Goldfinch ENVIRONMENTAL LTD

PROPOSED RESIDENTIAL DEVELOPMENT
TILSON YARD
BLACK BARN
GEDNEY MARSH
SPALDING
LINCS..

PROPOSED RESIDENTIAL DEVELOPMENT TILSON YARD BLACK BARN GEDNEY MARSH SPALDING LINCS..

GEOENVIRONMENTAL DESK STUDY

Report Ref.: 0548/1

Prepared by :

D Sargeant
BSc FGS

Date:

July 2018

Goldfinch Environmental Limited
19 Palmer Street, Walsham-le-Willows, Bury St Edmunds, Suffolk, IP31 3BZ
Tel: 01359 258681

CONTENTS

1.	INTRODUCTION	3
2.	LIMITATIONS	4
3.	LEGISLATIVE AND REGULATORY SETTING	5
4.	SITE LOCATION AND DESCRIPTION	6
5.	SITE HISTORY	8
6.	PRELIMINARY QUALITATIVE RISK ASSESSMENT	14
7.	RECOMMENDATIONS FOLLOWING PRELIMINARY RISK ASSESSMENT	17
8.	CONCLUSIONS	18

FIGURES

- Figure 1 Site Location Plan
- Figure 2 Proposed Layout Plan

APPENDICES

- Appendix 1 'Groundsure' Report

Goldfinch Environmental Limited
19 Palmer Street, Walsham-le-Willows, Bury St Edmunds, Suffolk, IP31 3BZ
Tel: 01359 258681

PROPOSED RESIDENTIAL DEVELOPMENT

TILSON YARD, BLACK BARN

GEDNEY MARSH

SPALDING, LINCS.

1. INTRODUCTION.

1.1 General.

This report describes the findings of a geoenvironmental desk study undertaken by Goldfinch Environmental Limited on the instruction of Mr M Parnell (the Client), via the offices of G R Merchant Architects, at a site located on the western side of Tilsons Farm, Main Road, Gedney Marsh, Spalding, Lincolnshire.

A site location plan has been included as Figure 1 with the proposed layout shown in Figure 2 towards the back of this report to assist the reader.

The Desk Study was required to support a planning application for the development of the site to a residential land use by establishment of a new dwelling.

Goldfinch Environmental Limited
19 Palmer Street, Walsham-le-Willows, Bury St Edmunds, Suffolk, IP31 3BZ
Tel: 01359 258681

2. LIMITATIONS.

This report is for the sole reliance and use of the Client. Any Third Party coming into possession of this report relies on it at their risk, unless written permission is expressly sought from, and provided by, Goldfinch Environmental Limited. The author owes them no duty of care and skill. Goldfinch Environmental Ltd accepts no responsibility or liability for the consequences of this document being used for purposes other than that for which it was commissioned and the assessments provided herein should not be relied on as a legal opinion.

The findings and opinions expressed are relevant to the time of the site visit and information review and should not be relied upon to represent conditions at substantially later dates. The assessments and opinions given in this report are based upon information available at the time of the report. Where additional information comes available which may affect or identify a need to review our conclusions or assessments we request the opportunity (and reserve the right), to review the information and where warranted, modify our assessment / opinion in part or wholly, accordingly.

The purpose of this desk study report was to determine the historical use of the site and adjacent areas from searches of Public Registers and a review of available historical maps and included a site reconnaissance ('walkover') survey together with brief internet searches. The outcome of these activities is described below and this information was used to construct a conceptual model for the site from which a risk assessment was completed in the context of the proposed residential development of the site.

The risk assessment was based on the source-pathway-receptor framework, with respect to the geoenvironmental condition of the site in the context of various sensitive receptors. Goldfinch Environmental Ltd have based this desk study upon the sources given in this report, and believes them to be reliable but cannot and does not guarantee the authenticity or reliability of the data it has relied upon.

This desk study does not include any geotechnical considerations pertaining to the site as these were outside the agreed brief.

The recommendations given in this report are based on guidance and best practice in place at the time of issue of the report, the information available at the time of the investigation, the nature of the indicated proposed development and associated end user behaviour patterns. Should any of the foregoing change at any time, then this report should be reviewed in the context of proposed changes.

The absence of indicators in search data, or from on site observations does not rule out their presence in other parts of the site. This desk study report has been based on information supplied in the 'GroundSure' report and its component parts included at Appendix 1 towards the back of this report, discussions with the Client and in-house searches.

Goldfinch Environmental Limited
19 Palmer Street, Walsham-le-Willows, Bury St Edmunds, Suffolk, IP31 3BZ
Tel: 01359 258681

3. LEGISLATIVE & REGULATORY SETTING.

The Environmental Protection Act of 1990 created the framework for the identification and remediation of contaminated land. The Act defines "contaminated land" as any land, which appears by the Local Authority to be "in such a condition, by reason of substances, in, on, or under the land that significant harm is being caused or there is significant possibility of such harm being caused, or, pollution of Controlled Waters is being, or is likely to be, caused".

Land potentially affected by 'contamination' is a material consideration for planning purposes together with its relationship with 'regulatory intervention' (Part IIa), and 'voluntary' investigation (which includes redevelopment of sites which may be affected by contamination). The Model Procedures (CLR-11, Environment Agency 2004), provide a generic framework indicating key technical activities applicable in each of these contexts.

The management of land contamination broadly comprises three components that are identified as 'Risk assessment', 'Options appraisal' and 'Implementation'. These, in turn, determine if any *un*acceptable risks exist, ascertain the most appropriate remediation strategy for the site and, finally, demonstrate that the strategy will be effective.

In accordance with this and other current guidance, where a 'land quality' risk assessment is required each 'Relevant Pollutant Linkage' (RPL, formerly referred to as "source-pathway-receptor" framework), is separately identified and a level of risk attached. This is documented in the form of a 'Conceptual Model'.

The outcome of the assessment of established, plausible relevant pollutant linkages is used to determine qualitatively the need for further investigation, or remediation with ensuing mitigation of the determined unacceptable risk. (In accordance with the Model Procedures and Regulatory preference, detailed remedial measures should be provided in a separate phase).

The risk assessment takes account of the local environment, end user behaviour patterns, and the nature of the development in relation to proven 'unacceptable' risk. This is the approach advocated by current guidance (CLR-11 and BS10175 etc), and therefore has been adopted in the assessment of this site.

Goldfinch Environmental Limited
19 Palmer Street, Walsham-le-Willows, Bury St Edmunds, Suffolk, IP31 3BZ
Tel: 01359 258681

4. SITE LOCATION AND DESCRIPTION.

4.1 Introduction

A site visit was carried out during 10 July 2018 the purpose being to:-

I. Collect additional/relevant information about the site its environs and any site-specific potential contaminants, pathways and receptors.

II. Record any aspects of the site not revealed by documentary searches. (e.g. the presence of above- or belowground hydrocarbon storage tanks.).

