from Southern Water

Dani Lister
Enzygo Ltd
Samuel House
5 Fox Valley Way
Stocksbridge
Sheffield
S36 2AA

Your ref

Our ref
DSA000027233

Date
13 October 2023

Contact
Tel 0330 303 0119

Dear Ms Lister,

Level 1 Capacity Check Enquiry: Land east of Halterworth Lane, Romsey, Hampshire, SO51 9AE.

We have completed the capacity check for the above development site and the results are as follows:

Foul Water

There is currently adequate capacity in the local sewerage network to accommodate a foul flow of **3.44 l/s** for the above development at manhole reference SU3721**2503**. Please note that no surface water flows (existing or proposed) can be accommodated within the existing foul sewerage system unless agreed by the Lead Local Flood Authority in consultation with Southern Water, after the hierarchy Part H3 of Building Regulations has been complied with.

There is currently inadequate capacity in the local sewerage network to accommodate a foul flow of **3.44 l/s** for the above development at manhole reference SU3721**2101** or SU3720**4901.**

Connecting to our network

It should be noted that this information is only a hydraulic assessment of the existing sewerage network and does not grant approval for a connection to the public sewerage system. A formal Sewer Connection (S106) application is required to be completed and approved by Southern Water Services. To make an application visit: developerservices.southernwater.co.uk

Please note the information provided above does not grant approval for any designs/drawings submitted for the capacity analysis. The results quoted above are only valid for 12 months from the date of issue of this letter.

Should it be necessary to contact us please quote our above reference number relating to this application by email at southernwaterplanning@southernwater.co.uk

Yours sincerely,

Future Growth Planning Team
Developer Services

southernwater.co.uk/developing-building/planning-your-development

from Southern Water

Dani Lister
Enzygo Ltd
Offices 3-4
Samuel House
5 Fox Valley Way
Sheffield
South Yorkshire
S36 2AA

Your ref

Our ref
14157

Date
14 March 2024

Contact
Tel 0330 303 0119

Dear Mr Lister,

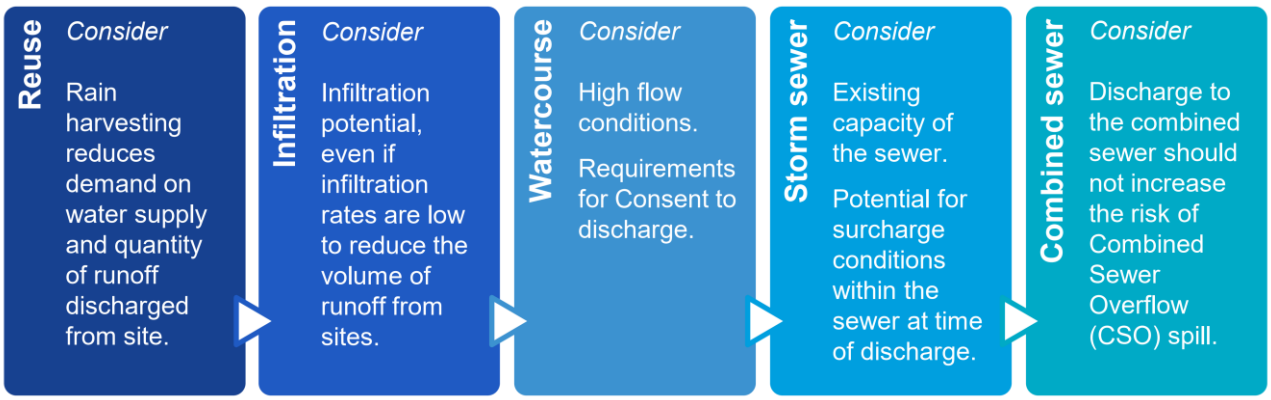
Level 1 Capacity Check Enquiry: Land east of Halterworth Lane, Romsey, Hampshire, SO51 9AE.

We have completed the capacity check for the above development site and the results are as follows:

Surface Water

There is currently adequate capacity in the local surface water sewerage network to accommodate a surface water flow of **21.91 l/s** for the above development at manhole reference SU3721**3753 (12.05 l/s),** SU3721**2655 (12.05 l/s)** and SU3721**2251 (9.86 l/s)**.

Although capacity in the surface water network has been identified, in all situations where surface water is being considered for discharge to our network, we require the below hierarchy for surface water to be followed which is reflected in part H3 of the Building Regulations. Whilst reuse does not strictly form part of this hierarchy, Southern Water would encourage the consideration of reuse for new developments.



Guidance on Building Regulations is here: gov.uk/government/publications/drainage-and-waste-disposal-approved-document-h

We would welcome the opportunity to engage with you on the design for disposal of surface water, with a particular focus on the potential for incorporating Sustainable Drainage Systems (SuDS), for this development at the earliest opportunity and we recommend that civil engineers and landscape architects work together and with Southern Water.

Where a surface water connection to the foul or combined sewer is being considered, this should be agreed by the Lead Local Flood Authority, in consultation with Southern Water.

It should be noted that although the above assessment indicates that there is capacity available for your proposed surface water flows the LLFA (Local Lead Flood Authority) may impose/request that a lower flow is discharged to the public surface water sewer.

If the excess surface water flows are to be attenuated on site, it could have a significant effect on any proposed Sewer Adoption (S104) Agreements. Any attenuation proposals should be agreed before any works are implemented on site. Where capacity is limited/restricted, agreement should be sought if you are to include any highway drainage within your proposals as Southern Water is not obligated to accept highway flows.

Connecting to our network

It should be noted that this information is only a hydraulic assessment of the existing sewerage network and does not grant approval for a connection to the public sewerage system. A formal Sewer Connection (S106) application is required to be completed and approved by Southern Water Services. To make an application visit: developerservices.southernwater.co.uk

Please note the information provided above does not grant approval for any designs/drawings submitted for the capacity analysis. The results quoted above are only valid for 12 months from the date of issue of this letter.

Please get in touch via the Get Connected customer dashboard if you have any queries.

Yours sincerely,

Future Growth Planning Team
Developer Services

southernwater.co.uk/developing-building/planning-your-development

Appendix 3 – Environment Agency Correspondence

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.
Attribution	Contains Environment Agency information © Environment Agency and/or database rights.

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.
Attribution	Contains Environment Agency information © Environment Agency and/or database rights.

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

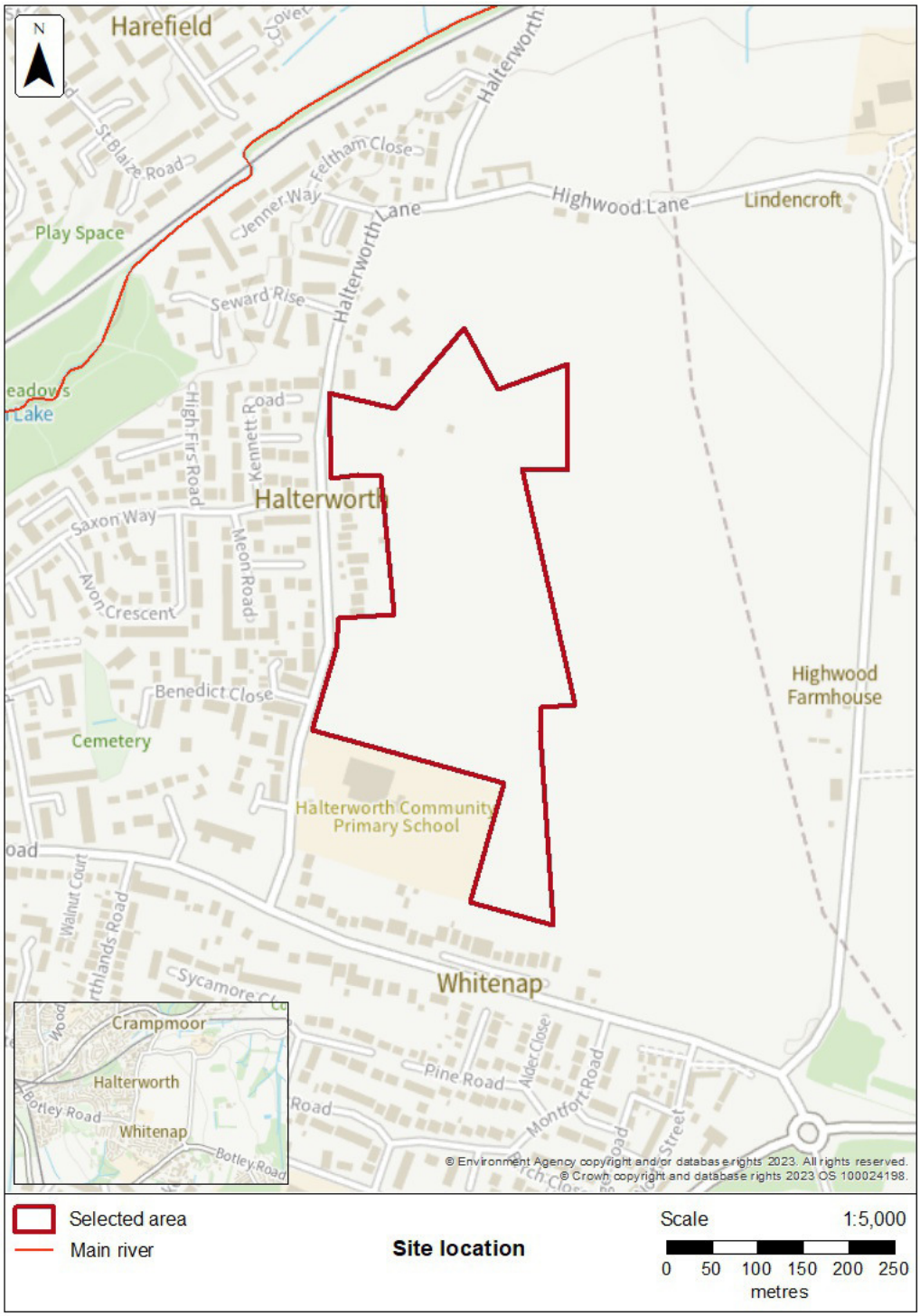
Aimee Etheridge
Partnership and Strategic Overview team, Hampshire and Isle of Wight
Environment Agency

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

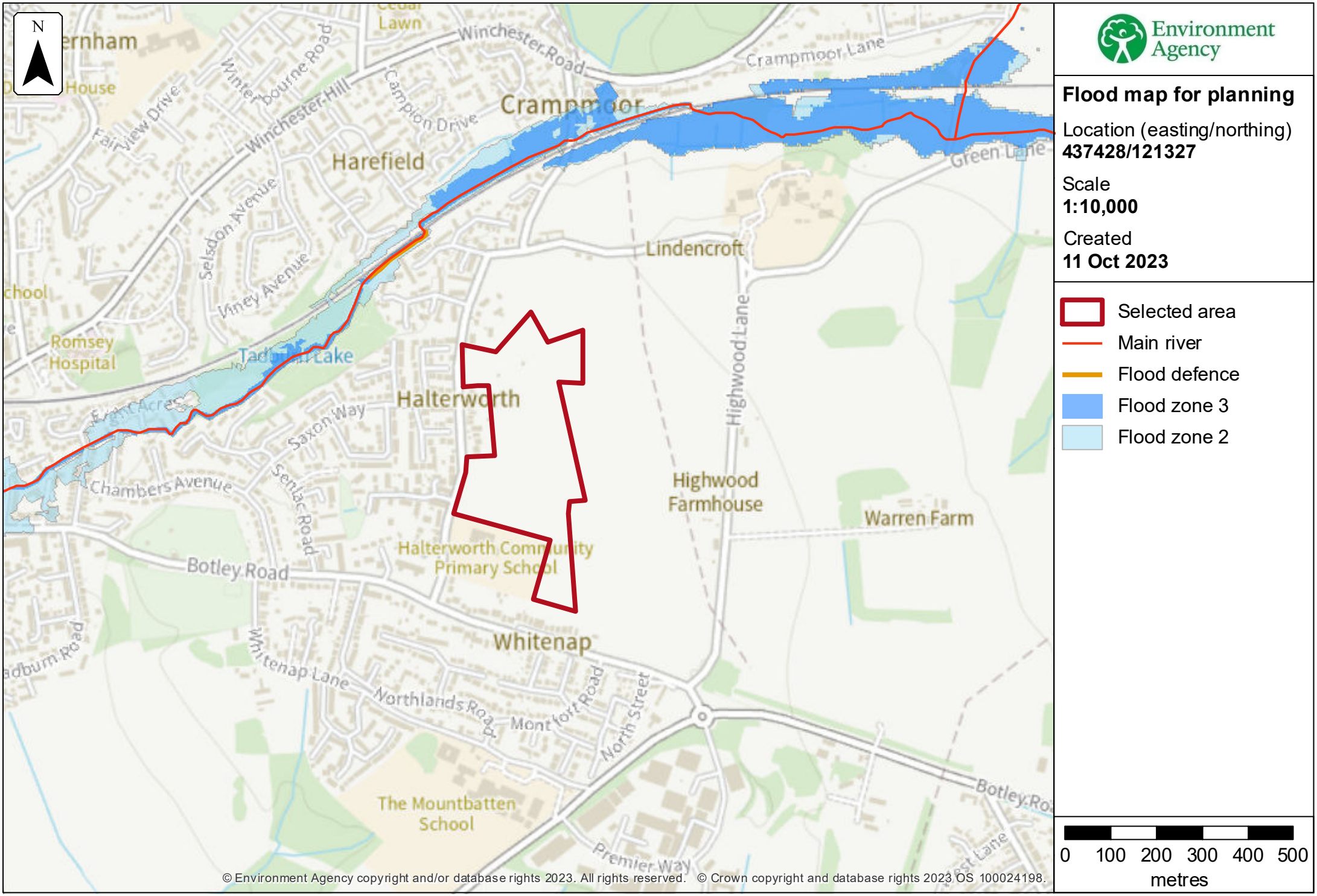
Flood zone 2 shows the area at risk of flooding for an undefended flood event with:

- 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
Senlac Road
Whitenap Lane
Northlands Road
Montfort Road
North Street
Premier Way
Viney Avenue
Selsdon Avenue
Campion Drive
Winterbourne Road
Fairview Drive
Winchester Hill
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Flood defences and attributes

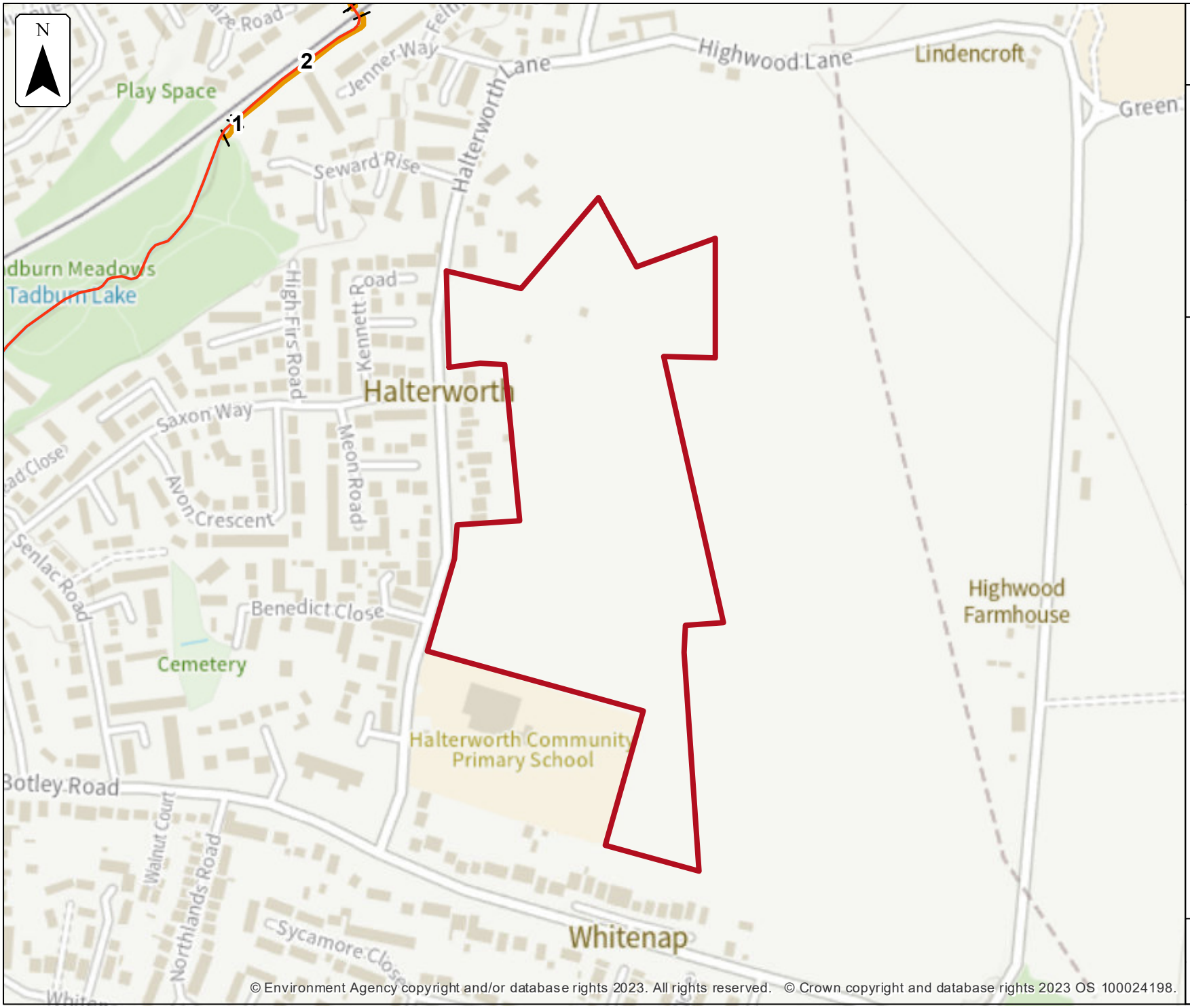
The flood defences map shows the location of the flood defences present.

