
25.0	1.60				
30.0	1.75				
40.0	1.92				
60.0	2.23				
80.0	2.59				
90.0	2.75				
100.0	2.91				
120.0	3.08				
1500.0	6.75				

Effective Storage Depth	m	9.00		
75% Effective Storage Depth	m	6.75		
(i.e. depth below GL)	m	**2.25**		
25% Effective Storage Depth	m	2.25		
(i.e. depth below GL)	m	**6.75**		
Effective Storage Depth 75%-25%	m	4.50		
Time to fall to 75% effective depth	mins	60.00		
Time to fall to 25% effective depth	mins	1500.00		
V (75%-25%)	m3	0.08		
a	m2	2.37		
t (75%-25%)	mins	1440.00		
SOIL INFILTRATION RATE	m/s	**3.88E-07**		

DESIGN SOIL INFILTRATION RATE, f	**3.88E-07**	**m/s**



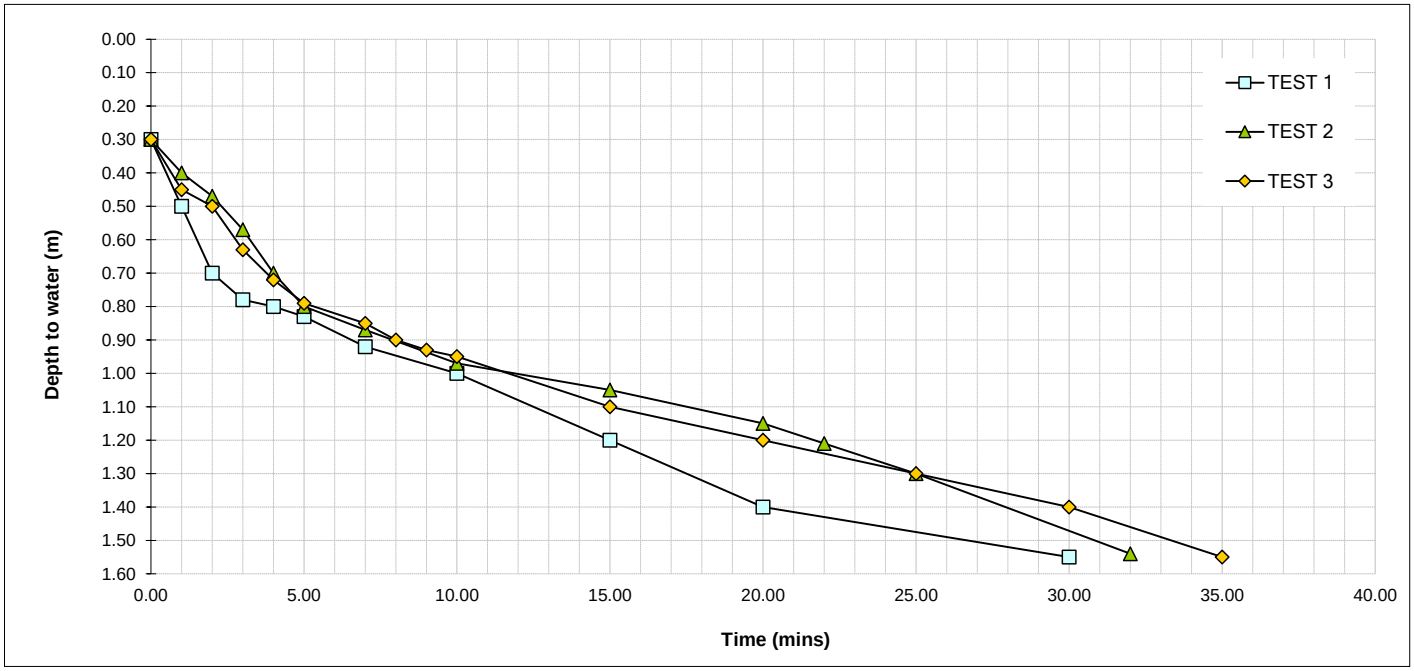
enzygo	Site.....	Halterworth Lane	Trial Pit Number.....	TP1	
	Job Number.....	SHF.1132.258	Length.....	3.00	m
	Date of Test.....	30/10/2023	Width.....	0.60	m
			Depth.....	1.60	m
	SOIL INFILTRATION RATE TEST		Groundwater Level.....	Dry	m
	See B.R.E. Digest 365, 1991, Soakaway Design.				

Remarks -
Please refer to the exploratory hole log TP1.
Slight Seepage of perched GW at 1.50m begl.

TEST 1		TEST 2		TEST 3	
Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)
0.00	0.30	0.00	0.30	0.00	0.30
1.00	0.50	1.00	0.40	1.00	0.45
2.00	0.70	2.00	0.47	2.00	0.50
3.00	0.78	3.00	0.57	3.00	0.63
4.00	0.80	4.00	0.70	4.00	0.72
5.00	0.83	5.00	0.80	5.00	0.79
7.00		7.00	0.87	7.00	0.85
10.00	1.00	10.00	0.97	8.00	0.90
15.00	1.20	15.00	1.05	9.00	0.93
20.00	1.40	20.00	1.15	10.00	0.95
30.00	1.55	22.00	1.21	15.00	1.10
		25.00	1.30	20.00	1.20
		32.00	1.54	25.00	1.30
				30.00	1.40
				35.00	1.55

Effective Storage Depth	m	1.30	1.30	1.30
75% Effective Storage Depth	m	0.98	0.98	0.98
(i.e. depth below GL)	m	**0.63**	**0.63**	**0.63**
25% Effective Storage Depth	m	0.33	0.33	0.33
(i.e. depth below GL)	m	**1.28**	**1.28**	**1.28**
Effective Storage Depth 75%-25%	m	0.65	0.65	0.65
Time to fall to 75% effective depth	mins	2.00	4.00	3.00
Time to fall to 25% effective depth	mins	20.00	25.00	25.00
V (75%-25%)	m3	1.17	1.17	1.17
a (50%)	m2	6.48	6.48	6.48
t (75%-25%)	mins	18.00	21.00	22.00
SOIL INFILTRATION RATE	m/s	**1.67E-04**	**1.43E-04**	**1.37E-04**

