PHASE I & II AREA AT HOLBEACH MEADOWS, HOLBEACH

PHASE I & II
GEO-ENVIRONMENTAL INVESTIGATION
FOR
ASHWOOD HOMES

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GML16197

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Executive Summary

This presents the salient points of the report and should not be referred to in isolation. The conclusions and recommendations presented below are considered reasonable based on the findings of the site investigation. However, these cannot be guaranteed to gain regulatory approval and therefore copies of this report should be sent to the appropriate Regulatory Authorities and / or other organisations (as appropriate) by the Client for their comments and approval prior to undertaking any irrecoverable works associated with the subject site.

Enabling / Earthworks	Significant enabling works are not envisaged at this stage. Specific testing (e.g. waste acceptance criteria testing) may be required at the discretion of the Client's designated waste handler if the off-site movement / disposal of soils is undertaken. Where applicable, such requirements must be verified directly with them by the Client.
Foundations	Shallow soil conditions at the site are highly variable. Due to the very low in situ soil strengths which have been recorded, a maximum net allowable bearing capacity of 50kN/m2 should be achievable in the underlying undisturbed natural soils across the eastern half of the site outside the influence of trees. Due to the higher in situ soil strengths which have been recorded in the western half of the site, a maximum net allowable bearing capacity of 90kN/m2 should be achievable in the underlying undisturbed natural soils outside the influence of trees. Due to the low SPT test data reported alternative foundation options must be considered for this development construction in this part of the site. Specialist contractor may need to be consulted with regards to a specialist foundation solution if piles are required. Further works may be required by the contractor. All foundations should be deepened through topsoil / made ground and locally soft / loose soils; if / where encountered; to bear on the underlying undisturbed natural soils at a minimum depth of 0.90m begl outside the influencing distance of trees. Because of the variability encountered in soil types, it is recommended that light mesh reinforcement is provided within all foundations. Foundations may require deepening within the influencing distance of trees at this stage (see Section 12.5).
Floor Slabs	Ground bearing floor slabs are considered appropriate across the majority of the site at this stage with suspended floors required only where more than 600mm of made ground has been encountered. Additionally a clear void and heave precautions will be required if deepening due to trees in excess of 1.50m depth which may have an effect on bearing capacity.
Road Construction	CBR values of less than 2% can be anticipated in the made ground and values between 2% and 5% can be anticipated in the underlying natural soils subject to in situ testing. All road construction proposals should be agreed with the Local Authority prior to finalising designs.
Groundwater	Significant groundwater was not encountered within the exploratory holes undertaken across the site during the recent investigation. Dewatering etc. is therefore not considered likely at this stage subject to prevailing weather / groundwater conditions.
Building Near Trees	Test data indicates that cohesive soils at the site have a maximum low volume change potential which will need to be considered during construction. Foundation designs will therefore need to be adjusted with regard to building near trees in accordance with NHBC Standards (Chapter 4.2).

Drainage	At this stage the site is not considered to be suitable for the use of in situ drainage soakaways due to the predominantly cohesive nature of the natural soils encountered (which is likely to prevent any in situ permeability / infiltration) and inconsistent levels of groundwater present. All drainage proposals are subject to in situ testing and should be agreed with the Local Authority prior to finalising designs.
Mining	**No** precautions necessary.
Excavations	Generally poor stability was noted in the exploratory holes completed across the site for the short time they remained open with sidewall collapse noted in some areas from 1.20m depth. All excavations should be assumed to be unstable as a precautionary measure. No man entry into unsupported excavations should therefore be allowed without an appropriate risk assessment by the Client and / or their appointed site contractors. Reference to CIRIA report 97 (1983) should be made to establish a suitable means of support or battering of excavation sides.
Ground Gas & Radon	The property is not in a radon affected area, as less than 1% of properties are above the action level in accordance with the Site Specific Environmental Data Report (Appendix IV). Radon protective measures are therefore not necessary for new properties, subject to Local Authority approval. A ground gas monitoring programme (6 No. weeks) is currently being undertaken for the site. Significant gas concentrations and / or flows have not been detected at present and therefore additional gas protection measures would not be required at this stage based on C665 (i.e. site indicatively classified as CS/1 or NHBC 'Green').
Sulphate Classification	The pH values recorded from the soil samples retrieved from site averaged 8.8, indicating that generally near neutral soil conditions prevail within soils at the site. Water soluble sulphate analysis of the soils recovered from the site by Geo-Matters Ltd recorded soils to have concentrations ranging between <0.01g/l and 0.41g/l therefore DS-1/AC-1 conditions prevail at the site in accordance with BRE Special Digest 1 'Concrete in Aggressive Ground 2005'. Minimum concrete specification should be in accordance with NHBC Standards, Section 2.1, Table 1.
Contamination	Chemical analysis results have been compared with current relevant guidance which indicates that there are no elevated levels of contaminants present across the site. No issues have been identified in relation to the proposed residential end use with private gardens, subject to the approval of the Local Authority.
Remediation	Remediation works to protect human health are not considered necessary.
Topsoil	Topsoil was encountered during the recent site works which has been chemically proven to be suitable for re-use. There shouldn't be a requirement to import additional topsoil onto the site for use in private gardens etc., although it is reiterated that any such works must be undertaken in full compliance with all regulatory licensing procedures, and validation of the soils prior to importation will be required, subject to the approval of the Local Authority. Where topsoil is discussed herein (and where it has been recorded within Engineer's logs for this site) it has been described and classified in general accordance with prevailing logging practice (e.g. BS5930 / ISO14688). Additional inspection(s) and analyses will be necessary should classification of such material be required against standards such as BS3882: 2007 'Specification for Topsoil and Requirements for Use'.

Further Works	The following further works are considered necessary: • Trees and hedgerows are present around the site, therefore as some parts of the site are underlain by natural cohesive soils which have been recorded to have a low volume change potential, a topographical survey and arboricultural survey of the site and surrounding influencing area will be required in order to prepare a foundation schedule. This foundation schedule should be prepared once the development layout has been finalised in order to mitigate the effects of existing / proposed trees and landscaping. • A review of the foundation depths / bearing capacities will be required once the foundation schedule is prepared to confirm risks from locally soft / loose soils at depth in some areas of the site. • Verification of foundation proposals with local regulatory authorities and structural engineers; • Specialist foundation contractors are likely to require additional works to enable them to provide the most cost effective foundation proposal; • The Client will need to liaise with appropriately licensed waste management contractors to determine requirements for additional analysis etc. should materials be considered for off-site removal / disposal.

The executive summary given above is an overview of the key findings and conclusions of the report. There may be other information contained in the body of the report which puts into context the findings of the executive summary. No reliance should be placed on the executive summary until the whole report has been read in full.

1.0 INTRODUCTION

1.1 Preamble

Geo-Matters Ltd were appointed by Ashwood Homes (hereafter referred to as 'the Client') to undertake a Phase I & II Geo-Environmental Assessment of the Phase I & II Area at Holbeach Meadows, Holbeach (hereafter referred to as 'the site').

1.2 Report Status

This report provides factual geotechnical and environmental information, alongside associated construction issues and recommendations, in relation to a proposed redevelopment of the site for new build residential houses (see Section 1.5 below).

This report has been prepared for the sole use and reliance the Client and their appointed agent, Geo-Matters Ltd. No other third party may rely upon or reproduce the content of this report without the written approval of Geo-Matters Ltd. If any unauthorised third party comes into possession of this report, they rely upon it entirely at their own risk and the authors do not owe them any warranty, duty of care or skill.

1.3 Sources and Conditions

The findings and recommendations made in this report are based on published information (as referenced in Section 3 and at the end of this report). Geo-Matters Ltd cannot accept responsibility for the reliability and authenticity of published information or reports prepared by third parties.

The possibility of significant variation in ground conditions existing between sampling locations cannot be discounted. Confirmation of ground conditions between exploratory holes should be undertaken if deemed necessary. There may be other conditions prevailing on site which have not been revealed by this investigation and which have not been taken into account in this report. Responsibility cannot be accepted for any conditions not revealed by this investigation and assessment. It should be noted that groundwater levels and quality may vary due to seasonal and other effects.

An arboriculturalist / invasive plant species survey has not been undertaken by Geo-Matters Ltd although potential areas of concern have been highlighted where observed. Invasive plant species may not have been fully observed due to seasonal variations and /or other restrictions.

Where topsoil is discussed herein (and where it has been recorded within Engineer's logs for this site) it has been described and classified in general accordance with prevailing logging practice (e.g. BS5930 / ISO14688). Additional inspection(s) and analyses will be necessary should classification of such material be required against standards such as BS3882: 2007 'Specification for Topsoil and Requirements for Use'.

Whilst this report may be utilised by others for reference purposes at the Client's discretion, it has not been prepared for any other purposes (e.g. waste classification etc.) and therefore additional works may be required by third parties dependent upon their own requirements / works. Further such assessments or testing may be required to inform subsequent works which we have not been made aware of or instructed upon at this stage (e.g. removal of soils for disposal etc.).

1.4 Previous Reports

Geo-Matters Ltd have not been made aware of any previous reports relating to the site by the client.

1.5 Proposed Development

This report has been prepared on the understanding that the development proposals for the site comprise new build low-rise residential housing with private gardens. Extracts of the proposed development plan (RG+P drawing 'Indicative Site Layout' dated May 2014) are presented in the Proposed Site Layout Plan (Drawing 001) in Appendix I. This shows residential housing across the majority of the investigation area, with public open space / soft landscaping in some areas and a watercourse / attenuation feature centrally positioned.

Should the development proposals alter (e.g. layout, type or foundation option), then the recommendations in this report may be subject to change. Whilst it may be utilised by others for reference purposes at the Client's discretion, it has not been prepared for any other purposes (e.g. waste classification etc.) and therefore additional works may be required by third parties dependent upon their own requirements / works.

2.0 SITE LOCATION AND DESCRIPTION

2.1 Location

The site is accessed via Fen Road, which is located to the east. The site is situated approximately 1.1km to the south west of Holbeach Town Centre, as presented on the Site Location Plan (Drawing 002) in Appendix II. The site is roughly centred at National Grid Reference 53551, 323938.

2.2 Description

The following general observations have been made concerning the site:

2.2.1 Site:

- The site is approximately 15.73ha in size and currently comprises 4 No. open agricultural fields;
- Agricultural fields are present adjacent to the site's boundaries on all sides;
- An old river (drain) is noted trending along the eastern boundary of the site;
- The site appears to be accessed through adjacent fields;
- The majority of site boundaries are defined by fencing and hedgerows including semi-mature trees;
- There is a disused barn located on the northern boundary of the site;
- An abandoned house is located adjacent to the barn on the northern boundary.

A Site Features Plan showing the general aspects of the site is included in Appendix III (Drawing 003).

2.2.2 Surrounding Area:

- The site is set within a mixed residential and agricultural area on the outskirts of Holbeach;
- Land to the north-east of the site supports a small office development;
- Land to the north, east and west supports agricultural fields;
- Land to the south supports residential housing.

3.0 GEO-ENVIRONMENTAL SETTING

3.1 Geology, Hydrogeology and Mining

A review of the following information has been undertaken:

- British Geological Survey 1:50,000 Scale Mapping Sheet 144 Solid & Drift;
- Coal Mining Searches, The Law Society Guidance Notes and Directory 1998 Edition;
- Environment Agency Online Aquifer Designation Database (accessed October 2016);
- Site Specific Environmental Data Report (Ref. GEO-M-3360535 dated October 2016).

Table 3.1: Geological Information

Drift Deposits	The superficial deposits beneath the site is recorded to comprise Tidal Flat Deposits. This is generally recorded to comprise clay and silt with sand and gravel layers.
Solid Geology	The solid geology beneath the site is recorded to comprise West Walton Formation. This is generally recorded to comprise mudstone and siltstone.
Ground Workings	There are thirteen no. records of ponds within a 250m radius of the site, the nearest of which is 7m east. All such records date from at least 65 years ago or more. There is one record of a burial ground 9m north of the site and one brick works 250m north-east.
Discontinuities	None recorded beneath the site on available mapping.
Artificial Ground	There are no records of any artificial ground within a 250m radius of the site.
Soil Chemistry	Soil chemistry for the site does not highlight any elevated natural contaminants.
Hydrogeology & Hydrology	The solid geology is recorded as a 'Unproductive' Aquifer. There are no groundwater abstraction licences within a 250m radius of the site. There are no surface water abstraction licences within a 250m radius of the site. There are no potable water abstraction licences within a 250m radius of the site. No river quality (biological or chemical) is recorded within a 250m radius of the site. There are six no. surface water features recorded within a 150m radius of the site. The site is not recorded to lie within an Environment Agency 'Source Protection Zone.

Table 3.1: Geological Information (Continued)

Flooding	The site is recorded to be within an Environment Agency flood risk area. Accordingly, the risk of flooding is recorded as 'Medium".
Natural Ground Stability Hazards	The site has been classified as having the following hazard ratings: Shrinking / Swelling Clay - Low Landslide - Very Low Ground Dissolution - Negligible Compressible Ground - Moderate Collapsible Ground - Negligible Running Sand - Moderate
Mining	The Site-Specific Environmental Data Report (included within Appendix IV) indicates that the site is **not** set within an area at risk from coal mining.
Radon	The property is not in a radon affected area, as less than 1% of properties are above the action level in accordance with the Site Specific Environmental Data Report (Appendix IV).

3.2 Environmental Data Search

The principal considerations of immediate relevance within a 250m radius of the site are given in Table 3.2 overleaf. For a comprehensive list of environmental data, please refer to the site specific environmental data report presented in Appendix IV.

Table 3.2: Environmental Data

Historic Industrial Sites	
Potentially Contaminative Uses	There are thirteen records identified within a 250m radius of the site. Two of which are railway sidings, the closest of these is located on site, two records of nurseries the closest of which is 9m north east, one record of a burial ground 9m north, one unspecified depot located 141m north of the site, one unspecified tank 197m south, three records of railway stations / buildings one coalyard 204m north of that site, one unspecified commercial / industrial 22m north and one brick works 250m north east of the site.
Tanks	Two unspecified tanks are recorded, the closest of which is 129m to the north of the site. There are no other tanks recorded within a 250m radius of the site.
Energy Features	None identified within a 250m radius of the site.
Infilled Land	There are nine identified within a 250m radius of the site. There are seven no. records of ponds within a 250m radius of the site, the nearest of which is 7m east. There is one record of a burial ground 9m north of the site and one brick works 250m north east.
Fuel and Garage Sites	There are two identified within a 250m radius of the site. Both records are recorded as garages, the closest of which is 157m east of the site.
Environmental Permits, Incidents and Registers	
IPC Authorisations	None identified within a 250m radius of the site.
IPPC Authorisations	None identified within a 250m radius of the site.
Water Industry Referrals	None identified within a 250m radius of the site.
Red List Discharge Consents	None identified within a 250m radius of the site.
List 1 Dangerous Substances	None identified within a 250m radius of the site.
List 2 Dangerous Substances	None identified within a 250m radius of the site.
Part A & Part B Activities and Enforcements	None identified within a 250m radius of the site.
Licensed Discharge Consents	None identified within a 250m radius of the site.

Table 3.2: Environmental Data (Continued)

Planning Hazardous Substance Consents	None identified within a 250m radius of the site.
National Incidents, List 1 & 2	None identified within a 250m radius of the site.
Category 3 or 4 Radioactive Substances Authorisations	None identified within a 250m radius of the site.
Site determined Contaminated under Part 2A EPA 1990	None identified within a 250m radius of the site.
Landfills and other Waste Sites	
Landfills (BGS, Historical or Local Authority)	There are two identified within a 500m radius of the site. Both records are recorded as environment agency historic landfills, the closest of which is 406m south west of the site.
Waste Facility / Treatment Operations	None identified within a 250m radius of the site.
Current Land Use	
Current Industrial Data	There are five records of potentially contaminative industrial sites within 250m of the study site. These refer to two motoring companies (the nearest of which 122m south east of the site), a signs company (122m south east of the site), a generic tanks company (122m north of the site) and an industrial products company (194m north west of the site).
Petrol Filling Stations / Garages	No active PFS entries have been identified within a 250m radius of the site.
Underground High Pressure Oil and Gas Pipelines	None identified within a 250m radius of the site.
Sensitive Land Use	
World Heritage Sites	None identified within a 250m radius of the site.
Other Entries	None identified within a 250m radius of the site.

4.0 HISTORY OF LAND USE

A study of historical Ordnance Survey maps has been undertaken to identify any potentially contaminative former land-uses. The main historical features of the site and surrounding area (within a 250m radius) are summarised in Table 4.1 (below) and Table 4.2 (overleaf) and are shown on the historical maps presented in Appendix V. It should be noted, however that considerable periods of time may have elapsed between successive Ordnance Survey map editions and it is possible that further land uses have occurred in the intervening years which were not recorded. In these circumstances, whilst we have tried to ascertain the complete record of the site history, the possibility that other significant land uses may have taken place cannot be discounted.

Table 4.1 Principal Historical On-Site Features

OS map date(s)~	Source Scale	Principal On-Site Features
1887	1:10,560	The site is situated across several open fields which are divided by hedgerows and trees along the boundaries. Two ponds are shown within the north-eastern section of the site, and 'Old River' runs along the eastern boundary.
1888	1:2,500	No significant changes identified.
1903	1:10,560	No significant changes identified.
1903 - 1906	1:10,560	
1904	1:2,500	The ponds are now no longer shown within the north-eastern area.
1929	1:10,560	An orchard / plantation is shown across the far western fields.
1931 - 1932	1:2,500	No significant changes identified.
1938	1:10,560	No significant changes identified.
1950	1:10,560	Elongated structure (possible barn) present in centre of site adjacent to track.
1955 - 1958	1:10,560	No significant changes identified.
1968	1:2,500	No significant changes identified.
1970 - 1971	1:10,000	Orchard no longer shown.
1981#	1:2,500	No significant changes identified.
1986#	1:2,500	No significant changes identified.
1991#	1:2,500	No significant changes identified.
1992	1:10,000	No significant changes identified.
1995	1:2,500	Elongated structure no longer recorded.
2002	1:10,000	No significant changes identified.
2010	1:10,000	Buildings absent from the centre of site.
2014	1:10,000	No significant changes identified.

Historical map incomplete

Table 4.2 Principal Historical Off-Site Features

OS map date(s)~	Source Scale	Principal Off-Site Features	Direction
1887	1:10,560	Fields. Farm. Ponds. 'Holbeach Station'. Railway. Brick works. Residential housing. Pump.	ALL N N N NE NE N N,S
1888	1:2,500	No significant changes identified.	-
1903 - 1906	1:10,560	Brick works removed. Ponds removed.	NE N
1904	1:2,500	No significant changes identified.	-
1929	1:10,560	Residential housing.	E
1931 - 1932	1:2,500	Holbeach flour mills	NE
1938	1:10,560	No significant changes identified.	-
1950	1:10,560	No significant changes identified.	-
1955 - 1958	1:10,560	Pump removed.	S
1968	1:2,500	Hallgate nurseries	N
1970 - 1971	1:10,000	Station removed. Railway dismantled. Depot / Coal yard.	N N N
1981[#]	1:2,500	No significant changes identified.	-
1986[#]	1:2,500	No significant changes identified.	-
1991[#]	1:2,500	Nurseries removed.	N
1992	1:10,000	Railway removed. Residential development.	N N
1995	1:2,500	No significant changes identified.	-
2002	1:10,000	Depot removed.	N
2010	1:10,000	No significant changes identified.	-
2014	1:10,000	No significant changes identified.	-

[#] Historical map incomplete

5.0 PHASE I GEOTECHNICAL ASSESSMENT

5.1 Anticipated Ground Conditions

Soils – Made Ground/Topsoil

On the basis of available information, cultivated topsoil is anticipated across the majority of the site given the absence of other extensive significant historical land uses. Made ground may be expected around access areas / tracks etc.

Natural Strata

The site is recorded to be underlain by solid geology which is considered likely to have weathered to a cohesive soil (clay and silt) at shallow depths, although granular soils may also be present.

Groundwater

The solid geology beneath the site has been categorised as an 'Undefined' aquifer. Significant groundwater is therefore not anticipated during site works, depending on the prevailing weather conditions, ambient conditions groundwater etc.

Stability Issues (e.g. Mining / Slopes)

The site has been classified as having:

Hazard	Maximum Designated Rating
Shrinking / Swelling Clay	Low Hazard Rating
Landslide	Very Low Hazard Rating
Ground Dissolution	Negligible Hazard Rating
Compressible Ground	Moderate Hazard Rating
Collapsible Ground	Negligible Hazard Rating
Running Sand	Moderate Hazard Rating

No coal mining issues have been identified at this stage.

Ground Gas and Radon

Potential ground gas sources have been identified at this stage, with regards to the two historic landfill sites located within 500m of the site.

The property is not in a radon affected area, in accordance with the Site Specific Environmental Data Report (Appendix V). Radon protective measures are therefore not necessary for new properties.

Contamination and Performance of Building Materials

Following a review of available records, no potentially contaminative land uses have been identified on the site at this stage. Issues relating to contamination are therefore subject to laboratory testing, final layout proposals and regulatory discussions.

6.0 PHASE I ENVIRONMENTAL ASSESSMENT

6.1 Phase I Conceptual Model

The following is based on the desk study information listed above and the site assessment undertaken by Geo-Matters Ltd.

6.1.1 Site Summary:

A review of all available desk study information indicates that the site has supported open farm land / fields since the earliest mapping reviewed.

The surrounding area is recorded to have been progressively and partially developed from similar open fields to support some residential and office land uses, whilst remaining predominantly agricultural.

Potential ground gas sources have been identified at this stage, with regards to the two historic landfill sites located within 500m of the site.

No significant potentially contaminative land uses have been recorded on site or within an influencing distance.

6.1.2 S-P-R Characterisation:

The statutory guidance describes contaminated land in terms of 'significant pollutants' and 'pollutant linkages', using SOURCE-PATHWAY-RECEPTOR' scenarios for the site. For a pollutant linkage to exist all three of these elements must be present. These have been clearly defined in the guidance as follows:

…..potential source as 'a contaminant which is in, or under the land and which has the potential to cause significant harm or to cause pollution of controlled waters'.

…..potential pathway as 'one or more routes or means by, or through, which a receptor is being exposed to, or affected by a contaminant, or could be so exposed or affected'.

…..potential receptor as 'a living organism, a group of living organisms, an ecological system or a piece of property which is being or could be, harmed by a contaminant or controlled waters which are being, or could be, polluted by a contaminant'.

Examination of the desk study information has identified the following (see below):

Potential Sources:

The review of the available desk study information has revealed the following potential sources of contamination identified resulting from former and/or existing land uses that must be considered in a SOURCE-PATHWAY-RECEPTOR scenario. There is also though the possibility that naturally occurring levels of some contaminants may exceed the relevant guidance values.

Table 6.1 Potential Sources of Contamination

Potential Onsite Sources	**Associated Potential Contaminants [a,b]**	
	Metals and Inorganics	*Organics and Others*
Farmland	General Suite	Pesticides
Potential Offsite Sources		
Farmland	General Suite	Pesticides

[a] Professional experience alongside DoE Industry Profiles and CLR8 (withdrawn but used for reference)
[b] Subject to Local Authority comments / planning conditions

Potential Pathways:

- Direct ingestion of soil and dust;
- Dermal contact with soil and dust;
- Inhalation of vapour and dust;
- Made ground (if identified);
- Vadose zone.

Potential Receptors:

- Ground workers employed in the redevelopment of the site;
- Future end users of the site (including properties);
- Controlled waters;
- Neighbouring land users.

6.1.3 Potential Pollutant Linkages:

A potential pollutant linkage is defined as 'the relationship between a contaminant, a pathway and a receptor' where the pollutant is the contaminant in the pollutant linkage. For land to be identified as contaminated under the current UK guidance all three elements of the pollutant linkage must be present. In many cases there may be more than one pollutant linkage on any given site.

A review of the desk study information, the features noted in the site visit and the potential sources, pathways and receptors listed above has led to the following potential significant pollutant linkages (SPL) being considered (Table 6.2 below).

Table 6.2 Potential Pollutant Linkages

Potential Source	Pathway	Receptors					SPL*
		Controlled Waters	Ground workers	End-users	Flora	Building materials	
Metal/metalloids and inorganics in **SOIL**	Direct Ingestion		✓	✓			✓
	Dermal Contact		✓	✓			✓
	Inhalation		✓	✓			✓
	Leaching/direct movement				✓	✓	✓
Asbestos containing materials in **SOIL**	Inhalation		✓	✓			✓
Organics in **SOIL** (hydrocarbons, pesticides, PAH etc)	Direct Ingestion		✓	✓			✓
	Dermal Contact		✓	✓			✓
	Inhalation		✓	✓			✓
	Leaching/direct movement				✓	✓	✓
Metal/metalloids and inorganics In **CONTROLLED WATERS**	Direct Ingestion	✓	✓	✓	✓		✓
	Dermal Contact	✓	✓	✓	✓		✓
	Inhalation						
	Leaching/direct movement	✓	✓	✓	✓		✓
Organics in **CONTROLLED WATERS** (hydrocarbons, pesticides, PAH etc)	Direct Ingestion	✓	✓	✓	✓		✓
	Dermal Contact	✓	✓	✓	✓		✓
	Inhalation						
	Leaching/direct movement	✓	✓	✓	✓		✓
GROUND GAS (Carbon Dioxide and Methane)	Direct Ingestion						
	Dermal Contact						
	Inhalation		✓	✓			✓
	Leaching/direct movement						

* Potential SPL identified pending Local Authority comments and confirmation of ground conditions

6.1.4 Model Status and Uncertainty

The potential significant linkages listed above are based on available data reviewed to date. Therefore, the linkages identified are tentative in nature and are subject to the following uncertainties:

- Presence and nature of any made ground and the underlying strata;
- Presence and depth of any groundwater at shallow depth;
- Actual presence of contaminants or ground gas sources in soils and / or water.

7.0 RATIONALE FOR PHASE II INVESTIGATION

7.1 Scope of Ground Investigation

The Phase II Environmental Investigation will comprise the recovery of samples from all exploratory holes positioned to provide optimum coverage across accessible areas of the site as identified in Table 7.1 below, in general accordance to BS5930:2015. Samples will be selected for analysis on the basis of their onsite visual descriptions with particular attention given to samples displaying any olfactory evidence of contamination. All samples will be taken in snap top plastic containers and 250ml amber glass jars or vials. All samples will be placed in cooled containers and transported to Geo-Matters Ltd's storage facility in Castle Donington before awaiting transfer to a UKAS / MCERTS accredited laboratory.

Table 7.1: Exploratory Hole Layout Rationale

Potential Source / Issue	Exploratory Holes
General Site Coverage	All Holes

The samples taken during the intrusive investigation will be analysed for a range of contaminants in accordance with NHBC Standards Chapter 4.1 'Land Quality – managing ground conditions' and CLR 8 'Potential Contaminants for the Assessment of Land' (withdrawn but used for reference purposes where applicable). The soil samples will be analysed for the following parameters: arsenic, cadmium, chromium, copper, nickel, zinc, lead, mercury, selenium, chromium, sulphate, speciated PAH's and phenols. Selected samples shall also be analysed for asbestos (screen), pesticides and TPH. If samples are observed to display further visual or olfactory evidence of contamination (e.g. evidence of hydrocarbon staining or potential asbestos containing materials), then they shall be scheduled for appropriate additional analysis.

7.2 Scope of Geotechnical Investigation

The geotechnical investigation will comprise the advancement of exploratory locations across accessible areas of the site to determine the site's geo-morphological characteristics. The visual description of the soils will be used as the basis of determining the basic engineering properties of the soils encountered and all soils logging will be in accordance to BS5930:2015 where applicable.

During site works, samples will be collected; where necessary; to allow for classification testing and chemical analysis to be undertaken to determine the potential effects of soil upon the performance of building materials. *In situ* testing (SPTs) will also be taken where possible to allow strength profiling of the underlying strata.

8.0 SITE WORKS

All fieldwork and soil descriptions were carried out in general accordance with BS EN 14688 'Geotechnical Investigation and Testing – Identification and Classification of Soil' and/or BS5930:2015. Each of the exploratory locations was positioned on site by Geo-Matters Ltd. The locations of these exploratory holes are shown on the Site Investigation Plan presented in Appendix VII (Drawing 005). Prior to any excavation, the locations were checked with the Client for the presence of underground services and with reference to service plans where supplied.

8.1 Scope of Investigation

A summary of the ground investigation undertaken by Geo-Matters Ltd is outlined in the table below:

Table 8.1: Method of Investigation

Method of Investigation	No.	Max Depth (m)	Sampling Regime
Bore Hole Drilling	14	700	1 & 2
Trial Pits	38	3.90	1 & 2

[1] – 500ml plastic tubs, 250ml amber jars and 40ml glass vials.
[2] – Bulk bags.

The investigation was carried out under the supervision of an engineer from Geo-Matters Ltd.

Disturbed samples were collected from each discrete horizon within the exploratory holes (where possible) to provide soils for laboratory testing.

Exploratory Hole Logs are presented in Appendix VIII.

8.2 Limitations to the Investigation

No significant limitations were encountered during the recent site investigation works.

9.0 ANALYSIS, RESULTS AND INTERPRETATION

9.1 Chemical Analyses of Soils

In December 2014 DEFRA released a set of provisional 'Category 4 Screening Levels' (C4SLs) for a select number of determinands. These were provisional screening values which were intended to indicate a level at which land may be considered as 'suitable for use' and 'definitely not contaminated'. Third parties (e.g. LQM, CIEH etc.) have used DEFRA's risk assessment approach and methodology to calculate further screening values for additional determinands which are common to brownfield / redevelopment sites across the UK. These are based on a limited number of common land uses, including residential end-uses with / without gardens. A combined set of Tier 1 Screening Values (T1SVs) shall therefore be used in consideration of potential risks to future end users at the subject site with reference to the proposed *residential end use with gardens*.

Due to ongoing revisions to the contaminated land assessment framework (including the derivation and release of authoritative screening values), the following assessment (and related conclusions / recommendations) may be revised should replacement screening values etc. be released in the near future.

Representative soil samples from the exploratory locations were analysed for the range of contaminants outlined above. Representative samples of the near surface and underlying natural strata were analysed. The environmental analysis was scheduled by Geo-Matters Limited and carried out by a UKAS/MCERTS accredited laboratory.

The full details of the chemical test results are presented in Appendix IX, and are summarised in Table 9.1 overleaf.

Table 9.1: Laboratory Analysis of Soil Samples

Determinand	No. of Samples Analysed	Concentration Range (mg/kg)	Tier 1 Screening Values (mg/kg)	No. Exceeding Threshold
Metals				
Arsenic	24	<1.0* – 23.0	37.0[a]	0
Cadmium	24	<0.2*	22.0[a]	0
Chromium (III)	24	7.7 – 39.0	910.0	0
Chromium (VI)	24	<4.0*	6.0[b]	0
Lead	24	4.5 – 38.0	200.0[a]	0
Selenium	24	<1.0* - 4.7	250.0[b]	0
Nickel	24	7.3 – 33.0	180.0[b]	0
Copper	24	6.6 – 29.0	2400.0[b]	0
Zinc	24	19.0 – 87.0	3700.0[b]	0
Mercury	24	<0.3* – 0.6	40.0[b]	0
Organics and Inorganics				
TPH C_6-C_{10}	6	<0.1*	27.0[b]	0
TPH C_{10}-C_{25}	6	<10.0*	74.0[b]	0
TPH C_{25}-C_{44}	6	<10.0*	1100.0[b]	0
Benzo(a)pyrene	24	<0.1*	2.2[b]	0
Asbestos	6	ND	D[c]	0
Phenols	24	<1.0*	280.0[b]	0
pH	24	7.4 – 9.4	N/A	N/A
Water Sol. Sulphate (g/l)	24	0.012 – 0.41	N/A	N/A
Pesticides	6	ND	D[c]	0

[a] DEFRA C4SL values for a residential end use with gardens / plant uptake
[b] LQM 'S4UL' values for a residential end use with gardens / plant uptake
[c] Geo-Matters general screening level
* - Contaminants all recorded below laboratory limits of detection
N/A = Not Applicable, ND = Not Detected, D = Detected, DL = Detection Limits

Metals

The results were compared with the referenced tier 1 screening values (T1SVs) which are considered most appropriate to the proposed end-use (residential with gardens).

Zootoxic Metals

None of the samples analysed for zootoxic metals recorded concentrations in excess of their respective Tier 1 Screening Values (T1SVs). On this basis, no risks have been identified from zootoxic metals at the subject site.

Phytotoxic Metals

None of the samples analysed for phytotoxic metals recorded concentrations that were deemed excessive. On this basis, no risks have been identified from these determinands at the subject site.

Inorganics

The pH values recorded from the soil samples averaged 8.8, indicating that generally near neutral soil conditions prevail within soils at the site.

Organics

Total Petroleum Hydrocarbons (TPH)

None of the samples analysed for TPH recorded concentrations in excess of their respective Tier 1 Screening Values (T1SVs). On this basis, no risks have been identified from these determinands at the subject site.

Organics

The significance of the PAH laboratory results have been assessed using the T1SV for benzo(a)pyrene. This is considered, in terms of toxicity, to present the greatest hazard to human health. The T1SV of 2.2mg/kg was not exceeded in any of the soil samples analysed. On this basis, no risks have been identified from these determinands at the subject site.

Other Determinands

Asbestos

A selection of representative samples of made ground / topsoil were scheduled for the assessment of free fibres of asbestos. None of the samples analysed tested positive for asbestos fibres. On this basis, no risks have been identified from asbestos at the subject site based on the proposed residential end use.

General Contaminants

Visual, Olfactory and Field Measurements

During our recent ground investigation, no significant visual or olfactory evidence of any potential contamination was noted within any the exploratory holes completed.

9.2 CLEA Statistical Analysis

In August 2008 the Environment Agency (EA) withdrew the core regulatory guidance documents for the assessment of human health risks from contaminated land (CLR7 to CLR10), including the soil guideline value (SGV) documents. The newly published EA guidance documents (SC050021.TR1, SC050021.SR2 and SC050021.SR3) have been consulted; alongside the CL:AIRE / CIEH guidance note on statistical interpretation of contaminated land data; and the risk assessment for the subject site has been undertaken in broad accordance with these documents.

With reference to the documents listed above, statistical analysis on sample data is not required for determinands where exceedances above the relevant T1SV were not recorded. Based on Table 4.1, no exceedances were recorded for any of the determinands analysed. Therefore, further statistical analysis is not considered necessary at this stage.

9.3 Geotechnical Testing

The geotechnical laboratory testing was carried out in accordance with BS EN 14688 'Geotechnical Investigation and Testing – Identification and Classification of Soil' and/or BS5930:2015. Full details of the test results are presented in Appendix IX.

The pH values recorded from the soil samples averaged 8.8, indicating that generally near neutral soil conditions prevail within soils at the site.

Three representative soil sample of the clay soil was analysed for Atterberg Limits and Moisture Contents. The results are presented in Table 9.2:

Table 9.2: Plasticity Index Results

Determinand	No. of Samples	Range	Remark
Plasticity Index	3	8.0 - 18.0%	N/A
% passing 425µm test sieve	3	100%	N/A

The results show that the clay soils encountered at the site display a modified plasticity indices between 8 - 18%. This indicates that the cohesive soils across the site would be classified as displaying a maximum **low** volume change potential.

Eleven representative sample of granular strata were scheduled for particle size distribution (PSD) grading analysis. The results confirm the engineer's site descriptions.

Copies of test certificates are presented within Appendix IX.

9.4 Ground Gas and Radon

Potential ground gas sources have been identified on / around the site therefore, ground gas monitoring exercise was undertaken concurrently with the site investigation works discussed herein. The monitoring programme (6 No. visits) is still ongoing at the time of writing but no significant levels of gas have been recorded at present (i.e. all concentrations of methane below 1% v/v and all concentrations of carbon dioxide below 5% v/v, with no significant flow detected).

Interpretation of gas monitoring data is specified in CIRIA 665 (2007) '*Assessing risks posed by hazardous ground gases to buildings*'. This guidance includes the calculation of volumetric flow rates of ground based on maximum recorded gas concentrations and maximum recorded gas flow rates. Limiting factors are applied to the gas monitoring results and a characteristic situation is then applied to the site. This provides a worst-case scenario in relation to the ingress of gas to future structures. Based on the current ground gas concentrations and flow rates detected to date the site would be indicatively classified as Characteristic Situation 1 or NHBC 'Green', subject to confirmation following completion of monitoring works and Local Authority / NHBC approval.

The property is not in a radon affected area, as less than 1% of properties are above the action level in accordance with the Site Specific Environmental Data Report (Appendix V). Radon protective measures are therefore **not necessary** for new properties, subject to Local Authority approval.

10.0 PHASE II GEOTECHNICAL ASSESSMENT

10.1 Ground Conditions

The geotechnical element of the works was undertaken concurrently with the environmental investigation. The ground conditions encountered within the exploratory locations are summarised in the table below with the logs presented in Appendix VIII.

Table 10.1: Summary of Ground Conditions at the Site

General Description	Maximum Thickness (m)
Brown slightly sandy slightly silty TOPSOIL with rootlets. (TP01 – TP38, WS01 – WS12, WS14)	0.30 (average 0.21)
MADE GROUND (Comprising: dark brown silty sandy clay). (WS13)	0.20
MADE GROUND (Comprising: light brown slightly gravelly silty sand. Gravel is fine to medium brick and tile fragments. (WS13)	0.80
Generally loose light brown silty fine to coarse SAND. (All holes)	3.80 (average 1.87*)
Tidal flat deports (TFD) comprising soft grey brown sandy sometimes clayey SILT / silty CLAY. (All holes)	6.30 (average 2.43*)

+ Not fully penetrated at all locations

10.1.1 Soils – Made Ground / Topsoil

Made ground was encountered within one exploratory hole (WS13) that was completed during the recent intrusive works and generally comprised reworked topsoil brown silty clay with brick fragments.

Topsoil was encountered within all the remaining exploratory holes across the site and generally comprised brown sandy silt.

The made ground / topsoil encountered are **not** considered to be suitable bearing strata for the proposed development due to the variability of composition and strength associated with such materials.

10.1.2 Soils – Natural Strata

Tidal flat deports (TFD) were recorded beneath the topsoil / made ground at all locations; comprising loose to medium dense light brown slightly silty SAND and grey soft to very soft sandy SILT.

The TFD is directly underlain by the West Walton Formation which was not encountered. Some *in situ* strength test data was noted to increase at around 7.00m begl, which may be potentially indicative of an interface / change of strata although no variation in soil type etc. was recorded within the borehole arisings at these 2 No. locations (WS02 and WS03).

10.1.3 Groundwater and Excavations

Groundwater strikes were recorded at 9 No. positions across the site during the recent works. These were recorded from depths ranging between 1.5m and 2.9m begl.

10.1.4 Stability Issues (e.g. mining / slopes)

Hazard	Maximum Designated Rating
Shrinking / Swelling Clay	Low Hazard Rating
Landslide	Very Low Hazard Rating
Ground Dissolution	Negligible Hazard Rating
Compressible Ground	Moderate Hazard Rating
Collapsible Ground	Negligible Hazard Rating
Running Sand	Moderate Hazard Rating

The Environmental Data Report for the site indicates that risks from mining are not likely at this stage. Precautions are **not** likely to be required at this stage, subject to regulatory approval.

10.2 Contamination and Performance of Building Materials

10.2.1 Sulphates

The pH values recorded from the soil samples retrieved from site averaged 8.8, indicating that generally near neutral soil conditions prevail within soils at the site.

Water soluble sulphate analysis of the soils recovered from the site by Geo-Matters Ltd recorded soils to have concentrations ranging between <0.01g/l and 0.41g/l therefore DS-1/AC-1 conditions prevail at the site in accordance with BRE Special Digest 1 'Concrete in Aggressive Ground 2005'.

10.2.2 Other Contaminants

No determinands were detected at concentrations considered sufficient to present risks to the building materials based on the proposed residential end use including private gardens.

10.3 Geotechnical Hazards for the Proposed Development

It is understood that the proposed development at the site is to comprise a residential end-use including private gardens and soft landscaping. Table 5.4 summarises the main; but not limited to; geotechnical hazards identified during our recent intrusive works associated with the proposed development.

Table 10.2: Summary of Geotechnical Hazards

Hazard	Comment
Volume Change Potential	Test data indicates that cohesive soils at the site have an overall **low volume change potential** which will need consideration for the proposed foundation design.
Made Ground	Significant depths of made ground were not generally encountered during the recent investigation works with the exception of WS13, therefore localised deepening may be required.
Soft / Loose Soils	Very loose / very soft soils have been encountered. Alternative foundation options (e.g. ground improvement or piles) may need to be considered for such areas. Further assessment from a geo-environmental engineer and specialist contractor may be required where this is the case. Groundwater will reduce the bearing capacity of the granular soils, where encountered.
Trees	Trees / hedgerows may have an effect on bearing depths, once a finalised plan has been received and engineering assessment can be undertaken.

Shallow soil conditions at the site are highly variable. Due to the very low *in situ* soil strengths which have been recorded, a maximum net allowable bearing capacity of 50kN/m^2 should be achievable in the underlying undisturbed natural soils across the eastern half of the site outside the influence of trees. Due to the higher *in situ* soil strengths which have been recorded in the western half of the site, a maximum net allowable bearing capacity of 90kN/m^2 should be achievable in the underlying undisturbed natural soils outside the influence of trees.

Due to the low SPT test data reported alternative foundation options must be considered for this development construction in this part of the site.

11.0 PHASE II ENVIRONMENTAL ASSESSMENT

11.1 Phase II Conceptual Model

11.1.1 Site Summary

The results of the scheduled chemical analysis were compared with the appropriate T1SVs based on the proposed residential end-use with private gardens.

In light of the chemical analysis results the SOURCE-PATHWAY-RECEPTOR characteristics have been re-assessed as outlined below.

11.1.2 Source-Pathway-Receptor Characterisation and Risk Assessment

The results of the chemical testing analyses indicate that no determinands have been recorded at concentrations sufficient to act as a source in a SOURCE-PATHWAY-RECEPTOR scenario (i.e. significant contamination was not encountered during our recent investigation works).

The potential pathways and receptors have therefore been revised from those listed in Section 6.1.3 above.

11.1.3 Identified Pollutant Linkages

In view of the above; the pollutant linkages have been reassessed as listed in Table 11.1 overleaf.

Table 11.1: Identified Pollutant Linkages

Potential Source	Pathway	Receptors					SPL*
		Controlled Waters	Ground workers	End-users	Flora	Building materials	
Metal/metalloids and inorganics in **SOIL**[#]	Direct Ingestion						
	Dermal Contact						
	Inhalation						
	Leaching/direct movement						
Asbestos containing materials in **SOIL**	Inhalation						
Organics in **SOIL**[#] (hydrocarbons, pesticides, PAH etc)	Direct Ingestion						
	Dermal Contact						
	Inhalation						
	Leaching/direct movement						
Metal/metalloids and inorganics in **CONTROLLED WATER**	Direct Ingestion						
	Dermal Contact						
	Inhalation						
	Leaching/direct movement						
Organics in **CONTROLLED WATER** (hydrocarbons, pesticides, PAH etc)	Direct Ingestion						
	Dermal Contact						
	Inhalation						
	Leaching/direct movement						
GROUND GAS (Carbon Dioxide and Methane)	Direct Ingestion						~
	Dermal Contact						~
	Inhalation						~
	Leaching/direct movement						~

* Subject to Local Authority approval
~ Subject to Local Authority approval / completion of monitoring programme

11.1.4 Model Status, Uncertainty and Justification

The above revised conceptual model is considered to represent the current site conditions based on the information derived from the site investigation.

11.2 Risk Assessment

11.2.1 Qualitative Risk Assessment

The regulatory framework within England which addresses risks from contaminated land is presented within and across several regimes. This includes sections 78 (A) to (YC) in Part IIA of the Environmental Protection Act 1990 (which was retrospectively inserted by Section 57 of the Environment Act 1995), Building Regulations, Environmental Permitting Regulations and the National Planning Policy Framework (NPPF). The contaminated land regime (principally under Part IIA of the EPA (1990)) sets out a risk based approach within which the identification and remediation of contaminated land presenting unacceptable risks to people and the environment is described. Related regimes (such as those listed above) provide additional guidance through frameworks which focus on specific subsequent scenarios (e.g. re-use of land for new uses).

In the context of the planning system (as identified within the NPPF), an emphasis is placed upon remediating and mitigating contaminated land (where appropriate). The NPPF states that (s. 120 pp28):

> *"To prevent unacceptable risks from pollution and land instability, planning policies and decisions should ensure that new development is appropriate for its location. The effects (including cumulative effects) of pollution on health, the natural environment or general amenity, and the potential sensitivity of the area or proposed development to adverse effects from pollution, should be taken into account. Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner."*

And additionally:

> *"Planning policies and decisions should also ensure that:*
> - *the site is suitable for its new use taking account of ground conditions and land instability, including from natural hazards or former activities such as mining, pollution arising from previous uses and any proposals for mitigation including land remediation or impacts on the natural environment arising from that remediation;*
> - *after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990."*

The core legislation (Part IIA) adopts the principle of a 'suitable for use' approach for; the assessment of contaminated land, the derivation of a site-specific risk assessment and subsequent determination of a remedial strategy. Action is only required if unacceptable risks are posed to human health or to the environment, taking into account the current land-use and geo-environmental settings.

The legislation places a responsibility on the Local Authority to determine whether the land under its jurisdiction is contaminated by consideration of whether: -

- ***Significant harm is being caused;***
- ***There is a significant possibility of significant harm being caused; or***
- ***Pollution of controlled waters is being caused or is likely to be caused.***

The statutory guidance describes a risk assessment methodology in terms of 'significant pollutants' and 'pollutant linkages', using SOURCE-PATHWAY-RECEPTOR' scenarios for the site.

On the basis of available data, the geo-environmental setting and proposed end-use, a qualitative Source-Pathway-Receptor risk assessment table is presented overleaf.

Table 11.2: Qualitative Risk Assessment Summary Table

Source	Pathway	Target (Receptor)	Comments	Risk Level	Action*
Metals/ Metalloids in soils and dust	Direct ingestion (active) Inhalation (passive) Dermal contact.	Ground workers, End users	Significant contamination was not encountered	**LOW**	NO FURTHER ACTION REQUIRED
Metals/ Metalloids in soils and dust	Near surface soils	Plants within the proposed landscaped areas and gardens.	Significant contamination was not encountered	**LOW**	NO FURTHER ACTION REQUIRED
Metal / Metalloids compounds in waters	As above (plus skin contact)	Ground workers, Site users	Significant groundwater was not encountered	**LOW**	NO FURTHER ACTION REQUIRED
Inorganics in soils and dust	Direct ingestion (active) Inhalation (passive)	Ground workers, End users and the Property	Significant contamination was not encountered	**LOW**	NO FURTHER ACTION REQUIRED
Organic compounds in soils and dust	As above (plus skin contact)	Ground workers, Site users	Significant contamination was not encountered	**LOW**	NO FURTHER ACTION REQUIRED
Organic compounds in waters	As above (plus skin contact)	Ground workers, Site users	Significant groundwater was not encountered	**LOW**	NO FURTHER ACTION REQUIRED
Ground Gas	Inhalation (passive), Ingress	End users and Property	Significant sources not encountered	**LOW**	NO FURTHER ACTION REQUIRED~

Notes: LOW / MODERATE / HIGH - Risk level is assigned a low/moderate/high qualitative value, based on assessed requirement for action in context of Part II EPA 90.
* Subject to Local Authority Approval
~Subject to Local Authority approval / completion of monitoring programme

11.3 Site Status

The Phase II Conceptual Model and the Qualitative Risk Assessment outlined above indicate that soils at the site should be treated as uncontaminated in the context of the proposed re-development of the site for a residential land-use with private gardens, subject to regulatory authority approval.

12.0 RECOMMENDATIONS

The conclusions and recommendations presented below are considered reasonable based on the findings of the site investigation undertaken to date. However, these cannot be guaranteed to gain regulatory approval and therefore copies of this report should be sent to the appropriate Regulatory Authorities and / or other organisations (as appropriate) by the Client for their comments and approval prior to undertaking any irrecoverable works associated with the subject site.

12.1 Enabling / Earthworks: Significant enabling works are not envisaged at this stage.

Specific testing (e.g. waste acceptance criteria testing) may be required at the discretion of the Client's designated waste handler if the off-site movement / disposal of soils is undertaken. Where applicable, such requirements must be verified directly with them by the Client.

12.2 Foundations: Shallow soil conditions at the site are highly variable. Due to the very low *in situ* soil strengths which have been recorded, a maximum net allowable bearing capacity of 50kN/m^2 should be achievable in the underlying undisturbed natural soils across the eastern half of the site outside the influence of trees. Due to the higher *in situ* soil strengths which have been recorded in the western half of the site, a maximum net allowable bearing capacity of 90kN/m^2 should be achievable in the underlying undisturbed natural soils outside the influence of trees. Due to the low SPT test data reported alternative foundation options must be considered for this development construction in this part of the site. Specialist contractor may need to be consulted with regards to a specialist foundation solution if piles are required. Further works may be required by the contractor.

All foundations should be deepened through topsoil / made ground and locally soft / loose soils; if / where encountered; to bear on the underlying undisturbed natural soils at a minimum depth of 0.90m begl outside the influencing distance of trees. Because of the variability encountered in soil types, it is recommended that light mesh reinforcement is provided within all foundations.

Foundations may require deepening within the influencing distance of trees at this stage (see Section 12.5).

12.3 Floor Slabs & Road Construction: Ground bearing floor slabs are considered appropriate across the majority of the site at this stage with suspended floors

required only where more than 600mm of made ground has been encountered. Additionally a clear void and heave precautions will be required if deepening due to trees in excess of 1.50m depth which may have an effect on bearing capacity.

CBR values of less than 2% can be anticipated in the made ground and values between 2% and 5% can be anticipated in the underlying natural soils subject to *in situ* testing. All road construction proposals should be agreed with the Local Authority prior to finalising designs.

12.4 Groundwater: Significant groundwater was not encountered within the exploratory holes undertaken across the site during the recent investigation. Dewatering etc. is therefore not considered likely at this stage subject to prevailing weather / groundwater conditions.

12.5 Building Near Trees: Test data indicates that cohesive soils at the site have an maximum **low** volume change potential which will need to be considered during construction. Foundation designs will therefore need to be adjusted with regard to building near trees in accordance with NHBC Standards (Chapter 4.2).

12.6 Drainage: At this stage the site is **not** considered to be suitable for the use of *in situ* drainage soakaways due to the predominantly cohesive nature of the natural soils encountered (which is likely to prevent any *in situ* permeability / infiltration) and inconsistent levels of groundwater present. All drainage proposals are subject to *in* situ testing and should be agreed with the Local Authority prior to finalising designs.

12.7 Ground Gas and Radon: The property is not in a radon affected area, as less than 1% of properties are above the action level in accordance with the Site Specific Environmental Data Report (Appendix IV). Radon protective measures are therefore not necessary for new properties, subject to Local Authority approval.

A ground gas monitoring programme (6 No. weeks) is currently being undertaken for the site. Significant gas concentrations and / or flows have not been detected at present and therefore additional gas protection measures would not be required at this stage based on C665 (i.e. site indicatively classified as CS/1 or NHBC 'Green').

12.8 Mining: No precautions necessary.

12.9 Excavations: Generally poor stability was noted in the exploratory holes completed across the site for the short time they remained open with sidewall collapse noted in some areas from 1.20m depth. All excavations should be assumed to be unstable as a precautionary measure. No man entry into unsupported excavations should therefore be allowed without an appropriate risk assessment by the Client and / or their appointed site contractors. Reference to CIRIA report 97 (1983) should be made to establish a suitable means of support or battering of excavation sides.

12.10 Sulphate Classification: The pH values recorded from the soil samples retrieved from site averaged 8.8, indicating that generally near neutral soil conditions prevail within soils at the site. Water soluble sulphate analysis of the soils recovered from the site by Geo-Matters Ltd recorded soils to have concentrations ranging between <0.01g/l and 0.41g/l therefore DS-1/AC-1 conditions prevail at the site in accordance with BRE Special Digest 1 'Concrete in Aggressive Ground 2005'. Minimum concrete specification should be in accordance with NHBC Standards, Section 2.1, Table 1.

12.11 Contamination: Chemical analysis results have been compared with current relevant guidance which indicates that there are no elevated levels of contaminants present across the site. No issues have been identified in relation to the proposed residential end use with private gardens, subject to the approval of the Local Authority.

12.12 Topsoil: Topsoil was encountered during the recent site works which has been chemically proven to be suitable for re-use. There shouldn't be a requirement to import additional topsoil onto the site for use in private gardens etc., although it is reiterated that any such works must be undertaken in full compliance with all regulatory licensing procedures, and validation of the soils prior to importation will be required, subject to the approval of the Local Authority.

Where topsoil is discussed herein (and where it has been recorded within Engineer's logs for this site) it has been described and classified in general accordance with prevailing logging practice (e.g. BS5930 / ISO14688). Additional inspection(s) and analyses will be necessary should classification of such material be required against standards such as BS3882: 2007 'Specification for Topsoil and Requirements for Use'.