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

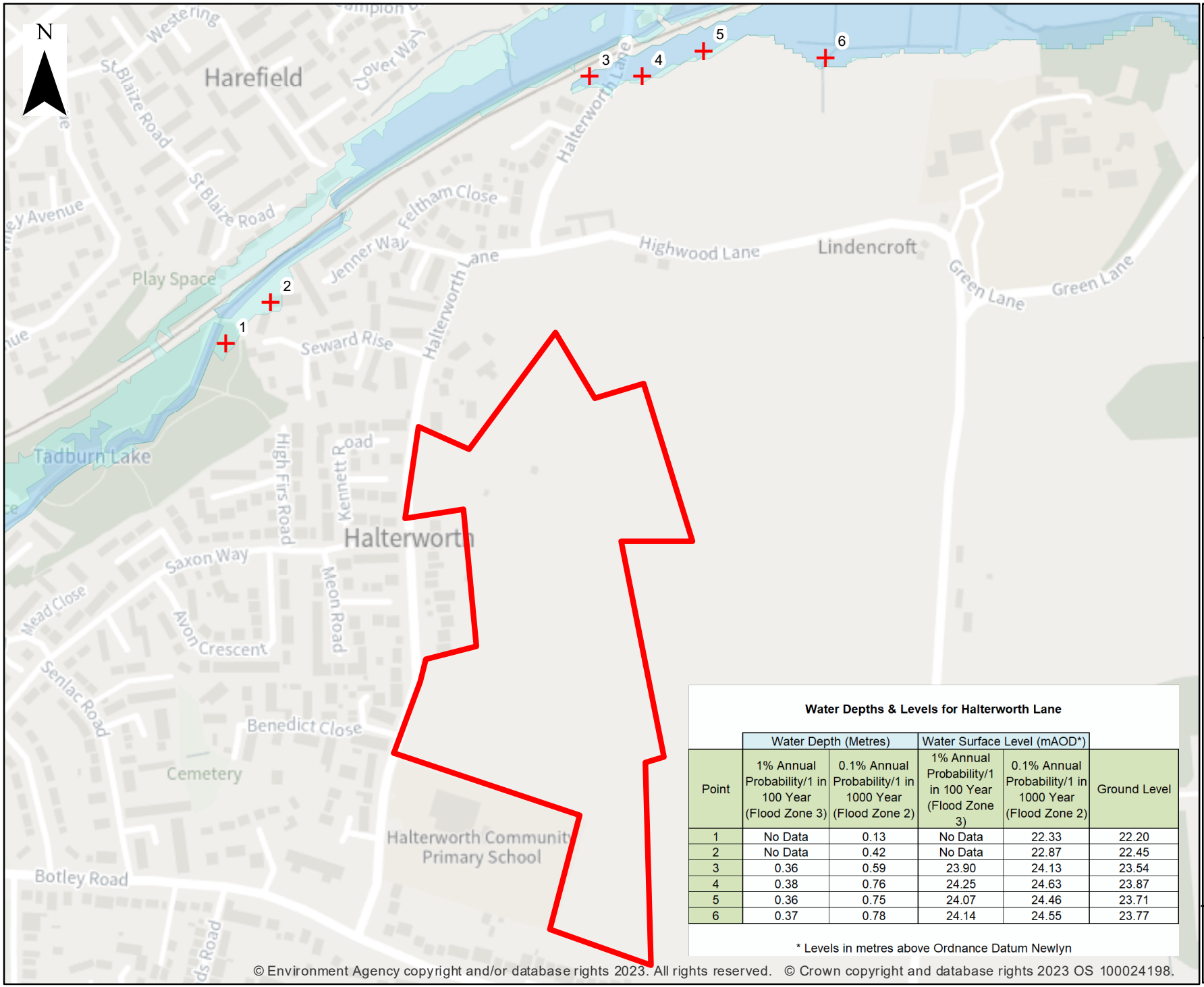
0 50 100 150 200 250
metres

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

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.

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

SJ32SE/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		

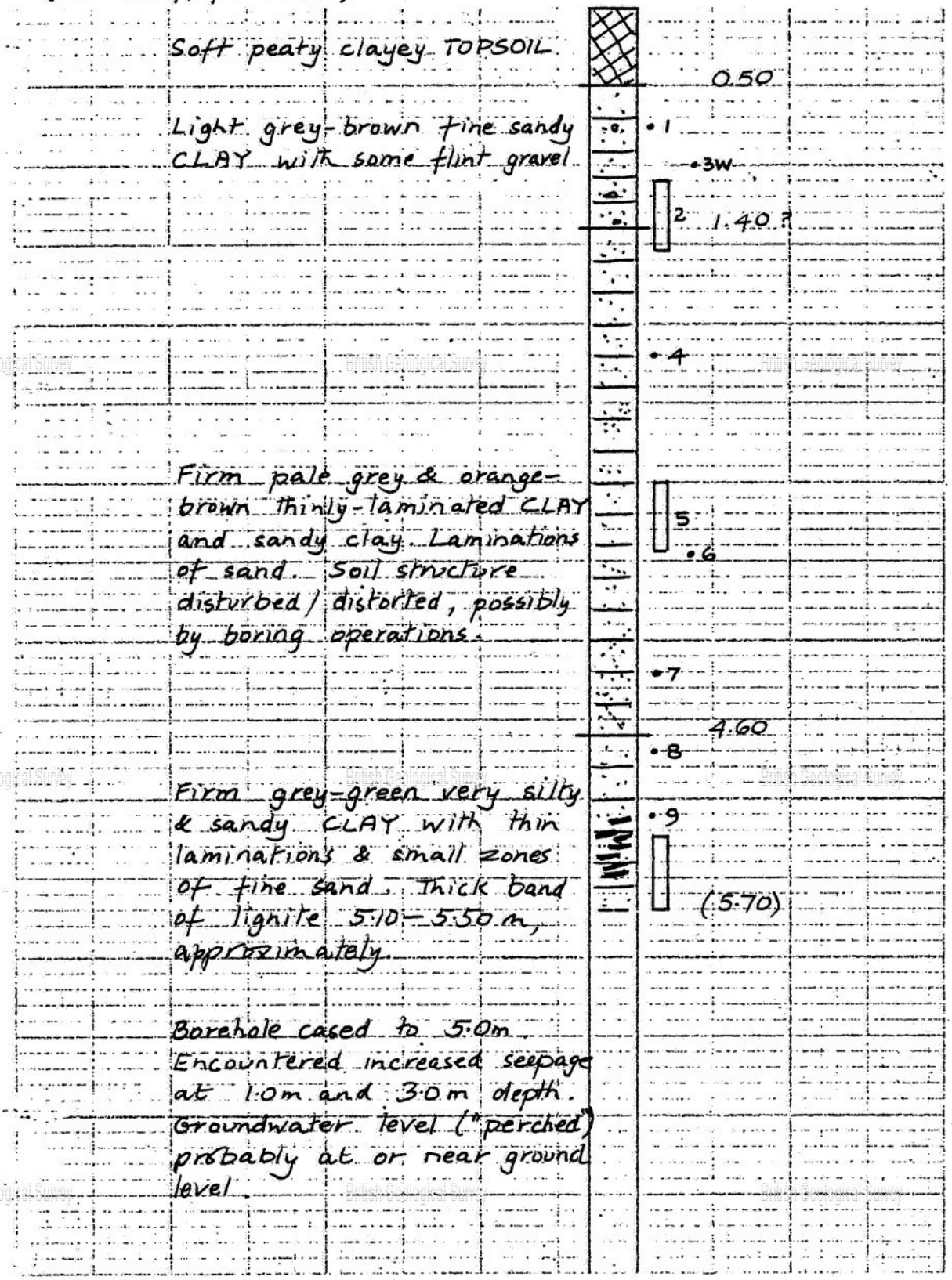
Bottom of Borehole

12/8

Notes

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

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



100 mm dia. core sample

o disturbed sample

I N blows/ft in standard penetration test

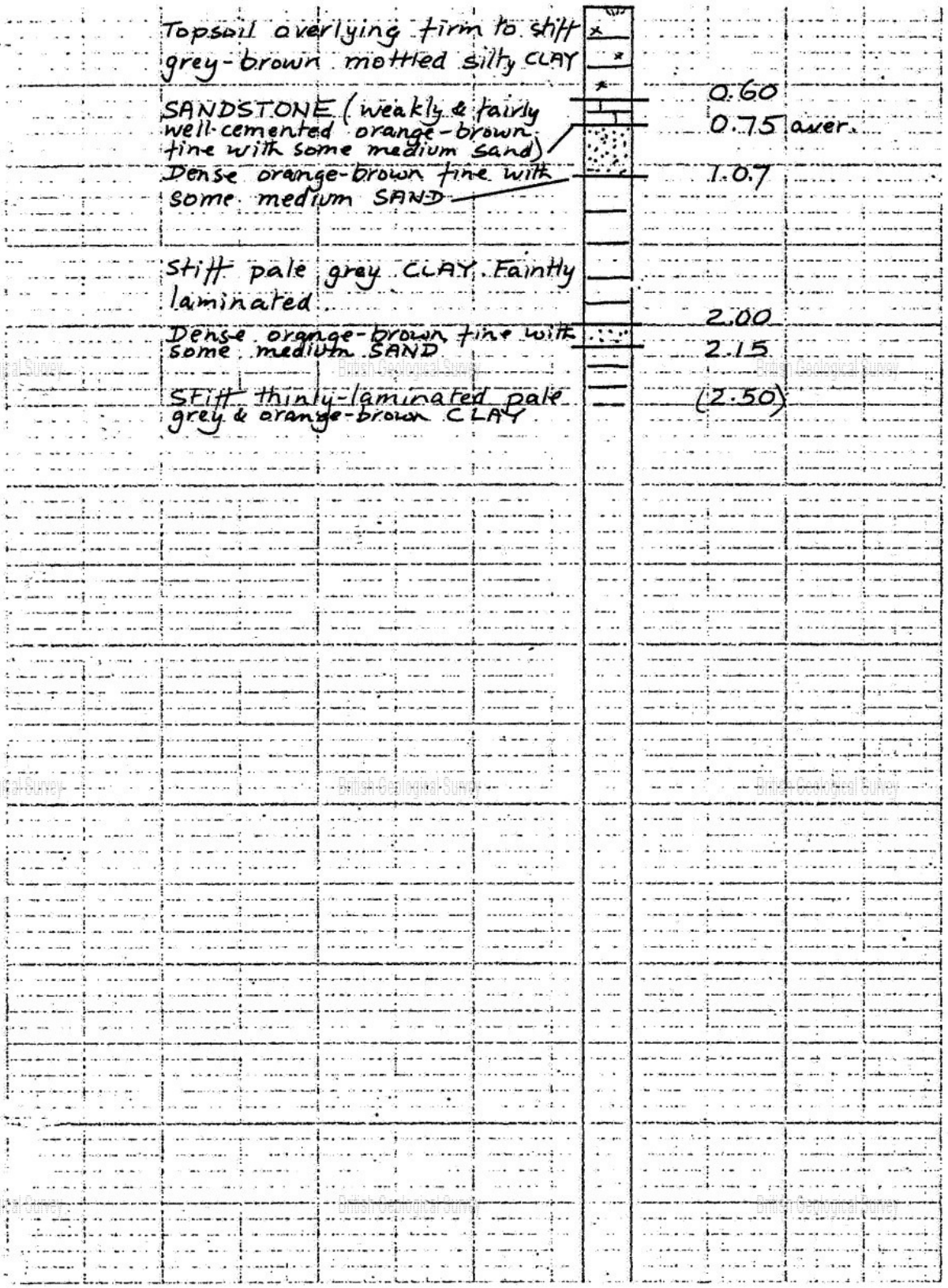
NR ... non-recovery of sample

oW .... water sample

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

W .... water sample

I N blows/ft in standard penetration test

Scale: 1 in for 1 m

Appendix 5 – Soakaway Testing Results

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
		Groundwater Level.....	Dry m

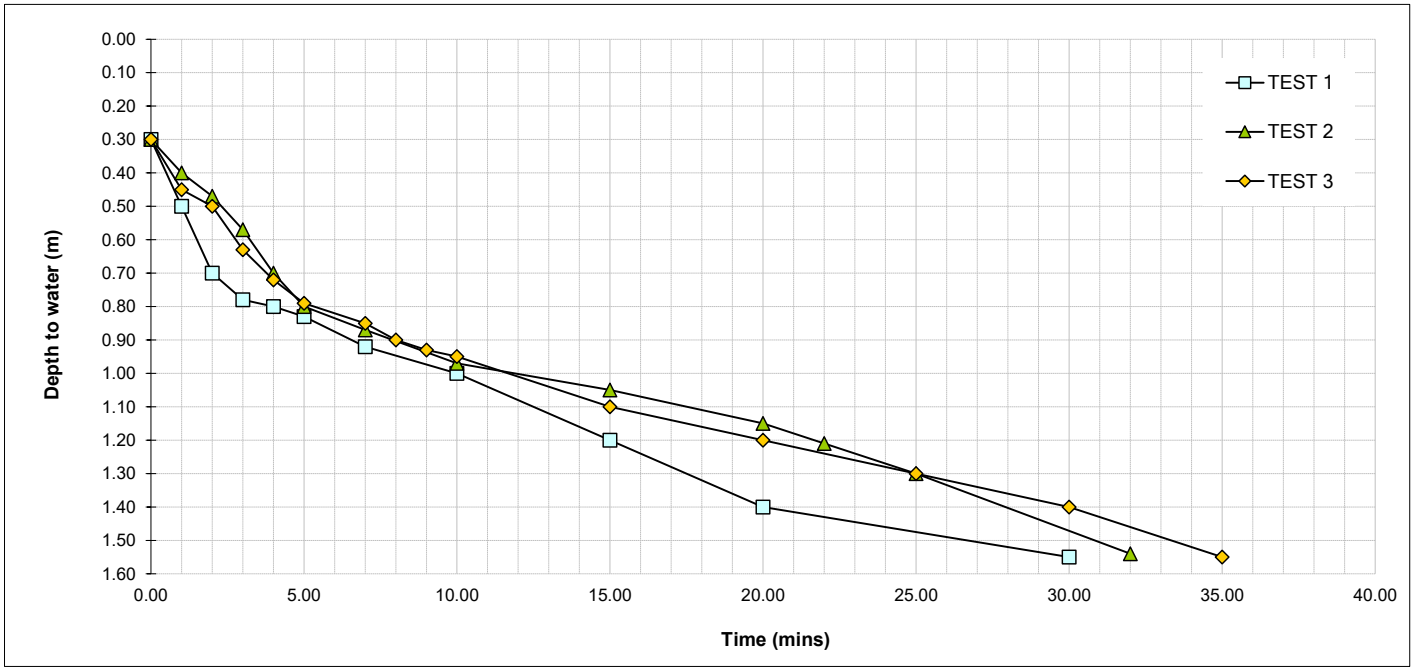
SOIL INFILTRATION RATE TEST
See B.R.E. Digest 365, 1991, Soakaway Design.

Remarks -
Please refer to the exploratory hole log 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**



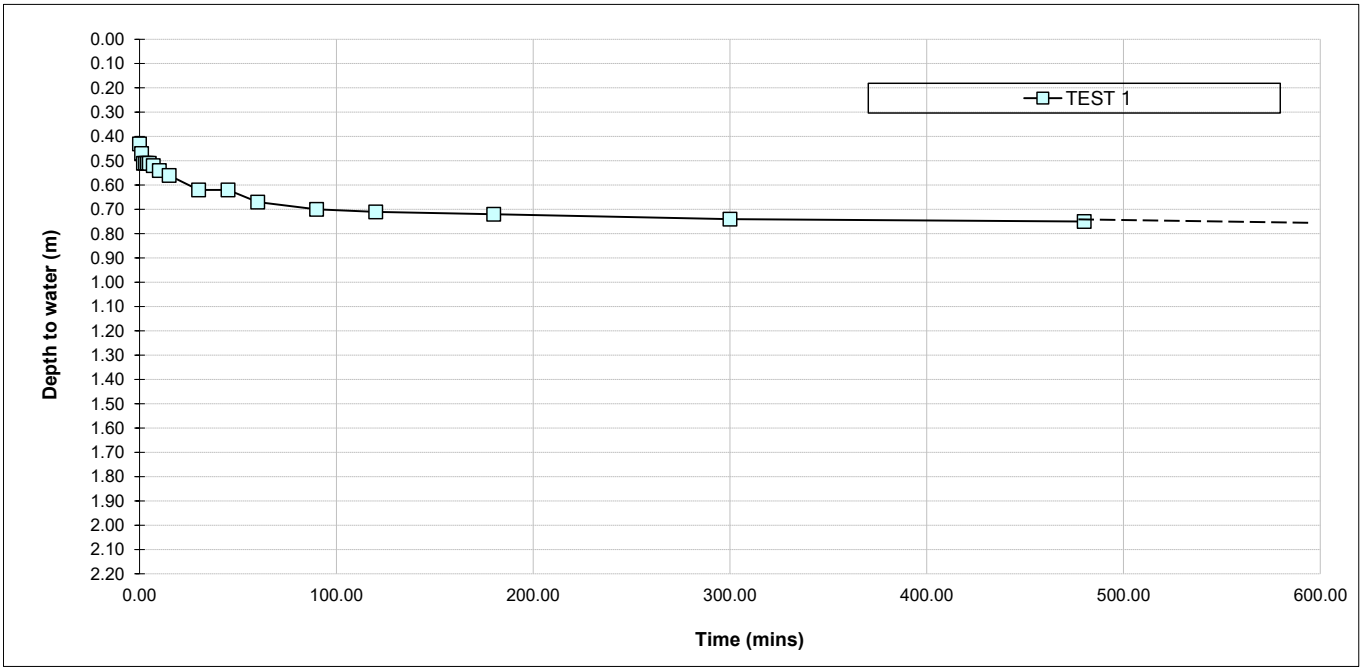
Site..... Halterworth Lane Job Number..... SHF.1132.258 Date of Test..... 30/10/2023	Trial Pit Number..... TP2 Length..... 2.10 m Width..... 0.60 m Depth..... 1.50 m Groundwater Level..... 1.2 m	

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

Remarks -
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.