DESIGN SOIL INFILTRATION RATE, f	**1.37E-04**	**m/s**

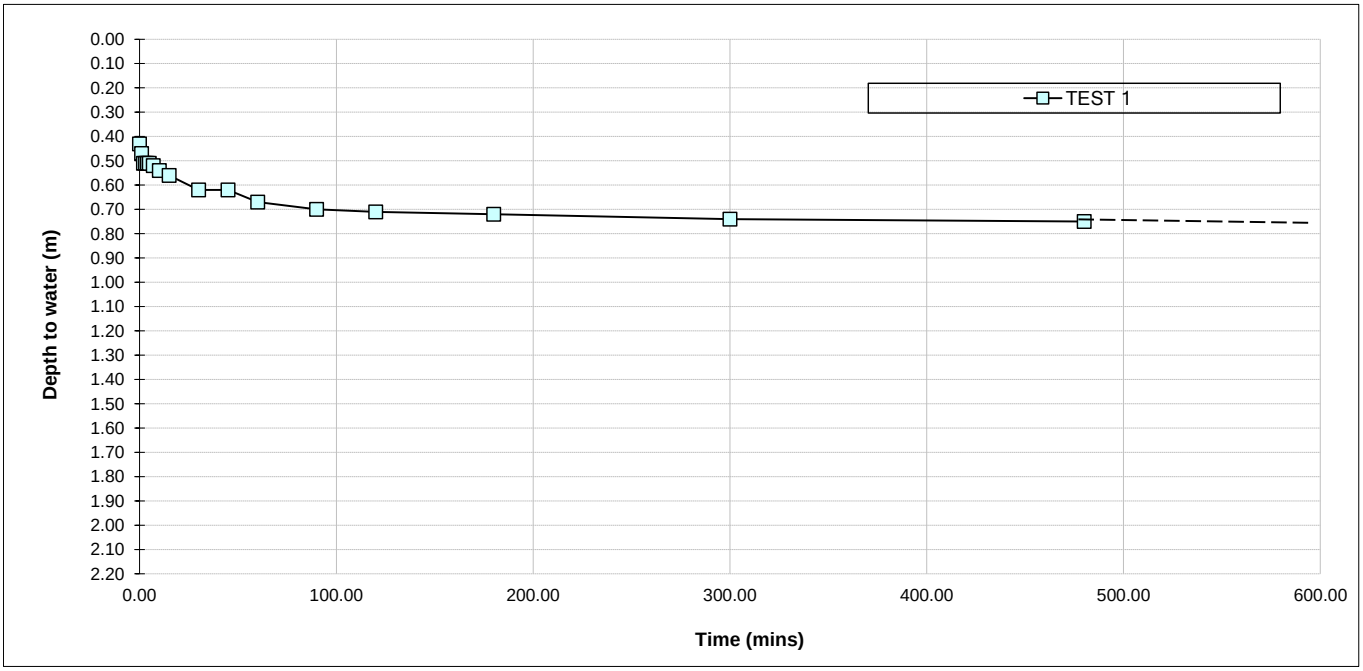


Site..... Halterworth Lane Job Number..... SHF.1132.258 Date of Test..... 30/10/2023		Trial Pit Number..... TP2 Length..... 2.10 m Width..... 0.60 m Depth..... 1.50 m	
SOIL INFILTRATION RATE TEST See B.R.E. Digest 365, 1991, Soakaway Design.		Groundwater Level..... 1.2 m	

Remarks -	TEST 1		
Please refer to the exploratory hole log TP2. SA was not undertaken do to pit instability and large water strike rising to 1.20m begl.	Time(min)	Depth to Water (m)	
	0.00		
	1.00		
	2.00		
	3.00		
	4.00		
	5.00		
	7.00		
	10.00		
	15.00		
	30.00		
	45.00		
	60.00		
	90.00		
	120.00		
	180.00		
	300.00		
	480.00		

Effective Storage Depth	m	1.50		
75% Effective Storage Depth	m	1.13		
(i.e. depth below GL)	m	**0.38**		
25% Effective Storage Depth	m	0.38		
(i.e. depth below GL)	m	**1.13**		
Effective Storage Depth 75%-25%	m	0.75		
Time to fall to 75% effective depth	mins	N/A		
Time to fall to 25% effective depth	mins	N/A		
V (75%-25%)	m3	0.95		
a (50%)	m2	5.31		
t (75%-25%)	mins	N/A		
SOIL INFILTRATION RATE	m/s	**Insufficent Uptake**		

DESIGN SOIL INFILTRATION RATE, f	**Insufficent Uptake**	**m/s**



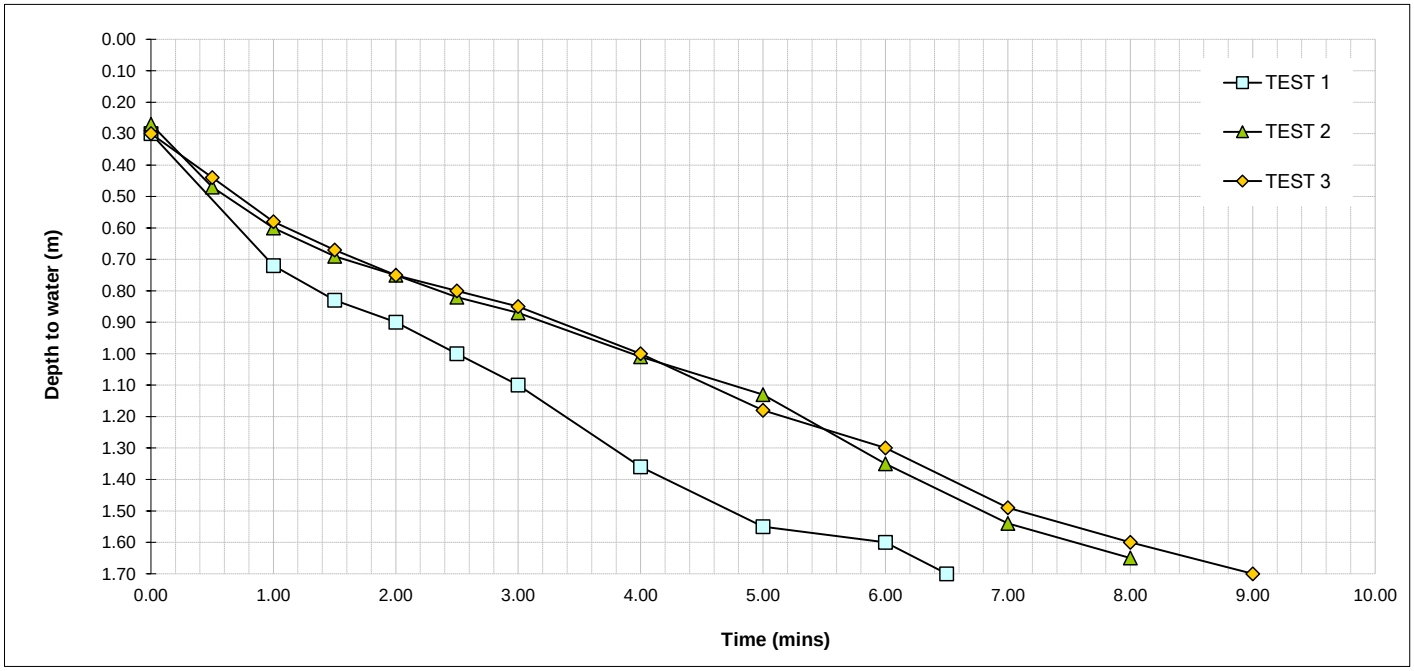
enzygo	Site.....	Halterworth Lane	Trial Pit Number.....	TP3	
	Job Number.....	SHF.1132.258	Length.....	2.00	m
	Date of Test.....	30/10/2023	Width.....	0.60	m
			Depth.....	1.70	m
	SOIL INFILTRATION RATE TEST		Groundwater Level.....	Dry	m
	See B.R.E. Digest 365, 1991, Soakaway Design.				