III. Collect any information that will assist in the planning of any subsequent phases of field investigation where the Desk Study deems this is necessary.

Approximate Grid Reference ^{5}43620, ^{3}28395 refers.

The site comprised an irregularly-shaped plot of land on the northern side of Main Road between Gedney Dyke to the south and Gedney Drove End to the north east of the site both of which are to the approximate northeast of Holbeach, Lincolnshire.

Topographic levels at the site, by visual inspection, appeared to change little across the site.

At the time of the site walkover survey the site was capped entirely with soft cover of mown grass with no buildings as can be seen in Photograph 1 below.

Photograph 1: View of the Southern Part of the Site.

Goldfinch Environmental Limited
19 Palmer Street, Walsham-le-Willows, Bury St Edmunds, Suffolk, IP31 3BZ
Tel: 01359 258681

Following visual inspection of the site there were no notable features with regard to land contamination. In addition, at the time of the site walkover survey there was no visual evidence to suggest that the site had been subject to previous 'development' for example, there was no apparent evidence of:~

1. The presence of Made Ground.

2. The presence or storage of potentially leachable materials/chemicals.

3. Demolition or dispersal of *contaminated* rubble or other materials.

4. Importation of potentially contaminated fill onto the site.

Goldfinch Environmental Limited
19 Palmer Street, Walsham-le-Willows, Bury St Edmunds, Suffolk, IP31 3BZ
Tel: 01359 258681

5. SITE HISTORY.

5.1 Historical Maps.

Where the attached maps are compiled from a composite of editions, the year of map upon which the majority of the site may be found is quoted below. These are reproduced at Appendix 1. Annotation, as it appears on the maps, is indicated by italics.

Land use in excess of 250m from the site is considered of potentially negligible to low risk to the application site and on that basis is generally excluded from the summary provided below (unless record review by this author suggests otherwise). However, should the reader require this additional detail, full disclosure records are included in Appendix 1 towards the back of this report.

(The reader should note at this point that occasionally on the older map editions the site boundaries can be slightly 'shifted' relative to more recent maps.).

1886-7 Edition {County Series - Scale 1:10 560}

The site was shown as an undeveloped plot of land the southern part of which appeared to be a water body (shaded blue area) in a rural setting. [Author Note: This could be a possible 'overspill' area from the adjacent creek.].

Surrounding land to the north and south of the site was sparsely developed.

1888 Edition {County Series - Scale 1:2 500}

There were no apparent changes to the site or its immediate environs.

1903-5 Edition {County Series - Scale 1:10 560}

There were no further apparent changes to the site at this scale of mapping.

Land to the southwest of the site was annotated '*Smy.*', (Smithy.).

There were no apparent change to the immediate environs of the site at this scale of mapping in the context of land quality.

1904 Edition {County Series - Scale 1:2 500}

There were no apparent further changes to the site at this scale of mapping although this does not preclude minor development having taken place.

Goldfinch Environmental Limited
19 Palmer Street, Walsham-le-Willows, Bury St Edmunds, Suffolk, IP31 3BZ
Tel: 01359 258681

1905 Edition {County Series - Scale 1:10 560}

There were no apparent changes to the site or its immediate environs.

1946-50 Edition {County Series - Scale 1:10 560}

There were no apparent changes to the site.

There were no further pertinent land use changes to the immediate environs of the site, although minor development had possibly taken place.

1955 Edition {Provisional - Scale 1:10 560}

There were no apparent changes to the site or its immediate environs at this scale of mapping.

1973 Edition {National Grid - Scale 1:2 500}

The site had now undergone a change, the northern outline of the possible water body was no longer shown, and the southeastern corner of the site was encroached by the western part of a small rectangular feature. [Author Note: At a meeting with the Client at the site it transpired that this was a small ramp for loading vehicles which had been removed some time ago and there was no evidence of its previous existence.].

The immediate environs of the site appeared to have undergone further development.

1974 Edition {National Grid - Scale 1:2 500}

There were no apparent changes to the site.

The immediate environs of the site had possibly undergone further development at this scale of mapping.

1978 Edition {National Grid - Scale 1:10 000}

There were no apparent changes to the site.

The immediate environs of the site had possibly undergone further development at this scale of mapping.

1994 Edition {National Grid - Scale 1:2 500}

Goldfinch Environmental Limited
19 Palmer Street, Walsham-le-Willows, Bury St Edmunds, Suffolk, IP31 3BZ
Tel: 01359 258681

There were no apparent changes to the site.

There were no apparent changes to surrounding land.

2002 Edition {Raster - Scale 1:10 000}

There were no apparent changes to the site.

There were no apparent changes to the immediate environs of the site.

2010 Edition {National Grid - Scale 1:10 000}

There were no further changes to the site.

There were no apparent changes to the surrounding environs with respect to land contamination.

2014 Edition {National Grid - Scale 1:10 000}

There were no apparent changes to the site or surrounding environs with respect to land contamination.

5.2 Public Registers.

A search of public register information has been made using an Internet-based system. A disclosure report is reproduced at Appendix 1. The following commentary is restricted to entries within a 250m search radius of the site. Appendix 1 should be referred to for details on entries beyond of this range.

5.2.1 Historical Industrial Sites

There were four records for the category 'Potentially Contaminative Uses identified from 1:10 000 scale mapping' within this dataset for the referred search radius. Supplied information indicated none of them were for the site, none of them were within 50m of the site and the remaining four were located between approximately 98 and 101m distant from the site and were for: '*Smithy'* (x4).

There were no records for the category 'Additional Information - Historical Tank Database' within the referred search radius for the site.

There were no records for the category 'Additional Information – Historical Energy Features Database' within this dataset for the referred search radius.

Goldfinch Environmental Limited
19 Palmer Street, Walsham-le-Willows, Bury St Edmunds, Suffolk, IP31 3BZ
Tel: 01359 258681

There were no records for the category 'Additional Information - Historical Petrol and Fuel Site Database' within this dataset for the referred search radius.

There were no records for the category 'Additional Information – Historical Garage and Motor Vehicle Repair Database' within this dataset for the referred search radius.

There were four records for the category 'Potentially Infilled Land' within this dataset for the referred search radius. Supplied information indicated all four were for the site and were given as: '*Pond*' (x4).

5.2.2 Environmental Permits, Incidents and Registers.

There were no records within this category for the referred search radius.

5.2.3 Landfill and Other Wastes.

There were no records within this category for the referred search radius.

5.2.4 Current Land Uses.

There were no records within this category for the referred search radius.

5.2.4.i Petrol & Fuel Sites.

There were no records within this dataset for the referred search radius.

5.2.5 Geology.

There were no records '*Identified*' for the site within the category 'Artificial Ground and Made Ground'.

There were records '*Identified*' within the category 'Superficial Ground and Drift Geology present beneath the site'. Supplied information indicated Tidal Flat Deposits (Clay and Silt).

The Bedrock & Solid Geology was given as Ampthill Clay Formation (Mudstone).