		TEST 1
		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**



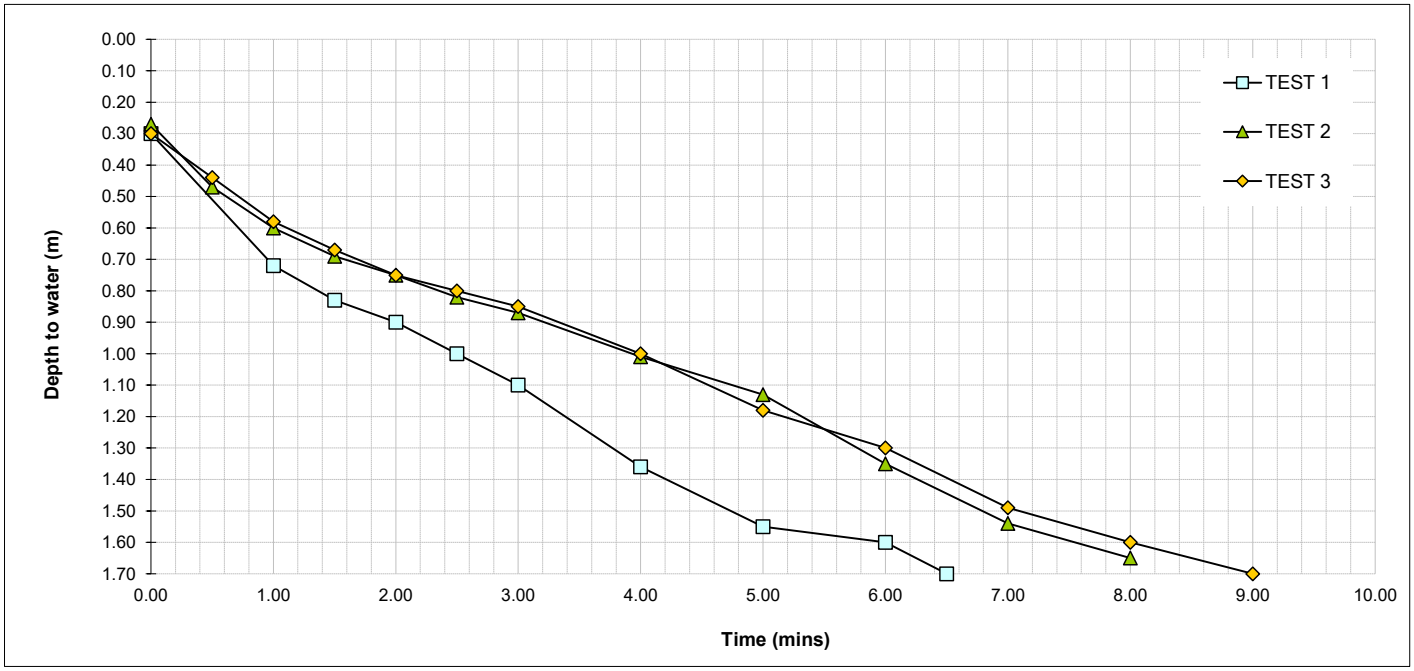
Site.....	Halterworth Lane		Trial Pit Number.....	TP3	
Job Number.....	SHF.1132.258		Length.....	2.00	m
Date of Test.....	30/10/2023		Width.....	0.60	m
			Depth.....	1.70	m
SOIL INFILTRATION RATE TEST			Groundwater Level.....	Dry	m
See B.R.E. Digest 365, 1991, Soakaway Design.					

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

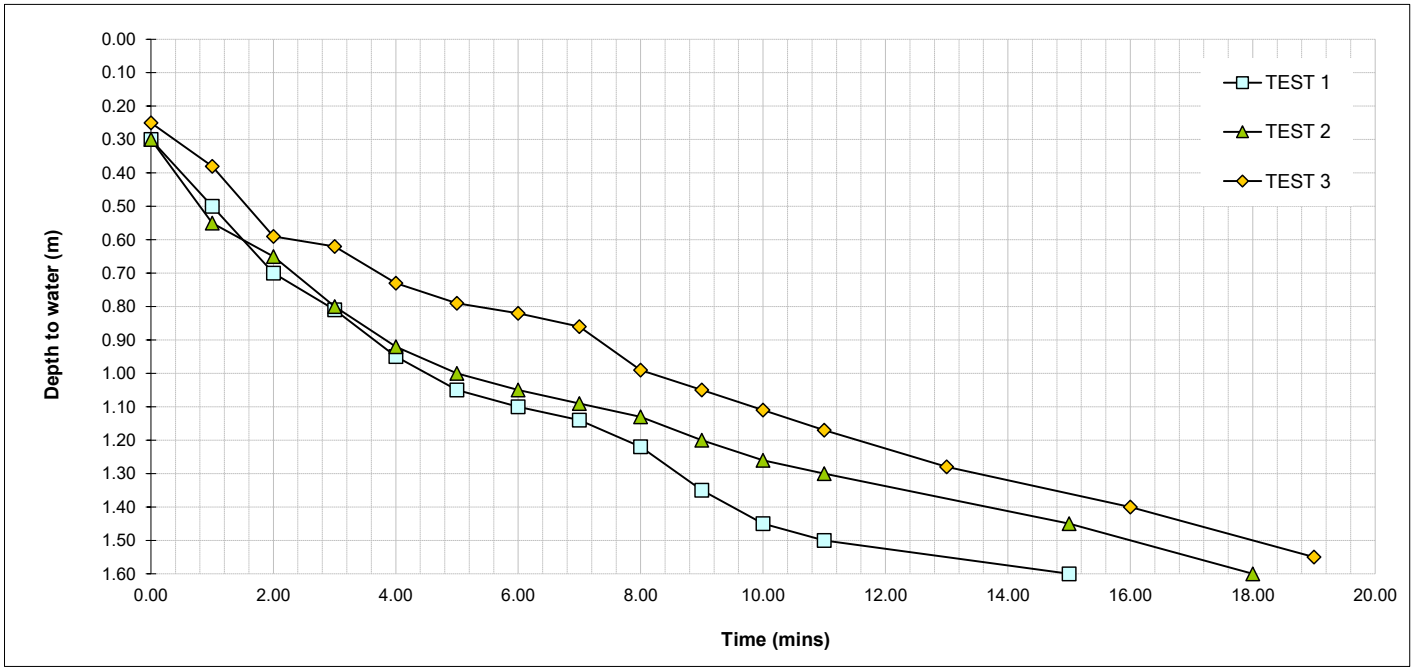
SOIL INFILTRATION RATE TEST
See B.R.E. Digest 365, 1991, Soakaway Design.

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

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**

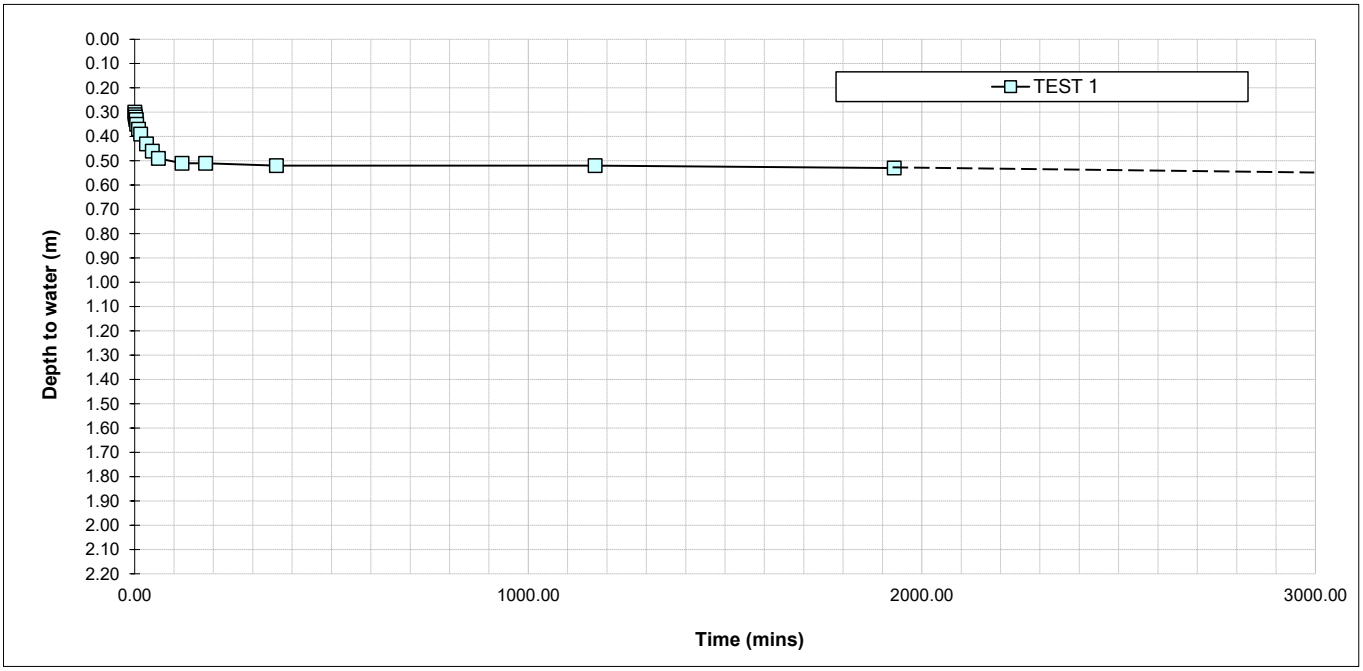


Site..... Halterworth Lane Job Number..... SHF.1132.258 Date of Test..... 30/10/2023		Trial Pit Number..... TP5 Length..... 2.10 m Width..... 0.60 m Depth..... 1.70 m	
SOIL INFILTRATION RATE TEST See B.R.E. Digest 365, 1991, Soakaway Design.		Groundwater Level..... Dry m	

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**

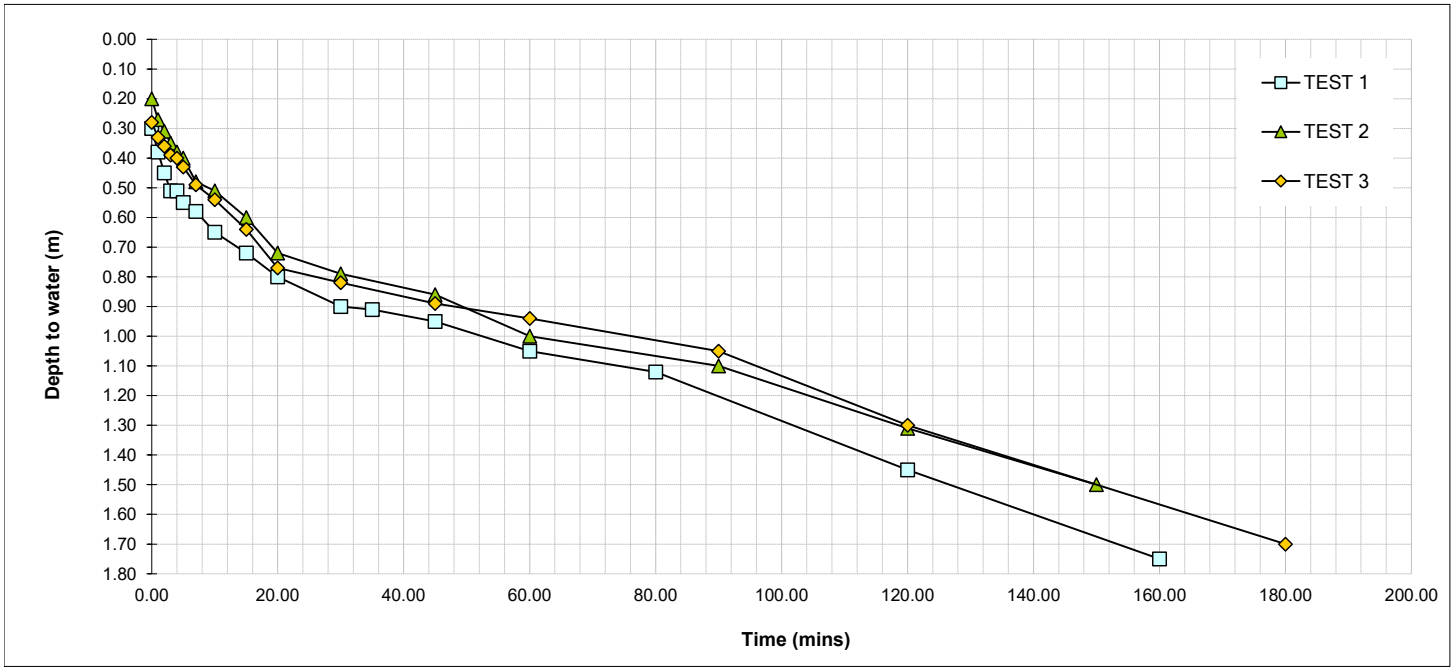


Site.....	Halterworth Lane		Trial Pit Number.....	TP6	
Job Number.....	SHF.1132.258		Length.....	2.10	m
Date of Test.....	30/10/2023		Width.....	0.60	m
			Depth.....	1.80	m
SOIL INFILTRATION RATE TEST			Groundwater Level.....	Dry	m
See B.R.E. Digest 365, 1991, Soakaway Design.					

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

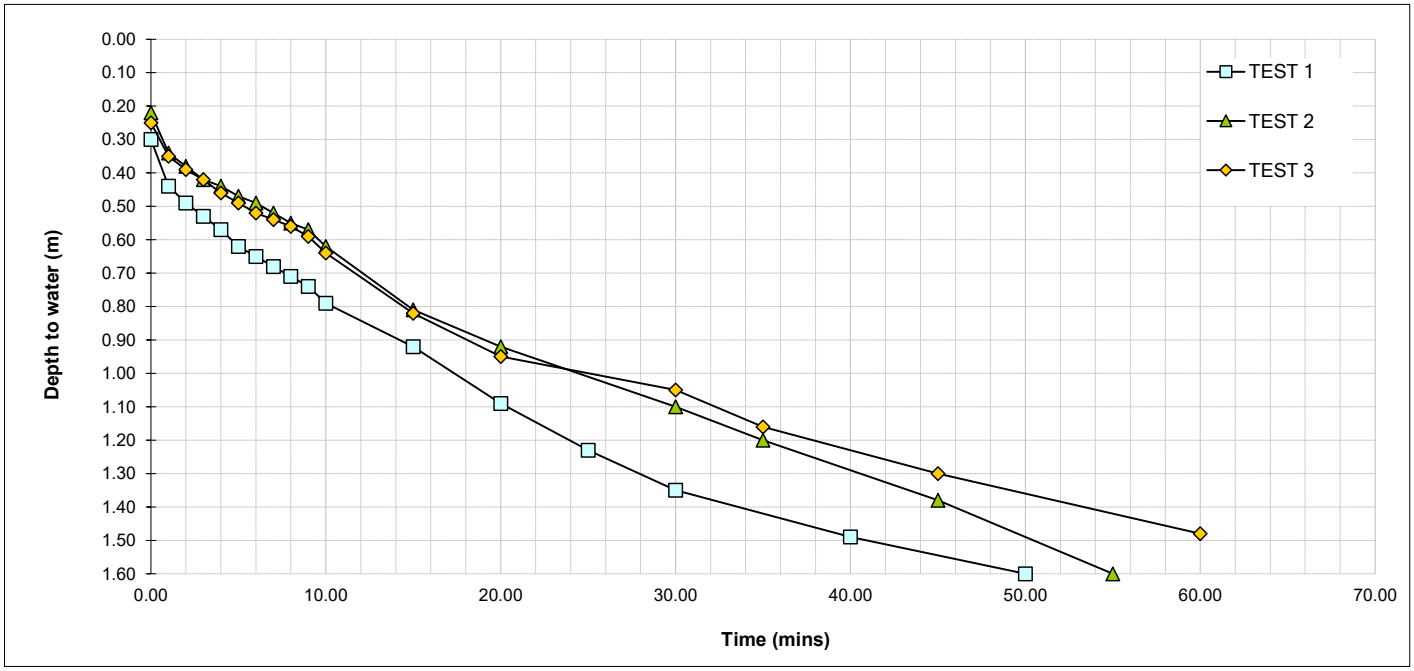
SOIL INFILTRATION RATE TEST
See B.R.E. Digest 365, 1991, Soakaway Design.

