APPENDIX A

CONTENTS

Groundsure
LOCATION INTELLIGENCE

Plandescil Ltd

42-44 PLANDESCIL LTD, CONNAUGHT ROAD,
ATTLEBOROUGH, NR17 2BW

Groundsure Reference:	GS-2715111
Your Reference:	20630
Report Date	2 Feb 2016
Report Delivery Method:	Email - pdf

Groundsure Geoinsight

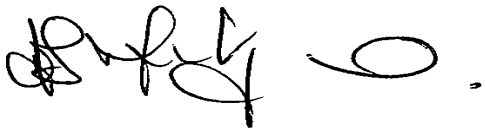
Address: Land between Wildfields Road and Hall Road,

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Geoinsight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159000 quoting the above Groundsure reference number.

Yours faithfully,



Managing Director
Groundsure Limited

Enc.
Groundsure Geoinsight

Groundsure Geoinsight

Address:	**Land between Wildfields Road and Hall Road,**
Date:	**2 Feb 2016**
Reference:	**GS-2715111**
Client:	**Plandescil Ltd**

NW N NE

W E

SW S SE

Aerial Photograph Capture date:	27-May-2013
Grid Reference:	558776,320930
Site Size:	0.66ha

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Overview of Findings

The Groundsure Geoinsight provides high quality geo-environmental information that allows geo-environmental professionals and their clients to make informed decisions and be forewarned of potential ground instability problems that may affect the ground investigation, foundation design and possibly remediation options that could lead to possible additional costs.

The report is based on the BGS 1:50,000 Digital Geological Map of Great Britain, BGS Geosure data; BRITPITS database; Shallow Mining data and Borehole Records, Coal Authority data including brine extraction areas, PBA non-coal mining and natural cavities database, Johnson Poole and Bloomer mining data and Groundsure's unique database including historical surface ground and underground workings.

For further details on each dataset, please refer to each individual section in the report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1:Geology		
1.1 Artificial Ground	1.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	No
	1.1.2 Are there any records relating to permeability of artificial ground within the study site* boundary?	No
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?	Yes
	1.2.2 Are there any records relating to permeability of superficial geology within the study site boundary?	Yes
	1.2.3 Are there any records of landslip within 500m of the study site boundary?	No
	1.2.4 Are there any records relating to permeability of landslips within the study site boundary?	No
1.3 Bedrock, Solid Geology & Faults	1.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	1.3.2 Are there any records relating to permeability of bedrock within the study site boundary?	Yes
	1.3.3 Are there any records of faults within 500m of the study site boundary?	Yes
1.4 Radon data	1.4.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level
	1.4.2 Is the property in an area where Radon Protection Measures are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary

Section 2:Ground Workings	On-site	0-50m	51-250	251-500	501-1000
2.1 Historical Surface Ground Working Features from Small Scale Mapping	0	0	0	Not Searched	Not Searched
2.2 Historical Underground Workings from Small Scale Mapping	0	0	0	0	0
2.3 Current Ground Workings	0	0	0	0	0

Section 3: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
3.1 Historical Mining	0	0	0	0	0
3.2 Coal Mining	0	0	0	0	0
3.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
3.4 Non-Coal Mining	0	0	0	0	0
3.5 Non-Coal Mining Cavities	0	0	0	0	0
3.6 Natural Cavities	0	0	0	0	0
3.7 Brine Extraction	0	0	0	0	0
3.8 Gypsum Extraction	0	0	0	0	0
3.9 Tin Mining	0	0	0	0	0
3.10 Clay Mining	0	0	0	0	0

Section 4: Natural Ground Subsidence	On-site
4.1 Shrink Swell Clay	Low
4.2 Landslides	Very Low
4.3 Ground Dissolution of Soluble Rocks	Negligible
4.4 Compressible Deposits	Moderate
4.5 Collapsible Deposits	Negligible
4.6 Running Sand	Moderate

Section 5: Borehole Records	On-site	0-50m	51-250
5 BGS Recorded Boreholes	0	0	0

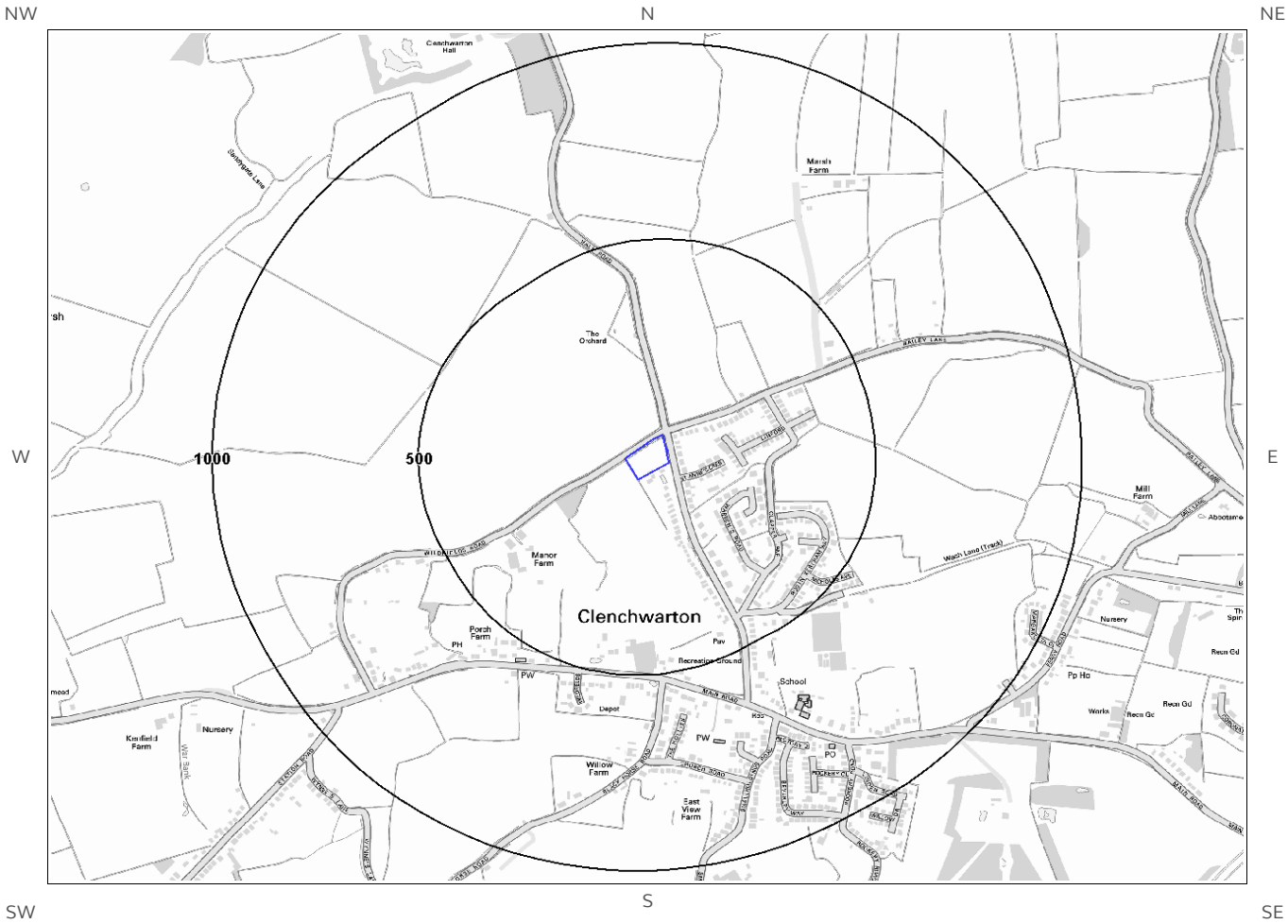
Section 6: Estimated Background Soil Chemistry	On-site	0-50m	51-250
6 Records of Background Soil Chemistry	1	2	6

Section 7: Railways and Tunnels	On-site	0-50m	51-250	251-500
7.1 Tunnels	0	0	0	Not Searched
7.2 Historical Railway and Tunnel Features	0	0	0	Not Searched
7.3 Historical Railways	0	0	0	Not Searched
7.4 Active Railways	0	0	0	Not Searched

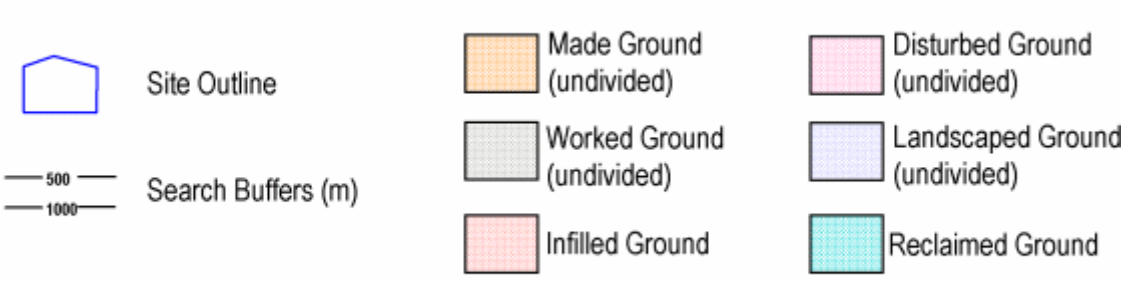
Section 7:Railways and Tunnels	On-site	0-50m	51-250	251-500
7.5 Railway Projects	0	0	0	0

1 Geology

1.1 Artificial Ground Map



Artificial Ground Legend



1 Geology

1.1 Artificial Ground

1.1.1Artificial/ Made Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No:145

Are there any records of Artificial/Made Ground within 500m of the study site boundary? No

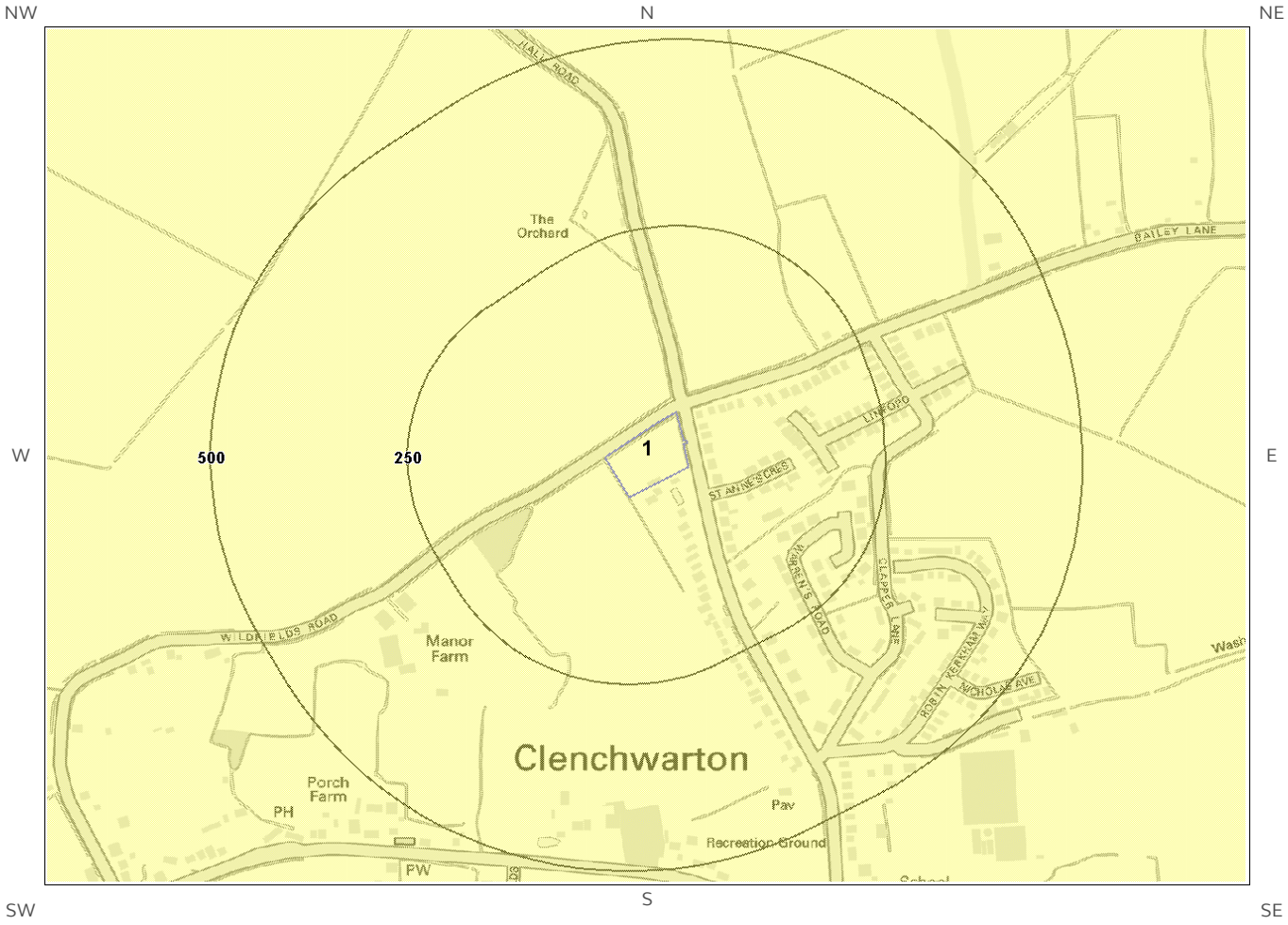
Database searched and no data found.

1.1.2 Permeability of Artificial Ground

Are there any records relating to permeability of artificial ground within the study site boundary? No

Database searched and no data found.

1.2 Superficial Deposits and Landslips Map



Superficial Deposits and Landslips Legend

Site Outline

500
1000
Search Buffers (m)

1.2 Superficial Deposits and Landslips

1.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary? Yes

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	TFD	TIDAL FLAT DEPOSITS	CLAY AND SILT [UNLITHIFIED DEPOSITS CODING SCHEME]

1.2.2 Permeability of Superficial Ground

Are there any records relating to permeability of superficial ground within the study site boundary? Yes

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Intergranular	Low	Very Low

1.2.3 Landslip

Are there any records of Landslip within 500m of the study site boundary? No

Database searched and no data found.

This Geology shows the main components as discrete layers, these are: Artificial / Made Ground, Superficial / Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

1.2.4 Landslip Permeability

Are there any records relating to permeability of landslips within the study site* boundary? No

Database searched and no data found.