Remarks -
Please refer to the exploratory hole log TP3.

TEST 1		TEST 2		TEST 3	
Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)
0.00	0.30	0.00	0.27	0.00	0.30
1.00	0.72	0.50	0.47	0.50	0.44
1.50	0.83	1.00	0.60	1.00	0.58
2.00	0.90	1.50	0.69	1.50	0.67
2.50	1.00	2.00	0.75	2.00	0.75
3.00	1.10	2.50	0.82	2.50	0.80
4.00	1.36	3.00	0.87	3.00	0.85
5.00	1.55	4.00	1.01	4.00	1.00
6.00	1.60	5.00	1.13	5.00	1.18
6.50	1.70	6.00	1.35	6.00	1.30
		7.00	1.54	7.00	1.49
		8.00	1.65	8.00	1.60
		0.00	0.00	9.00	1.70
				0.00	0.00
				0.00	0.00

Effective Storage Depth	m	1.40	1.43	1.40
75% Effective Storage Depth	m	1.05	1.07	1.05
(i.e. depth below GL)	m	**0.65**	**0.63**	**0.65**
25% Effective Storage Depth	m	0.35	0.36	0.35
(i.e. depth below GL)	m	**1.35**	**1.34**	**1.35**
Effective Storage Depth 75%-25%	m	0.70	0.72	0.70
Time to fall to 75% effective depth	mins	1.00	1.50	1.50
Time to fall to 25% effective depth	mins	4.00	6.00	6.50
V (75%-25%)	m3	0.84	0.86	0.84
a (50%)	m2	4.84	4.92	4.84
t (75%-25%)	mins	3.00	4.50	5.00
SOIL INFILTRATION RATE	m/s	**9.64E-04**	**6.46E-04**	**5.79E-04**

DESIGN SOIL INFILTRATION RATE, f	**5.79E-04**	**m/s**



Site.....	Halterworth Lane	
Job Number.....	SHF.1132.258	
Date of Test.....	30/10/2023	
Trial Pit Number.....	TP4	
Length.....	2.10	m
Width.....	0.60	m
Depth.....	1.60	m
Groundwater Level.....	Dry	m

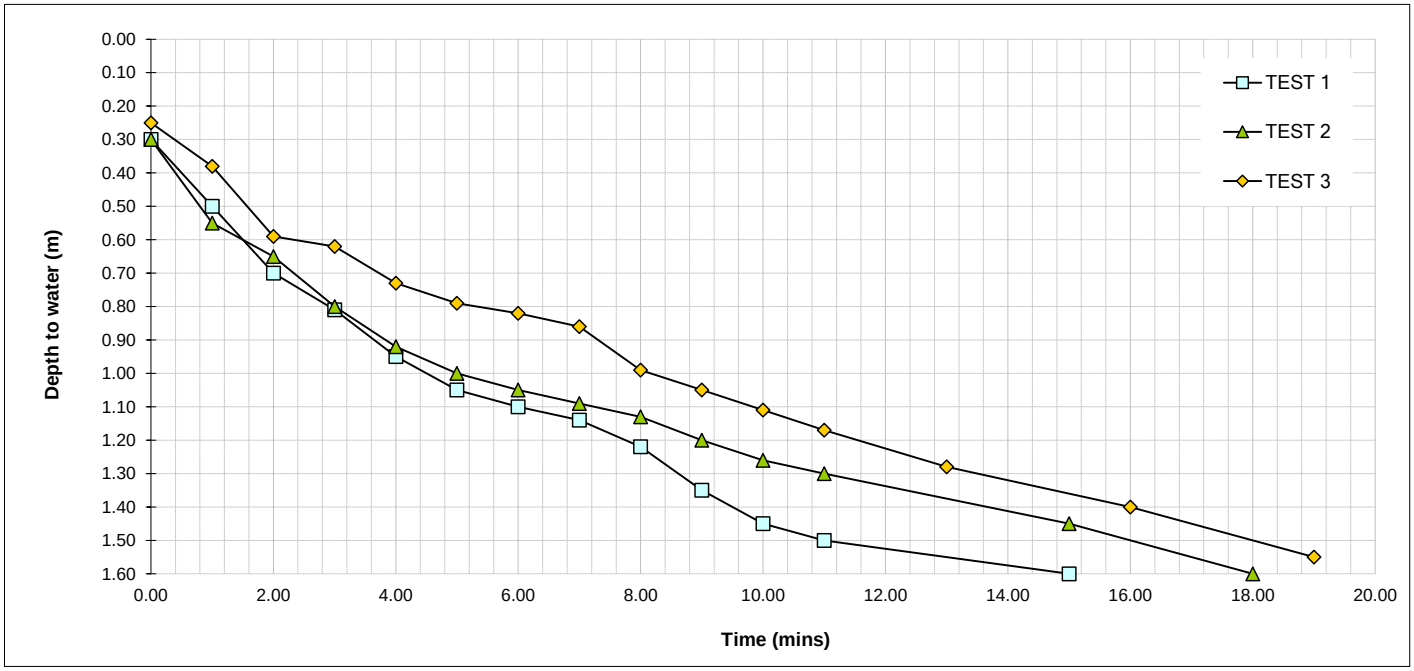
SOIL INFILTRATION RATE TEST
See B.R.E. Digest 365, 1991, Soakaway Design.

Remarks -
Please refer to the exploratory hole log TP4.