5.2.6 Hydrogeology and Hydrology.

Goldfinch Environmental Limited
19 Palmer Street, Walsham-le-Willows, Bury St Edmunds, Suffolk, IP31 3BZ
Tel: 01359 258681

For the category 'Are there any records of Strata Classification in the Superficial Geology within 500m of the site' an ''*Identified*' response was provided. Supplied information indicated the site was underlain by a '*Unproductive*' aquifer.

For the category 'Are there any records of Strata Classification in the Bedrock geology within 500m of the site' an '*Identified*' response was provided. Supplied records showed that the site was underlain by an '*Unproductive*' Aquifer.

There were no records for the category 'Groundwater Abstraction Licences' within the referred search radius for the site.

There were no records for the category 'Surface Water Abstraction Licences' within the referred search radius for the site.

There were no records for the category 'Potable Water Abstraction Licences' within the referred search radius for the site.

There were no records for the category 'Source Protection Zones' within the search radius for the site.

There were no records for the category 'Groundwater Vulnerability and Soil Leaching Potential' for the site.

There were no records of Environment Agency information on River Quality available within 1500m of the site.

There were ten records for the category 'Ordnance Survey MasterMap Water Networks' within the search radius for the site. The reader is referred to Section 6.10 of the Enviroinsight report for further details.

There were seven 'Surface Water Features' reportedly within 250m of the study site that were not represented on mapping. One was given as 'on-site'.

5.2.7 Flooding.

There were Environment Agency Flood Zone 2 floodplains within 250m of the site.

There were Environment Agency Flood Zone 3 floodplains within 250m of the site.

There was a 'High' risk of flooding from Rivers and Sea for the site.

There were no Flood Defence areas within the search radius of 250m for the site.

There were no areas benefitting from Flood Defences within 250m of the site.

There were no areas used for Flood Storage within 250m of the site.

Goldfinch Environmental Limited
19 Palmer Street, Walsham-le-Willows, Bury St Edmunds, Suffolk, IP31 3BZ
Tel: 01359 258681

For the category 'What is the maximum BGS Groundwater Flooding Susceptibility within 50m of the study site'. The response 'Not Prone' was given in the supplied information.

For the category 'What is the BGS confidence rating for the Groundwater Flooding susceptibility areas' the provided response was 'Not Applicable'.

5.2.8 Designated Environmentally Sensitive Sites.

There were no records for the site within this dataset.

5.2.9 Natural Hazards.

Search records indicated there was a 'Moderate' maximum risk of natural ground subsidence.

5.2.10 Mining.

Searches indicated there were no coal mining areas within 75m of the site.

There were no 'Non-Coal Mining areas' within 50m of the study site.

There are no brine affected areas within 75m of the site.

5.2.11 Radon.

Searches indicated that the site is in an area where less than 1% of properties are above the 'Action Level' therefore radon protection measures are not necessary in extensions and new dwellings.

Goldfinch Environmental Limited
19 Palmer Street, Walsham-le-Willows, Bury St Edmunds, Suffolk, IP31 3BZ
Tel: 01359 258681

6. PRELIMINARY QUALITATIVE RISK ASSESSMENT.

6.1 Introduction.

There are three factors that are taken into account whilst undertaking a qualitative risk assessment. These have been described in Section 3 of this document. At the time of this report, the site had been proposed for residential development.

6.2 Conceptual Model.

Source (s) (Potential)	Pathway	Target	Risk
Soil: The site had existed as 'undeveloped' plot of land. Early historic maps (to issue of the 1973 edition) showed the southeastern corner of the site was encroached by the western end of a small rectangular feature. The Client indicated this was a loading ramp, which had been removed. This part of the site is to be hard cover in the development thus permanently capping the footprint of this feature. Therefore a negligible risk to human health is associated with this aspect of the site. Early historic maps showed the southern part of the site as a water body (shaded blue) which is no longer shown from issue of the 1973 Edition. As stated above this is considered to be an 'overspill area' from the adjacent creek, which had probably naturally dried out/silted up over time and a Low risk was associated with this feature. There were no site-specific indicators of potential soil-borne contamination and Visual and olfactory indicators of potential contamination immediately nearby off site were not noted.	❖ Dermal contact, ingestion and inhalation	• Present users • End users • Construction workers • General public	• Low • Low • Low • Low
	❖ Wind erosion and atmospheric dispersion	• Adjacent properties • General public • Ecological Systems • Archaeological Sites & Monuments	• Low • Low • Low • n/a
	❖ Leaching	• Adjacent properties • Shallow groundwater • Services/construction materials • Plant life • Surface water • Ecological Systems • Arch. & Monuments	• Low • Low • Low • Low • Low • Low • Low
Shallow groundwater: The site overlies 'Unproductive' aquifers, which were not considered to be pollution sources.	❖ Groundwater migration	• Adjacent properties • Deep groundwater • Services/construction materials • Plant life • Ecological Systems • Archaeological Sites & Monuments	• Low • Low • Low • n/a • Low • Low
	❖ Dermal contact, ingestion and inhalation	• Present users • End users • Construction workers • General public	• Low • Low • Low • Neg-Low
Gas: Measurable (background) concentrations of ground gas would not (reasonably) be anticipated to be present as a result of historical site use or the underlying natural geology.	❖ Direct inhalation ❖ Soil migration ❖ Services migration	• End users • Construction workers • Buildings • Ecological Systems • Arch. Sites & Monuments	• Low • Low • Low • Low • Neg

Goldfinch Environmental Limited
19 Palmer Street, Walsham-le-Willows, Bury St Edmunds, Suffolk, IP31 3BZ
Tel: 01359 258681

Negligible Risk	Defined as the site should be considered suitable for present or future use and environmental setting. Contaminants unlikely to be present, which might have unacceptable impact on key targets.
Low Risk	Defined as the site should be considered suitable for present or future use and environmental setting. Contaminants may be present but unlikely to have unacceptable impact on key targets.
Medium Risk	Defined as the site may not be suitable for present or future use and environmental setting. Contaminants are probably present and might have unacceptable impact on key targets.
High Risk	Defined as the site is probably or certainly not suitable for present or future use and environmental setting. Contaminants probably or certainly present and likely to have an unacceptable impact on key targets.
Notes:	n/a = not applicable

The risk assessment follows below:-

6.3 Targets.

Potential targets, in the context of the risk assessment (based on the relevant pollutant linkage), where a plausible pathway can be proven, are discussed as follows.

At the time of this report, the proposed scheme comprised residential development.

6.3.1 Human Health (Site Users & Construction Workers)

The site had a limited documented development history as described, which included its establishment. There is the potential for the presence of limited thicknesses of Made Ground in the form of concrete hardstanding associated with the former loading ramp, which encroached the southeastern corner of the site. This location is within proposed hard cover, which would provide a physical barrier between any potential sources of contamination resulting from on site activities and the End User.

It is further reasonably considered that if Made Ground is present in this area then it would be 'inert' and therefore not a 'plausible' source of contamination itself.