* This includes an automatically generated 50m buffer zone around the site

1.3 Bedrock and Faults Map

Bedrock and Faults Legend

Site Outline

500
1000
Search Buffers (m)

1.3 Bedrock, Solid Geology & Faults

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No:145

1.3.1 Bedrock/ Solid Geology

Records of Bedrock/ Solid Geology within 500m of the study site boundary:

ID	Distance (m)	Direction	LEX Code	Description	Rock Age
1	0.0	On Site	KC-MDST	Kimmeridge Clay Formation - Mudstone	Kimmeridgian

1.3.2 Permeability of Bedrock Ground

Are there any records relating to permeability of bedrock ground within the study site* boundary? Yes

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Fracture	Low	Very Low

1.3.3 Faults

Are there any records of Faults within 500m of the study site boundary? Yes

ID	Distance (m)	Direction	Category Description	Feature Description
2	201.0	SE	ROCK	Cementstone bed

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as Faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

* This includes an automatically generated 50m buffer zone around the site

1.4 Radon Data

1.4.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level

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1.4.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary

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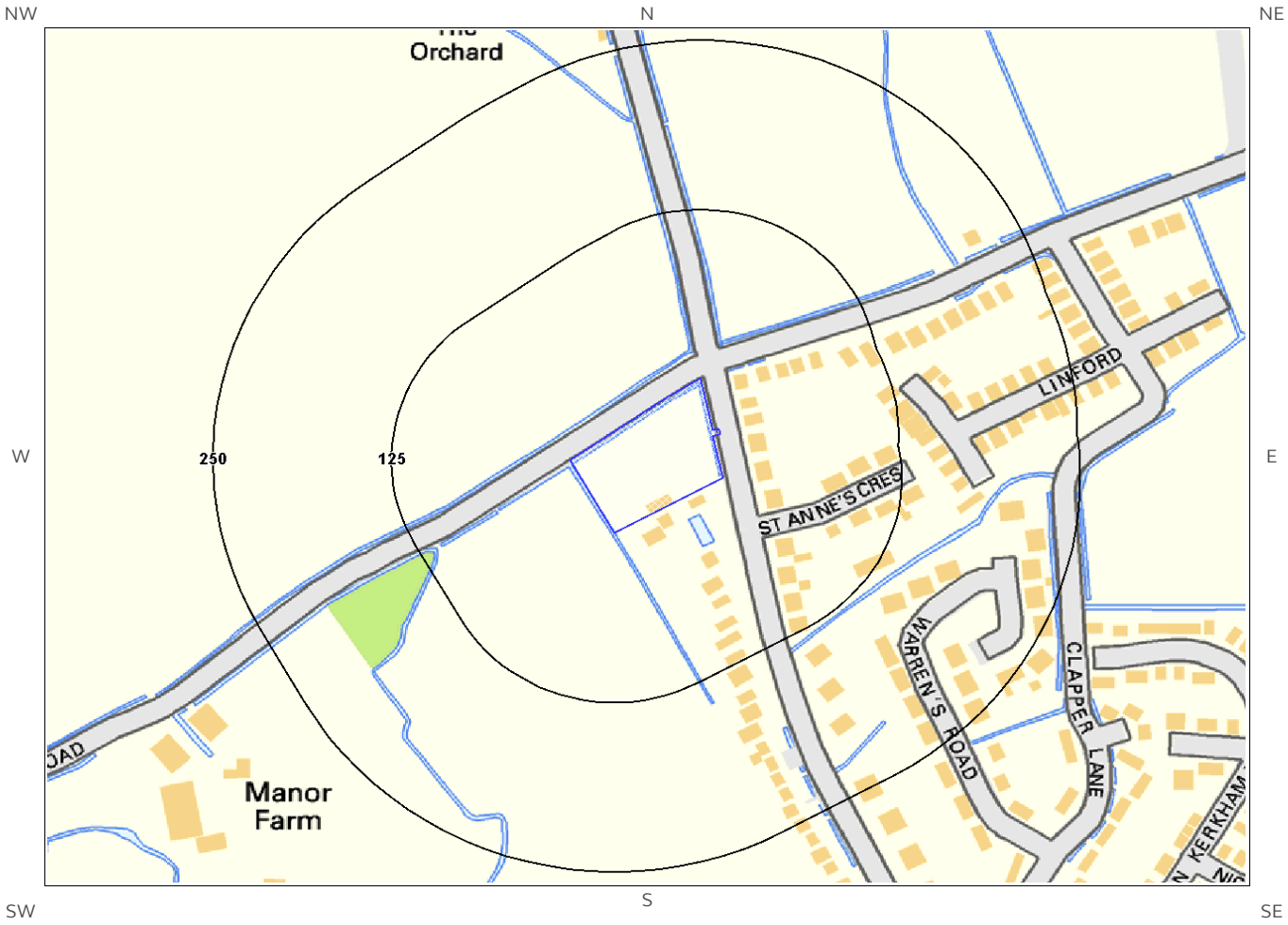
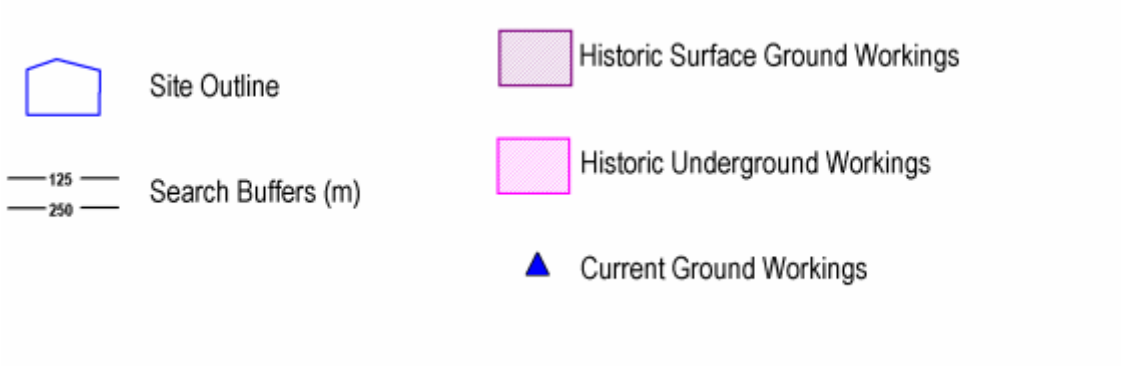
2 Ground Workings Map



Ground Workings Legend



2 Ground Workings

2.1 Historical Surface Ground Working Features derived from Historical Mapping

This dataset is based on Groundsure's unique Historical Land Use Database derived from 1:10,560 and 1:10,000 scale historical mapping.

Are there any Historical Surface Ground Working Features within 250m of the study site boundary? No

Database searched and no data found.

2.2 Historical Underground Working Features derived from Historical Mapping

This data is derived from the Groundsure unique Historical Land Use Database. It contains data derived from 1:10,000 and 1:10,560 historical Ordnance Survey Mapping and includes some natural topographical features (Shake Holes for example) as well as manmade features that may have implications for ground stability. Underground and mining features have been identified from surface features such as shafts. The distance that these extend underground is not shown.

Are there any Historical Underground Working Features within 1000m of the study site boundary? No

Database searched and no data found.

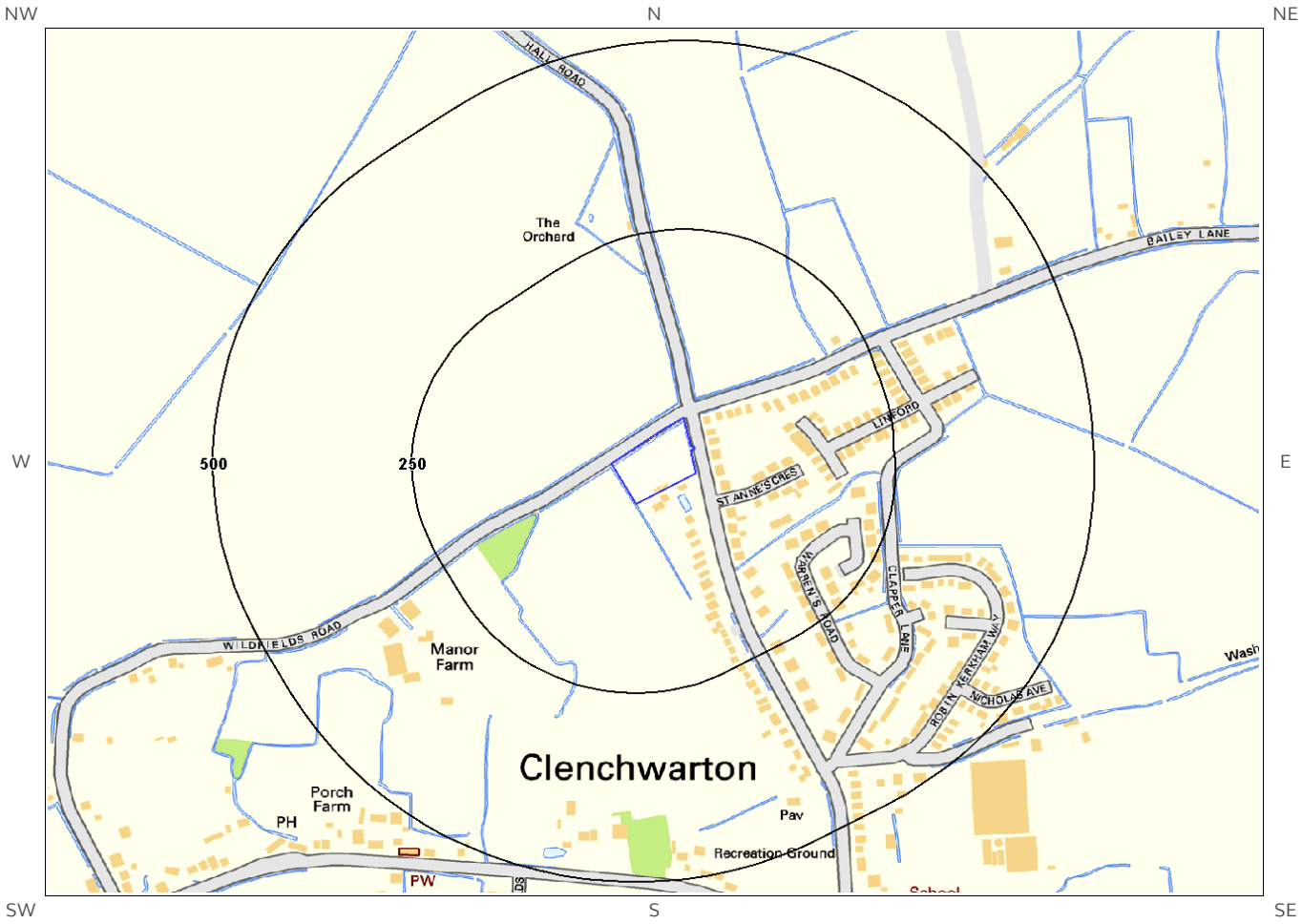
2.3 Current Ground Workings

This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

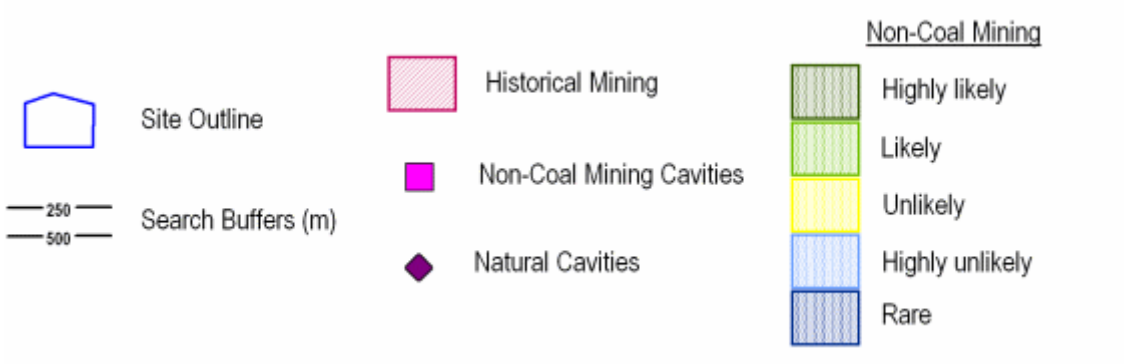
Are there any BGS Current Ground Workings within 1000m of the study site boundary? No

Database searched and no data found.

3 Mining, Extraction & Natural Cavities Map



Mining, Extraction and Natural Cavities Legend



3 Mining, Extraction & Natural Cavities

3.1 Historical Mining

This dataset is derived from Groundsure unique Historical Land-use Database that are indicative of mining or extraction activities.

Are there any Historical Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

3.2 Coal Mining

This dataset provides information as to whether the study site lies within a known coal mining affected area as defined by the coal authority.

Are there any Coal Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

3.3 Johnson Poole and Bloomer

This dataset provides information as to whether the study site lies within an area where JPB hold information relating to mining.

Are there any JPB Mining areas within 1000m of the study site boundary? No

The following information provided by JPB is not represented on mapping: Database searched and no data found.

3.4 Non-Coal Mining

This dataset provides information as to whether the study site lies within an area which may have been subject to non-coal historic mining.

Are there any Non-Coal Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

3.5 Non-Coal Mining Cavities

This dataset provides information from the Peter Brett Associates (PBA) mining cavities database (compiled for the national study entitled "Review of mining instability in Great Britain, 1990" PBA has also continued adding to this database) on mineral extraction by mining.

Are there any Non-Coal Mining cavities within 1000m of the study site boundary? No

Database searched and no data found.

3.6 Natural Cavities

This dataset provides information based on Peter Brett Associates natural cavities database.

Are there any Natural Cavities within 1000m of the study site boundary? No

Database searched and no data found.

3.7 Brine Extraction

This data provides information from the Coal Authority issued on behalf of the Cheshire Brine Subsidence Compensation Board.

Are there any Brine Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

3.8 Gypsum Extraction

This dataset provides information on Gypsum extraction from British Gypsum records.

Are there any Gypsum Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

3.9 Tin Mining

This dataset provides information on tin mining areas and is derived from tin mining records. This search is based upon postcode information to a sector level.

Are there any Tin Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

3.10 Clay Mining

This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

Are there any Clay Mining areas within 1000m of the study site boundary? No

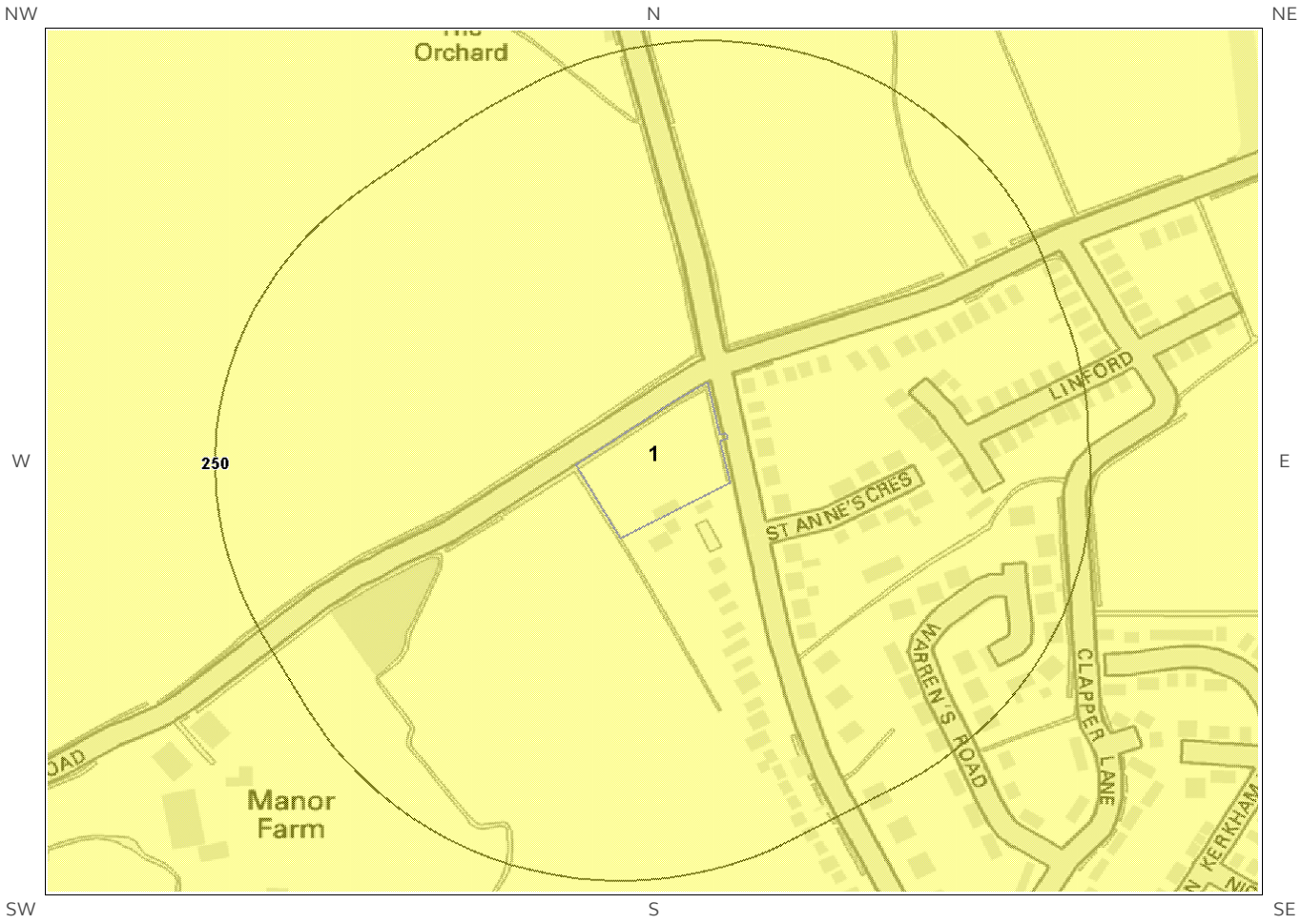
Database searched and no data found.