12.13 Remediation: Remediation works to protect human health are **not** considered necessary.

12.14 Further Works: The following further works are considered necessary:

- Trees and hedgerows are present around the site, therefore as some parts of the site are underlain by natural cohesive soils which have been recorded to have a **low** volume change potential, a topographical survey and arboricultural survey of the site and surrounding influencing area will be required in order to prepare a foundation schedule. This foundation schedule should be prepared once the development layout has been finalised in order to mitigate the effects of existing / proposed trees and landscaping.
- A review of the foundation depths / bearing capacities will be required once the foundation schedule is prepared to confirm risks from locally soft / loose soils at depth in some areas of the site.
- Verification of foundation proposals with local regulatory authorities and structural engineers;
- Specialist foundation contractors are likely to require additional works to enable them to provide the most cost effective foundation proposal;
- The Client will need to liaise with appropriately licensed waste management contractors to determine requirements for additional analysis etc. should materials be considered for off-site removal / disposal.

INFORMATION SOURCES

Geological data	British Geological Survey 1:50,000 Scale Mapping Sheet 144 Solid & Drift; Coal Mining Searches, The Law Society Guidance Notes and Directory 1998 Edition; Environment Agency Online Aquifer Designation Database (accessed October 2016); Site Specific Environmental Data Report GEO-M-3360536 dated October 2016).
Environmental	Site Specific Environmental Data Report: (Ref. GEO-M-3360535 dated October 2016). BRE Report BR211 "Radon: Guidance on protective measures for new dwellings" (1999 Edition). Environment Agency (EA) & DEFRA: "Model Procedures for the Management of Land Contamination – Contaminated Land Report 11" (CLR11) (2004) Department for Environment, Food and Rural Affairs (DEFRA) – "SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document" (December 2014) DEFRA and Contaminated Land: Applications in Real Environments (CL:AIRE) "SP1010 – Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination: Final Project Report" (Revision 2 dated 24th September 2014 Chartered Institute of Environmental Health (CIEH): "Professional Practice Note: Reviewing human health risk assessment reports invoking contaminant oral bioavailability measurements or estimates" (2009) CL:AIRE in Association with EIC and AGS: "Soil Generic Assessment Criteria for Human Health Risk Assessment" (updated January 2010 version) (Reference purposes)
Historical	As presented Appendix V.

APPENDIX I

Proposed Site Layout Plan



DO NOT SCALE

NOTES:

N

Approx. Site Boundary

Approx. Boundary of Investigation Area

GEOMATTERS

www.geo-matters.com
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CLIENT:

ASHWOOD HOMES

PROJECT:

Phase I & II Areas at Holbeach Meadows, Holbeach

TITLE:

Proposed Site Layout Plan

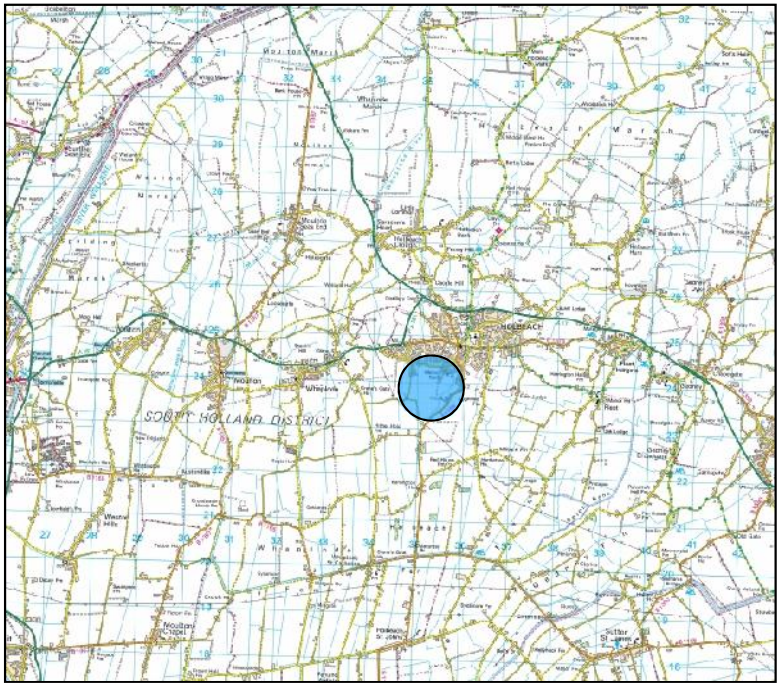
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NTS	Final
DESIGN/DRAWN :	DATE:
JR	Nov. 2013
PROJECT No:	DRAWING No:
GML16197	001

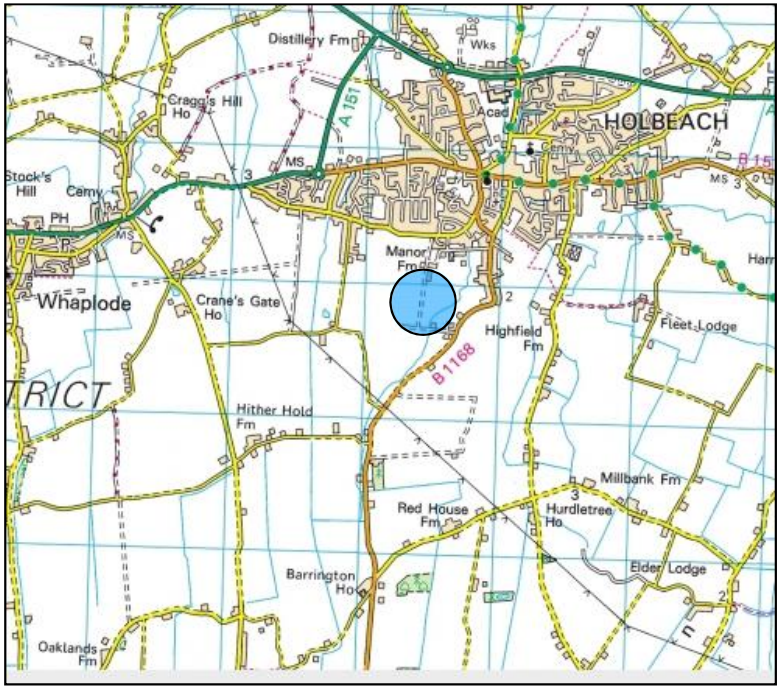
The proposed layout plan shown is an extract taken from RG+P Drawing 'Indicative Site Layout' dated May 2014

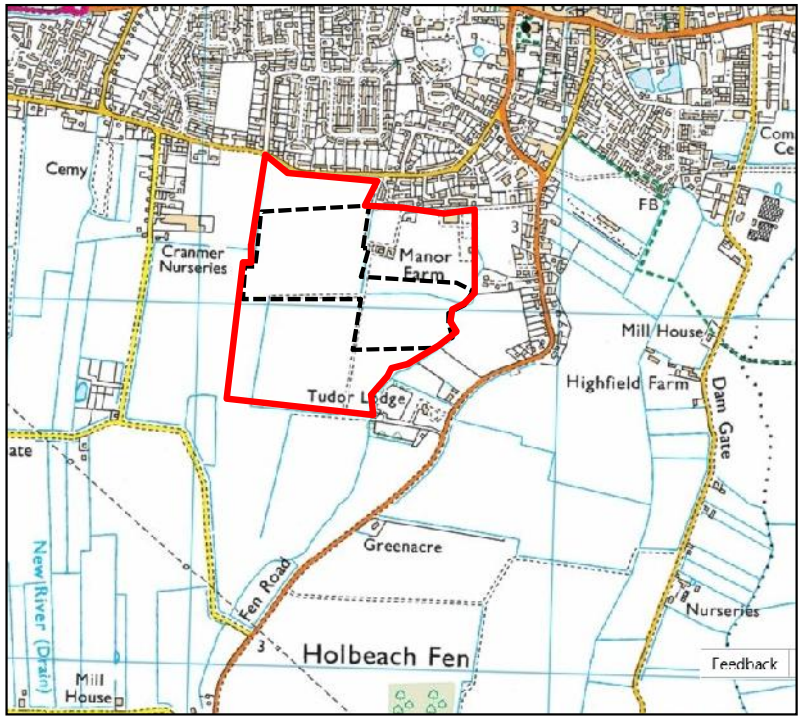
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APPENDIX II

Site Location Plan







DO NOT SCALE

NOTES:

N

Approx Site Location

Approx. Site Boundary

Approx. Boundary of Investigation Area

GEOMATTERS

www.geo-matters.com
info@geo-matters.com

CLIENT: ASHWOOD HOMES

PROJECT:
Phase I & II Areas at Holbeach Meadows, Holbeach

TITLE:
Site Location Plan

SCALE@SIZE :	ISSUE:
NTS	Final
DESIGN/DRAWN :	DATE:
AD	Nov. 2016
PROJECT No:	DRAWING No:
GML16197	002

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APPENDIX III

Site Features Plan



DO NOT SCALE

NOTES:

N

Approx. Site Boundary

Approx. Location of Trees / Bushes

GEOMATTERS

www.geo-matters.com
info@geo-matters.com

CLIENT: ASHWOOD HOMES

PROJECT:

Phase I & II Areas at Holbeach Meadows, Holbeach

TITLE:

Site Features Plan

SCALE@SIZE :	ISSUE:
NTS	Final
DESIGN/DRAWN :	DATE:
AD	Nov. 2016
PROJECT No:	DRAWING No:
GML16197	003

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APPENDIX IV

Environmental Data Report

Geo-Matters Limited

Geo-Matters Ltd, 104 Bondgate,
Castle Donington, DE74 2NR

Groundsure Reference:	GEO-M-3360535
Your Reference:	GML16197
Report Date	10 Oct 2016
Report Delivery Method:	Email - pdf

Groundsure Enviro Insight

Address: 13, FEN ROAD, SPALDING, PE12 8QA

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Enviro Insight** 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,

Geo-Matters Limited

Enc.
Groundsure Enviroinsight

Groundsure Enviro Insight

Address:	**13, FEN ROAD, SPALDING, PE12 8QA**
Date:	**10 Oct 2016**
Reference:	**GEO-M-3360535**
Client:	**Geo-Matters Limited**

NW N NE

W E



SW S SE

Aerial Photograph Capture date:	16-Sep-2007
Grid Reference:	535521,324065
Site Size:	15.73ha

Report Reference: GEO-M-3360535
Client Reference: GML16197

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Overview of Findings

For further details on each dataset, please refer to each individual section in the main 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: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	6	3	34	34
1.2 Additional Information – Historical Tank Database	0	0	7	10
1.3 Additional Information – Historical Energy Features Database	0	0	0	6
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	9	3
1.6 Potentially Infilled Land	0	9	11	28

Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	0
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	0	2
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	0	0	0
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHHS sites	0	0	0	0
2.3 Environment Agency Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	0	6
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-1500
3.1 Landfill Sites						
3.1.1 Environment Agency Registered Landfill Sites	0	0	0	0	0	Not searched
3.1.2 Environment Agency Historic Landfill Sites	0	0	0	2	3	1
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	0	0
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	3	Not searched	Not searched
3.2.2 Environment Agency Licensed Waste Sites	0	0	0	3	0	0

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	0	0	5	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	1	1
4.3 National Grid Underground Electricity Cables	0	0	0	0
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology	
5.1 Are there any records of Artificial Ground and Made Ground present beneath the study site?	No
5.2 Are there any records of Superficial Ground and Drift Geology present beneath the study site?	Yes
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.	

Section 6: Hydrogeology and Hydrology	0-500m
6.1 Are there any records of Strata Classification in the Superficial Geology within 500m of the study site?	Yes
6.2 Are there any records of Strata Classification in the Bedrock Geology within 500m of the study site?	Yes

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	0	0	0	0	Not searched	Not searched

	On-site	0-50m	51-250	251-500	501-1000	1000-1500

Section 6: Hydrogeology and Hydrology	0-500m					
6.9 Is there any Environment Agency information on river quality within 1500m of the study site?	No	No	No	No	No	No
6.10 Detailed River Network entries within 500m of the site	0	0	0	2	Not searched	Not searched
6.11 Surface water features within 250m of the study site	Yes	Yes	Yes	Not searched	Not searched	Not searched

Section 7: Flooding	
7.1 Are there any Enviroment Agency Zone 2 floodplains within 250m of the study site?	Yes
7.2 Are there any Environment Agency Zone 3 floodplains within 250m of the study site	Yes
7.3 What is the Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site?	Medium
7.4 Are there any Flood Defences within 250m of the study site?	No
7.5 Are there any areas benefiting from Flood Defences within 250m of the study site?	No
7.6 Are there any areas used for Flood Storage within 250m of the study site?	No
7.7 What is the maximum BGS Groundwater Flooding susceptibility within 50m of the study site?	Not Prone
7.8 What is the BGS confidence rating for the Groundwater Flooding susceptibility areas?	Not Applicable

Section 8: Designated Environmentally Sensitive Sites	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	0
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	0	0	0	0	0
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	0	0	0	0	0	0
8.14 Records of Green Belt land	0	0	0	0	0	0

Section 9: Natural Hazards

9.1 What is the maximum risk of natural ground subsidence?	Moderate
9.1.1 What is the maximum Shrink-Swell hazard rating identified on the study site?	Low
9.1.2 What is the maximum Landslides hazard rating identified on the study site?	Very Low
9.1.3 What is the maximum Soluble Rocks hazard rating identified on the study site?	Negligible
9.1.4 What is the maximum Compressible Ground hazard rating identified on the study site?	Moderate
9.1.5 What is the maximum Collapsible Rocks hazard rating identified on the study site?	Negligible
9.1.6 What is the maximum Running Sand hazard rating identified on the study site?	Moderate
9.2 Radon	
9.2.1 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.
9.2.2 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.

Section 10: Mining

10.1 Are there any coal mining areas within 75m of the study site?	No
10.2 Are there any Non-Coal Mining areas within 50m of the study site boundary?	No
10.3 Are there any brine affected areas within 75m of the study site?	No

Using this report

The following report is designed by Environmental Consultants for Environmental Professionals bringing together the most up-to-date market leading environmental data. This report is provided under and subject to the Terms & Conditions agreed between Groundsure and the Client. The document contains the following sections:

1. Historical Industrial Sites

Provides information on past land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. Potentially Infilled Land features are also included. This search is conducted using radii of up to 500m.

2. Environmental Permits, Incidents and Registers

Provides information on Regulated Industrial Activities and Pollution Incidents as recorded by Regulatory Authorities, and sites determined as Contaminated Land. This search is conducted using radii up to 500m.

3. Landfills and Other Waste Sites

Provides information on landfills and other waste sites that may pose a risk to the study site. This search is conducted using radii up to 1500m.

4. Current Land Uses

Provides information on current land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. These searches are conducted using radii of up to 500m. This includes information on potentially contaminative industrial sites, petrol stations and fuel sites as well as high pressure gas pipelines and underground electricity transmission lines.

5. Geology

Provides information on artificial and superficial deposits and bedrock beneath the study site.

6. Hydrogeology and Hydrology

Provides information on productive strata within the bedrock and superficial geological layers, abstraction licenses, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

7. Flooding

Provides information on river and coastal flooding, flood defences, flood storage areas and groundwater flood areas. This search is conducted using radii of up to 250m.

8. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

9. Natural Hazards

Provides information on a range of natural hazards that may pose a risk to the study site. These factors include natural ground subsidence and radon..

10. Mining

Provides information on areas of coal and non-coal mining and brine affected areas.

11. Contacts

This section of the report provides contact points for statutory bodies and data providers that may be able to provide further information on issues raised within this report. Alternatively, Groundsure provide a free Technical Helpline (08444 159000) for further information and guidance.

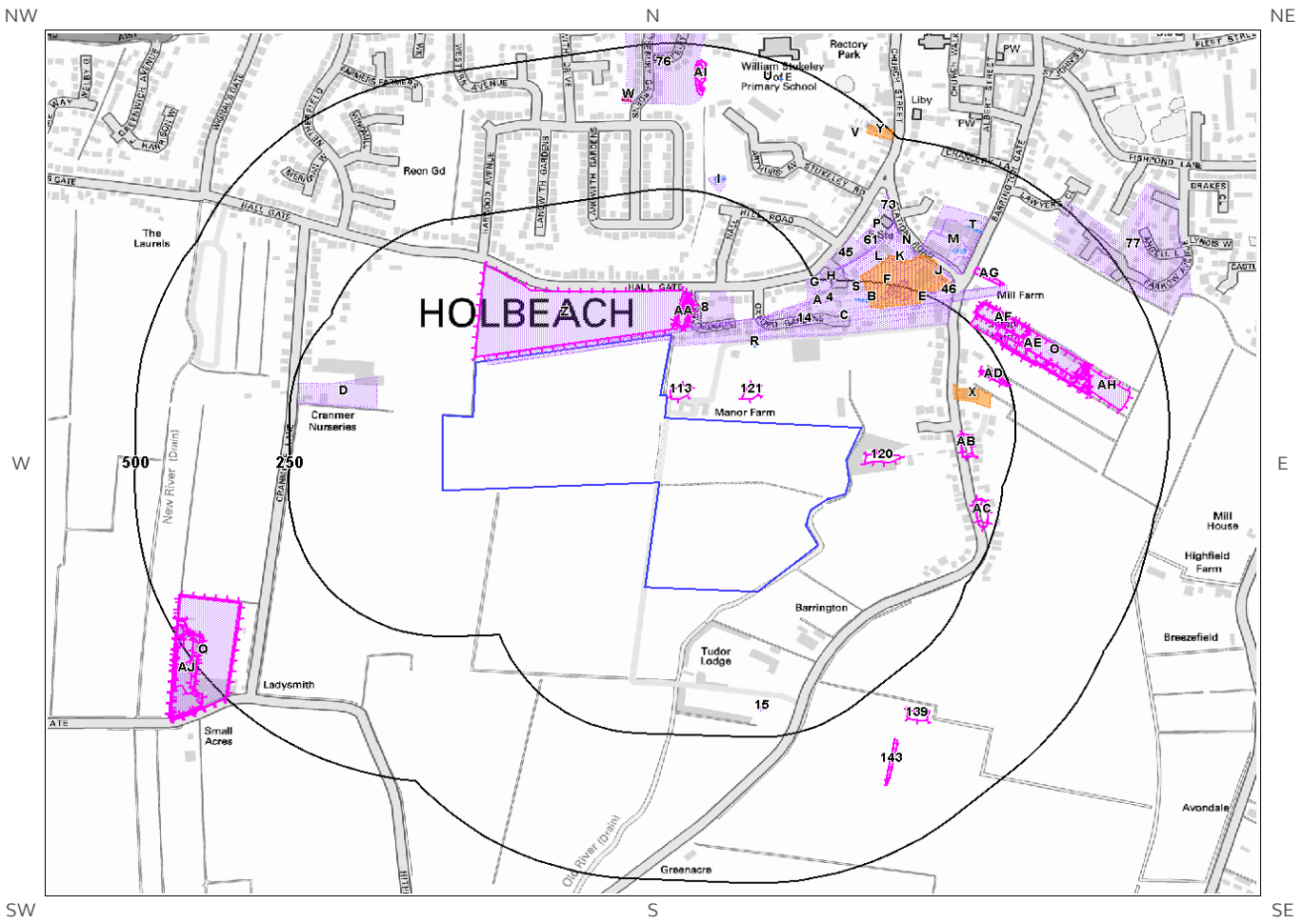
Note: Maps

Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes all other information and takes the following format -Id: 1, Id: 2, etc. Where numerous features on the same map are in such close proximity that the numbers would obscure each other a letter identifier is used instead to represent the features. (e.g. Three features which overlap may be given the identifier “A” on the map and would be identified separately as features 1A, 3A, 10A on the data tables provided).

Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as “Not Shown”.

All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.

1. Historical Land Use



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Site Outline

250
500
Search Buffers (m)

Historical 1:10,000 and 1:10,560 scale mapping

Industrial Land Use

Potentially Infilled Land

Historical 1:2,500, 1:1,250 and 1:500 scale mapping

Energy Features

Petrol Stations

Tanks

Garages

1. Historical Industrial Sites

1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping

The systematic analysis of data extracted from standard 1:10,560 and 1:10,000 scale historical maps provides the following information:

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 77

ID	Distance [m]	Direction	Use	Date
1A	0	On Site	Railway Sidings	1938
2A	0	On Site	Railway Sidings	1958
3S	0	On Site	Railway Sidings	1887
4	0	On Site	Railway Sidings	1950
5A	0	On Site	Railway Sidings	1903
6B	0	N	Railway Sidings	1903
7B	1	N	Railway Sidings	1929
8	9	NE	Nurseries	1970
9Z	9	N	Burial Ground	1958
10C	108	E	Railway Sidings	1903
11C	108	E	Railway Sidings	1929
12D	109	W	Nurseries	1971
13D	109	W	Nurseries	1992
14	141	N	Unspecified Depot	1992
15	197	S	Unspecified Tank	1958
16E	204	N	Railway Station	1903
17E	204	N	Railway Station	1929
18F	204	N	Coal Yard	1970
19A	216	N	Railway Building	1903
20E	219	N	Railway Station	1958
21E	219	NE	Railway Station	1950
22E	219	NE	Railway Station	1903
23E	219	NE	Railway Station	1938
24G	224	N	Railway Building	1950
25L	227	N	Unspecified Commercial/Industrial	1887
26F	229	N	Railway Building	1950
27F	229	N	Railway Building	1903
28E	230	N	Railway Building	1950
29E	230	N	Railway Building	1903
30F	230	N	Railway Buildings	1958
31F	230	N	Railway Building	1887
32F	232	N	Railway Buildings	1938
33F	232	N	Railway Building	1903

34F	232	N	Railway Building	1929
35G	233	N	Railway Building	1903
36E	234	N	Railway Building	1903
37E	234	N	Railway Building	1929
38E	240	N	Railway Station	1887
39G	244	N	Railway Building	1903
40H	247	N	Railway Building	1950
41H	247	N	Railway Building	1903
42G	247	N	Railway Building	1958
43AE	250	NE	Brick Works	1887
44I	256	N	Unspecified Works	1970
45	259	N	Unspecified Depot	1970
46	267	NE	Railway Building	1958
47I	268	N	Unspecified Tanks	1970
48J	284	NE	Railway Building	1958
49J	285	NE	Railway Building	1950
50K	289	N	Railway Building	1903
51K	289	N	Railway Building	1950
52K	292	N	Railway Building	1950
53K	292	N	Railway Building	1903
54K	293	N	Railway Building	1950
55K	293	N	Railway Building	1903
56L	293	N	Railway Building	1958
57P	302	N	Fire Station	1992
58O	304	NE	Unspecified Depot	1970
59M	306	NE	Unspecified Mills	1958
60M	307	NE	Corn Mills	1887
61	307	N	Railway Building	1950
62M	308	NE	Flour Mills	1938
63M	308	NE	Flour Mills	1929
64M	313	NE	Disused Corn Mill	1903
65M	313	NE	Flour Mill	1950
66M	314	NE	Disused Corn Mill	1903
67N	317	N	Railway Building	1903
68N	317	N	Railway Building	1950
69AG	324	NE	Police and Ambulance Station	1938
70O	328	NE	Unspecified Kiln	1887
71P	331	N	Railway Building	1903
72AH	366	E	Sewage Settling Beds	1970
73	374	N	Railway Building	1950
74Q	380	SW	Brick Works	1903
75Q	381	SW	Brick Works	1903
76	396	N	Nurseries	1970
77	444	NE	Nurseries	1970

1.2 Additional Information – Historical Tank Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical tanks within 500m of the search boundary: 17

ID	Distance (m)	Direction	Use	Date
78R	129	N	Unspecified Tank	1991
79R	131	N	Unspecified Tank	1996
80R	131	N	Unspecified Tank	1996
81R	131	N	Unspecified Tank	1995
82S	215	N	Tanks	1981
83S	216	N	Tanks	1986
84S	216	N	Tanks	1986
85I	272	N	Tanks	1968
86M	335	NE	Unspecified Tank	1904
87M	335	NE	Unspecified Tank	1931
88M	340	NE	Unspecified Tank	1888
89T	382	NE	Tanks	1986
90T	384	NE	Tanks	1981
91V	451	NE	Unspecified Tank	1904
92U	463	N	Unspecified Tank	1931
93U	471	N	Unspecified Tank	1931
94V	478	NE	Unspecified Tank	1904

1.3 Additional Information – Historical Energy Features Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical energy features within 500m of the search boundary: 6

ID	Distance (m)	Direction	Use	Date
95W	406	N	Electricity Substation	1981
96W	406	N	Electricity Substation	1991
97W	406	N	Electricity Substation	1986
98W	407	N	Electricity Substation	1995
99W	407	N	Electricity Substation	1996
100W	407	N	Electricity Substation	1996

1.4 Additional Information – Historical Petrol and Fuel Site Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical petrol stations and fuel sites within 500m of the search boundary: 0

Database searched and no data found.

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 12

ID	Distance (m)	Direction	Use	Date
101X	157	E	Garage	1981
102X	157	E	Garage	1986
103X	167	E	Garage	1968
104F	205	N	Garage	1981
105F	206	N	Garage	1991
106F	206	N	Garage	1986
107F	207	N	Garage	1995
108F	207	N	Garage	1996
109F	207	N	Garage	1996
110Y	470	NE	Garage	1986
111Y	470	NE	Garage	1981
112Y	475	NE	Garage	1968

1.6 Potentially Infilled Land

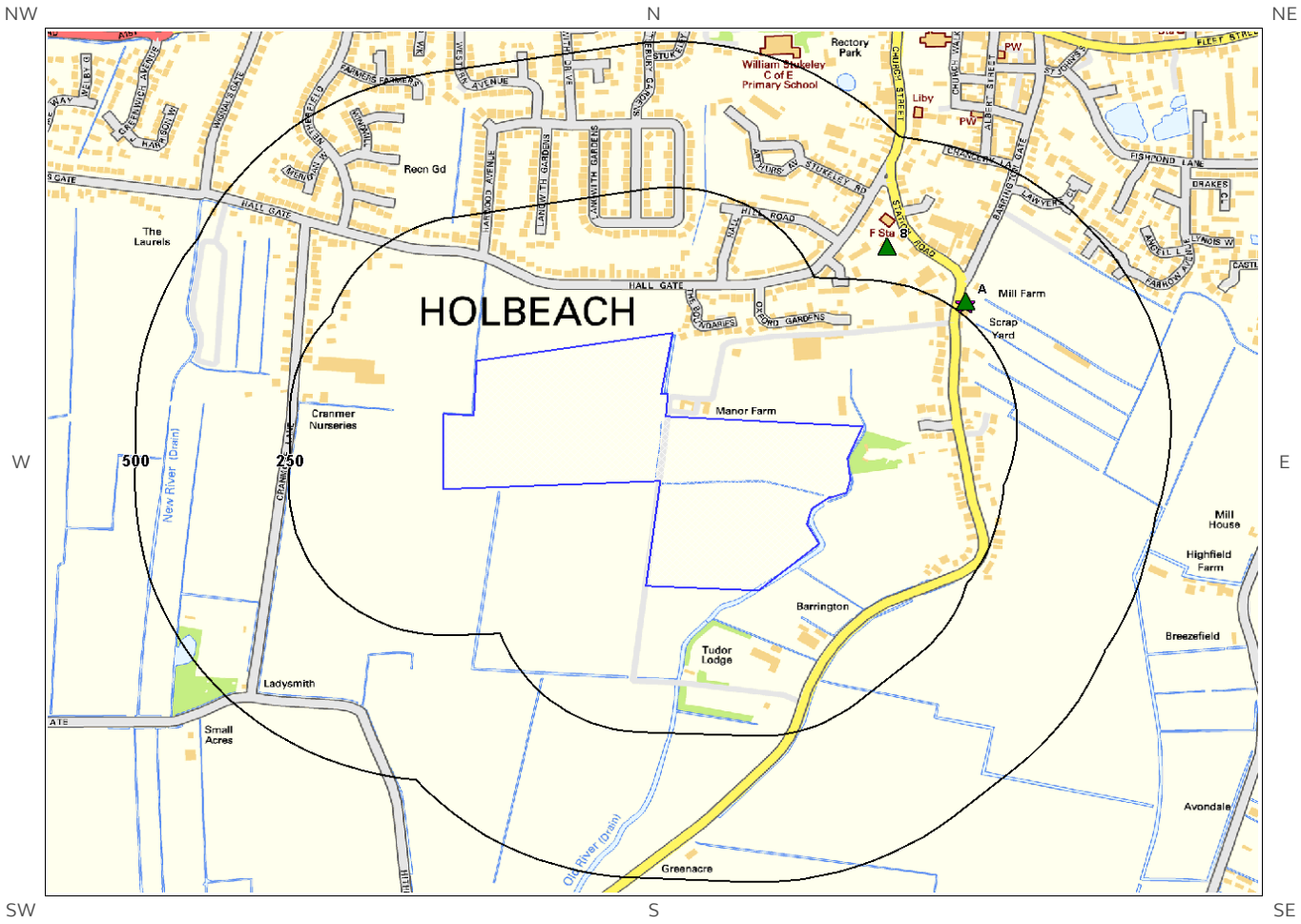
Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 48

The following Historical Potentially Infilled Features derived from the Historical Mapping information is provided by Groundsure:

ID	Distance(m)	Direction	Use	Date
113	7	E	Pond	1903
114Z	9	N	Burial Ground	1958
115AA	17	NE	Pond	1958
116AA	18	NE	Pond	1903
117AA	19	NE	Pond	1950
118AA	19	NE	Pond	1929
119AA	20	NE	Pond	1938
120	27	SE	Pond	1992

121	39	N	Pond	1903
122AB	157	E	Pond	1887
123AB	157	E	Pond	1903
124AB	159	E	Pond	1903
125AC	204	E	Pond	1903
126AC	206	E	Pond	1887
127AC	206	E	Pond	1903
128AD	213	NE	Pond	1950
129AD	213	NE	Pond	1887
130AD	213	NE	Pond	1903
131AD	214	NE	Pond	1938
132AE	250	NE	Brick Works	1887
133AE	263	NE	Ponds	1887
134AE	264	NE	Ponds	1903
135O	265	NE	Ponds	1903
136AF	270	NE	Pond	1903
137AF	286	NE	Pond	1938
138AF	287	NE	Pond	1929
139	314	SE	Pond	1887
140AG	322	NE	Pond	1887
141AG	322	NE	Pond	1950
142AG	322	NE	Pond	1903
143	337	SE	Pond	1887
144AH	351	E	Pond	1929
145AH	351	E	Pond	1938
146AH	366	E	Sewage Settling Beds	1970
147Q	380	SW	Brick Works	1903
148Q	381	SW	Brick Works	1903
149AI	414	N	Ponds	1950
150AI	414	N	Ponds	1903
151AI	414	N	Ponds	1887
152AI	421	N	Ponds	1938
153AJ	461	SW	Water Body	1938
154AJ	463	SW	Pond	1950
155AJ	463	SW	Water Body	1903
156AJ	463	SW	Pond	1903
157AJ	463	SW	Pond	1929
158AJ	476	SW	Pond	1971
159AJ	477	SW	Ponds	1887
160Q	479	SW	Pond	1992

2. Environmental Permits, Incidents and Registers Map



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- Site Outline
- Search Buffers (m) 250 / 500
- Recorded Pollution Incident
- Dangerous Substances (List 1)
- Dangerous Substances (List 2)
- Water Industry Referrals
- Licenced Discharge Consents
- Red List Discharge Consents
- RAS 3 & 4 Authorisations
- Part A(1) Authorised Processes and Historic IPC Authorisations
- Part A(2) and Part B Authorised Processes
- COMAH / NIHHS Sites
- Sites Determined as Contaminated Land
- Hazardous Substance Consents and Enforcements

2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency and Local Authorities reveal the following information:

2.1.1 Records of historic IPC Authorisations within 500m of the study site:

0

Database searched and no data found.

2.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:

0

Database searched and no data found.

2.1.3 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site:

0

Database searched and no data found.

2.1.4 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.5 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site:

2

The following Part A(2) and Part B Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
7A	268	NE	535956 324338	Address: Eric Ladbrook (Holbeach) Ltd, 5a Fen Road, Holbeach, Spalding, PE12 8QA Process: Melting and Casting of Non Ferrous Metals Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
8	307	N	535828 324432	Address: Lefleys Garage, Station Street, Holbeach, Spalding, PE12 7LF Process: Petrol Vapour Recovery Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

2.1.8 Records of Licensed Discharge Consents within 500m of the study site:

0

Database searched and no data found.

2.1.9 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site:

0

Database searched and no data found.

2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site:

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site: 0

Database searched and no data found.

2.3 Environment Agency Recorded Pollution Incidents

2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:

6

The following NIRS List 2 records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
1A	267	NE	535955 324337	Incident Date: 10-Jan-2003 Incident Identification: 130373 Pollutant: Contaminated Water Pollutant Description: Firefighting Run-Off	Water Impact: Category 3 (Minor) Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)
2A	267	NE	535955 324337	Incident Date: 18-Oct-2002 Incident Identification: 115579 Pollutant: Atmospheric Pollutants and Effects:Contaminated Water Pollutant Description: Smoke:Firefighting Run-Off	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 2 (Significant)
3A	267	NE	535955 324337	Incident Date: 18-Oct-2002 Incident Identification: 115579 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Smoke	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 2 (Significant)
4A	267	NE	535955 324337	Incident Date: 18-Oct-2002 Incident Identification: 115579 Pollutant: Contaminated Water Pollutant Description: Firefighting Run-Off	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 2 (Significant)
5A	267	NE	535955 324337	Incident Date: 18-Oct-2002 Incident Identification: 115579 Pollutant: Contaminated Water Pollutant Description: Smoke Firefighting Run-Off	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 2 (Significant)
6A	267	NE	535955 324337	Incident Date: 18-Oct-2002 Incident Identification: 115579 Pollutant: Atmospheric Pollutants and Effects : Contaminated Water Pollutant Description: Smoke :Firefighting Run-Off	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 2 (Significant)

2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:

0

Database searched and no data found.

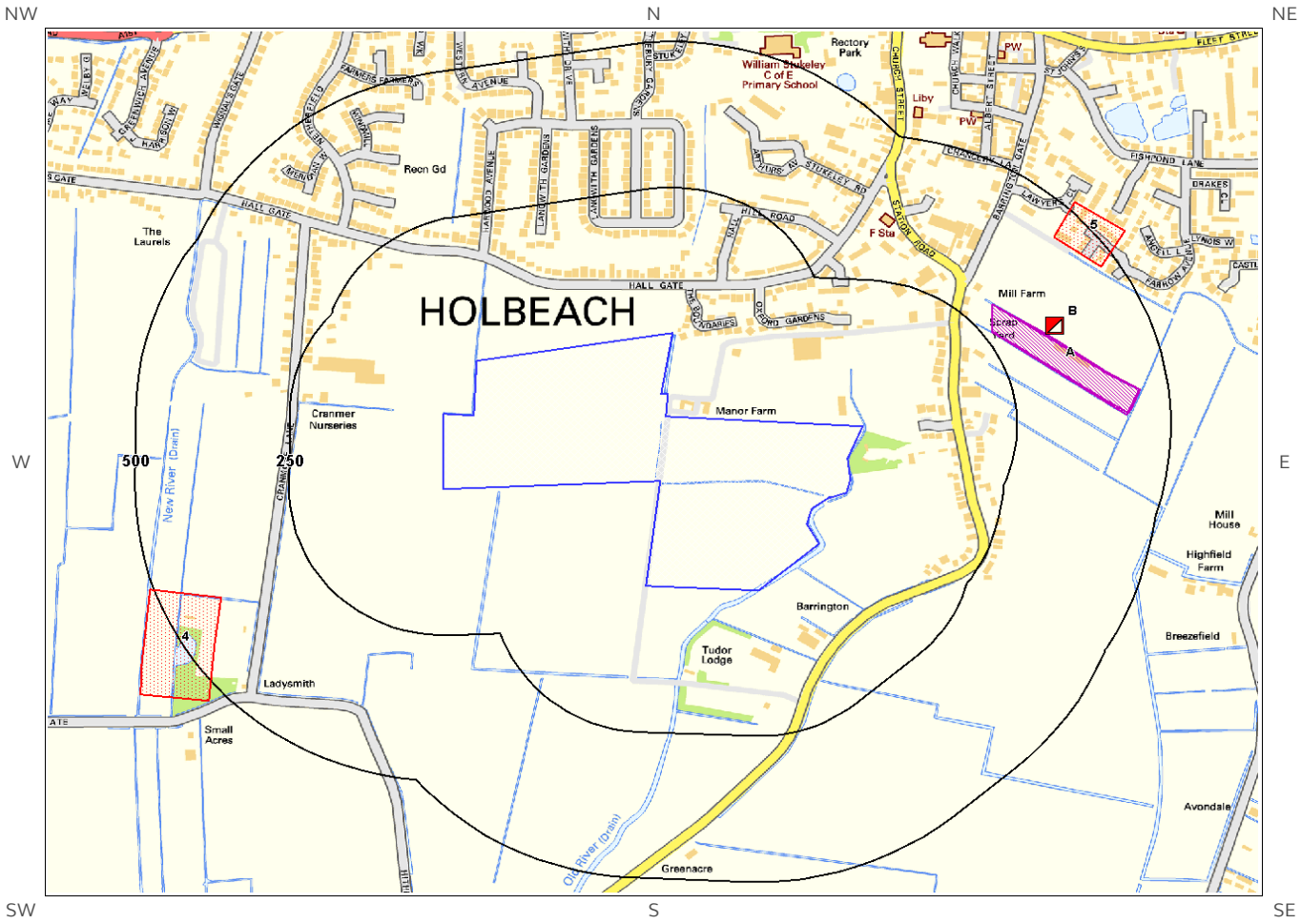
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

How many records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site? 0

Database searched and no data found.

---

3. Landfill and Other Waste Sites Map



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Site Outline

250
500
Search Buffers (m)

E.A. Active Landfill

E.A. Historic Landfill

BGS / DoE Survey Landfill

Historic and Planned Waste Sites

E.A. Licensed Waste Site

Local Authority/Historical Mapping Landfill Records

3. Landfill and Other Waste Sites

3.1 Landfill Sites

3.1.1 Records from Environment Agency landfill data within 1000m of the study site:

0

Database searched and no data found.

3.1.2 Records of Environment Agency historic landfill sites within 1500m of the study site:

6

The following landfill records are represented as either points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
4	406	SW	534600 323700	Site Address: Cranmore Lane, Holbeach, Lincolnshire Waste Licence: - Site Reference: RD7-51-01/89, SH-51-01/89, 2500/5052 Waste Type: Household Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -
5	449	NE	536100 324400	Site Address: Barrington Gate, Holbeach, Lincolnshire Waste Licence: - Site Reference: RD7-52-01/89, SH-52-01/89, 0500/5053 Waste Type: Household Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -
Not shown	745	E	536600 324300	Site Address: Holbeach Fen, Dam Gate, Holbeach, Lincolnshire Waste Licence: - Site Reference: RD7-53-01/89, SH-53-01/89, 2500/5036 Waste Type: Household Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -
Not shown	796	NE	536400 324600	Site Address: Allison Avenue, Holbeach, Lincolnshire Waste Licence: - Site Reference: SH-54-01/89, RD7-54-01/89, RD7-55-01/89, 2500/5263 Waste Type: Household Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -

ID	Distance (m)	Direction	NGR	Details	
Not shown	912	NW	534200 324600	Site Address: Main Road, Whaplode, Lincolnshire Waste Licence: - Site Reference: RD7-50-01/89, SH-50-01/89, 2500/5051 Waste Type: Household Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -
Not shown	1022	NW	534200 324800	Site Address: Main Road, Whaplode, Lincolnshire Waste Licence: - Site Reference: SH-49-01/89, RD7-49-01/89, 2500/5063 Waste Type: Household Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -

3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:

0

Database searched and no data found.

3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site:

0

Database searched and no data found.

3.2 Other Waste Sites

3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site:

3

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details		
1A	265	NE	536119 324240	Type of Site: Scrap Yard Site Address: N/A	Planning Application Reference: N/A Date: 1991	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
2A	265	NE	536120 324242	Type of Site: Scrap Yard Site Address: N/A	Planning Application Reference: N/A Date: 1995	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon

ID	Distance (m)	Direction	NGR	Details		
3A	265	NE	536120 324242	Type of Site: Scrap Yard Site Address: N/A	Planning Application Reference: N/A Date: 1997	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon

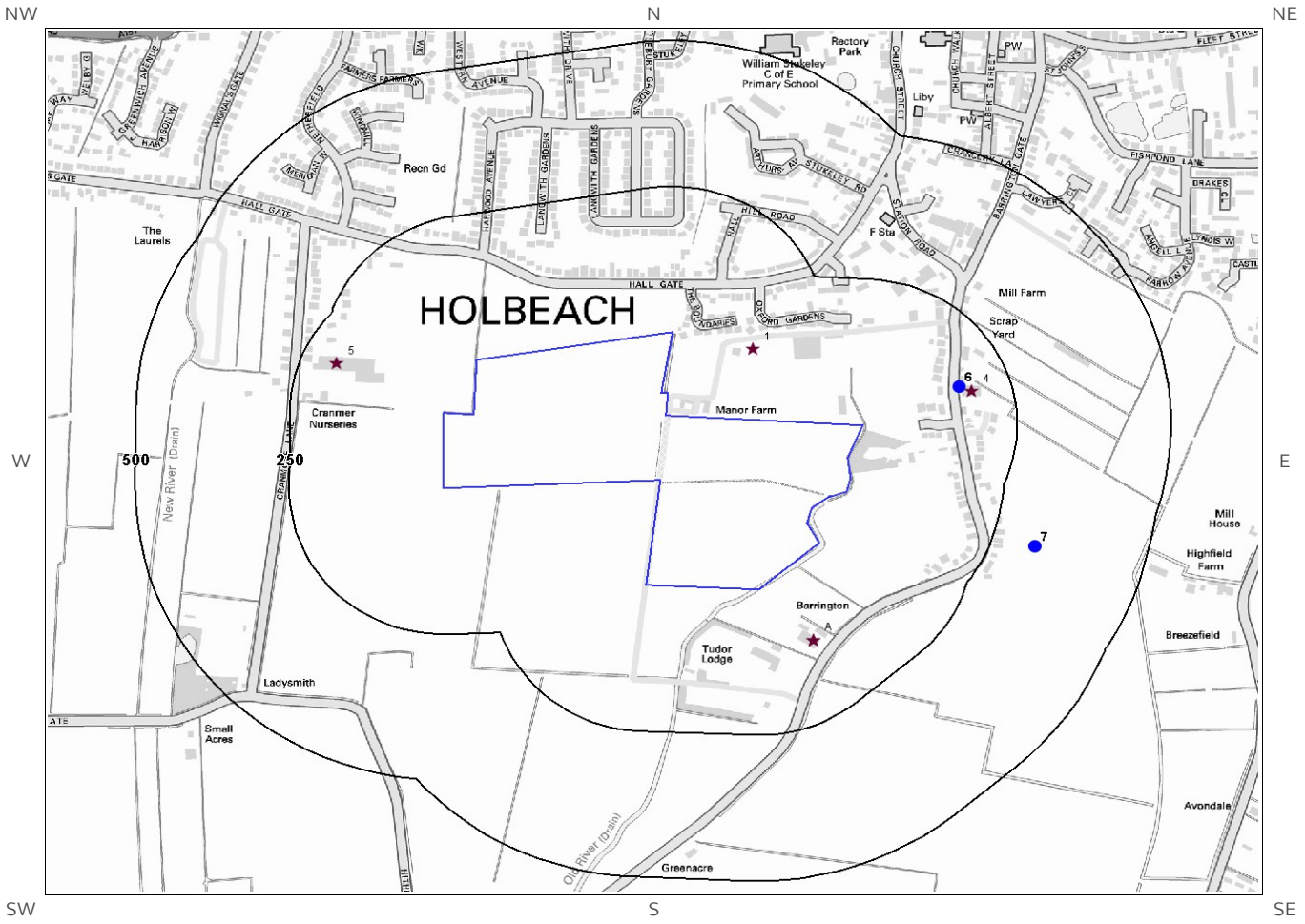
3.2.2 Records of Environment Agency licensed waste sites within 1500m of the study site:

3

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
10B	355	NE	536100 324300	Site Address: Ladbrook Mr E., 5a, Fen Road, Holbeach, Lincolnshire, PE12 8QA Type: Metal Recycling Site (mixed MRS's) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: LAD001 EPR reference: - Operator: Ladbrook Mr E Waste Management licence No: 71024 Annual Tonnage: 30000.0	Issue Date: 13/05/1992 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Eric Ladbrooke Ltd Correspondence Address: Ladbrook Mr E., 5a, Fen Road, Holbeach, Lincolnshire, PE12 8QA
11B	355	NE	536100 324300	Site Address: Ladbrook Mr E., 5a, Fen Road, Holbeach, Lincolnshire, PE12 8QA Type: Metal Recycling Site (mixed MRS's) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: LAD001 EPR reference: EA/EPR/TP3498NJ/A001 Operator: Ladbrooke Mr E Waste Management licence No: 71024 Annual Tonnage: 30000.0	Issue Date: 13/05/1992 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Eric Ladbrooke Ltd Correspondence Address: -
12B	355	NE	536100 324300	Site Address: Ladbrook Mr E., 5a, Fen Road, Holbeach, Lincolnshire, PE12 8QA Type: Metal Recycling Site (mixed MRS's) Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: NMR003 EPR reference: EA/EPR/LB3135RD/V002 Operator: Nationwide Metal Recycling Ltd Waste Management licence No: 71024 Annual Tonnage: 30000.0	Issue Date: 13/05/1992 Effective Date: 26/10/2012 Modified: 05/11/2012 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Nationwide Metal Recycling Ltd Correspondence Address: -

4. Current Land Use Map



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Site Outline

Search Buffers (m)
250
500

Current Industrial Sites

Petrol & Fuel Sites

Electricity Transmission Cables

Gas Transmission Pipelines

4. Current Land Uses

4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: 5

The following records are represented as points on the Current Land Uses map.

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	122	N	Tank	535610 324258	PE12	Tanks (Generic)	Industrial Features
2A	122	SE	T R M Racing	535707 323759	Barrington, Fen Road, Holbeach, Spalding, PE12 8QD	New Vehicles	Motoring
3A	122	SE	L R Signs & Designs Ltd	535707 323759	Barrington, Fen Road, Holbeach, Spalding, PE12 8QD	Signs	Industrial Products
4	185	E	Grays of Holbeach	535965 324186	25-27, Fen Road, Holbeach, Spalding, PE12 8QA	New Vehicles	Motoring
5	194	NW	Terry Johnson Ltd	534933 324233	31, Cranmore Lane, Holbeach, Spalding, PE12 7HT	General Purpose Machinery	Industrial Products

4.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: 2

The following petrol or fuel site records provided by Catalist are represented as points on the Current Land Use map:

ID	Distance (m)	Direction	NGR	Company	Address	LPG	Status
6	168	NE	535945 324193	Murco	Grays Of Holbeach, Fen Road, Holbeach, Spalding, Lincolnshire, PE12 8QA	Not Applicable	Obsolete
7	319	E	536068 323919	Obsolete	David Lefley, Fen Road, Holbeach, Spalding, Lincolnshire, PE12 7LF	Not Applicable	Obsolete

4.3 National Grid High Voltage Underground Electricity Transmission Cables

This dataset identifies the high voltage electricity transmission lines running between generating power plants and electricity substations. The dataset does not include the electricity distribution network (smaller, lower voltage cables distributing power from substations to the local user network). This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high voltage underground electricity transmission cables within 500m of the study site: 0

Database searched and no data found.

4.4 National Grid High Pressure Gas Transmission Pipelines

This dataset identifies high-pressure, large diameter pipelines which carry gas between gas terminals, power stations, compressors and storage facilities. The dataset does not include the Local Transmission System (LTS) which supplies gas directly into homes and businesses. This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high pressure gas transmission pipelines within 500m of the study site: 0

Database searched and no data found.

---

5. Geology

5.1 Artificial Ground and Made Ground

Database searched and no data found.

The database has been searched on site, including a 50m buffer.