Based upon the foregoing and the final paragraph of this report, regarding 'unanticipated contamination:-

A *Low* risk has been identified until proven otherwise.

6.3.2 Services and Construction Materials

6.3.2.1 Concrete & Potable water supplies.

Adverse effects on services and construction materials may be anticipated where soils are impacted by localised raised/lowered pH values, PAH's, TPHs and metals contamination and where these are present in Made Ground materials. However, in this instance and based on the absence of Made Ground and the foregoing:-

A *Low* risk has been identified.

Goldfinch Environmental Limited
19 Palmer Street, Walsham-le-Willows, Bury St Edmunds, Suffolk, IP31 3BZ
Tel: 01359 258681

6.4 Landscaping & Planting

Based on the foregoing a '*Low*' risk is presented to this receptor from the Made Ground should this be locally present at the site e.g. the south eastern corner of the site as referred above.

6.5 Groundwater (Controlled Waters)

The site is underlain by 'Unproductive' Aquifers. However, there remains the potential for small quantities of perched groundwater in any superficial fills (or Made Ground), where these are present. However, searches indicated in this instance that the presence of significant thicknesses of Made Ground would not be reasonably anticipated given the documented history of the site.

A *Low* risk to deeper groundwater has been identified.

6.6 Ground Gas

Measurable concentrations of soil gases (predominantly carbon dioxide) would not be reasonably anticipated to be present as a function of any made ground present. However, where present, any granular overburden would mitigate the risk of ground gas buildup via natural ventilation of ground gas to atmosphere.

On the basis of the foregoing:~

A *Low* risk has been identified.

Goldfinch Environmental Limited
19 Palmer Street, Walsham-le-Willows, Bury St Edmunds, Suffolk, IP31 3BZ
Tel: 01359 258681

7. RECOMMENDATIONS FOLLOWING PRELIMINARY RISK ASSESSMENT.

7.1 Overview.

The desk study information (including the outcome of the walkover survey), showed the site had a very limited documented developmental history [e.g. the referred loading ramp encroachi ng the southeastern corner of the site long since removed.] since its establishment.

The site walkover survey and the searches carried out as part of this Desk Study indicated that there were no readily identifiable sources of contamination.

The presence of Made Ground was not readily apparent and the documented history of the site suggests limited potential for this soil type to be present.

On that basis, and subject to the final paragraph in this report (in blue text), the need for a Phase 2 intrusive investigation is considered *un*warranted.

The opinions and recommendations in this report are subject to the agreement of the Regulators.

Goldfinch Environmental Limited
19 Palmer Street, Walsham-le-Willows, Bury St Edmunds, Suffolk, IP31 3BZ
Tel: 01359 258681

8. CONCLUSIONS.

This geoenvironmental desk study prepared by Goldfinch Environmental Limited was undertaken on the instruction of Mr M Parnell (the Client), via the offices of G R Merchant Architects, at a site located on the western side of Tilsons Farm, Main Road, Gedney Marsh, Spalding, Lincolnshire.

The site was proposed for residential development.

There were no notable features present in the context of land contamination other than possible localised inert Made Ground as described above.

Desk Study searches have shown that the site rests on Tidal Flat Deposits underlain by Mudstone.

An *overall Low* risk is associated with the site *subject to the final paragraph in this report.*

Recommendations for the need for further work (or otherwise) have been discussed in Section 7 of this report.

Also, at all times especially once any necessary groundworks have commenced, the final paragraph below applies regarding 'unanticipated' contamination.

The reader should note that the opinions, recommendations and conclusions in this report are subject to the agreement of the Local Authority who are the final arbiters in these matters.

Based on the foregoing, a *Low* risk to construction workers and services installations has been associated with the site until proven otherwise. Site personnel, particularly groundworkers, should follow sound health and safety welfare practices that will further mitigate this level of risk.

Should unanticipated contamination be suspected, or revealed during any groundworks, then the area should be temporarily isolated and further advice sought by a suitably independent qualified person and a management strategy for these occurrences should be submitted to the Local Authority for their approval prior to proceeding, as required by Regulatory Offices.

Goldfinch Environmental Limited
19 Palmer Street, Walsham-le-Willows, Bury St Edmunds, Suffolk, IP31 3BZ
Tel: 01359 258681