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	Trial Pit Number.....	TP8
Job Number.....	SHF.1132.258	Length.....	2.80 m
Date of Test.....	30/10/2023	Width.....	0.60 m
		Depth.....	1.80 m
		Groundwater Level.....	Dry m

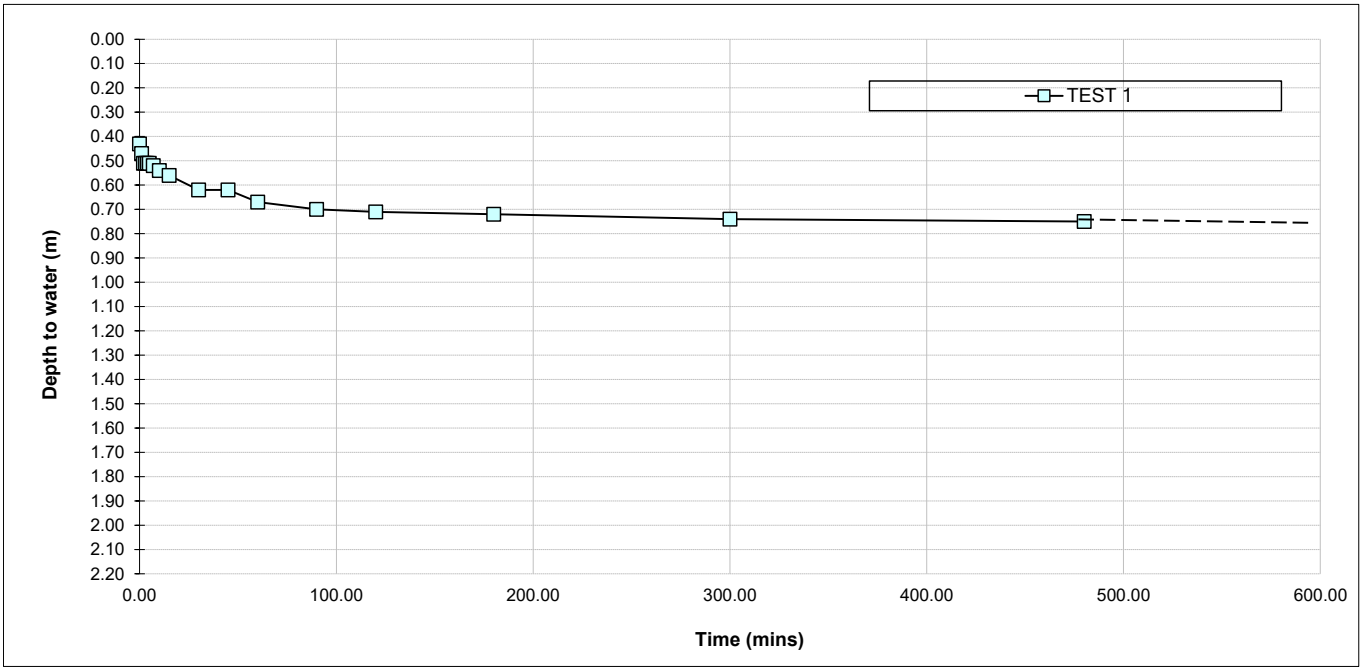
SOIL INFILTRATION RATE TEST
See B.R.E. Digest 365, 1991, Soakaway Design.

Remarks -
Please refer to the exploratory hole log TP8.
Data extrapolated due to insufficient uptake.

TEST 1	
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**



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
		Groundwater Level.....	Dry m

SOIL INFILTRATION RATE TEST

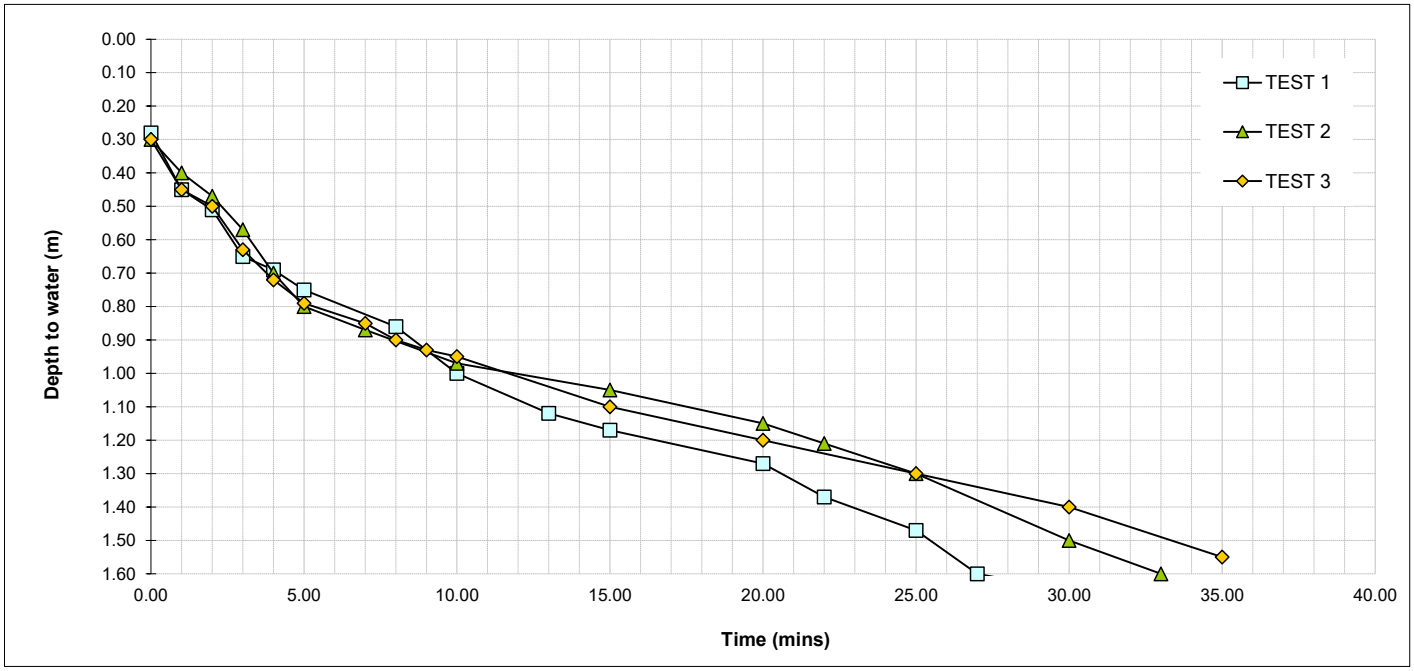
See B.R.E. Digest 365, 1991, Soakaway Design.

Remarks -
Please refer to the exploratory hole log 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**



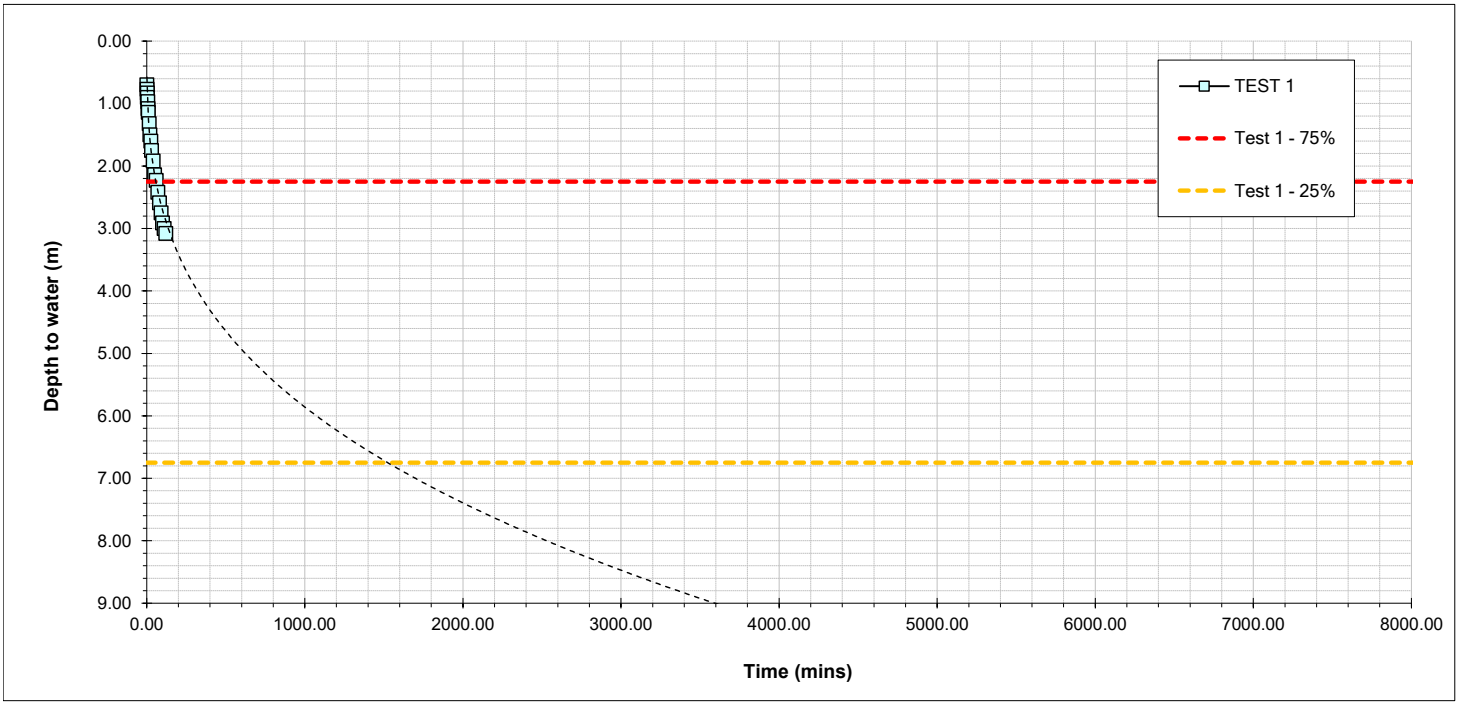
Site.....	Halterworth Lane, Romsey		Soakaway Number.....	BH3	
Job Number.....	SHF.1132.258		Diameter	0.15	m
Date of Test.....	31/10/2023		Casing Depth	4.00	m
			Borehole Depth.....	9.00	m
BOREHOLE SOIL INFILTRATION RATE TEST			Groundwater Level.....	Dry	m
See B.R.E. Digest 365, 1991, Soakaway Design.					

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**



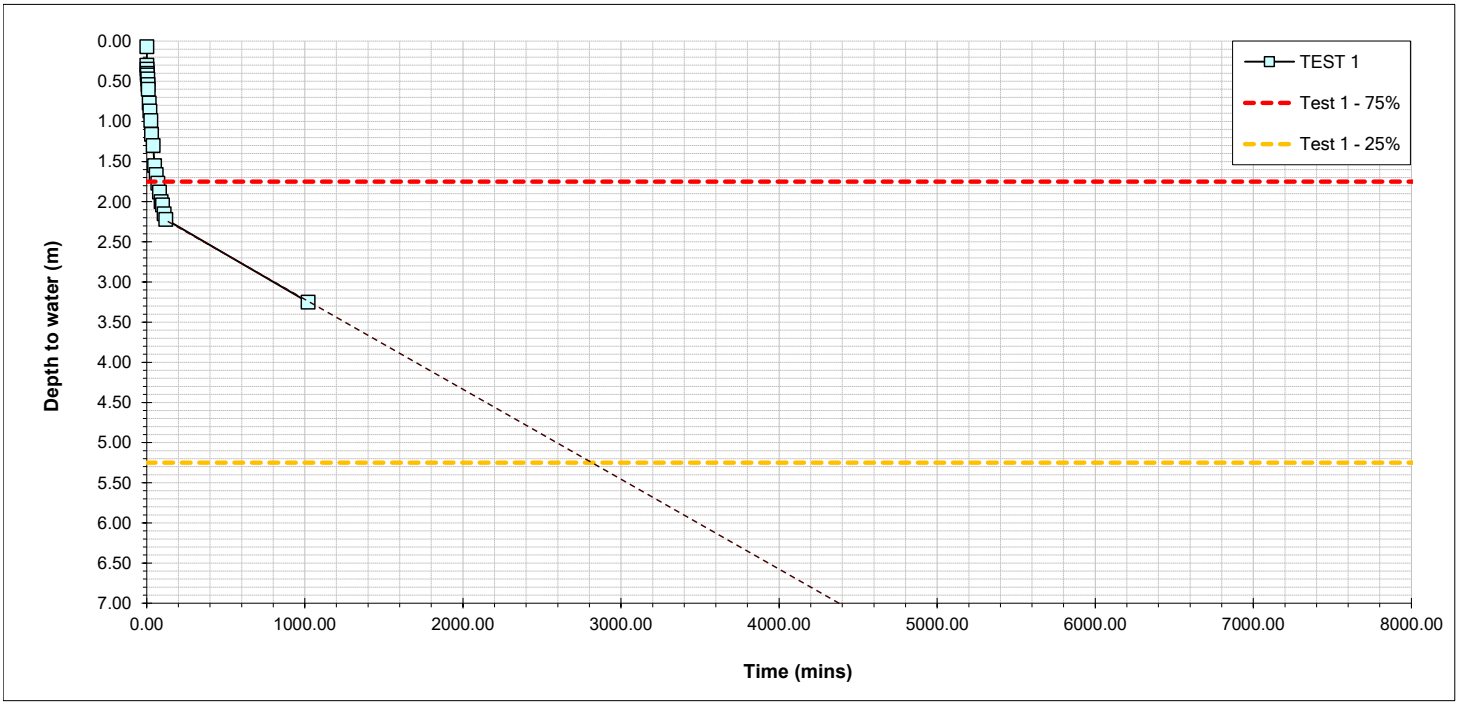
Site.....	Halterworth Lane, Romsey		Soakaway Number.....	BH2	
Job Number.....	SHF.1132.258		Diameter	0.15	m
Date of Test.....	01/11/2023		Casing Depth	4.20	m
			Borehole Depth.....	7.00	m
BOREHOLE SOIL INFILTRATION RATE TEST			Groundwater Level.....	Dry	m
See B.R.E. Digest 365, 1991, Soakaway Design.					

Remarks -
Please refer to BH2 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	0.30				
2.0	0.35				
3.0	0.40				
4.0	0.42				
10.0	0.60				
30.0	1.16				
50.0	1.55				
60.0	1.66				
70.0	1.77				
80.0	1.88				
90.0	2.00				
100.0	2.04				
110.0	2.15				
120.0	2.22				
1020.0	3.25				
2800.0	5.25				

Effective Storage Depth	m	7.00		
75% Effective Storage Depth	m	5.25		
(i.e. depth below GL)	m	**1.75**		
25% Effective Storage Depth	m	1.75		
(i.e. depth below GL)	m	**5.25**		
Effective Storage Depth 75%-25%	m	3.50		
Time to fall to 75% effective depth	mins	70.00		
Time to fall to 25% effective depth	mins	2800.00		
V (75%-25%)	m3	0.06		
a	m2	1.34		
t (75%-25%)	mins	2730.00		
SOIL INFILTRATION RATE	m/s	**2.82E-07**		

DESIGN SOIL INFILTRATION RATE, f	**2.82E-07**	**m/s**



Appendix 6 - Groundwater Monitoring

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

Site				BH1
Halterworth Lane, Romsey				
Job No: SHF.1132.258	Dates: Start 30-10-23, Finish 30-10-23	Ground Level (m)	Co-Ordinates	
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}			

General Remarks

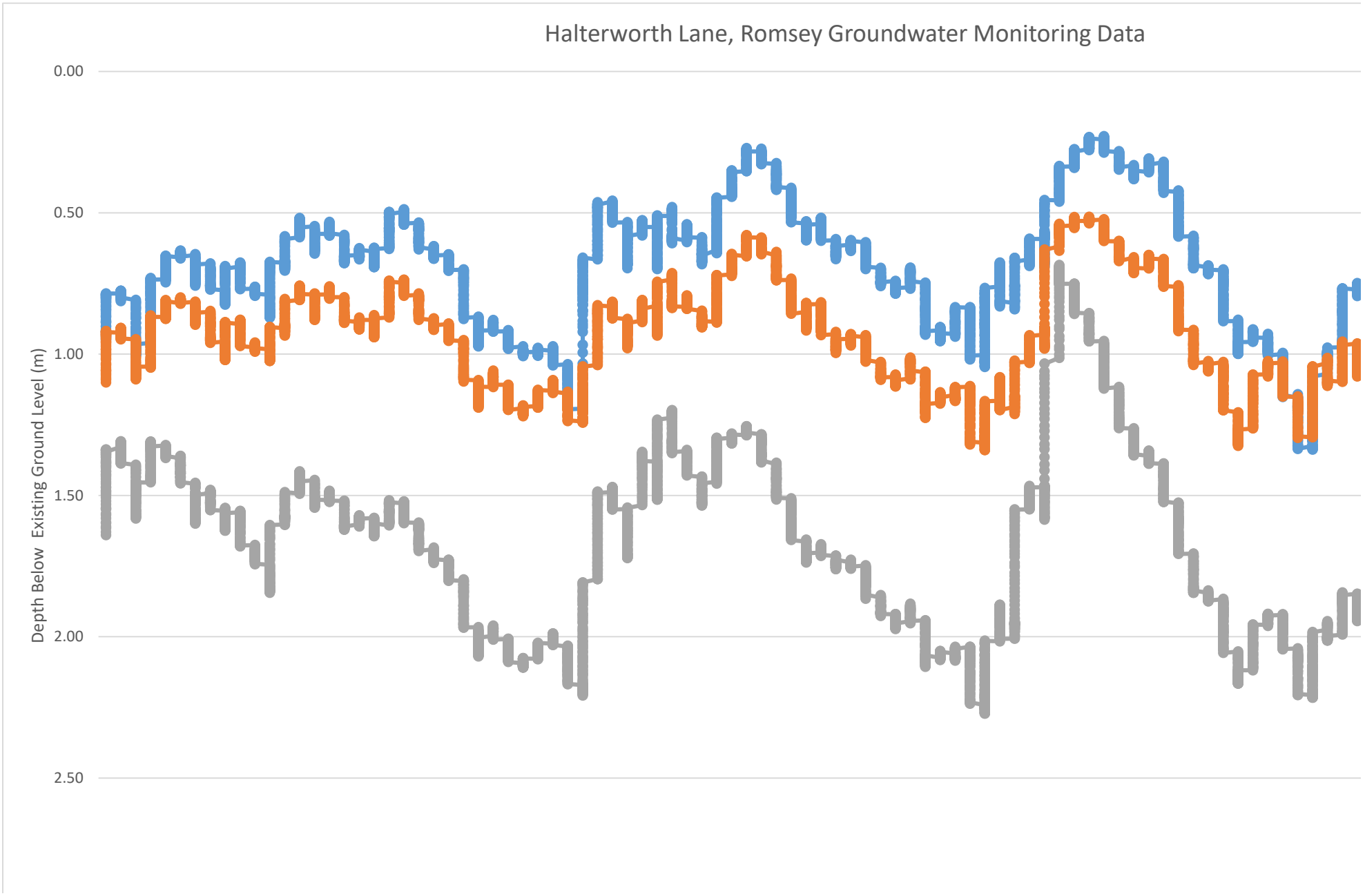
1. Hand excavated inspection pit from ground level to 1.00m begl.
2. D - Disturbed Sample; ES - Environmental Sample; B - Bulk Sample.
3. Densities and soil consistencies are based on insitu tests.
4. No visual or olfactory evidence of contamination observed.
5. Groundwater was not encoutered.
6. SPT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