4 Natural Ground Subsidence

4.1 Shrink-Swell Clay Map

Shrink Swell Clay Legend

4.2 Landslides Map



Landslides Legend

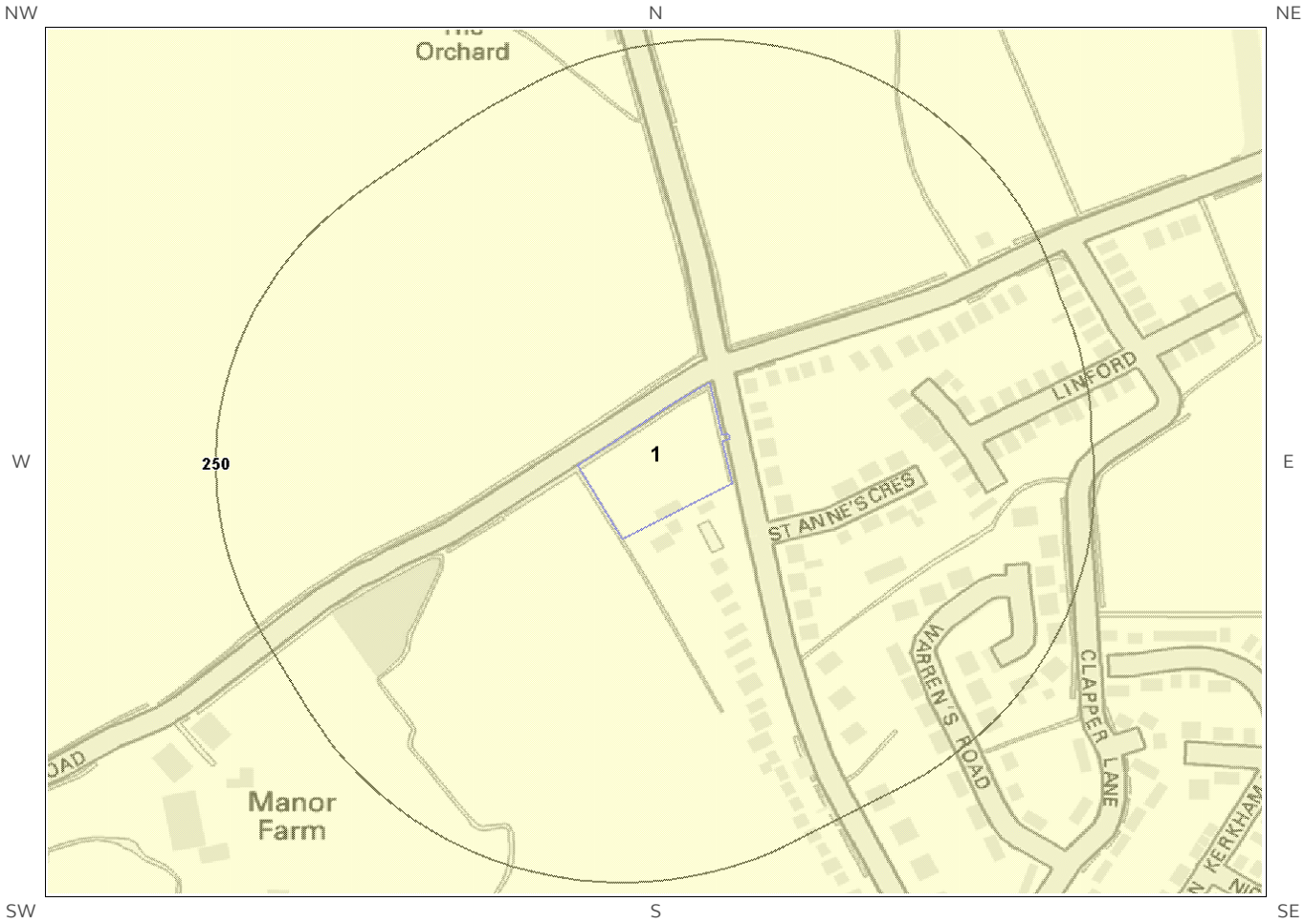
Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

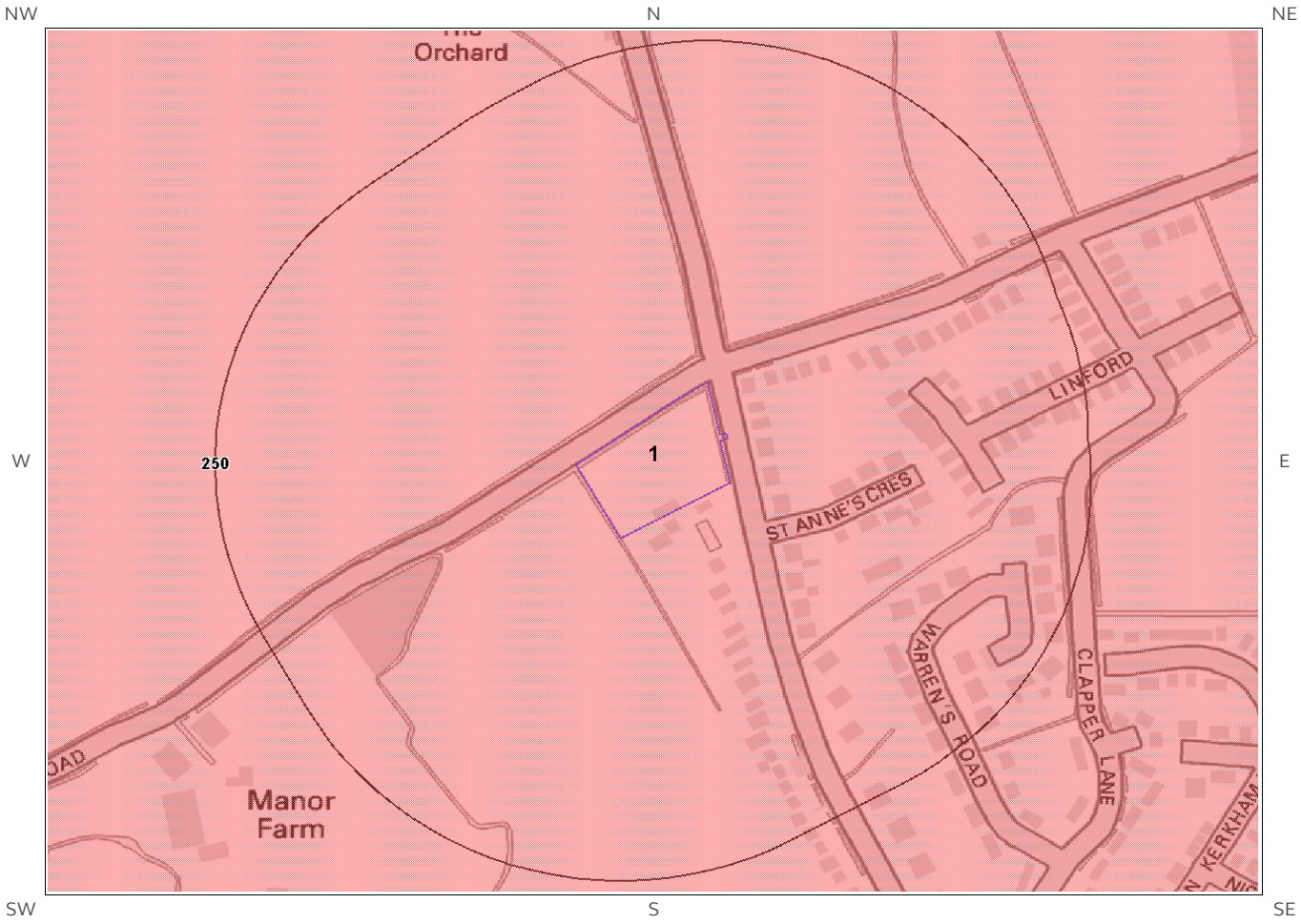
Low
Moderate
High

4.3 Ground Dissolution Soluble Rocks Map



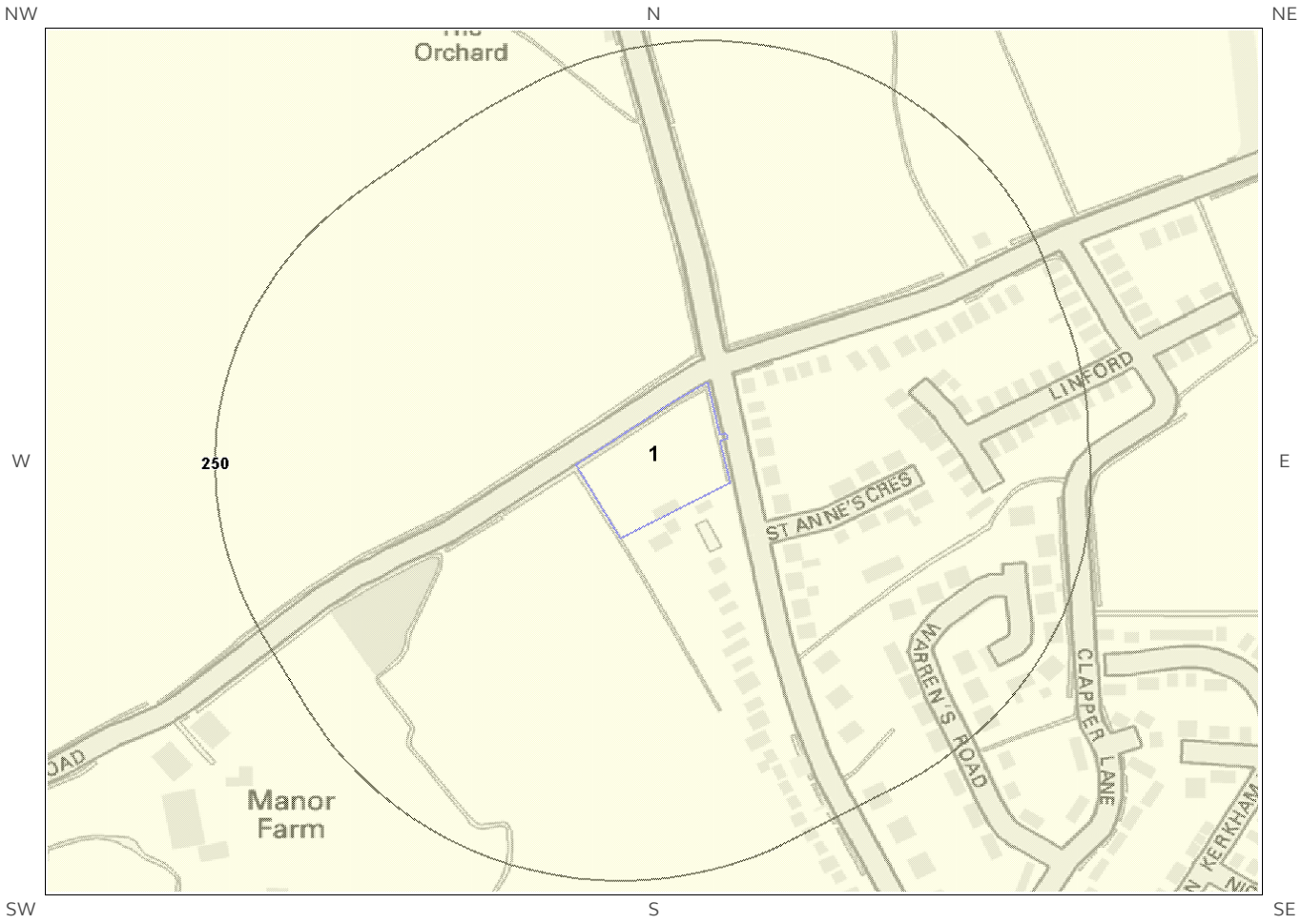
Ground Dissolution Soluble Rocks Legend

4.4 Compressible Deposits Map



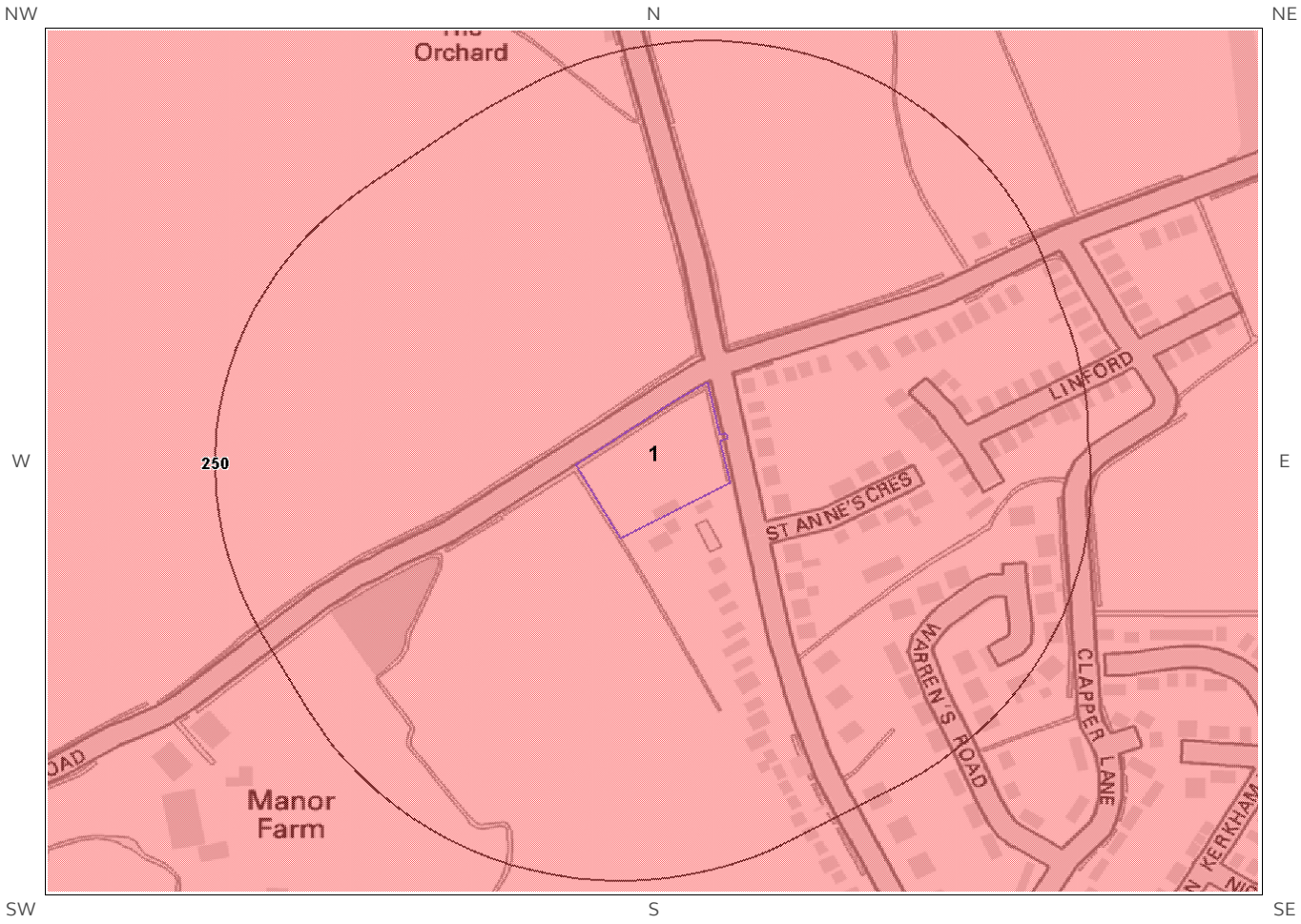
Compressible Deposits Legend

4.5 Collapsible Deposits Map



Collapsible Deposits Legend

4.6 Running Sand Map



Running Sand Legend

4 Natural Ground Subsidence

The National Ground Subsidence rating is obtained through the 6 natural ground stability hazard datasets, which are supplied by the British Geological Survey (BGS).