FIGURES

Approximate Site Location

N

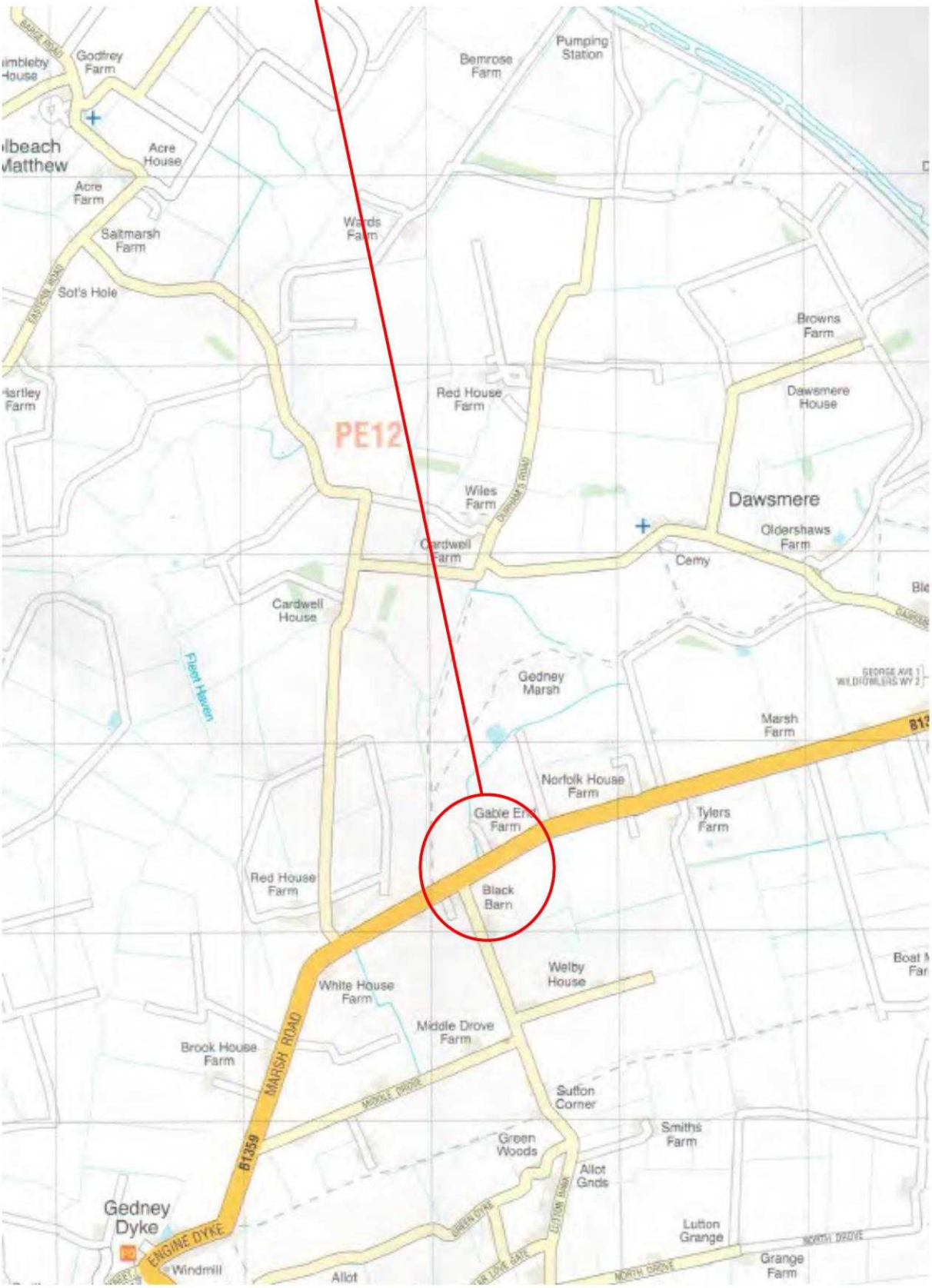


Figure 1	Site Location Plan	**Goldfinch** Environmental Ltd
Ref: 0548/1		

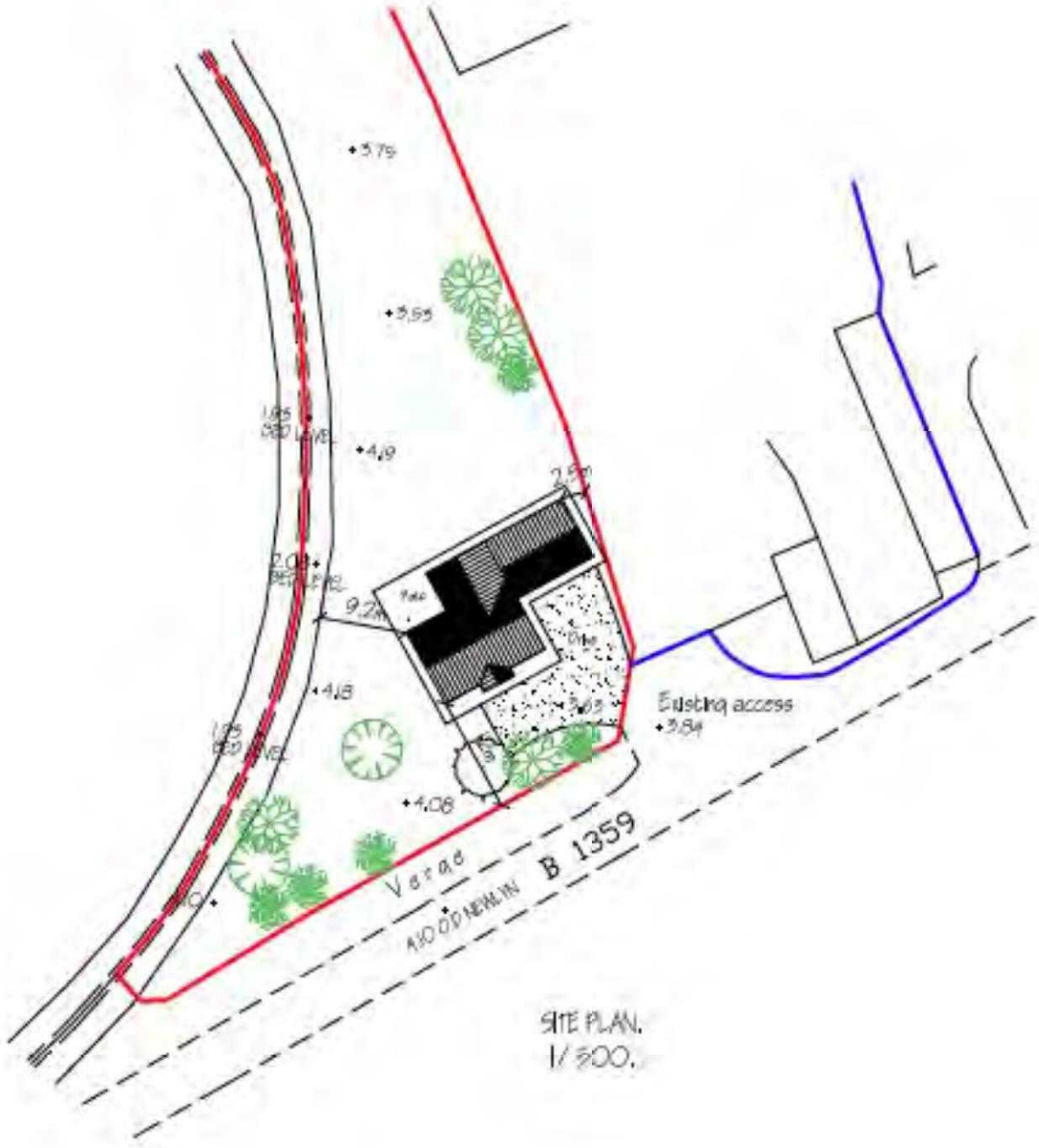
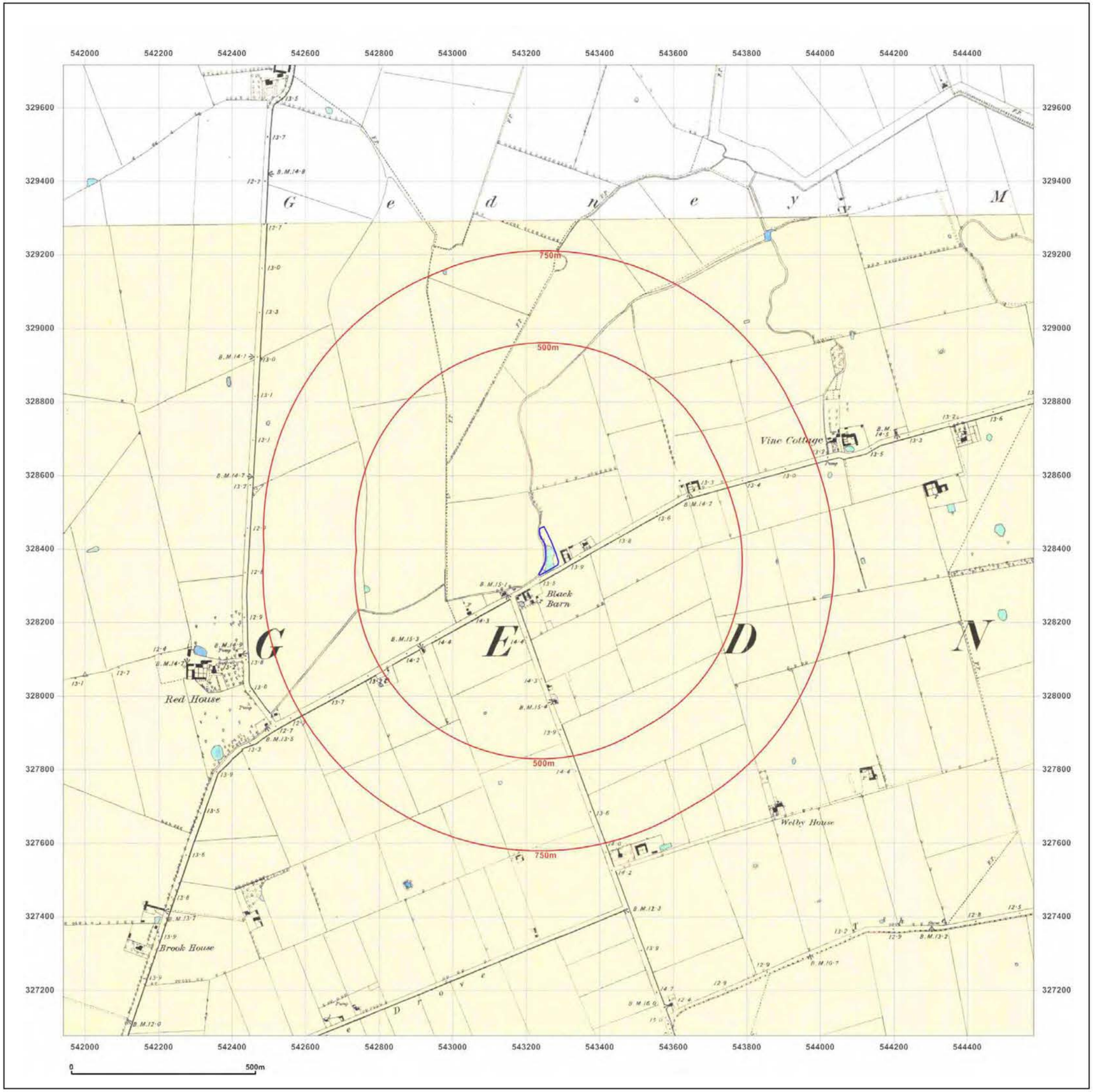