TEST 1		TEST 2		TEST 3	
Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)
0.00	0.30	0.00	0.30	0.00	0.25
1.00	0.50	1.00	0.55	1.00	0.38
2.00	0.70	2.00	0.65	2.00	0.59
3.00	0.81	3.00	0.80	3.00	0.62
4.00	0.95	4.00	0.92	4.00	0.73
5.00	1.05	5.00	1.00	5.00	0.79
6.00	1.10	6.00	1.05	6.00	0.82
7.00	1.14	7.00	1.09	7.00	0.86
8.00	1.22	8.00	1.13	8.00	0.99
9.00	1.35	9.00	1.20	9.00	1.05
10.00	1.45	10.00	1.26	10.00	1.11
11.00	1.50	11.00	1.30	11.00	1.17
15.00	1.60	15.00	1.45	13.00	1.28
		18.00	1.60	16.00	1.40
				19.00	1.55

		TEST 1	TEST 2	TEST 3
Effective Storage Depth	m	1.30	1.30	1.35
75% Effective Storage Depth	m	0.98	0.98	1.01
(i.e. depth below GL)	m	**0.63**	**0.63**	**0.59**
25% Effective Storage Depth	m	0.33	0.33	0.34
(i.e. depth below GL)	m	**1.28**	**1.28**	**1.26**
Effective Storage Depth 75%-25%	m	0.65	0.65	0.68
Time to fall to 75% effective depth	mins	2.00	2.00	2.00
Time to fall to 25% effective depth	mins	9.00	10.00	13.00
V (75%-25%)	m3	0.82	0.82	0.85
a (50%)	m2	4.77	4.77	4.91
t (75%-25%)	mins	7.00	8.00	11.00
SOIL INFILTRATION RATE	m/s	**4.09E-04**	**3.58E-04**	**2.63E-04**

DESIGN SOIL INFILTRATION RATE, f **2.63E-04** **m/s**



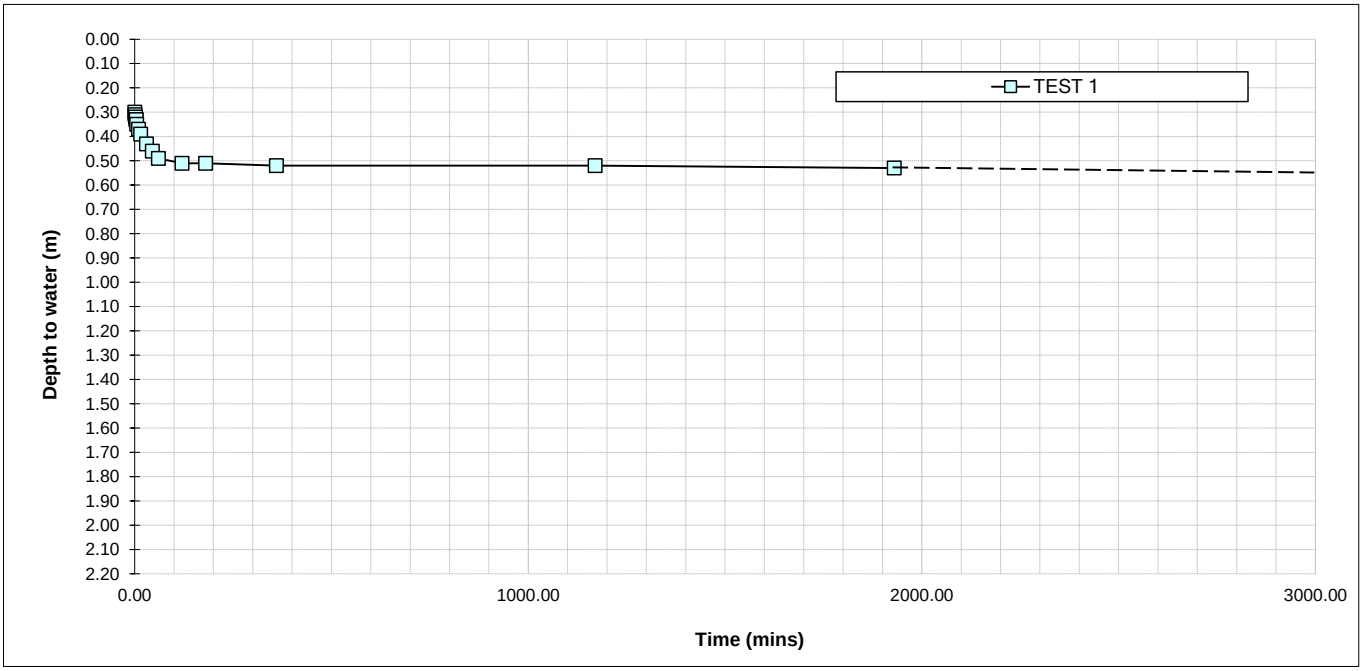
Site.....	Halterworth Lane	Trial Pit Number.....	TP5
Job Number.....	SHF.1132.258	Length.....	2.10 m
Date of Test.....	30/10/2023	Width.....	0.60 m
		Depth.....	1.70 m
SOIL INFILTRATION RATE TEST		Groundwater Level.....	Dry m
See B.R.E. Digest 365, 1991, Soakaway Design.			

Remarks -
Please refer to the exploratory hole log TP5.
Data extrapolated due to insufficient uptake.

TEST 1	
Time(min)	Depth to Water (m)
0.00	0.30
1.00	0.31
2.00	0.32
3.00	0.33
4.00	0.33
5.00	0.35
10.00	0.37
15.00	0.39
30.00	0.43
45.00	0.46
60.00	0.49
120.00	0.51
180.00	0.51
1170.00	0.52
1930.00	0.53

Effective Storage Depth	m	1.40
75% Effective Storage Depth	m	1.05
(i.e. depth below GL)	m	**0.65**
25% Effective Storage Depth	m	0.35
(i.e. depth below GL)	m	**1.35**
Effective Storage Depth 75%-25%	m	0.70
Time to fall to 75% effective depth	mins	N/A
Time to fall to 25% effective depth	mins	N/A
V (75%-25%)	m3	0.88
a (50%)	m2	5.04
t (75%-25%)	mins	N/A
SOIL INFILTRATION RATE	m/s	**Insufficent Uptake**