The following GeoSure data represented on the mapping is derived from the BGS Digital Geological map of Great Britain at 1:50,000 scale.

What is the maximum hazard rating of natural subsidence within the study site** boundary? Moderate

4.1 Shrink-Swell Clays

The following Shrink Swell information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Low	Ground conditions predominantly medium plasticity. Do not plant trees with high soil moisture demands near to buildings. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a possible increase in construction cost to reduce potential shrink swell problems. For existing property, there is a possible increase in insurance risk, especially during droughts or where vegetation with high moisture demands is present.

4.2 Landslides

The following Landslides information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

4.3 Ground Dissolution of Soluble Rocks

The following Ground Dissolution information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

* This includes an automatically generated 50m buffer zone around the site

4.4 Compressible Deposits

The following Compressible Deposits information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Moderate	Significant potential for compressibility problems. Do not drain, load or de-water ground near the property without technical advice. For new build, consider possibility of compressible ground in ground investigation, construction and building design. Consider effects of groundwater changes. Extra construction costs are likely. For existing property, possible increase in insurance risk from compressibility, especially if water conditions or loading of the ground change significantly.

4.5 Collapsible Deposits

The following Collapsible Rocks information provided by the British Geological Survey:

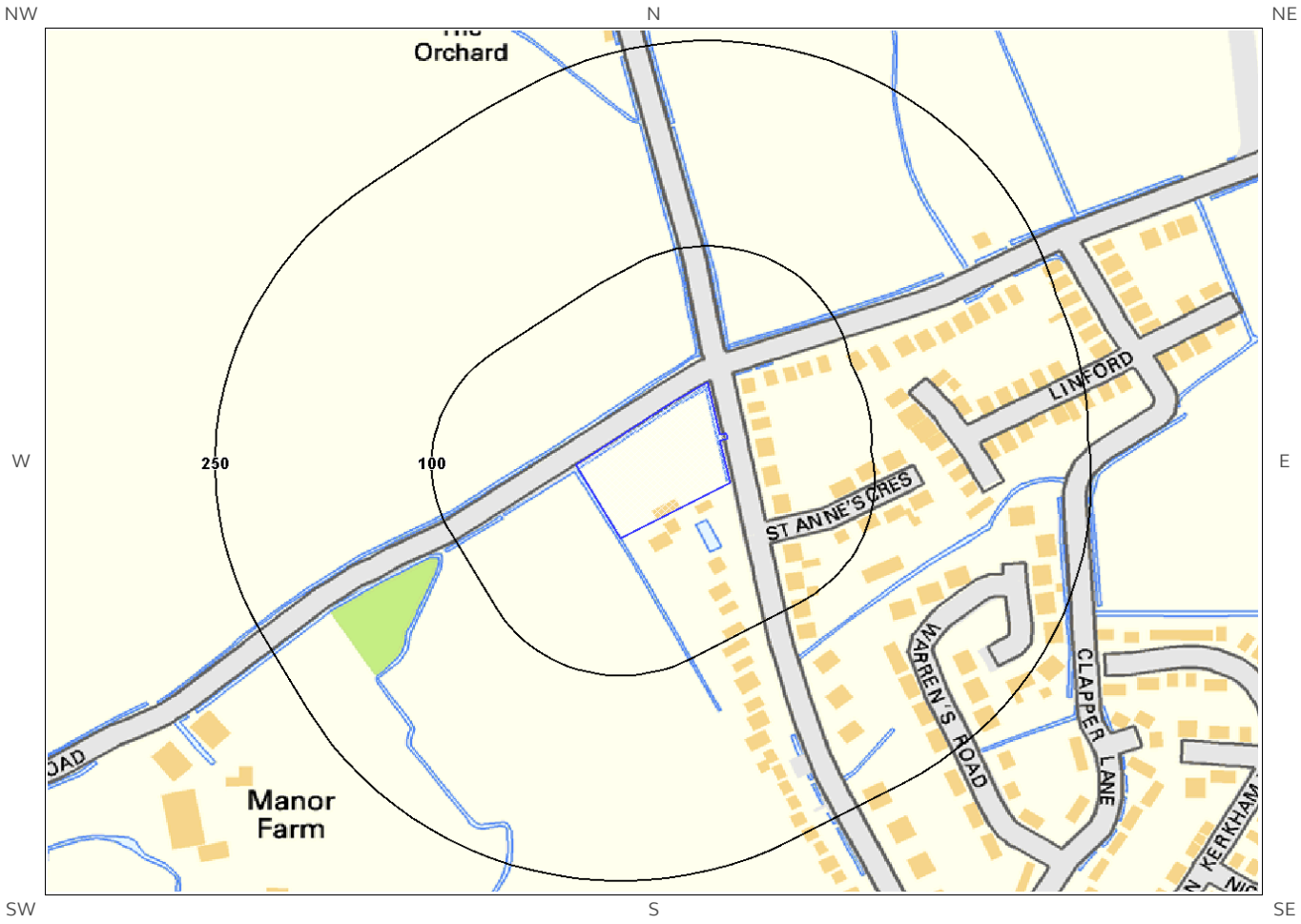
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for collapsible deposits identified. No actions required to avoid problems due to collapsible deposits. No special ground investigation required, or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

4.6 Running Sands

The following Running Sands information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Moderate	Significant potential for running sand problems with relatively small changes in ground conditions. Avoid large amounts of water entering the ground (for example through pipe leakage or soak-aways). Do not dig (deep) holes into saturated ground near the property without technical advice. For new build, consider the consequences of soil and groundwater conditions during and after construction. For existing property, possible increase in insurance risk from running sand, for example, due to water leakage, high rainfall events or flooding.

5 Borehole Records Map



Borehole Records Legend

Site Outline

Borehole Locations

125
250
Search Buffers (m)

5 Borehole Records

The systematic analysis of data extracted from the BGS Borehole Records database provides the following information.

Records of boreholes within 250m of the study site boundary:	0

Database searched and no data found.

6 Estimated Background Soil Chemistry

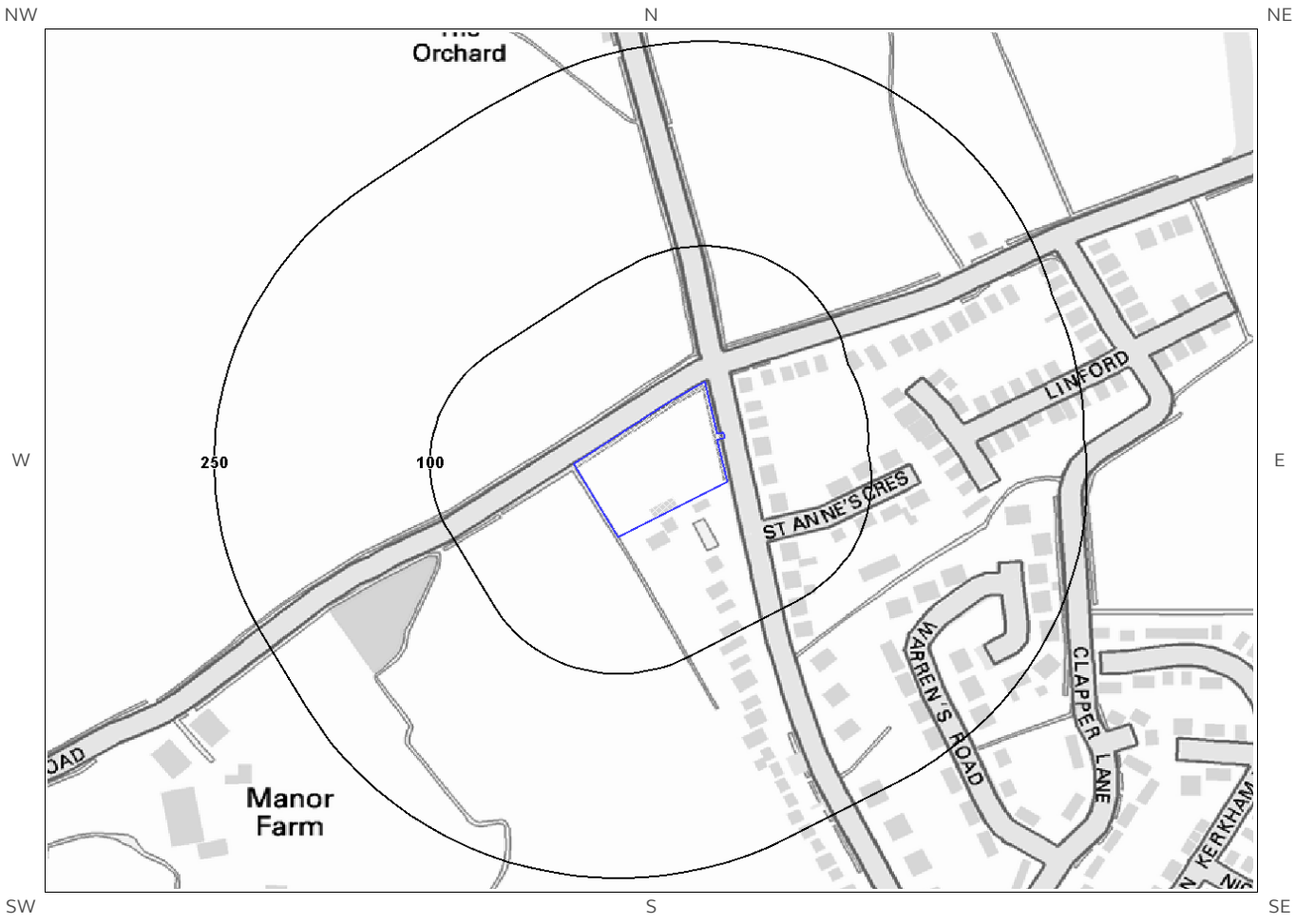
Records of background estimated soil chemistry within 250m of the study site boundary: 9

For further information on how this data is calculated and limitations upon its use, please see the Groundsure Geoinsight User Guide, available on request.

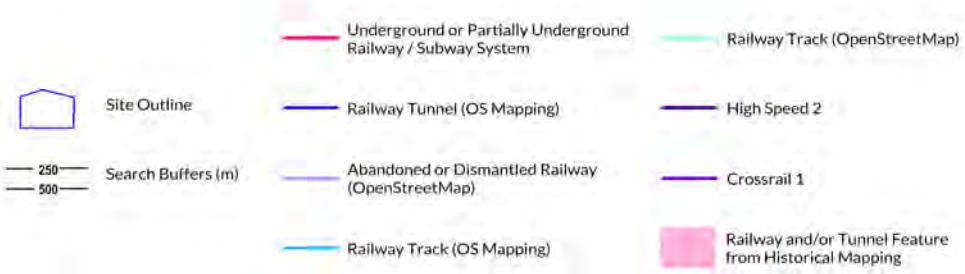
Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	<100 mg/kg
11.0	N	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	<100 mg/kg
11.0	N	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	<100 mg/kg
175.0	E	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	<100 mg/kg
184.0	E	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	<100 mg/kg
184.0	E	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	<100 mg/kg
218.0	W	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	<100 mg/kg
229.0	W	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	<100 mg/kg
229.0	W	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	<100 mg/kg

*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.

7 Railways and Tunnels Map



Railways and Tunnels Legend



7 Railways and Tunnels

7.1 Tunnels

This data is derived from OpenStreetMap and provides information on the possible locations of underground railway systems in the UK - the London Underground, the Tyne & Wear Metro and the Glasgow Subway.

Have any underground railway lines been identified within the study site boundary?	No
Have any underground railway lines been identified within 250m of the study site boundary?	No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels Map.

This data is derived from Ordnance Survey mapping and provides information on the possible locations of railway tunnels forming part of the UK overground railway network.

Have any other railway tunnels been identified within the site boundary?	No
Have any other railway tunnels been identified within 250m of the site boundary?	No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels Map.

7.2 Historical Railway and Tunnel Features

This data is derived from Groundsure's unique Historical Land-use Database and contains features relating to tunnels, railway tracks or associated works that have been identified from historical Ordnance Survey mapping.

Have any historical railway or tunnel features been identified within the study site boundary?	No
Have any historical railway or tunnel features been identified within 250m of the study site boundary?	No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels Map.

7.3 Historical Railways

This data is derived from OpenStreetMap and provides information on the possible alignments of abandoned or dismantled railway lines in proximity to the study site.

Have any historical railway lines been identified within the study site boundary?	No
Have any historical railway lines been identified within 250m of the study site boundary?	No

Database searched and no data found.

Note: multiple sections of the same track may be listed in the detail above

Any records that have been identified are represented on the Railways and Tunnels Map.

7.4 Active Railways

These datasets are derived from Ordnance Survey mapping and OpenStreetMap and provide information on the possible locations of active railway lines in proximity to the study site.

Have any active railway lines been identified within the study site boundary?	No
Have any active railway lines been identified within 250m of the study site boundary?	No

Database searched and no data found.

Note: multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels Map.

7.5 Railway Projects

These datasets provide information on the location of large scale railway projects High Speed 2 and Crossrail 1 .

Is the study site within 5km of the route of the High Speed 2 rail project?	No
Is the study site within 500m of the route of the Crossrail 1 rail project?	No

*Further information on proximity to these routes, the project construction status and associated works can be obtained through the purchase of a **Groundsure HS2 and Crossrail 1 Report**.*

The route data has been digitised from publicly available maps by Groundsure. The route as provided relates to the Crossrail 1 project only, and does not include any details of the Crossrail 2 project, as final details of the route for Crossrail 2 are still under consultation.