Halterworth Lane, Romsey Groundwater Monitoring Data
Depth Below Existing Ground Level (m)
0.00
0.50
1.00
1.50
2.00
2.50

Appendix 7 - Drainage Calculations

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Dani Lister
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:	50.98987° N
Longitude:	1.46809° W
Reference:	4142054048
Date:	Dec 07 2023 09:24

Runoff estimation approach

FEH Statistical

Site characteristics

Total site area (ha): 8.35

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):		29.5
1 in 1 year (l/s):		25.07
1 in 30 years (l/s):		67.84
1 in 100 year (l/s):		94.09
1 in 200 years (l/s):		110.32

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Dani Lister
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:	50.99041° N
Longitude:	1.46796° W
Reference:	1237220836
Date:	Jan 03 2024 11:22

Runoff estimation approach

FEH Statistical

Site characteristics

Total site area (ha): 7.2

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):		25.43
1 in 1 year (l/s):		21.62
1 in 30 years (l/s):		58.5
1 in 100 year (l/s):		81.13
1 in 200 years (l/s):		95.12

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

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	0.818	0.818	9.9	606.6	O K
30 min Summer	1.020	1.020	9.9	811.8	O K
60 min Summer	1.214	1.214	9.9	1032.3	O K
120 min Summer	1.314	1.314	9.9	1155.5	O K
180 min Summer	1.367	1.367	9.9	1224.3	O K
240 min Summer	1.403	1.403	9.9	1270.4	O K
360 min Summer	1.446	1.446	9.9	1328.7	O K
480 min Summer	1.470	1.470	9.9	1361.4	O K
600 min Summer	1.483	1.483	9.9	1379.3	O K
720 min Summer	1.489	1.489	9.9	1387.5	O K
960 min Summer	1.489	1.489	9.9	1386.5	O K
1440 min Summer	1.465	1.465	9.9	1354.4	O K
2160 min Summer	1.429	1.429	9.9	1305.0	O K
2880 min Summer	1.397	1.397	9.9	1263.2	O K
4320 min Summer	1.342	1.342	9.9	1191.3	O K
5760 min Summer	1.294	1.294	9.9	1131.2	O K
7200 min Summer	1.256	1.256	9.9	1083.6	O K
8640 min Summer	1.223	1.223	9.9	1043.5	O K
10080 min Summer	1.195	1.195	9.9	1010.0	O K
15 min Winter	0.818	0.818	9.9	606.6	O K
30 min Winter	1.020	1.020	9.9	811.9	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	137.250	0.0	602.8	27
30 min Summer	92.038	0.0	770.6	41
60 min Summer	59.069	0.0	1056.1	70
120 min Summer	33.764	0.0	1205.8	130
180 min Summer	24.338	0.0	1301.6	190
240 min Summer	19.311	0.0	1374.0	248
360 min Summer	13.979	0.0	1480.4	366
480 min Summer	11.136	0.0	1540.0	486
600 min Summer	9.348	0.0	1546.7	604
720 min Summer	8.111	0.0	1539.6	722
960 min Summer	6.500	0.0	1519.4	960
1440 min Summer	4.768	0.0	1479.8	1222
2160 min Summer	3.506	0.0	2266.8	1604
2880 min Summer	2.830	0.0	2438.0	2016
4320 min Summer	2.111	0.0	2674.1	2856
5760 min Summer	1.732	0.0	2991.9	3688
7200 min Summer	1.501	0.0	3240.4	4536
8640 min Summer	1.344	0.0	3481.9	5360
10080 min Summer	1.231	0.0	3719.0	6152
15 min Winter	137.250	0.0	602.8	26
30 min Winter	92.038	0.0	770.6	41

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

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	1.214	1.214	9.9	1032.9	O K
120 min Winter	1.315	1.315	9.9	1157.0	O K
180 min Winter	1.369	1.369	9.9	1226.8	O K
240 min Winter	1.405	1.405	9.9	1273.7	O K
360 min Winter	1.450	1.450	9.9	1334.0	O K
480 min Winter	1.476	1.476	9.9	1368.5	O K
600 min Winter	1.490	1.490	9.9	1388.4	O K
720 min Winter	1.497	1.497	9.9	1398.7	O K
960 min Winter	1.500	1.500	9.9	1402.3	Flood Risk
1440 min Winter	1.474	1.474	9.9	1366.9	O K
2160 min Winter	1.426	1.426	9.9	1301.2	O K
2880 min Winter	1.378	1.378	9.9	1238.3	O K
4320 min Winter	1.281	1.281	9.9	1114.9	O K
5760 min Winter	1.188	1.188	9.9	1001.5	O K
7200 min Winter	1.101	1.101	9.9	901.9	O K
8640 min Winter	1.015	1.015	9.9	806.7	O K
10080 min Winter	0.910	0.910	9.9	697.6	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
60 min Winter	59.069	0.0	1056.1	70
120 min Winter	33.764	0.0	1205.8	128
180 min Winter	24.338	0.0	1301.5	186
240 min Winter	19.311	0.0	1373.9	244
360 min Winter	13.979	0.0	1480.0	360
480 min Winter	11.136	0.0	1538.3	476
600 min Winter	9.348	0.0	1543.3	590
720 min Winter	8.111	0.0	1535.4	704
960 min Winter	6.500	0.0	1514.5	926
1440 min Winter	4.768	0.0	1475.5	1340
2160 min Winter	3.506	0.0	2266.8	1668
2880 min Winter	2.830	0.0	2438.1	2136
4320 min Winter	2.111	0.0	2689.1	3068
5760 min Winter	1.732	0.0	2991.9	3976
7200 min Winter	1.501	0.0	3240.5	4832
8640 min Winter	1.344	0.0	3482.0	5712
10080 min Winter	1.231	0.0	3719.4	6560

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

Tank or Pond Structure

Invert Level (m) 0.000

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	546.0	1.500	1388.0	1.800	1550.0

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0138-9900-1500-9900
Design Head (m)	1.500
Design Flow (l/s)	9.9
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	138
Invert Level (m)	0.000
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.500	9.9
Flush-Flo™	0.438	9.9
Kick-Flo®	0.929	7.9
Mean Flow over Head Range	-	8.6

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.0	1.200	8.9	3.000	13.7	7.000	20.6
0.200	8.9	1.400	9.6	3.500	14.8	7.500	21.3
0.300	9.6	1.600	10.2	4.000	15.7	8.000	21.9
0.400	9.9	1.800	10.8	4.500	16.7	8.500	22.6
0.500	9.8	2.000	11.3	5.000	17.5	9.000	23.2
0.600	9.7	2.200	11.9	5.500	18.3	9.500	23.8
0.800	9.0	2.400	12.4	6.000	19.1		
1.000	8.2	2.600	12.8	6.500	19.9		

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

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	0.783	0.783	12.1	741.3	O K
30 min Summer	0.989	0.989	12.1	992.5	O K
60 min Summer	1.190	1.190	12.1	1262.6	O K
120 min Summer	1.295	1.295	12.1	1414.0	O K
180 min Summer	1.352	1.352	12.1	1498.8	O K
240 min Summer	1.390	1.390	12.1	1555.8	O K
360 min Summer	1.436	1.436	12.1	1628.5	O K
480 min Summer	1.463	1.463	12.1	1669.6	O K
600 min Summer	1.477	1.477	12.1	1692.6	O K
720 min Summer	1.484	1.484	12.1	1703.8	O K
960 min Summer	1.484	1.484	12.1	1704.4	O K
1440 min Summer	1.462	1.462	12.1	1668.2	O K
2160 min Summer	1.425	1.425	12.1	1610.2	O K
2880 min Summer	1.392	1.392	12.1	1559.7	O K
4320 min Summer	1.334	1.334	12.1	1471.7	O K
5760 min Summer	1.284	1.284	12.1	1398.0	O K
7200 min Summer	1.244	1.244	12.1	1339.8	O K
8640 min Summer	1.210	1.210	12.1	1290.4	O K
10080 min Summer	1.180	1.180	12.1	1249.0	O K
15 min Winter	0.783	0.783	12.1	741.5	O K
30 min Winter	0.989	0.989	12.1	992.6	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	137.250	0.0	730.6	27
30 min Summer	92.038	0.0	938.8	41
60 min Summer	59.069	0.0	1287.3	70
120 min Summer	33.764	0.0	1469.2	130
180 min Summer	24.338	0.0	1585.2	188
240 min Summer	19.311	0.0	1672.7	248
360 min Summer	13.979	0.0	1800.5	366
480 min Summer	11.136	0.0	1874.9	486
600 min Summer	9.348	0.0	1887.9	604
720 min Summer	8.111	0.0	1879.2	722
960 min Summer	6.500	0.0	1852.6	960
1440 min Summer	4.768	0.0	1798.3	1222
2160 min Summer	3.506	0.0	2767.8	1604
2880 min Summer	2.830	0.0	2975.8	2016
4320 min Summer	2.111	0.0	3254.4	2856
5760 min Summer	1.732	0.0	3655.9	3688
7200 min Summer	1.501	0.0	3959.4	4536
8640 min Summer	1.344	0.0	4254.3	5360
10080 min Summer	1.231	0.0	4543.0	6152
15 min Winter	137.250	0.0	730.6	26
30 min Winter	92.038	0.0	938.9	41

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

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	1.191	1.191	12.1	1263.2	O K
120 min Winter	1.296	1.296	12.1	1415.5	O K
180 min Winter	1.354	1.354	12.1	1501.5	O K
240 min Winter	1.392	1.392	12.1	1559.5	O K
360 min Winter	1.440	1.440	12.1	1634.4	O K
480 min Winter	1.468	1.468	12.1	1677.5	O K
600 min Winter	1.483	1.483	12.1	1702.8	O K
720 min Winter	1.492	1.492	12.1	1716.3	O K
960 min Winter	1.496	1.496	12.1	1722.4	O K
1440 min Winter	1.470	1.470	12.1	1682.2	O K
2160 min Winter	1.421	1.421	12.1	1604.5	O K
2880 min Winter	1.372	1.372	12.1	1528.3	O K
4320 min Winter	1.270	1.270	12.1	1377.2	O K
5760 min Winter	1.172	1.172	12.1	1237.7	O K
7200 min Winter	1.082	1.082	12.1	1113.6	O K
8640 min Winter	0.988	0.988	12.1	991.5	O K
10080 min Winter	0.869	0.869	12.1	842.8	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
60 min Winter	59.069	0.0	1287.3	70
120 min Winter	33.764	0.0	1469.2	128
180 min Winter	24.338	0.0	1585.2	186
240 min Winter	19.311	0.0	1672.6	244
360 min Winter	13.979	0.0	1800.1	360
480 min Winter	11.136	0.0	1873.5	476
600 min Winter	9.348	0.0	1884.7	590
720 min Winter	8.111	0.0	1875.2	704
960 min Winter	6.500	0.0	1847.8	926
1440 min Winter	4.768	0.0	1794.2	1340
2160 min Winter	3.506	0.0	2767.8	1668
2880 min Winter	2.830	0.0	2976.0	2136
4320 min Winter	2.111	0.0	3273.5	3068
5760 min Winter	1.732	0.0	3656.0	3976
7200 min Winter	1.501	0.0	3959.6	4832
8640 min Winter	1.344	0.0	4254.5	5720
10080 min Winter	1.231	0.0	4543.7	6464

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

Model Details

Storage is Online Cover Level (m) 1.800

Tank or Pond Structure

Invert Level (m) 0.000

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	750.0	1.500	1610.0	1.800	1511.0

Hydro-Brake® Optimum Outflow Control

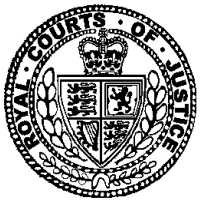
Unit Reference	MD-SHE-0151-1210-1500-1210
Design Head (m)	1.500
Design Flow (l/s)	12.1
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	151
Invert Level (m)	0.000
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1500

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.500	12.1
Flush-Flo™	0.437	12.1
Kick-Flo®	0.939	9.7
Mean Flow over Head Range	-	10.5

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.4	1.200	10.9	3.000	16.8	7.000	25.2
0.200	10.9	1.400	11.7	3.500	18.1	7.500	26.1
0.300	11.8	1.600	12.5	4.000	19.3	8.000	26.9
0.400	12.1	1.800	13.2	4.500	20.4	8.500	27.7
0.500	12.1	2.000	13.9	5.000	21.5	9.000	28.5
0.600	11.9	2.200	14.5	5.500	22.5	9.500	29.2
0.800	11.1	2.400	15.1	6.000	23.4		
1.000	10.0	2.600	15.7	6.500	24.3		

Appendix 8 – Court of Appeal Judgement



Neutral Citation Number: [2024] EWCA Civ 12

Case No: CA-2023-000087

IN THE COURT OF APPEAL (CIVIL DIVISION)
ON APPEAL FROM THE HIGH COURT OF JUSTICE
ADMINISTRATIVE COURT
PLANNING COURT
THE HONOURABLE MRS JUSTICE LANG DBE
[2022] EWHC3177 (ADMIN)

Royal Courts of Justice
Strand, London, WC2A 2LL

Date: 17 January 2024

Before:

LORD JUSTICE COULSON
LORD JUSTICE LEWIS
and
LORD JUSTICE WILLIAM DAVIS

- -

Between:

THE KING (on the application of Substation Action Save East Suffolk Ltd.)	**Appellant**
- and -	
(1) SECRETARY OF STATE FOR ENERGY SECURITY AND NET ZERO **(2) EAST ANGLIA ONE NORTH LTD** **(3) EAST ANGLIA TWO LTD.**	**Respondents**

- -
- -

Richard Turney and Charles Bishop (instructed by **Richard Buxton Solicitors, Cambridge**) for the **Appellant**
Mark Westmoreland Smith and Jonathan Welch (instructed by **Government Legal Department**) for the **First Respondent**
Hereward Phillpot KC and Hugh Flanagan (instructed by **Shepherd and Wedderburn)** for the **Second and Third Respondents**

Hearing date: 6 December 2023

- -

Approved Judgment

This judgment was handed down remotely at 10.30am on 17 January 2024 by circulation to the parties or their representatives by e-mail and by release to the National Archives.

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LORD JUSTICE LEWIS:

INTRODUCTION

1. This is an appeal against a decision of Lang J. ("the judge") refusing a claim for judicial review pursuant to section 118 of the Planning Act 2008 ("the 2008 Act") of two decisions of the first respondent dated 31 March 2022 to make development consent orders under section 114 of the 2008 Act for the construction, respectively, of the East Anglia One North ("EA1N"), and the East Anglia Two ("EA2"), Offshore Wind Farms with associated onshore and offshore development. The two development consent orders are the East Anglia One North Offshore Wind Farm Order 2022 and East Anglia Two Offshore Wind Farm Order 2022.

2. Both development consent orders authorise two nationally significant infrastructure projects ("NSIPs"), namely a generating station and associated grid connection and substation, and a National Grid NSIP comprising substation, cable sealing ends and pylon realignment. The project substations, and the National Grid NSIP, are to be located at Friston in Suffolk.

3. The appellant is a company limited by guarantee formed by a number of local residents in East Suffolk to represent communities in the area. There are significant concerns in the local community about the onshore location of the connection of the development to the National Grid. It is this element of the development which is the subject of the appeal; the appellant does not object to the offshore wind farms. The first respondent is the Secretary of State for Energy Security and Net Zero who made the development consent orders. The second and third respondents were the respective applicants for the two development consent orders.

4. Permission has been granted for two grounds of appeal. The first ground concerns the risk of surface water flooding at the development. The appellant essentially contends that the provisions of the relevant policies required the first respondent to be satisfied that a sequential test had been applied by the applicant when selecting the site for the proposed development. That test, it was submitted, required the applicant to locate the development in an area which was not at medium or high risk of surface water flooding unless there were no other sites reasonably available. The second ground concerns the assessment of cumulative effects of the development together with other potential projects. In particular, the appellant contends that certain projects (known as the "Nautilus" and "Eurolink" schemes) have been identified as projects which could connect with the new National Grid substation. An assessment of the effect of those two projects was included in an Extension Appraisal document supplied by the second and third respondents. The appellant contends that the first respondent should have taken that information into account when deciding whether to make the development consent orders but he did not do so. The judge dismissed both grounds of challenge. The appellant appeals against that decision on the following grounds.

   (1) The judge erred in her decision on the flood risk ground, namely:

      (a) she regarded the application of the sequential test in respect of flood risk as a lawful exercise of planning judgment, in circumstances where no "sequential" approach was applied at all; and

(b) she made a perverse error of fact in finding that no part of the site was in an area at high risk of surface water flooding, contrary to the evidence and agreement of the parties.

(2) The judge erred in her decision on the cumulative impacts ground namely:

(a) she erred in failing to recognise that the respondent was under a statutory duty to take into account the Extension Appraisal as environmental information and could not disavow it as an irrelevant consideration;

(b) she wrongly elided the potential effects of the Nautilus and Eurolink schemes with the potential effects of the National Grid substation to accommodate those schemes, which was the point in issue.