DESIGN SOIL INFILTRATION RATE, f **Insufficent Uptake** **m/s**

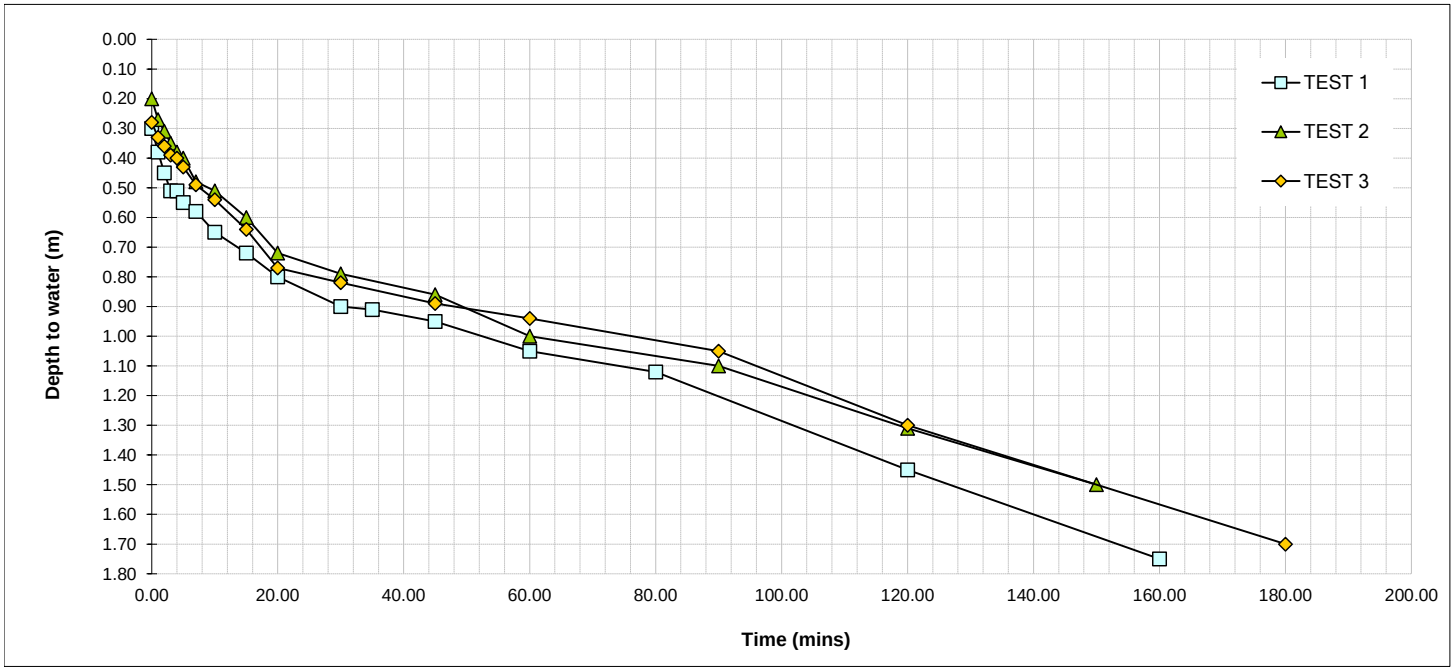


Site.....	Halterworth Lane		Trial Pit Number.....	TP6	
Job Number.....	SHF.1132.258		Length.....	2.10	m
Date of Test.....	30/10/2023		Width.....	0.60	m
			Depth.....	1.80	m
SOIL INFILTRATION RATE TEST			Groundwater Level.....	Dry	m
See B.R.E. Digest 365, 1991, Soakaway Design.					

Remarks -
Please refer to the exploratory hole log TP6.
Slight Seepage of perched GW at 1.50m begl.

		TEST 1		TEST 2		TEST 3	
		Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)
		0.00	0.30	0.00	0.20	0.00	0.28
		1.00	0.38	1.00	0.27	1.00	0.33
		2.00	0.45	2.00	0.31	2.00	0.36
		3.00	0.51	3.00	0.35	3.00	0.39
		4.00	0.51	4.00	0.38	4.00	0.40
		5.00	0.55	5.00	0.40	5.00	0.43
		7.00	0.58	7.00	0.48	7.00	0.49
		10.00	0.69	10.00	0.51	10.00	0.54
		15.00	0.72	15.00	0.60	15.00	0.64
		20.00	0.80	20.00	0.72	20.00	0.77
		30.00	0.90	30.00	0.79	30.00	0.82
		35.00	0.91	45.00	0.86	45.00	0.89
		45.00	0.95	60.00	1.00	60.00	0.94
		60.00	1.05	90.00	1.10	90.00	1.05
		80.00	1.12	120.00	1.31	120.00	1.30
		120.00	1.45	150.00	1.50		
		160.00	1.75				
Effective Storage Depth	m		1.50		1.60		1.52
75% Effective Storage Depth	m		1.13		1.20		1.14
(i.e. depth below GL)	m		**0.68**		**0.60**		**0.66**
25% Effective Storage Depth	m		0.38		0.40		0.38
(i.e. depth below GL)	m		**1.43**		**1.40**		**1.42**
Effective Storage Depth 75%-25%	m		0.75		0.80		0.76
Time to fall to 75% effective depth	mins		10.00		15.00		15.00
Time to fall to 25% effective depth	mins		120.00		150.00		180.00
V (75%-25%)	m3		0.95		1.01		0.96
a (50%)	m2		5.31		5.58		5.36
t (75%-25%)	mins		110.00		135.00		165.00
SOIL INFILTRATION RATE	m/s		**2.70E-05**		**2.23E-05**		**1.80E-05**

DESIGN SOIL INFILTRATION RATE, f	**1.80E-05**	**m/s**



Site.....	Halterworth Lane	
Job Number.....	SHF.1132.258	
Date of Test.....	30/10/2023	
Trial Pit Number.....	TP7	
Length.....	2.20	m
Width.....	0.60	m
Depth.....	1.60	m
Groundwater Level.....	Dry	m