Figure 2	Proposed Layout Plan	**Goldfinch** Environmental Ltd
Ref: 0548/1		

APPENDIX 1

'Groundsure' Report



Groundsure INSIGHTS

Site Details:

TILSONS YARD BLACK BARN,
MAIN ROAD, GEDNEY DROVE END, SPALDING, PE12 9PA

Client Ref: 0548-ds
Report Ref: GS-2391-5170825
Grid Ref: 543260, 328395

Map Name: County Series

Map date: **1886-1887**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

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

Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

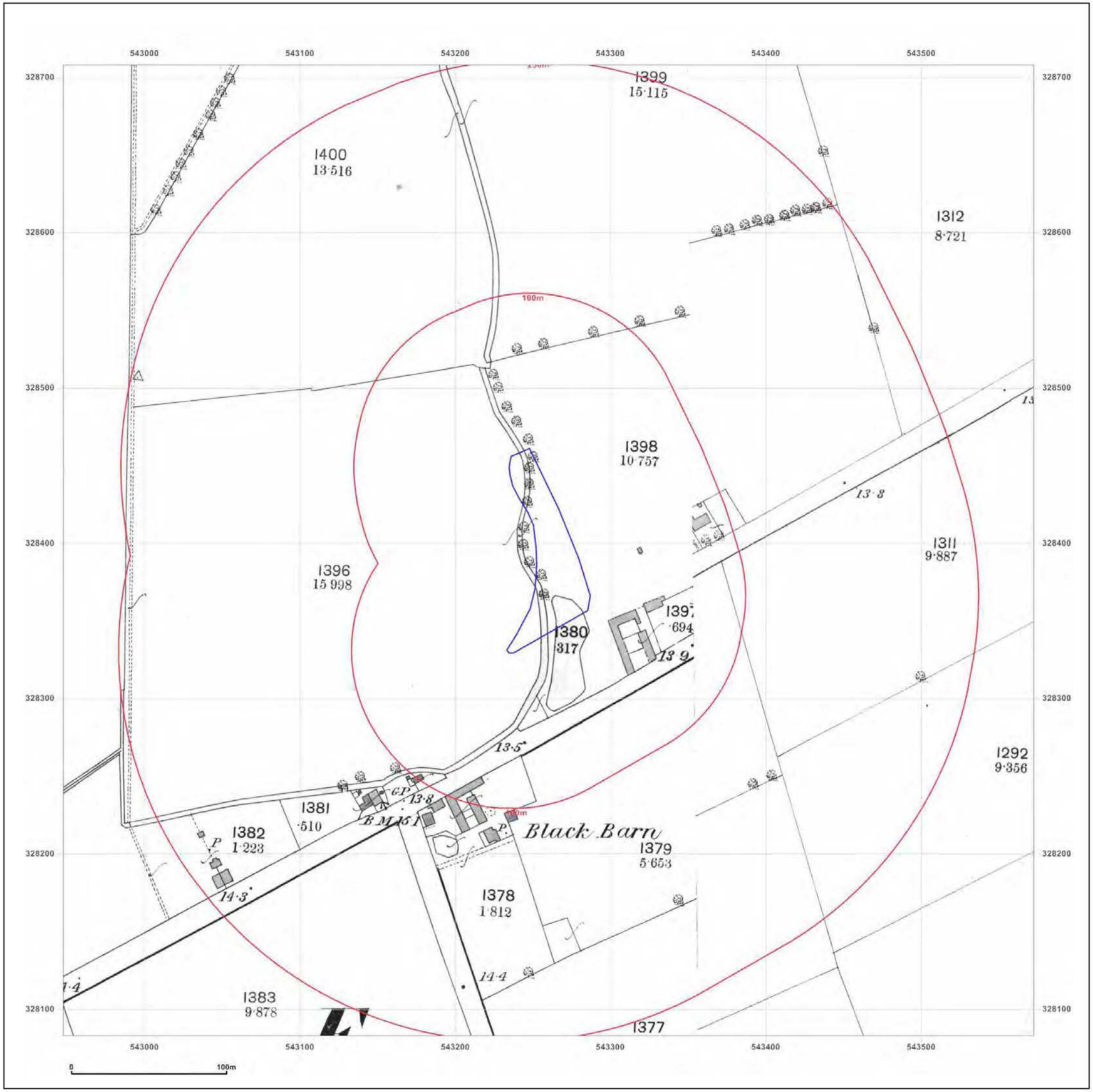
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 June 2018