5.2 Superficial Ground and Drift Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
TFD	TIDAL FLAT DEPOSITS	CLAY AND SILT [UNLITHIFIED DEPOSITS CODING SCHEME]

5.3 Bedrock and Solid Geology

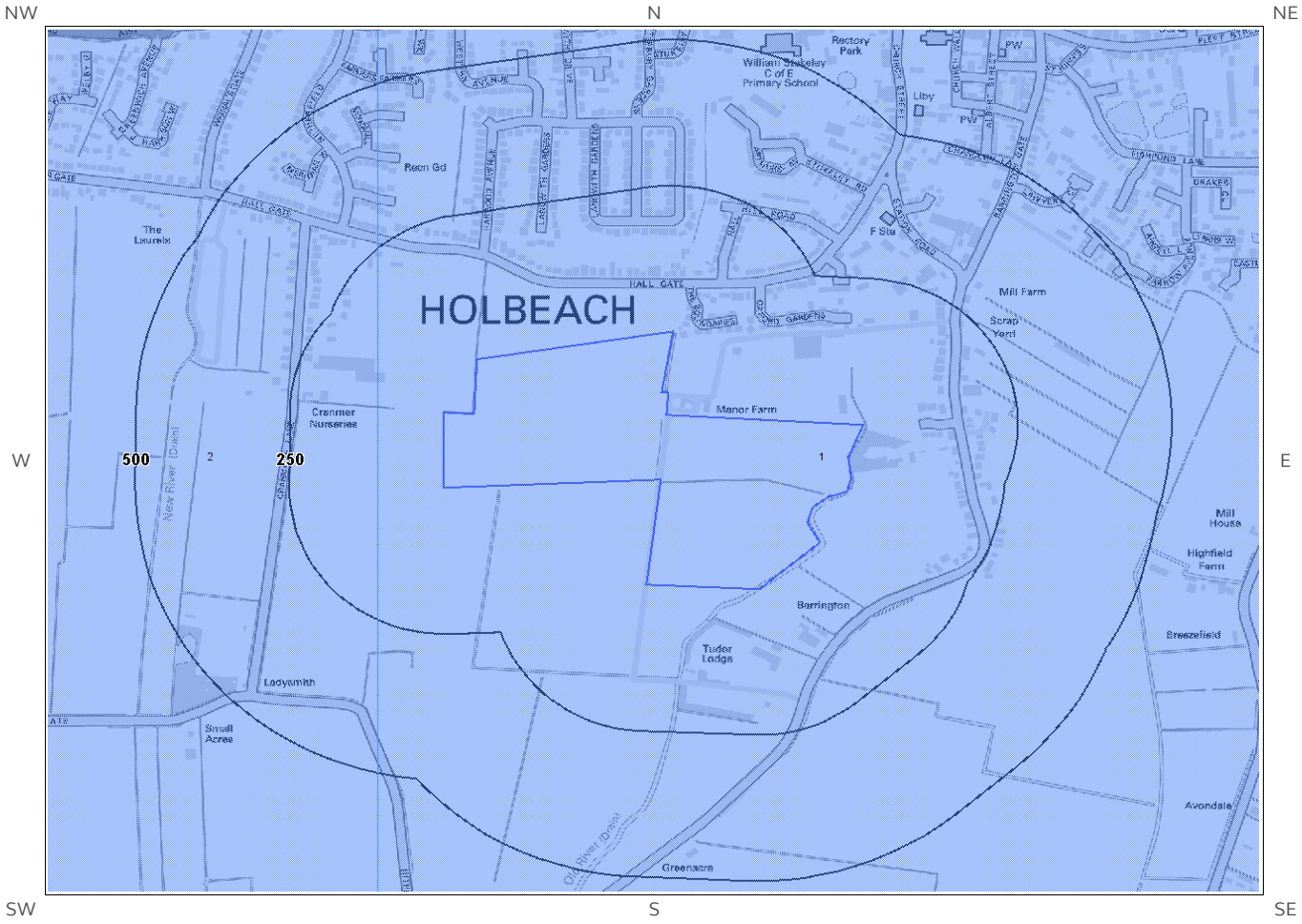
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
WWB-MDSI	WEST WALTON FORMATION	MUDSTONE AND SILTSTONE

(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

6 Hydrogeology and Hydrology

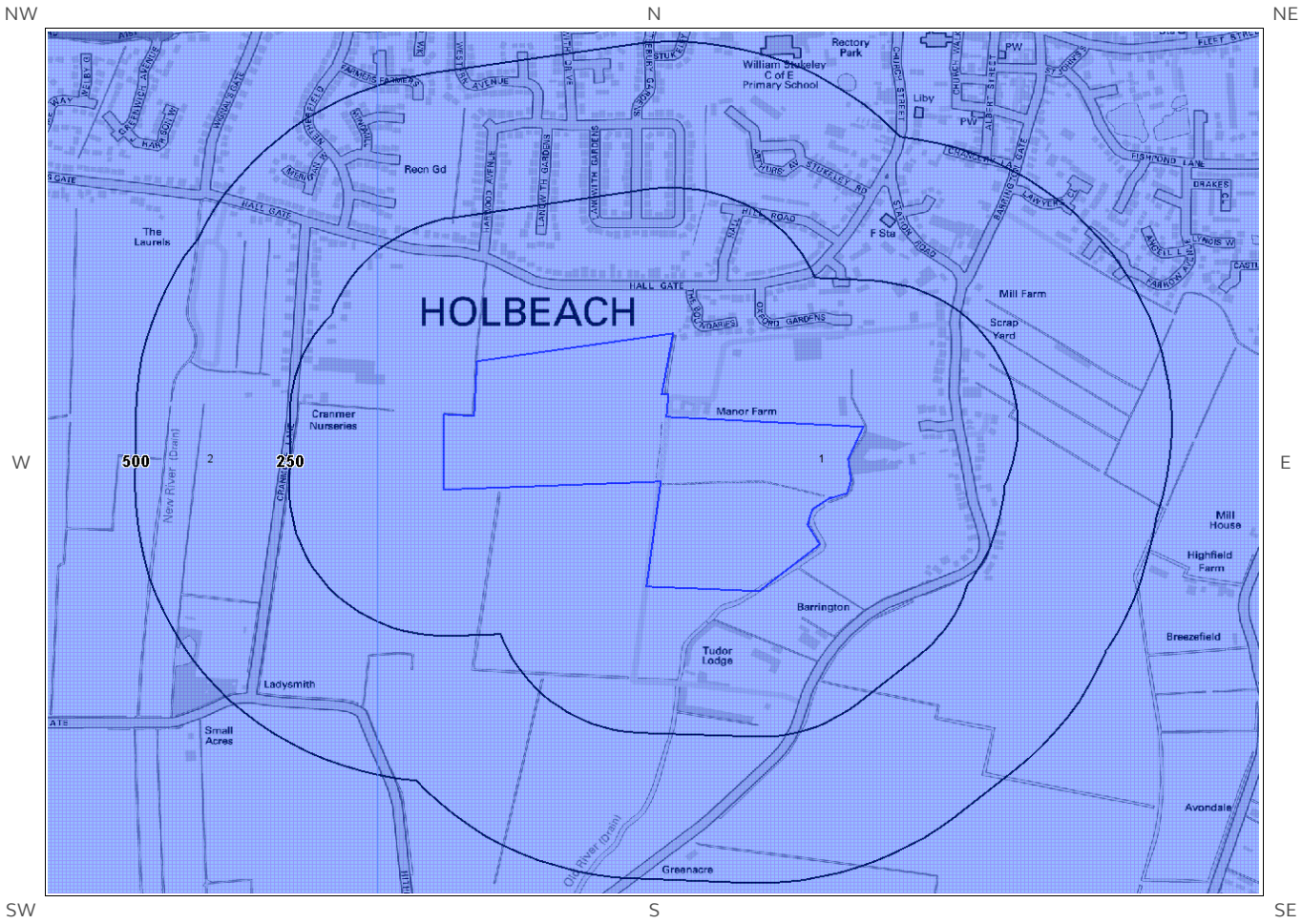
6a. Aquifer Within Superficial Geology



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Site Outline
250
500
Search Buffers (m)
Principal Aquifer
Secondary (A) Aquifer - Permeable Layers
Secondary (B) Aquifer - Lower Permeability Layers
Secondary Aquifer - Undifferentiated Layers
Unproductive
Unknown (lakes and landslip)

6b. Aquifer Within Bedrock Geology and Abstraction Licenses



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Site Outline

250
500
Search Buffers (m)

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

Secondary (B) Aquifer - Lower Permeability Layers

Groundwater Abstraction Licence

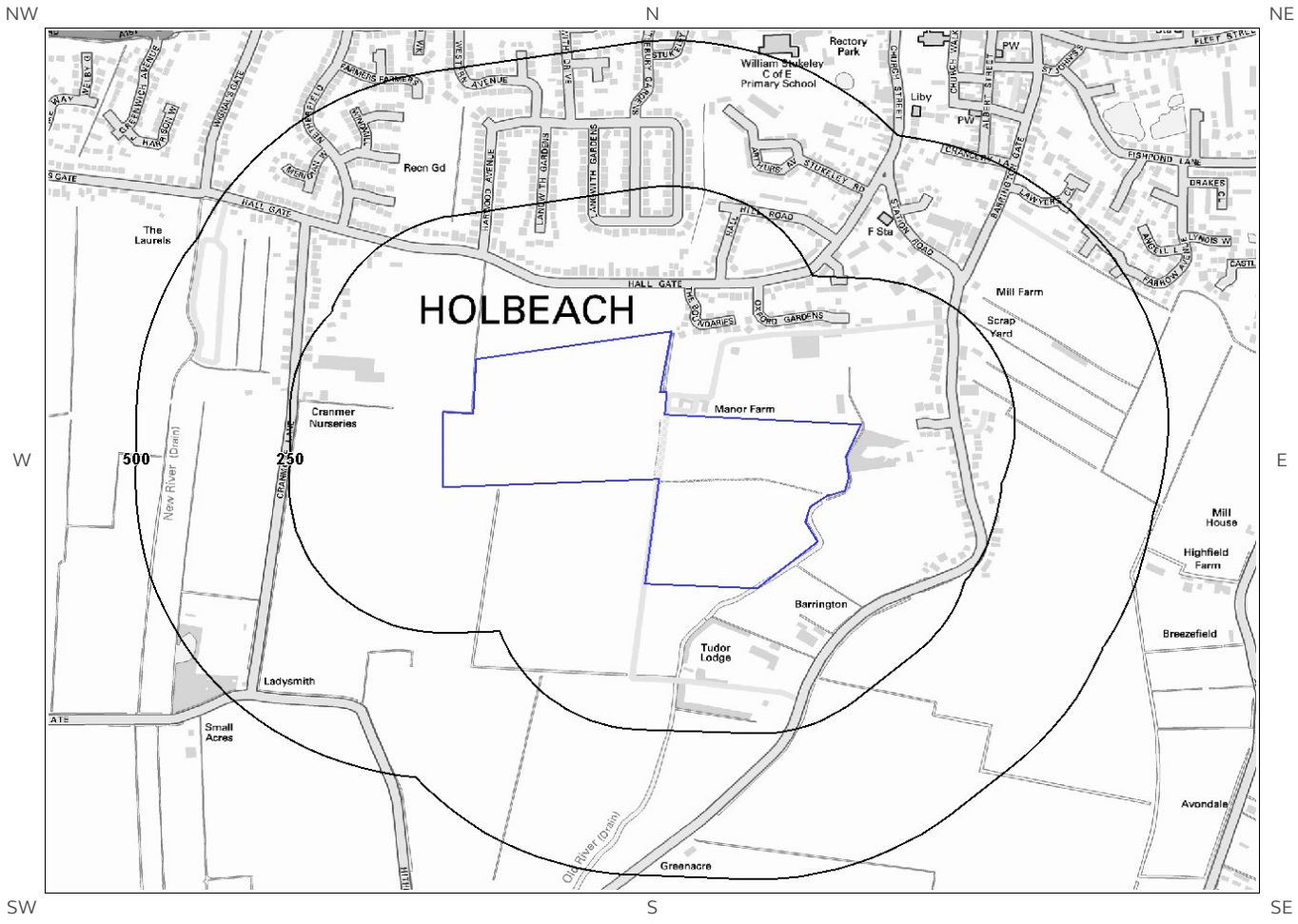
Secondary Aquifer - Undifferentiated Layers

Unproductive

Unknown (lakes and landslip)

Surface Water Abstraction Licence

6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses



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Site Outline

250
500
Search Buffers (m)

Source Protection Zone 1 - Inner Catchment

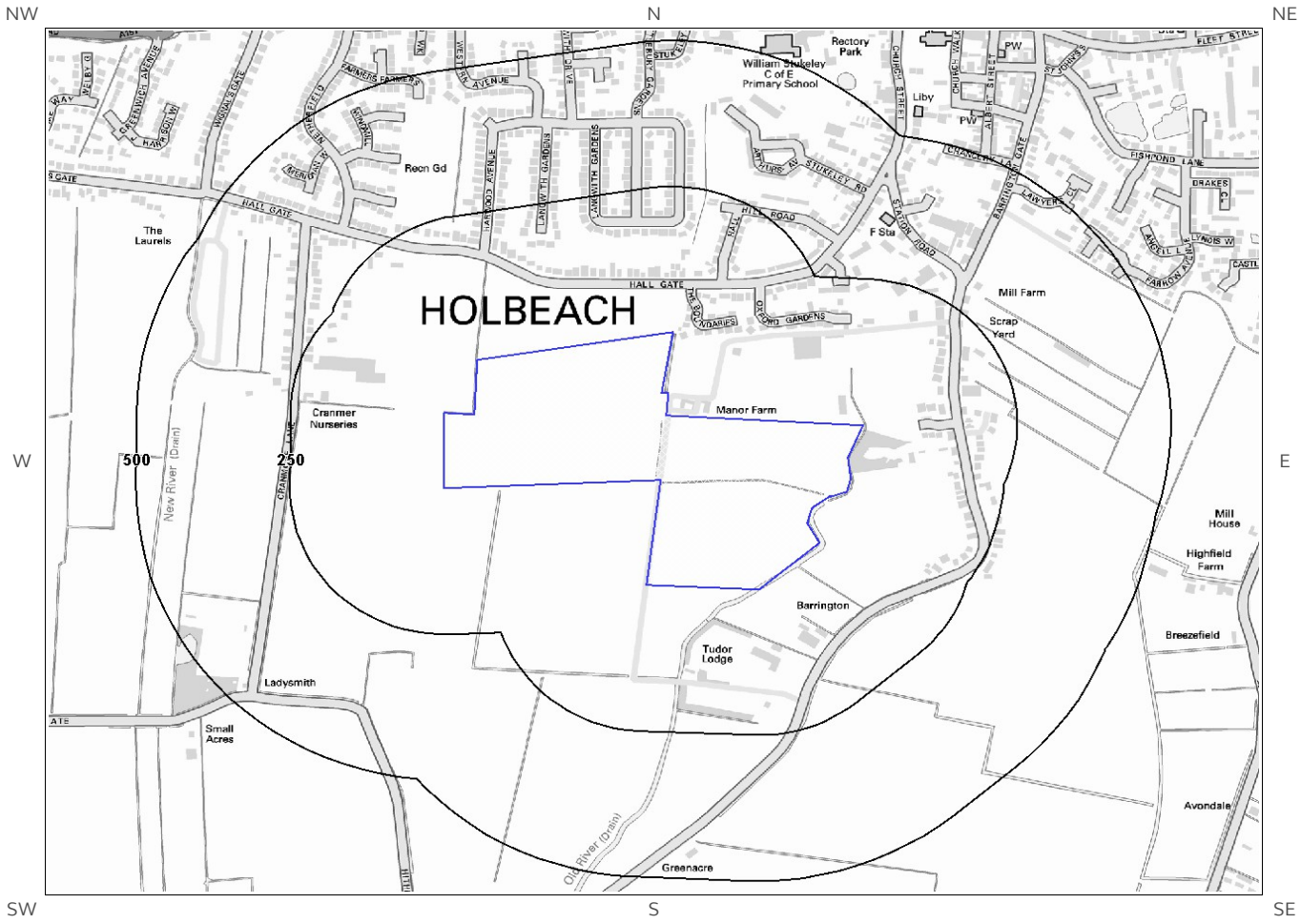
Source Protection Zone 2 - Outer Catchment

Source Protection Zone 3 - Total Catchment

Source Protection Zone 4 - Zone of Special Interest

Potable Water Abstraction Licence

6d. Hydrogeology – Source Protection Zones within confined aquifer



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Site Outline

250
500
Search Buffers (m)

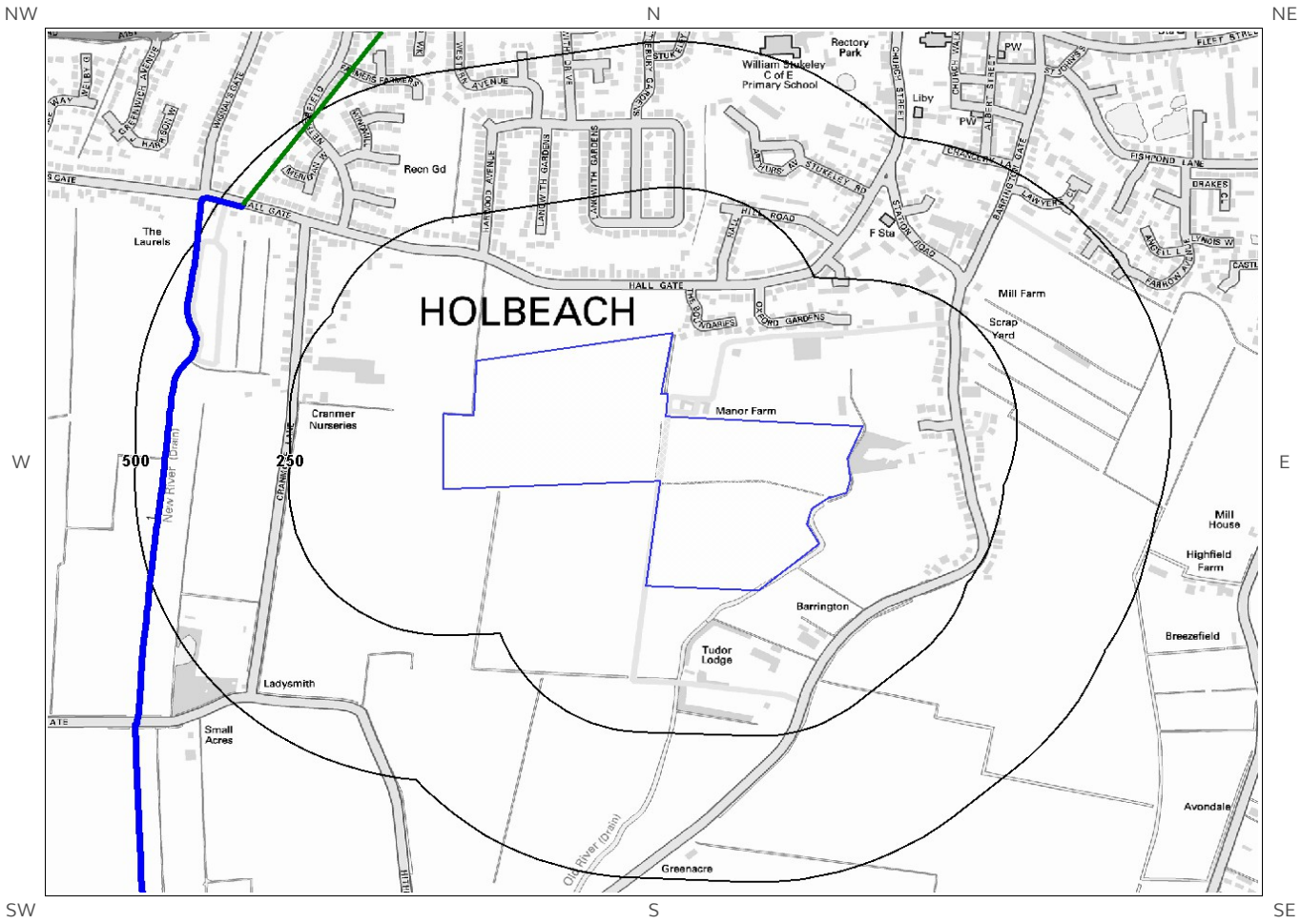
Source Protection Zone 1 - Inner Catchment

Source Protection Zone 2C - Outer Catchment within Confined Aquifer

Source Protection Zone 3C - Total Catchment within Confined Aquifer

Potable Water Abstraction Licence

6e. Hydrology – Detailed River Network and River Quality



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Site Outline

250
500
Search Buffers (m)

Primary River
Secondary River
Tertiary River
Lake/Reservoir
Underground River (inferred)
General Quality Assessment: Biology
General Quality Assessment: Chemistry

Canal
Canal Tunnel
Culvert
Multiple Channel Culvert
Underground River (Potential Sewer)
Underground River (local knowledge)

6.Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

Are there records of strata classification within the superficial geology at or in proximity to the property? Yes

From 1 April 2010, the Environment Agency's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (6a):

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
2	107	W	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

6.2 Aquifer within Bedrock Deposits

Are there records of strata classification within the bedrock geology at or in proximity to the property? Yes

From 1 April 2010, the Environment Agency's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
2	107	W	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

6.3 Groundwater Abstraction Licences

Are there any Groundwater Abstraction Licences within 2000m of the study site? No

Database searched and no data found.

6.4 Surface Water Abstraction Licences

Are there any Surface Water Abstraction Licences within 2000m of the study site? No

Database searched and no data found.

6.5 Potable Water Abstraction Licences

Are there any Potable Water Abstraction Licences within 2000m of the study site? No

Database searched and no data found.

6.6 Source Protection Zones

Are there any Source Protection Zones within 500m of the study site? No

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

Are there any Source Protection Zones within the Confined Aquifer within 500m of the study site? No

Historically, Source Protection Zone maps have been focused on regulation of activities which occur at or near the ground surface, such as prevention of point source pollution and bacterial contamination of water supplies. Sources in confined aquifers were often considered to be protected from these surface pressures due to the presence of a low permeability confining layer (e.g. glacial till, clay). The increased interest in subsurface activities such as onshore oil and gas exploration, ground source heating and cooling requires protection zones for confined sources to be marked on SPZ maps where this has not already been done.

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

Is there any Environment Agency information on groundwater vulnerability and soil leaching potential within 500m of the study site? No

Database searched and no data found.

6.9 River Quality

Is there any Environment Agency information on river quality within 1500m of the study site? No

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

Database searched and no data found.

6.10 Detailed River Network

Are there any Detailed River Network entries within 500m of the study site? Yes

The following Detailed River Network records are represented on the Hydrology Map (6e):

ID	Distance (m)	Direction	Details	
1	419	W	River Name: New River Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
2	465	NW	River Name: New River Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined

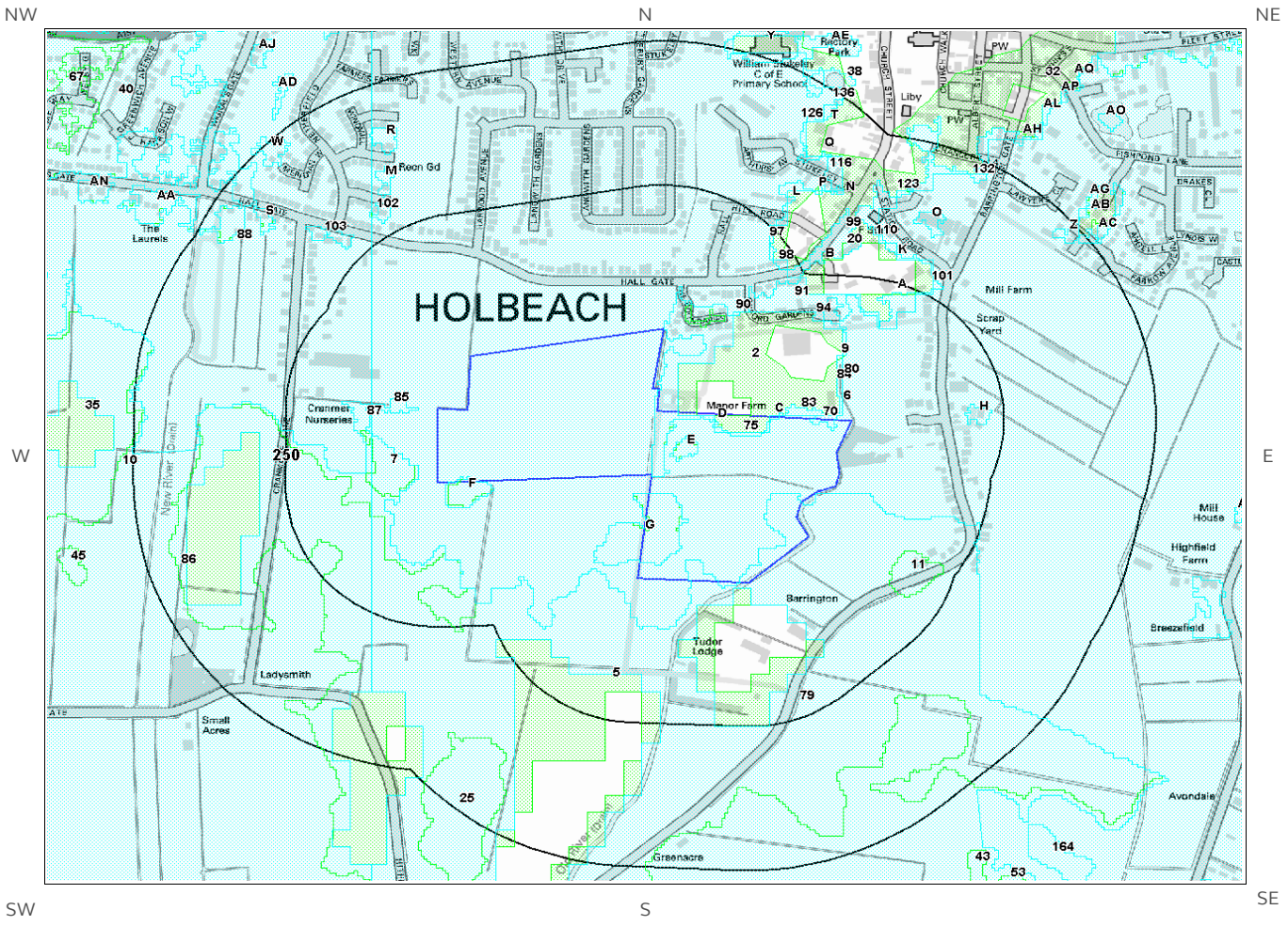
6.11 Surface Water Features

Are there any surface water features within 250m of the study site? Yes

The following surface water records are not represented on mapping:

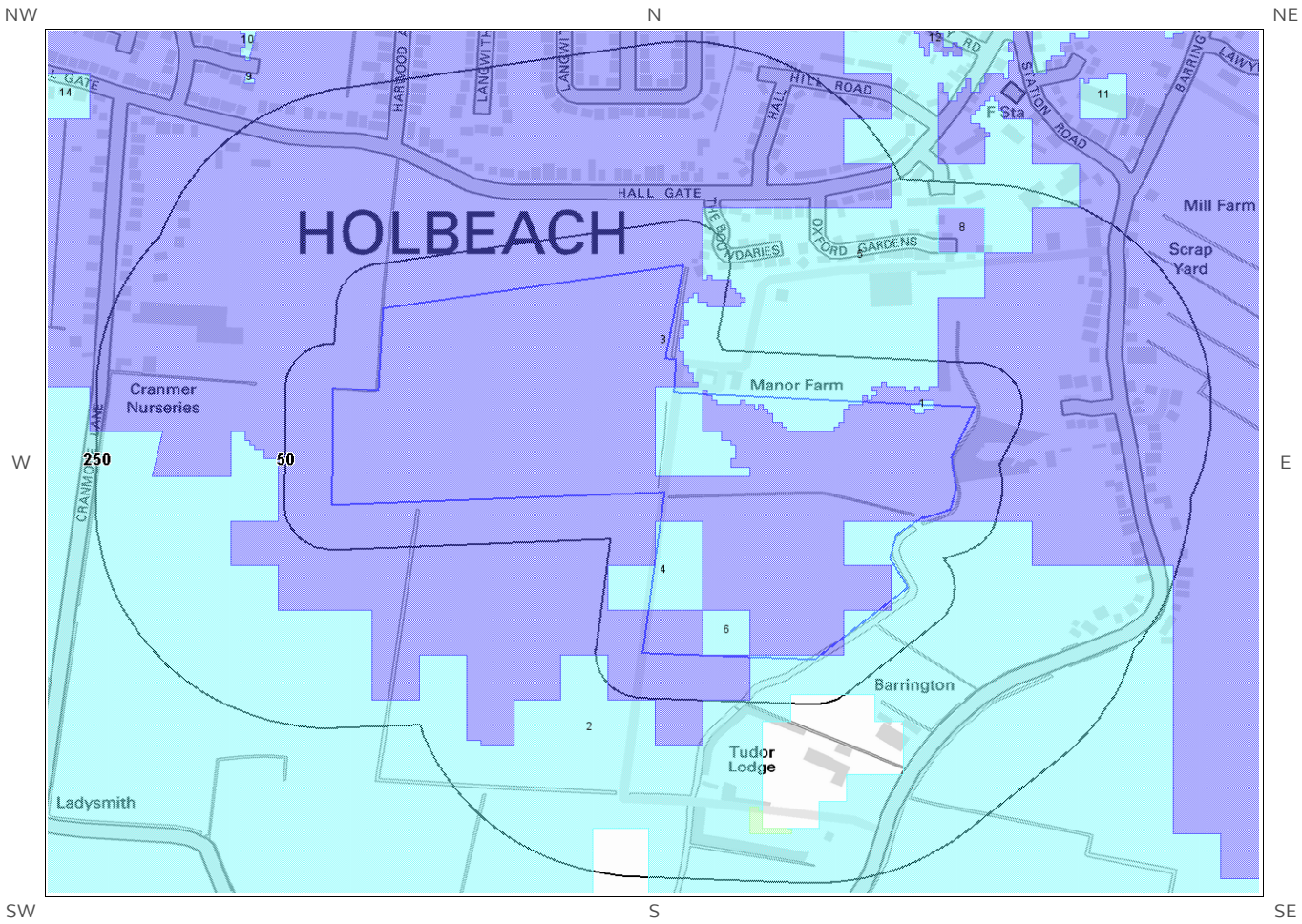
Distance (m)	Direction
0	On Site
0	On Site
0	On Site
0	On Site
6	S
76	SE
82	W
135	SE
147	SE
155	N
164	S
182	SE
187	SE
196	NE
228	NE
229	SW
246	N

7a. Environment Agency Flood Map for Planning (from rivers and the sea)



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7b. Environment Agency Risk of Flooding from Rivers and the Sea (RoFRaS) Map



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Site Outline

100
250
Search Buffers (m)

RoFRaS Rating

- Very Low
- Low
- Medium
- High

7 Flooding

7.1 River and Coastal Zone 2 Flooding

Is the site within 250m of an Environment Agency Zone 2 floodplain? Yes

Environment Agency Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Any relevant data is represented on Map 7a – Flood Map for Planning:

ID	Distance (m)	Direction	Update	Type
1F	0	On Site	09-Sep-2016	Zone 2 - (Fluvial/Tidal Models)
2	0	On Site	09-Sep-2016	Zone 2 - (Fluvial/Tidal Models)
3E	0	On Site	09-Sep-2016	Zone 2 - (Fluvial/Tidal Models)
4G	0	On Site	09-Sep-2016	Zone 2 - (Fluvial/Tidal Models)
5	0	On Site	09-Sep-2016	Zone 2 - (Fluvial/Tidal Models)
6	0	On Site	09-Sep-2016	Zone 2 - (Fluvial/Tidal Models)
7	37	W	09-Sep-2016	Zone 2 - (Fluvial/Tidal Models)
8	102	W	09-Sep-2016	Zone 2 - (Fluvial/Tidal Models)
9	102	N	09-Sep-2016	Zone 2 - (Fluvial/Tidal Models)
10	109	W	09-Sep-2016	Zone 2 - (Fluvial/Tidal Models)
11	145	SE	09-Sep-2016	Zone 2 - (Fluvial/Tidal Models)
12H	185	E	09-Sep-2016	Zone 2 - (Fluvial/Tidal Models)
13N	213	NE	09-Sep-2016	Zone 2 - (Fluvial/Tidal Models)
14A	229	N	09-Sep-2016	Zone 2 - (Fluvial/Tidal Models)
15A	232	N	09-Sep-2016	Zone 2 - (Fluvial/Tidal Models)
16A	237	N	09-Sep-2016	Zone 2 - (Fluvial/Tidal Models)
17K	246	NE	09-Sep-2016	Zone 2 - (Fluvial/Tidal Models)

7.2 River and Coastal Zone 3 Flooding

Is the site within 250m of an Environment Agency Zone 3 floodplain? Yes

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year. Any relevant data is represented on Map 7a – Flood Map for Planning.

ID	Distance (m)	Direction	Update	Type
1F	0	On Site	09-Sep-2016	Zone 3 - (Fluvial Models)
2	0	On Site	09-Sep-2016	Zone 3 - (Fluvial Models)
3E	0	On Site	09-Sep-2016	Zone 3 - (Fluvial Models)
4G	0	On Site	09-Sep-2016	Zone 3 - (Fluvial Models)
5	0	On Site	09-Sep-2016	Zone 3 - (Fluvial Models)
6	0	On Site	09-Sep-2016	Zone 3 - (Fluvial Models)
7	0	On Site	09-Sep-2016	Zone 3 - (Fluvial Models)
8	0	On Site	09-Sep-2016	Zone 3 - (Fluvial Models)
9	0	On Site	09-Sep-2016	Zone 3 - (Fluvial Models)
10	0	On Site	09-Sep-2016	Zone 3 - (Fluvial Models)
11	0	On Site	09-Sep-2016	Zone 3 - (Fluvial Models)
12H	0	On Site	09-Sep-2016	Zone 3 - (Fluvial Models)
13N	0	On Site	09-Sep-2016	Zone 3 - (Fluvial Models)
14A	2	N	09-Sep-2016	Zone 3 - (Fluvial Models)
15A	3	N	09-Sep-2016	Zone 3 - (Fluvial Models)
16A	4	N	09-Sep-2016	Zone 3 - (Fluvial Models)
17K	7	N	09-Sep-2016	Zone 3 - (Fluvial Models)
	33	W	09-Sep-2016	Zone 3 - (Fluvial Models)
	109	W	09-Sep-2016	Zone 3 - (Fluvial Models)
	110	W	09-Sep-2016	Zone 3 - (Fluvial Models)
	110	W	09-Sep-2016	Zone 3 - (Fluvial Models)
	112	N	09-Sep-2016	Zone 3 - (Fluvial Models)

116	E	09-Sep-2016	Zone 3 - (Fluvial Models)
143	E	09-Sep-2016	Zone 3 - (Fluvial Models)
165	N	09-Sep-2016	Zone 3 - (Fluvial Models)
168	N	09-Sep-2016	Zone 3 - (Fluvial Models)
170	N	09-Sep-2016	Zone 3 - (Fluvial Models)
185	E	09-Sep-2016	Zone 3 - (Fluvial Models)
190	N	09-Sep-2016	Zone 3 - (Fluvial Models)
211	NE	09-Sep-2016	Zone 3 - (Fluvial Models)
213	NE	09-Sep-2016	Zone 3 - (Fluvial Models)
222	NE	09-Sep-2016	Zone 3 - (Fluvial Models)

7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating

What is the highest risk of flooding onsite? Medium

The Environment Agency RoFRaS database provides an indication of river and coastal flood risk at a national level on a 50m grid with the flood rating at the centre of the grid calculated and given above. The data considers the probability that the flood defences will overtop or breach by considering their location, type, condition and standard of protection.

RoFRaS data for the study site indicates the property is in an area with a Medium (greater than 1 in 100 but less than 1 in 30) chance of flooding in any given year.

Any relevant data within 250m is represented on the RoFRaS Flood map. Data to 50m is reported in the table below.

ID	Distance (m)	Direction	RoFRas flood Risk
1	0.0	On Site	Low
2	0.0	On Site	Low
3	0.0	On Site	Medium
4	0.0	On Site	Low
5	0.0	On Site	Low
6	0.0	On Site	Low

7.4 Flood Defences

Are there any Flood Defences within 250m of the study site? No

Database searched and no data found.

7.5 Areas benefiting from Flood Defences

Are there any areas benefiting from Flood Defences within 250m of the study site? No

7.6 Areas benefiting from Flood Storage

Are there any areas used for Flood Storage within 250m of the study site? No

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site? No

Notes: Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

7.7.2 What is the highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions?

Not Prone

The area is not considered to be prone to groundwater flooding based on rock type.

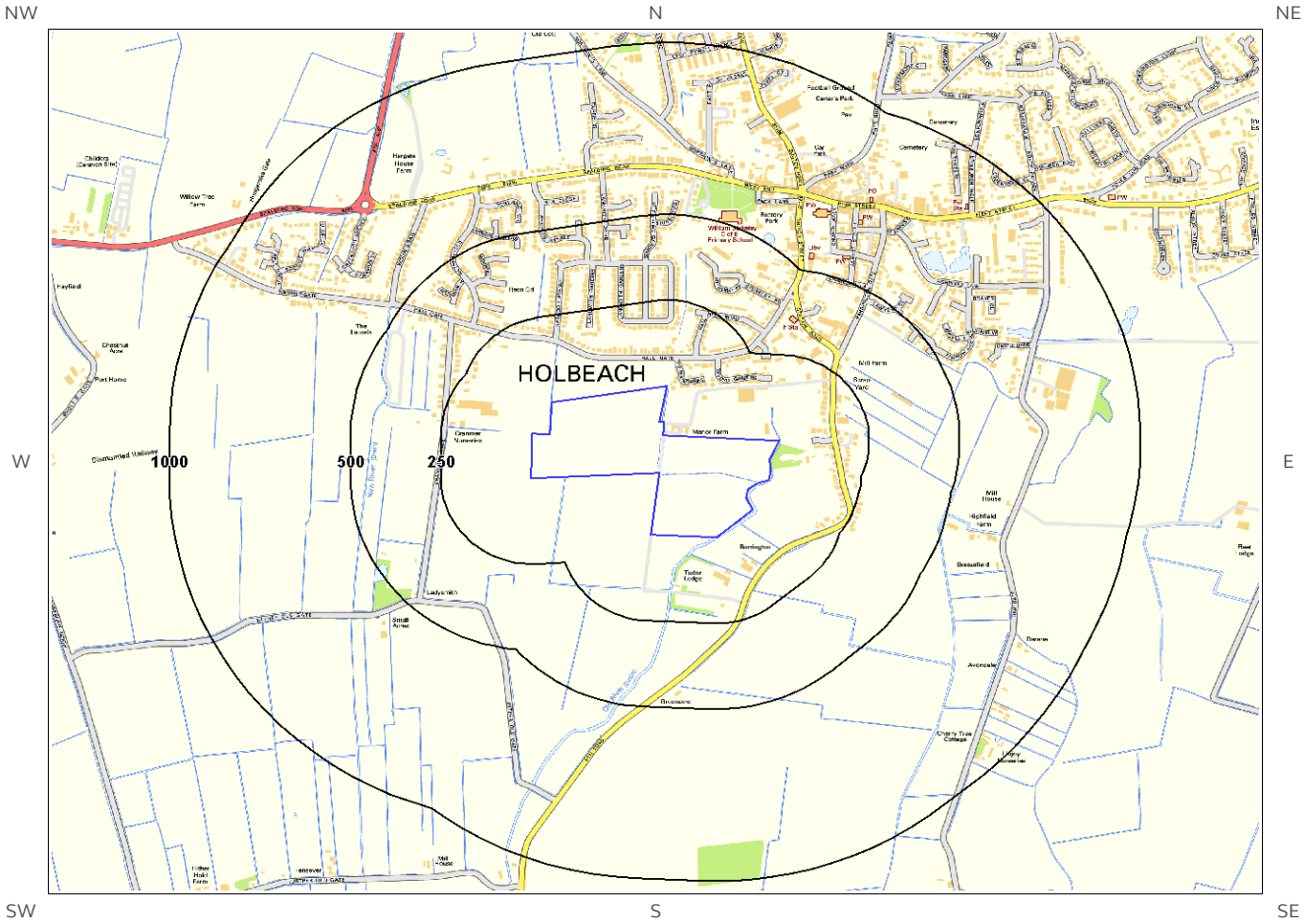
7.8 Groundwater Flooding Confidence Areas

What is the British Geological Survey confidence rating in this result? Not Applicable

Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

The confidence rating is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a relatively lower level of confidence the susceptibility result should be treated with more caution. In other areas with higher levels of confidence the susceptibility result can be used with more confidence.

8. Designated Environmentally Sensitive Sites Map



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Site Outline

100
250
Search Buffers (m)

AONB
National Park
SSSI
Special Protection Areas
Nitrate Vulnerable Zones
Green Belt
Environmentally Sensitive Areas
Special Areas of Conservation
World Heritage Sites
Nitrate Sensitive Areas
Ancient Woodland
National Nature Reserve
Local Nature Reserves
Ramsar Sites

8. Designated Environmentally Sensitive Sites

Presence of Designated Environmentally Sensitive Sites within 2000m of the study site?	No

8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:

0

Database searched and no data found.

8.2 Records of National Nature Reserves (NNR) within 2000m of the study site:

0

Database searched and no data found.

8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:

0

Database searched and no data found.

8.4 Records of Special Protection Areas (SPA) within 2000m of the study site:

0

Database searched and no data found.

8.5 Records of Ramsar sites within 2000m of the study site:

0

Database searched and no data found.

8.6 Records of Ancient Woodland within 2000m of the study site:

0

Database searched and no data found.

8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:

0

Database searched and no data found.

8.8 Records of World Heritage Sites within 2000m of the study site:

0

Database searched and no data found.

8.9 Records of Environmentally Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:

0

Database searched and no data found.

8.11 Records of National Parks (NP) within 2000m of the study site:

0

Database searched and no data found.

8.12 Records of Nitrate Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:

0

Database searched and no data found.

8.14 Records of Green Belt land within 2000m of the study site:

0

Database searched and no data found.

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a Groundsure Geo Insight, available from our website. The following information has been found:

9.1.1 Shrink Swell

What is the maximum Shrink-Swell*[*] hazard rating identified on the study site? Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
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.

9.1.2 Landslides

What is the maximum Landslide* hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
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.

9.1.3 Soluble Rocks

What is the maximum Soluble Rocks* hazard rating identified on the study site? Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
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 indicates an automatically generated 50m buffer and site.

9.1.4 Compressible Ground

What is the maximum Compressible Ground* hazard rating identified on the study site? Moderate

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Significant potential for compressibility problems. Avoid large differential loadings of ground. Do not drain 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.

9.1.5 Collapsible Rocks

What is the maximum Collapsible Rocks* hazard rating identified on the study site? Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
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.

9.1.6 Running Sand

What is the maximum Running Sand*[*] hazard rating identified on the study site? Moderate

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
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.

9.2 Radon

9.2.1 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.

* This indicates an automatically generated 50m buffer and site.

9.2.2 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.

10. Mining

10.1 Coal Mining

Are there any coal mining areas within 75m of the study site? No

Database searched and no data found.

10.2 Non-Coal Mining

Are there any Non-Coal Mining areas within 50m of the study site boundary? No

Database searched and no data found.

10.3 Brine Affected Areas

Are there any brine affected areas within 75m of the study site? No
Guidance: No Guidance Required.

Contact Details

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Your Reference: GML16197

Report Date 10 Oct 2016

Report Delivery Method: Email - pdf

Groundsure Geo Insight

Address: 13, FEN ROAD, SPALDING, PE12 8QA

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Geo Insight** 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,

Geo-Matters Limited

Enc.
Groundsure Geoinsight

Groundsure Geo Insight

Address:	**13, FEN ROAD, SPALDING, PE12 8QA**
Date:	**10 Oct 2016**
Reference:	**GEO-M-3360536**
Client:	**Geo-Matters Limited**

NW N NE

W E



SW S SE

Aerial Photograph Capture date:	16-Sep-2007
Grid Reference:	535521,324065
Site Size:	15.73ha

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Overview of Findings

The Groundsure Geo Insight 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?	No
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	7	8	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	2	2

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

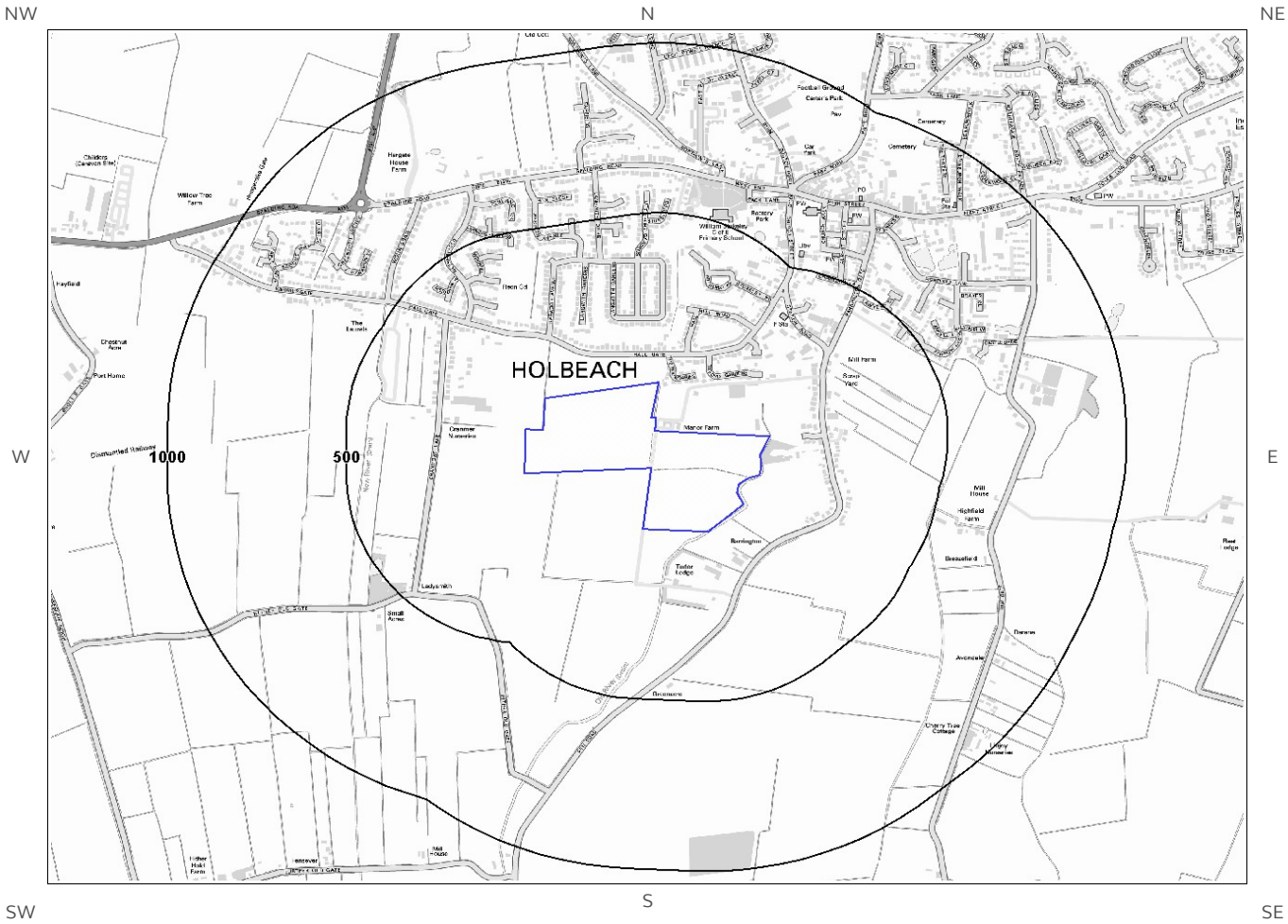
Section 6: Estimated Background Soil Chemistry	On-site	0-50m	51-250
6 Records of Background Soil Chemistry	6	0	8

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	9	1	2	Not Searched
7.3 Historical Railways	1	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

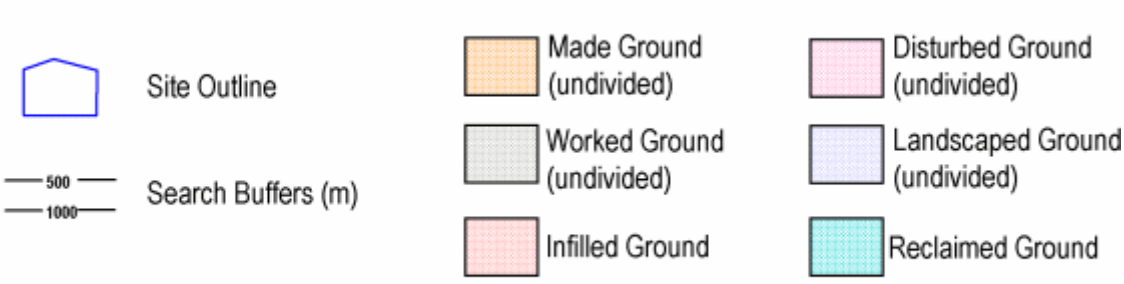
1 Geology

1.1 Artificial Ground Map



Artificial Ground Legend

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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:144

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

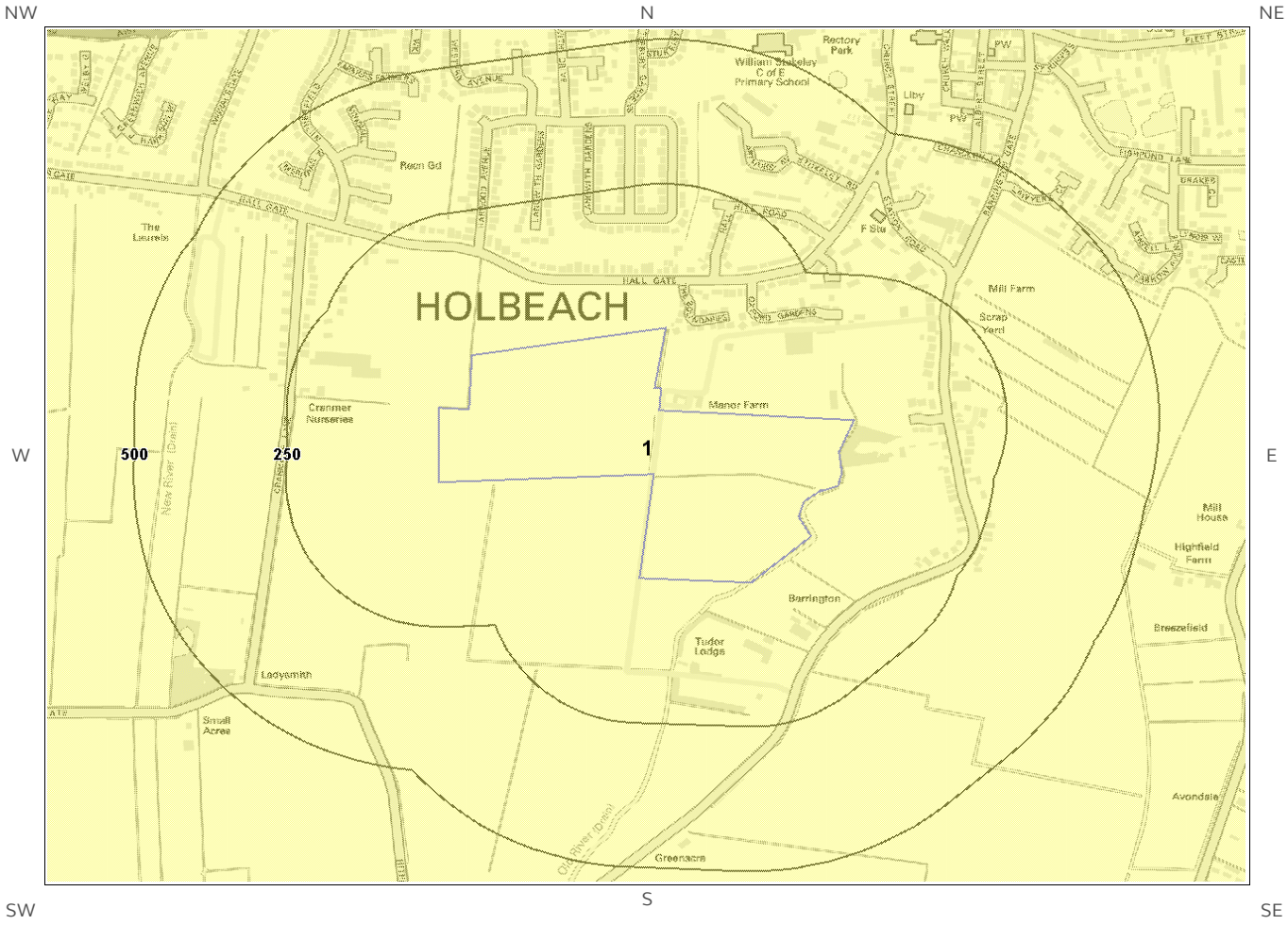
Database searched and no data found.

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

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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.

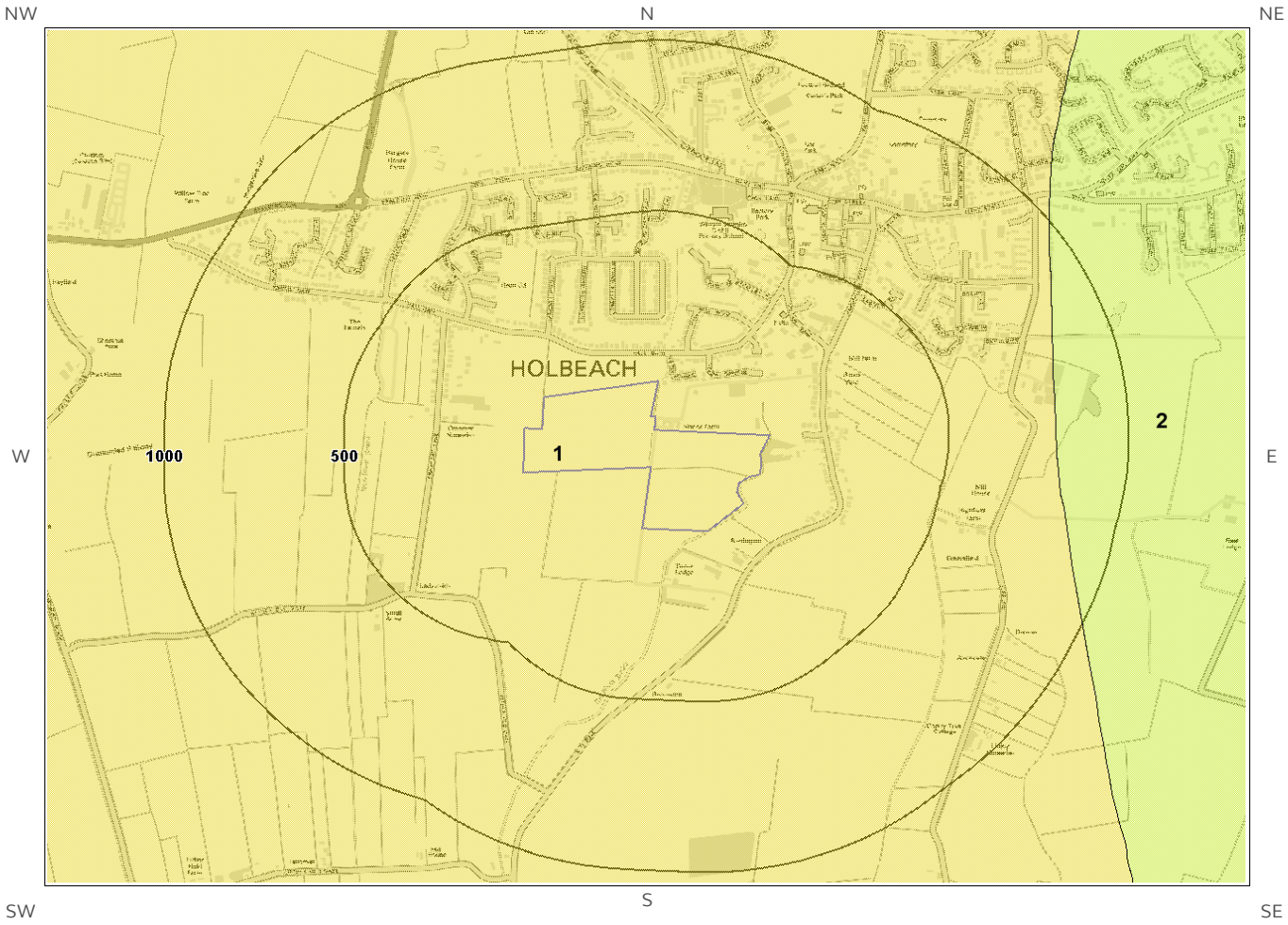
1.2.4 Landslip Permeability

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

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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:144

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	WWB-MDSI	West Walton Formation - Mudstone And Siltstone	Oxfordian

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? No

Database searched and no data found.