Contact Details

Groundsure Helpline

Telephone: 08444 159 000
info@groundsure.com

British Geological Survey Enquiries

Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email:**enquiries@bgs.ac.uk**
Web:**www.bgs.ac.uk**
BGS Geological Hazards Reports and general geological enquiries

British Gypsum

British Gypsum Ltd
East Leake
Loughborough
Leicestershire
LE12 6HX

The Coal Authority

200 Lichfield Lane
Mansfield
Notts NG18 4RG
Tel: 0345 7626 848
DX 716176 Mansfield 5
www.coal.gov.uk

Public Health England

Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG
https://www.gov.uk/government/organisations/public-health-england
Email: **enquiries@phe.gov.uk**
Main switchboard: 020 7654 8000

Johnson Poole & Bloomer Limited

Harris and Pearson Building, Brettel Lane
Brierley Hill, West Midlands
DY5 3LH
Tel: +44 (0) 1384 262 000
Email:**enquiries.gs@jpb.co.uk**
Website: **www.jpb.co.uk**

Ordnance Survey

Adanac Drive, Southampton
SO16 0AS

Tel: 08456 050505
Website: http://www.ordnancesurvey.co.uk/

Getmapping PLC

Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW
Tel: 01252 845444
Website:**http://www1.getmapping.com/**

Contact Details

Peter Brett Associates

Caversham Bridge House
Waterman Place
Reading
Berkshire RG1 8DN
Tel: +44 (0)118 950 0761 E-mail:**reading@pba.co.uk**
Website:**http://www.peterbrett.com/home**

Standard Terms and Conditions

1 Definitions

I**n these terms and conditions unless the context otherwise requires:**
"Beneficiary" means the person or entity for whose benefit the Client has obtained the Services.
"Client" means the party or parties entering into a Contract with Groundsure.
"Commercial" means any building or property which is not Residential.
"Confidential Information" means the contents of this Contract and all information received from the Client as a result of, or in connection with, this Contract other than
(i) information which the Client can prove was rightfully in its possession prior to disclosure by Groundsure and
(ii) any information which is in the public domain (other than by virtue of a breach of this Contract).
"Support Services" means Support Services provided by Groundsure including, without limitation, interpreting third party and in-house environmental data, providing environmental support advice, undertaking environmental audits and assessments, Site investigation, Site monitoring and related items.
"Contract" means the contract between Groundsure and the Client for the provision of the Services, and which shall incorporate these terms and conditions, the Order, and the relevant User Guide.
"Third Party Data Provider" means any third party providing Third Party Content to Groundsure.
"Data Reports" means reports comprising factual data with no accompanying interpretation.
"Fees" has the meaning set out in clause 5.1.
"Groundsure" means Groundsure Limited, a company registered in England and Wales under number 03421028.
"Groundsure Materials" means all materials prepared by Groundsure and provided as part of the Services, including but not limited to Third Party Content, Data Reports, Mapping, and Risk Screening Reports.
"Intellectual Property" means any patent, copyright, design rights, trade or service mark, moral rights, data protection rights, know-how or trade mark in each case whether registered or not and including applications for the same or any other rights of a similar nature anywhere in the world.
"Mapping" means a map, map data or a combination of historical maps of various ages, time periods and scales.
"Order" means an electronic, written or other order form submitted by the Client requesting Services from Groundsure in respect of a specified Site.
"Ordnance Survey" means the Secretary of State for Business, Innovation and Skills, acting through Ordnance Survey, Adanac Drive, Southampton, SO16 0AS, UK.
"Order Website" means the online platform through which Orders may be placed by the Client and accepted by Groundsure.
"Report" means a Risk Screening Report or Data Report for Commercial or Residential property.
"Residential" means any building or property used as or intended to be used as a single dwelling.
"Risk Screening Report" means a risk screening report comprising factual data with an accompanying interpretation by Groundsure.
"Services" means any Report, Mapping and/or Support Services which Groundsure has agreed to provide by accepting an Order pursuant to clause 2.6.
"Site" means the area of land in respect of which the Client has requested Groundsure to provide the Services.
"Third Party Content" means data, database information or other information which is provided to Groundsure by a Third Party Data Provider.
"User Guide" means the user guide, as amended from time to time, available upon request from Groundsure and on the website (www.Groundsure.com) and forming part of this Contract.

2 Scope of Services, terms and conditions, requests for insurance and quotations

2.1 Groundsure agrees to provide the Services in accordance with the Contract.
2.2 Groundsure shall exercise reasonable skill and care in the provision of the Services.
2.3 Subject to clause 7.3 the Client acknowledges that it has not relied on any statement or representation made by or on behalf of Groundsure which is not set out and expressly agreed in writing in the Contract and all such statements and representations are hereby excluded to the fullest extent permitted by law.
2.4 The Client acknowledges that terms and conditions appearing on a Client's order form, printed stationery or other communication, or any terms or conditions implied by custom, practice or course of dealing shall be of no effect, and that this Contract shall prevail over all others in relation to the Order.
2.5 If the Client or Beneficiary requests insurance in conjunction with or as a result of the Services, Groundsure shall use reasonable endeavours to recommend such insurance, but makes no warranty that such insurance shall be available from insurers or that it will be offered on reasonable terms. Any insurance purchased by the Client or Beneficiary shall be subject solely to the terms of the policy issued by insurers and Groundsure will have no liability therefor. In addition you acknowledge and agree that Groundsure does not act as an agent or broker for any insurance providers. The Client should take (and ensure that the Beneficiary takes) independent advice to ensure that the insurance policy requested or offered is suitable for its requirements.
2.6 Groundsure's quotations or proposals are valid for a period of 30 days only unless an alternative period of time is explicitly stipulated by Groundsure. Groundsure reserves the right to withdraw any quotation or proposal at any time before an Order is accepted by Groundsure. Groundsure's acceptance of an Order shall be binding only when made in writing and signed by Groundsure's authorised representative or when accepted through the Order Website.

3 The Client's obligations

3.1The Client shall comply with the terms of this Contract and
(i) procure that the Beneficiary or any third party relying on the Services complies with and acts as if it is bound by the Contract and
(ii) be liable to Groundsure for the acts and omissions of the Beneficiary or any third party relying on the Services as if such acts and omissions were those of the Client.
3.2 The Client shall be solely responsible for ensuring that the Services are appropriate and suitable for its and/or the Beneficiary's needs.
3.3 The Client shall supply to Groundsure as soon as practicable and without charge all requisite information (and the Client warrants that such information is accurate, complete and appropriate), including without limitation any environmental information relating to the Site and shall give such assistance as Groundsure shall reasonably require in the provision of the Services including, without limitation, access to the Site, facilities and equipment.
3.4 Where the Client's approval or decision is required to enable Groundsure to carry out work in order to provide the Services, such approval or decision shall be given or procured in reasonable time and so as not to delay or disrupt the performance of the Services.
3.5 Save as expressly permitted by this Contract the Client shall not, and shall procure that the Beneficiary shall not, re-sell, alter, add to, or amend the Groundsure Materials, or use the Groundsure Materials in a manner for which they were not intended. The Client may make the Groundsure Materials available to a third party who is considering acquiring some or all of, or providing funding in relation to, the Site, but such third party cannot rely on the same unless expressly permitted under clause 4.
3.6 The Client is responsible for maintaining the confidentiality of its user name and password if using the Order Website and the Client acknowledges that Groundsure accepts no liability of any kind for any loss or damage suffered by the Client as a consequence of using the Order Website.

4 Reliance

4.1The Client acknowledges that the Services provided by Groundsure consist of the presentation and analysis of Third Party Content and other content and that information obtained from a Third Party Data Provider cannot be guaranteed or warranted by Groundsure to be reliable.
4.2 In respect of Data Reports, Mapping and Risk Screening Reports, the following classes of person and no other are entitled to rely on their contents;
(i) the Beneficiary,
(ii) the Beneficiary's professional advisers, (iii) any person providing funding to the Beneficiary in relation to the Site (whether directly or as part of a lending syndicate),
(iv) the first purchaser or first tenant of the Site, and
(v) the professional advisers and lenders of the first purchaser or tenant of the Site.
4.3 In respect of Support Services, only the Client, Beneficiary and parties expressly named in a Report and no other parties are entitled to rely on its contents.
4.4 Save as set out in clauses 4.2 and 4.3 and unless otherwise expressly agreed in writing, no other person or entity of any kind is entitled to rely on any Services or Report issued or provided by Groundsure. Any party considering such Reports and Services does so at their own risk.

5 Fees and Disbursements

5.1Groundsure shall charge and the Client shall pay fees at the rate and frequency specified in the written proposal, Order Website or Order acknowledgement form, plus (in the case of Support Services) all proper disbursements incurred by Groundsure. The Client shall in addition pay all value added tax or other tax payable on such fees and disbursements in relation to the provision of the Services (together "Fees").
5.2 The Client shall pay all outstanding Fees to Groundsure in full without deduction, counterclaim or set off within 30 days of the date of Groundsure's invoice or such other period as may be agreed in writing between Groundsure and the Client ("Payment Date"). Interest on late payments will accrue on a daily basis from the Payment Date until the date of payment (whether before or after judgment) at the rate of 8% per annum.
5.3 The Client shall be deemed to have agreed the amount of any invoice unless an objection is made in writing within 28 days of the date of the invoice. As soon as reasonably practicable after being notified of an objection, without prejudice to clause 5.2 a member of Groundsure's management team will contact the Client and the parties shall then use all reasonable endeavours to resolve the dispute within 15 days.

6 Intellectual Property and Confidentiality

6.1 Subject to
(i) full payment of all relevant Fees and
(ii) compliance with this Contract, the Client is granted (and is permitted to sub-licence to the Beneficiary) a royalty-free, worldwide, non-assignable and (save to the extent set out in this Contract) non-transferable licence to make use of the Groundsure Materials.
6.2 All Intellectual Property in the Groundsure Materials are and shall remain owned by Groundsure or Groundsure's licensors (including without limitation the Third Party Data Providers) the Client acknowledges, and shall procure

acknowledgement by the Beneficiary of, such ownership. Nothing in this Contract purports to transfer or assign any rights to the Client or the Beneficiary in respect of such Intellectual Property.
6.3 Third Party Data Providers may enforce any breach of clauses 6.1 and 6.2 against the Client or Beneficiary.
6.4 The Client shall, and shall procure that any recipients of the Groundsure Materials shall:

(i) not remove, suppress or modify any trade mark, copyright or other proprietary marking belonging to Groundsure or any third party from the Services;

(ii) use the information obtained as part of the Services in respect of the subject Site only, and shall not store or reuse any information obtained as part of the Services provided in respect of adjacent or nearby sites;

(iii) not create any product or report which is derived directly or indirectly from the Services (save that those acting in a professional capacity to the Beneficiary may provide advice based upon the Services);

(iv) not combine the Services with or incorporate such Services into any other information data or service;

(v) not reformat or otherwise change (whether by modification, addition or enhancement), the Services (save that those acting for the Beneficiary in a professional capacity shall not be in breach of this clause 6.4(v) where such reformatting is in the normal course of providing advice based upon the Services);

(vi) where a Report and/or Mapping contains material belonging to Ordnance Survey, acknowledge and agree that such content is protected by Crown Copyright and shall not use such content for any purpose outside of receiving the Services; and

(vii) not copy in whole or in part by any means any map prints or run-on copies containing content belonging to Ordnance Survey (other than that contained within Ordnance Survey's OS Street Map) without first being in possession of a valid Paper Map Copying Licence from Ordnance Survey,

6.5 Notwithstanding clause 6.4, the Client may make reasonable use of the Groundsure Materials in order to advise the Beneficiary in a professional capacity. However, Groundsure shall have no liability in respect of any advice, opinion or report given or provided to Beneficiaries by the Client.
6.6 The Client shall procure that any person to whom the Services are made available shall notify Groundsure of any request or requirement to disclose, publish or disseminate any information contained in the Services in accordance with the Freedom of Information Act 2000, the Environmental Information Regulations 2004 or any associated legislation or regulations in force from time to time.

7.Liability: Particular Attention Should Be Paid To This Clause

7.1 This Clause 7 sets out the entire liability of Groundsure, including any liability for the acts or omissions of its employees, agents, consultants, subcontractors and Third Party Content, in respect of:

(i) any breach of contract, including any deliberate breach of the Contract by Groundsure or its employees, agents or subcontractors;

(ii) any use made of the Reports, Services, Materials or any part of them; and

(iii) any representation, statement or tortious act or omission (including negligence) arising under or in connection with the Contract.

7.2 All warranties, conditions and other terms implied by statute or common law are, to the fullest extent permitted by law, excluded from the Contract.
7.3 Nothing in the Contract limits or excludes the liability of the Supplier for death or personal injury resulting from negligence, or for any damage or liability incurred by the Client or Beneficiary as a result of fraud or fraudulent misrepresentation.
7.4 Groundsure shall not be liable for

(i) loss of profits;
(ii) loss of business;
(iii) depletion of goodwill and/or similar losses;
(iv) loss of anticipated savings;
(v) loss of goods;
(vi) loss of contract;
(vii) loss of use;
(viii) loss or corruption of data or information;
(ix) business interruption;
(x) any kind of special, indirect, consequential or pure economic loss, costs, damages, charges or expenses;
(xi) loss or damage that arise as a result of the use of all or part of the Groundsure Materials in breach of the Contract;
(xii) loss or damage arising as a result of any error, omission or inaccuracy in any part of the Groundsure Materials where such error, omission or inaccuracy is caused by any Third Party Content or any reasonable interpretation of Third Party Content;
(xiii) loss or damage to a computer, software, modem, telephone or other property; and
(xiv) loss or damage caused by a delay or loss of use of Groundsure's internet ordering service.

7.5 Groundsure's total liability in relation to or under the Contract shall be limited to £10 million for any claim or claims.
7.6 Groundsure shall procure that the Beneficiary shall be bound by limitations and exclusions of liability in favour of Groundsure which accord with those detailed in clauses 7.4 and 7.5 (subject to clause 7.3) in respect of all claims which the Beneficiary may bring against Groundsure in relation to the Services or other matters arising pursuant to the Contract.

8 Groundsure's right to suspend or terminate

8.1 If Groundsure reasonably believes that the Client or Beneficiary has not provided the information or assistance required to enable the proper provision of the Services, Groundsure shall be entitled to suspend all further performance of the Services until such time as any such deficiency has been made good.
8.2 Groundsure shall be entitled to terminate the Contract immediately on written notice in the event that:

(i) the Client fails to pay any sum due to Groundsure within 30 days of the Payment Date; or

(ii) the Client (being an individual) has a bankruptcy order made against him or (being a company) shall enter into liquidation whether compulsory or voluntary or have an administration order made against it or if a receiver shall be appointed over the whole or any part of its property assets or undertaking or if the Client is struck off the Register of Companies or dissolved; or

(iii) the Client being a company is unable to pay its debts within the meaning of Section 123 of the Insolvency Act 1986 or being an individual appears unable to pay his debts within the meaning of Section 268 of the Insolvency Act 1986 or if the Client shall enter into a composition or arrangement with the Client's creditors or shall suffer distress or execution to be levied on his goods; or

(iv) the Client or the Beneficiary breaches any term of the Contract (including, but not limited to, the obligations in clause 4) which is incapable of remedy or if remediable, is not remedied within five days of notice of the breach.

9. Client's Right to Terminate and Suspend

9.1 Subject to clause 10.1, the Client may at any time upon written notice terminate or suspend the provision of all or any of the Services.
9.2 In any event, where the Client is a consumer (and not a business) he/she hereby expressly acknowledges and agrees that:

(i) the supply of Services under this Contract (and therefore the performance of this Contract) commences immediately upon Groundsure's acceptance of the Order; and

(ii) the Reports and/or Mapping provided under this Contract are

(a) supplied to the Client's specification(s) and in any event
(b) by their nature cannot be returned.

10 Consequences of Withdrawal, Termination or Suspension

10.1 Upon termination of the Contract:

(i) Groundsure shall take steps to bring to an end the Services in an orderly manner, vacate any Site with all reasonable speed and shall deliver to the Client and/or Beneficiary any property of the Client and/or Beneficiary in Groundsure's possession or control; and

(ii) the Client shall pay to Groundsure all and any Fees payable in respect of the performance of the Services up to the date of termination or suspension. In respect of any Support Services provided, the Client shall also pay Groundsure any additional costs incurred in relation to the termination or suspension of the Contract.

11 Anti-Bribery

11.1 The Client warrants that it shall:

(i) comply with all applicable laws, statutes and regulations relating to anti-bribery and anti-corruption including but not limited to the Bribery Act 2010;

(ii) comply with such of Groundsure's anti-bribery and anti-corruption policies as are notified to the Client from time to time; and

(iii) promptly report to Groundsure any request or demand for any undue financial or other advantage of any kind received by or on behalf of the Client in connection with the performance of this Contract.

11.2 Breach of this Clause 11 shall be deemed a material breach of this Contract.

12 General

12.1 The Mapping contained in the Services is protected by Crown copyright and must not be used for any purpose other than as part of the Services or as specifically provided in the Contract.
12.2 The Client shall be permitted to make one copy only of each Report or Mapping Order. Thereafter the Client shall be entitled to make unlimited copies of the Report or Mapping Order only in accordance with an Ordnance Survey paper map copy license available through Groundsure.
12.3 Groundsure reserves the right to amend or vary this Contract. No amendment or variation to this Contract shall be valid unless signed by an authorised representative of Groundsure.
12.4 No failure on the part of Groundsure to exercise, and no delay in exercising, any right, power or provision under this Contract shall operate as a waiver thereof.
12.5 Save as expressly provided in this Contract, no person other than the persons set out therein shall have any right under the Contract (Rights of Third Parties) Act 1999 to enforce any terms of the Contract.
12.6 The Secretary of State for Business, Innovation and Skills ("BIS") or BIS' successor body, as the case may be, acting through Ordnance Survey may enforce a breach of clause 6.4(vi) and clause 6.4(vii) of these terms and conditions against the Client in accordance with the provisions of the Contracts (Rights of Third Parties) Act 1999.
12.7 Groundsure shall not be liable to the Client if the provision of the Services is delayed or prevented by one or more of the following circumstances:

(i) the Client or Beneficiary's failure to provide facilities, access or information;
(ii) fire, storm, flood, tempest or epidemic;
(iii) Acts of God or the public enemy;
(iv) riot, civil commotion or war;
(v) strikes, labour disputes or industrial action;
(vi) acts or regulations of any governmental or other agency;
(vii) suspension or delay of services at public registries by Third Party Data Providers;
(viii) changes in law; or
(ix) any other reason beyond Groundsure's reasonable control.