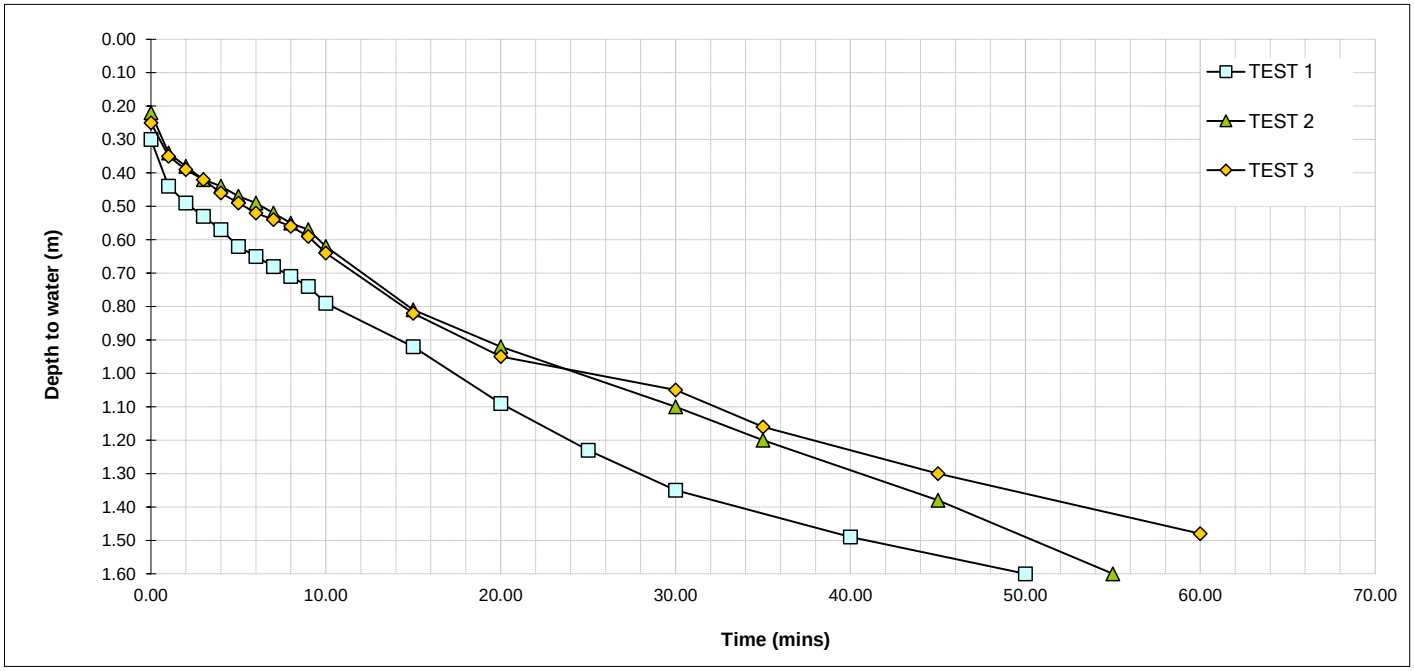
SOIL INFILTRATION RATE TEST
See B.R.E. Digest 365, 1991, Soakaway Design.

Remarks -
Please refer to the exploratory hole log TP7.
Slight Seepage of perched GW at 1.60m begl.

TEST 1		TEST 2		TEST 3	
Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)
0.00	0.30	0.00	0.22	0.00	0.25
1.00	0.44	1.00	0.34	1.00	0.35
2.00	0.49	2.00	0.38	2.00	0.39
3.00	0.53	3.00	0.42	3.00	0.42
4.00	0.57	4.00	0.44	4.00	0.46
5.00	0.62	5.00	0.47	5.00	0.49
6.00	0.65	6.00	0.49	6.00	0.52
7.00	0.68	7.00	0.52	7.00	0.54
8.00	0.71	8.00	0.55	8.00	0.56
9.00	0.74	9.00	0.57	9.00	0.59
10.00	0.79	10.00	0.62	10.00	0.64
15.00	0.92	15.00	0.81	15.00	0.82
20.00	1.09	20.00	0.92	20.00	0.95
25.00	1.23	30.00	1.10	30.00	1.05
30.00	1.35	35.00	1.20	35.00	1.16
40.00	1.49	45.00	1.38	45.00	1.30
50.00	1.60	55.00	1.60	60.00	1.48

Effective Storage Depth	m	1.30	1.38	1.35
75% Effective Storage Depth	m	0.98	1.04	1.01
(i.e. depth below GL)	m	**0.63**	**0.57**	**0.59**
25% Effective Storage Depth	m	0.33	0.35	0.34
(i.e. depth below GL)	m	**1.28**	**1.26**	**1.26**
Effective Storage Depth 75%-25%	m	0.65	0.69	0.68
Time to fall to 75% effective depth	mins	6.00	9.00	9.00
Time to fall to 25% effective depth	mins	25.00	35.00	38.00
V (75%-25%)	m3	0.86	0.91	0.89
a (50%)	m2	4.96	5.18	5.10
t (75%-25%)	mins	19.00	26.00	29.00
SOIL INFILTRATION RATE	m/s	**1.52E-04**	**1.13E-04**	**1.00E-04**

DESIGN SOIL INFILTRATION RATE, f	**1.00E-04**	**m/s**

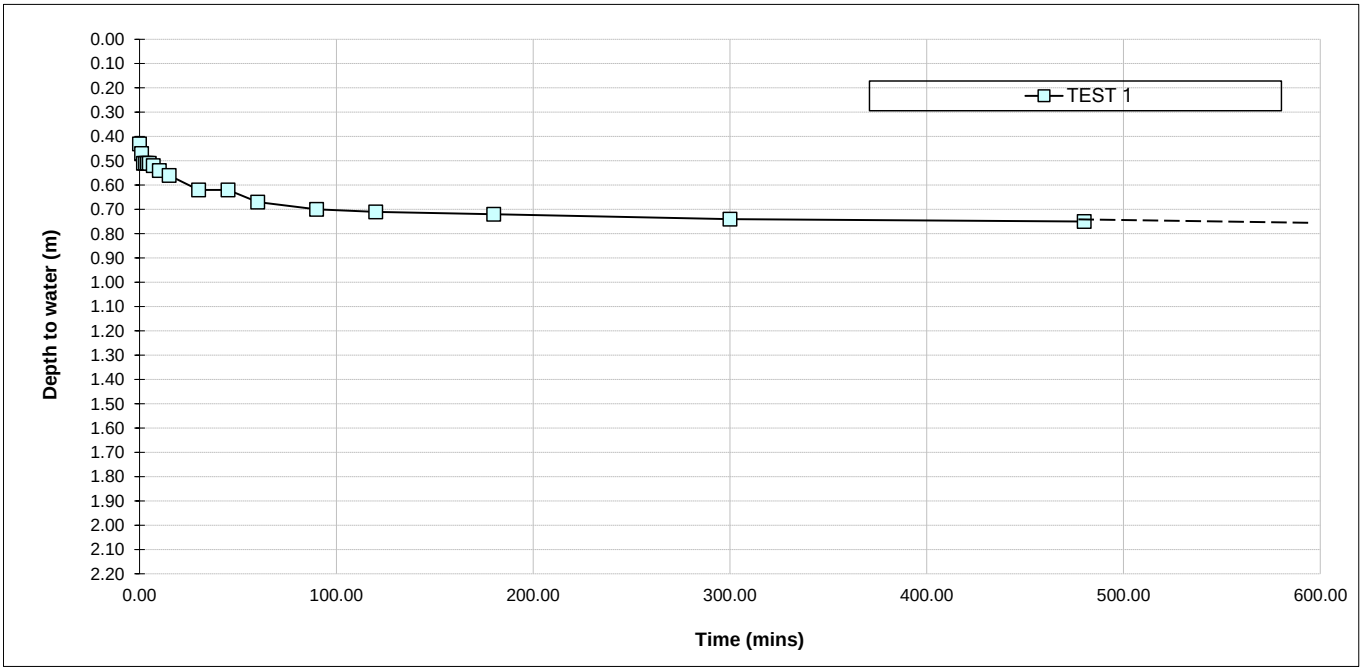


Site..... Halterworth Lane Job Number..... SHF.1132.258 Date of Test..... 30/10/2023		Trial Pit Number..... TP8 Length..... 2.80 m Width..... 0.60 m Depth..... 1.80 m	
SOIL INFILTRATION RATE TEST See B.R.E. Digest 365, 1991, Soakaway Design.		Groundwater Level..... Dry m	