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

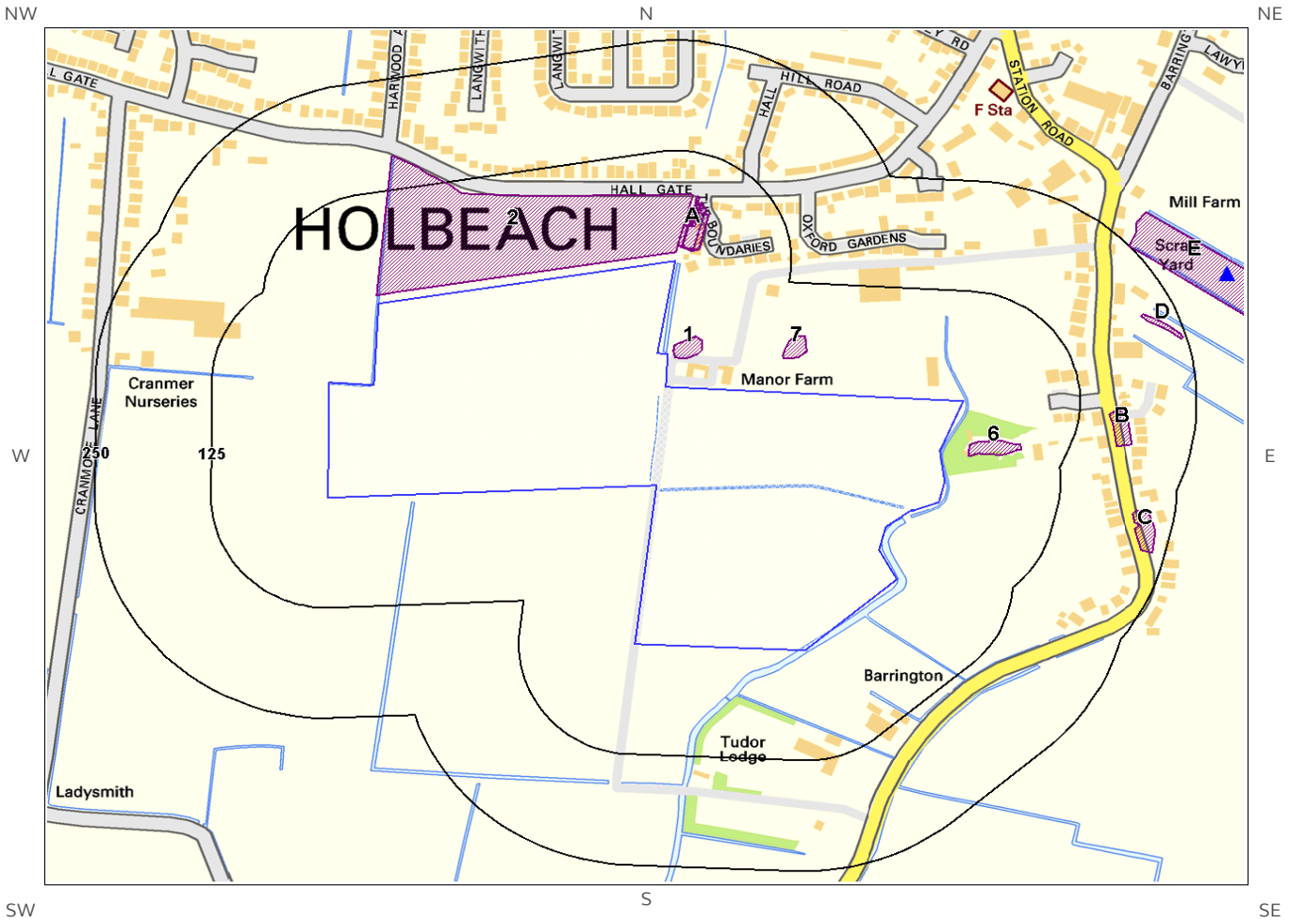
---

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

---

2 Ground Workings Map



Ground Workings Legend

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Site Outline

125
250
Search Buffers (m)

Historic Surface Ground Workings

Historic Underground Workings

Current Ground Workings

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? Yes

The following Historical Surface Ground Working Features are provided by Groundsure:

ID	Distance (m)	Direction	NGR	Use	Date
1	7.0	E	535494 324188	Pond	1903
2	9.0	N	535330 324326	Burial Ground	1950
3A	17.0	NE	535498 324326	Pond	1950
4A	18.0	NE	535502 324325	Pond	1903
5A	19.0	NE	535502 324329	Pond	1950
6	27.0	SE	535824 324074	Pond	1992
7	39.0	N	535609 324188	Pond	1903
8B	157.0	E	535958 324096	Pond	1903
9B	157.0	E	535958 324096	Pond	1887
10C	206.0	E	535984 323979	Pond	1903
11C	206.0	E	535984 323979	Pond	1887
12D	213.0	NE	536003 324211	Pond	1950
13D	213.0	NE	536003 324211	Pond	1903
14D	213.0	NE	536003 324211	Pond	1887
15E	250.0	NE	536062 324262	Brick Works	1887

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

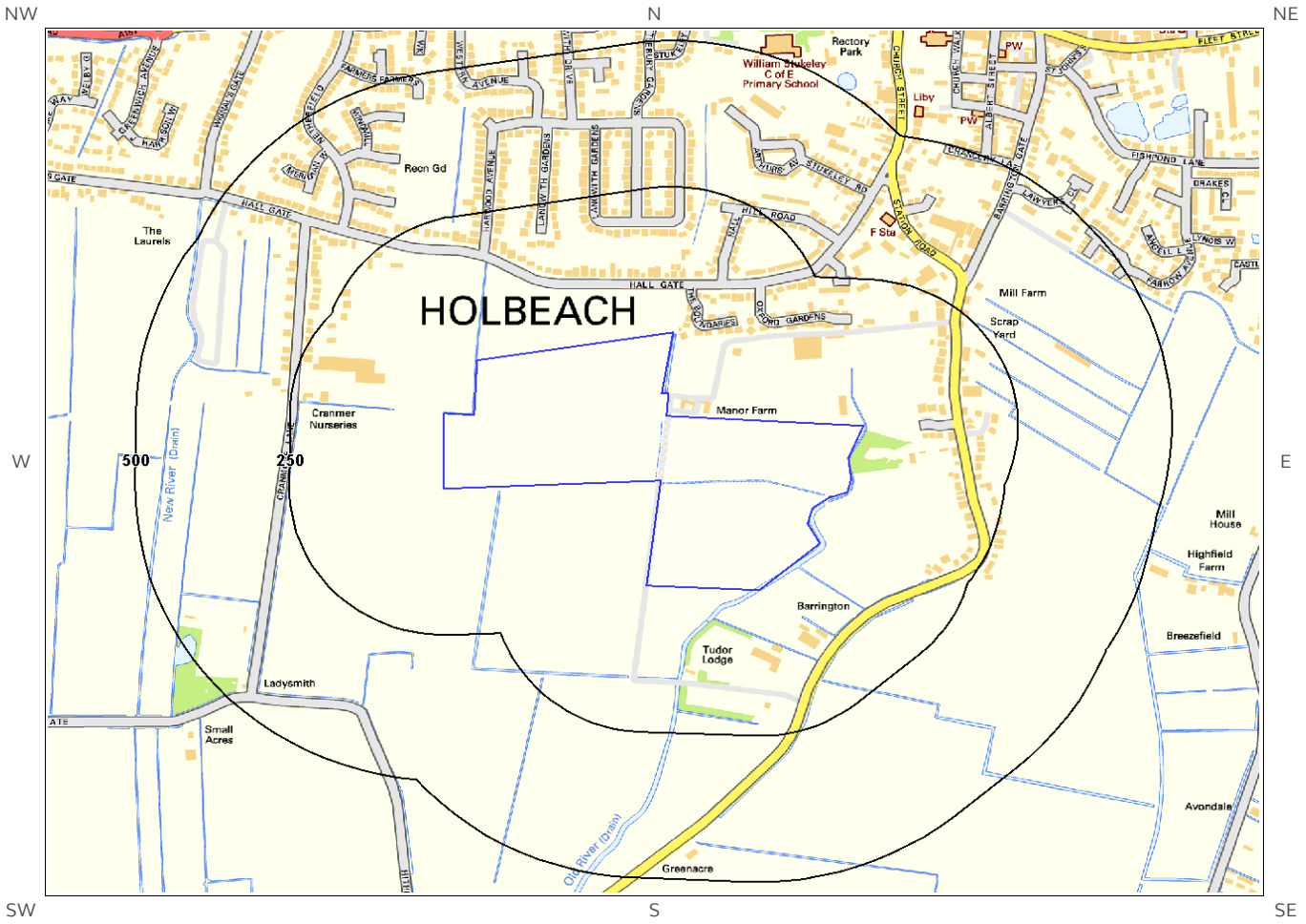
This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

Are there any BGS Current Ground Workings within 1000m of the study site boundary? Yes

The following Current Ground Workings information is provided by British Geological Survey:

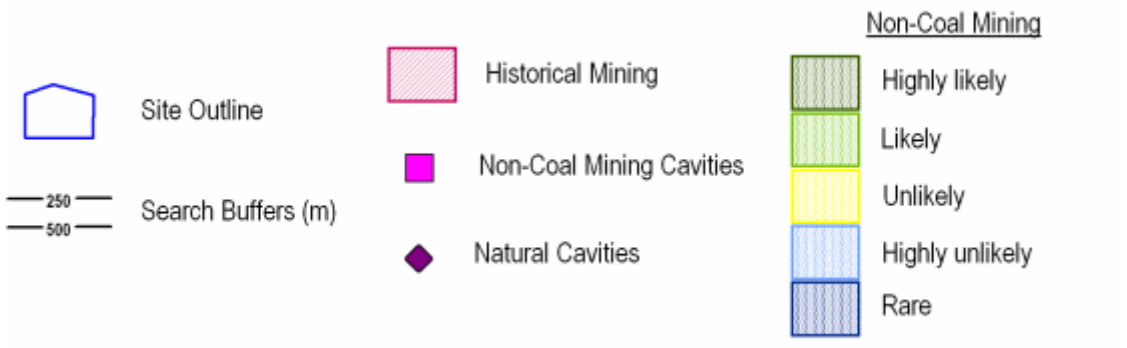
ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
16E	317.0	NE	536072 324271	Clay & Shale	Holbeach Brick Works	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	443.0	SW	534767 323734	Clay & Shale	Hither Old Gate Brick Works	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	666.0	NE	536205 324648	Clay & Shale	Holbeach Brick Pits	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	726.0	NE	536298 324645	Clay & Shale	Holbeach Brick Pits	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

3 Mining, Extraction & Natural Cavities Map



Mining, Extraction and Natural Cavities Legend

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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

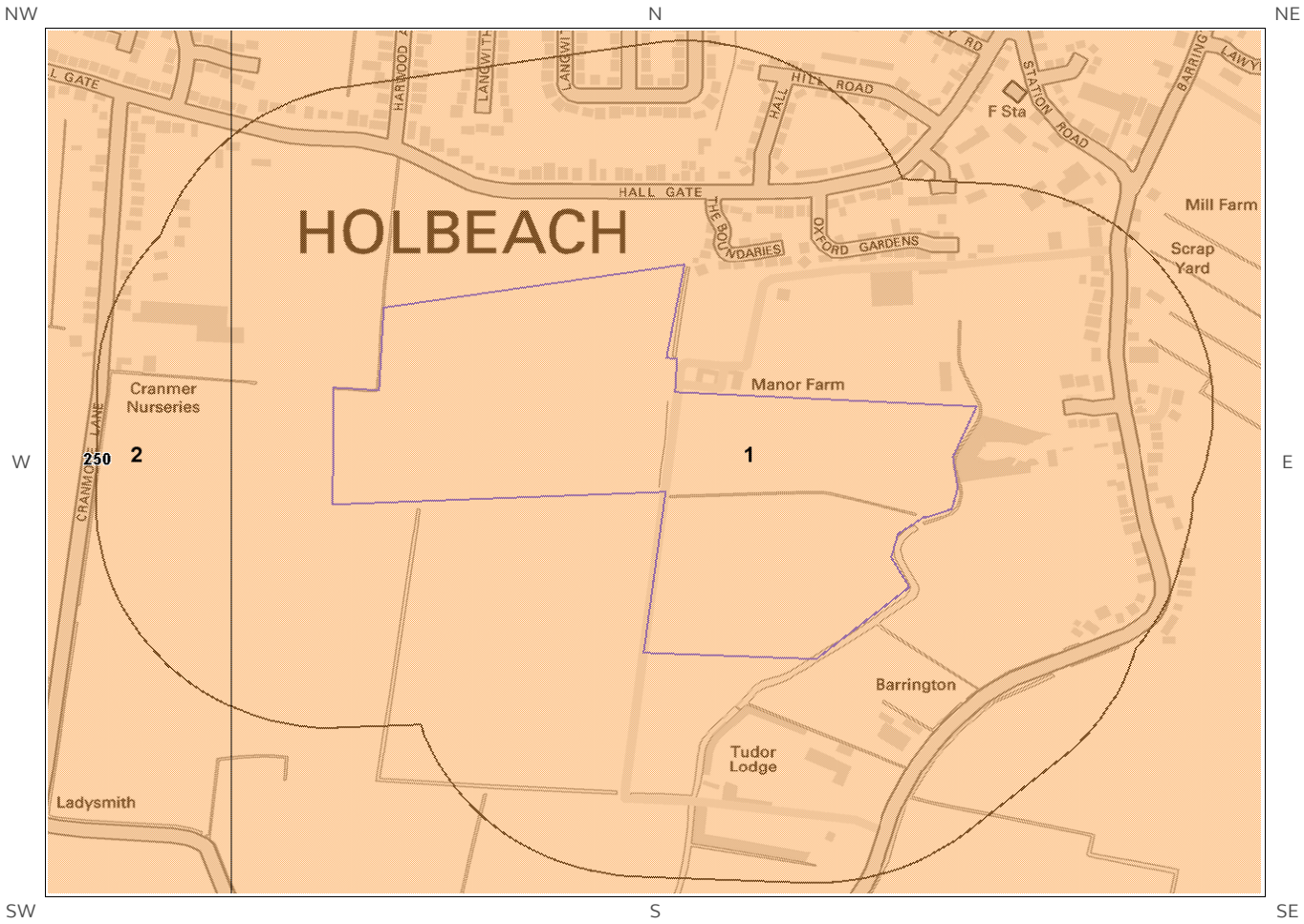
This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

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

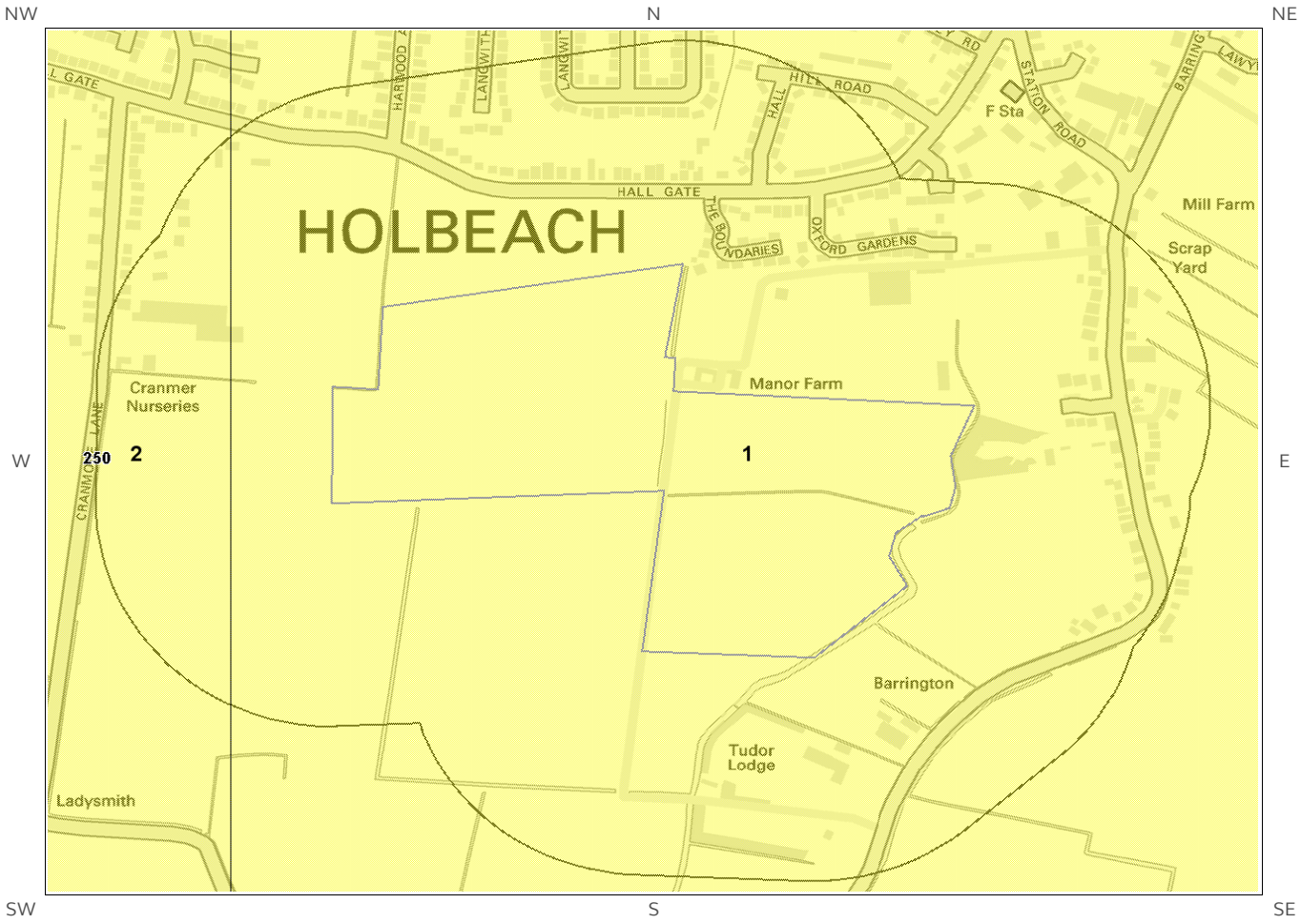


Shrink Swell Clay Legend

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4.2 Landslides Map

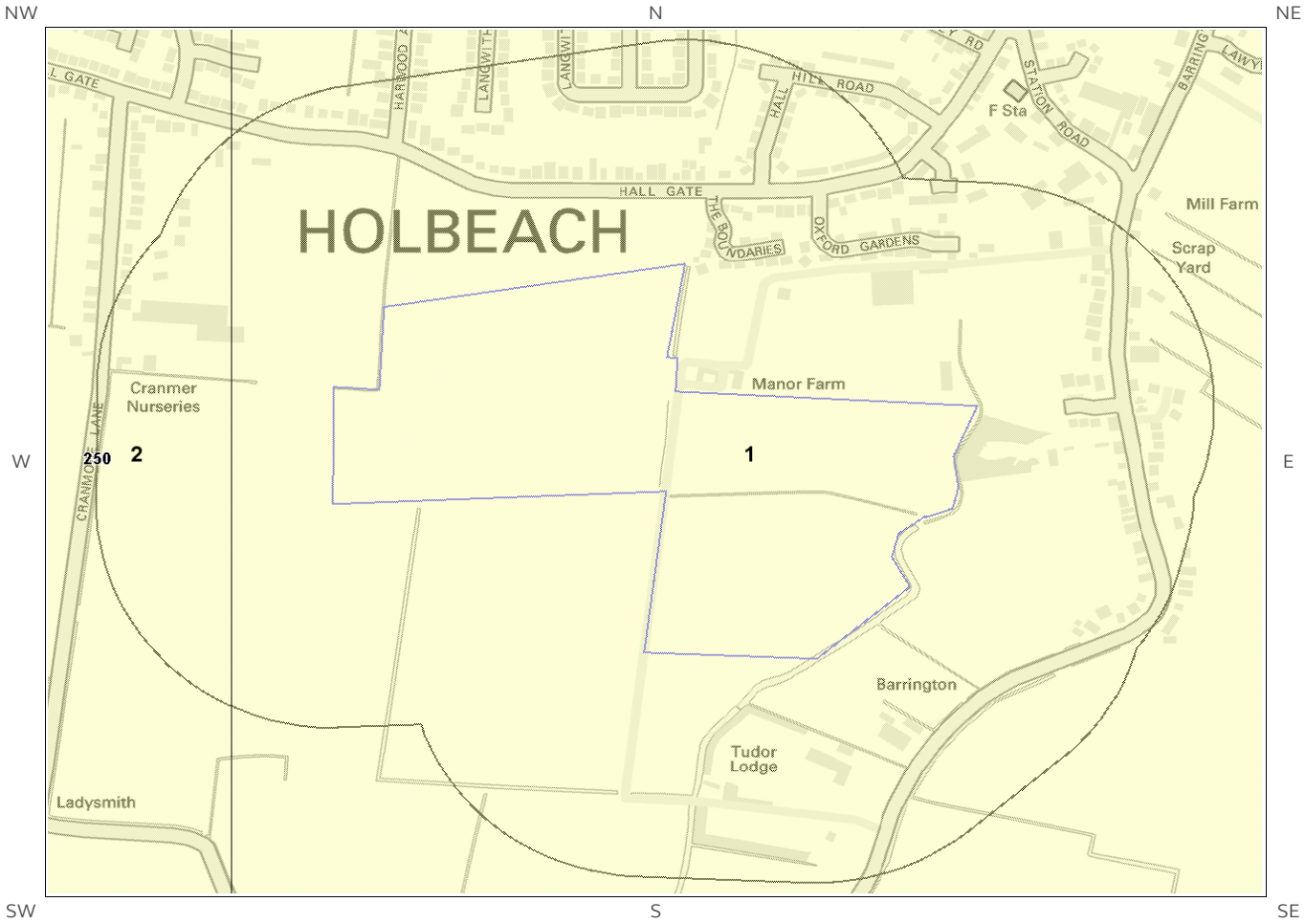


Landslides Legend

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4.3 Ground Dissolution Soluble Rocks Map

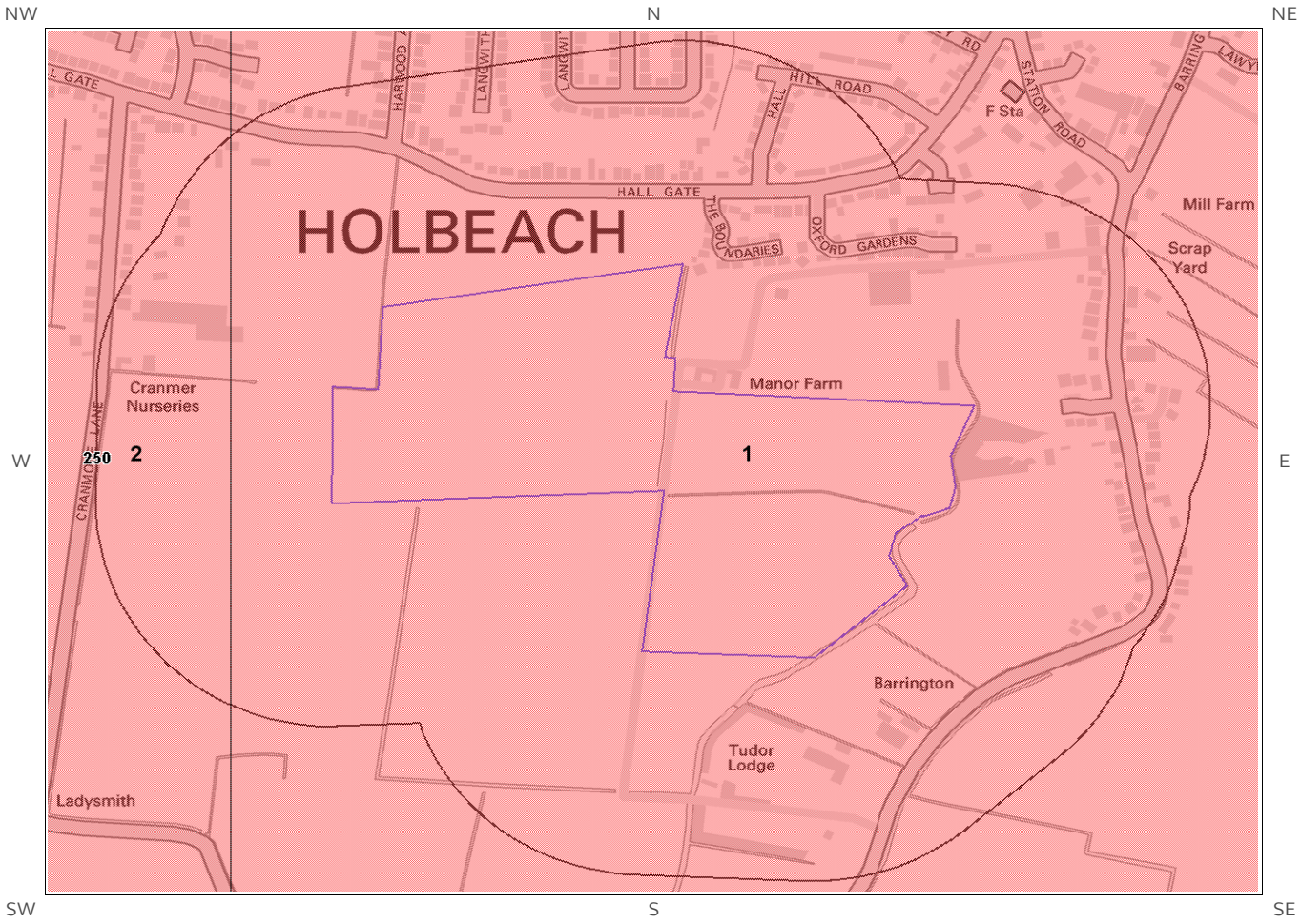


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Ground Dissolution Soluble Rocks Legend



4.4 Compressible Deposits Map

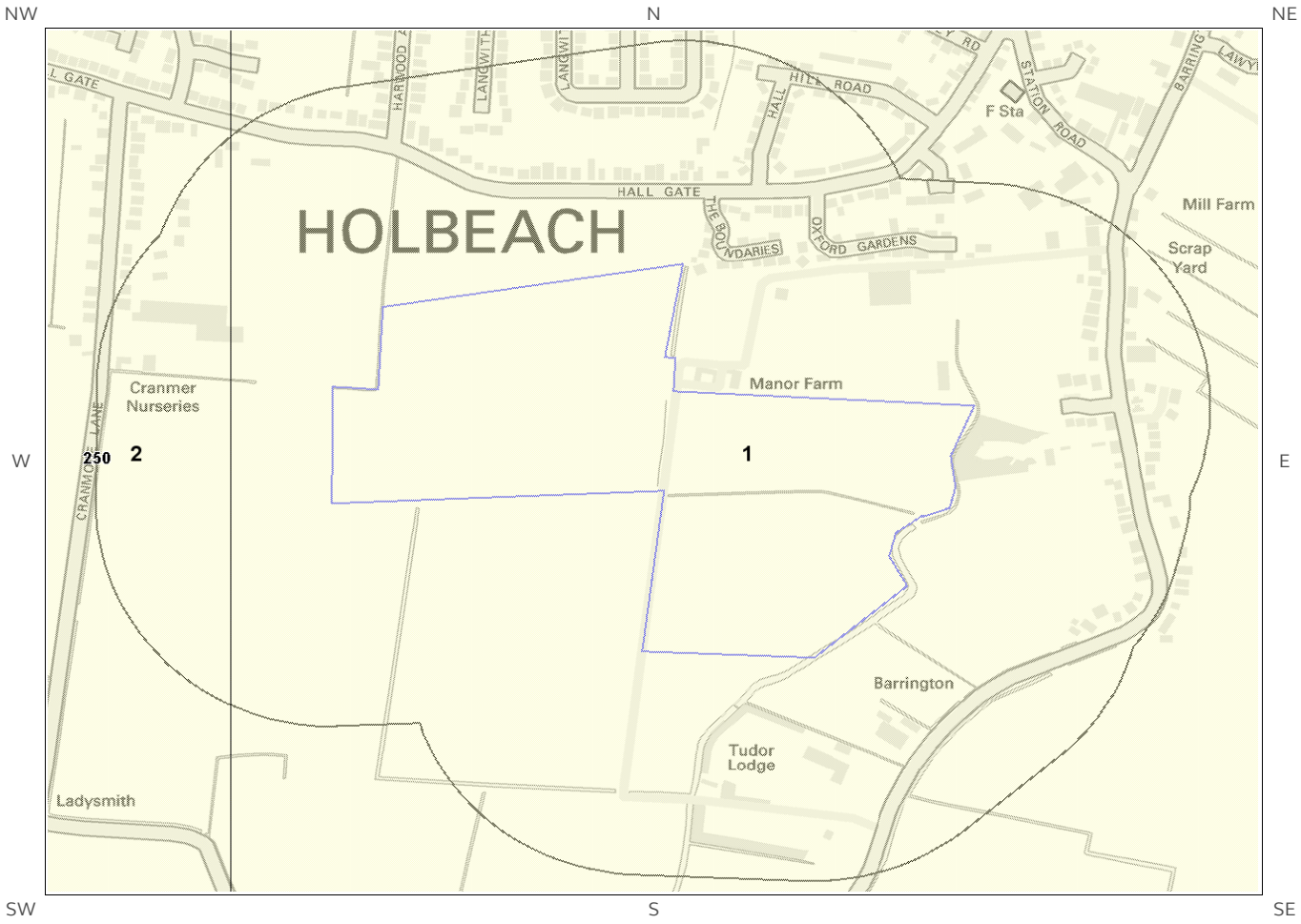


Compressible Deposits Legend

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4.5 Collapsible Deposits Map

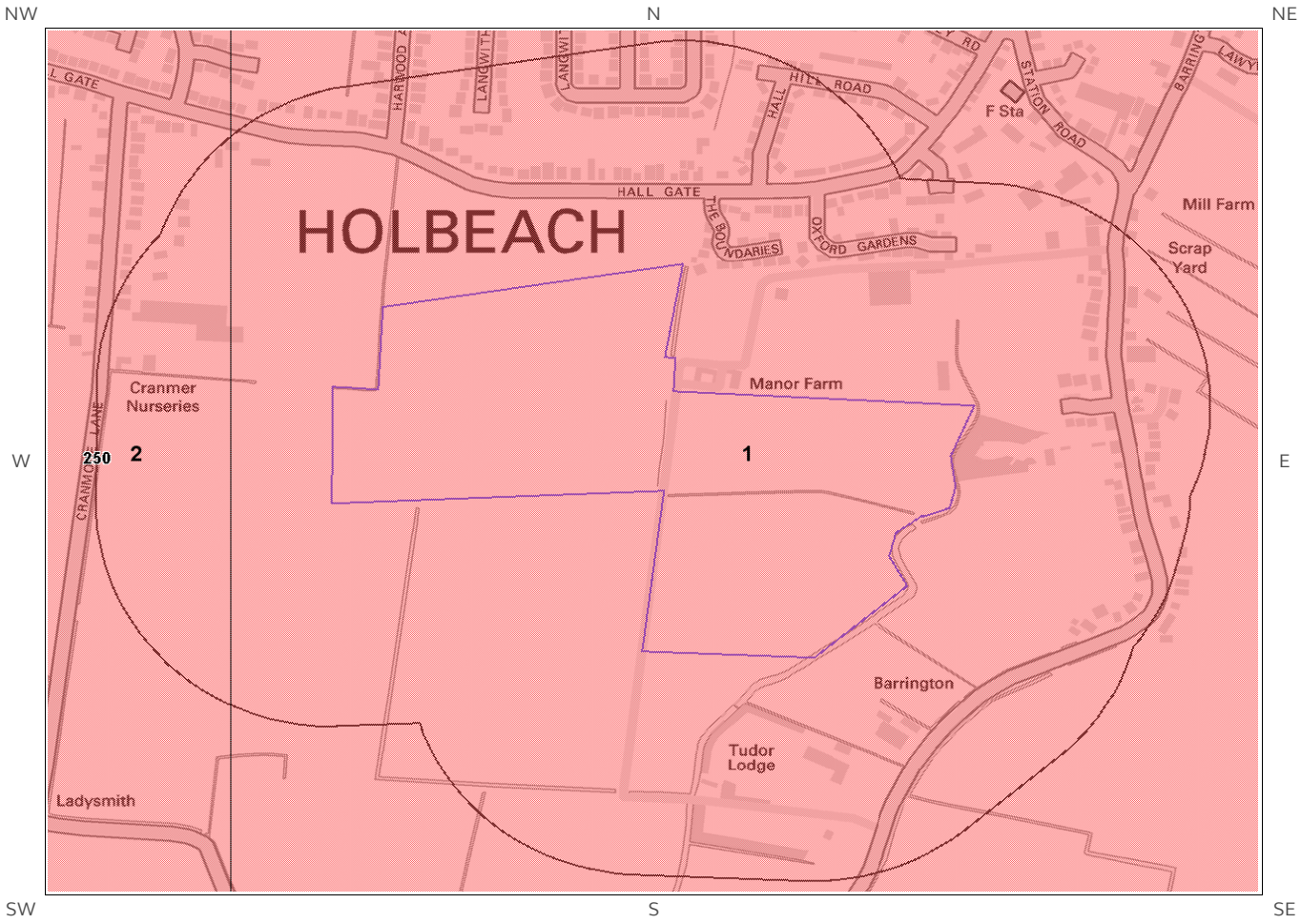


Collapsible Deposits Legend

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4.6 Running Sand Map



Running Sand Legend

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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:

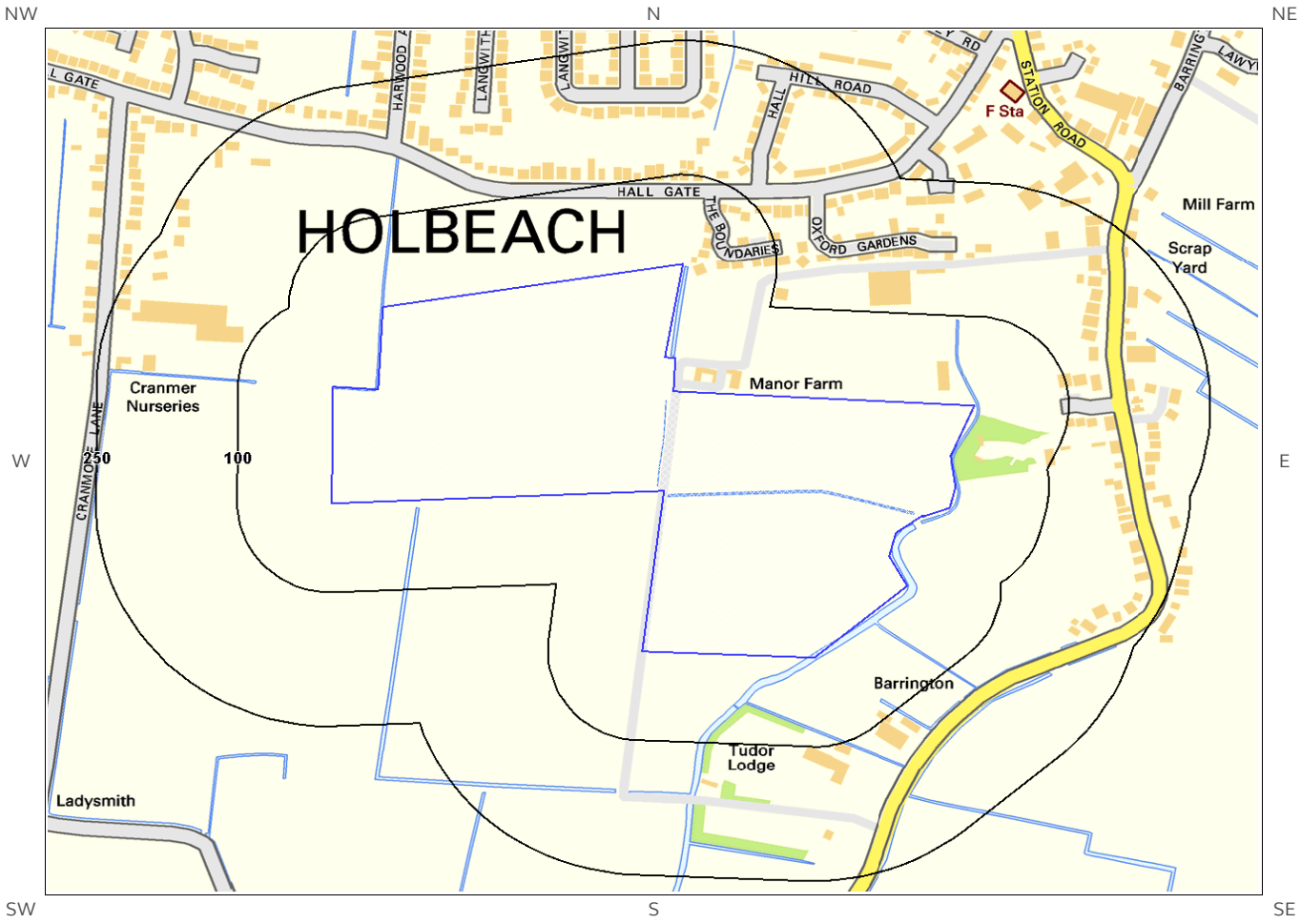
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for collapsible deposits identified. No actions required to avoid problems due to collapsible deposits. No special ground investigation required, or increased construction costs or increased financial risk due to potential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

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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

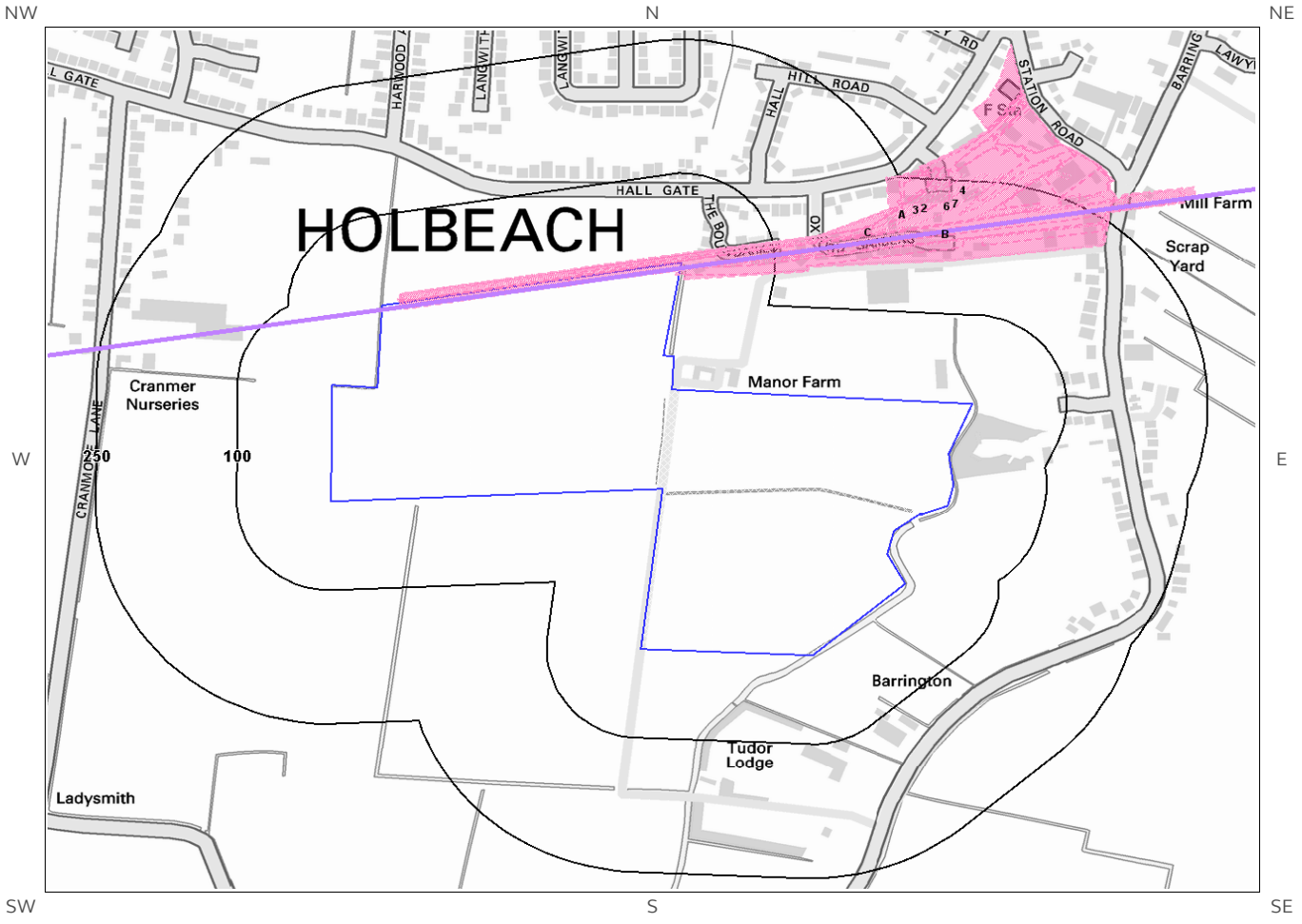
Records of background estimated soil chemistry within 250m of the study site boundary: 14

For further information on how this data is calculated and limitations upon its use, please see the Groundsure Geo Insight 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	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
107.0	W	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
109.0	W	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
109.0	W	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
210.0	E	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
214.0	N	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
215.0	N	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
234.0	E	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
234.0	E	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 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

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- Site Outline
- Search Buffers (m) — 250 / 500
- Underground or Partially Underground Railway / Subway System
- Railway Tunnel (OS Mapping)
- Abandoned or Dismantled Railway (OpenStreetMap)
- Railway Track (OS Mapping)
- Railway Track (OpenStreetMap)
- High Speed 2
- High Speed 2 Revised Proposed Route
- Crossrail 1
- Railway and/or Tunnel Feature from Historical Mapping

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? Yes

Have any historical railway or tunnel features been identified within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Details	Date
1A	0	On Site	535860 324355	Railway Sidings	1958
2	0	On Site	535806 324358	Railway Sidings	1950
3	0	On Site	535806 324358	Railway Sidings	1903
4	0	On Site	535801 324393	Railway Sidings	1887
5A	0	On Site	535771 324351	Railway Sidings	1938
6	0	N	535761 324357	Railway Sidings	1903

ID	Distance (m)	Direction	NGR	Details	Date
10C	0	On Site	535703 324310	Railway Sidings	1904
11C	0	On Site	535702 324310	Railway Sidings	1932
12C	0	On Site	535739 324323	Railway Sidings	1888
7	1	N	535773 324354	Railway Sidings	1929
8B	108	E	535758 324315	Railway Sidings	1903
9B	108	E	535758 324315	Railway Sidings	1929

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? Yes

Have any historical railway lines been identified within 250m of the study site boundary? Yes

Distance (m)	Direction	Status
0	On Site	Abandoned

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 5km of the proposed alternative 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

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info@geo-matters.com
104 Bondgate, Castle Donington, Derbyshire, DE74 2NR

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Web:**www.bgs.ac.uk**
BGS Geological Hazards Reports and general geological enquiries

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DX 716176 Mansfield 5
www.coal.gov.uk

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Public information access office
Public Health England, Wellington House
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https://www.gov.uk/government/organisations/public-health-england
Email: **enquiries@phe.gov.uk**
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Tel: +44 (0)118 950 0761 E-mail:**reading@pba.co.uk**
Website:**http://www.peterbrett.com/home**

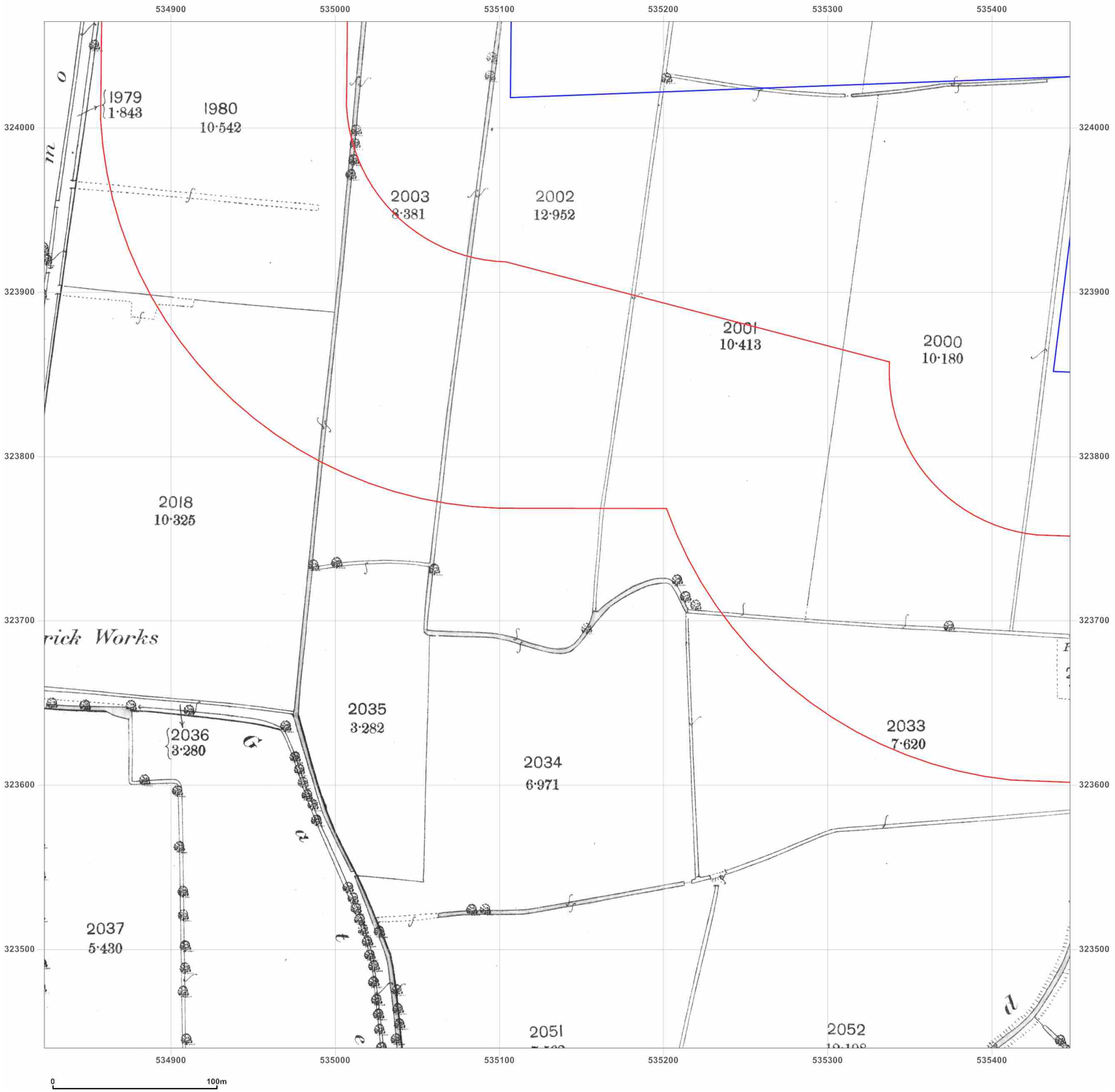
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Groundsure's Terms and Conditions can be viewed online at this link:
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APPENDIX V

Historical Mapping



GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING,
PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537_LS_1_1
Grid Ref: 535135, 323752

Map Name: County Series

Map date: **1888**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1888
Revised 1888
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

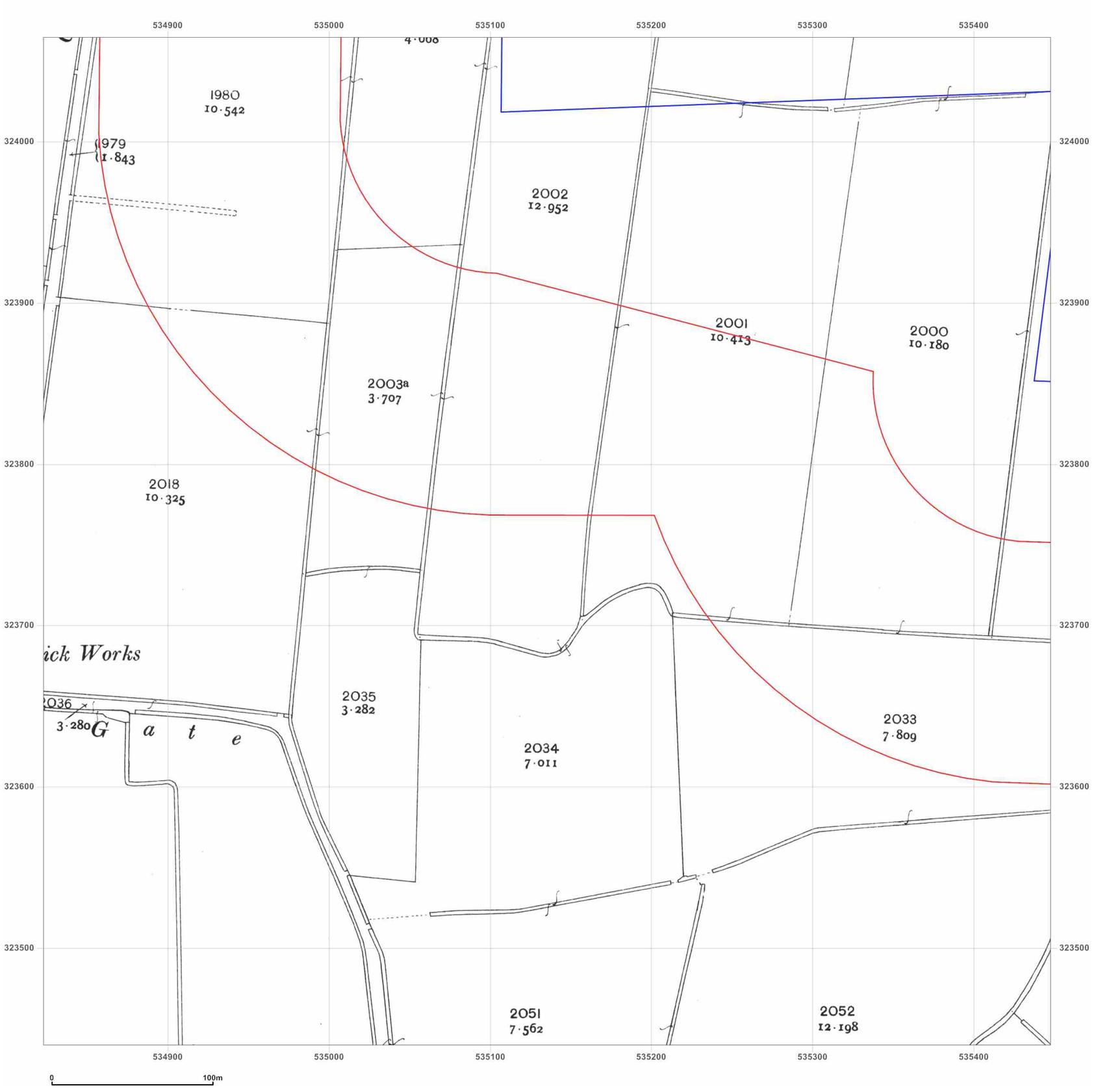
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Production date: 10 October 2016

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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING,
PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537_LS_1_1
Grid Ref: 535135, 323752

Map Name: County Series

Map date: **1904**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1904
Revised 1904
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

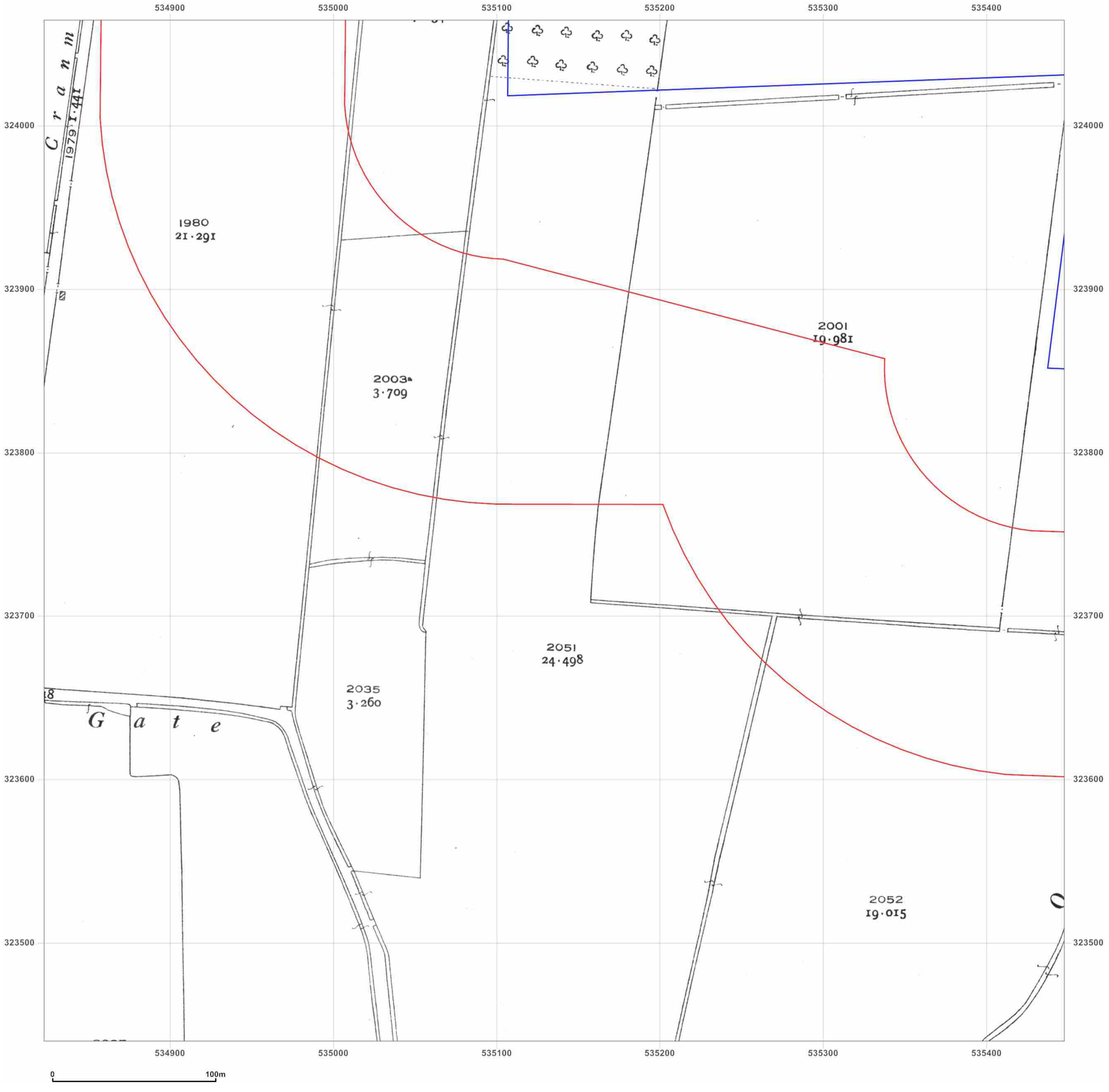
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Production date: 10 October 2016