In the event that Groundsure is prevented from performing the Services (or any part thereof) in accordance with this clause 12.6 for a period of not less than 30 days then Groundsure shall be entitled to terminate this Contract immediately on written notice to the Client.

12.8 Any notice provided shall be in writing and shall be deemed to be properly given if delivered by hand or sent by first class post, facsimile or by email to the address, facsimile number or email address of the relevant party as may have been notified by each party to the other for such purpose or in the absence of such notification the last known address.

12.9 Such notice shall be deemed to have been received on the day of delivery if delivered by hand, facsimile or email (save to the extent such day is not a working day where it shall be deemed to have been delivered on the next working day) and on the second working day after the day of posting if sent by first class post.

12.10 The Contract constitutes the entire agreement between the parties and shall supersede all previous arrangements between the parties relating to the subject matter hereof.

12.11 Each of the provisions of the Contract is severable and distinct from the others and if one or more provisions is or should become invalid, illegal or unenforceable, the validity and enforceability of the remaining provisions shall not in any way be tainted or impaired.

12.12 This Contract shall be governed by and construed in accordance with English law and any proceedings arising out of or connected with this Contract shall be subject to the exclusive jurisdiction of the English courts.

12.13 Groundsure is an executive member of the Council of Property Search Organisation (CoPSO) and has signed up to the Search Code administered by the Property Codes Compliance Board (PCCB). All Risk Screening Reports shall be supplied in accordance with the provisions of the Search Code.

12.14 If the Client or Beneficiary has a complaint about the Services, written notice should be given to the Compliance Officer at Groundsure who will respond in a timely manner. In the event you are not satisfied with Groundsure's complaints handling process or you are unable to resolve the complaint, at your discretion you may refer the complaint to The Property Ombudsman Scheme at the following URL/email: website www.tpos.co.uk or email: admin@tpos.co.uk

12.15 The Client agrees that it shall, and shall procure that each Beneficiary shall, treat in confidence all Confidential Information and shall not, and shall procure that each Beneficiary shall not (i) disclose any Confidential Information to any third party other than in accordance with the terms of this Contract; and (ii) use Confidential Information for a purpose other than the exercise of its rights and obligations under this Contract. Subject to clause 6.6, nothing shall prevent the Client or any Beneficiary from disclosing Confidential Information to the extent
required by law

APPENDIX B

CONTENTS

ICP SUDS Mean Annual Flood

Input

Return Period (years) 2 SAAR (mm) 600 Urban 0.000
Area (ha) 0.202 Soil 0.300 Region Number Region 5

Results l/s

QBAR Rural 0.3
QBAR Urban 0.3

Q2 years 0.3

Q1 year 0.3
Q30 years 0.7
Q100 years 1.1

STORM SEWER DESIGN by the Modified Rational Method

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
S1.000	10.000	0.100	100.0	0.013	5.00	0.0	0.600	o	150	
S1.001	10.000	0.100	100.0	0.000	0.00	0.0	0.600	o	150	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	50.00	5.17	1.800	0.013	0.0	0.0	0.0	1.00	17.8	1.8
S1.001	50.00	5.33	1.700	0.013	0.0	0.0	0.0	1.00	17.8	1.8

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.001	SDITCH	2.300	1.600	0.000	0	0

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 0 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm)	18.800
Region	England and Wales	Ratio R	0.400
Cv (Summer)	0.750		
Cv (Winter)	0.840		

Margin for Flood Risk Warning (mm)	500.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	OFF
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.000	S1	15 Winter	1	+0%					1.833	-0.117
S1.001	S2	15 Winter	1	+0%					1.733	-0.117

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	0.000	0.11		1.7	FLOOD RISK	
S1.001	S2	0.000	0.11		1.7	OK	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 0 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm)	18.800
Region	England and Wales	Ratio R	0.400
Cv (Summer)	0.750		
Cv (Winter)	0.840		

Margin for Flood Risk Warning (mm)	500.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	OFF
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.000	S1	15 Winter	30	+0%					1.852	-0.098
S1.001	S2	15 Winter	30	+0%					1.752	-0.098

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	0.000	0.26		4.1	FLOOD RISK	
S1.001	S2	0.000	0.26		4.2	OK	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 0 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm)	18.800
Region	England and Wales	Ratio R	0.400
Cv (Summer)	0.750		
Cv (Winter)	0.840		

Margin for Flood Risk Warning (mm)	500.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	OFF
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 30

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.000	S1	15 Winter	100	+30%					1.870	-0.080
S1.001	S2	15 Winter	100	+30%					1.770	-0.080

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	0.000	0.44		6.9	FLOOD RISK	
S1.001	S2	0.000	0.44		7.0	OK	

Summary of Results for 1 year Return Period

Half Drain Time : 131 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	0.064	0.064	0.0	1.2	1.2	11.9	O K
30 min Summer	0.077	0.077	0.0	1.5	1.5	14.4	O K
60 min Summer	0.089	0.089	0.0	1.7	1.7	16.8	O K
120 min Summer	0.100	0.100	0.0	1.8	1.8	18.8	O K
180 min Summer	0.106	0.106	0.0	1.8	1.8	19.9	O K
240 min Summer	0.110	0.110	0.0	1.8	1.8	20.6	O K
360 min Summer	0.112	0.112	0.0	1.8	1.8	21.0	O K
480 min Summer	0.112	0.112	0.0	1.8	1.8	20.9	O K
600 min Summer	0.110	0.110	0.0	1.8	1.8	20.5	O K
720 min Summer	0.107	0.107	0.0	1.8	1.8	20.0	O K
960 min Summer	0.099	0.099	0.0	1.7	1.7	18.5	O K
1440 min Summer	0.086	0.086	0.0	1.6	1.6	16.2	O K
2160 min Summer	0.074	0.074	0.0	1.4	1.4	13.8	O K
2880 min Summer	0.065	0.065	0.0	1.2	1.2	12.2	O K
4320 min Summer	0.054	0.054	0.0	1.0	1.0	10.0	O K
5760 min Summer	0.047	0.047	0.0	0.8	0.8	8.8	O K
7200 min Summer	0.042	0.042	0.0	0.7	0.7	8.0	O K
8640 min Summer	0.039	0.039	0.0	0.6	0.6	7.3	O K
10080 min Summer	0.037	0.037	0.0	0.5	0.5	6.9	O K
15 min Winter	0.071	0.071	0.0	1.4	1.4	13.4	O K
30 min Winter	0.086	0.086	0.0	1.6	1.6	16.2	O K
60 min Winter	0.101	0.101	0.0	1.8	1.8	19.0	O K
120 min Winter	0.113	0.113	0.0	1.8	1.8	21.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	31.083	0.0	11.7	18
30 min Summer	19.576	0.0	14.9	32
60 min Summer	12.330	0.0	19.4	60
120 min Summer	7.765	0.0	24.6	94
180 min Summer	5.925	0.0	28.2	128
240 min Summer	4.891	0.0	31.1	162
360 min Summer	3.732	0.0	35.6	232
480 min Summer	3.080	0.0	39.2	300
600 min Summer	2.654	0.0	42.3	366
720 min Summer	2.350	0.0	44.9	432
960 min Summer	1.910	0.0	48.7	558
1440 min Summer	1.425	0.0	54.4	796
2160 min Summer	1.063	0.0	61.4	1164
2880 min Summer	0.864	0.0	66.5	1528
4320 min Summer	0.620	0.0	71.4	2248
5760 min Summer	0.490	0.0	75.7	2952
7200 min Summer	0.409	0.0	78.8	3680
8640 min Summer	0.352	0.0	81.4	4408
10080 min Summer	0.310	0.0	83.5	5144
15 min Winter	31.083	0.0	13.2	18
30 min Winter	19.576	0.0	16.8	32
60 min Winter	12.330	0.0	21.8	60
120 min Winter	7.765	0.0	27.6	100

Summary of Results for 1 year Return Period

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
180 min Winter	0.119	0.119	0.0	1.8	1.8	22.3	O K
240 min Winter	0.121	0.121	0.0	1.8	1.8	22.7	O K
360 min Winter	0.121	0.121	0.0	1.8	1.8	22.6	O K
480 min Winter	0.117	0.117	0.0	1.8	1.8	22.0	O K
600 min Winter	0.112	0.112	0.0	1.8	1.8	21.0	O K
720 min Winter	0.107	0.107	0.0	1.8	1.8	20.0	O K
960 min Winter	0.095	0.095	0.0	1.7	1.7	17.8	O K
1440 min Winter	0.079	0.079	0.0	1.5	1.5	14.8	O K
2160 min Winter	0.064	0.064	0.0	1.2	1.2	12.1	O K
2880 min Winter	0.056	0.056	0.0	1.0	1.0	10.5	O K
4320 min Winter	0.046	0.046	0.0	0.8	0.8	8.6	O K
5760 min Winter	0.040	0.040	0.0	0.6	0.6	7.5	O K
7200 min Winter	0.036	0.036	0.0	0.5	0.5	6.7	O K
8640 min Winter	0.033	0.033	0.0	0.4	0.4	6.2	O K
10080 min Winter	0.031	0.031	0.0	0.4	0.4	5.8	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
180 min Winter	5.925	0.0	31.6	138
240 min Winter	4.891	0.0	34.9	176
360 min Winter	3.732	0.0	39.9	252
480 min Winter	3.080	0.0	44.0	322
600 min Winter	2.654	0.0	47.4	392
720 min Winter	2.350	0.0	50.4	456
960 min Winter	1.910	0.0	54.6	580
1440 min Winter	1.425	0.0	61.0	824
2160 min Winter	1.063	0.0	68.8	1188
2880 min Winter	0.864	0.0	74.5	1532
4320 min Winter	0.620	0.0	80.0	2248
5760 min Winter	0.490	0.0	84.8	3000
7200 min Winter	0.409	0.0	88.3	3744
8640 min Winter	0.352	0.0	91.2	4384
10080 min Winter	0.310	0.0	93.6	5152

Rainfall Details

Rainfall Model	FEH
Return Period (years)	1
Site Location	GB 558250 321200 TF 58250 21200
C (1km)	-0.020
D1 (1km)	0.333
D2 (1km)	0.278
D3 (1km)	0.183
E (1km)	0.304
F (1km)	2.512
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+0

Time Area Diagram

Total Area (ha) 0.215

Time (mins) From:	To:	Area (ha)
0	4	0.215

Model Details

Storage is Online Cover Level (m) 0.800

Cellular Storage Structure

Invert Level (m) 0.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	197.5	197.5	0.800	197.5	242.5

Hydro-Brake Optimum® Outflow Control

Unit Reference	MD-SHE-0070-2000-0800-2000
Design Head (m)	0.800
Design Flow (l/s)	2.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Diameter (mm)	70
Invert Level (m)	0.000
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.800	2.0	Kick-Flo®	0.502	1.6
Flush-Flo™	0.238	2.0	Mean Flow over Head Range	-	1.7

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	1.8	1.200	2.4	3.000	3.6	7.000	5.4
0.200	2.0	1.400	2.6	3.500	3.9	7.500	5.6
0.300	2.0	1.600	2.7	4.000	4.2	8.000	5.8
0.400	1.9	1.800	2.9	4.500	4.4	8.500	5.9
0.500	1.6	2.000	3.0	5.000	4.6	9.000	6.1
0.600	1.7	2.200	3.2	5.500	4.8	9.500	6.3
0.800	2.0	2.400	3.3	6.000	5.0		
1.000	2.2	2.600	3.4	6.500	5.2		

Summary of Results for 30 year Return Period

Half Drain Time : 308 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	0.198	0.198	0.0	2.0	2.0	37.2	O K
30 min Summer	0.234	0.234	0.0	2.0	2.0	43.9	O K
60 min Summer	0.271	0.271	0.0	2.0	2.0	50.8	O K
120 min Summer	0.305	0.305	0.0	2.0	2.0	57.2	O K
180 min Summer	0.319	0.319	0.0	2.0	2.0	59.8	O K
240 min Summer	0.324	0.324	0.0	2.0	2.0	60.8	O K
360 min Summer	0.328	0.328	0.0	2.0	2.0	61.5	O K
480 min Summer	0.327	0.327	0.0	2.0	2.0	61.3	O K
600 min Summer	0.323	0.323	0.0	2.0	2.0	60.6	O K
720 min Summer	0.317	0.317	0.0	2.0	2.0	59.5	O K
960 min Summer	0.297	0.297	0.0	2.0	2.0	55.7	O K
1440 min Summer	0.257	0.257	0.0	2.0	2.0	48.2	O K
2160 min Summer	0.206	0.206	0.0	2.0	2.0	38.6	O K
2880 min Summer	0.166	0.166	0.0	1.9	1.9	31.2	O K
4320 min Summer	0.108	0.108	0.0	1.8	1.8	20.3	O K
5760 min Summer	0.083	0.083	0.0	1.6	1.6	15.6	O K
7200 min Summer	0.070	0.070	0.0	1.3	1.3	13.2	O K
8640 min Summer	0.062	0.062	0.0	1.2	1.2	11.7	O K
10080 min Summer	0.057	0.057	0.0	1.1	1.1	10.6	O K
15 min Winter	0.223	0.223	0.0	2.0	2.0	41.8	O K
30 min Winter	0.263	0.263	0.0	2.0	2.0	49.3	O K
60 min Winter	0.306	0.306	0.0	2.0	2.0	57.4	O K
120 min Winter	0.347	0.347	0.0	2.0	2.0	65.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	95.518	0.0	37.5	18
30 min Summer	57.402	0.0	45.2	33
60 min Summer	34.495	0.0	55.1	62
120 min Summer	20.730	0.0	66.3	122
180 min Summer	15.390	0.0	73.9	180
240 min Summer	12.458	0.0	79.8	228
360 min Summer	9.248	0.0	88.9	286
480 min Summer	7.486	0.0	96.0	350
600 min Summer	6.354	0.0	101.8	418
720 min Summer	5.558	0.0	106.9	488
960 min Summer	4.428	0.0	113.5	624
1440 min Summer	3.215	0.0	123.6	882
2160 min Summer	2.334	0.0	135.2	1260
2880 min Summer	1.860	0.0	143.6	1616
4320 min Summer	1.299	0.0	150.1	2292
5760 min Summer	1.007	0.0	155.7	3000
7200 min Summer	0.827	0.0	159.7	3680
8640 min Summer	0.704	0.0	163.0	4408
10080 min Summer	0.614	0.0	165.7	5144
15 min Winter	95.518	0.0	42.1	18
30 min Winter	57.402	0.0	50.7	33
60 min Winter	34.495	0.0	61.8	62
120 min Winter	20.730	0.0	74.3	120