Remarks -	TEST 1		
Please refer to the exploratory hole log TP8. Data extrapolated due to insufficient uptake.	Time(min)	Depth to Water (m)	
	0.00	0.43	
	1.00	0.47	
	2.00	0.51	
	3.00	0.51	
	4.00	0.51	
	5.00	0.51	
	7.00	0.52	
	10.00	0.54	
	15.00	0.56	
	30.00	0.62	
	45.00	0.62	
	60.00	0.67	
	90.00	0.70	
	120.00	0.71	
	180.00	0.72	
	300.00	0.74	
	480.00	0.75	

Effective Storage Depth	m	1.37		
75% Effective Storage Depth	m	1.03		
(i.e. depth below GL)	m	**0.77**		
25% Effective Storage Depth	m	0.34		
(i.e. depth below GL)	m	**1.46**		
Effective Storage Depth 75%-25%	m	0.69		
Time to fall to 75% effective depth	mins	N/A		
Time to fall to 25% effective depth	mins	N/A		
V (75%-25%)	m3	1.15		
a (50%)	m2	6.34		
t (75%-25%)	mins	N/A		
SOIL INFILTRATION RATE	m/s	**Insufficent Uptake**		

DESIGN SOIL INFILTRATION RATE, f	**Insufficent Uptake**	**m/s**



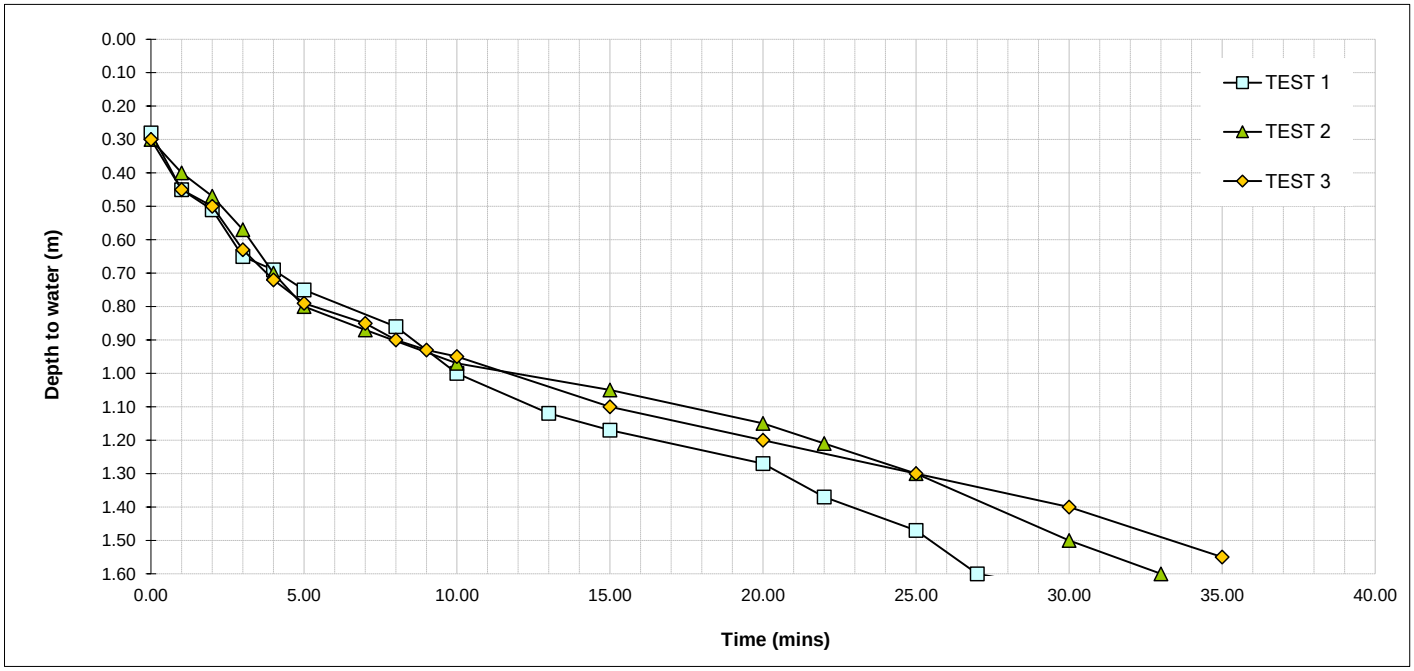
enzygo	Site.....	Halterworth Lane	Trial Pit Number.....	TP9	
	Job Number.....	SHF.1132.258	Length.....	3.00	m
	Date of Test.....	30/10/2023	Width.....	0.60	m
			Depth.....	1.60	m
	SOIL INFILTRATION RATE TEST		Groundwater Level.....	Dry	m
	See B.R.E. Digest 365, 1991, Soakaway Design.				

Remarks -
Please refer to the exploratory hole log TP9.
Slight Seepage of perched GW at 1.30m begl.

TEST 1		TEST 2		TEST 3	
Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)	Time(min)	Depth to Water (m)
0.00	0.28	0.00	0.30	0.00	0.30
1.00	0.45	1.00	0.40	1.00	0.45
2.00	0.51	2.00	0.47	2.00	0.50
3.00	0.65	3.00	0.57	3.00	0.63
4.00	0.69	4.00	0.70	4.00	0.72
5.00	0.75	5.00	0.80	5.00	0.79
8.00	0.86	7.00	0.87	7.00	0.85
10.00	1.00	10.00	0.97	8.00	0.90
13.00	1.12	15.00	1.05	9.00	0.93
15.00	1.17	20.00	1.15	10.00	0.95
20.00	1.27	22.00	1.21	15.00	1.10
22.00	1.37	25.00	1.30	20.00	1.20
25.00	1.47	30.00	1.50	25.00	1.30
27.00	1.60	33.00	1.60	30.00	1.40
				35.00	1.55

Effective Storage Depth	m	1.32	1.30	1.30
75% Effective Storage Depth	m	0.99	0.98	0.98
(i.e. depth below GL)	m	**0.61**	**0.63**	**0.63**
25% Effective Storage Depth	m	0.33	0.33	0.33
(i.e. depth below GL)	m	**1.27**	**1.28**	**1.28**
Effective Storage Depth 75%-25%	m	0.66	0.65	0.65
Time to fall to 75% effective depth	mins	3.00	4.00	3.00
Time to fall to 25% effective depth	mins	20.00	25.00	25.00
V (75%-25%)	m3	1.19	1.17	1.17
a (50%)	m2	6.55	6.48	6.48
t (75%-25%)	mins	17.00	21.00	22.00
SOIL INFILTRATION RATE	m/s	**1.78E-04**	**1.43E-04**	**1.37E-04**

DESIGN SOIL INFILTRATION RATE, f	**1.37E-04**	**m/s**



Appendix 6 – Drainage Calculations

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Eric O'Connor
Site name:	Halterworth Lane
Site location:	Romsey

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.