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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING,
PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537_LS_1_1
Grid Ref: 535135, 323752

Map Name: County Series

Map date: **1932**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1932
Revised 1932
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

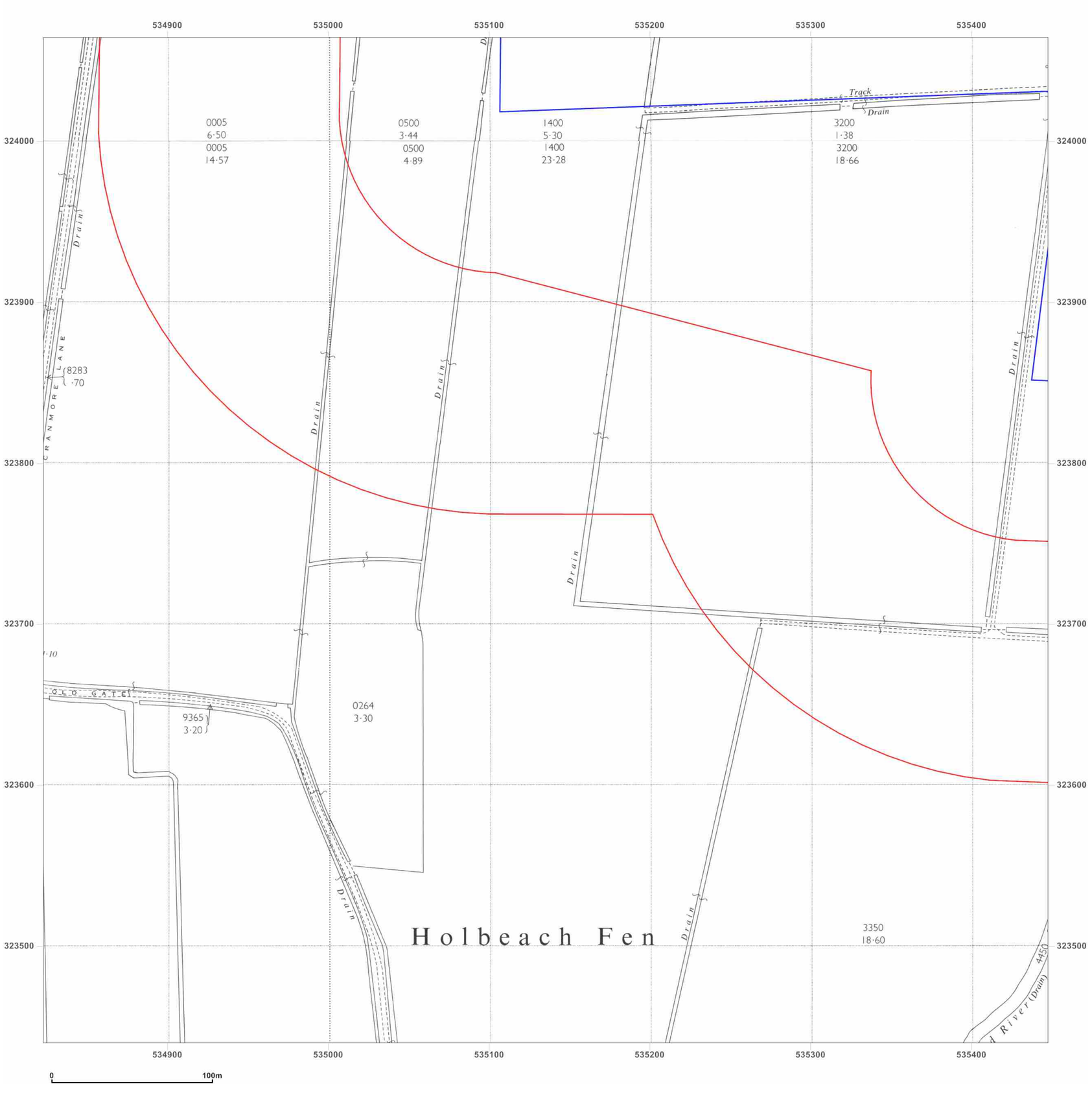
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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING,
PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537_LS_1_1
Grid Ref: 535135, 323752

Map Name: National Grid

Map date: **1968**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1969
Levelled 1965

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1969
Levelled 1965

Groundsure INSIGHTS

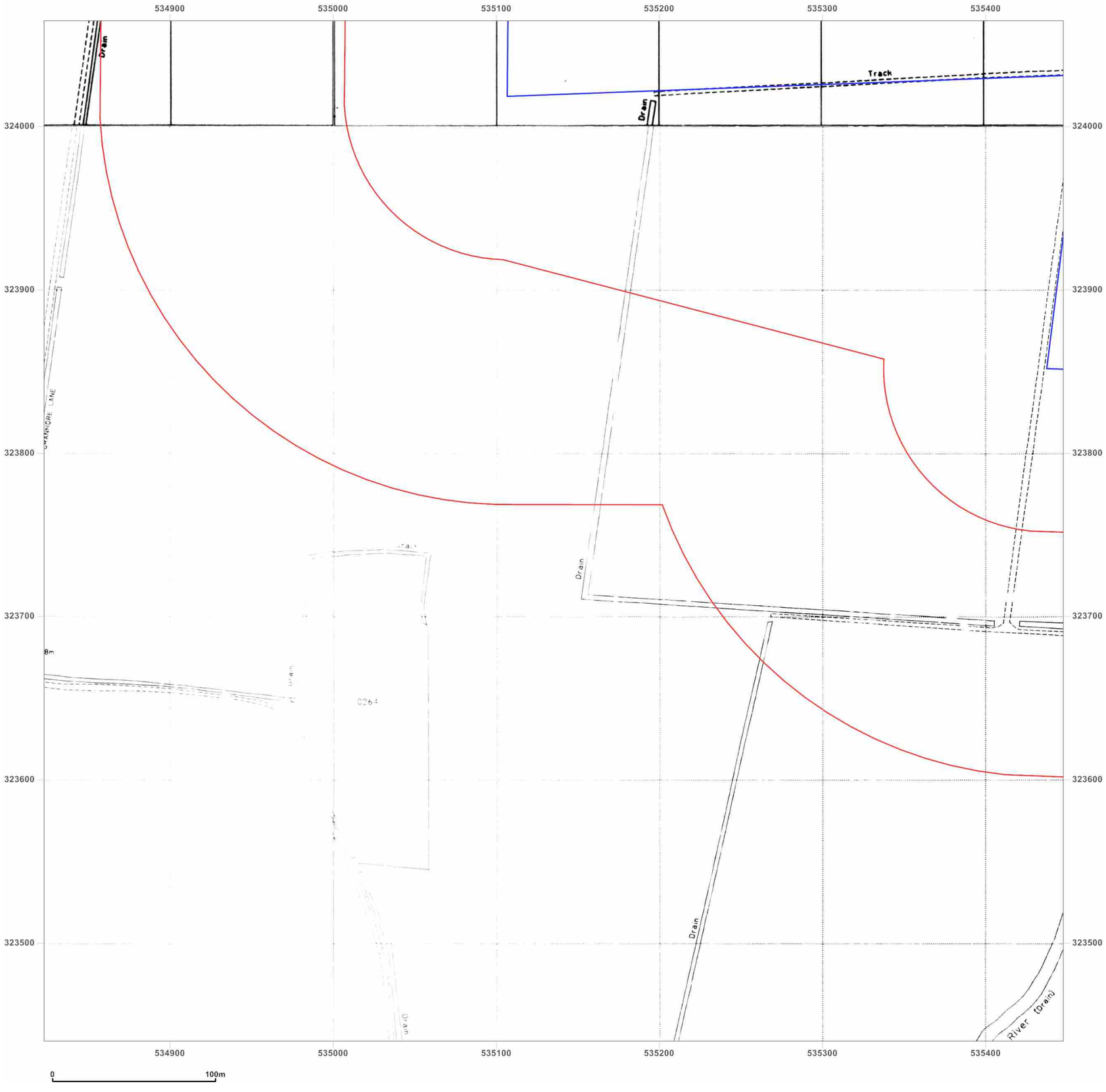
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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING,
PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537_LS_1_1
Grid Ref: 535135, 323752

Map Name: National Grid

Map date: **1991-1995**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1991
Revised 1991
Edition N/A
Copyright 1991
Levelled N/A

Surveyed 1991
Revised 1991
Edition N/A
Copyright 1991
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1995
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1995
Levelled N/A

Groundsure INSIGHTS

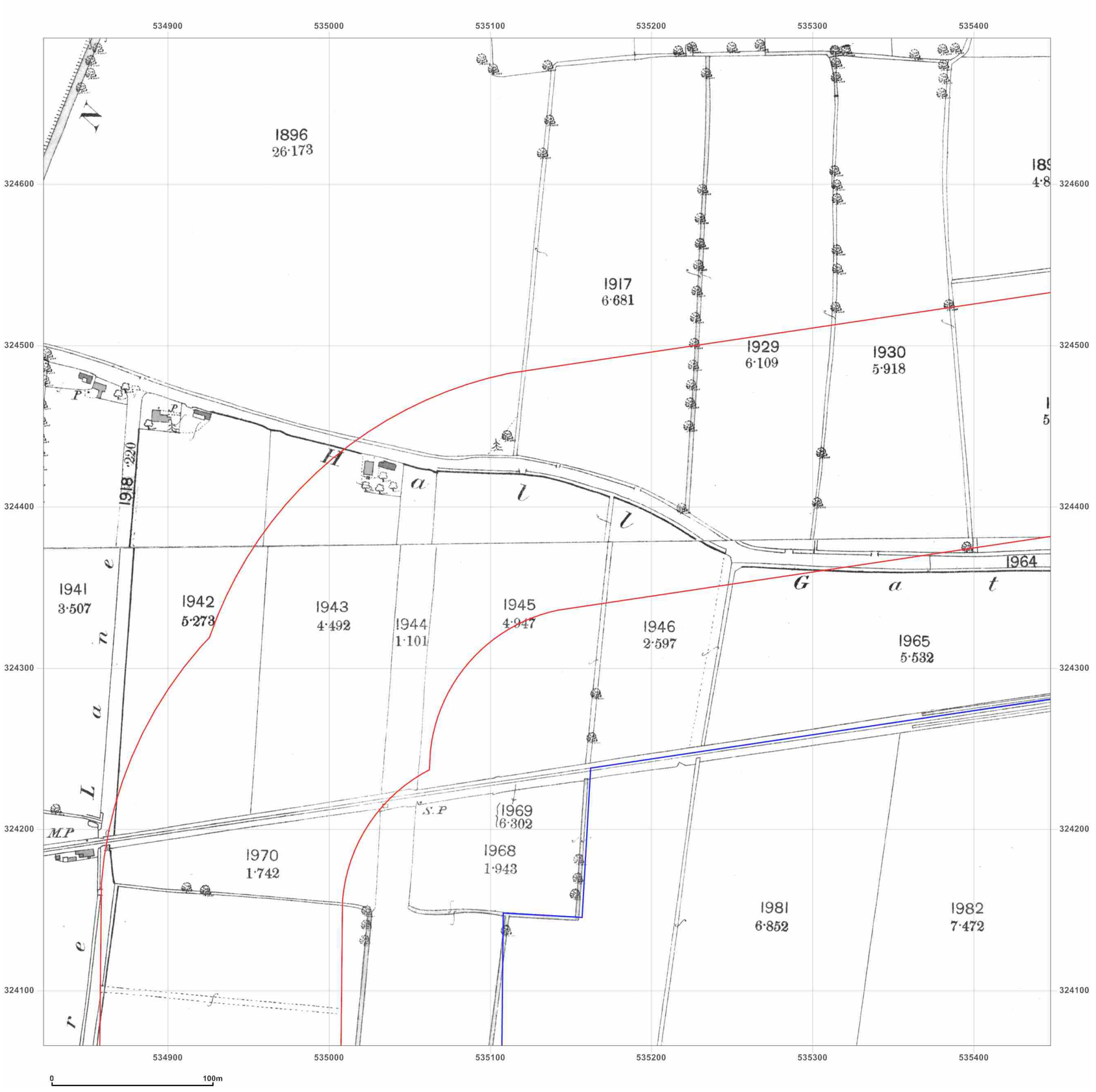
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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING,
PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537_LS_1_2
Grid Ref: 535135, 324378

Map Name: County Series

Map date: **1888**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1888
Revised 1888
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1888
Revised 1888
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

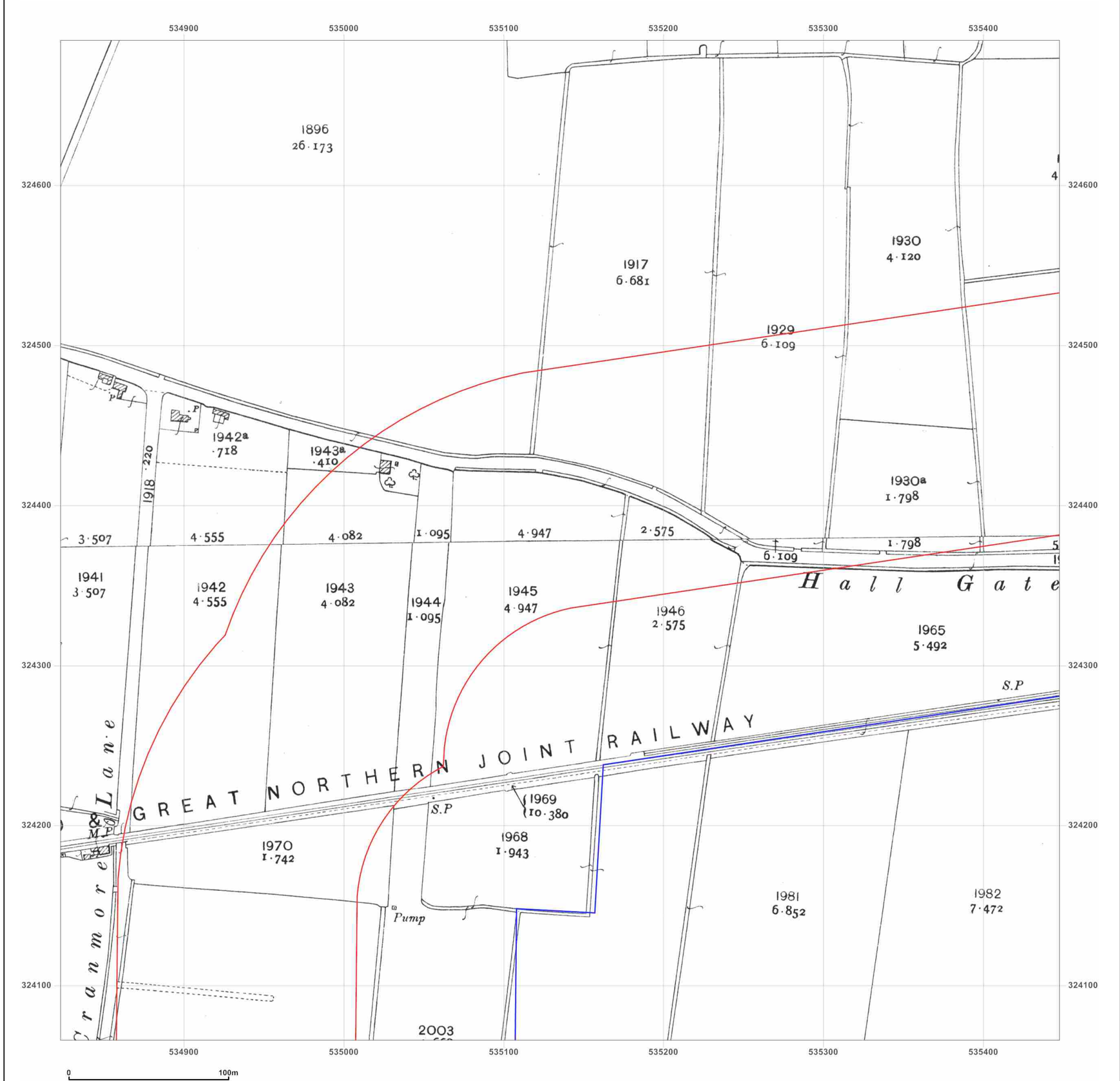
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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING,
PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537_LS_1_2
Grid Ref: 535135, 324378

Map Name: County Series

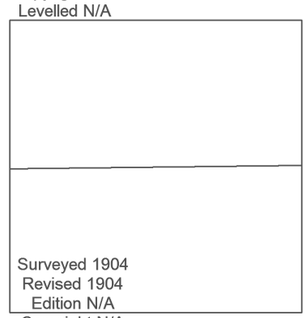
Map date: **1904**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1904
Revised 1904
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1904
Revised 1904
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

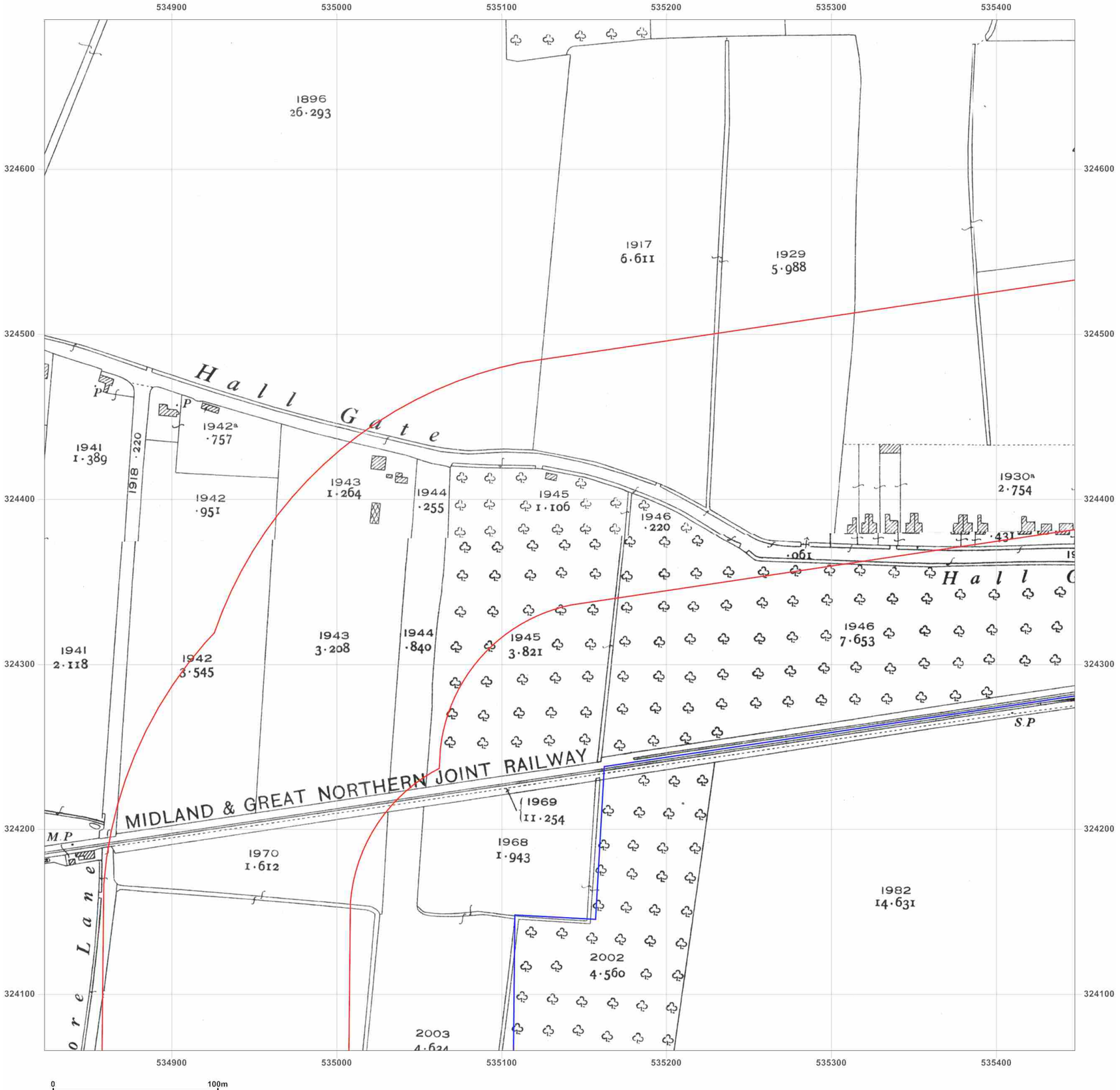
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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING,
PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537_LS_1_2
Grid Ref: 535135, 324378

Map Name: County Series

Map date: **1931-1932**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1931
Revised 1931
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1932
Revised 1932
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

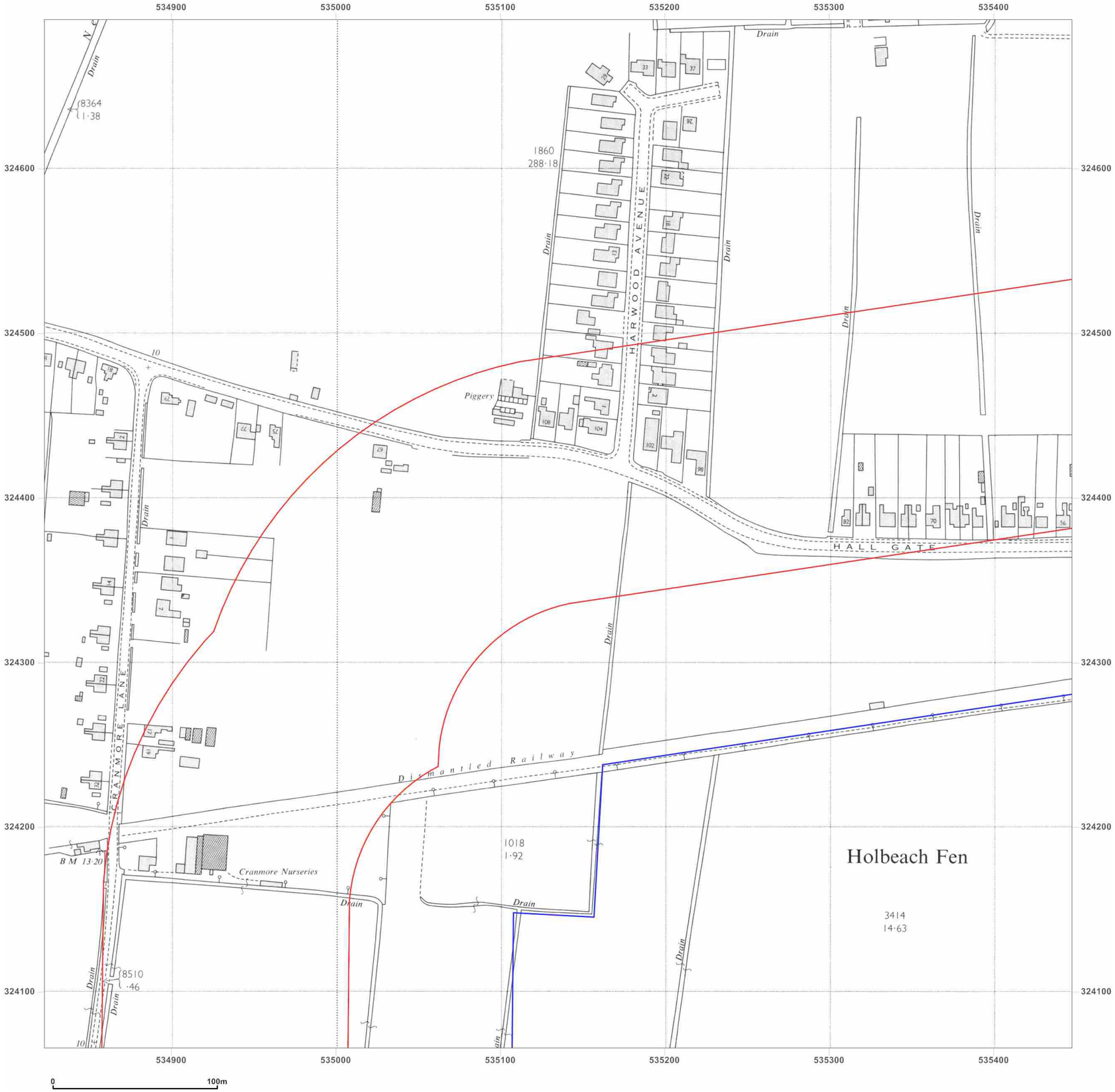
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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING,
PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537_LS_1_2
Grid Ref: 535135, 324378

Map Name: National Grid

Map date: **1968**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1969
Levelled 1965

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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING,
PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537_LS_1_2
Grid Ref: 535135, 324378

Map Name: National Grid

Map date: **1981**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1981
Revised 1981
Edition N/A
Copyright 1982
Levelled 1965

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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING,
PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537_LS_1_2
Grid Ref: 535135, 324378

Map Name: National Grid

Map date: **1986**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1965	Surveyed 1965
Revised 1986	Revised 1986
Edition N/A	Edition N/A
Copyright 1986	Copyright 1986
Levelled 1965	Levelled 1965

Groundsure INSIGHTS

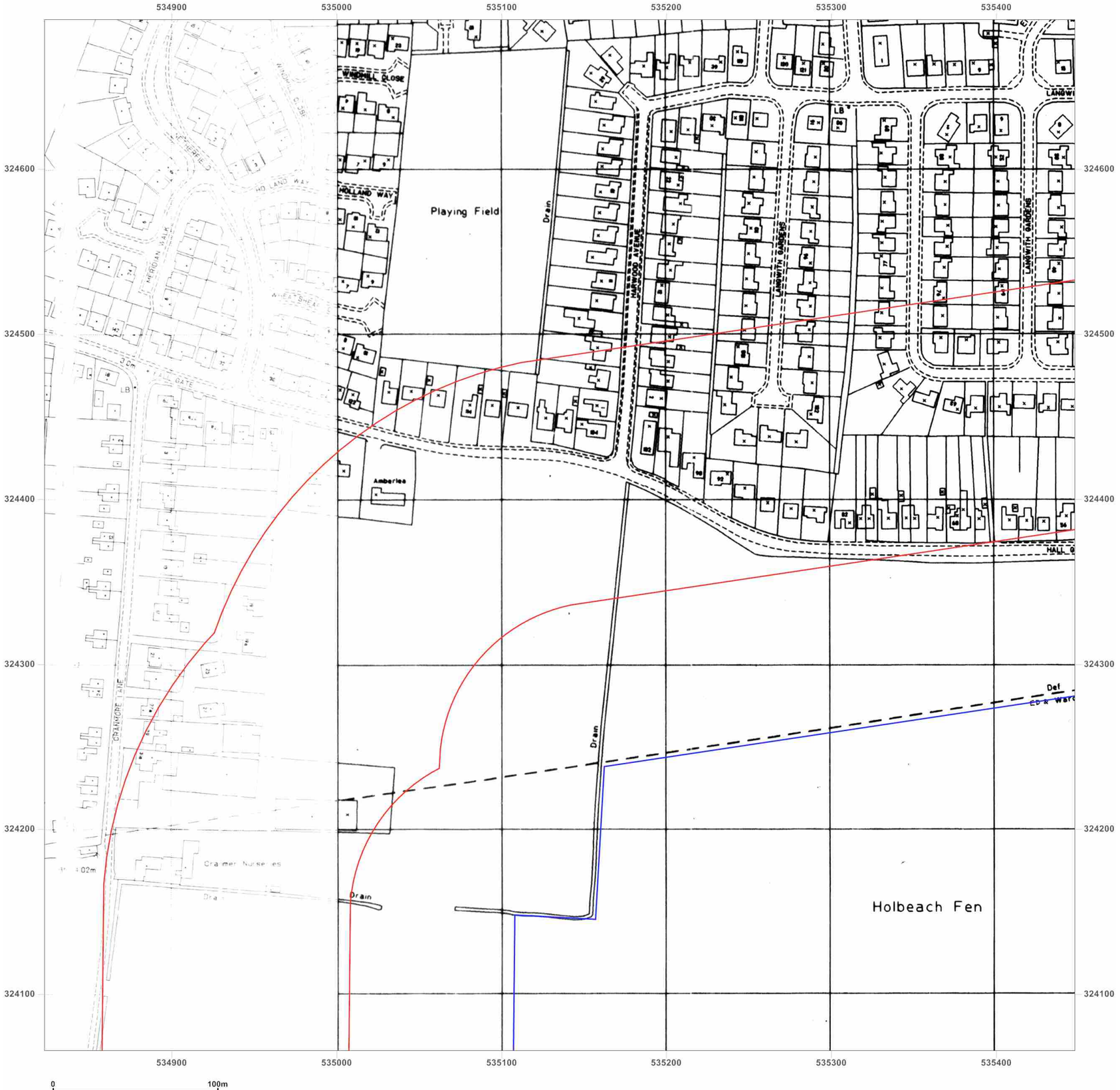
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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING,
PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537_LS_1_2
Grid Ref: 535135, 324378

Map Name: National Grid

Map date: **1991-1995**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1995
Levelled N/A

Surveyed 1991
Revised 1991
Edition N/A
Copyright 1991
Levelled N/A

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Site Details:

13, FEN ROAD, SPALDING,
PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537_LS_1_2
Grid Ref: 535135, 324378

Map Name: National Grid

Map date: **1991-1995**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1991
Revised 1991
Edition N/A
Copyright 1991
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1995
Levelled N/A

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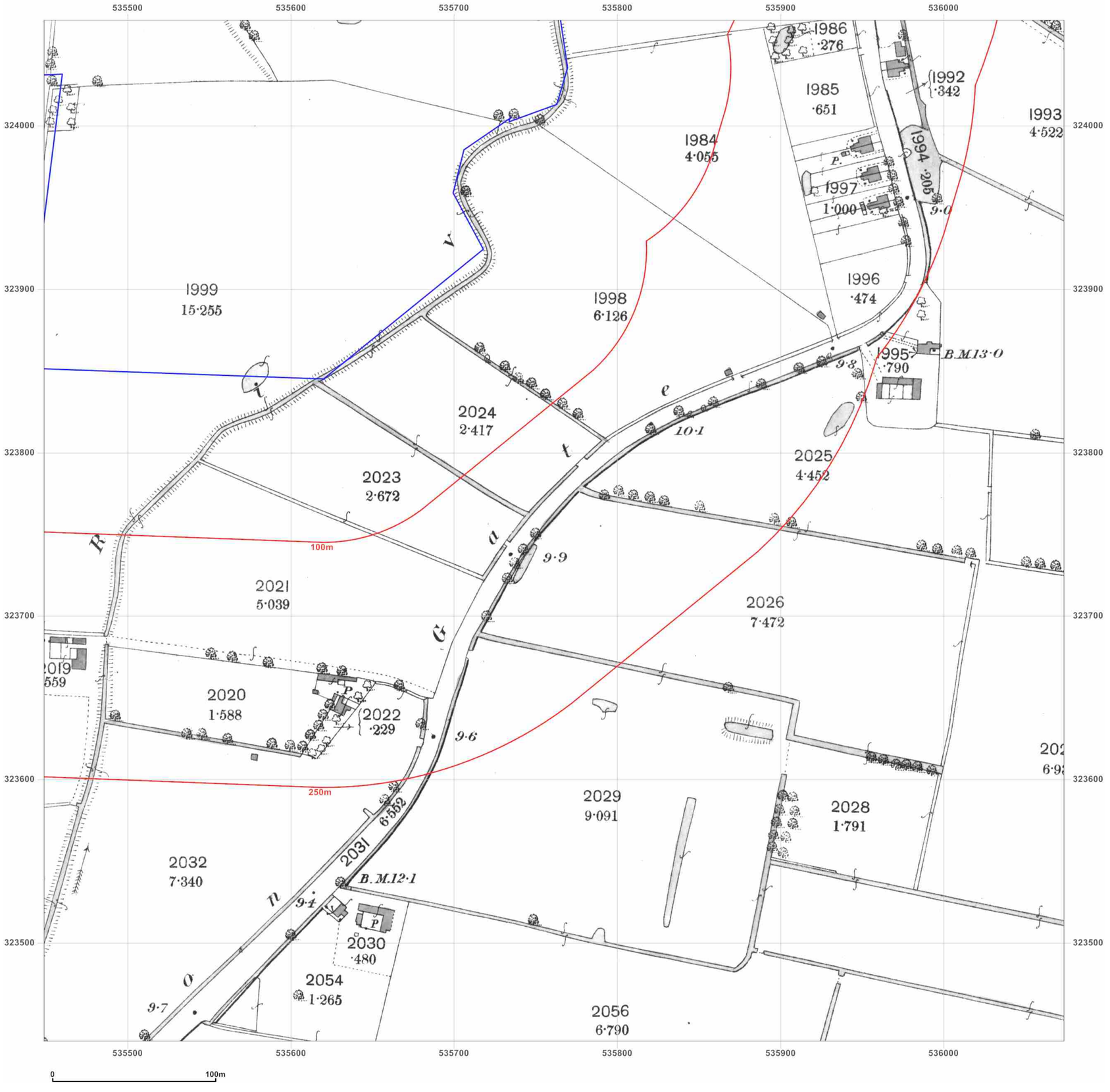
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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING,
PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537_LS_2_1
Grid Ref: 535761, 323752

Map Name: County Series

Map date: **1888**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1888
Revised 1888
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

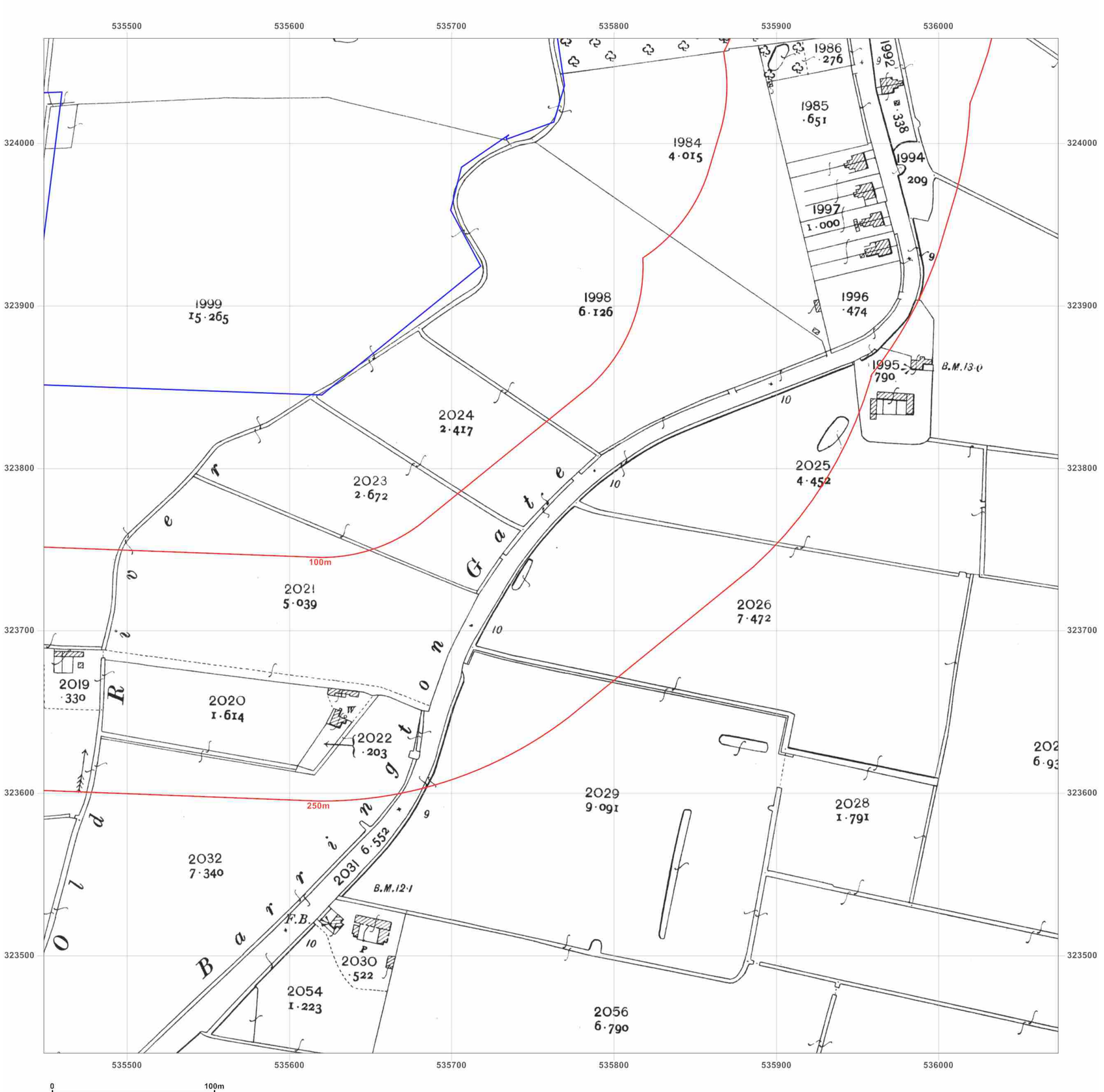
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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING,
PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537_LS_2_1
Grid Ref: 535761, 323752

Map Name: County Series

Map date: **1904**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1904
Revised 1904
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

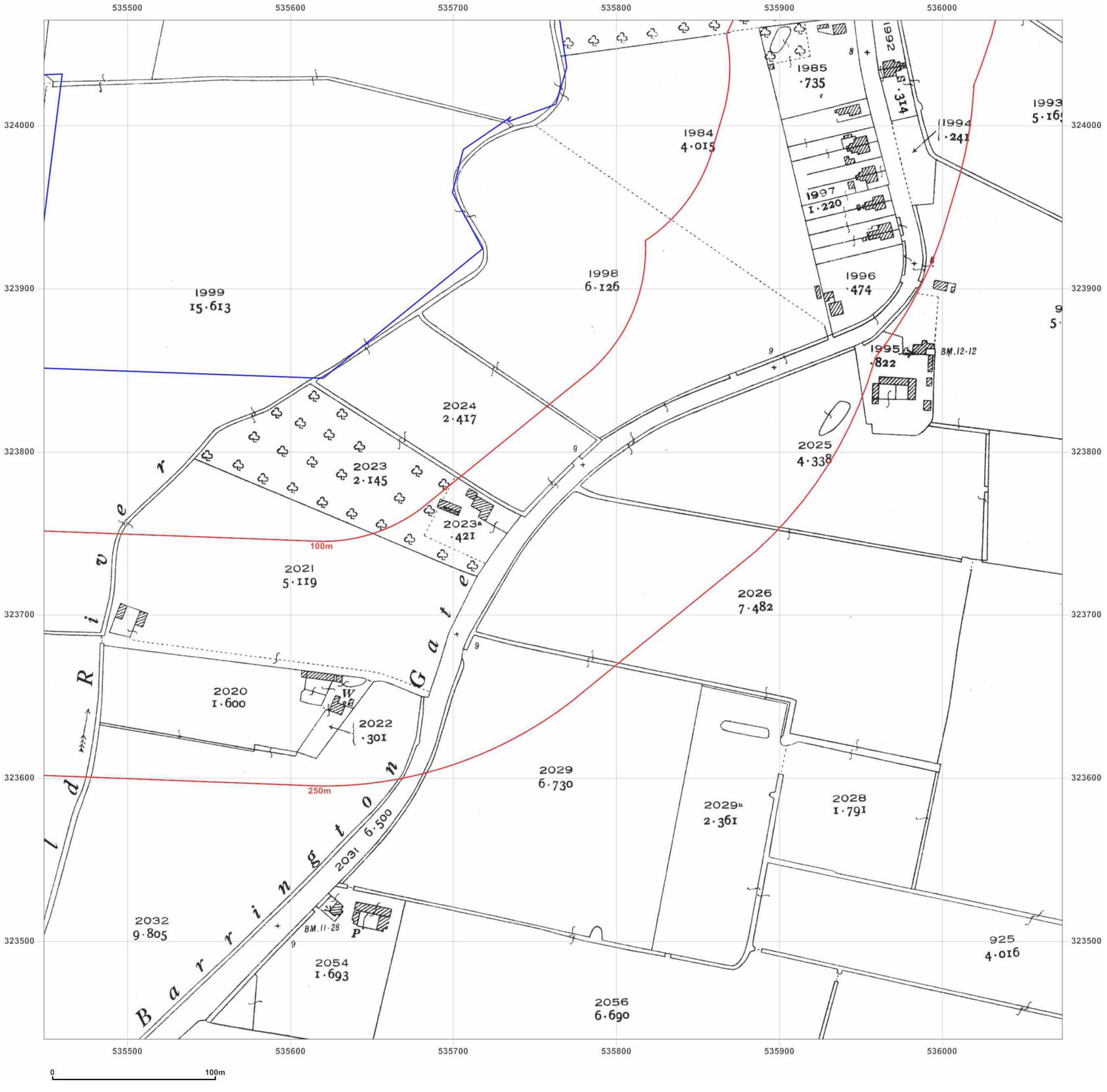
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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING,
PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537_LS_2_1
Grid Ref: 535761, 323752

Map Name: County Series

Map date: **1932**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1932
Revised 1932
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

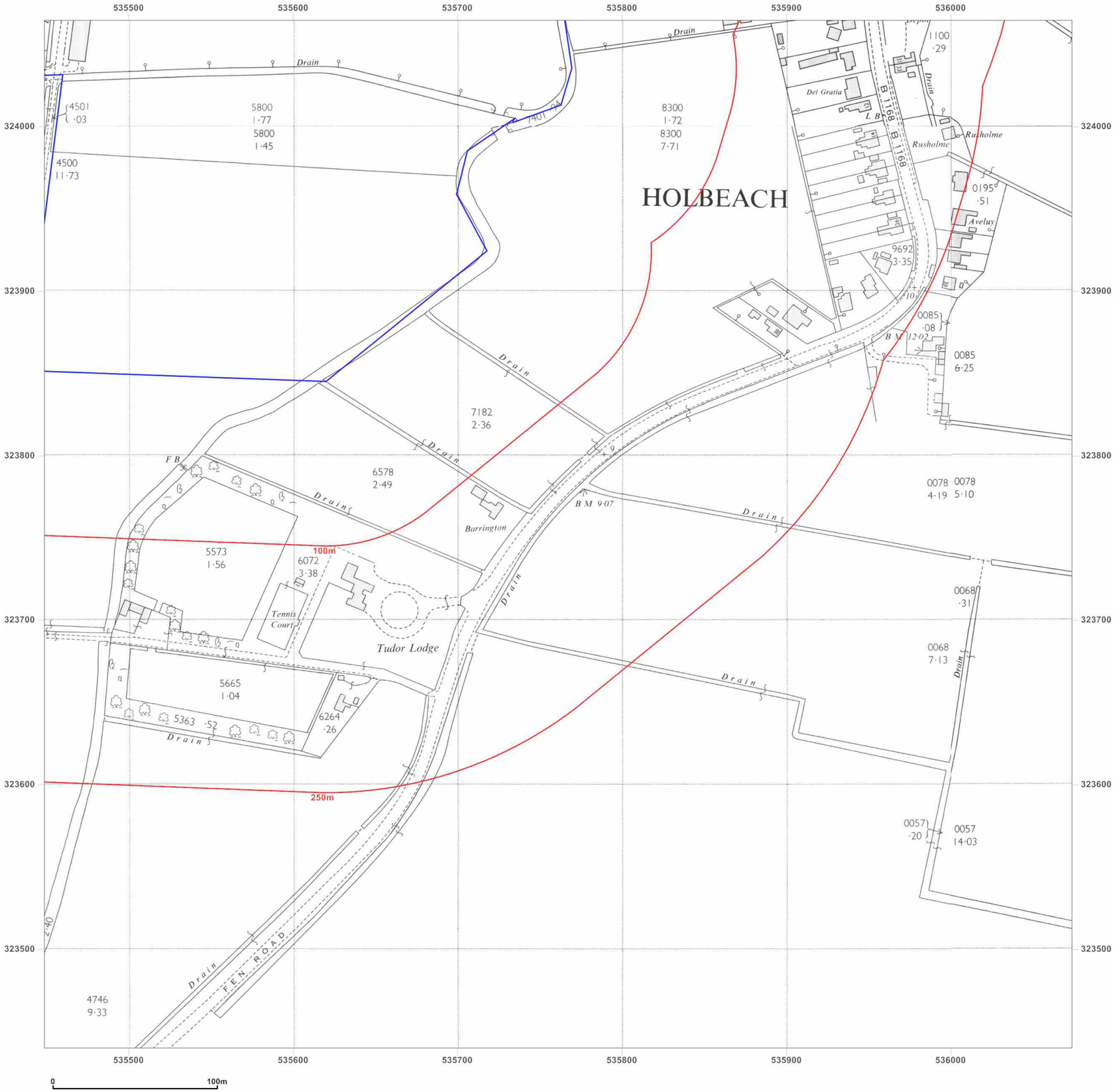
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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING,
PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537_LS_2_1
Grid Ref: 535761, 323752

Map Name: National Grid

Map date: **1968**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1969
Levelled 1965

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1969
Levelled 1965

Surveyed 1968
Revised 1968
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Copyright 1969
Levelled 1965

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1969
Levelled 1965

Groundsure INSIGHTS

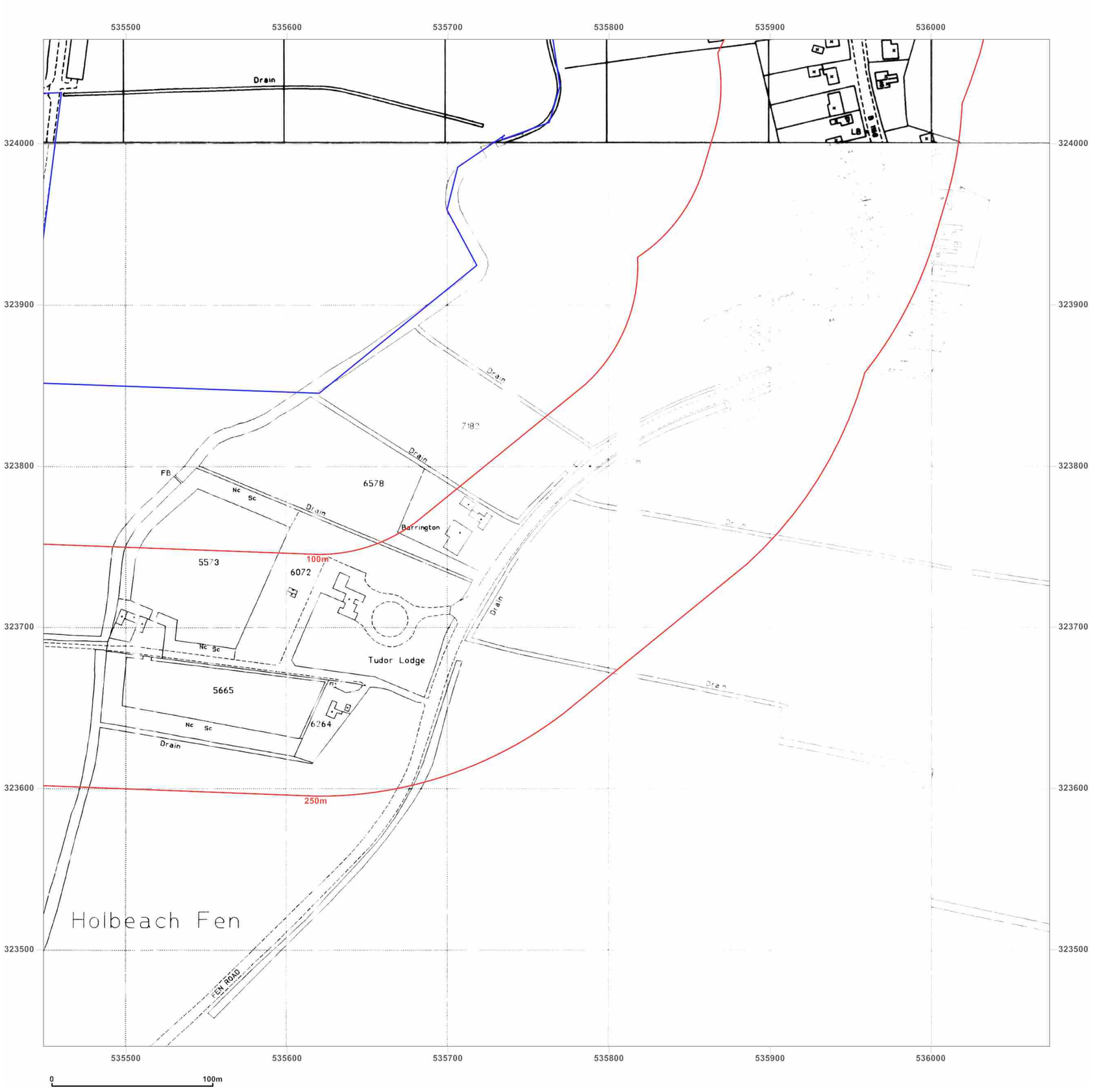
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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING,
PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537_LS_2_1
Grid Ref: 535761, 323752

Map Name: National Grid

Map date: **1991-1995**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1991
Revised 1991
Edition N/A
Copyright 1991
Levelled N/A

Surveyed 1991
Revised 1991
Edition N/A
Copyright 1991
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1995
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1995
Levelled N/A

Groundsure INSIGHTS

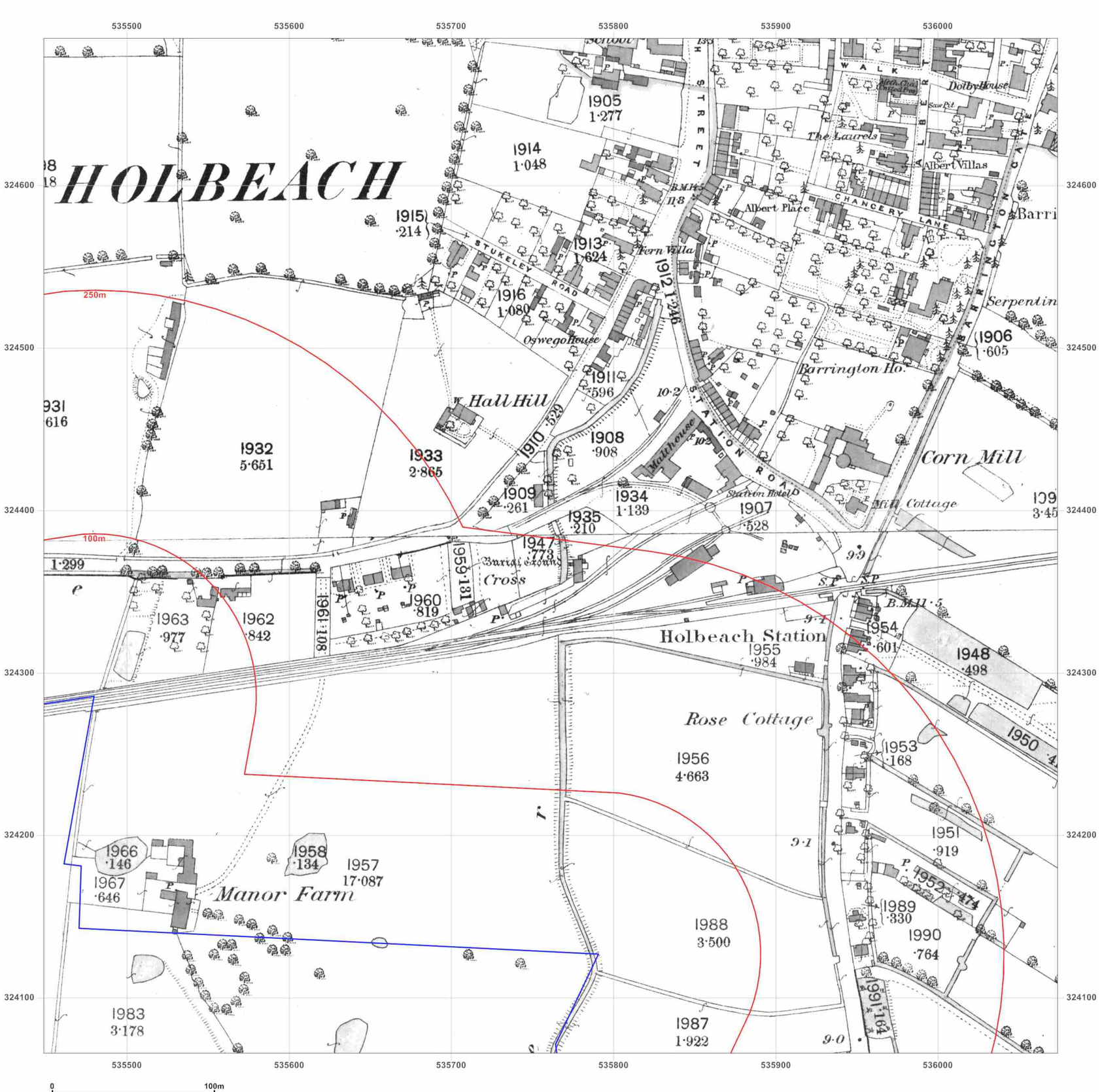
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Production date: 10 October 2016