Summary of Results for 30 year Return Period

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
180 min Winter	0.365	0.365	0.0	2.0	2.0	68.6	O K
240 min Winter	0.374	0.374	0.0	2.0	2.0	70.2	O K
360 min Winter	0.377	0.377	0.0	2.0	2.0	70.7	O K
480 min Winter	0.373	0.373	0.0	2.0	2.0	69.9	O K
600 min Winter	0.366	0.366	0.0	2.0	2.0	68.7	O K
720 min Winter	0.357	0.357	0.0	2.0	2.0	67.0	O K
960 min Winter	0.326	0.326	0.0	2.0	2.0	61.2	O K
1440 min Winter	0.265	0.265	0.0	2.0	2.0	49.7	O K
2160 min Winter	0.189	0.189	0.0	2.0	2.0	35.5	O K
2880 min Winter	0.137	0.137	0.0	1.9	1.9	25.6	O K
4320 min Winter	0.083	0.083	0.0	1.6	1.6	15.5	O K
5760 min Winter	0.065	0.065	0.0	1.2	1.2	12.3	O K
7200 min Winter	0.056	0.056	0.0	1.0	1.0	10.5	O K
8640 min Winter	0.050	0.050	0.0	0.9	0.9	9.4	O K
10080 min Winter	0.046	0.046	0.0	0.8	0.8	8.6	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
180 min Winter	15.390	0.0	82.8	176
240 min Winter	12.458	0.0	89.4	232
360 min Winter	9.248	0.0	99.6	336
480 min Winter	7.486	0.0	107.5	380
600 min Winter	6.354	0.0	114.1	456
720 min Winter	5.558	0.0	119.8	534
960 min Winter	4.428	0.0	127.2	682
1440 min Winter	3.215	0.0	138.5	954
2160 min Winter	2.334	0.0	151.4	1340
2880 min Winter	1.860	0.0	160.8	1672
4320 min Winter	1.299	0.0	168.2	2292
5760 min Winter	1.007	0.0	174.4	3000
7200 min Winter	0.827	0.0	178.9	3680
8640 min Winter	0.704	0.0	182.6	4416
10080 min Winter	0.614	0.0	185.7	5168

Rainfall Details

Rainfall Model	FEH
Return Period (years)	30
Site Location	GB 558250 321200 TF 58250 21200
C (1km)	-0.020
D1 (1km)	0.333
D2 (1km)	0.278
D3 (1km)	0.183
E (1km)	0.304
F (1km)	2.512
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+0

Time Area Diagram

Total Area (ha) 0.215

Time (mins) From:	To:	Area (ha)
0	4	0.215

Model Details

Storage is Online Cover Level (m) 0.800

Cellular Storage Structure

Invert Level (m) 0.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	197.5	197.5	0.800	197.5	242.5

Hydro-Brake Optimum® Outflow Control

Unit Reference	MD-SHE-0070-2000-0800-2000
Design Head (m)	0.800
Design Flow (l/s)	2.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Diameter (mm)	70
Invert Level (m)	0.000
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.800	2.0	Kick-Flo®	0.502	1.6
Flush-Flo™	0.238	2.0	Mean Flow over Head Range	-	1.7

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	1.8	1.200	2.4	3.000	3.6	7.000	5.4
0.200	2.0	1.400	2.6	3.500	3.9	7.500	5.6
0.300	2.0	1.600	2.7	4.000	4.2	8.000	5.8
0.400	1.9	1.800	2.9	4.500	4.4	8.500	5.9
0.500	1.6	2.000	3.0	5.000	4.6	9.000	6.1
0.600	1.7	2.200	3.2	5.500	4.8	9.500	6.3
0.800	2.0	2.400	3.3	6.000	5.0		
1.000	2.2	2.600	3.4	6.500	5.2		

Summary of Results for 100 year Return Period

Half Drain Time : 462 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	0.300	0.300	0.0	2.0	2.0	56.2	O K
30 min Summer	0.349	0.349	0.0	2.0	2.0	65.5	O K
60 min Summer	0.401	0.401	0.0	2.0	2.0	75.3	O K
120 min Summer	0.453	0.453	0.0	2.0	2.0	85.0	O K
180 min Summer	0.479	0.479	0.0	2.0	2.0	89.9	O K
240 min Summer	0.493	0.493	0.0	2.0	2.0	92.5	O K
360 min Summer	0.503	0.503	0.0	2.0	2.0	94.4	O K
480 min Summer	0.500	0.500	0.0	2.0	2.0	93.7	O K
600 min Summer	0.493	0.493	0.0	2.0	2.0	92.5	O K
720 min Summer	0.485	0.485	0.0	2.0	2.0	90.9	O K
960 min Summer	0.456	0.456	0.0	2.0	2.0	85.5	O K
1440 min Summer	0.402	0.402	0.0	2.0	2.0	75.5	O K
2160 min Summer	0.332	0.332	0.0	2.0	2.0	62.4	O K
2880 min Summer	0.274	0.274	0.0	2.0	2.0	51.3	O K
4320 min Summer	0.173	0.173	0.0	1.9	1.9	32.5	O K
5760 min Summer	0.119	0.119	0.0	1.8	1.8	22.3	O K
7200 min Summer	0.091	0.091	0.0	1.7	1.7	17.0	O K
8640 min Summer	0.078	0.078	0.0	1.5	1.5	14.6	O K
10080 min Summer	0.069	0.069	0.0	1.3	1.3	13.0	O K
15 min Winter	0.336	0.336	0.0	2.0	2.0	63.1	O K
30 min Winter	0.392	0.392	0.0	2.0	2.0	73.6	O K
60 min Winter	0.453	0.453	0.0	2.0	2.0	85.0	O K
120 min Winter	0.515	0.515	0.0	2.0	2.0	96.6	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	142.972	0.0	56.5	19
30 min Summer	84.483	0.0	66.8	33
60 min Summer	49.921	0.0	80.0	62
120 min Summer	29.499	0.0	94.6	122
180 min Summer	21.684	0.0	104.3	182
240 min Summer	17.431	0.0	111.8	242
360 min Summer	12.813	0.0	123.3	360
480 min Summer	10.300	0.0	132.1	450
600 min Summer	8.695	0.0	139.4	500
720 min Summer	7.572	0.0	145.7	558
960 min Summer	5.991	0.0	153.7	674
1440 min Summer	4.307	0.0	165.6	936
2160 min Summer	3.096	0.0	179.4	1320
2880 min Summer	2.450	0.0	189.2	1700
4320 min Summer	1.694	0.0	196.0	2380
5760 min Summer	1.305	0.0	201.8	3056
7200 min Summer	1.065	0.0	205.8	3744
8640 min Summer	0.902	0.0	209.2	4416
10080 min Summer	0.784	0.0	211.8	5144
15 min Winter	142.972	0.0	63.3	19
30 min Winter	84.483	0.0	74.9	33
60 min Winter	49.921	0.0	89.6	62
120 min Winter	29.499	0.0	105.9	120

Summary of Results for 100 year Return Period

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
180 min Winter	0.547	0.547	0.0	2.0	2.0	102.6	O K
240 min Winter	0.565	0.565	0.0	2.0	2.0	106.0	O K
360 min Winter	0.580	0.580	0.0	2.0	2.0	108.8	O K
480 min Winter	0.580	0.580	0.0	2.0	2.0	108.9	O K
600 min Winter	0.573	0.573	0.0	2.0	2.0	107.4	O K
720 min Winter	0.561	0.561	0.0	2.0	2.0	105.2	O K
960 min Winter	0.527	0.527	0.0	2.0	2.0	98.8	O K
1440 min Winter	0.446	0.446	0.0	2.0	2.0	83.7	O K
2160 min Winter	0.338	0.338	0.0	2.0	2.0	63.4	O K
2880 min Winter	0.250	0.250	0.0	2.0	2.0	47.0	O K
4320 min Winter	0.128	0.128	0.0	1.9	1.9	24.0	O K
5760 min Winter	0.085	0.085	0.0	1.6	1.6	15.9	O K
7200 min Winter	0.069	0.069	0.0	1.3	1.3	13.0	O K
8640 min Winter	0.060	0.060	0.0	1.1	1.1	11.3	O K
10080 min Winter	0.054	0.054	0.0	1.0	1.0	10.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
180 min Winter	21.684	0.0	116.8	178
240 min Winter	17.431	0.0	125.2	236
360 min Winter	12.813	0.0	138.1	350
480 min Winter	10.300	0.0	148.0	458
600 min Winter	8.695	0.0	156.2	564
720 min Winter	7.572	0.0	163.2	608
960 min Winter	5.991	0.0	172.1	742
1440 min Winter	4.307	0.0	185.5	1026
2160 min Winter	3.096	0.0	200.9	1428
2880 min Winter	2.450	0.0	212.0	1788
4320 min Winter	1.694	0.0	219.6	2424
5760 min Winter	1.305	0.0	226.0	3048
7200 min Winter	1.065	0.0	230.6	3744
8640 min Winter	0.902	0.0	234.3	4416
10080 min Winter	0.784	0.0	237.4	5144

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
Site Location	GB 558250 321200 TF 58250 21200
C (1km)	-0.020
D1 (1km)	0.333
D2 (1km)	0.278
D3 (1km)	0.183
E (1km)	0.304
F (1km)	2.512
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+0

Time Area Diagram

Total Area (ha) 0.215

Time (mins) From:	To:	Area (ha)
0	4	0.215

Model Details

Storage is Online Cover Level (m) 0.800

Cellular Storage Structure

Invert Level (m) 0.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	197.5	197.5	0.800	197.5	242.5

Hydro-Brake Optimum® Outflow Control

Unit Reference	MD-SHE-0070-2000-0800-2000
Design Head (m)	0.800
Design Flow (l/s)	2.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Diameter (mm)	70
Invert Level (m)	0.000
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.800	2.0	Kick-Flo®	0.502	1.6
Flush-Flo™	0.238	2.0	Mean Flow over Head Range	-	1.7

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	1.8	1.200	2.4	3.000	3.6	7.000	5.4
0.200	2.0	1.400	2.6	3.500	3.9	7.500	5.6
0.300	2.0	1.600	2.7	4.000	4.2	8.000	5.8
0.400	1.9	1.800	2.9	4.500	4.4	8.500	5.9
0.500	1.6	2.000	3.0	5.000	4.6	9.000	6.1
0.600	1.7	2.200	3.2	5.500	4.8	9.500	6.3
0.800	2.0	2.400	3.3	6.000	5.0		
1.000	2.2	2.600	3.4	6.500	5.2		

Summary of Results for 100 year Return Period (+30%)

Half Drain Time : 654 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	0.391	0.391	0.0	2.0	2.0	73.4	O K
30 min Summer	0.457	0.457	0.0	2.0	2.0	85.8	O K
60 min Summer	0.530	0.530	0.0	2.0	2.0	99.5	O K
120 min Summer	0.604	0.604	0.0	2.0	2.0	113.4	O K
180 min Summer	0.643	0.643	0.0	2.0	2.0	120.7	O K
240 min Summer	0.666	0.666	0.0	2.0	2.0	125.0	O K
360 min Summer	0.687	0.687	0.0	2.0	2.0	129.0	O K
480 min Summer	0.691	0.691	0.0	2.0	2.0	129.6	O K
600 min Summer	0.686	0.686	0.0	2.0	2.0	128.8	O K
720 min Summer	0.681	0.681	0.0	2.0	2.0	127.7	O K
960 min Summer	0.653	0.653	0.0	2.0	2.0	122.6	O K
1440 min Summer	0.602	0.602	0.0	2.0	2.0	113.0	O K
2160 min Summer	0.529	0.529	0.0	2.0	2.0	99.3	O K
2880 min Summer	0.450	0.450	0.0	2.0	2.0	84.4	O K
4320 min Summer	0.299	0.299	0.0	2.0	2.0	56.1	O K
5760 min Summer	0.202	0.202	0.0	2.0	2.0	37.9	O K
7200 min Summer	0.144	0.144	0.0	1.9	1.9	26.9	O K
8640 min Summer	0.109	0.109	0.0	1.8	1.8	20.4	O K
10080 min Summer	0.090	0.090	0.0	1.7	1.7	16.9	O K
15 min Winter	0.439	0.439	0.0	2.0	2.0	82.4	O K
30 min Winter	0.514	0.514	0.0	2.0	2.0	96.5	O K
60 min Winter	0.597	0.597	0.0	2.0	2.0	112.0	O K
120 min Winter	0.682	0.682	0.0	2.0	2.0	127.9	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	185.863	0.0	73.6	19
30 min Summer	109.827	0.0	87.0	34
60 min Summer	64.898	0.0	104.0	64
120 min Summer	38.348	0.0	123.0	122
180 min Summer	28.190	0.0	135.7	182
240 min Summer	22.660	0.0	145.4	242
360 min Summer	16.657	0.0	160.3	360
480 min Summer	13.390	0.0	171.8	480
600 min Summer	11.304	0.0	181.3	548
720 min Summer	9.843	0.0	189.4	604
960 min Summer	7.788	0.0	199.7	728
1440 min Summer	5.599	0.0	214.9	996
2160 min Summer	4.025	0.0	233.3	1408
2880 min Summer	3.185	0.0	246.1	1792
4320 min Summer	2.203	0.0	255.0	2508
5760 min Summer	1.696	0.0	262.3	3176
7200 min Summer	1.385	0.0	267.7	3824
8640 min Summer	1.173	0.0	272.0	4496
10080 min Summer	1.020	0.0	275.6	5144
15 min Winter	185.863	0.0	82.4	19
30 min Winter	109.827	0.0	97.4	33
60 min Winter	64.898	0.0	116.6	62
120 min Winter	38.348	0.0	137.8	120

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
180 min Winter	0.728	0.728	0.0	2.0	2.0	136.6	O K
240 min Winter	0.756	0.756	0.0	2.0	2.0	141.9	O K
360 min Winter	0.786	0.786	0.0	2.0	2.0	147.4	O K
480 min Winter	0.795	0.795	0.0	2.0	2.0	149.2	O K
600 min Winter	0.794	0.794	0.0	2.0	2.0	149.0	O K
720 min Winter	0.786	0.786	0.0	2.0	2.0	147.5	O K
960 min Winter	0.751	0.751	0.0	2.0	2.0	140.9	O K
1440 min Winter	0.684	0.684	0.0	2.0	2.0	128.4	O K
2160 min Winter	0.581	0.581	0.0	2.0	2.0	109.1	O K
2880 min Winter	0.465	0.465	0.0	2.0	2.0	87.3	O K
4320 min Winter	0.249	0.249	0.0	2.0	2.0	46.8	O K
5760 min Winter	0.139	0.139	0.0	1.9	1.9	26.1	O K
7200 min Winter	0.092	0.092	0.0	1.7	1.7	17.2	O K
8640 min Winter	0.077	0.077	0.0	1.5	1.5	14.4	O K
10080 min Winter	0.067	0.067	0.0	1.3	1.3	12.6	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
180 min Winter	28.190	0.0	152.0	180
240 min Winter	22.660	0.0	162.9	238
360 min Winter	16.657	0.0	179.6	352
480 min Winter	13.390	0.0	192.4	462
600 min Winter	11.304	0.0	203.0	572
720 min Winter	9.843	0.0	212.1	672
960 min Winter	7.788	0.0	223.5	762
1440 min Winter	5.599	0.0	240.4	1068
2160 min Winter	4.025	0.0	261.3	1536
2880 min Winter	3.185	0.0	275.6	1960
4320 min Winter	2.203	0.0	285.7	2596
5760 min Winter	1.696	0.0	293.8	3224
7200 min Winter	1.385	0.0	299.8	3752
8640 min Winter	1.173	0.0	304.7	4488
10080 min Winter	1.020	0.0	308.8	5144

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
Site Location	GB 558250 321200 TF 58250 21200
C (1km)	-0.020
D1 (1km)	0.333
D2 (1km)	0.278
D3 (1km)	0.183
E (1km)	0.304
F (1km)	2.512
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+30

Time Area Diagram

Total Area (ha) 0.215

Time (mins) From:	To:	Area (ha)
0	4	0.215

Model Details

Storage is Online Cover Level (m) 0.800

Cellular Storage Structure

Invert Level (m) 0.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	197.5	197.5	0.800	197.5	242.5

Hydro-Brake Optimum® Outflow Control

Unit Reference	MD-SHE-0070-2000-0800-2000
Design Head (m)	0.800
Design Flow (l/s)	2.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Diameter (mm)	70
Invert Level (m)	0.000
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.800	2.0	Kick-Flo®	0.502	1.6
Flush-Flo™	0.238	2.0	Mean Flow over Head Range	-	1.7