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

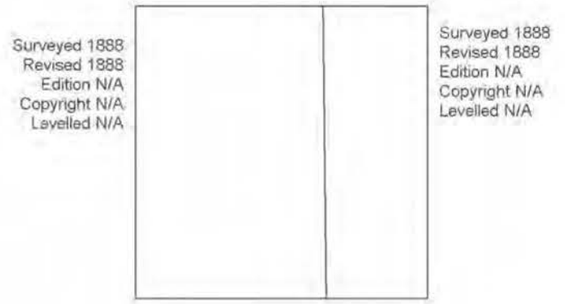
Site Details:

TILSONS YARD BLACK BARN,
MAIN ROAD, GEDNEY DROVE
END, SPALDING, PE12 9PA

Client Ref: 0548-ds
Report Ref: GS-2391-5170825
Grid Ref: 543260, 328395

Map Name: County Series
Map date: **1888**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S



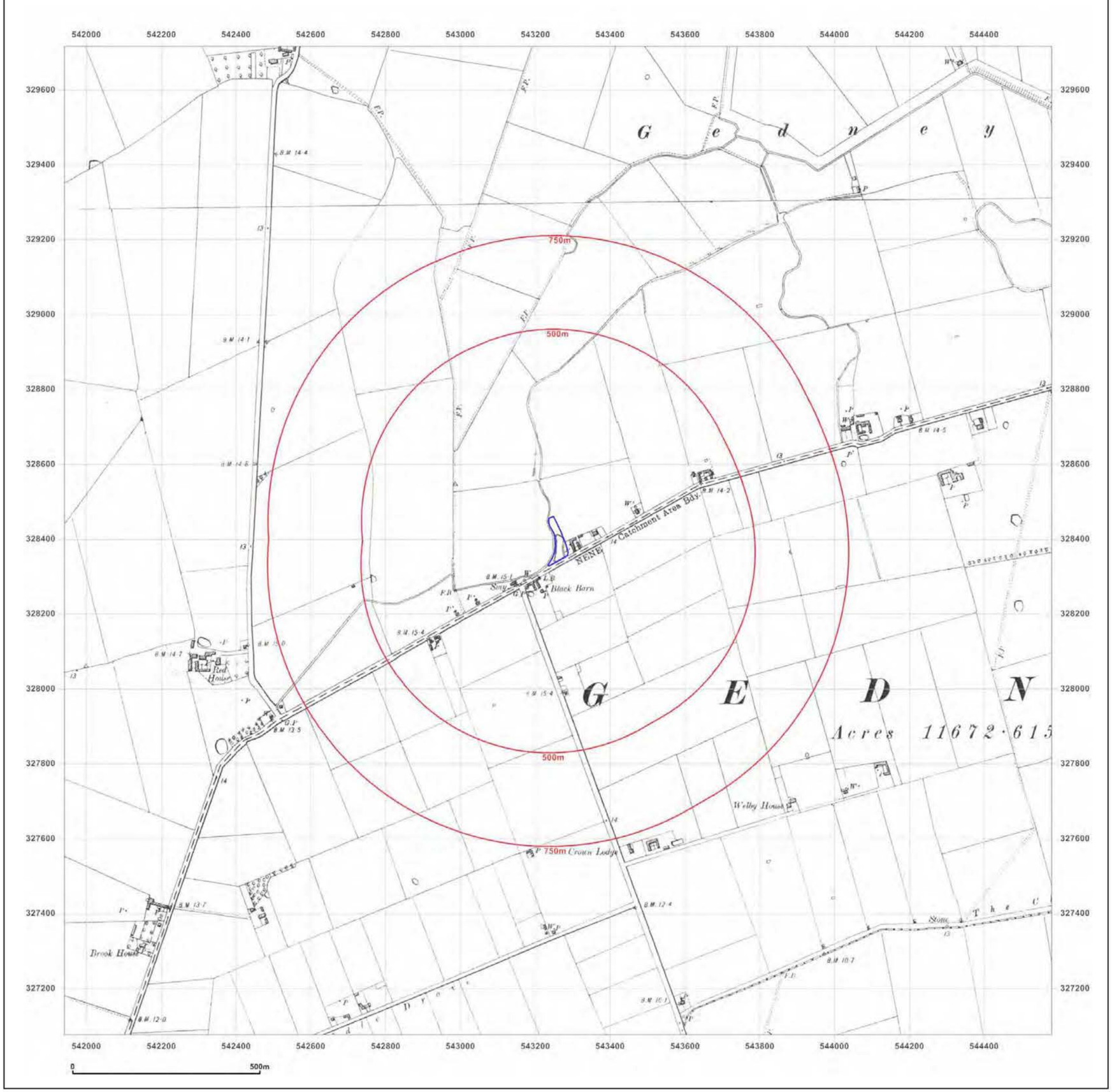
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 June 2018

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

TILSONS YARD BLACK BARN,
MAIN ROAD, GEDNEY DROVE END, SPALDING, PE12 9PA

Client Ref: 0548-ds
Report Ref: GS-2391-5170825
Grid Ref: 543260, 328395

Map Name: County Series

Map date: **1903-1905**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1886
Revised 1905
Edition 1905
Copyright N/A
Levelled N/A

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

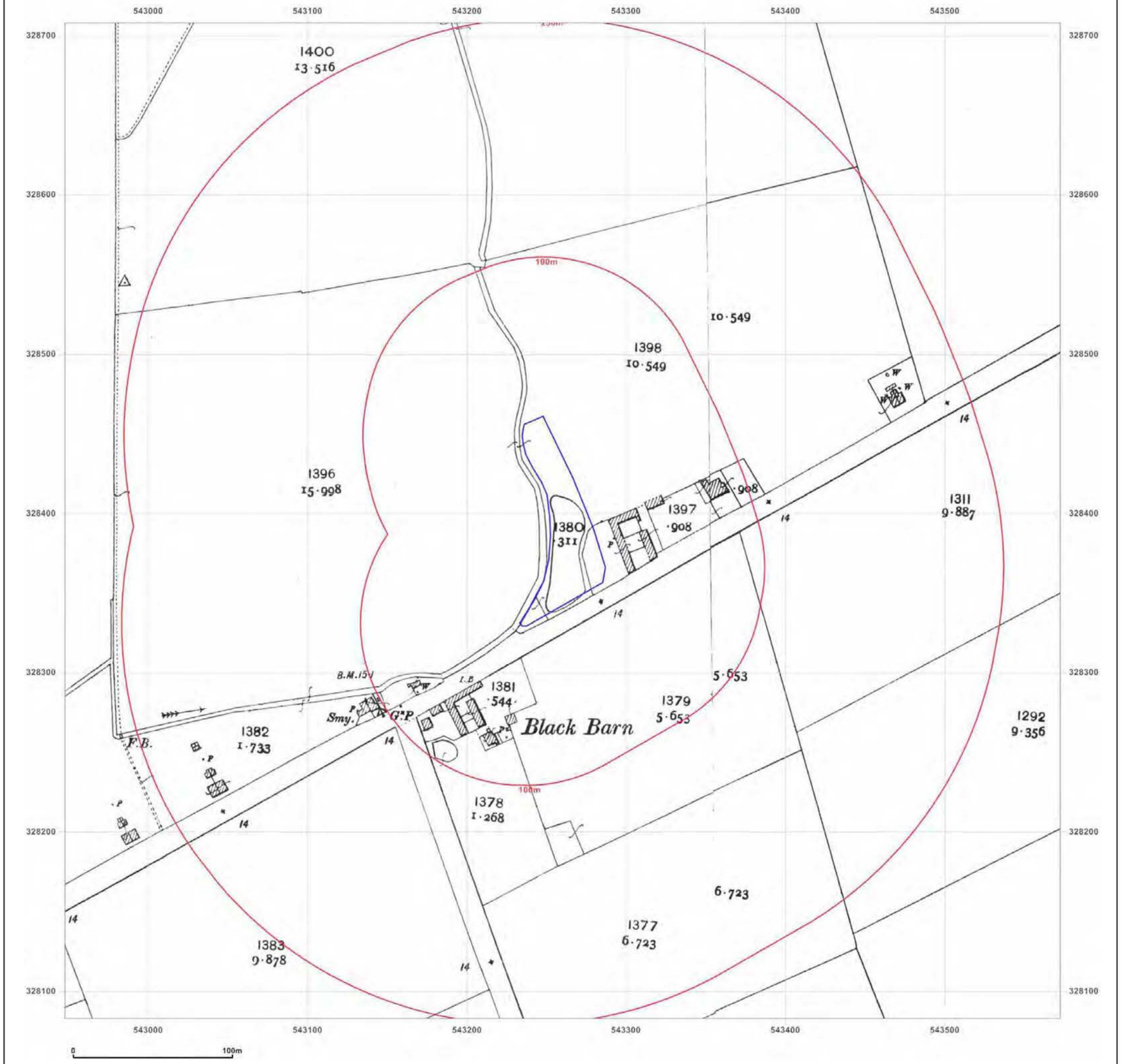
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 June 2018