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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING,
PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537_LS_2_2
Grid Ref: 535761, 324378

Map Name: County Series

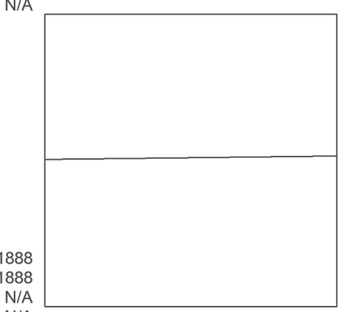
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Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1888
Revised 1888
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1888
Revised 1888
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

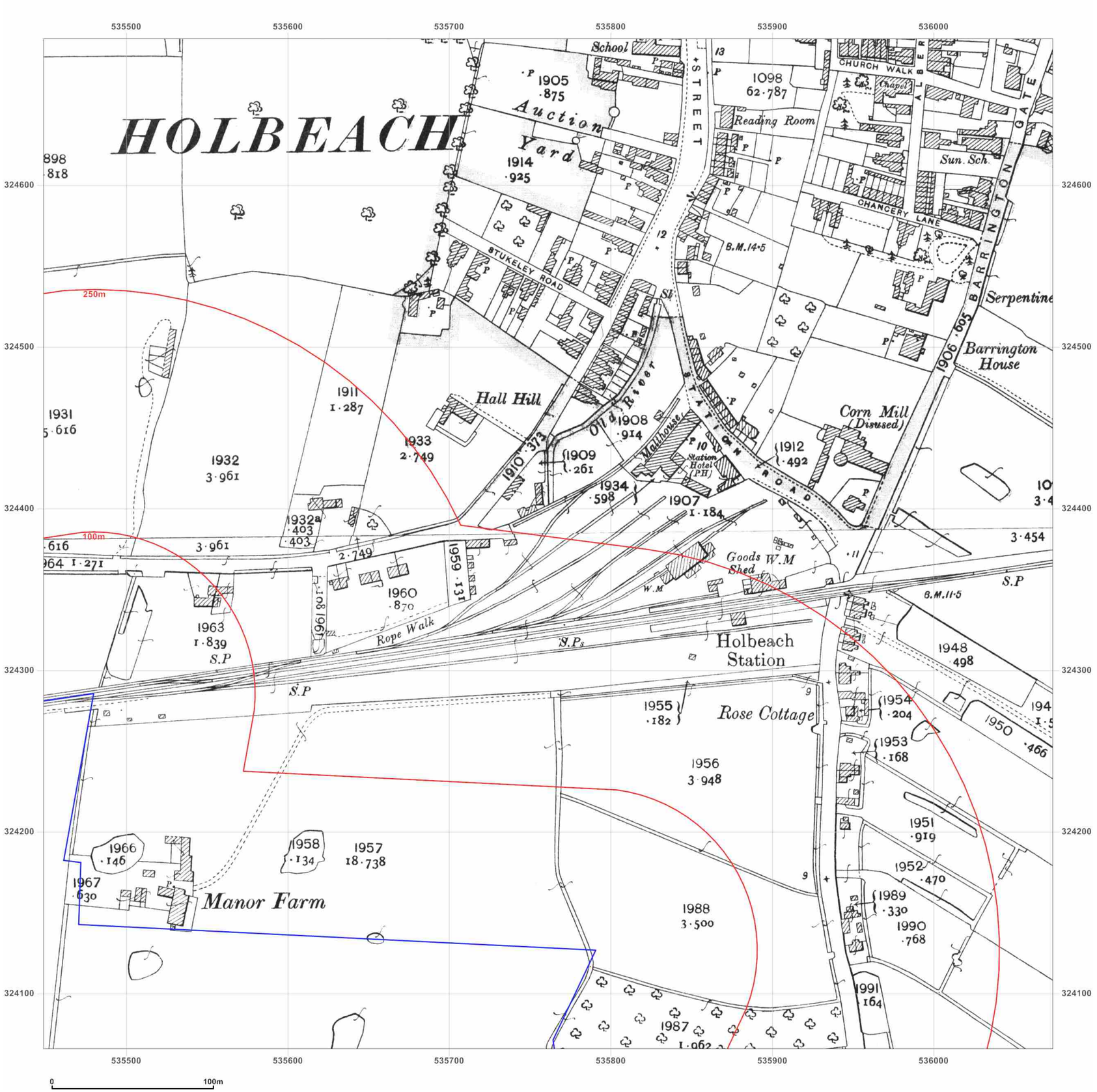
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Production date: 10 October 2016

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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING,
PE12 8QA

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Report Ref: GEO-M-3360537_LS_2_2
Grid Ref: 535761, 324378

Map Name: County Series

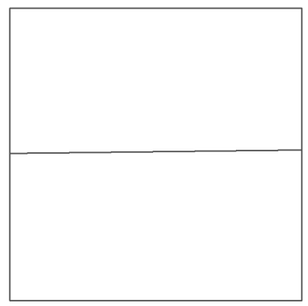
Map date: **1904**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1904
Revised 1904
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1904
Revised 1904
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

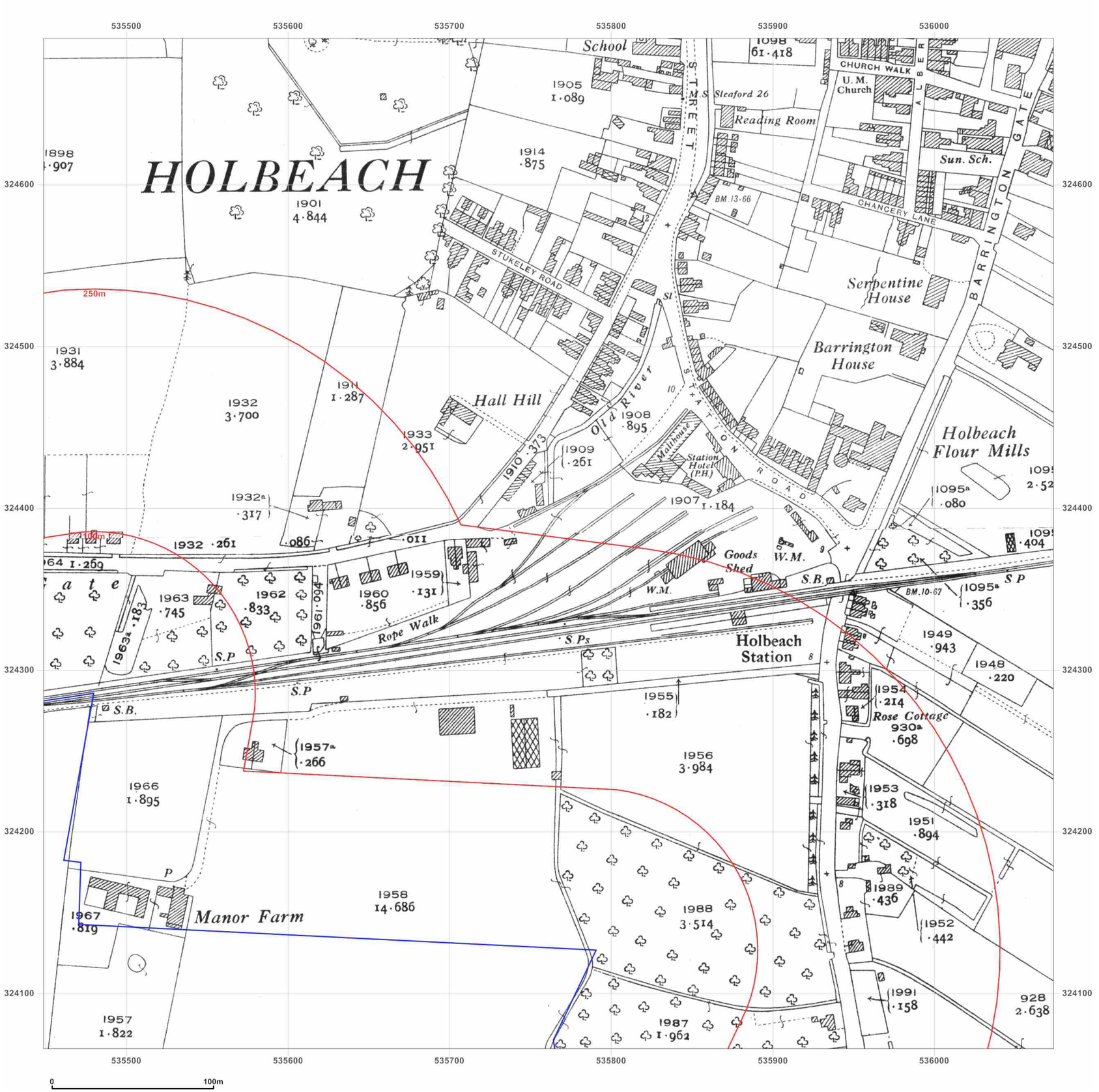
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GEOMATTERS

Site Details:

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PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537_LS_2_2
Grid Ref: 535761, 324378

Map Name: County Series

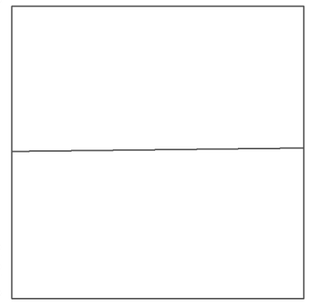
Map date: **1931-1932**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1931
Revised 1931
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1932
Revised 1932
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 10 October 2016

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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING,
PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537_LS_2_2
Grid Ref: 535761, 324378

Map Name: National Grid

Map date: **1968**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1968	Surveyed 1968
Revised 1968	Revised 1968
Edition N/A	Edition N/A
Copyright 1969	Copyright 1969
Levelled 1965	Levelled 1965

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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING,
PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537_LS_2_2
Grid Ref: 535761, 324378

Map Name: National Grid

Map date: **1981-1984**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1981
Revised 1981
Edition N/A
Copyright 1982
Levelled 1965

Surveyed 1964
Revised 1984
Edition N/A
Copyright 1984
Levelled 1964

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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING,
PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537_LS_2_2
Grid Ref: 535761, 324378

Map Name: National Grid

Map date: **1986**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1965	Surveyed 1964
Revised 1986	Revised 1986
Edition N/A	Edition N/A
Copyright 1986	Copyright 1986
Levelled 1965	Levelled 1964

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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING,
PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537_LS_2_2
Grid Ref: 535761, 324378

Map Name: National Grid

Map date: **1991**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1991
Revised 1991
Edition N/A
Copyright 1991
Levelled N/A

Surveyed 1991
Revised 1991
Edition N/A
Copyright 1991
Levelled N/A

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GEOMATTERS

Site Details:

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PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537_LS_2_2
Grid Ref: 535761, 324378

Map Name: National Grid

Map date: **1995**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1995
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1995
Levelled N/A

Groundsure INSIGHTS

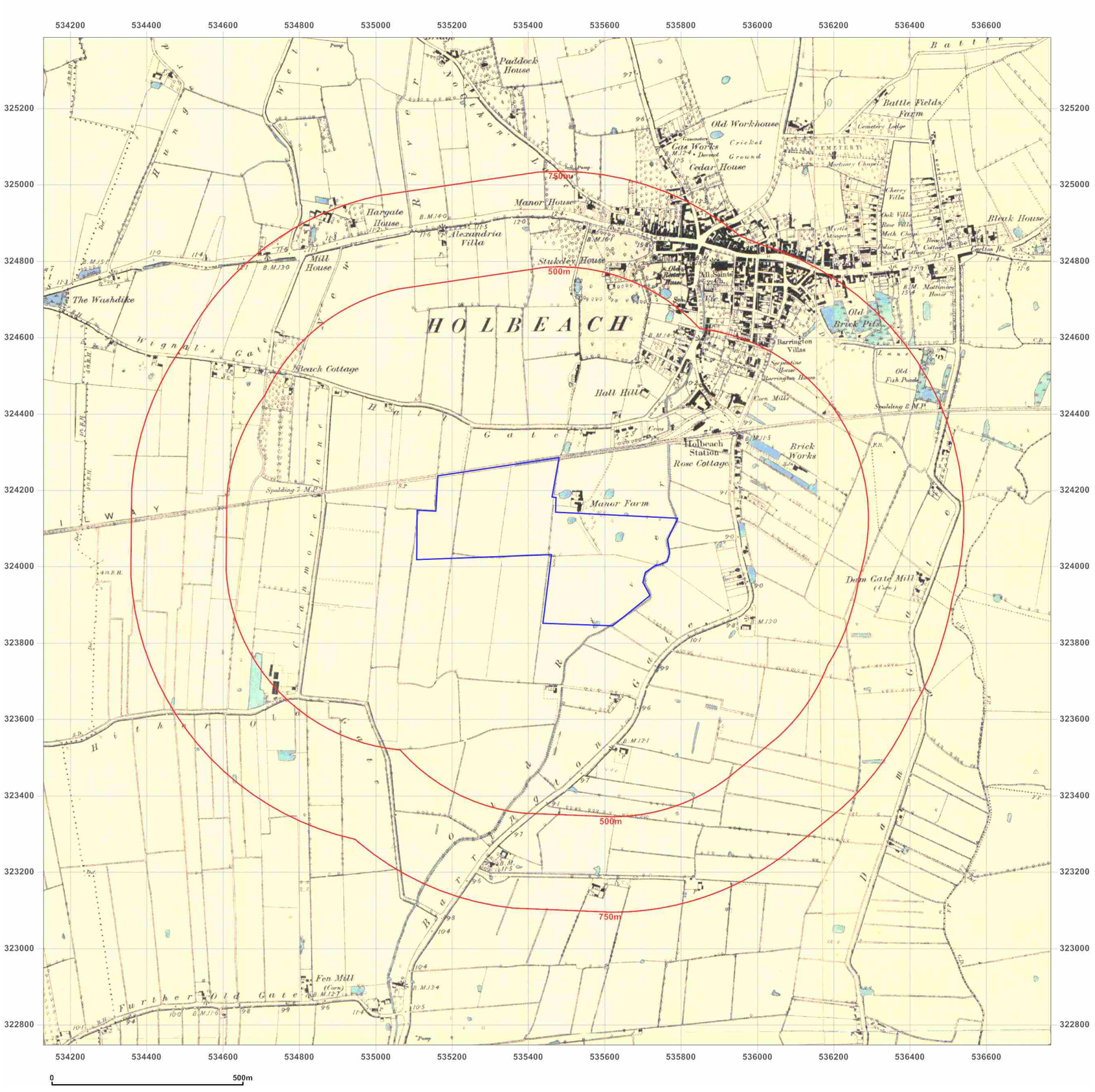
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Production date: 10 October 2016

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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING, PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537
Grid Ref: 535448, 324065

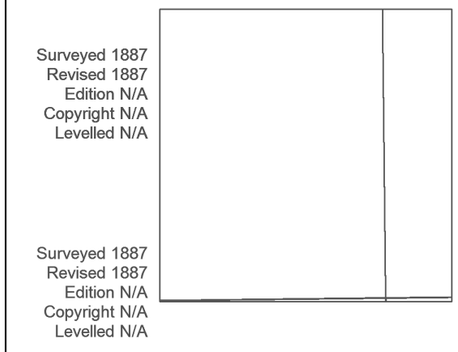
Map Name: County Series

Map date: **1887**

Scale: 1:10,560

Printed at: 1:10,560

N
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Groundsure INSIGHTS

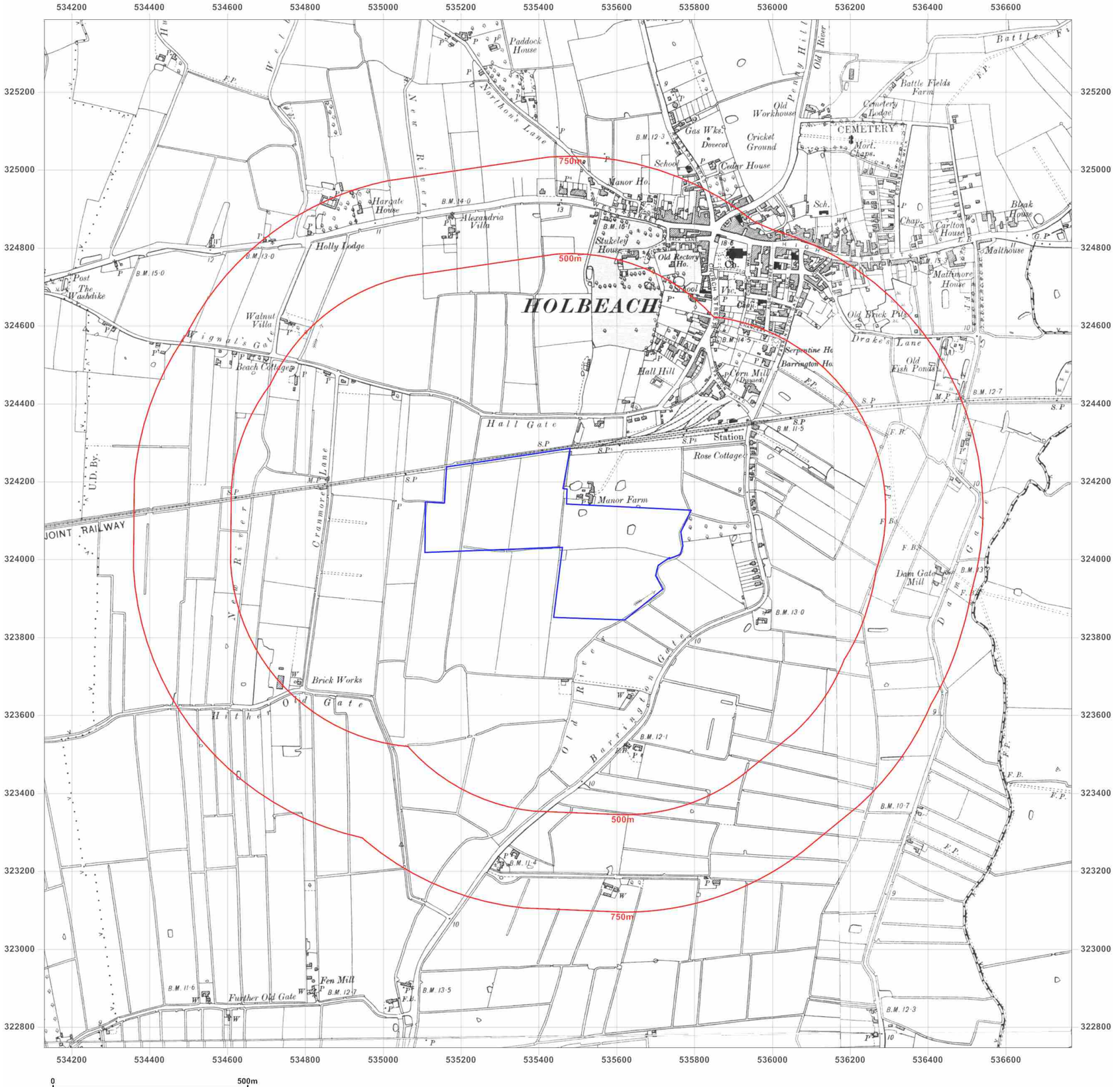
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Production date: 10 October 2016

To view map legend click here *Legend*



GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING, PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537
Grid Ref: 535448, 324065

Map Name: County Series

Map date: **1903**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1886
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1886
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1886
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1886
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

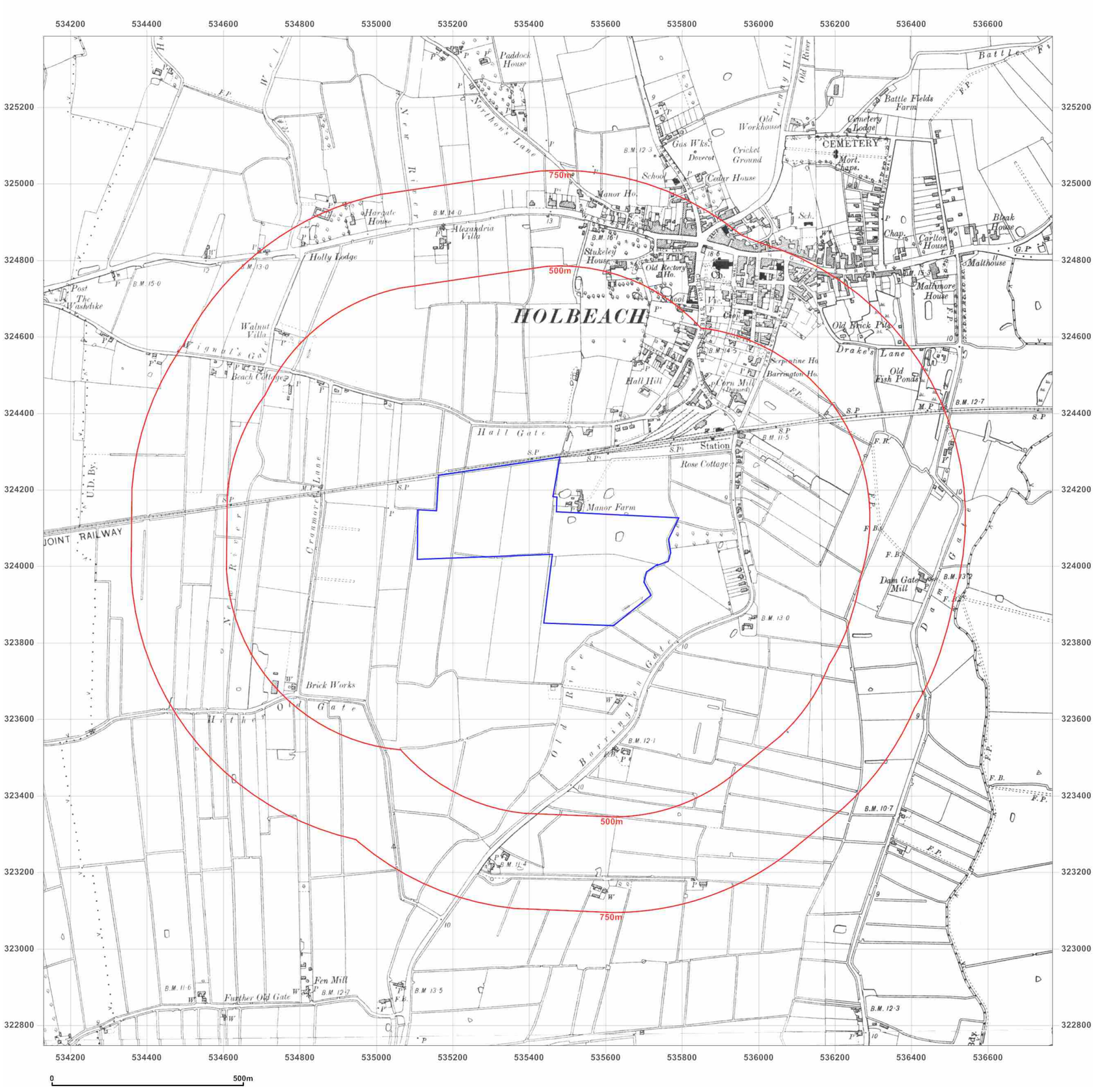
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Production date: 10 October 2016

To view map legend click here *Legend*



GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING, PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537
Grid Ref: 535448, 324065

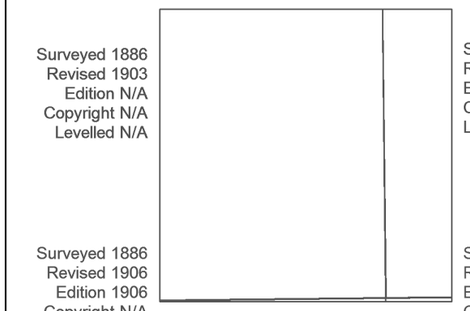
Map Name: County Series

Map date: **1903-1906**

Scale: 1:10,560

Printed at: 1:10,560

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Groundsure INSIGHTS

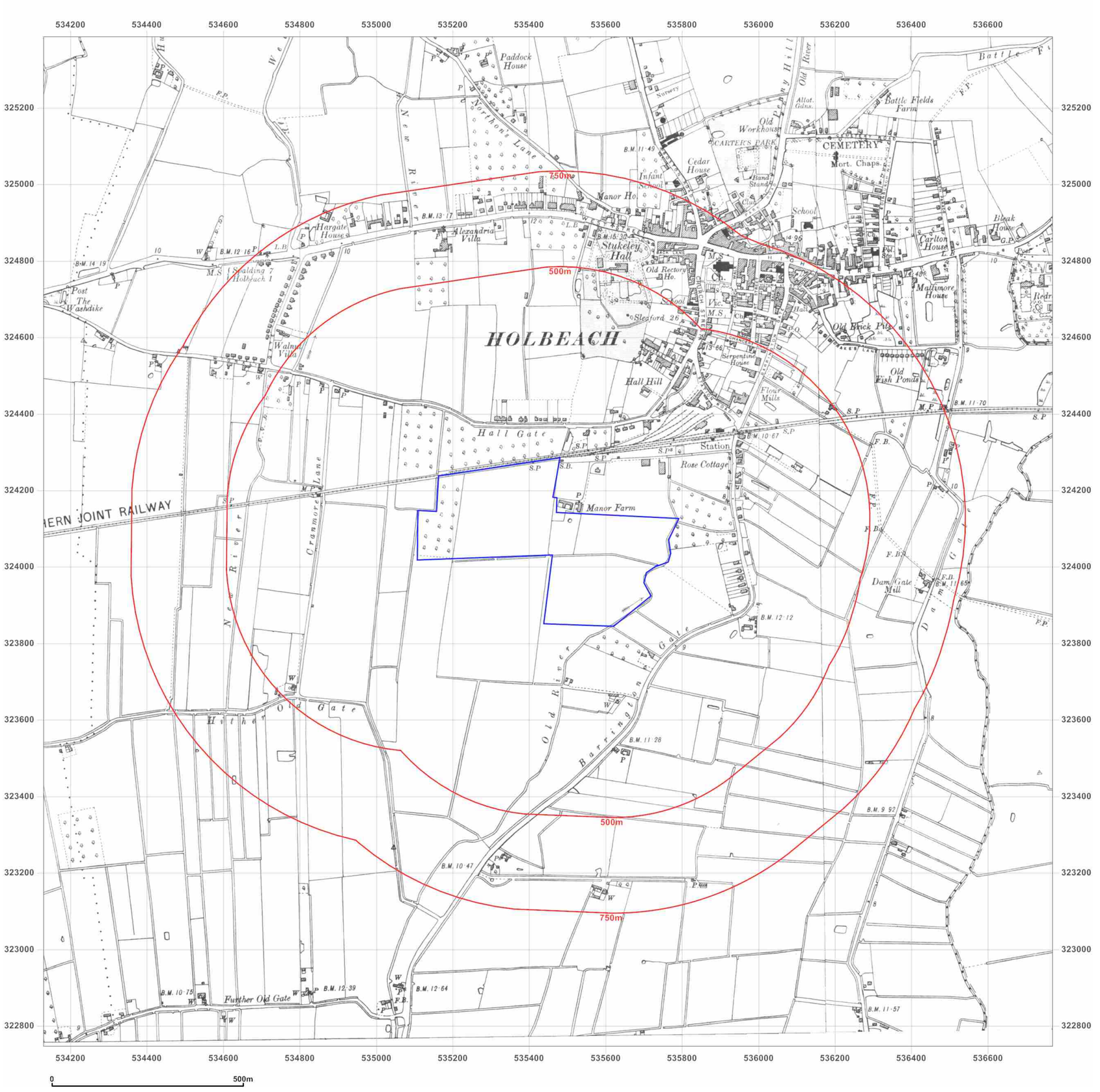
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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING, PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537
Grid Ref: 535448, 324065

Map Name: County Series

Map date: **1929**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1886
Revised 1929
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1886
Revised 1929
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

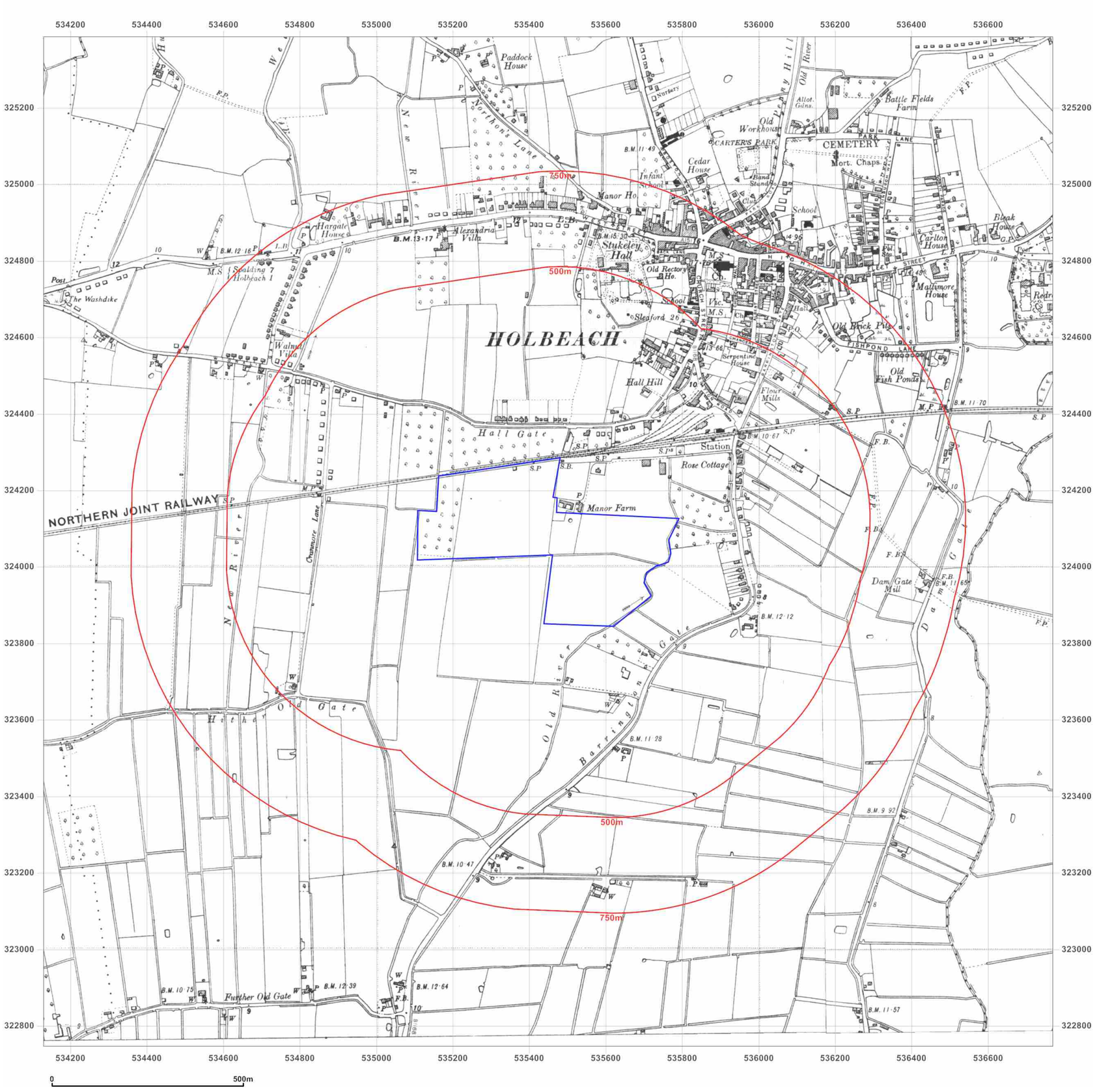
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Production date: 10 October 2016

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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING, PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537
Grid Ref: 535448, 324065

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1886
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

Surveyed 1886
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

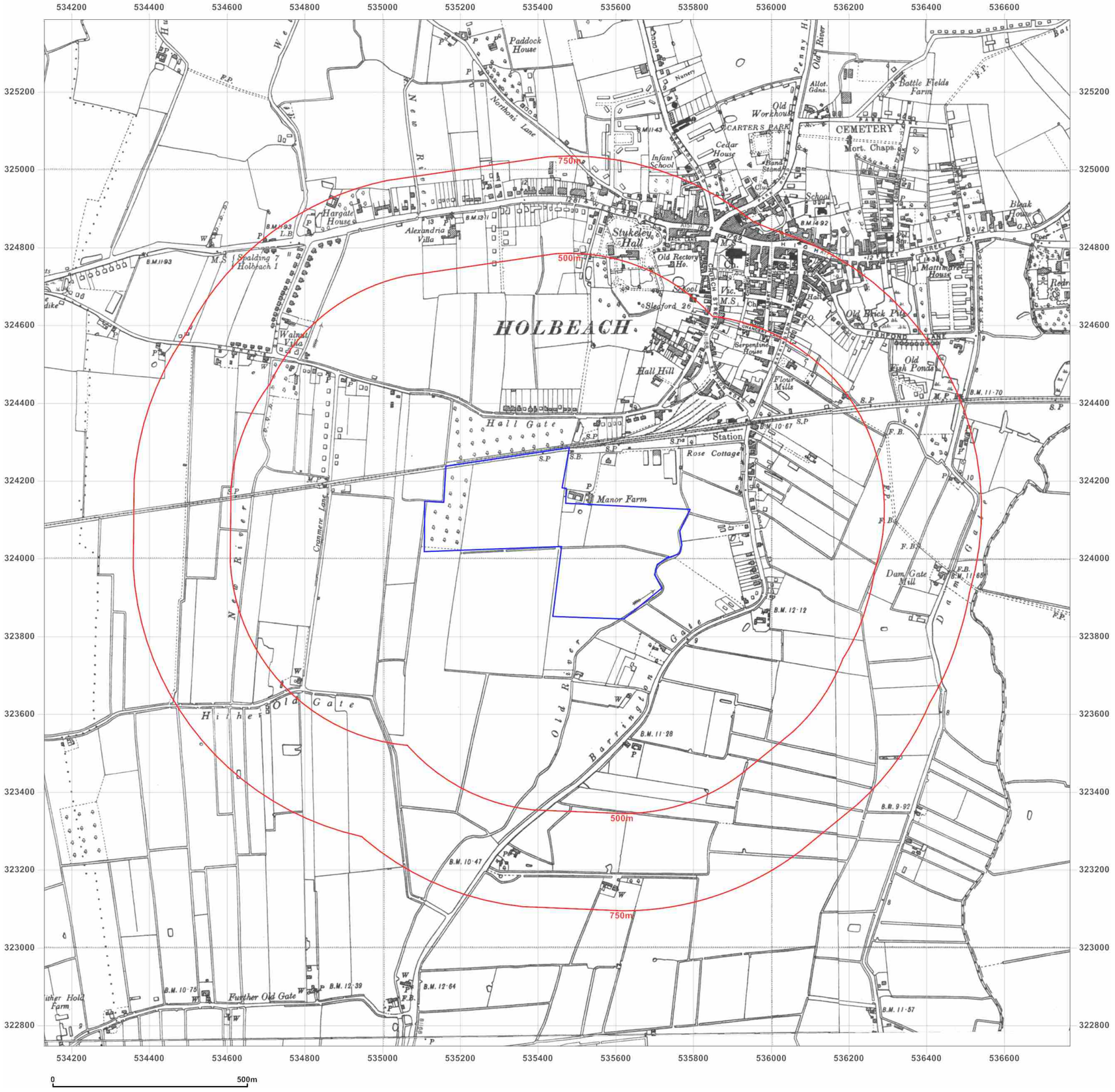
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Production date: 10 October 2016

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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING,
PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537
Grid Ref: 535448, 324065

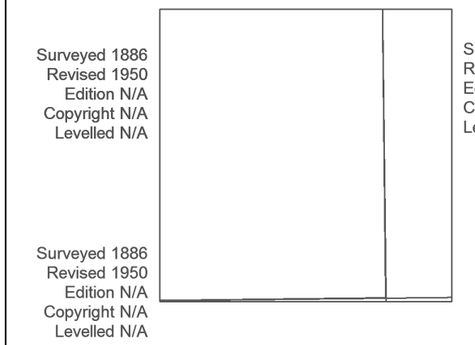
Map Name: County Series

Map date: **1950**

Scale: 1:10,560

Printed at: 1:10,560

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Groundsure INSIGHTS

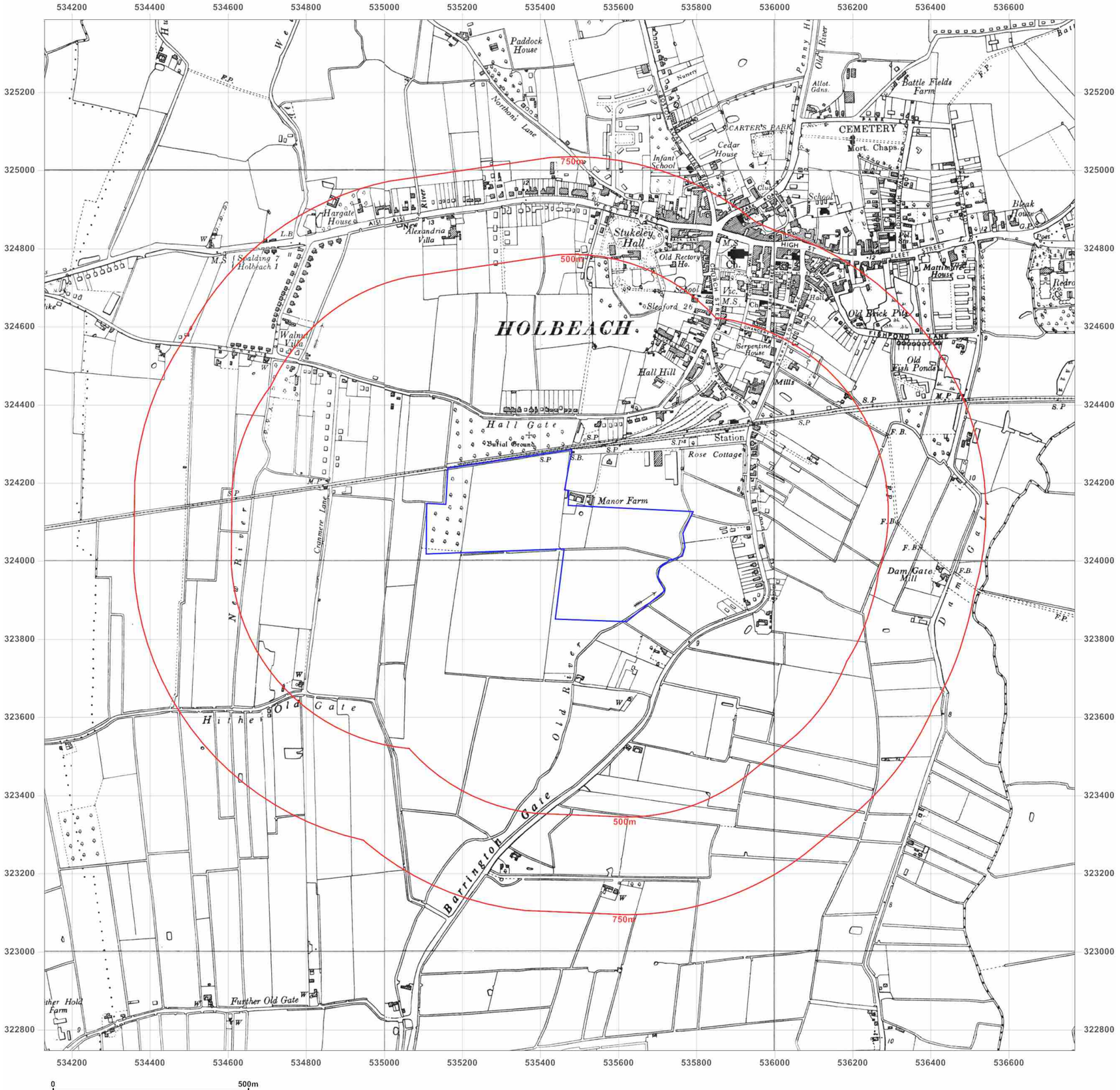
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Production date: 10 October 2016

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Site Details:

13, FEN ROAD, SPALDING, PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537
Grid Ref: 535448, 324065

Map Name: Provisional

Map date: **1955-1958**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed N/A
Revised 1955
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised 1955
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised 1958
Edition N/A
Copyright N/A
Levelled N/A

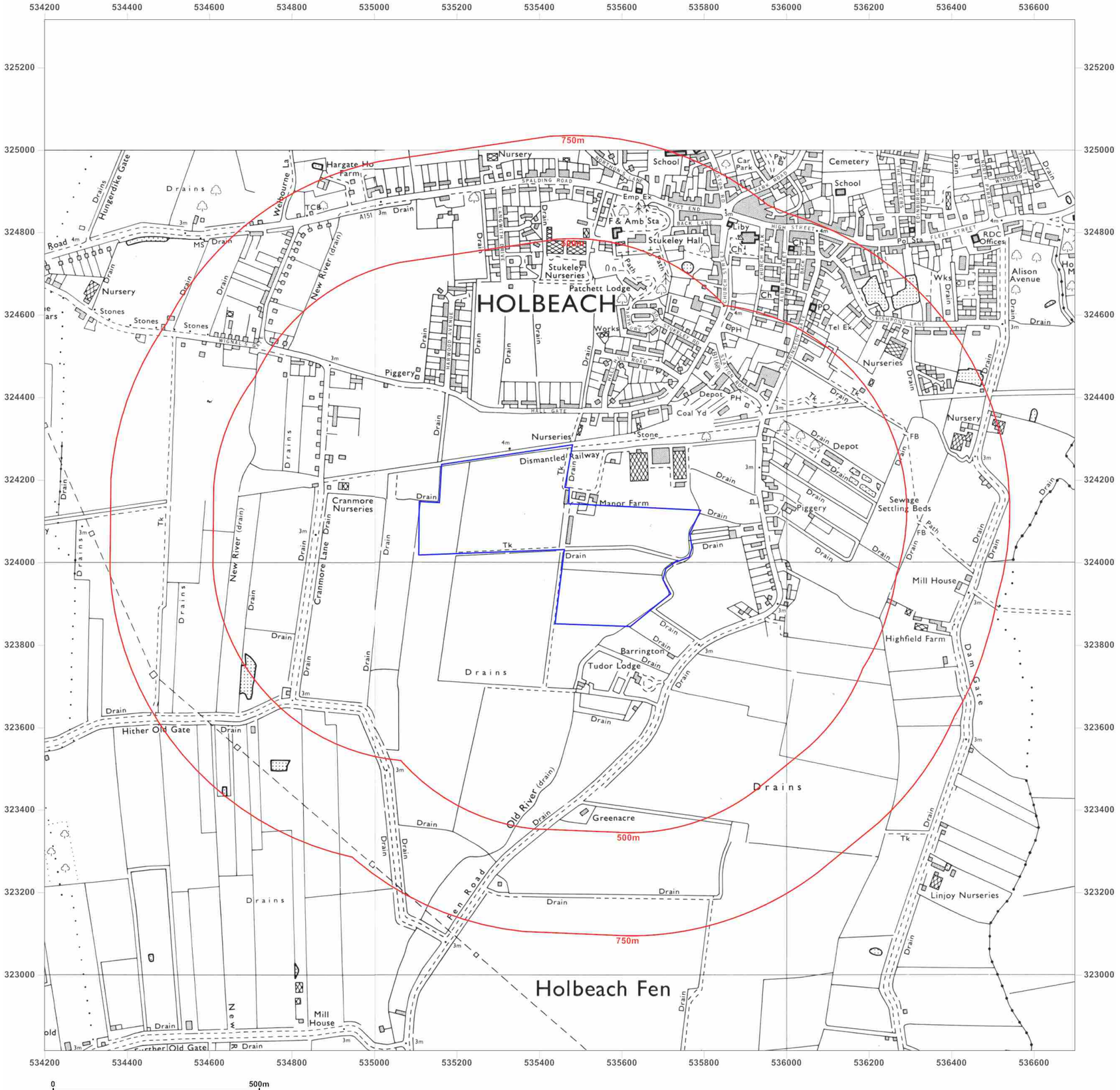
Surveyed N/A
Revised 1958
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 10 October 2016

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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING, PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537
Grid Ref: 535448, 324065

Map Name: National Grid

Map date: **1970-1971**

Scale: 1:10,000

Printed at: 1:10,000

N
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Surveyed 1970
Revised 1971
Edition N/A
Copyright 1971
Levelled N/A

Surveyed 1968
Revised 1970
Edition N/A
Copyright 1970
Levelled N/A

Groundsure INSIGHTS

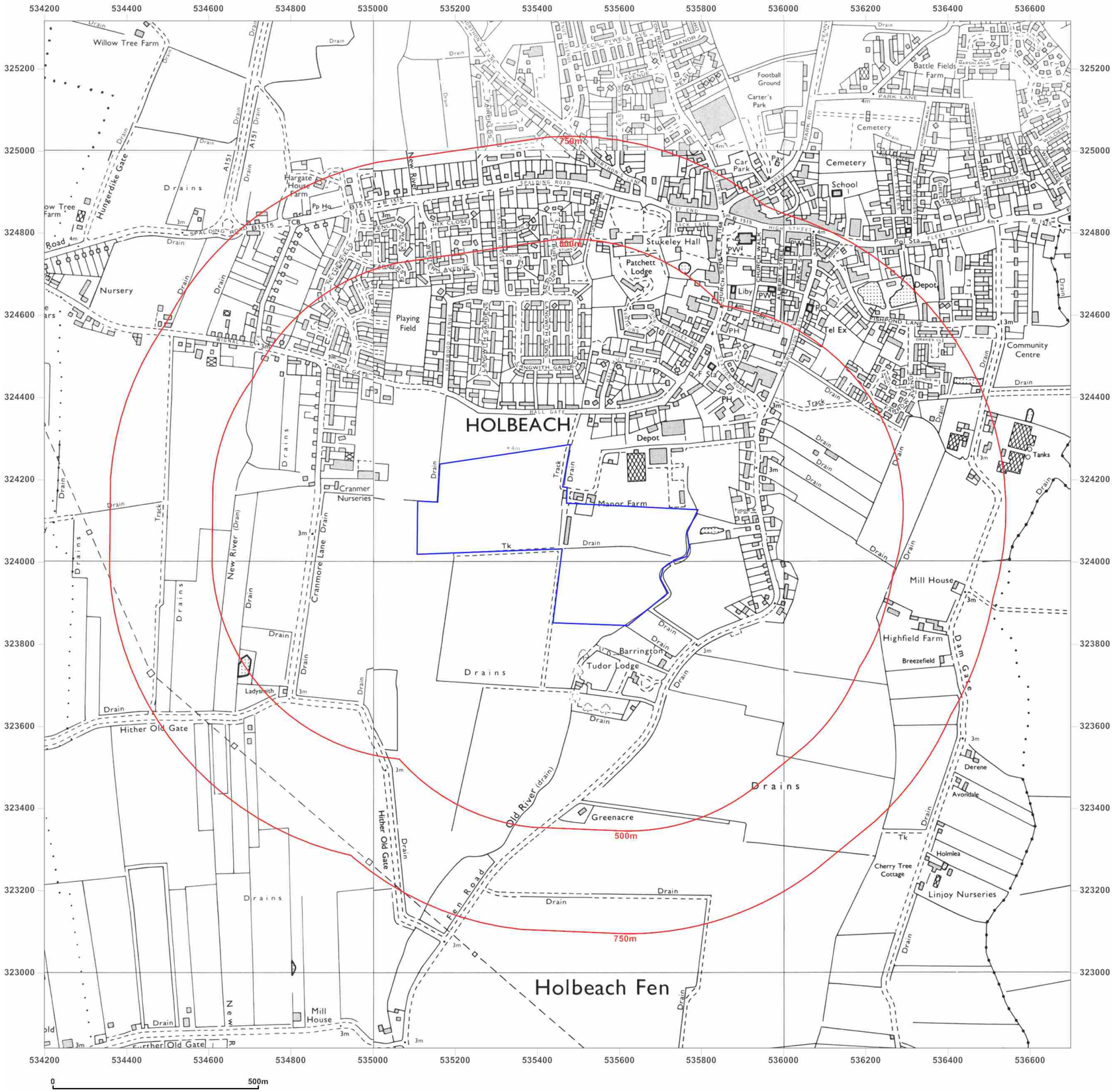
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Production date: 10 October 2016

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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING, PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537
Grid Ref: 535448, 324065

Map Name: National Grid

Map date: **1992**

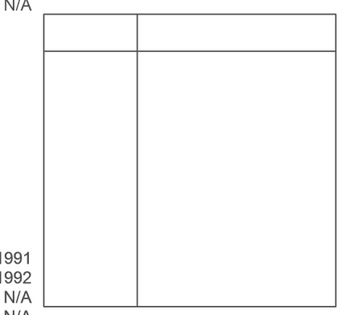
Scale: 1:10,000

Printed at: 1:10,000

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Surveyed 1991
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1991
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1991
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1991
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A

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Site Details:

13, FEN ROAD, SPALDING, PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537
Grid Ref: 535448, 324065

Map Name: 1:10,000 Raster

Map date: **2002**

Scale: 1:10,000

Printed at: 1:10,000

N
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2002

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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING, PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537
Grid Ref: 535448, 324065

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

N
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2010

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GEOMATTERS

Site Details:

13, FEN ROAD, SPALDING, PE12 8QA

Client Ref: GML16197
Report Ref: GEO-M-3360537
Grid Ref: 535448, 324065

Map Name: National Grid

Map date: **2014**

Scale: 1:10,000

Printed at: 1:10,000

N
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2014

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APPENDIX VI

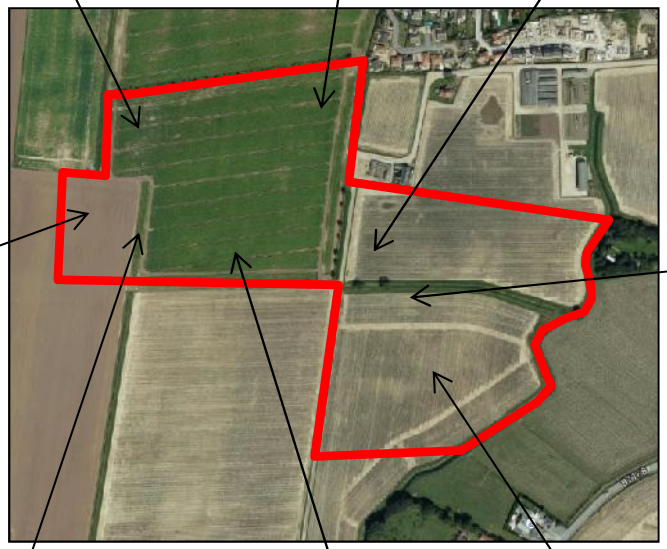
General Photographic Record



















DO NOT SCALE

NOTES:

N

Approx. Site Boundary

GEOMATTERS

www.geo-matters.com
info@geo-matters.com

CLIENT:

ASHWOOD HOMES

PROJECT:

Phase I & II Areas at Holbeach Meadows, Holbeach

TITLE:

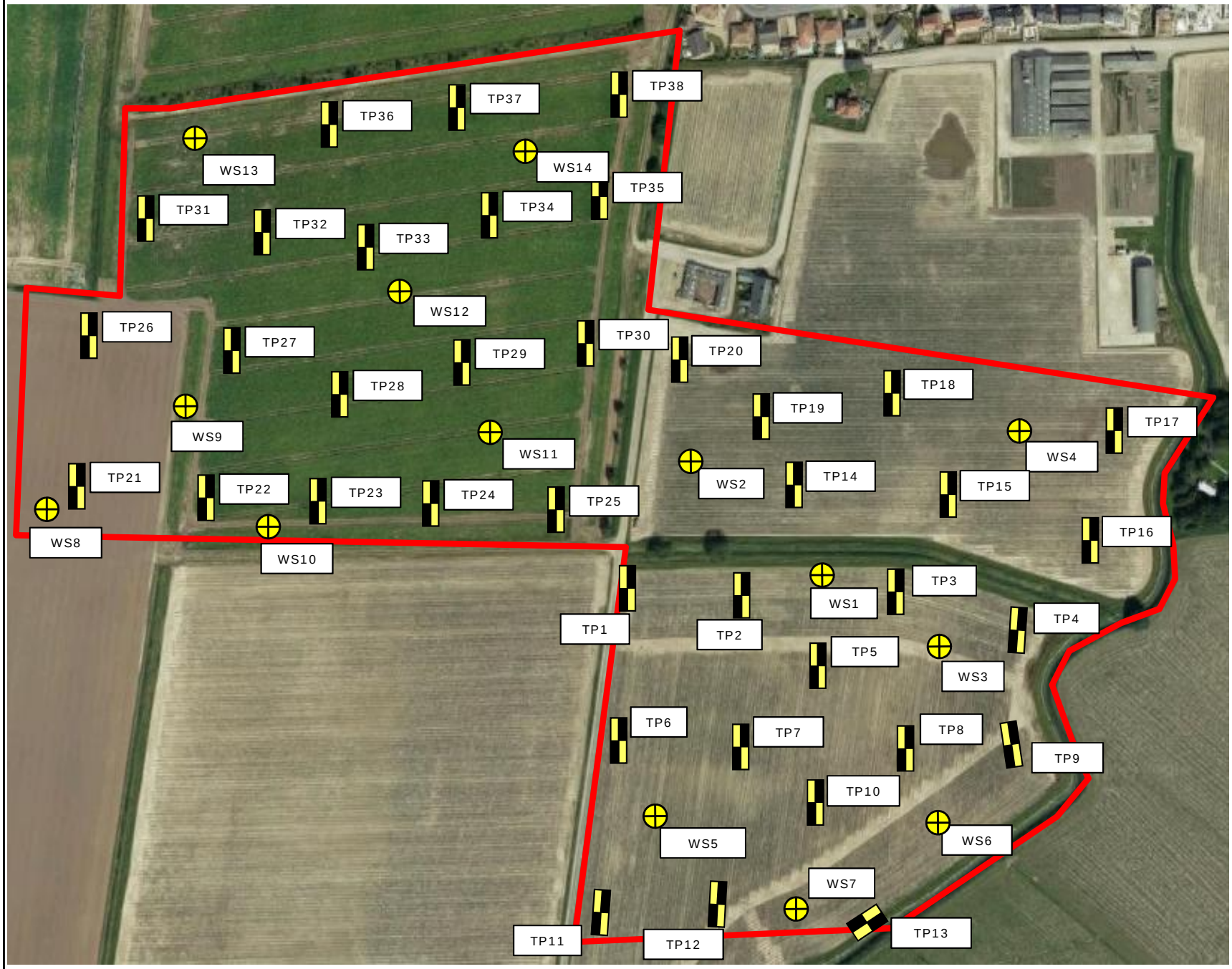
General Photographic Record

SCALE@SIZE :	ISSUE:
NTS	Final
DESIGN/DRAWN :	DATE:
AD	Nov. 2016
PROJECT No:	DRAWING No:
GML16197	004

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APPENDIX VII

Site Investigation Layout Plan



DO NOT SCALE

NOTES:

N

Approx. Site Boundary

Approx. Location of Boreholes

Approx. Location of Trial Pits

GEOMATTERS

www.geo-matters.com
info@geo-matters.com

CLIENT: ASHWOOD HOMES

PROJECT:
Phase I & II Areas at Holbeach Meadows, Holbeach

TITLE:
Exploratory Hole Layout Plan

SCALE@SIZE :	ISSUE:
NTS	Final
DESIGN/DRAWN :	DATE:
AD	Nov. 2016
PROJECT No:	DRAWING No:
GML16197	005

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APPENDIX VIII

Exploratory Hole Logs

GEOMATTERS

Site: Holbeach Meadows, Holbeach

Client: Ashwood Homes

TP01

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 5th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.25	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
			1m	Loose light brown slightly silty fine to coarse SAND.	
				… becoming silty from 1.00m depth.	
				… sidewall collapse from 1.20m depth.	
1.40	B				
			2m 2.10		
				Exploratory location completed at 2.10m depth.	
			3m		
			4m		
			5m		

Sheet 1 of 1	Groundwater:	Date : 05/10/16
Logged by: AD		Logged by: AD

TRIAL PIT RECORD

GEOMATTERS

Remarks:
1)

Strength descriptions of granular soils are based on Engineer's field description(s)

HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS

Site: Holbeach Meadows, Holbeach

Client: Ashwood Homes

TP02

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 5th October 2016

Field Monitoring and Sampling			Strata		Legend
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	
			0.10	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
				Loose brown grey mottled slightly silty fine to coarse SAND.	
				… becoming silty from 0.50m depth.	
			1m		
				… becoming very silty from 1.80m depth.	
			1.90		
2.10	B		2m	Soft grey brown slightly clayey sandy fine to coarse SILT.	
			3m		
			3.80		
				Exploratory location completed at 3.80m depth.	
			4m		
			5m		

Sheet 1 of 1

Logged by: AD

Groundwater:

Date : 05/10/16

Logged by: AD

TRIAL PIT RECORD

GEOMATTERS

Remarks:

1)

Strength descriptions of granular soils are based on Engineer's field description(s)

HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach	TP03
	Client: Ashwood Homes	

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 5th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.20	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
			0.60	Loose brown grey mottled silty fine to coarse SAND.	
			3.80	Soft grey brown slightly clayey sandy fine to coarse SILT.	
				Exploratory location completed at 3.80m depth.	