THE LEGAL FRAMEWORK

The 2008 Act

5. A detailed account of the provisions of the 2008 Act is provided by the Supreme Court in *R (Friends of the Earth Ltd) v Secretary of State for Transport* [2021] PTSR 190 at paragraphs 19 to 38. In essence, by section 31 of the 2008 Act, development consent is required for development "to the extent that the project is or forms part of a nationally significant infrastructure project." Section 104 applies in relation to an application for development consent where a national policy statement has effect in relation to that development. National policy statements are made under section 5 of the 2008 Act. Section 104 provides, so far as material, that

> "(2) In deciding the application the Secretary of State must have regard to—
>
> (a) any national policy statement which has effect in relation to development of the description to which the application relates (a 'relevant national policy statement')
>
> …..
>
> and
>
> (d) any other matters which the Secretary of State thinks are both important and relevant to the Secretary of State's decision.
>
> (3) The Secretary of State must decide the application in accordance with any relevant national policy statement, except to the extent that one or more of subsections (4) to (8) applies.

The National Policy Statement

6. The Secretary of State made an Overarching National Policy Statement for Energy (EN-1) in July 2011. Part 3 recognises the need for new types of energy infrastructure of the kind covered by EN-1 and provides that substantial weight should be given to the

contribution which such projects would make to satisfying that need. Part 5 deals with the assessment of generic impacts from such projects. The material paragraphs dealing with flood risk provide as follows (footnotes omitted):

> "5.7. Flood Risk
>
> Introduction
>
> …..
>
> 5.7.3 The aims of planning policy on development and flood risk are to ensure that flood risk from all sources of flooding is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding and to direct development away from areas at highest risk. Where new energy infrastructure is exceptionally necessary in such areas, policy aims to make it safe without increasing flood risk elsewhere and, where possible, by reducing flood risk overall.
>
> Applicant's assessment
>
> 5.7.4. Applications for energy projects of 1 hectare or greater in Flood Zone 1 in England … and all proposals for energy projects located in Flood Zones 2 and 3 in England … should be accompanied by a flood risk assessment (FRA). An FRA will also be required where an energy project less than 1 hectare may be subject to sources of flooding other than rivers and the sea (for example surface water) … This should identify and assess the risks of all forms of flooding to and from the project and demonstrate how the flood risk will be managed, taking climate change into account.
>
> …..
>
> 5.7.6 Further guidance can be found in the Practice Guide which accompanies Planning Policy Statement 25 (PPS25), TAN15 for Wales or successor documents.
>
> …..
>
> IPC Decision Making
>
> 5.7.9 In determining an application for development consent, the IPC should be satisfied that where relevant:
>
> • the application is supported by an appropriate FRA;
>
> • the Sequential Test has been applied as part of site selection;
>
> • a sequential approach has been applied at the site level to minimise risk by directing the most vulnerable uses to areas of lowest flood risk;

> • the proposal is in line with any relevant national and local flood risk management strategy
>
> • priority has been given to the use of sustainable drainage systems (SuDs) (as required in the next paragraph on National Standards); and
>
> • in flood risk areas the project is appropriately flood resilient and resistant, including safe access and escape routes where required, and that any residual risk can be safely managed over the lifetime of the development.
>
> …..
>
> 5.7.12 The IPC should not consent development in Flood Zone 2 in England … unless it is satisfied that the sequential test requirements have been met. It should not consent development in Flood Zone 3 or Zone C unless it is satisfied that the Sequential and Exception Test requirements have been met …"
>
> The Sequential Test
>
> 5.7.13 Preference should be given to locating projects in Flood Zone 1 in England … If there is no reasonably available site in Flood Zone 1 … then projects can be located in Flood Zone 2 … If there is no reasonably available site in Flood Zones 1 or 2 then nationally significant energy infrastructure projects can be located in Flood Zone 3 … subject to the Exception Test. Consideration of alternative sites should take account of the policy on alternatives set out in section 4.4 above."

7. The reference to Flood Zones 1, 2 and 3 are references to the Flood Zones identified by the Environment Agency as areas with a low, medium or high risk, respectively, of fluvial flooding, that is flooding from rivers.

The National Planning Policy Framework ("the Framework")

8. The Framework in place at the time of the application for development consents had paragraphs dealing with flood risk. The Framework was amended in July 2021 after the applications in the present case were submitted. The material paragraphs dealing with the policy on assessment of flood risks is in the following terms (footnotes omitted):

> "Planning and flood risk
>
> 159. Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere.
>
> 160. Strategic policies should be informed by a strategic flood risk assessment, and should manage flood risk from all sources.

They should consider cumulative impacts in, or affecting, local areas susceptible to flooding, and take account of advice from the Environment Agency and other relevant flood risk management authorities, such as lead local flood authorities and internal drainage boards.

161. All plans should apply a sequential, risk-based approach to the location of development—taking into account all sources of flood risk and the current and future impacts of climate change—so as to avoid, where possible, flood risk to people and property. They should do this, and manage any residual risk, by:

(a) applying the sequential test and then, if necessary, the exception test as set out below;

(b) safeguarding land from development that is required, or likely to be required, for current or future flood management;

(c) using opportunities provided by new development and improvements in green and other infrastructure to reduce the causes and impacts of flooding, (making as much use as possible of natural flood management techniques as part of an integrated approach to flood risk management); and

(d) where climate change is expected to increase flood risk so that some existing development may not be sustainable in the long-term, seeking opportunities to relocate development, including housing, to more sustainable locations.

162. The aim of the sequential test is to steer new development to areas with the lowest risk of flooding from any source. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding. The strategic flood risk assessment will provide the basis for applying this test. The sequential approach should be used in areas known to be at risk now or in the future from any form of flooding.

163. If it is not possible for development to be located in areas with a lower risk of flooding (taking into account wider sustainable development objectives), the exception test may have to be applied. The need for the exception test will depend on the potential vulnerability of the site and of the development proposed, in line with the Flood Risk Vulnerability Classification set out in Annex 3.

…..

167. When determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported

> by a site-specific flood-risk assessment. Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:
>
> (a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;
>
> (b) the development is appropriately flood resistant and resilient such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment;
>
> (c) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;
>
> (d) any residual risk can be safely managed; and
>
> (e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan."

9. As the judge explained at paragraph 60 of her judgment, paragraphs 160 to 163 apply to plan-making and site-allocation by local planning authorities. Paragraphs 167 applies to applications for development consents.

The Planning Policy Guidance ("PPG")

10. The PPG offers further guidance on assessment of flood risk. The material paragraphs are as follows:

> "7.002 What is "flood risk"?
>
> For the purposes of applying the National Planning Policy Framework, "flood risk" is a combination of the probability and the potential consequences of flooding from all sources – including from rivers and the sea, directly from rainfall on the ground surface and rising groundwater overwhelmed sewers and drainage systems, and from reservoirs, canals and lakes and other artificial sources.
>
> …..
>
> 7.018 **What is the sequential, risk-based approach to the location of development?**
>
> This general approach is designed to ensure that areas at little or no risk of flooding from any source are developed in preference to areas at higher risk. The aim should be to keep development out of medium and high risk flooding areas (Flood Zones 2 and 3) and other areas affected by other sources of flooding where possible.

Application of the sequential approach in the plan-making process, in particular application of the Sequential Test, will help ensure that development can be safely and sustainably delivered and developers do not waste their time promoting proposals which are inappropriate on flood risk grounds.

7.019 **The aim of the Sequential Test**

What is the aim of the Sequential Test for the location of development?

The Sequential Test ensures that a sequential approach is followed to steer new development to areas with the lowest probability of flooding. The flood zones as refined in the Strategic Flood Risk Assessment for the area provide the basis for applying the Test. The aim is to steer new development to Flood Zone 1 (areas with a low probability of river or sea flooding). Where there are no reasonably available sites in Flood Zone 1, local planning authorities in their decision making should take into account the flood risk vulnerability of land uses and consider reasonably available sites in Flood Zone 2 (areas with a medium probability of river or sea flooding), applying the Exception Test if required. Only where there are no reasonably available sites in Flood Zones 1 or 2 should the suitability of sites in Flood Zone 3 (areas with a high probability of river or sea flooding) be considered, taking into account the flood risk vulnerability of land uses and applying the Exception Test if required.

Within each flood zone, surface water and other sources of flooding also need to be taken into account in applying the sequential approach to the location of development.

…..

Para 7.033 **Applying the Sequential Test to individual planning applications**

How should the Sequential Test be applied to planning applications?

See advice on the sequential approach to development and the aim of the sequential test.

The Sequential Test does not need to be applied for individual developments on sites which have been allocated in development plans through the Sequential Test, or for applications for minor development or change of use (except for a change of use to a caravan, camping or chalet site, or to a mobile home or park home site).

Nor should it normally be necessary to apply the Sequential Test to development proposals in Flood Zone 1 (land with a low probability of flooding from rivers or the sea), unless the Strategic Flood Risk Assessment for the area, or other more recent information, indicates there may be flooding issues now or in the future (for example, through the impact of climate change).

For individual planning applications where there has been no sequential testing of the allocations in the development plan, or where the use of the site being proposed is not in accordance with the development plan, the area to apply the Sequential Test across will be defined by local circumstances relating to the catchment area for the type of development proposed. For some developments this may be clear, for example, the catchment area for a school. In other cases it may be identified from other Local Plan policies, such as the need for affordable housing within a town centre, or a specific area identified for regeneration. For example, where there are large areas in Flood Zones 2 and 3 (medium to high probability of flooding) and development is needed in those areas to sustain the existing community, sites outside them are unlikely to provide reasonable alternatives.

When applying the Sequential Test, a pragmatic approach on the availability of alternatives should be taken. For example, in considering planning applications for extensions to existing business premises it might be impractical to suggest that there are more suitable alternative locations for that development elsewhere. For nationally or regionally important infrastructure the area of search to which the Sequential Test could be applied will be wider than the local planning authority boundary.

Any development proposal should take into account the likelihood of flooding from other sources, as well as from rivers and the sea. The sequential approach to locating development in areas at lower flood risk should be applied to all sources of flooding, including development in an area which has critical drainage problems, as notified to the local planning authority by the Environment Agency, and where the proposed location of the development would increase flood risk elsewhere.

See also advice on who is responsible for deciding whether an application passes the Sequential Test and further advice on the Sequential Test process available from the Environment Agency (flood risk standing advice).

7.034 **"Who is responsible for deciding whether an application passes the Sequential Test?**

It is for local planning authorities, taking advice from the Environment Agency as appropriate, to consider the extent to

> which Sequential Test considerations have been satisfied, taking into account the particular circumstances in any given case. The developer should justify with evidence to the local planning authority what area of search has been used when making the application. Ultimately the local planning authority needs to be satisfied in all cases that the proposed development would be safe and not lead to increased flood risk elsewhere."

The Regulations

11. The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 ("the Regulations") apply to applications for development consent under the 2008 Act. Regulation 14 provides that an application for an order granting development consent must be accompanied by an environmental statement. Regulation 21 provides that:

> "21 Consideration of whether development consent should be granted
>
> (1) When deciding whether to make an order granting development consent for EIA development the Secretary of State must—
>
> (a) examine the environmental information;
>
> (b) reach a reasoned conclusion on the significant effects of the proposed development on the environment, taking into account the examination referred to in sub-paragraph (a) and, where appropriate, any supplementary examination considered necessary;
>
> (c) integrate that conclusion into the decision as to whether an order is to be granted; and
>
> (d) if an order is to be made, consider whether it is appropriate to impose monitoring measures."

12. Environmental information is defined in regulation 3 of the Regulations in the following terms:

> "environmental information" means the environmental statement (or in the case of a subsequent application, the updated environmental statement), including any further information and any other information, any representations made by any body required by these Regulations to be invited to make representations and any representations duly made by any other person about the environmental effects of the development and of any associated development".

13. "Further information" and "any other information" are then defined as follows:

> "'further information' means additional information which, in the view of the Examining authority, the Secretary of State or the

> relevant authority, is directly relevant to reaching a reasoned conclusion on the significant effects of the development on the environment and which it is necessary to include in an environmental statement or updated environmental statement in order for it to satisfy the requirements of regulation 14(2)"
>
> and
>
> "'any other information' means any other substantive information provided by the applicant in relation to the environmental statement or updated environmental statement"

14. Paragraph 5(e) of Schedule 4 to the Regulations provides that a description of the likely significant effects of the development on the environment include, amongst other things, "the cumulation of effects with other existing and/or approved projects".

15. In addition, paragraph 4.2.5 of EN-1 provides that when considering cumulative effects, an environmental statement should provide information on how the effects of the applicant's proposal would combine and interact with "the effects of other development (including projects for which consent has been sought or granted, as well as those already in existence)".

THE FACTUAL BACKGROUND

The Projects

16. The facts are set out fully in the judgment of the judge at paragraph 15 and following. The applications are described in the following terms:

> "15. The applications for development consent comprised an offshore element and an onshore element. The offshore element is for the construction and operation of up to 67 (in the case of EA1N) and 75 (in the case of EA2) wind turbine generators ("WTGs"); together with up to four offshore electrical platforms; an offshore construction, operation and maintenance platform; a meteorological mast; inert-array cables linking the WTGs to each other and to the offshore electrical platforms; platform link cables; and up to two export cables to take the electricity generated by the WTGs from the offshore electrical platforms to landfall. The proposed generating capacity was up to 800MW for EA1N and up to 900MW for EA2."
>
> 16. The onshore works in respect of both applications include landfall connection works north of Thorpeness in Suffolk, with underground cables running to a new onshore substation located next to Friston, Suffolk. The onshore works also include the realignment of existing overhead power lines and the construction of a new National Grid substation at Friston. The proposal is therefore that the Friston site will accommodate a substation for each of EA1N and EA2, and a new National Grid NSIP comprising a substation and cable sealing ends connected

> to the realigned overhead lines. The site at Friston extends to 46.28 hectares."

17. The judge describes the process by which the site for the proposed development was identified. Initially seven potential zones were selected including Friston. The process included scoping, a red/amber/green or "RAG" assessment and consultation. That was followed by a preliminary environmental report and a flood risk assessment. Zone 7, Friston, was selected as the onshore site.

The Applications

18. Applications for the two development consent orders were submitted on 25 October 2019. They were accompanied by an environmental statement. Paragraphs 124 to 132 dealt with flooding from surface water in the following terms:

> "124. The Environment Agency's Long Term Flood Risk Information map (Environment Agency undated) (**Figure 20.3.3**) shows the onshore development area is primarily in an area at primarily low risk of surface water flooding i.e. outside the extent of the 1 in 1,000 year surface water flooding event.
>
> 125. However, the National grid Substation National Grid CCS cable sealing end compounds and permanent access road are located in an area with varying risk of surface water flooding. The northern and western boundary around the National Grid substation, including the cable sealing and compounds, and part of the footprint of the National Grid substation, includes areas at both high risk of surface water flooding i.e. during the 1 in 30 year event and medium risk of surface water flooding i.e. there is a risk of flooding during the 1 in 100 year vent. This flood risk is associated with the drainage of surface water from the north in proximity to Little Moor Farm.
>
> 126. The onshore substation and onshore substation CCS are located in areas primarily at low risk of surface water flooding i.e. outside the extent of the 1 in 1,00-year surface water flooding event.
>
> 127. As part of the onshore substation and National Grid infrastructure a permanent access road will be built up to the north-east of Moor Farm, connecting to both the onshore substation and National Grid substation. In addition, permanent access tracks to the cable sealing end compounds will be built to the north of the National Grid substation. Parts of the access roads are likely to cross areas at both high risk of surface water flooding i.e. during the 1 in 30-year event and medium risk of surface water flooding i.e. there is a risk of flooding during the 1 in 100-year event (**Figure 20.3.3**).
>
> 128. The surface water flood risk extends downstream to Friston, where they have been several reports of historical

> flooding, as providing by local residents. Flood incident records as recorded by the LLFA are reported as having a low priority, and are generally located along the B1121 Saxmundham Road (Suffolk County Council 2018a and b).
>
> 129. Flood risk from surface water to the onshore substation and National Grid infrastructure and off-site as a result of the proposed East Anglia one North project will be addressed through the development of a detailed drainage design, the beginnings of which are provided in the Outline Landscape and Ecological Management Strategy (OLEMS), as secured under the requirements of the draft DCO, and submitted with this DCO application. Existing land drains will need to be reinstated and/or connected into the formal drainage network following construction.
>
> 130. A local specialised drainage contractor will undertake surveys, locate drains, create drawings pre- and post-construction, and ensure appropriate reinstatement. The Surface Water and Drainage Management Plan will include provisions to minimise flood risk within the working area and ensure ongoing drainage of surrounding land.
>
> 131. The Surface Water and Drainage Management Plan, as secured under the requirements of the draft DCO, will include Sustainable Drainage System (SuDS) measures. Further detail is provided in the OCoCP submitted with this DCO application.
>
> 132. Further details related to management of surface water flood risk and drainage for the onshore substation and National Grid infrastructure is considered within **section 20.7**."

19. On 25 March 2021, the second and third respondents provided the Extension of National Grid Substation Appraisal document. That considered the issue of other projects connecting to the National Grid substation, including the Nautilus and Eurolink projects. The document stated that it was not practicable to carry out a cumulative impact assessment as virtually none of the information about those projects that advice indicated should be considered was available. The document indicated that the only practical solution was to provide updated information about the only element of the projects about which there was any certainty. It therefore provided an assessment of that element of the projects but stated that it "is recognised that this represents only a partial assessment of those projects". Also on 25 March 2021, the second and third respondents provided a flood risk and drainage clarification note. That document noted that the possible presence of the surface water conveyance route had been identified since the early development of the projects. The second and third respondents proposed to retain it but redirect it around the northern perimeter of the substation such that it did not cause flooding.