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	1.8	1.200	2.4	3.000	3.6	7.000	5.4
0.200	2.0	1.400	2.6	3.500	3.9	7.500	5.6
0.300	2.0	1.600	2.7	4.000	4.2	8.000	5.8
0.400	1.9	1.800	2.9	4.500	4.4	8.500	5.9
0.500	1.6	2.000	3.0	5.000	4.6	9.000	6.1
0.600	1.7	2.200	3.2	5.500	4.8	9.500	6.3
0.800	2.0	2.400	3.3	6.000	5.0		
1.000	2.2	2.600	3.4	6.500	5.2		

Predicted Surface Water Runoff Rates from the Proposed Development Prior to Mitigation

Average Rainfall Intensities (i) for Listed Storm Events

Storm Event	i (mm/hr)
1 year 15 mins	29.060
30 year 15 mins	71.211
100 year 15 mins	92.207
1 year 360 mins	3.732
30 year 360 mins	9.248
100 year 360 mins	12.813

$Q = 2.78\ C_V\ C_R\ i\ A$

Predicted Proposed Surface Water Runoff Rates

Proposed Impermeable Area (A) Hectares: 0.215
Cv: 0.75, CR: 1.3

Storm Event	1 in 1 year event	1 in 30 year event	1 in 100 year event
2016 (15 mins)	16.93	41.50	53.73
2016 (360 mins)	2.17	5.39	7.47

Predicted Proposed Surface Water Runoff Rates (Including 30% Climate Change)

Storm Event	1 in 1 year event	1 in 30 year event	1 in 100 year event
2116 (15 mins)	22.02	53.95	69.85
2116 (360 mins)	2.83	7.01	9.71

APPENDIX C

CONTENTS

Surface Water Maintenance Schedule

Feature	Schedule	Required action	Frequency
Drainage	Regular	Inspect flow control manhole and check for blockages to grates and outlets.	Monthly and after large storm events.
	Occasional	Remove silt and leaf build up from manholes, gutters etc.	Annually (or as required).
		Remove sediment from trap.	Annually (or as required).
	Monitoring	Inspect inlets and pre-treatment systems for silt accumulation. Establish appropriate silt removal frequencies.	Half yearly.
		Check outlet for blockages to ditch outlet	Three monthly
		Check Flow control for blockages	Three monthly
		Check manholes, gutters etc. for silt and leaf build up.	Annually.
Pervious Pavements	Regular	Brushing and vacuuming.	To manufacturers' recommendations.
	Occasional	Removal of weed.	As required
	Remedial	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50 mm of the level of the paving.	As required
		Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users.	As required
		Rehabilitation of surface and upper sub-structure.	As required (if infiltration performance is reduced as a result of clogging).
	Monitoring	Initial inspection.	Monthly for 3 months after installation
		Inspect for evidence of poor operation and/or weed growth. If required take remedial action.	3-monthly, 48 h after large storms.
		Inspect silt accumulation rates and establish appropriate brushing frequencies.	Annually.

APPENDIX D

CONTENTS

SuDS Checklist for Outline Applications

The following checklist has been completed by Plandescil Ltd as part of the Flood Risk Assessment & Surface Water Drainage Strategy and planning application in order to demonstrate that the necessary information has been supplied to assess the suitability of the proposed sustainable drainage system, in line with Paragraphs 103 and 109 of the National Planning Policy Framework (NPPF).

CHECKLIST FOR SUBMISSION – Outline Drainage Design		
Ref	**Detail required**	**Report Compliant Section**
1.	Demonstrate an undertaking of the natural drainage characteristics within and adjoining the site.	Section 3.1
2.	Provide an outline assessment of existing geology, ground conditions and permeability through desk-based research e.g. a review of geology maps and catchment information and site visit observations. Infiltration tests should be carried out at this state wherever possible.	Section 2.4, 2.5, 2.6 & 3.1
3.	Prepare a Conceptual Drainage Plan to show the above together with:	
	a) The proposed "management train"	Section 3.1 & 3.3
	b) Indicative location and type of source control	Section 3.1
	c) Site controls with storage locations	Section 3.1
	d) Conveyance and exceedence routes	Section 3.1
	e) The destination of runoff.	Section 3.1
4.	Provide a Conceptual SuDS Design Statement describing:	
	a) The SuDS Design Criteria applicable to the site	Section 3.1
	b) Reasoning for inclusion of the selection of SuDS features	Section 3.1
	c) Indicative runoff rate calculations and attenuation volumes for the lifetime of the development	Section 2.7, 2.8 & 3.1
	d) Integration with landscape design	n/a
	e) Any phasing plan for the development	n/a
	f) Management of health and safety risks	Site will be designed to current CDM & best practice
	g) Explanation of land use decision and how they impact drainage	Section 3.1
	h) Proposed method of flow control	Section 3.1
	i) Information regarding the proposed number of treatment states to be applied to each element of the site	Section 3.3
	j) Demonstration that surface water/groundwater entering the development from adjacent land has been taken into account.	Section 3.1

The following applications are not considered to have a significant impact on the sites surface water drainage. Therefore the Lead Local Flood Authority will not be providing bespoke comments unless the site sits within a Critical Drainage Area (CDS), as defined in the Surface Water Management Plans (SWMPs).

- Minerals extraction
- Greenfield development that doesn't increase impermeable land by more than 0.25ha

- Brownfield development that doesn't increase the impermeable land by more than 0.1ha

This checklist is based upon Breckland Council's Outline Application Checklist (http://www.breckland.gov.uk/content/sustainable-drainage-systems-suds). Whilst the site does not fall within the catchment of Breckland Council, the requirements of this form are considered applicable to all Local Authorities.

APPENDIX E

CONTENTS

'Contains British Geological Survey materials © NERC [2015]'

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civil · structural · environmental · surveying

Client
Ian H Bix Associates Ltd

Project
Proposed Residential Development
Land between Wildfields Road & Hall Road
Clenchwarton, Norfolk

Drawing Title
British Geological Survey
Borehole Location Map

Scale	Date	Drawn By
N.T.S	February 2016	SVH

Drawing No.	Rev
Appendix E	0

BGS ID: 507302 : BGS Reference: TF51NE17
British National Grid (27700) : 559660,319240
Report an issue with this borehole

Holst Soil Engineering Limited

Borehole No. 9

BOREHOLE LOG TF 51 NE / 17

Contract No. NW/SJ1927/F3046
Location . Kings Lynn West A17
Client .... C.H. Dobbie & Partners
Method of Boring .. Shell & Auger
Diameter of Borehole .0.203m 5966 1924

Sheet 1 of 2
Chainage ... 1645.00m
Ground Level .. 2.763m A.O.D.
Date ... 20.12.74.

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	N / R.Q.D.%	Daily Progress
TOP SOIL		0.20	2.56	0.00	0 0.20		
Mottled brown clayey SILT		0.50	2.26		0.30-0.75		
Brown laminated, fine sandy SILT with fine sand partings.		1.95	0.81	1.50	0 0.80 1.50-1.95 0 2.00		
Loose, dark grey, organic, laminated fine sandy, clayey SILT.		6.00	-3.24	2.50 3.50 4.50 6.00	2.50-2.95 0 3.00 0 3.50 S 3.50-3.95 0 4.70 S 4.70-5.15 0 6.00 S 6.00-6.45	'13' '15' '17'	
Loose, dark grey, organic, laminated silty, clayey fine SAND.				7.50	0 7.55 S 7.55-8.00	'15'	
Continued							

Type of Sample
□ Undisturbed ● Bulk
Is S.P.T. X Vane
Ic C.P.T. Δ Water
O Jar ◪ Piezometer

Remarks (Observations of Ground Water etc.)
Slight seepage from 1.20m
Water added during boring operations.

Water levels are subject to seasonal or tidal variations and should not be taken as constant

BGS ID: 507302 : BGS Reference: TF51NE17
British National Grid (27700) : 559660,319240
Report an issue with this borehole

Holst Soil Engineering Limited

Borehole No. 9

BOREHOLE LOG TF 51 NE / 17

Contract No. ..WW/SJ1927/E3046.....
Location.....Kings Lynn West A17.....
Client.....C.H. Dobbie & Partners.....
Method of Boring .Shell & Auger.....
Diameter of Borehole ..0.203m.....

Sheet 2 of..2.....
Chainage..1645.00m.....
Ground Level. 2.763m A.O.D.....
Date ..20.12.74.....

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N" R.Q.D.%	Daily Progress
Loose, dark grey, organic, laminated, silty, clayey fine SAND.				8.50	O 8.80 S 8.80-9.25	17	
		10.00	-7.24	9.00	O 10.05 S 10.05-10.50	16	
Loose, dark grey, organic, clayey, fine sandy SILT.		10.50	-7.74				20.12.74.

Type of Sample
□ Undisturbed ● Bulk
Is S.P.T. X Vane
Ic C.P.T. △ Water
O Jar ◪ Piezometer

Remarks (Observations of Ground Water etc.)

Water levels are subject to seasonal or tidal variations and should not be taken as constant

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS ID: 507304 : BGS Reference: TF51NE19
British National Grid (27700) : 559030,319190
Report an issue with this borehole

<< < Prev Page 1 of 2 Next > >>

Holst Soil Engineering Limited

Borehole No. 11

BOREHOLE LOG TF 51 NE/19

Contract No. ..WW/F3046/SI/1927.....
Location . A17 West of Kings Lynn .....
Client .. C.H. Dobbie & Partners .....
Method of Boring .Shell & Auger.....
Diameter of Borehole ..0.23m..... 5903 1919

Sheet 1 of..2.....
Chainage...2260.00m .....
Ground Level..3.583m A.O.D.....
Date ..18.12.74. - 19.12.74.....

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N" / R.Q.D.%	Daily Progress
TOP SOIL		0.54	3.04	0.00	△ 1.80m		
					0.60-1.05		
Loose brown fine sandy SILT				2.30	O 2.30		
					S 2.30-2.75	6	
		3.30	0.28				
Loose dark grey fine sandy SILT				3.80	O 3.80		
					S 3.80-4.25	6	
		4.50	-0.92				
Loose, light brown, fine sandy SILT with comminuted shells and fragments of dark grey mudstone.				5.30	O 5.30		
					S 5.30-5.75	8	
				6.50	O 6.50		
					S 6.50-6.95	8	
		8.00	-4.42				18.12.74.
Dark brown PEAT		8.10	-4.52		O 8.00		
Loose dark grey organic fine silty SAND with shells.				8.30	O 8.30		
					S 8.30-8.75	6	
Continued							

Type of Sample
□ Undisturbed ● Bulk
Is S.P.T. X Vane
Ic C.P.T. △ Water
O Jar ◪ Piezometer

Remarks (Observations of Ground Water etc.)

Seepage	1.80m	18.12.74.	Casing	1.80m
Struck	5.00m	18.12.74.	Casing	5.00m
Standing	1.37m	20.12.74.	Casing	0.00m

Water levels are subject to seasonal or tidal variations and should not be taken as constant

BGS ID: 507304 : BGS Reference: TF51NE19
British National Grid (27700) : 559030,319190
Report an issue with this borehole

Holst Soil Engineering Limited

Borehole No. 11

BOREHOLE LOG TF 51 NE/19

Contract No. WW/E3046/S1.1927.....
Location.....A17 West of Kings Lynn.....
Client.....C.H. Dobbie & Partners.....
Method of Boring . Shell & Auger.....
Diameter of Borehole . 0.203.....

Sheet 2 of....2.....
Chainage...2260.00m.....
Ground Level. 3.583m A.O.D.....
Date .18.12.74. - 19.12.74.....

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	'N' / R.Q.D.%	Daily Progress
Loose dark grey, organic fine silty SAND with shells		10.60	-7.02	10.00	S 10.00-10.45 O 10.80	8	
Loose, dark grey, organic, fine to coarse silty SAND with entire marine shells at the base of the stratum.				12.20	O 12.30 S 12.20-12.65	8	
				13.50	O 13.50 S 13.50-13.95	7	
		15.30	-11.72	14.50	S 14.70-15.15 O 15.30	9	19.12.74.

Type of Sample
□ Undisturbed ● Bulk
Is S.P.T. X Vane
Ic C.P.T. △ Water
O Jar ◪ Piezometer

Remarks (Observations of Ground Water etc.)

Water levels are subject to seasonal or tidal variations and should not be taken as constant

BGS ID: 507307 : BGS Reference: TF51NE22
British National Grid (27700) : 558480,319200 Report an issue with this borehole

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Holst Soil Engineering Limited

Borehole No. 14

BOREHOLE LOG TF 51 NE 122

Contract No. ..WW/SJ1927/F3046.....
Location .....Kings Lynn West A17.....
Client .....C.H. Dobbie & Partners.....
Method of Boring .....Shell & Auger.....
Diameter of Borehole ..0.203m.....

Sheet 1 of...2.....
Chainage...2825.00m.....
Ground Level..3.412m.....
Date 13.12.74.-15.12.74.....

5848 1920

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/ R.Q.D.%	Daily Progress
TOP SOIL		0.50	2.89	0.00	O 0.60 Is 0.60-1.05	'8'	
Loose brown, fine grained SAND		1.30	2.11	1.50	A O 1.50 Is 1.50-1.95	'4'	
Loose, dark grey organic, clayey SILT		2.30	1.11	2.50	O 2.50 Is 2.50-2.95	'5'	
Loose, fine grained, grey-brown SAND, with comminuted shells.				3.00	O 3.00 Is 3.00-3.45	'6'	
				4.00	O 4.00 Is 4.00-4.45	'6'	
				5.00	O 5.00 Is 5.00-5.45	'5'	
		6.00	-2.59	6.00	O 6.00 Is 6.00-6.45		13.12.74.
Loose, fine grained grey-brown SAND with small well rounded flint pebbles.				7.00	O 7.00 Is 7.00-7.45	'6'	
		7.70	-4.29				14.12.74.
Loose, dark grey fine and medium SAND with traces of wood and bone.				8.50	O 8.60 Is 8.60-9.05	'6'	
Borehole continued							

Type of Sample
□ Undisturbed ● Bulk
Is S.P.T. X Vane
Ic C.P.T. △ Water
O Jar ◪ Piezometer

Remarks (Observations of Ground Water etc.)
Slow seepage 1.30m 13.12.74. Casing 1.00m
Standing 1.30m 14.12.74. Casing 6.00m
Final standing level 1.30m 15.12.74.

Water levels are subject to seasonal or tidal variations and should not be taken as constant

BGS ID: 507307 : BGS Reference: TF51NE22
British National Grid (27700) : 558480,319200 Report an issue with this borehole

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Holst Soil Engineering Limited

Borehole No. 14

BOREHOLE LOG TF 51 NE /22

Contract No. . WW/SI1927/E3046 .....
Location ..... Kings Lynn West A17 .....
Client ..... C.H. Dobbie & Partners .....
Method of Boring . Shell & Auger .....
Diameter of Borehole . . 0.203m .....

Sheet 2 of . . 2 .....
Chainage . . . 2825.00m .....
Ground Level . . 3.412m .....
Date . 13.12.74. - 15.12.74. .....

Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/ R.Q.D.%	Daily Progress
Loose dark grey fine and mediun SAND with traces of wood and bone.				10.00	O 10.20 S 10.20-10.65	'6'	
				11.50	O 11.50 S 11.50-11.95	'6'	
		13.80	-10.39	13.30	O 13.30 S 13.30-13.75	'6'	
Soft grey-brown, very silty CLAY with organic lenses and patches.		15.00	-12 59	14.00	O 14.50 S 14.50-14.95	'4'	15.12.74.

Type of Sample		Remarks (Observations of Ground Water etc.)
□ Undisturbed	● Bulk	
Is S.P.T.	X Vane	
Ic. C.P.T.	△ Water	
O Jar	◪ Piezometer	Water levels are subject to seasonal or tidal variations and should not be taken as constant