1m
2m
3m
4m
5m

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 05/10/16 Logged by: AD

TRIAL PIT RECORD

GEOMATTERS

Remarks:
1)

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach	TP04
	Client: Ashwood Homes	

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 5th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.20	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
0.80	B		1.80	Loose light brown slightly silty fine to coarse SAND.	
			3.90	Soft brown grey mottled slightly sandy slightly clayey fine to medium SILT.	
				Exploratory location completed at 3.90m depth.	

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 05/10/16 Logged by: AD

TRIAL PIT RECORD

GEOMATTERS

Remarks:
1)

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach	TP05
	Client: Ashwood Homes	

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 5th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.15	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
1.00	B		1.10	Loose light brown grey silty fine to medium SAND.	
			3.60	Soft brown grey mottled slightly sandy slightly clayey fine to medium SILT. … becoming black grey from2.60m depth.	
				Exploratory location completed at 3.60m depth.	

1m 2m 3m 4m 5m

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 05/10/16 Logged by: AD

TRIAL PIT RECORD

GEOMATTERS

Remarks:
1)

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach	TP06
	Client: Ashwood Homes	

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 5th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.15	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
0.60	B		1.10	Loose light brown grey silty fine to medium SAND.	
			2.80	Soft light brown very sandy fine to medium SILT.	
				Exploratory location completed at 2.80m depth.	

1m
2m
3m
4m
5m

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 05/10/16 Logged by: AD

TRIAL PIT RECORD

GEOMATTERS

Remarks:
1)

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach	TP07
	Client: Ashwood Homes	

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 5th October 2016

Field Monitoring and Sampling			Strata		Legend
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	
			0.20	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
			0.50	Loose light brown grey silty fine to medium SAND.	
0.70	B			Soft light brown very sandy fine to medium SILT.	
				… becoming grey from 2.60m depth.	
			3.70	Exploratory location completed at 3.70m depth.	

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 05/10/16 Logged by: AD

TRIAL PIT RECORD

Remarks:
1)

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS

GEOMATTERS	Site: Holbeach Meadows, Holbeach Client: Ashwood Homes	TP08

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 5th October 2016

Field Monitoring and Sampling			Strata		Legend
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	
			0.15	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
			1m	Loose light brown grey slightly silty fine to medium SAND.	
			1.70		
1.80	B		2m	Soft brown grey mottled slightly sandy slightly clayey fine to medium SILT.	
			3m		
			3.60		
			4m	Exploratory location completed at 3.60m depth.	
			5m		

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 05/10/16 Logged by: AD

TRIAL PIT RECORD

GEOMATTERS

Remarks:
1)

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach	TP09
	Client: Ashwood Homes	

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 5th October 2016

Field Monitoring and Sampling			Strata		Legend
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	
			0.20	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
1.30	B		1.60	Loose light brown grey slightly silty fine to medium SAND.	
			3.50	Soft brown grey mottled sandy fine to medium SILT.	
				Exploratory location completed at 3.50m depth.	

1m
2m
3m
4m
5m

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 05/10/16 Logged by: AD

TRIAL PIT RECORD

GEOMATTERS

Remarks:
1)

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach	TP10
	Client: Ashwood Homes	

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 5th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.15	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
			1.00	Loose light brown grey slightly silty fine to medium SAND.	
			3.90	Soft brown grey mottled sandy fine to medium SILT. … becoming grey from 2.10m depth.	
				Exploratory location completed at 3.90m depth.	

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 05/10/16 Logged by: AD

TRIAL PIT RECORD

Remarks:
1)

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS

GEOMATTERS	Site: Holbeach Meadows, Holbeach	TP11
	Client: Ashwood Homes	

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 5th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.20	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
			0.50	Loose light brown grey slightly silty fine to medium SAND.	
				Soft brown grey mottled sandy fine to medium SILT.	
				… becoming grey from 2.10m depth.	
			2.60	Exploratory location completed at 2.60m depth.	

1m
2m
3m
4m
5m

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 05/10/16 Logged by: AD

TRIAL PIT RECORD

Remarks:
1) Hole terminated due to side wall collapse from 1.60m depth.

GEOMATTERS

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS

Site: Holbeach Meadows, Holbeach

Client: Ashwood Homes

TP12

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 5th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.20	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
			1.10	Loose light brown grey slightly silty fine to medium SAND.	
2.40	B		3.60	Soft brown grey mottled slightly clayey sandy fine to medium SILT.	
				Exploratory location completed at 3.60m depth.	

1m
2m
3m
4m
5m

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 05/10/16 Logged by: AD

TRIAL PIT RECORD

GEOMATTERS

Remarks:
1)

Strength descriptions of granular soils are based on Engineer's field description(s)

HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS

Site: Holbeach Meadows, Holbeach

Client: Ashwood Homes

TP13

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 5th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.15	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
			0.60	Loose light brown grey slightly silty fine to medium SAND.	
1.50	B		3.90	Soft to firm brown grey mottled slightly clayey sandy fine to medium SILT. … becoming grey from 3.30m depth.	
				Exploratory location completed at 3.90m depth.	

1m 2m 3m 4m 5m

Sheet 1 of 1	Groundwater:	Date : 05/10/16
Logged by: AD		Logged by: AD

TRIAL PIT RECORD

Remarks:
1)

GEOMATTERS

Strength descriptions of granular soils are based on Engineer's field description(s)

HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach	TP14
	Client: Ashwood Homes	

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 5th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.25	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
			1.80	Loose light brown silty fine to medium SAND.	
			3.30	Soft to firm brown grey mottled very sandy fine to medium SILT.	
				Exploratory location completed at 3.30m depth.	

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 05/10/16 Logged by: AD

TRIAL PIT RECORD

GEOMATTERS

Remarks:
1)

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach	TP15
	Client: Ashwood Homes	

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 5th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.25	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
			0.60	Loose light brown slightly silty fine to medium SAND.	
0.90	B		3.40	Soft to firm brown grey mottled slightly clayey very sandy fine to medium SILT. … becoming grey and slightly sandy from 2.20m depth.	
				Exploratory location completed at 3.40m depth.	

1m
2m
3m
4m
5m

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 05/10/16 Logged by: AD

TRIAL PIT RECORD

Remarks:
1)

GEOMATTERS

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach	TP16
	Client: Ashwood Homes	

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 5th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.25	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
			1m	Loose light brown slightly silty fine to medium SAND.	
			2m	… becoming silty from 1.00m depth	
			3m	… becoming grey from 2.70m depth.	
			3.50		
			4m	Exploratory location completed at 3.50m depth.	
			5m		

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 05/10/16 Logged by: AD

TRIAL PIT RECORD

Remarks:
1)

GEOMATTERS

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach	TP17
	Client: Ashwood Homes	

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 6th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.20	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
0.70	B		1.80	Loose light brown slightly silty fine to medium SAND. … becoming very silty from 0.60m depth.	
			3.50	Soft to firm brown grey mottled sandy fine to medium SILT. … becoming grey from 3.10m depth.	
				Exploratory location completed at 3.50m depth.	

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 06/10/16 Logged by: AD

TRIAL PIT RECORD

Remarks:
1)

GEOMATTERS

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach	TP18
	Client: Ashwood Homes	

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 6th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.15	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
				Loose light brown silty fine to medium SAND.	
			1m	… becoming very silty from 1.00m depth.	
1.90	JT		2m		
			3m		
			3.20	Exploratory location completed at 3.20m depth.	
			4m		
			5m		

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 06/10/16 Logged by: AD

TRIAL PIT RECORD

GEOMATTERS

Remarks:
1)

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach Client: Ashwood Homes	TP19

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 6th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
0.15	JT		0.30	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
			2.60	Loose light brown silty fine to medium SAND.	
			3.20	Soft to firm brown grey mottled sandy fine to medium SILT.	
				Exploratory location completed at 3.20m depth.	

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 06/10/16 Logged by: AD

TRIAL PIT RECORD

GEOMATTERS

Remarks:
1)

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS

Site: Holbeach Meadows, Holbeach

Client: Ashwood Homes

TP20

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 6th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.20	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
1.50	B		2.20	Loose light brown silty fine to medium SAND.	
			2.70	Soft to firm brown grey mottled sandy fine to medium SILT.	
				Exploratory location completed at 2.70m depth.	

1m 2m 3m 4m 5m

Sheet 1 of 1

Logged by: AD

Groundwater:

Date : 06/10/16

Logged by: AD

TRIAL PIT RECORD

Remarks:

1) Sidewall collapse from 1.70m depth.

GEOMATTERS

Strength descriptions of granular soils are based on Engineer's field description(s)

HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach Client: Ashwood Homes	TP21

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 7th October 2016

Field Monitoring and Sampling			Strata		Legend
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	
			0.15	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
1.10	B		2.30	Very loose to loose light brown grey silty fine to coarse SAND.	
			2.80	Soft to firm grey very sandy fine to medium SILT.	
				Exploratory location completed at 2.80m depth.	

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 07/10/16 Logged by: AD

TRIAL PIT RECORD

Remarks:
1) Sidewall collapse from 1.30m depth.

GEOMATTERS

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach Client: Ashwood Homes	TP22

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 6th October 2016

Field Monitoring and Sampling			Strata		Legend
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	
0.10	JT		0.20	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
1.80	JT		2.40	Loose light brown silty fine SAND.	
			3.20	Soft to firm brown grey mottled very sandy fine to medium SILT.	
				Exploratory location completed at 3.20m depth.	

1m
2m
3m
4m
5m

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 06/10/16 Logged by: AD

TRIAL PIT RECORD

GEOMATTERS

Remarks:
1)

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS

Site: Holbeach Meadows, Holbeach

Client: Ashwood Homes

TP23

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 6th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.20	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
0.90	JT		2.60	Loose light brown grey mottled silty fine to coarse SAND.	
				Exploratory location completed at 2.60m depth.	

1m
2m
3m
4m
5m

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 06/10/16 Logged by: AD

TRIAL PIT RECORD

Remarks:
1) Sidewall collapse from 1.30m depth.

GEOMATTERS

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS

Site: Holbeach Meadows, Holbeach

Client: Ashwood Homes

TP24

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 6th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.25	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
1.40	B		1m	Loose light brown grey mottled silty fine to coarse SAND.	
			2m	… becoming grey and very silty from 2.10m depth.	
			2.30	Exploratory location completed at 2.30m depth.	
			3m		
			4m		
			5m		

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 06/10/16 Logged by: AD

TRIAL PIT RECORD

Remarks:
1) Sidewall collapse from 1.20m depth.

GEOMATTERS

Strength descriptions of granular soils are based on Engineer's field description(s)

HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach Client: Ashwood Homes	TP25

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 7th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.20	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
			2.20	Loose light brown grey mottled silty fine to coarse SAND.	
			3.10	Soft to firm brown grey very sandy fine to medium SILT. … becoming grey from 2.60m depth.	
				Exploratory location completed at 3.10m depth.	

1m
2m
3m
4m
5m

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 07/10/16 Logged by: AD

TRIAL PIT RECORD

GEOMATTERS

Remarks:
1) Sidewall collapse from 1.40m depth.

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach	TP26
	Client: Ashwood Homes	

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 7th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.20	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
				Loose light brown slightly silty fine to coarse SAND.	
2.10	B			… becoming grey from 2.30m depth.	
			2.80	Exploratory location completed at 2.80m depth.	

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 07/10/16 Logged by: AD
TRIAL PIT RECORD	Remarks: 1) Sidewall collapse from 1.10m depth.	
GEOMATTERS	Strength descriptions of granular soils are based on Engineer's field description(s) HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)	

GEOMATTERS	Site: Holbeach Meadows, Holbeach	TP27
	Client: Ashwood Homes	

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 6th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.20	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
0.50	JT			Loose light brown grey mottled silty fine to coarse SAND.	
1.20	B				
2.40	JT		2.50		
				Exploratory location completed at 2.50m depth.	

1m
2m
3m
4m
5m

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 06/10/16 Logged by: AD

TRIAL PIT RECORD

GEOMATTERS

Remarks:
1) Sidewall collapse from 1.00m depth.

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS

Site: Holbeach Meadows, Holbeach

Client: Ashwood Homes

TP28

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 6th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.25	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
0.70	B		2.50	Loose light brown grey silty fine to coarse SAND.	
				Exploratory location completed at 2.50m depth.	

1m
2m
3m
4m
5m

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 06/10/16 Logged by: AD

TRIAL PIT RECORD

Remarks:
1) Sidewall collapse from 1.30m depth.

GEOMATTERS

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach Client: Ashwood Homes	TP29

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 6th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.25	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
			2.40	Very loose to loose light brown grey silty fine to coarse SAND.	
				Exploratory location completed at 2.40m depth.	

1m
2m
3m
4m
5m

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 06/10/16 Logged by: AD

TRIAL PIT RECORD

Remarks:
1) Sidewall collapse from 1.50m depth.

GEOMATTERS

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach	TP30
	Client: Ashwood Homes	

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 6th October 2016

Field Monitoring and Sampling			Strata		Legend
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	
			0.15	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
1.20	JT		1m	Very loose to loose light brown grey silty fine to coarse SAND.	
1.60	B		2m		
			2.20	Soft to firm brown grey mottled very sandy fine to medium SILT.	
			3m	… becoming grey from 2.90m depth.	
			3.50	Exploratory location completed at 3.50m depth.	
			4m		
			5m		

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 06/10/16 Logged by: AD

TRIAL PIT RECORD

GEOMATTERS

Remarks:
1)

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach	TP31
	Client: Ashwood Homes	

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 7th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.20	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
				Very loose to loose light brown grey slightly silty fine to coarse SAND.	
				… becoming silty from 0.40m depth.	
			1m		
				… becoming mottled from 1.60m depth.	
			2m		
2.20	B				
			2.40		
				Exploratory location completed at 2.40m depth.	
			3m		
			4m		
			5m		

Sheet 1 of 1	Groundwater:	Date : 07/10/16
Logged by: AD		Logged by: AD

TRIAL PIT RECORD

Remarks:
1) Sidewall collapse from 2.10m depth

GEOMATTERS

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach	TP32
	Client: Ashwood Homes	

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 7th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.25	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
0.60	B		1m	Very loose to loose light brown grey slightly clayey silty fine to coarse SAND. … clay absent from 1.00m depth.	
			2m 2.10	Exploratory location completed at 2.10m depth.	
			3m		
			4m		
			5m		

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 07/10/16 Logged by: AD

TRIAL PIT RECORD

GEOMATTERS

Remarks:
1) Sidewall collapse from 1.20m depth.

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach	TP33
	Client: Ashwood Homes	

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 7th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.25	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
			1.60	Loose light brown grey slightly clayey silty fine to coarse SAND.	
			2.80	Soft to firm brown grey mottled slightly clayey sandy fine to medium SILT.	
				Exploratory location completed at 2.80m depth.	

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 07/10/16 Logged by: AD

TRIAL PIT RECORD

GEOMATTERS

Remarks:
1) Sidewall collapse from 1.50m depth.

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach	TP34
	Client: Ashwood Homes	

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 7th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.15	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
1.30	B		1m	Loose light brown silty fine to coarse SAND.	
			2m	… becoming grey from 1.80m depth.	
			3m		
			3.40	Exploratory location completed at 3.40m depth.	
			4m		
			5m		

Sheet 1 of 1	Groundwater:	Date : 07/10/16
Logged by: AD		Logged by: AD

TRIAL PIT RECORD

Remarks:
1)

GEOMATTERS

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS

Site: Holbeach Meadows, Holbeach

Client: Ashwood Homes

TP35

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 7th October 2016

Field Monitoring and Sampling				Strata	Legend
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	
			0.25	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
			2.60	Loose light brown silty fine to coarse SAND.	
				Exploratory location completed at 2.60m depth.	

1m
2m
3m
4m
5m

Sheet 1 of 1

Logged by: AD

Groundwater:

Date : 07/10/16

Logged by: AD

TRIAL PIT RECORD

Remarks:

1) Sidewall collapse from 1.40m depth.

GEOMATTERS

Strength descriptions of granular soils are based on Engineer's field description(s)

HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach	TP36
	Client: Ashwood Homes	

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 7th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.15	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
			0.70	Loose light brown silty fine to coarse SAND.	
			0.90	Soft to firm brown grey mottled slightly clayey sandy fine to medium SILT.	
			2.50	Loose light brown grey silty fine to coarse SAND. … becoming grey from 1.70m depth.	
				Exploratory location completed at 2.50m depth.	

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 07/10/16 Logged by: AD

TRIAL PIT RECORD

GEOMATTERS

Remarks:
1) Sidewall collapse from 1.40m depth.

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach	TP37
	Client: Ashwood Homes	

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 7th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.20	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
1.50	B		2.90	Loose light brown grey slightly silty fine to coarse SAND. … becoming grey from 1.80m depth.	
				Exploratory location completed at 2.90m depth.	

1m
2m
3m
4m
5m

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 07/10/16 Logged by: AD

TRIAL PIT RECORD

Remarks:
1) Sidewall collapse from 1.90m depth.

GEOMATTERS

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach Client: Ashwood Homes	TP38

Contractor: N/A	Project No: GML16197	Sheet: 1 of 1
Equipment: JCB 3CX Excavator	Logged by: AD	Date: 7th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (HSV/PP)	depth (m)	Description	Legend
			0.20	Brown slightly sandy slightly silty TOPSOIL with rootlets.	
			2.70	Loose light brown grey slightly silty fine to coarse SAND.	
				Exploratory location completed at 2.70m depth.	

1m
2m
3m
4m
5m

Sheet 1 of 1 Logged by: AD	Groundwater:	Date : 07/10/16 Logged by: AD

TRIAL PIT RECORD

Remarks:
1) Sidewall collapse from 1.20m depth.

GEOMATTERS

Strength descriptions of granular soils are based on Engineer's field description(s)
HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach	WS01
	Client: Ashwood Homes	

Contractor: RP Drilling	Project No: GML16197	Sheet: 1 of 1
Equipment: Window Sampler Rig	Logged by: PD	Date: 5th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (SPT)	depth (m)	Description	Legend / Well
0.10	JT		0.20	Dark brown silty sandy TOPSOIL.	
			0.80	Loose light brown silty fine to medium SAND.	
		SPT 1.00m = 3	1m	Soft brown mottled grey slightly sandy clayey SILT (damp).	
1.50	JT				
		SPT 2.00m = 0	2m	… 2.00m begl becomes very soft.	
2.80	JT				
		SPT 3.00m = 0	3m		
		SPT 4.00m = 3	4.00		
				Borehole completed at 4.00m depth.	
			5m		

Sheet 1 of 1	Groundwater:	Date : 05/10/16
Logged by: PD	Damp strata encountered from 0.80m depth.	Drilled by: RP
		Logged by: PD

BOREHOLE RECORD

GEOMATTERS

Remarks:

1) 3.00m - 4.00m begl very poor recovery.

HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS

Site: Holbeach Meadows, Holbeach

Client: Ashwood Homes

WS02

Contractor: RP Drilling	Project No: GML16197	Sheet: 1 of 2
Equipment: Window Sampler Rig	Logged by: PD	Date: 5th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (SPT)	depth (m)	Description	Legend / Well
			0.15	Dark brown silty sandy TOPSOIL.	
		SPT 1.00m = 7	1m	Loose light brown silty fine to medium SAND.	
1.30	JT		1.60		
		SPT 2.00m = 5	2m	Soft to firm brown mottled grey slightly sandy clayey SILT (damp).	
2.80	JT			… becoming grey from 2.70m depth.	
		SPT 3.00m = 2	3m	… 2.00m begl becoming very soft.	
			3.40		
		SPT 4.00m = 0		Very soft grey slightly sandy SILT (damp).	
4.80	JT				
		SPT 5.00m = 1	5m		
				Continued on sheet 2.	

Sheet 1 of 2

Logged by: PD

Groundwater:

Damp strata encountered from 1.60m depth.

Date : 05/10/16

Drilled by: RP

Logged by: PD

BOREHOLE RECORD

Remarks:

1) 4.00m - 7.00m begl very poor recovery.

GEOMATTERS

HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach	WS02
	Client: Ashwood Homes	

Contractor: RP Drilling	Project No: GML16197	Sheet: 2 of 2
Equipment: Window Sampler Rig	Logged by: PD	Date: 5th October 2016

Field Monitoring and Sampling				Strata	Legend	Well
Depth (m)	Type	Result (SPT)	depth (m)	Description		
				Continued from Sheet 1.		
		SPT 6.00m = 4	6m			
6.60	B					
		SPT 7.00m = 13	7m	… 7.00m begl becoming stiff.		
				Borehole completed at 7.00m depth.		

Sheet 2 of 2	Groundwater:	Date : 05/10/16
Logged by: PD		Drilled by: RP
	Damp strata encountered from 1.60m depth.	Logged by: PD

BOREHOLE RECORD

Remarks:
1) 4.00m - 7.00m begl very poor recovery.

GEOMATTERS

HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach Client: Ashwood Homes	WS03

Contractor: RP Drilling	Project No: GML16197	Sheet: 1 of 2
Equipment: Window Sampler Rig	Logged by: PD	Date: 5th October 2016

Field Monitoring and Sampling			Strata		
				Legend	Well
Depth (m)	Type	Result (SPT)	depth (m)	Description	
0.20	JT		0.30	Dark brown silty sandy TOPSOIL.	
			0.70	Loose light brown silty fine to medium SAND. Rare shell fragments.	
0.70	JT	SPT 1.00m = 3	1m	Soft brown mottled grey slightly sandy clayey SILT. … 1.30m begl becoming very soft and damp.	
		SPT 2.00m = 2	2m		
		SPT 3.00m = 0	3m		
3.50 - 4.90	B		3.50	Very soft dark grey slightly sandy clayey SILT (wet).	
		SPT 4.00m = 0	4m		
4.90	JT	SPT 5.00m = 0	5m		
				Continued on sheet 2.	

Sheet 1 of 2 Logged by: PD	Groundwater: Water strike at 2.90m begl. Water level at 2.10m begl in borehole after 5 mins stand time.	Date : 05/10/16 Drilled by: RP Logged by: PD

BOREHOLE RECORD

Remarks:
1) 5.00m - 7.00m very poor recovery.

GEOMATTERS

HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS

Site: Holbeach Meadows, Holbeach

Client: Ashwood Homes

WS03

Contractor: RP Drilling	Project No: GML16197	Sheet: 2 of 2
Equipment: Window Sampler Rig	Logged by: PD	Date: 5th October 2016

Field Monitoring and Sampling				Strata		
Depth (m)	Type	Result (SPT)	depth (m)	Description	Legend	Well
				Continued from sheet 1.		
		SPT 6.00m = 3	6m			
7.00	T	SPT 7.00m = 23	7.00			
				Borehole completed at 7.00m depth.		

Sheet 2 of 2

Logged by: PD

Groundwater:
Water strike at 2.90m begl.
Water at 2.10m begl in borehole after 5 mins stand time.

Date : 05/10/16
Drilled by: RP
Logged by: PD

BOREHOLE RECORD

Remarks:
1) 5.00m - 7.00m very poor recovery.

GEOMATTERS

HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS

Site: Holbeach Meadows, Holbeach

Client: Ashwood Homes

WS04

Contractor: RP Drilling	Project No: GML16197	Sheet: 1 of 1
Equipment: Window Sampler Rig	Logged by: PD	Date: 5th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (SPT)	depth (m)	Description	Legend / Well
			0.25	Dark brown silty sandy TOPSOIL.	
			0.80	Loose light brown silty fine to medium SAND.	
		SPT 1.00m = 2	1m	Soft brown mottled grey slightly clayey sandy SILT (damp).	
		SPT 2.00m = 3	2m		
				… becoming grey from 2.80m depth	
		SPT 3.00m = 6	3m	… becoming firm from 3.00m depth.	
		SPT 4.00m = 3	4.00	… becoming soft from 4.00m depth.	
				Borehole completed at 4.00m depth.	
			5m		

Sheet 1 of 1

Logged by: PD

Groundwater:

Damp strata encountered from 0.80m depth.

Date : 05/10/16

Drilled by: RP

Logged by: PD

BOREHOLE RECORD

Remarks:

1) 3.00m - 4.00m begl very poor recovery.

GEOMATTERS

HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS

Site: Holbeach Meadows, Holbeach

Client: Ashwood Homes

WS05

Contractor: RP Drilling	Project No: GML16197	Sheet: 1 of 1
Equipment: Window Sampler Rig	Logged by: PD	Date: 5th October 2016

Field Monitoring and Sampling				Strata	Legend	Well
Depth (m)	Type	Result (SPT)	depth (m)	Description		
0.20	JT			Dark brown silty sandy TOPSOIL.		
			0.30			
				Loose light brown silty fine to medium SAND. Rare shell fragments.		
			0.60			
0.70	JT			Soft brown mottled grey slightly sandy clayey SILT.		
		SPT 1.00m = 2		… 1.00m begl becoming wet.		
		SPT 2.00m = 0	2m	… 2.00m begl becoming very soft.		
2.60	JT					
		SPT 3.00m = 1	3m			
		SPT 4.00m = 5	4.00	… 4.00m begl becoming soft to firm.		
				Borehole completed at 4.00m depth.		
			5m			

Sheet 1 of 1

Logged by: PD

Groundwater:
Water strike encountered at 1.00m begl.

Date : 05/10/16
Drilled by: RP
Logged by: PD

BOREHOLE RECORD

Remarks:
1) 1.00m - 4.00m very poor recovery.

GEOMATTERS

HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS

Site: Holbeach Meadows, Holbeach

Client: Ashwood Homes

WS06

Contractor: RP Drilling	Project No: GML16197	Sheet: 1 of 1
Equipment: Window Sampler Rig	Logged by: PD	Date: 5th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (SPT)	depth (m)	Description	Legend / Well
			0.10	Dark brown silty sandy TOPSOIL.	
		SPT 1.00m = 6	1m	Firm brown mottled grey slightly sandy clayey SILT.	
1.30	JT				
				. . . 1.70m begl becoming very soft.	
			1.90		
		SPT 2.00m = 0	2m	Very soft dark grey sandy SILT (damp).	
2.60	JT				
		SPT 3.00m = 0	3m		
		SPT 4.00m = 4	4.00	… 4.00m begl becoming soft to firm.	
				Borehole completed at 4.00m depth.	
			5m		

Sheet 1 of 1

Logged by: PD

Groundwater:
Damp strata encountered from 1.90m begl.

Date : 05/10/16
Drilled by: RP
Logged by: PD

BOREHOLE RECORD

Remarks:
1) 2.00m - 4.00m poor recovery.

GEOMATTERS

HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS

Site: Holbeach Meadows, Holbeach

Client: Ashwood Homes

WS07

Contractor: RP Drilling	Project No: GML16197	Sheet: 1 of 2
Equipment: Window Sampler Rig	Logged by: PD	Date: 5th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (SPT)	depth (m)	Description	Legend / Well
0.10	JT		0.20	Dark brown silty sandy TOPSOIL.	
				Loose light brown silty fine to medium SAND. Rare shell fragments.	
			0.80		
		SPT 1.00m = 4	1m	Soft to firm brown mottled grey slightly sandy clayey SILT. … 1.00m begl becomes soft and damp.	
1.60	JT				
		SPT 2.00m = 0		… 2.00m begl becoming very soft and wet.	
		SPT 3.00m = 0	3.00		
				Very soft dark grey sandy SILT (wet).	
3.70	JT				
		SPT 4.00m = 5	4m	… 4.00m begl becoming soft to firm.	
		SPT 5.00m = 4	5m		
				Continued on sheet 2.	

Sheet 1 of 2

Logged by: PD

Groundwater:
Water strike encountered at 2.00m begl.

Date : 05/10/16
Drilled by: RP
Logged by: PD

BOREHOLE RECORD

Remarks:
1)

GEOMATTERS

HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach	WS07
	Client: Ashwood Homes	

Contractor: RP Drilling	Project No: GML16197	Sheet: 2 of 2
Equipment: Window Sampler Rig	Logged by: PD	Date: 5th October 2016

Field Monitoring and Sampling				Strata	Legend	Well
Depth (m)	Type	Result (SPT)	depth (m)	Description		
				Continued from sheet 1.		
6.00 - 7.00	B	SPT 6.00m = 4	6m			
		SPT 7.00m = 8	7.00	. . . 7.00m begl becoming firm.		
				Borehole completed at 7.00m depth.		

Sheet 2 of 2 Logged by: PD	Groundwater: Water strike encountered at 2.00m begl.	Date : 05/10/16 Drilled by: RP Logged by: PD

BOREHOLE RECORD

Remarks:
1)

GEOMATTERS

HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS

Site: Holbeach Meadows, Holbeach

Client: Ashwood Homes

WS08

Contractor: RP Drilling	Project No: GML16197	Sheet: 1 of 1
Equipment: Window Sampler Rig	Logged by: PD	Date: 7th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (SPT)	depth (m)	Description	Legend / Well
0.20	JT		0.30	Dark brown silty sandy clayey TOPSOIL.	
		SPT 1.00m = 9	1m	Loose light brown silty fine to medium SAND.	
1.70	JT			… 1.80m begl becoming wet.	
		SPT 2.00m = 5	2m		
			2.20	Medium dense dark grey silty fine to medium SAND (wet). Occasional shell fragments.	
2.50	JT			. . . 2.70m begl becoming light brown.	
		SPT 3.00m = 14	3m		
		SPT 4.00m = 31	4m		
				Borehole completed 4.00m depth.	
			5m		

Sheet 1 of 1

Logged by: PD

Groundwater:
Water strike at 1.80m begl.

Date : 07/10/16
Drilled by: RP
Logged by: PD

BOREHOLE RECORD

Remarks:
1) 3.00m - 4.00m poor recovery.
2) Cased to 4.00m begl.

GEOMATTERS

HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach	WS09
	Client: Ashwood Homes	

Contractor: RP Drilling	Project No: GML16197	Sheet: 1 of 1
Equipment: Window Sampler Rig	Logged by: PD	Date: 7th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (SPT)	depth (m)	Description	Legend / Well
			0.20	Dark brown silty sandy clayey TOPSOIL.	
0.40	JT			Loose light brown silty fine to medium SAND.	
			0.90		
		SPT 1.00m = 8	1m	Loose dark brown mottled orangish brown silty fine to medium SAND.	
1.30	JT				
		SPT 2.00m = 8		… 2.00m begl becoming wet.	
			2.50		
				Loose dark grey silty fine to medium SAND (wet).	
3.00 - 4.00	B	SPT 3.00m = 4	3m		
		SPT 4.00m = 12	4.00		
				Borehole completed at 4.00m depth.	
			5m		

Sheet 1 of 1	Groundwater:	Date : 07/10/16
Logged by: PD	Water strike at 2.00m begl.	Drilled by: RP
		Logged by: PD

BOREHOLE RECORD

GEOMATTERS

Remarks:
1)

HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS

Site: Holbeach Meadows, Holbeach

Client: Ashwood Homes

WS10

Contractor: RP Drilling	Project No: GML16197	Sheet: 1 of 1
Equipment: Window Sampler Rig	Logged by: PD	Date: 7th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (SPT)	depth (m)	Description	Legend / Well
			0.30	Dark brown clayey silty sandy TOPSOIL.	
0.50	JT		0.90	Medium dense light brown clayey silty fine to medium SAND.	
		SPT 1.00m = 10	1m	Loose light brown mottled orange brown silty fine to medium SAND.	
1.50	JT				
		SPT 2.00m = 6	2m	… 1.90m begl becoming wet.	
			2.70		
2.80	JT			Loose dark grey silty fine to medium SAND (wet).	
		SPT 3.00m = 2	3m		
				… 3.80m begl becoming light grey.	
		SPT 4.00m = 31	4m	… 4.00m begl beoming medium dense to dense.	
				Borehole completed at 4.00m depth	
			5m		

Sheet 1 of 1

Logged by: PD

Groundwater:
Water strike at 1.90m depth.

Date : 07/10/16
Drilled by: RP
Logged by: PD

BOREHOLE RECORD

Remarks:
1)

GEOMATTERS

HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS

Site: Holbeach Meadows, Holbeach

Client: Ashwood Homes

WS11

Contractor: RP Drilling	Project No: GML16197	Sheet: 1 of 1
Equipment: Window Sampler Rig	Logged by: PD	Date: 7th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (SPT)	depth (m)	Description	Legend / Well
0.20	JT		0.30	Dark brown clayey silty sandy TOPSOIL.	
0.90	JT	SPT 1.00m = 7	1m	Loose light brown mottled orangish brown silty fine to medium SAND.	
				… 1.50m begl becoming wet.	
		SPT 2.00m = 8	2m		
			2.30	Loose dark grey silty fine to medium SAND (wet).	
		SPT 3.00m = 24	3m	… 3.00m begl becoming medium dense.	
		SPT 4.00m = 14	4.00	Borehole completed at 4.00m begl.	
			5m		

Sheet 1 of 1

Logged by: PD

Groundwater:
Water strike at 1.50m begl.

Date : 07/10/16
Drilled by: RP
Logged by: PD

BOREHOLE RECORD

Remarks:
1)

GEOMATTERS

HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS	Site: Holbeach Meadows, Holbeach	WS12
	Client: Ashwood Homes	

Contractor: RP Drilling	Project No: GML16197	Sheet: 1 of 1
Equipment: Window Sampler Rig	Logged by: PD	Date: 7th October 2016

Field Monitoring and Sampling				Strata	Legend	Well
Depth (m)	Type	Result (SPT)	depth (m)	Description		
				Dark brown clayey silty sandy TOPSOIL.		
			0.30			
				Loose light brown mottled orangish brown silty fine to medium SAND.		
			0.90			
1.10	JT	SPT 1.00m = 8	1m	Loose dark brown mottled orangish brown silty fine to medium SAND (damp).		
				… 1.50m begl becoming wet.		
		SPT 2.00m = 13	2m	… 2.00m begl becoming medium dense.		
2.20	JT					
			2.80			
		SPT 3.00m = 11	3m	Medium dense dark grey silty fine to medium SAND (wet). Rare shell fragments.		
		SPT 4.00m = 34	4.00			
				Borehole completed at 4.00m depth.		
			5m			

Sheet 1 of 1	Groundwater:	Date : 07/10/16
Logged by: PD	Water strike at 1.50m begl.	Drilled by: RP
		Logged by: PD

BOREHOLE RECORD

Remarks:
1) Cased to 2.00m begl.

GEOMATTERS

HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS

Site: Holbeach Meadows, Holbeach

Client: Ashwood Homes

WS13

Contractor: RP Drilling	Project No: GML16197	Sheet: 1 of 1
Equipment: Window Sampler Rig	Logged by: PD	Date: 7th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (SPT)	depth (m)	Description	Legend / Well
0.10	JT		0.20	MADE GROUND (Comprising dark brown silty sandy clay).	
				MADE GROUND (Comprising light brown slightly gravelly silty sand. Gravel is fine to medium brick and tile fragments.	
0.80	JT				
		SPT 1.00m = 6	1.00	Loose dark brown clayey silty fine to medium SAND.	
				… 1.80m begl becoming wet.	
		SPT 2.00m = 7	2m		
			2.60		
				Loose dark grey silty fine to medium SAND (wet).	
		SPT 3.00m = 2	3m		
			3.60		
3.70	JT			Loose light grey silty fine to medium SAND.	
		SPT 4.00m = 19	4.00	… 4.00m begl becoming medium dense.	
				Borehole completed at 4.00m depth.	
			5m		

Sheet 1 of 1

Logged by: PD

Groundwater:
Water strike at 1.80m begl.
Water level at 1.60m begl in borehole after 5 mins stand time.

Date : 07/10/16
Drilled by: RP
Logged by: PD

BOREHOLE RECORD

Remarks:
1) Cased to 1.00m begl.

GEOMATTERS

HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

GEOMATTERS

Site: Holbeach Meadows, Holbeach

Client: Ashwood Homes

WS14

Contractor: RP Drilling	Project No: GML16197	Sheet: 1 of 1
Equipment: Window Sampler Rig	Logged by: PD	Date: 7th October 2016

Field Monitoring and Sampling			Strata		
Depth (m)	Type	Result (SPT)	depth (m)	Description	Legend / Well
0.10	JT		0.30	Dark brown sandy silty TOPSOIL.	
		SPT 1.00m = 10	1m	Loose light brown silty fine to medium SAND. … 0.90m begl becoming dark brown.	
			1.60 ▼		
1.80	JT	SPT 2.00m = 9	2m	Loose dark brown mottled orangish brown silty fine to medium SAND (wet).	
			2.50		
2.90	JT	SPT 3.00m = 1	3m	Loose dark grey silty fine to medium SAND (wet).	
		SPT 4.00m = 19	4.00		
				Borehole completed at 4.00m depth.	
			5m		

Sheet 1 of 1

Logged by: PD

Groundwater:
Water strike at 1.60m begl.

Date : 07/10/16
Drilled by: RP
Logged by: PD

BOREHOLE RECORD

Remarks:
1) Cased to 1.00m begl.

GEOMATTERS

HSV = Hand Shear Vane (kPa), PP = Pocket Penetrometer (daN/cm^2)

APPENDIX IX

Laboratory Testing Data

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Analytical Report Number : 16-29842

Project / Site name:	Holbeach Meadows, Holbeach	**Samples received on:**	11/10/2016
Your job number:	GML16197	**Samples instructed on:**	11/10/2016
Your order number:	GML16197-AD-007	**Analysis completed by:**	18/10/2016
Report Issue Number:	1	**Report issued on:**	18/10/2016
Samples Analysed:	31 soil samples		

Signed: CCStone

Dr Claire Stone
Quality Manager
For & on behalf of i2 Analytical Ltd.

Signed:

Emma Winter
Assistant Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-29842

Project / Site name: Holbeach Meadows, Holbeach
Your Order No: GML16197-AD-007

Lab Sample Number				641999	642000	642001	642002	642003
Sample Reference				WS01	WS01	WS02	WS02	WS02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	1.50	1.30	2.80	4.80
Date Sampled				05/10/2016	05/10/2016	05/10/2016	05/10/2016	05/10/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	17	24	21	21	36
Total mass of sample received	kg	0.001	NONE	1.5	1.4	1.2	1.3	1.1
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	-	-	-
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.4	8.9	9.1	9.2	9.3
Total Sulphate as SO_4	mg/kg	50	MCERTS	440	260	210	760	770
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.049	0.037	0.039	0.20	0.24
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.2	0.5	0.4	0.3	2.3
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	< 1.60	< 1.60	< 1.60
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	4.1	4.0	< 1.0	20
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	16	13	12	9.3	35
Copper (aqua regia extractable)	mg/kg	1	MCERTS	24	12	10	9.4	19
Lead (aqua regia extractable)	mg/kg	1	MCERTS	15	8.1	6.6	5.3	16
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	0.4	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	13	15	12	8.6	32
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	1.5	4.7	1.5	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	39	34	31	23	75
Petroleum Hydrocarbons								
Petroleum Range Organics (C6 - C10)	mg/kg	0.1	NONE	-	-	< 0.1	-	-
TPH (C10 - C25)	mg/kg	10	MCERTS	-	-	< 10	-	-
TPH (C25 - C40)	mg/kg	10	NONE	-	-	< 10	-	-
Pesticide and Herbicide Screen								
Pesticides/Herbicides Screen in Soil	P/A	N/A	NONE	Absent	-	-	-	-

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-29842

Project / Site name: Holbeach Meadows, Holbeach
Your Order No: GML16197-AD-007

Lab Sample Number				642004	642005	642006	642007	642008
Sample Reference				WS03	WS03	WS04	WS05	WS05
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				4.90	7.00	0.20	0.20	0.70
Date Sampled				05/10/2016	05/10/2016	05/10/2016	05/10/2016	05/10/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	30	26	17	16	20
Total mass of sample received	kg	0.001	NONE	0.91	0.60	1.1	1.3	1.2
Asbestos in Soil	Type	N/A	ISO 17025	-	-	-	-	-
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	9.4	9.3	-	8.4	-
Total Sulphate as SO_4	mg/kg	50	MCERTS	740	740	-	350	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.17	0.26	-	0.022	-
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.5	1.2	-	1.1	-
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	-
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	-
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	-
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	-
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	-
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	-
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	-
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	-
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	-
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	-	< 1.60	-
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14	7.5	-	13	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	-
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	-	< 4.0	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	39	27	-	13	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	21	15	-	21	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	18	12	-	14	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.4	-	< 0.3	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	31	22	-	12	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	2.3	-	< 1.0	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	73	48	-	43	-
Petroleum Hydrocarbons								
Petroleum Range Organics (C6 - C10)	mg/kg	0.1	NONE	-	-	-	-	-
TPH (C10 - C25)	mg/kg	10	MCERTS	-	-	-	-	-
TPH (C25 - C40)	mg/kg	10	NONE	-	-	-	-	-
Pesticide and Herbicide Screen								
Pesticides/Herbicides Screen in Soil	P/A	N/A	NONE	-	-	Absent	-	Absent

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-29842

Project / Site name: Holbeach Meadows, Holbeach
Your Order No: GML16197-AD-007

Lab Sample Number				642009	642010	642011	642012	642013
Sample Reference				WS05	WS07	WS07	WS07	WS08
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.60	0.10	1.60	3.70	0.20
Date Sampled				05/10/2016	05/10/2016	05/10/2016	05/10/2016	07/10/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	31	16	20	33	16
Total mass of sample received	kg	0.001	NONE	1.2	1.3	1.5	1.2	1.4
Asbestos in Soil	Type	N/A	ISO 17025	-	Not-detected	-	-	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.8	8.3	8.8	9.2	7.4
Total Sulphate as SO_4	mg/kg	50	MCERTS	1100	410	480	970	210
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.41	0.018	0.054	0.36	0.012
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.0	1.2	0.6	1.6	1.1
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	< 1.60	< 1.60	< 1.60
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	23	< 1.0	10	11	21
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	36	17	22	38	20
Copper (aqua regia extractable)	mg/kg	1	MCERTS	20	26	14	24	23
Lead (aqua regia extractable)	mg/kg	1	MCERTS	15	14	12	18	38
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	0.6	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	30	14	25	33	17
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	70	40	51	87	53
Petroleum Hydrocarbons								
Petroleum Range Organics (C6 - C10)	mg/kg	0.1	NONE	-	-	-	-	-
TPH (C10 - C25)	mg/kg	10	MCERTS	-	-	-	-	-
TPH (C25 - C40)	mg/kg	10	NONE	-	-	-	-	-
Pesticide and Herbicide Screen								
Pesticides/Herbicides Screen in Soil	P/A	N/A	NONE	-	-	-	-	-

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-29842

Project / Site name: Holbeach Meadows, Holbeach
Your Order No: GML16197-AD-007

Lab Sample Number				642014	642015	642016	642017	642018
Sample Reference				WS08	WS09	WS09	WS10	WS10
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.50	0.40	1.30	0.50	1.50
Date Sampled				07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	21	11	22	14	21
Total mass of sample received	kg	0.001	NONE	1.6	1.2	1.5	1.2	1.2
Asbestos in Soil	Type	N/A	ISO 17025	-	-	-	Not-detected	-
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.9	-	9.0	8.6	9.0
Total Sulphate as SO_4	mg/kg	50	MCERTS	710	-	220	210	240
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.26	-	0.056	0.021	0.028
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.3	-	0.5	0.6	0.4
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	-	< 1.60	< 1.60	< 1.60
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	6.6	-	6.4	16	6.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	-	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	8.0	-	11	18	13
Copper (aqua regia extractable)	mg/kg	1	MCERTS	9.6	-	10	17	12
Lead (aqua regia extractable)	mg/kg	1	MCERTS	4.5	-	6.8	12	6.2
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	8.0	-	11	17	15
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	17	-	29	40	30
Petroleum Hydrocarbons								
Petroleum Range Organics (C6 - C10)	mg/kg	0.1	NONE	-	-	-	-	-
TPH (C10 - C25)	mg/kg	10	MCERTS	-	-	-	-	-
TPH (C25 - C40)	mg/kg	10	NONE	-	-	-	-	-
Pesticide and Herbicide Screen								
Pesticides/Herbicides Screen in Soil	P/A	N/A	NONE	-	Absent	-	-	-

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Analytical Report Number: 16-29842

Project / Site name: Holbeach Meadows, Holbeach
Your Order No: GML16197-AD-007

Lab Sample Number				642019	642020	642021	642022	642023
Sample Reference				WS11	WS11	WS12	WS12	WS13
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.90	1.10	2.20	0.10
Date Sampled				07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	13	20	19	23	13
Total mass of sample received	kg	0.001	NONE	1.3	1.3	1.4	1.4	1.1
Asbestos in Soil	Type	N/A	ISO 17025	-	-	-	-	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	-	8.9	-	8.7	8.2
Total Sulphate as SO_4	mg/kg	50	MCERTS	-	300	-	270	260
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	0.038	-	0.039	0.031
Total Organic Carbon (TOC)	%	0.1	MCERTS	-	0.2	-	0.5	1.3
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	-	< 1.0	-	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	-	< 0.10	-	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	-	< 0.10	-	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	-	< 0.10	-	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	-	< 0.10	-	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	-	< 0.10	-	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	-	< 0.10	-	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	-	< 0.10	-	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	< 0.10	-	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	< 0.10	-	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	< 0.10	-	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	< 0.10	-	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	< 0.10	-	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	< 0.10	-	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	< 0.05	-	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	-	< 1.60	-	< 1.60	< 1.60
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	6.2	-	10	11
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	< 0.2	-	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	-	< 4.0	-	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	17	-	19	21
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	17	-	18	29
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	6.4	-	10	38
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	0.6	-	< 0.3	0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	13	-	17	17
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	2.9	-	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	34	-	41	58
Petroleum Hydrocarbons								
Petroleum Range Organics (C6 - C10)	mg/kg	0.1	NONE	< 0.1	-	< 0.1	-	< 0.1
TPH (C10 - C25)	mg/kg	10	MCERTS	< 10	-	< 10	-	< 10
TPH (C25 - C40)	mg/kg	10	NONE	< 10	-	< 10	-	< 10
Pesticide and Herbicide Screen								
Pesticides/Herbicides Screen in Soil	P/A	N/A	NONE	-	Absent	-	-	-

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Analytical Report Number: 16-29842

Project / Site name: Holbeach Meadows, Holbeach
Your Order No: GML16197-AD-007

Lab Sample Number				642024	642025	642026	642027	642028
Sample Reference				WS13	WS14	WS14	WS14	TP27
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.80	0.10	1.80	2.90	0.50
Date Sampled				07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	11	15	21	22	19
Total mass of sample received	kg	0.001	NONE	1.1	1.2	1.5	1.3	1.3
Asbestos in Soil	Type	N/A	ISO 17025	-	-	-	-	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.9	-	9.2	9.2	8.9
Total Sulphate as SO_4	mg/kg	50	MCERTS	330	-	190	520	200
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.023	-	0.022	0.095	0.028
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.0	-	0.1	0.3	0.2
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	-	< 1.60	< 1.60	< 1.60
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	3.7	-	5.8	3.0	1.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	-	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	18	-	11	7.7	18
Copper (aqua regia extractable)	mg/kg	1	MCERTS	14	-	6.6	10	11
Lead (aqua regia extractable)	mg/kg	1	MCERTS	25	-	4.8	4.5	7.0
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	16	-	7.3	8.2	14
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	1.8	< 1.0	2.1
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	42	-	19	25	31
Petroleum Hydrocarbons								
Petroleum Range Organics (C6 - C10)	mg/kg	0.1	NONE	< 0.1	-	-	-	-
TPH (C10 - C25)	mg/kg	10	MCERTS	< 10	-	-	-	-
TPH (C25 - C40)	mg/kg	10	NONE	< 10	-	-	-	-
Pesticide and Herbicide Screen								
Pesticides/Herbicides Screen in Soil	P/A	N/A	NONE	-	Absent	-	-	-

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Analytical Report Number: 16-29842

Project / Site name: Holbeach Meadows, Holbeach
Your Order No: GML16197-AD-007

Lab Sample Number				642029				
Sample Reference				TP30				
Sample Number				None Supplied				
Depth (m)				1.20				
Date Sampled				06/10/2016				
Time Taken				None Supplied				
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1				
Moisture Content	%	N/A	NONE	20				
Total mass of sample received	kg	0.001	NONE	1.2				
Asbestos in Soil	Type	N/A	ISO 17025	-				
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	-				
Total Sulphate as SO_4	mg/kg	50	MCERTS	-				
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-				
Total Organic Carbon (TOC)	%	0.1	MCERTS	-				
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	-				
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	-				
Acenaphthylene	mg/kg	0.1	MCERTS	-				
Acenaphthene	mg/kg	0.1	MCERTS	-				
Fluorene	mg/kg	0.1	MCERTS	-				
Phenanthrene	mg/kg	0.1	MCERTS	-				
Anthracene	mg/kg	0.1	MCERTS	-				
Fluoranthene	mg/kg	0.1	MCERTS	-				
Pyrene	mg/kg	0.1	MCERTS	-				
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-				
Chrysene	mg/kg	0.05	MCERTS	-				
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-				
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-				
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-				
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-				
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-				
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-				
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	-				
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-				
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-				
Chromium (hexavalent)	mg/kg	4	MCERTS	-				
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-				
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-				
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-				
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-				
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-				
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-				
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-				
Petroleum Hydrocarbons								
Petroleum Range Organics (C6 - C10)	mg/kg	0.1	NONE	< 0.1				
TPH (C10 - C25)	mg/kg	10	MCERTS	< 10				
TPH (C25 - C40)	mg/kg	10	NONE	< 10				
Pesticide and Herbicide Screen								
Pesticides/Herbicides Screen in Soil	P/A	N/A	NONE	-				

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Analytical Report Number : 16-29842

Project / Site name: Holbeach Meadows, Holbeach

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
641999	WS01	None Supplied	0.10	Brown clay and loam.
642000	WS01	None Supplied	1.50	Brown clay.
642001	WS02	None Supplied	1.30	Brown sandy clay.
642002	WS02	None Supplied	2.80	Brown sandy clay.
642003	WS02	None Supplied	4.80	Brown clay.
642004	WS03	None Supplied	4.90	Brown clay.
642005	WS03	None Supplied	7.00	Brown clay with fibres.
642006	WS04	None Supplied	0.20	Brown clay.
642007	WS05	None Supplied	0.20	Brown sandy clay.
642008	WS05	None Supplied	0.70	Brown clay.
642009	WS05	None Supplied	2.60	Brown clay.
642010	WS07	None Supplied	0.10	Brown clay.
642011	WS07	None Supplied	1.60	Brown clay.
642012	WS07	None Supplied	3.70	Brown clay.
642013	WS08	None Supplied	0.20	Brown clay and loam with vegetation.
642014	WS08	None Supplied	2.50	Brown sandy clay.
642015	WS09	None Supplied	0.40	Light brown sandy clay with gravel and vegetation.
642016	WS09	None Supplied	1.30	Brown sandy clay.
642017	WS10	None Supplied	0.50	Brown sandy clay.
642018	WS10	None Supplied	1.50	Brown sandy clay.
642019	WS11	None Supplied	0.20	Brown clay and loam.
642020	WS11	None Supplied	0.90	Brown sandy clay.
642021	WS12	None Supplied	1.10	Brown sandy clay.
642022	WS12	None Supplied	2.20	Brown clay.
642023	WS13	None Supplied	0.10	Brown clay and loam.
642024	WS13	None Supplied	0.80	Brown clay and loam with vegetation.
642025	WS14	None Supplied	0.10	Brown clay and loam with vegetation.
642026	WS14	None Supplied	1.80	Light brown sand.
642027	WS14	None Supplied	2.90	Brown sand.
642028	TP27	None Supplied	0.50	Brown sandy clay.
642029	TP30	None Supplied	1.20	Brown clay.