20. In response to comments on flood risk, a further document was submitted on behalf of the second and third respondents in June 2021. That indicated that the site selection process "initially focussed on flood risk from fluvial sources". However, during site

selection, a surface water conveyance route was identified which partly passed through the northern perimeter of what was the proposed location of the National Grid substation. The response document noted the view of the second and third respondents that "the presence of a surface water flow route is in no way sufficient to discount a location from development". It noted that the National Grid infrastructure and substation were only minor contributors to the flow upstream of Friston and that they posed no significant flood water risk. It stated that:

> "From the outset the Applicants have committed to mitigating and managing surface water within the Order limits so as not to exacerbate flood risks to downstream receptors and the evidence supports that this is possible. In higher return period events, the Applicants anticipate the operational SuDS will provide a betterment to the existing surface water regime within the Order limits, in turn providing for both the Projects and the residents of Friston by containing excess surface water and ensuring it is discharged as a controlled rate.
>
> The Applicants have provided plans showing the locations of the indicative designs together with the calculations that support the sizing".

The Examining Authority Report

21. The applications were considered by an examining authority. It prepared two reports, one for each application, but it is agreed that it is sufficient to refer to the report on the EA1N application for the purposes of this appeal. The examining authority reported to the first respondent on 6 December 2021. Its report is detailed and comprehensive and should be read in full. For present purposes it is necessary only to refer to three parts.

22. First, in relation to the flood risk issue, the examining authority considered that, at the time of the submission of the application, the flood risk assessment complied with the relevant requirements of EN1 and the provisions of the Framework then in force and the PPG. However, it considered that the reference to risks from flooding from all sources was a significant change and that it would be in the interests of fairness to consult the parties on the implications of what it saw as a change in policy.

23. Secondly, it considered that the Extension of the National Grid Substation Appraisal documents demonstrated a significant worsening of adverse effects from certain viewpoints.

24. Thirdly, the examining authority's overall conclusion was to recommend that the Secretary of State grant development consent. As it said in its conclusions:

> "28.4.4. In the ExA's judgement, the benefits of the Proposed Development at the national scale, providing highly significant additional renewable energy generation capacity in scalar terms and in a timely manner to meet need, are sufficient to outweigh the negative impacts that that have been identified in relation to the construction and operation of the Proposed Development at the local scale. The local harm that the ExA has identified is

substantial and should not be underestimated in effect. Its mitigation has in certain key respects been found to be only just sufficient on balance. However, the benefits of the Proposed Development principally in terms of addressing the need for renewable energy development identified in NPS EN-1 outweigh those effects. In terms of PA 2008 section 104(7) the ExA specifically finds that the benefits of the Proposed Development do on balance outweigh its adverse impacts.

28.4.5. In reaching this conclusion, the ExA has had regard to the effect of the Proposed Development cumulatively with the other East Anglia development and with such other relevant policies and proposals as might affect its development, operation or decommissioning and in respect of which there is information in the public domain. In that regard, the ExA observes that effects of the cumulative delivery of the Proposed Development with the other East Anglia development on the transmission connection site near Friston are so substantially adverse that utmost care will be required in the consideration of any amendments or additions to those elements of the Proposed Development in this location. This ExA does not seek to fetter the discretion of future decision-makers about additional development proposals at this location. However, it can and does set out a strong view that the most substantial and innovative attention to siting, scale, appearance and the mitigation of adverse effects within design processes would be required if anything but immaterial additional development were to be proposed in this location.

28.4.6. In relation to this conclusion, the ExA observes that particular regard needs to be had at this location to flood and drainage effects (where additional impermeable surfaces within the existing development site have the potential to affect the proposed flood management solution), to landscape and visual impacts and to impacts on the historic built environment, should these arise from additional development proposals in the future.

28.4.7. The ExA concludes overall that, for the reasons set out in the preceding chapters and summarised above, the SoS should decide to grant development consent.

28.4.8. The ExA acknowledges that this is a conclusion that may well meet with considerable dismay amongst many local residents and businesses who became IPs and contributed positively and passionately to the Examination across a broad range of matters and issues. To them the ExA observes that their concerns are real and that the planning system provided a table to which they could be brought. However, highly weighty global and national considerations about the need for large and timely additional renewable energy generating capacity to meet need and to materially assist in the mitigation of adverse climate

> effects due to carbon emissions have to be accorded their due place in the planning balance. In the judgment of the ExA, these matters must tip a finely balanced equation in favour of the decision to grant development consent for the Proposed Development."

The First Respondent's Decision

25. The first respondent consulted with the applicants for development consent and other interested bodies and groups on the changes in the wording of the Framework which referred to taking account of "all" flood risks. In their response dated 30 November 2021, the second and third respondents noted that site selection, design and refinements of the projects had been an iterative process considering a range of matters. The site selection process had had regard to legislation and policy guidance. The locations identified were entirely within Flood Zone 1 and so on land at the lowest risk of flooding from rivers. Paragraph 8 of the response continued:

> "8. The onshore substation and National Grid infrastructure locations were also reviewed against the Environment Agency's surface water flood risk mapping and identified as being located in an area predominantly at very low risk of surface water flooding Furthermore, the National Grid substation location was selected in full cognisance of the presence of a shallow surface water flow route (comprising approximately 4cm of water depth during a 1 in a 100 year storm event), noting that such features can be diverted and their continued conveyance ensured using well established and proven techniques. A commitment to this is made within the ***Outline Operational Drainage Management Plan*** (OODMP) … along with a commitment to offset any reduction volume relating to other existing surface water features affected at the substation locations."

26. At paragraph 15, the document noted that the flood risk and drainage measures to be implemented for the projects would ensure that there was no risk of surface water flooding the infrastructure. The measures proposed would also ensure that there was no increased risk of flooding to the surrounding area and especially to Friston. Paragraph 22 and 23 of the document stated:

> "22. The revised focus of the wording in the NPPF and accompanying Planning Practice Guidance acknowledges the need to consider all sources of flooding; however, it does not provide any criteria for their assessment on their suitability in terms of location (similar to that provided for the flood zones and vulnerability of a development) which can be used to determine whether a development is appropriate or not.
>
> 23. While the Applicants have considered all sources of flooding, in the absence of any criteria as to how this should be implemented, they have sought to address the potential risk from surface water flooding by locating the onshore substations and National Grid infrastructure in an area at low risk of surface

> water flooding, and by adopting appropriate mitigation measures within the design to address any remaining surface water flood risk concerns."

27. The first respondent made separate decisions for each application but it is agreed that it is sufficient to refer to the decision on the EA1N application for the purposes of this appeal. The decision is detailed and comprehensive and should be read in full. For present purposes it is necessary only to refer to the following parts.

> "First, the decision letter deals with the responses to the change in the wording of the Framework in paragraph 4.27 and noted the following:"
>
> "4.27 The Secretary of State consulted on the issue of updates to the NPPF on 2 November 2021 and 20 December 2021, the key responses are summarised below:
>
> • SCC (the Lead Local Flood Authority)—the changes to the NPPF would require the Applicant to undertake a Sequential Test, and if necessary, an Exception Test. However, SCC acknowledge that as the PPG has not been updated, it is not clear how the Sequential and Exception Tests would be applied.
>
> • ESC—states that the reference in the updated NPPF has the potential to have important implications for the East Anglia ONE North and East Anglia TWO projects. However, they also acknowledge that as the PPG has not been updated, it is not clear how the Sequential and Exception Tests would be applied.
>
> • SASES—consider that it is clear from the Applicant's submissions that surface water and ground water were not taken into account during the site selection process and, consequently, the Sequential test was not properly applied. Additionally, SASES consider that the updates to the NPPF do not impose any new policy requirement but rather reinforce the existing requirements. SASES also reiterated that they considered the infiltration testing conducted by the Applicant was insufficient and had concerns about the Applicant's approach to applying the Sequential Test. Overall, SASES considered that because of the defects of the Applicant's approach, that policy requirements had not been met.
>
> • The Applicant—acknowledges that the updated NPPF is more explicit in the use of the term 'any source' of flooding but note that the criteria for the assessment and application of the Sequential Test remains unchanged, and that the PPG does not provide any criteria for the assessment of suitability of a location to determine whether a development is appropriate or not. The Applicant also highlighted:

> (i) they have considered all sources of flooding in the design of the Proposed Development;
>
> (ii) the substation site and National Grid infrastructure have been located in an area at low risk of surface water flooding;
>
> (iii) appropriate mitigation measures have been adopted to address any remaining surface water flood risk concerns;
>
> (iv) SCC had already given surface water flooding equal weighting when reviewing the Proposed Development's assessment of flood risk throughout the examination;
>
> (v) that the emphasis in the updated NPPF to move away from hard engineered flood solutions is not considered by the Applicant to be a fundamental change that would alter their proposed drainage strategy or adoption of SuDS measures;
>
> (vi) that the extensive landscape planting proposed would reduce the speed of surface water runoff compared to that currently experienced, as well as soil erosion and silt levels in runoff;
>
> (vii) modelling undertaken for the Friston Surface Water Flood Study15 confirms that surface water flooding within Friston primarily results from surface water flow from a number of locations unrelated to the substation site; and
>
> (viii) by attenuating surface water and ensuring a controlled discharge rate from the site there is no increase in flood risk to the surrounding area, specifically Friston."

28. The first respondent then set out his conclusions on this issue at paragraph 4.28 of the decision letter in the following terms:

> "4.28 The Secretary of State notes that all sources of flooding have been considered by the Applicant in the design of the Proposed Development, he also notes the surface water mitigation measures which the Applicant has proposed to address flood risk concerns. Furthermore, the Secretary of State has considered all the consultation responses relevant to the NPPF updates and, noting that the guidance on how the Sequential Test should be applied in respect of all sources of flooding has not been updated, is satisfied that the Applicant has (as it is currently defined) applied the Sequential Test as part of site selection. As such, the Secretary of State considers that the FRA is appropriate for the Application."

29. At paragraphs 4.47 and 4.48, the first respondent noted that he considered that the second and third respondents had applied the sequential test as part of site selection and the flood risk assessment was appropriate. Overall, the first respondent was satisfied

that the policy requirements had been met but even so the potential increased flood risk carried a high negative weight in the planning balance.

30. In relation to the Extension Appraisal document, the first respondent said this:

> "5.12 In response to significant concerns from a number of parties (including the Councils') about future projects, the Applicant submitted an Extension of National Grid Substation Appraisal. This Appraisal assessed the potential effects of extending the National Grid substation to accommodate future projects, including: Nautilus interconnector, EuroLink interconnector, North Falls and Five Estuaries offshore wind farms. However, the Appraisal states "it has been confirmed by both the proposed North Falls and Five Estuaries projects that they will not connect near Leiston.
>
> 5.13 The Secretary of State notes that the future projects considered are in the following stages of development:
>
> • Nautilus interconnector—National Grid Ventures requested a section 35 direction under the Planning Act 2008 on 4 March 2019, the Secretary of State received further information from National Grid Ventures on 4 April 2019 and a direction was made by the Secretary of State on 29 April 2019. The application is expected to be submitted to the Planning Inspectorate Q2 2023.
>
> • EuroLink interconnector—is a proposal by National Grid Ventures to build a HVDC transmission cable between the UK and the Netherlands. The capacity of the link will be 1.4 GW and the project is still in the very early stages of development. No information on this project has currently been submitted to the Planning Inspectorate or the Secretary of State.
>
> "5.14 Currently, the only documentation available on the Planning Inspectorate's website for the Nautilus interconnector project is the Section 35 Direction made by the Secretary of State for the proposed development to be treated as development for which development consent is required under the 2008 Act. The Eurolink interconnector project is earlier in the development consent process than Nautilus, and no documentation has been submitted to the Planning Inspectorate. Consequently, there is very limited environmental information available which would allow the Applicant to conduct a cumulative assessment. The Applicant's decision not to include these proposed projects in its cumulative effects assessment is also supported by the Planning Inspectorate's Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects. Paragraph 3.3.1 of the Advice Note lists the information required to conduct stage 4 of a cumulative effects assessment:

> • proposed design and location information;
>
> • proposed programme of construction, operation and decommissioning; and
>
> • environmental assessments that set out baseline data and effects arising from the 'other existing development and/or approved development'.
>
> "5.15 As none of the above information was available prior to the close of the East Anglia ONE North and East Anglia TWO examination period for either the Nautilus or Eurolink projects, the Secretary of State is content that it was not necessary for the Applicant to include these proposed projects in its cumulative effects assessment. Further details of the Secretary of State's position on the inclusion of these projects in the Applicant's cumulative assessment can be found in paragraph 12.14 of this document.
>
> "5.16 The ExA concludes that: 'The extension of National Grid Substation Appraisal demonstrates a significant worsening of potential adverse effects for relevant VPs [Viewpoints] and for landscape character. The extension of the NG substation would intensify and worsen the effects of the Proposed Development on both the local landscape and on visual receptors. Such an effect would be added to in an unknown way by the provision of required surface water drainage."
>
> "5.22 In reaching the above conclusions the ExA has not considered the Extension of National Grid Substation Appraisal, noting that the Applicant acknowledges that the Appraisal is 'environmental information' and is not intended to comprise a Cumulative Impact Assessment.
>
> "5.23 The Secretary of State agrees with the ExA's conclusions on Landscape and Visual Amenity."

31. The overall conclusion of the first respondent was that the case for development consent had been made out and the benefits of the proposed development would outweigh any adverse effects for the reasons given in section 27 of the decision letter. The first respondent therefore decided to make orders granting development consent for the two projects.

THE JUDGMENT BELOW

32. The judge dismissed the claim in a comprehensive and clear judgment. On the first matter that comprises ground one of this appeal, the judge's reasoning can be found in essentially three paragraphs. At paragraph 58, the judge said:

> "58. I agree with the submission made by the defendant and the applicants that, whilst NPS EN-1 refers to all sources of

> flooding, the specific guidance on the application of the sequential test only refers to the location of projects in different flood zones. Whilst flood zones are plainly relevant, they are designated on the basis of the risk of fluvial flooding, not surface water or other sources of flooding, and so they are not a sufficient means of assessing surface water flood risks. Therefore, it is a matter of judgment for an applicant, and ultimately the decision-maker, as to how to apply the sequential test to flood risks from other sources, such as surface water."

33. The judge then dealt with the arguments based on the Framework and the PPG. She concluded at paragraphs 64 and 65 that:

> "64. It is apparent that the Framework and the PPG require surface water flooding to be taken into account when considering location of development, as part of the sequential approach, but, beyond that, there is no further direction as to exactly how surface water flooding is to be factored into the sequential approach. Policy and guidance is not prescriptive in this regard. Therefore it will be a matter of judgment for the applicant and the decision-maker (as envisaged in para 7.034 of the PPG) as to how to give effect to the policy appropriately, in the particular circumstances of the case."
>
> 65. I accept the submission of the defendant and applicants that neither the policies nor the guidance support the claimant's submission that the application of the sequential test means that, where there is some surface water flood risk, it must be positively demonstrated that there are no sites reasonably available for the development with lower surface water flood risk."

34. The first ground of appeal also asserts that the judge made an error of fact in finding that no part of the site was in an area at high risk of surface water flooding. That assertion was based on paragraph 79 of the judgment where the judge said:

> "79. At DL 4.27, the defendant noted the applicants' position that all sources of flooding had been assessed with regard to the onshore substations, and that the wider area, including the village of Friston, would not be adversely affected. The substation and infrastructure were located in an area at low risk of surface water flooding, and appropriate mitigation measures had been adopted to address any remaining surface water flood risk concerns, by attenuating surface water and ensuring a controlled discharge rate from the site. There was no increase in flood risk to the surrounding area, specifically Friston."

35. On the issue material to ground 2 of this appeal, the judge's conclusions are set out at paragraph 197 to 203 in the following terms:

"197. I accept the submissions made by the defendant and the applicants that the approach taken by the defendant did not constitute a breach of the EIA Regulations 2017. The developments in question were not "existing and/or approved projects" in respect of which a cumulative assessment would be required by reference to paragraph 5 of Schedule 4 to the EIA Regulations 2017".

198. The Extension Appraisal did not constitute a cumulative impact assessment for the reasons set out in that document at 1.1. The two projects were at such an early stage that there was not sufficient reliable information to undertake a satisfactory cumulative assessment. That approach was in accordance with the guidance in Advice Note Seventeen.

199. The ExA and the defendant were entitled to regard the Extension Appraisal as "environmental information" but not "further information", as defined in regulation 3 of the EIA Regulations 2017 , as it was not "additional information which, in the view of the Examining authority, the Secretary of State or the relevant authority, is directly relevant to reaching a reasoned conclusion on the significant effects of the development on the environment and which it is necessary to include in an environmental statement … in order for it to satisfy the requirements of regulation 14(2)".

200. Like all other representations made by the applicants about the environmental effects of the development (ie "environmental information" as defined in regulation 3), the Extension Appraisal was carefully examined by the ExA, and fully taken into account by the defendant when making his decision. The issues of flooding and transport were considered in the screening assessment with the Extension Appraisal, but were not taken forward for further assessment.

201. The defendant was entitled, as the decision-maker, to disagree with the ExA's statement that satisfactory assumptions could have been made to allow the future projects to be included in the cumulative impact assessment, for the reasons he gave at DL 12.14–12.19. Furthermore, although the claimant relied upon the ExA's description of the decision as "finely balanced", the defendant took a different view and concluded that the applicants had a strong case (DL 27.7).

202. In my judgment, the defendant's approach cannot be characterised as irrational. He was entitled to agree, in the exercise of his judgment, with the applicants' case that the uncertainties about the future projects were such that it was not possible to undertake a reliable assessment of cumulative effects for the purposes of regulation 21(1)(b) of the EIA Regulations 2017.