Site Details

Latitude:	50.99045° N
Longitude:	1.46504° W
Reference:	87648378
Date:	Dec 22 2023 12:00

Runoff estimation approach

FEH Statistical

Site characteristics

Total site area (ha):	7.26

Methodology

Q_{MED} estimation method:	Calculate from BFI and SAAR
BFI and SPR method:	Specify BFI manually
HOST class:	N/A
BFI / BFIHOST:	0.573
Q_{MED} (l/s):	
Q_{BAR} / Q_{MED} factor:	1.14

Hydrological characteristics

	Default	Edited
SAAR (mm):	788	788
Hydrological region:	7	7
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 30 years:	2.3	2.3
Growth curve factor 100 years:	3.19	3.19
Growth curve factor 200 years:	3.74	3.74

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited

Q_{BAR} (l/s):		25.65
1 in 1 year (l/s):		21.8
1 in 30 years (l/s):		58.99
1 in 100 year (l/s):		81.81
1 in 200 years (l/s):		95.92

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 437438 121337 SU 37438 21337
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 %	+45

Time Area Diagram

Total Area (ha) 2.200

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.800	4	8	0.700	8	12	0.700

Time Area Diagram

Total Area (ha) 0.000

Time From:	(mins) To:	Area (ha)
0	4	0.000

Summary of Results for 100 year Return Period (+45%)

Half Drain Time : 38 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	0.937	0.937	153.0	488.4	O K
30 min Summer	1.094	1.094	173.0	608.6	O K
60 min Summer	1.170	1.170	182.9	671.2	O K
120 min Summer	1.088	1.088	172.3	603.9	O K
180 min Summer	1.006	1.006	161.8	540.1	O K
240 min Summer	0.936	0.936	152.8	487.5	O K
360 min Summer	0.819	0.819	138.3	405.9	O K
480 min Summer	0.723	0.723	126.6	344.2	O K
600 min Summer	0.644	0.644	117.0	295.7	O K
720 min Summer	0.576	0.576	108.9	256.7	O K
960 min Summer	0.466	0.466	96.1	197.9	O K
1440 min Summer	0.311	0.311	78.5	123.0	O K
2160 min Summer	0.167	0.167	62.6	61.6	O K
2880 min Summer	0.082	0.082	53.4	29.1	O K
4320 min Summer	0.042	0.042	41.8	14.6	O K
5760 min Summer	0.035	0.035	34.1	12.0	O K
7200 min Summer	0.030	0.030	29.5	10.5	O K
8640 min Summer	0.027	0.027	26.5	9.4	O K
10080 min Summer	0.025	0.025	24.5	8.6	O K
15 min Winter	0.937	0.937	153.0	488.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	137.250	0.0	22
30 min Summer	92.038	0.0	32
60 min Summer	59.069	0.0	50
120 min Summer	33.764	0.0	84
180 min Summer	24.338	0.0	118
240 min Summer	19.311	0.0	150
360 min Summer	13.979	0.0	214
480 min Summer	11.136	0.0	278
600 min Summer	9.348	0.0	340
720 min Summer	8.111	0.0	400
960 min Summer	6.500	0.0	520
1440 min Summer	4.768	0.0	760
2160 min Summer	3.506	0.0	1124
2880 min Summer	2.830	0.0	1472
4320 min Summer	2.111	0.0	2188
5760 min Summer	1.732	0.0	2928
7200 min Summer	1.501	0.0	3592
8640 min Summer	1.344	0.0	4264
10080 min Summer	1.231	0.0	4968
15 min Winter	137.250	0.0	22

Summary of Results for 100 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	1.095	1.095	173.1	609.1	O K
60 min Winter	1.164	1.164	182.2	666.4	O K
120 min Winter	1.057	1.057	168.2	578.9	O K
180 min Winter	0.947	0.947	154.3	496.1	O K
240 min Winter	0.853	0.853	142.5	428.8	O K
360 min Winter	0.699	0.699	123.6	328.9	O K
480 min Winter	0.578	0.578	109.2	257.7	O K
600 min Winter	0.480	0.480	97.8	205.1	O K
720 min Winter	0.401	0.401	88.6	165.0	O K
960 min Winter	0.279	0.279	74.9	108.7	O K
1440 min Winter	0.124	0.124	57.9	44.6	O K
2160 min Winter	0.045	0.045	44.4	15.5	O K
2880 min Winter	0.037	0.037	36.1	12.7	O K
4320 min Winter	0.028	0.028	27.0	9.5	O K
5760 min Winter	0.023	0.023	22.0	7.9	O K
7200 min Winter	0.020	0.020	19.0	6.8	O K
8640 min Winter	0.018	0.018	17.0	6.2	O K
10080 min Winter	0.016	0.016	15.6	5.6	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	92.038	0.0	33
60 min Winter	59.069	0.0	52
120 min Winter	33.764	0.0	90
180 min Winter	24.338	0.0	124
240 min Winter	19.311	0.0	158
360 min Winter	13.979	0.0	224
480 min Winter	11.136	0.0	288
600 min Winter	9.348	0.0	350
720 min Winter	8.111	0.0	410
960 min Winter	6.500	0.0	530
1440 min Winter	4.768	0.0	768
2160 min Winter	3.506	0.0	1092
2880 min Winter	2.830	0.0	1456
4320 min Winter	2.111	0.0	2196
5760 min Winter	1.732	0.0	2888
7200 min Winter	1.501	0.0	3672
8640 min Winter	1.344	0.0	4360
10080 min Winter	1.231	0.0	5136

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 437438 121337 SU 37438 21337
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 %	+45

Time Area Diagram

Total Area (ha) 1.800

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.600	4	8	0.600	8	12	0.600

Time Area Diagram

Total Area (ha) 0.000

Time From:	(mins) To:	Area (ha)
0	4	0.000

Model Details

Storage is Online Cover Level (m) 1.800

Infiltration Basin Structure

Invert Level (m) 0.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.94600 Porosity 1.00
Infiltration Coefficient Side (m/hr) 0.94600

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	340.0	1.500	1029.0	1.501	0.0

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