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Analytical Report Number : 16-29842

Project / Site name: Holbeach Meadows, Holbeach

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Pesticides and Herbicides in soil screening	In-house method	In-house method		W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
PRO (Soil)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	NONE
Total organic carbon in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L023-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L038-PL	D	MCERTS
TPH Oils (Soils)	Determination of extractable hydrocarbons in soil by GC-MS/FID.	In-house method	L076-PL	D	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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UKAS TESTING
4041

TEST CERTIFICATE

Determination of Moisture Content

Tested in Accordance with BS 1377-2:1990: Clause 3.2

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

Analytical i2 Environmental Science

Client:	Geo-Matters Limited	Client Reference:	GML16197
Client Address:	104 Bondgate Castle Donington DE74 2NR	Job Number:	16-29827
		Date Sampled:	05/10/2016
		Date Received:	11/10/2016
Contact:	Amy Downs	Date Tested:	19/10/2016
Site Name:	Holbeach Meadows, Holbeach	Sampled By:	AD
Site Address:	Not Given		

Test results

Laboratory Reference	Sample Reference	Location	Depth Top [m]	Depth Base [m]	Sample Type	Description	Moisture Content [%]
641912	Not Given	TP06	0.6	Not Given	B	Light brown sandy CLAY	26
641919	Not Given	TP30	1.6	Not Given	B	Light brown silty CLAY	29
641922	Not Given	TP32	0.6	Not Given	B	Brown sandy CLAY. Sand is fine	27

Remarks

Approved:

Mirosława Pytlik
PL Head of
Geotechnical Section

Date Reported: 24/10/2016

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

for and on behalf of i2 Analytical Ltd

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The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

4041

Tested in Accordance with BS1377-2: 1990: Clause 4.4 & 5: One Point Method

Client:	Geo-Matters Limited	Client Reference:	GML16197
Client Address:	104 Bondgate Castle Donington DE74 2NR	Job Number:	16-29827
		Date Sampled:	05/10/2016
		Date Received:	11/10/2016
Contact:	Amy Downs	Date Tested:	19/10/2016
Site Name:	Holbeach Meadows, Holbeach	Sampled By:	AD
Site Address:	Not Given		

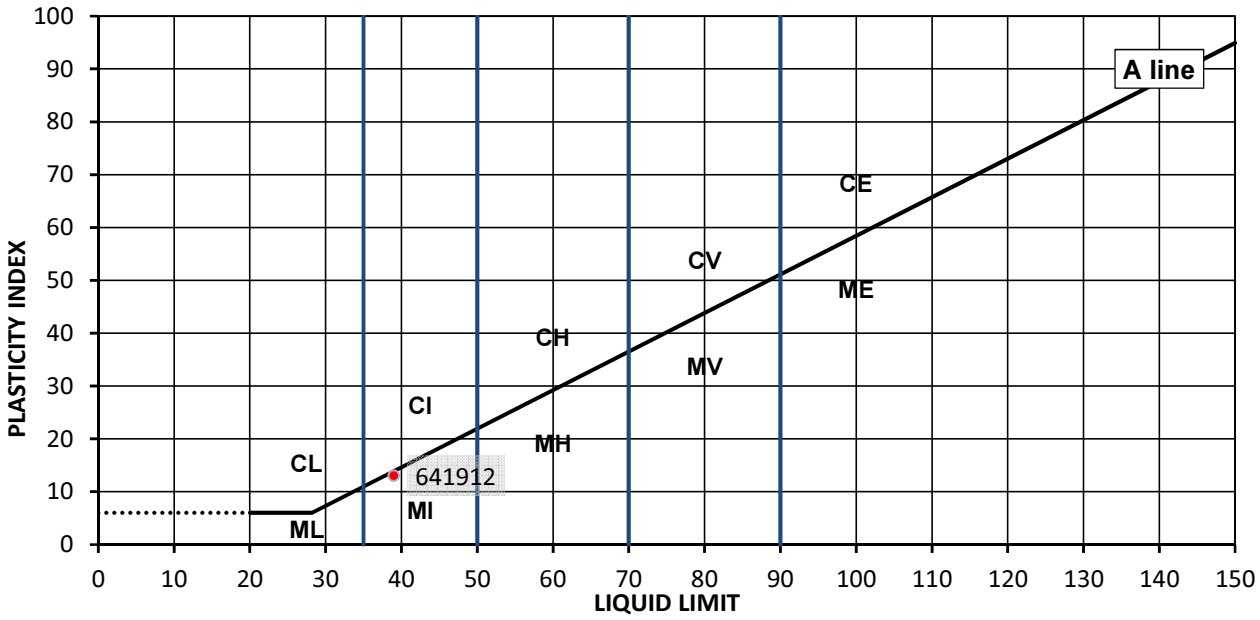
TEST RESULTS

Laboratory Reference: 641912
Sample Reference: Not Given

Description: Light brown sandy CLAY
Location: TP06
Sample Preparation: Tested in natural condition

Sample Type: B
Depth Top [m]: 0.6
Depth Base [m]: Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
26	39	26	13	100



Legend, based on BS 5930:1999 +A2: 2010 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 24/10/2016

for and on behalf of i2 Analytical Ltd

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GF 105.9

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

4041

Tested in Accordance with BS1377-2: 1990: Clause 4.4 & 5: One Point Method

Client:	Geo-Matters Limited	Client Reference:	GML16197
Client Address:	104 Bondgate Castle Donington DE74 2NR	Job Number:	16-29827
		Date Sampled:	06/10/2016
		Date Received:	11/10/2016
Contact:	Amy Downs	Date Tested:	19/10/2016
Site Name:	Holbeach Meadows, Holbeach	Sampled By:	AD
Site Address:	Not Given		

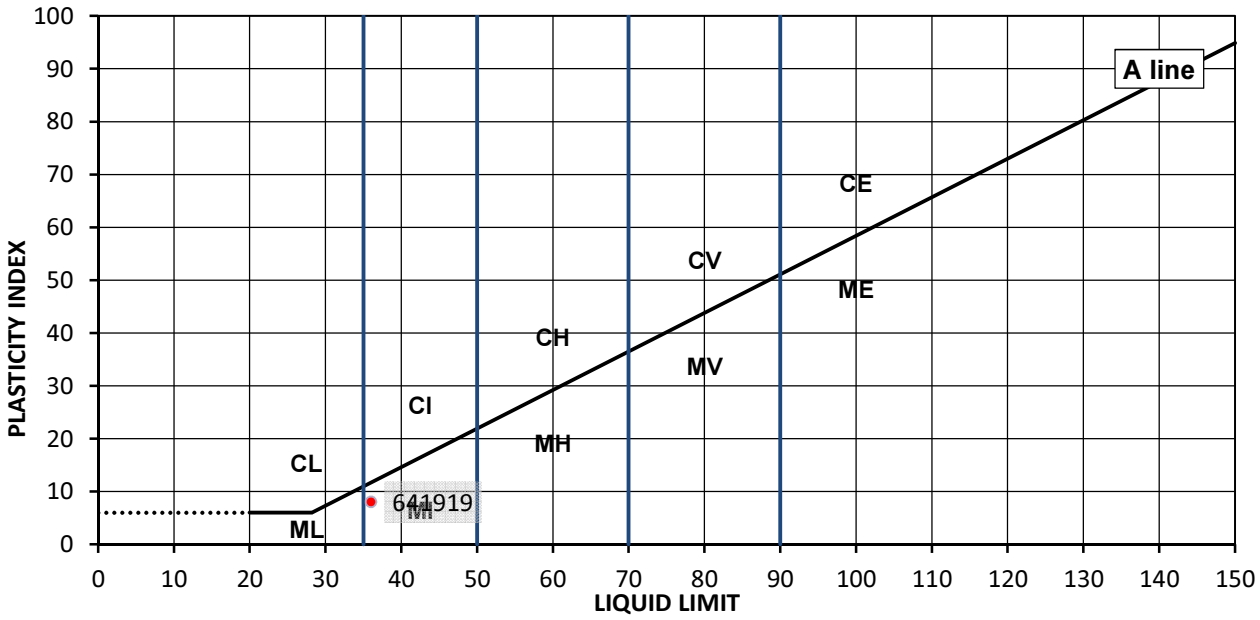
TEST RESULTS

Laboratory Reference: 641919
Sample Reference: Not Given

Description: Light brown silty CLAY
Location: TP30
Sample Preparation: Tested in natural condition

Sample Type: B
Depth Top [m]: 1.6
Depth Base [m]: Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
29	36	28	8	100



Legend, based on BS 5930:1999 +A2: 2010 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 24/10/2016

for and on behalf of i2 Analytical Ltd

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GF 105.9

TEST CERTIFICATE

Determination of Liquid and Plastic Limits

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

UKAS TESTING 4041

Tested in Accordance with BS1377-2: 1990: Clause 4.4 & 5: One Point Method

Client:	Geo-Matters Limited	Client Reference:	GML16197
Client Address:	104 Bondgate Castle Donington DE74 2NR	Job Number:	16-29827
		Date Sampled:	07/10/2016
		Date Received:	11/10/2016
Contact:	Amy Downs	Date Tested:	19/10/2016
Site Name:	Holbeach Meadows, Holbeach	Sampled By:	AD
Site Address:	Not Given		

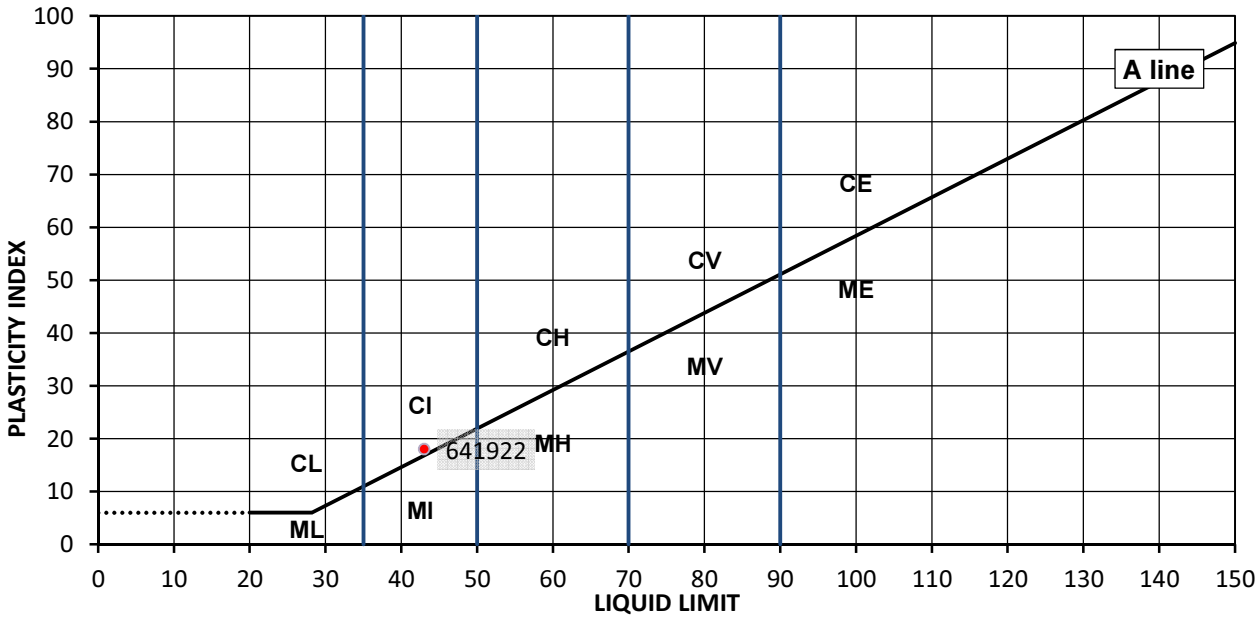
TEST RESULTS

Laboratory Reference: 641922
Sample Reference: Not Given

Description: Brown sandy CLAY. Sand is fine
Location: TP32
Sample Preparation: Tested in natural condition

Sample Type: B
Depth Top [m]: 0.6
Depth Base [m]: Not Given

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
27	43	25	18	100



Legend, based on BS 5930:1999 +A2: 2010 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks

Approved:

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 24/10/2016

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TEST CERTIFICATE

Summary of Classification Test Results

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

Client: Geo-Matters Limited
Client Address: 104 Bondgate
Castle Donington
DE74 2NR
Contact: Amy Downs
Site Name: Holbeach Meadows, Holbeach
Site Address: Not Given

Client Reference: GML16197
Job Number: 16-29827
Date Sampled: 05/10/2016
Date Received: 11/10/2016
Date Tested: 19/10/2016
Sampled By: AD

Test results

Laboratory Reference	Hole No.	Sample				Soil Description	Density		M/C	Attenberg				PD
		Reference	Top depth [m]	Base depth [m]	Type		bulk Mg/m3	dry Mg/m3	%	% Passing 425um %	LL %	PL %	PI %	Mg/m3
641912	TP06	Not Given	0.60	Not Given	B	Light brown sandy CLAY	-	-	26	100	39	26	13	-
641919	TP30	Not Given	1.60	Not Given	B	Light brown silty CLAY	-	-	29	100	36	28	8	-
641922	TP32	Not Given	0.60	Not Given	B	Brown sandy CLAY. Sand is fine	-	-	27	100	43	25	18	-

Comments:

Approved:

Mirosława Pytlik
PL Head of Geotechnical Section

Signed:

Sushil Sharda
Technical Manager (Geotechnical Division)

Date Reported: 24/10/2016

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TEST CERTIFICATE

Determination of Particle Size Distribution

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

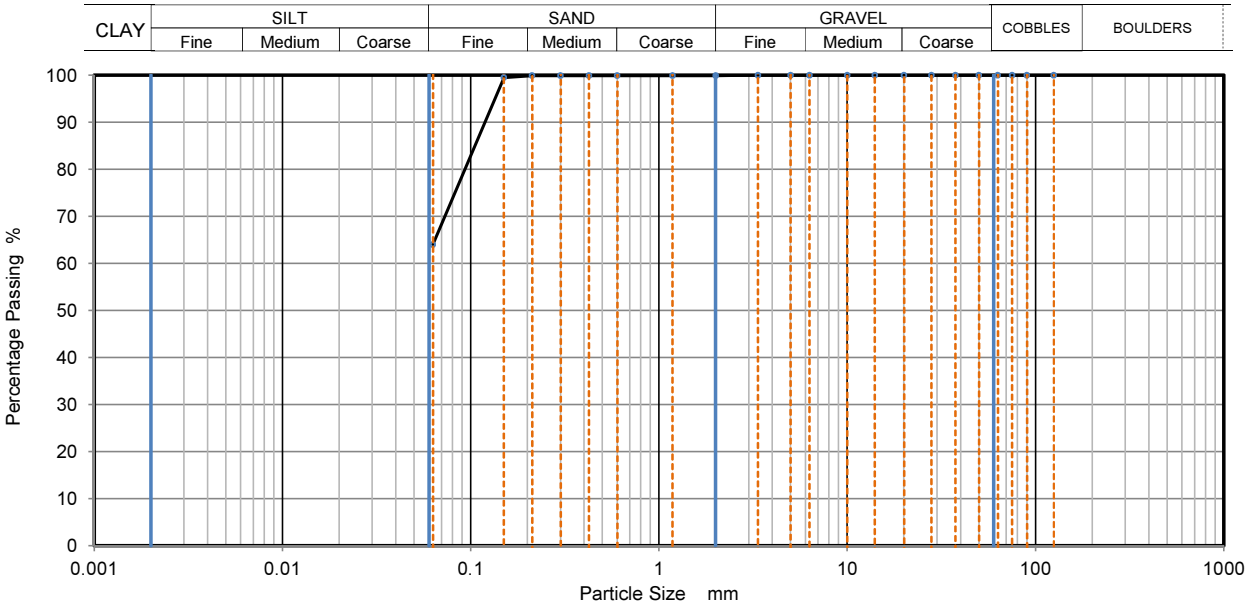
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Geo-Matters Limited	Client Reference:	GML16197
Client Address:	104 Bondgate Castle Donington DE74 2NR	Job Number:	16-29827
		Date Sampled:	05/10/2016
		Date Received:	11/10/2016
Contact:	Amy Downs	Date Tested:	18/10/2016
Site Name:	Holbeach Meadows, Holbeach	Sampled By:	AD
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 641911 Sample Reference: Not Given

Sample description:	Yellowish brown sandy SILT	Sample Type:	B
Location:	TP01	Depth Top [m]:	1.4
Supplier:	Not Given	Depth Base [m]:	Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	100		
0.212	100		
0.15	100		
0.063	64		

Dry Mass of sample [g]: 226

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.10
Sand	35.90
Fines <0.063mm	64.00

Grading Analysis		
D100	mm	3.35
D60	mm	
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 24/10/2016

for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

Determination of Particle Size Distribution

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

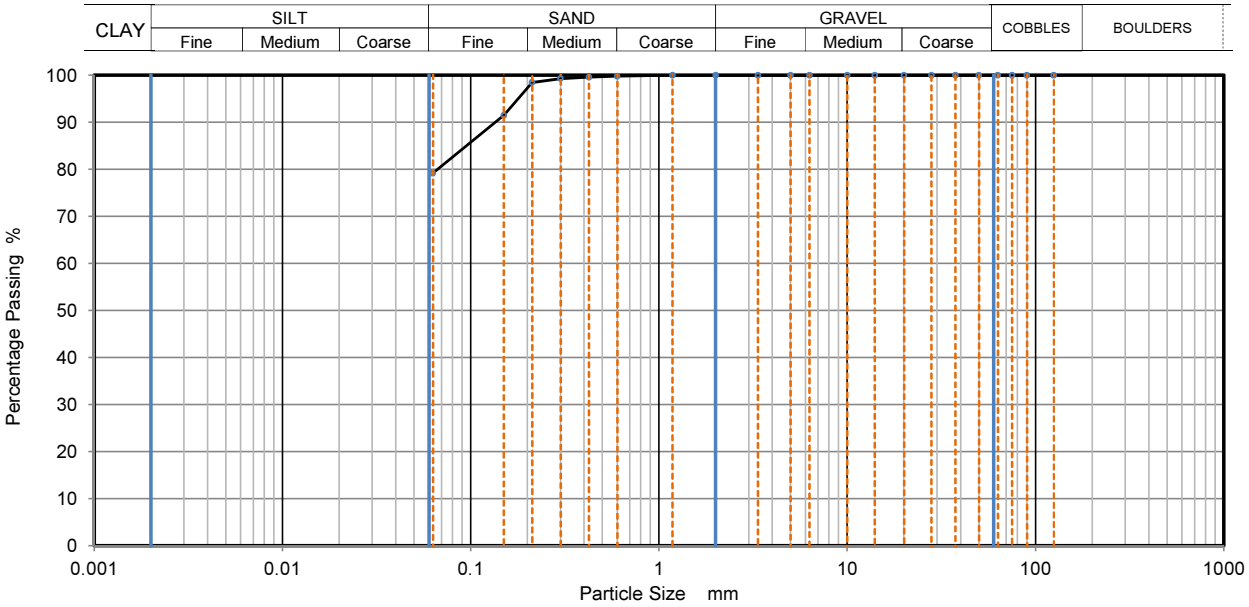
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Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Geo-Matters Limited	Client Reference:	GML16197
Client Address:	104 Bondgate Castle Donington DE74 2NR	Job Number:	16-29827
		Date Sampled:	05/10/2016
		Date Received:	11/10/2016
Contact:	Amy Downs	Date Tested:	18/10/2016
Site Name:	Holbeach Meadows, Holbeach	Sampled By:	AD
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 641913 Sample Reference: Not Given

Sample description:	Yellowish brown slightly sandy SILT	Sample Type:	B
Location:	TP09	Depth Top [m]:	1.3
Supplier:	Not Given	Depth Base [m]:	Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	99		
0.212	99		
0.15	92		
0.063	79		

Dry Mass of sample [g]: 240

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.00
Sand	20.80
Fines <0.063mm	79.20

Grading Analysis		
D100	mm	2
D60	mm	
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

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Signed:

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(Geotechnical Division)

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TEST CERTIFICATE

Determination of Particle Size Distribution

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

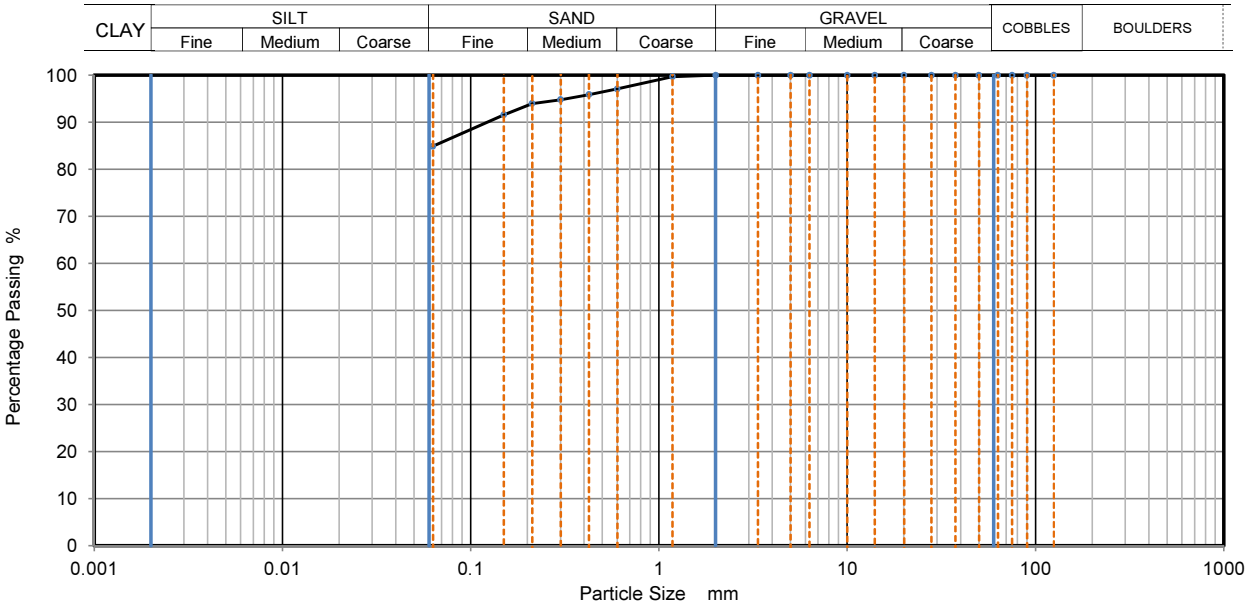
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Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Geo-Matters Limited	Client Reference:	GML16197
Client Address:	104 Bondgate Castle Donington DE74 2NR	Job Number:	16-29827
		Date Sampled:	05/10/2016
		Date Received:	11/10/2016
Contact:	Amy Downs	Date Tested:	18/10/2016
Site Name:	Holbeach Meadows, Holbeach	Sampled By:	AD
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference:	641914	Sample Reference:	Not Given
Sample description:	Brown slightly sandy CLAY	Sample Type:	B
Location: TP13		Depth Top [m]:	1.5
Supplier: Not Given		Depth Base [m]:	Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	97		
0.425	96		
0.3	95		
0.212	94		
0.15	92		
0.063	85		

Dry Mass of sample [g]: 174

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.00
Sand	15.10
Fines <0.063mm	84.90

Grading Analysis		
D100	mm	2
D60	mm	
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 24/10/2016

for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

Determination of Particle Size Distribution

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

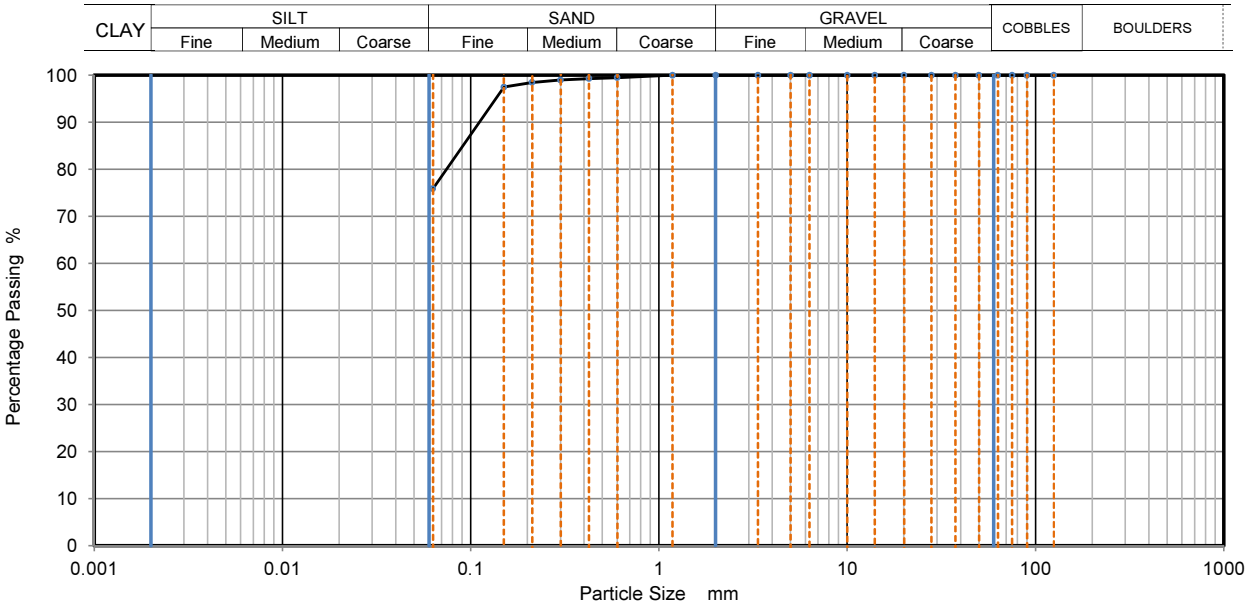
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Geo-Matters Limited	Client Reference:	GML16197
Client Address:	104 Bondgate Castle Donington DE74 2NR	Job Number:	16-29827
		Date Sampled:	05/10/2016
		Date Received:	11/10/2016
Contact:	Amy Downs	Date Tested:	18/10/2016
Site Name:	Holbeach Meadows, Holbeach	Sampled By:	AD
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 641915 Sample Reference: Not Given

Sample description:	Yellowish brown slightly sandy CLAY	Sample Type:	B
Location:	TP15	Depth Top [m]:	0.9
Supplier:	Not Given	Depth Base [m]:	Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99		
0.3	99		
0.212	99		
0.15	98		
0.063	76		

Dry Mass of sample [g]: 198

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.00
Sand	24.10
Fines <0.063mm	75.90

Grading Analysis		
D100	mm	1.18
D60	mm	
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 24/10/2016

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TEST CERTIFICATE

Determination of Particle Size Distribution

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

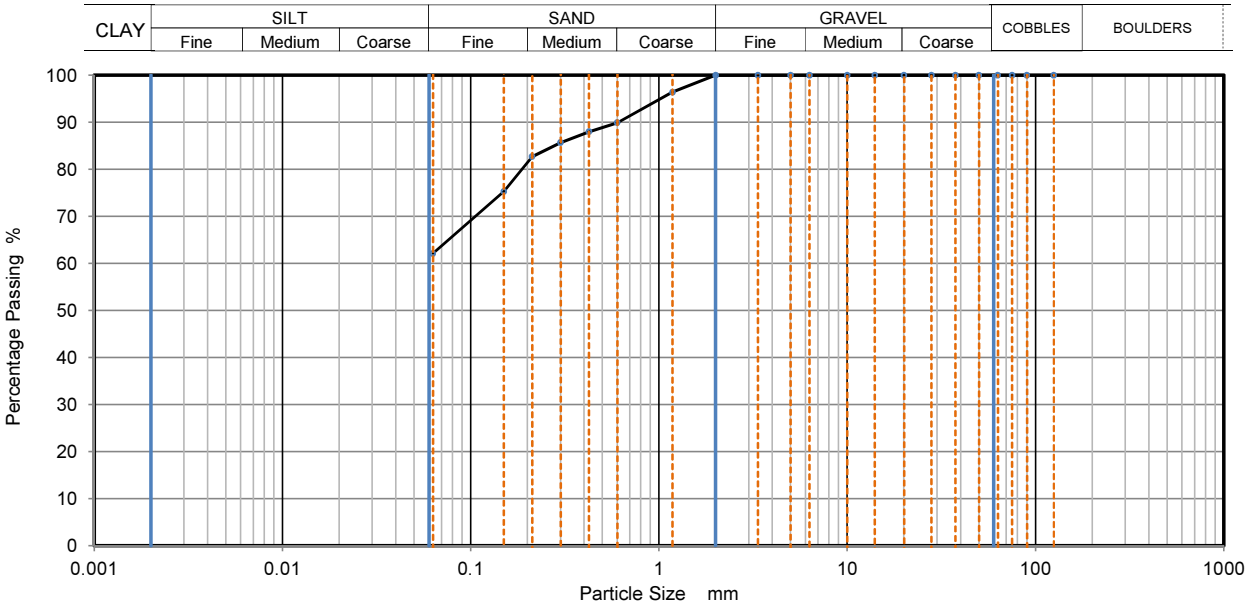
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Geo-Matters Limited	Client Reference:	GML16197
Client Address:	104 Bondgate Castle Donington DE74 2NR	Job Number:	16-29827
		Date Sampled:	05/10/2016
		Date Received:	11/10/2016
Contact:	Amy Downs	Date Tested:	18/10/2016
Site Name:	Holbeach Meadows, Holbeach	Sampled By:	AD
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference:	641916	Sample Reference:	Not Given
Sample description:	Brown sandy CLAY	Sample Type:	B
Location:	WS02	Depth Top [m]:	3.5
Supplier:	Not Given	Depth Base [m]:	4.9



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	96		
0.6	90		
0.425	88		
0.3	86		
0.212	83		
0.15	75		
0.063	62		

Dry Mass of sample [g]: 159

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.00
Sand	37.90
Fines <0.063mm	62.10

Grading Analysis		
D100	mm	2
D60	mm	
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

Mirosława Pytlik
PL Head of
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

Date Reported: 24/10/2016

for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

Determination of Particle Size Distribution

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

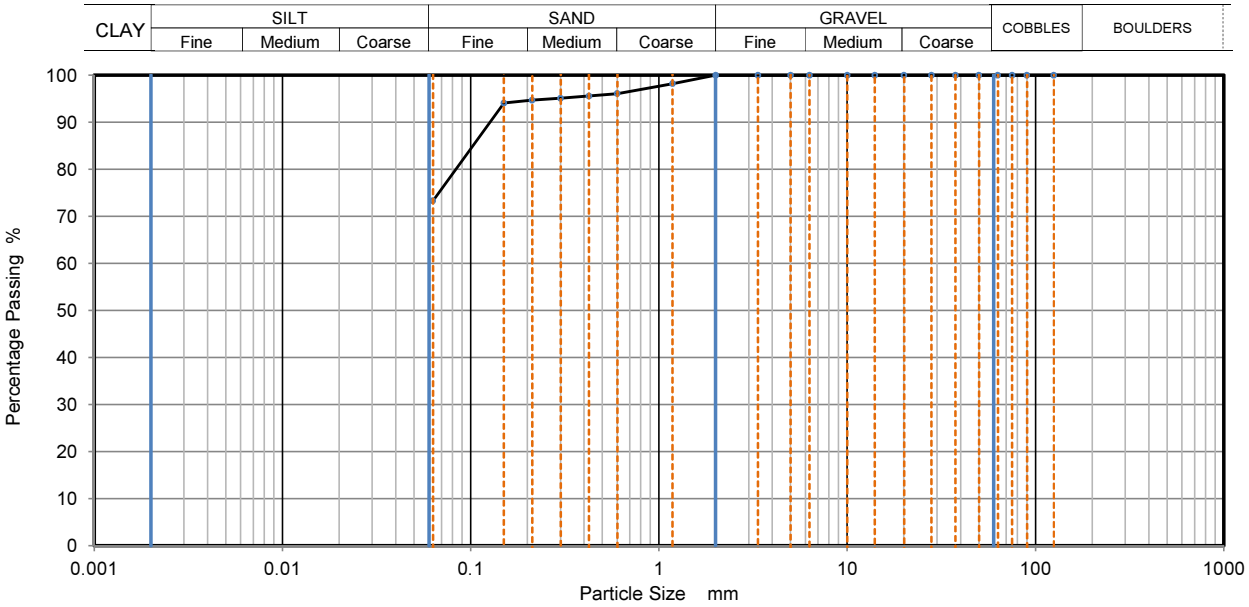
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Geo-Matters Limited	Client Reference:	GML16197
Client Address:	104 Bondgate Castle Donington DE74 2NR	Job Number:	16-29827
		Date Sampled:	05/10/2016
		Date Received:	11/10/2016
Contact:	Amy Downs	Date Tested:	18/10/2016
Site Name:	Holbeach Meadows, Holbeach	Sampled By:	AD
Site Address:	Not Given		

TEST RESULTS

Laboratory Reference:	641917	Sample Reference:	Not Given
Sample description:	Brown slightly sandy CLAY	Sample Type:	B
Location: WS07		Depth Top [m]:	6
Supplier: Not Given		Depth Base [m]:	7



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	98		
0.6	96		
0.425	96		
0.3	95		
0.212	95		
0.15	94		
0.063	73		

Dry Mass of sample [g]: 189

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.00
Sand	26.70
Fines <0.063mm	73.30

Grading Analysis		
D100	mm	2
D60	mm	
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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Signed:

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TEST CERTIFICATE

Determination of Particle Size Distribution

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Croxley Green Business Park
Watford Herts WD18 8YS

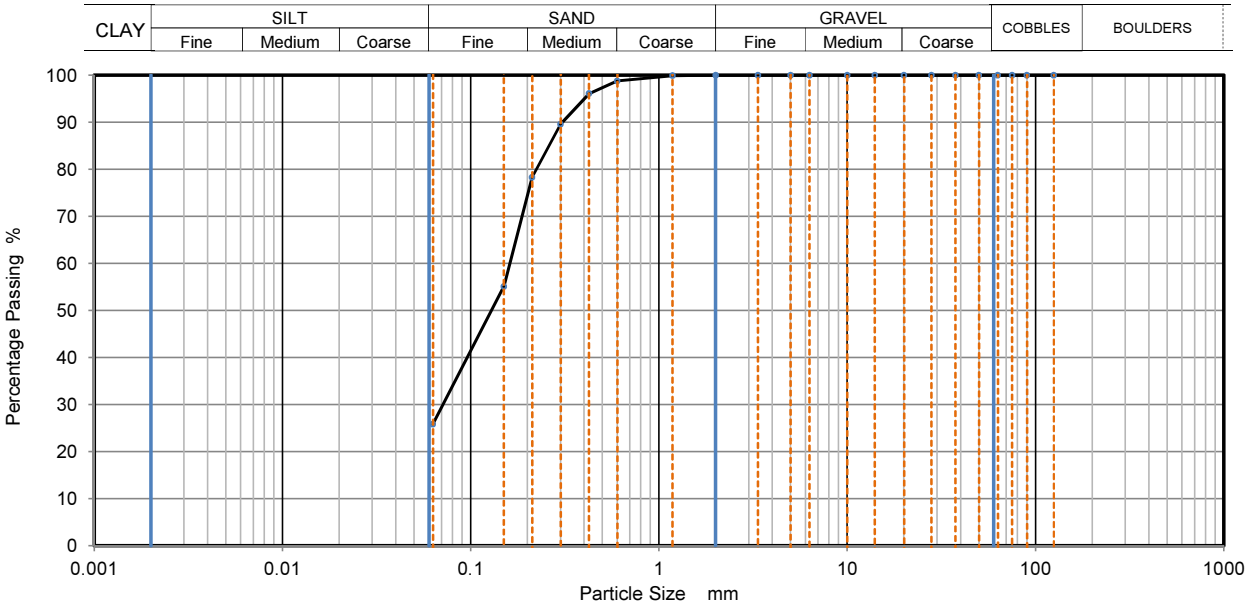
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Geo-Matters Limited	Client Reference:	GML16197
Client Address:	104 Bondgate Castle Donington DE74 2NR	Job Number:	16-29827
		Date Sampled:	06/10/2016
		Date Received:	11/10/2016
Contact:	Amy Downs	Date Tested:	18/10/2016
Site Name:	Holbeach Meadows, Holbeach	Sampled By:	AD
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 641918

Sample description:	Yellowish brown silty fine to coarse SAND	Sample Reference:	Not Given
Location:	TP20	Sample Type:	B
Supplier:	Not Given	Depth Top [m]:	1.5
		Depth Base [m]:	Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	96		
0.3	90		
0.212	78		
0.15	55		
0.063	26		

Dry Mass of sample [g]: 216

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.00
Sand	74.20
Fines <0.063mm	25.80

Grading Analysis		
D100	mm	2
D60	mm	0.161
D30	mm	0.0713
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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TEST CERTIFICATE

Determination of Particle Size Distribution

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

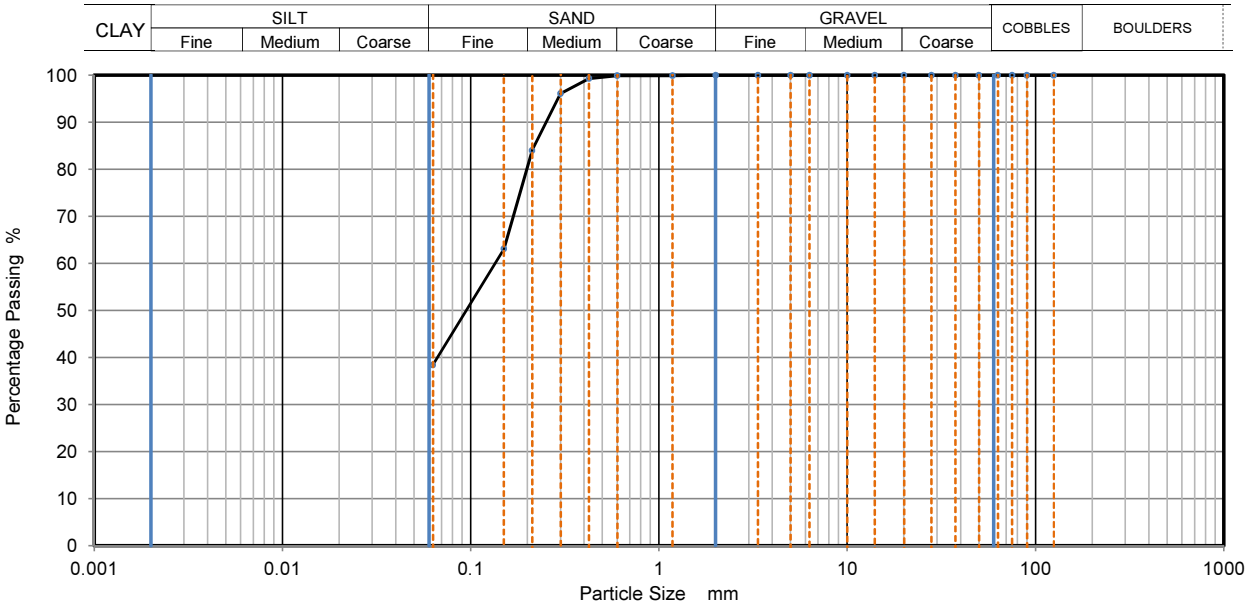
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Geo-Matters Limited	Client Reference:	GML16197
Client Address:	104 Bondgate Castle Donington DE74 2NR	Job Number:	16-29827
		Date Sampled:	07/10/2016
		Date Received:	11/10/2016
Contact:	Amy Downs	Date Tested:	18/10/2016
Site Name:	Holbeach Meadows, Holbeach	Sampled By:	AD
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 641920

Sample description:	Yellowish brown very silty fine to coarse SAND	Sample Reference:	Not Given
Location:	TP21	Sample Type:	B
Supplier:	Not Given	Depth Top [m]:	1.1
		Depth Base [m]:	Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99		
0.3	96		
0.212	84		
0.15	63		
0.063	38		

Dry Mass of sample [g]: 256

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.00
Sand	61.60
Fines <0.063mm	38.40

Grading Analysis		
D100	mm	2
D60	mm	0.134
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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Geotechnical Section

Signed:

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(Geotechnical Division)

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TEST CERTIFICATE

Determination of Particle Size Distribution

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7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

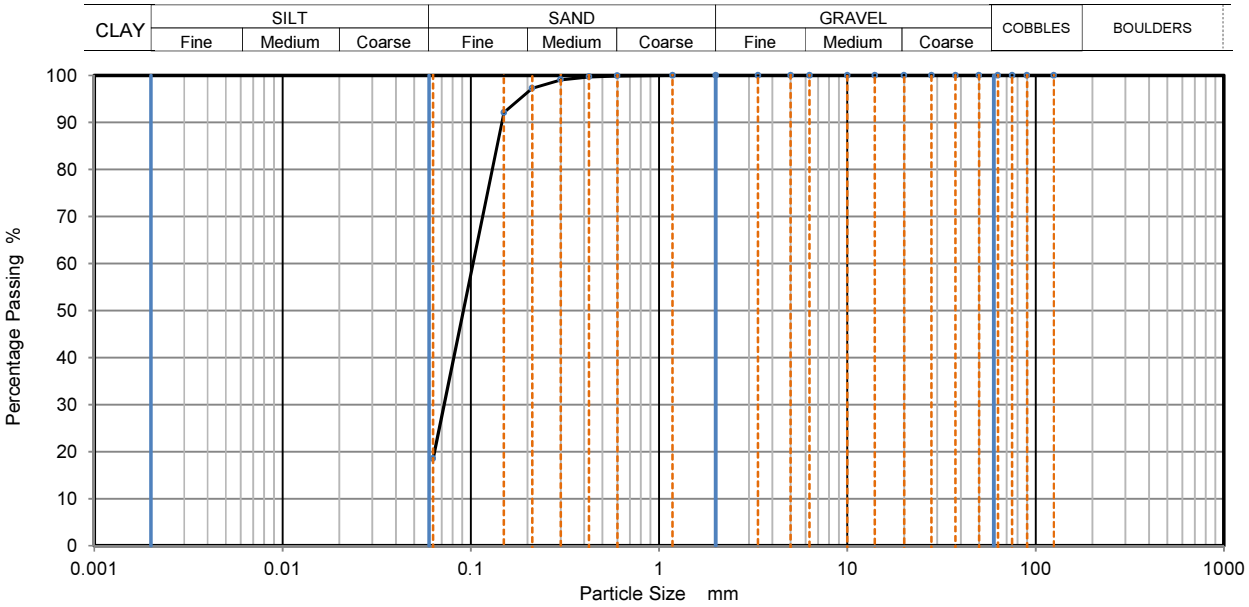
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Geo-Matters Limited	Client Reference:	GML16197
Client Address:	104 Bondgate Castle Donington DE74 2NR	Job Number:	16-29827
		Date Sampled:	07/10/2016
		Date Received:	11/10/2016
Contact:	Amy Downs	Date Tested:	18/10/2016
Site Name:	Holbeach Meadows, Holbeach	Sampled By:	AD
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 641921 Sample Reference: Not Given

Sample description:	Brown silty fine to coarse SAND	Sample Type:	B
Location:	TP31	Depth Top [m]:	2.2
Supplier:	Not Given	Depth Base [m]:	Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	99		
0.212	97		
0.15	92		
0.063	19		

Dry Mass of sample [g]: 259

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.00
Sand	81.50
Fines <0.063mm	18.50

Grading Analysis		
D100	mm	1.18
D60	mm	0.103
D30	mm	0.0721
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS1377 unless noted below

Approved:

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PL Head of
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

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TEST CERTIFICATE

Determination of Particle Size Distribution

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Croxley Green Business Park
Watford Herts WD18 8YS

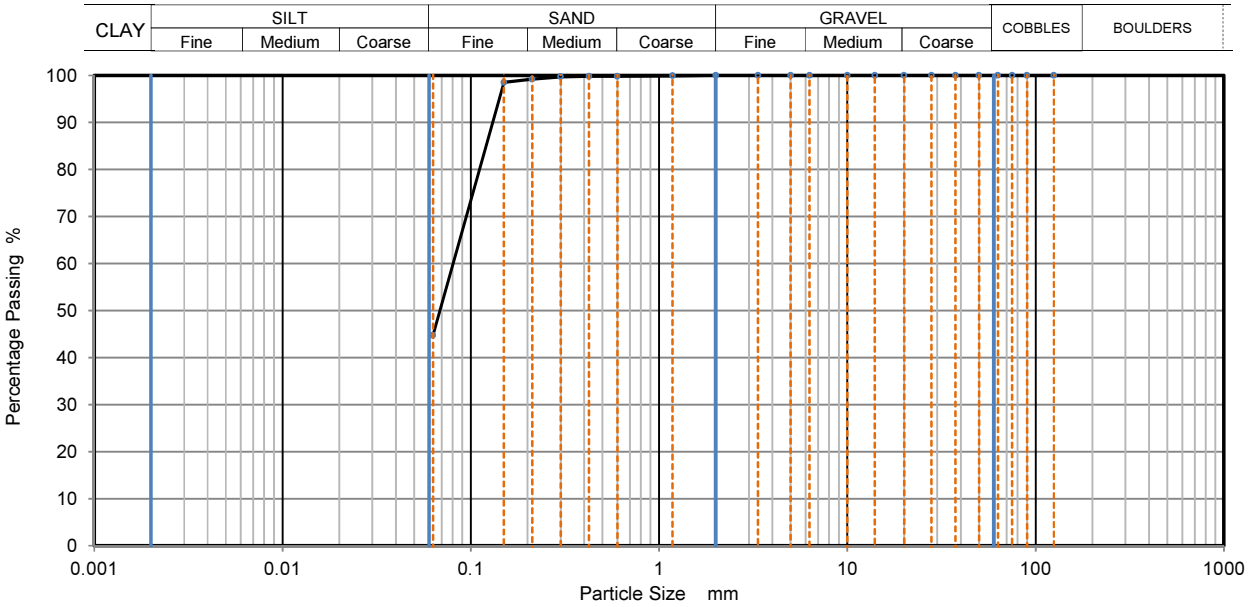
UKAS TESTING 4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Geo-Matters Limited	Client Reference:	GML16197
Client Address:	104 Bondgate Castle Donington DE74 2NR	Job Number:	16-29827
		Date Sampled:	07/10/2016
		Date Received:	11/10/2016
Contact:	Amy Downs	Date Tested:	18/10/2016
Site Name:	Holbeach Meadows, Holbeach	Sampled By:	AD
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 641923 Sample Reference: Not Given

Sample description:	Yellowish brown sandy SILT	Sample Type:	B
Location:	TP37	Depth Top [m]:	1.5
Supplier:	Not Given	Depth Base [m]:	Not Given



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	100		
0.212	99		
0.15	99		
0.063	45		

Dry Mass of sample [g]: 244

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.00
Sand	55.30
Fines <0.063mm	44.70

Grading Analysis		
D100	mm	2
D60	mm	0.0807
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

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PL Head of
Geotechnical Section

Signed:

Sushil Sharda
Technical Manager
(Geotechnical Division)

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TEST CERTIFICATE

Determination of Particle Size Distribution

i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

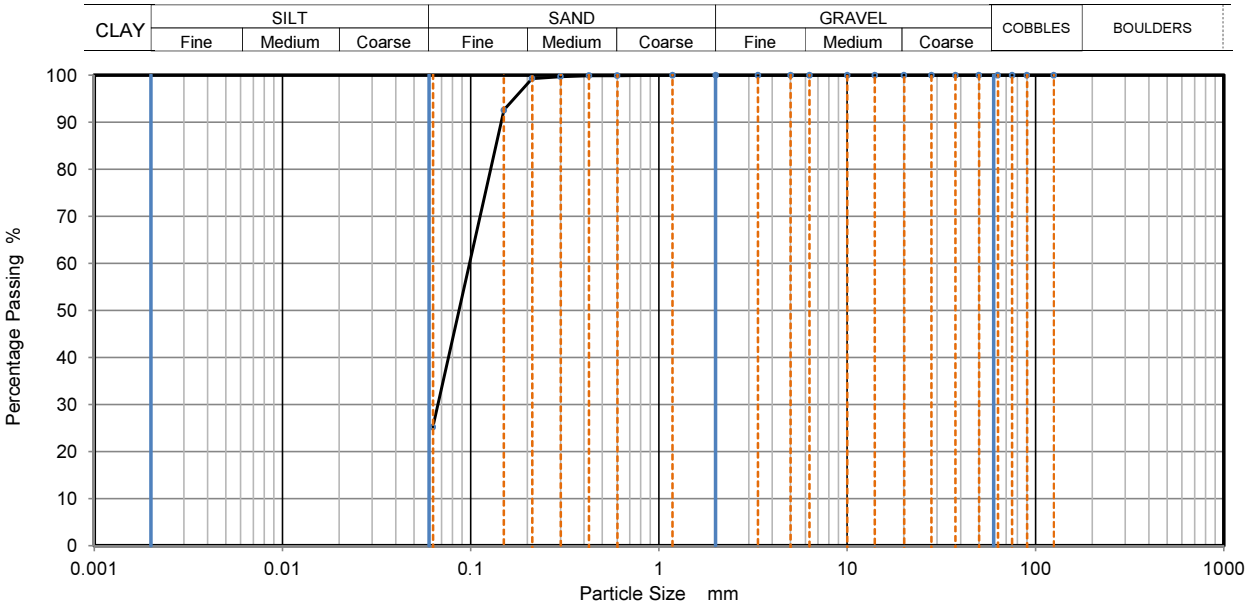
4041

Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Client:	Geo-Matters Limited	Client Reference:	GML16197
Client Address:	104 Bondgate Castle Donington DE74 2NR	Job Number:	16-29827
		Date Sampled:	07/10/2016
		Date Received:	11/10/2016
Contact:	Amy Downs	Date Tested:	18/10/2016
Site Name:	Holbeach Meadows, Holbeach	Sampled By:	AD
Site Address:	Not Given		

TEST RESULTS Laboratory Reference: 641924

Sample description:	Brown silty SAND	Sample Reference:	Not Given
Location:	WS09	Sample Type:	B
Supplier:	Not Given	Depth Top [m]:	3
		Depth Base [m]:	4



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	100		
0.212	99		
0.15	93		
0.063	25		

Dry Mass of sample [g]: 252

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.00
Sand	74.80
Fines <0.063mm	25.20

Grading Analysis		
D100	mm	1.18
D60	mm	0.0986
D30	mm	0.067
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

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