> 203. Finally, I consider that the reasons given for the decision were clear and sufficient, and met the legal standard."

THE FIRST GROUND OF APPEAL – FLOOD RISK FROM SURFACE WATER

Submissions

36. Mr Turney, with Mr Bishop, for the appellant, submitted that the first respondent had misinterpreted the relevant paragraphs of EN-1, the Framework and the PPG. The relevant provisions of the policies applied to risks of flooding from all sources including surface water. The relevant paragraphs required a sequential test to be adopted in site selection. That test required consideration of whether there was an alternative site available with less risk of flooding. The aim was first to locate development away from areas of flood risk. Those areas were defined by the probability of flooding as appeared from Table 1 as defined in the PPG. The areas at risk of flooding from surface water was also to be assessed by the probability of flooding. Consequently, where there was some risk of flooding from surface water, it must be positively demonstrated that there were no other sites reasonably available for the development with a lower risk of flooding from surface water. Further, that issue had to be considered at the site selection stage, not at the stage of designing the project and deciding where within the application site particular infrastructure would be located or in deciding what mitigating measures might be adopted. Non-compliance with the sequential test meant that an application for development consent was not in accordance with EN-1 and the Framework. In the present case, it was submitted that it was clear from paragraph 4.28 of the decision letter that the sequential test had not been used when selecting the site for development but only at the design stage. Mr Turney relied on *R (Zurich Assurance Ltd (t/a Threadneedle Property Investments)) v North Lincolnshire Council* [2012] EWHC 3708 (Admin) and *Hale Bank Parish Council v Halton Borough Council* [2019] EWHC 2677 (Admin) as examples in other contexts of how a sequential test operated.

37. Mr Turney submitted that the judge was wrong in finding that the relevant paragraphs of EN-1, the Framework and the PPG did not provide a prescriptive approach to determining how the sequential test was to be applied to flood risks from surface water. Further, he submitted that the judge erred as she considered that the substation and infrastructure were located in an area of low risk whereas in fact the substation was located in an area of high risk of surface water flooding.

38. Mr Westmoreland Smith, with Mr Welch, for the first respondent submitted that EN-1, the Framework, and the PPG required that the risk from surface water flooding be taken into account when considering the location of development as part of the sequential approach but, beyond that there was no direction as to how the risk flooding from surface water was to be considered. That was a matter of planning judgment. In particular, he submitted, the sequential test did not require that where there was any risk of flooding from surface water then it had to be demonstrated that there are no other sites reasonably available. Further, the underlying aim was to address any risk of flooding from surface water. If any such risk could be addressed by a combination of location and mitigation, that would satisfy the policy aims. Mr Westmoreland Smith relied upon the judgment in *Wathen-Fayed v Secretary of State for Levelling-Up, Housing and Communities* [2023] EWHC 92 (Admin), [2023] PTSR 524. Further, the

judge had not made any error of fact but, if the judge had, such an error was immaterial as the decision-maker had not made any such error.

39. Mr Phillpot KC, with Mr Flanagan, for the second and third respondents submitted that, properly understood, the issue on the first ground concerned the application rather than the interpretation of the relevant policies. They required that the risk of flooding from surface water be taken into account but did not provide how that was to be done. There was no mechanistic approach required. In the present case, the first and second respondents had decided not to discount the sites where there was a risk of flooding from surface water but where there were other measures that could be taken to address that risk. The reference to design should be understood in that context. Design was in fact part of the selection process. In considering the risk from surface water flooding in the case of the sites eventually selected, the first and second respondents had considered that such risk as existed could be adequately dealt with. The relevant provisions of the policies did not require applicants for development consent to abandon a site because of a risk which was entirely manageable. Such an approach would serve no practical purpose.

Discussion

40. The principles applicable to the interpretation of national planning policy in the context of the 2008 Act were summarised by Lindblom LJ in *R (Scarisbrick) v Secretary of State for Communities and Local Government* [2017] EWCA Civ 787 at paragraph 19. In essence, statements of policy are to be read objectively in accordance with the language used, read in its proper context. It is important to distinguish between issues of interpretation of a policy (which is a matter for judicial analysis), and issues of planning judgment in the application of that policy (which are matters for the decision-maker subject to review on public law grounds).

41. Dealing first with EN-1, paragraph 7.5.3 identifies the aim of the policy as ensuring that flood risk from all sources is taken into account at all stages in the planning process to avoid inappropriate development in areas of highest risk and to direct development away from areas at highest risk. The applicant for development consent will be required to provide a flood risk assessment which "should identify and assess the risks of all forms of flooding to and from the project and demonstrate how these flood risks will be managed" (see paragraph 5.7.4 of EN-1). Paragraph 5.7.9 deals with decision-making. The decision-maker must be satisfied that the application is supported by an appropriate flood risk assessment and that what is described as "the Sequential Test" has been applied as part of site selection, and what is described as "a sequential approach" has been applied at site level to minimise risk by directing the most vulnerable uses to areas of lowest flood risk. "The Sequential Test" is then defined at paragraph5.7.13. That requires preference to be given to locating projects in Flood Zone 1. If there are no reasonably available sites in Zone 1, projects can be located in Flood Zone 2 and, if no reasonably available sites are available in that Zone, then consideration can be given to locating projects in Zone 3 subject to an exception test described later in EN-1. It is clear that the application of the sequential test is concerned with risks from flooding from fluvial flooding (i.e. from rivers). Zones 1, 2 and 3 are concerned with areas at risk from fluvial flooding (as appears, for example, from Table 1 to the PPG). They are not concerned with, and do not identify zones by reference to, the probability of flooding from surface water.

42. There are no provisions of EN-1 which require that, where there is a risk of flooding from surface water, an applicant for development consent must demonstrate that there is no site reasonably available with a lower risk of surface water flooding. EN-1 does not require such an exercise to be carried out. The decision-maker will have to be satisfied that a sequential approach has been applied at site level to minimise risk by directing the most vulnerable uses to areas of lowest flood risk. How that is to be achieved, and whether the decision-maker can be satisfied that that has been done, involves issues of planning judgment in the application of the policy in EN-1

43. Similar considerations apply to the relevant paragraphs of the Framework and the PPG. It is clear that the aim underlying the policy on planning and flood risk is to ensure that inappropriate development is avoided in areas at risk of flooding by directing development away from areas of highest risk (see paragraph 159). At paragraph 162, the Framework recognises that the "aim of the sequential test is to steer new development to areas with the lowest risk of flooding from any source" and also refers to development not being allocated or permitted if there are reasonably available sites in areas with a lower risk of flooding. That is a reference to the sequential test as defined in EN-1 and is applicable to areas subject to fluvial flooding. The final sentence of paragraph 162 deals with flood risk more generally and refers to the "sequential approach" being used in areas known to be at risk from any form of flooding. The provisions of the Framework do not, however, require an applicant for development consent to demonstrate that there are no other sites reasonably available if any part of the development is to be located in an area where there is a risk of flooding from surface water. The same is true of the relevant paragraphs of the PPG. Paragraph 7.019 of the PPG, by way of example, makes it clear that the sequential test is concerned with steering development to Flood Zone 1 (areas with a low probability of fluvial flooding), and only if no sites are a reasonably available in that Zone, should consideration be given to reasonably available sites in Flood Zone 2. I do not consider that the two authorities relied upon by Mr Turney, namely *Zurich Assurance* and *Hale* assist in the interpretation of EN-1 or the Framework and the PPG. Both cases deal with differently worded policies.

44. The judge was correct, therefore, when she said at paragraphs 64 and 65 of her judgment that it was apparent from the Framework and the PPG that the risk of flooding from surface water must be taken into account at all stages as part of the aim of avoiding inappropriate development in areas at risk and to direct development away from areas at highest risk. The decision-maker will have to be satisfied that a sequential approach has been applied at the site level to minimise risk and direct the most vulnerable uses to areas of lowest flood risk. How that is done, however, is a matter of planning judgment for the decision-maker subject to review on public law grounds. The relevant provisions of EN-1, the Framework, and the PPG do not require that wherever there is a risk of flooding from surface water, an application for development consent must demonstrate that there is no other reasonably available site with a lower risk of flooding.

45 The judge was also correct to find that the first and second respondents had considered surface flood water risk at all relevant stages of the process. That was considered in the preliminary environmental information report, the environmental statement and the various notes and documents provided by the first and second respondents during the decision-making process and referred to above. Furthermore, it is artificial to seek to separate out a site selection from a design stage on the facts of this case. The process

of site selection involved considering whether to select a site where particular parts of the infrastructure would be located in areas of lowest risk of flooding and where suitable mitigation measures would be adopted to address the risk of surface water flooding where parts were located in an area of higher risk. I accept the respondents' submissions that, provided the applicants for development consent ensured that the aim of preventing inappropriate development in areas of flood risk was addressed, that could be done by a combination of the location of parts of the project and by mitigation. The conclusion reached by the first respondent at paragraph 4.28 of the decision letter was not irrational or otherwise unlawful.

46 On the second part of ground 1, I do not consider that the judge made any factual error in the assessment of the evidence. In particular, I do not consider that the judge was under any misapprehension that all the infrastructure proposed as part of the development was in an area of low risk of flooding from surface water. By way of example, the judge specifically referred to paragraph 171 of the flood risk assessment submitted with the preliminary environmental information report which stated that the substation and infrastructure "are primarily in areas at low risk of flooding from surface water" but referred to areas which were at a medium to high risk (see paragraph 71 of the judgment). The judge referred to the flood risk assessment submitted with the environmental assessment (see paragraph 72 of the judgment) and that deals specially with the parts of the substation and infrastructure located in areas with varying risk. The judge set out paragraph 23 of the response to the first respondent's questions which stated that the second and third respondents had addressed the potential risk from surface water flooding by locating substations and infrastructure in a low risk area and by adopting mitigation measures to address any remaining flood risk concerns and that is reflected in paragraph 79 of the judgment. That paragraph identifies that there are two means by which flood risk is being addressed: location and mitigation. Mitigation is relevant because part of the infrastructure remains in areas of medium or high risk of surface water flooding. I consider, therefore, that the judge correctly understood the evidence and did not make any factual error in her assessment. In any event, it would not be material as it is clear that the decision-maker did not make any such error.

47 For those reasons, which are essentially those given by the judge, I would dismiss the appeal on the first ground

THE SECOND GROUND – ASSESSMENT OF CUMULATIVE IMPACTS

Submissions

48 Mr Turney submitted that the construction of a new National Grid substation would provide a suitable connection for other projects (notably the Nautilus and Eurolink projects). It was likely that the substation would need to be extended or otherwise altered to accommodate such connections. Mr Turney therefore submitted that the first respondent was required to consider the likely significant cumulative effects of the project for which development consent was granted with other possible projects. Failure to do so was a breach of regulation 21(1)(a) and (b) of the Regulations and was irrational. Further, the examining authority had erred when it said that it had not considered the information in the Extension Appraisal document noting that it was environmental information and was not intended to comprise a cumulative impact assessment. Mr Turney submitted that the judge erred by finding that the information was environmental information but not further information. The judge was also wrong

to elide the potential effects of the Nautilus and Eurolink schemes with the potential effects on the National Grid substation to accommodate these schemes. The effects of the extension of the substation had been assessed in the Extension Appraisal document and those effects should have been assessed.

49 Mr Westmoreland Smith submitted that there was no breach of regulation 21 as the Nautilus and Eurolink projects were not existing projects but only potential or future projects. Consequently, they did not need to be the subject of a cumulative assessment, given the wording of paragraph 5(e) of Schedule 4 to the Regulations. Further, the fact that information had to be examined under regulation 21(1)(a) did not mean that it was information that had to be relied upon when reaching a conclusion on the likely significant effects of the proposed development. It may well be that the information, on examination as here, did not relate to that issue. In so far as the appellant sought to rely upon the cumulative impacts of the projects that were the subject of applications for development consent and other potential projects, it was open to the first respondent to defer assessment of the impact of other potential projects if there was insufficient information to assess those other potential projects.

50 Mr Phillpot for the second and third respondents submitted that properly interpreted regulation 21(1)(a) required environmental information to be examined and regulation 21(1)(b) required the Secretary of State to reach a reasoned conclusion on the significant effects of the proposed development taking into account "the examination" referred to in relation 21(1)(a). Here the environmental information was not further information as it was not information directly relevant to reaching a reasoned conclusion. Further, the assessments in the Examination Appraisal document were not a cumulative impact assessment of the projects for which development consent was sought and other potential projects. The first respondent was entitled to defer consideration of the environmental impact of other potential projects where there was insufficient information available to conduct a cumulative impact assessment.

Discussion

51 The starting point is that the information at issue here does not relate directly to the projects that are the subject matter of the two applications for development consent. The impacts of each of those projects has been assessed. Nor does the information relate to the impact of all aspects of the Nautilus or Eurolink projects. As the Extension Appraisal document makes clear little or none of the information required for a proper assessment of those projects was available. Rather, the information related to the potential future expansion or alteration of the National Grid substation necessary to accommodate the two proposed projects.

52 Dealing with the Regulations, regulation 21(1)(a) requires the Secretary of State when deciding whether to make an order granting development consent to "examine the environmental information". Regulation 21(1)(b) provides that the Secretary of State must then reach a reasoned conclusion on the significant effects of the proposed development taking into account that examination.

53 Environmental information is broadly defined in regulation 3 as meaning (a) the environmental statement (b) further information (itself defined to mean additional information which is directly relevant to reaching a reasoned conclusion on the significant effects of the development) (c) any other information (d) any representations

made by a specified body and (e) and any other representations. It is that information which has to be examined under regulation 21(1)(a). It is the result of that examination which has to be taken account of when reaching a reasoned conclusion on the significant effects of the proposed development. Some of the environmental information may, on analysis, not affect any conclusion on the significant effects of the development. Some of the information would be relevant, as would be the case, for example, with further information which, by definition, is additional information directly relevant to reaching a reasoned conclusion on the significant effects of the proposed development.

54 In the present case, the first respondent was entitled to take the view that the information in the Extension Appraisal document was not material affecting his reasoned conclusion on the significant effects of the proposed developments (i.e. EA1N or EA2, which were the two projects subject to the application for orders granting development consent). First, he was entitled to conclude that the information was not further information as it was not directly relevant to reaching a conclusion on the effects of the development that was the subject of the applications for development consent. The information was relevant, if at all, in relation to the effects of two other potential developments (Nautilus and Eurolink) if, ultimately, they were connected to the National Grid substation.

55 Secondly, and most significantly, the question therefore is whether the information should have been considered as part of a cumulative assessment of the two projects subject to the applications for development consent and the other potential projects. The law on this is well-established. Where two or more linked sets of works are properly regarded as separate projects, the objective of securing environmental protection is sufficiently secured by consideration of the cumulative effects at the stage when the first project is assessed so far as that is reasonably possible. However, a decision-maker may defer consideration of the cumulative effects arising from future projects where, amongst other reasons, there was not any adequate information on which a cumulative assessment could be based: see *R (Larkfleet Ltd) v South Kesteven District Council* [2016] Env. LR. 76, especially at paragraphs 35 to 38, and *Pearce v Secretary of State for Business, Energy an Industrial Strategy* [2021] EWHC 326 (Admin), [2022] Env L.R. 4, especially at paragraphs 116 to 117.

56 The decision of the first respondent to defer assessment of the cumulative impacts of the two projects with other future projects (the Nautilus and Eurolink projects) was rational and lawful, as the judge found at paragraphs 190 to 193 and 198 of her judgment. There was inadequate information available to carry out a cumulative impact assessment.

57 In those circumstances, the first respondent did not act in breach of regulation 21(1)(a) and (b) of the Regulations. The information in the Extension Appraisal document was examined. However, the examination of that information did not affect the conclusion on the significant effects of the developments for which applications for development consent had been made, i.e EA1N and EA2. The information was not part of a cumulative impact assessment of those developments with other future projects. It was not further information directly relevant to the significant effects of the developments for which applications for development consent orders had been made. The information was, in truth, information relevant if at all to assessment of (some of the) effects of other potential projects. As such there was no breach by the first respondent of his

obligations under regulation 21(1)(a) and (b) and he did not act irrationally or unlawfully.

58 For completeness, it is not necessary in this case to consider whether a cumulative assessment needs only to be carried out on the effects of the development together with other existing or approved projects and if so, whether the Nautilus and Eurolink projects were such projects. There is an issue as to whether paragraph 5(e) of Schedule 4 to the Regulations, properly interpreted, only applies to such projects or whether it also applies to future or potential projects or whether policy guidance requires the effects of such projects to be included in cumulative impact assessments. It is not necessary to reach a conclusion on that issue here as, in any event, it was rational to defer consideration of the impact of those future projects to a later stage.

59 For those reasons, ground 2 is not established.

CONCLUSION

60 The relevant provisions of EN-1, the Framework and the PPG do not require an applicant for development consent to demonstrate that whenever there is a risk of flooding from surface water there are no other sites reasonably available where the proposed development could be located in an area of lower surface water flood risk. The risks of flooding from surface water are to be taken into account when deciding whether to grant development consent under section 104 of the 2008 Act. The way in which account is to be taken of that risk raises issues of planning judgment in the application of the relevant provisions of the policies. The judge was correct in her interpretation of the policy and in finding that there was no irrationality or other public law error in the way in which the first respondent dealt with this issue when granting development consent. The effects of other potential projects (which were not projects forming part of the developments forming the subject matter of the application for development consent) did not have to be the subject of a cumulative impact assessment before development consent was granted in the present case. The first respondent was entitled to defer consideration of the effects of the other projects as there was insufficient information available to make an assessment. Such information as was available on the likely effects of other potential projects was not relevant to the assessment of the significant effects of the projects forming part of the applications for development consent in the present case. I would therefore dismiss this appeal.

LORD JUSTICE WILLIAM DAVIS

61 I agree.

LORD JUSTICE COULSON

62 I also agree.

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