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

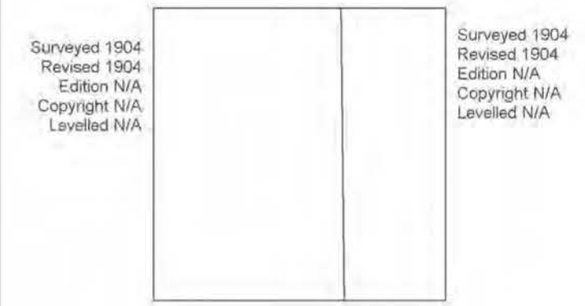
Site Details:

TILSONS YARD BLACK BARN,
MAIN ROAD, GEDNEY DROVE
END, SPALDING, PE12 9PA

Client Ref: 0548-ds
Report Ref: GS-2391-5170825
Grid Ref: 543260, 328395

Map Name: County Series
Map date: 1904
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S



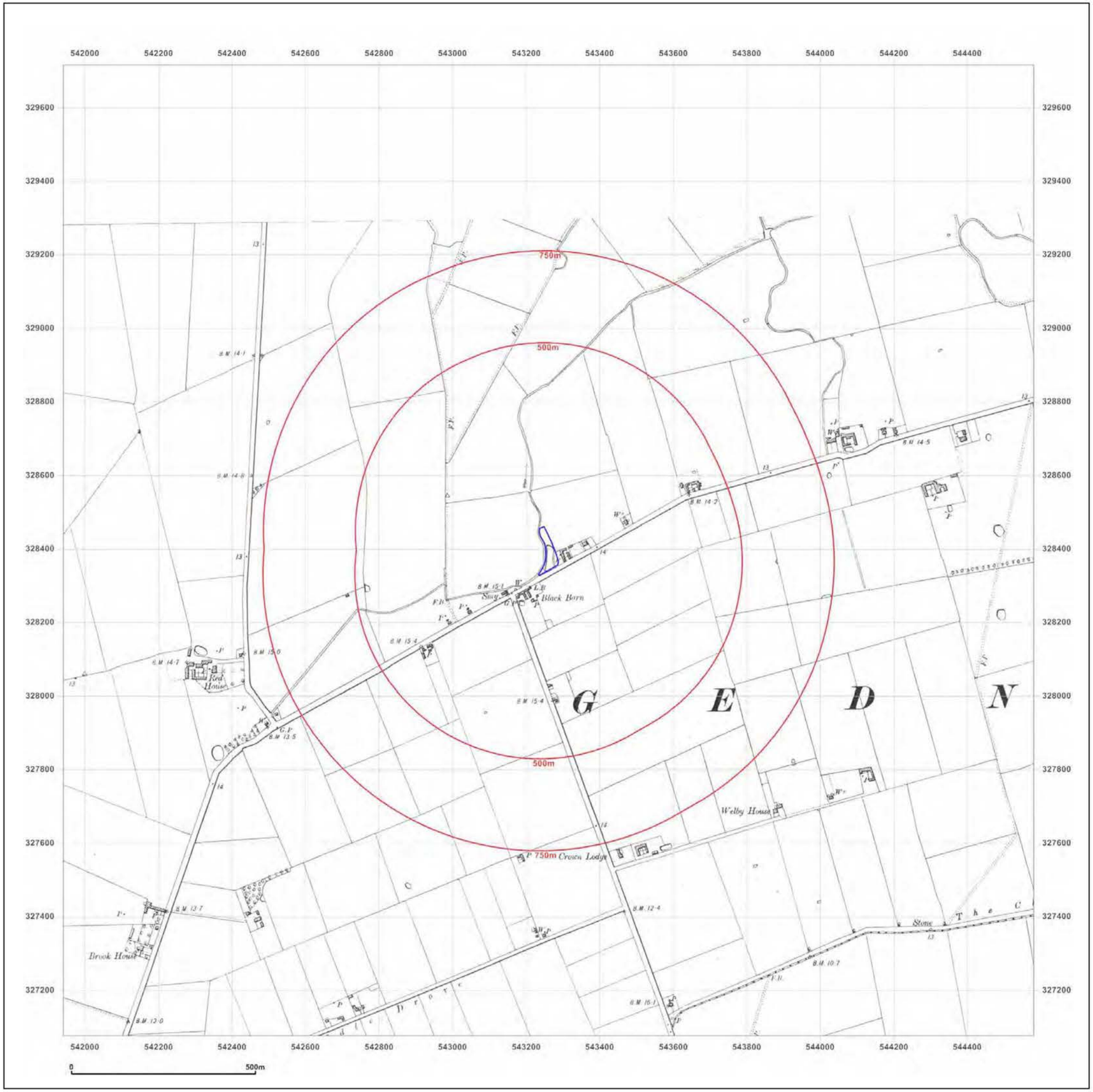
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 June 2018

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

TILSONS YARD BLACK BARN,
MAIN ROAD, GEDNEY DROVE
END, SPALDING, PE12 9PA

Client Ref: 0548-ds
Report Ref: GS-2391-5170825
Grid Ref: 543260, 328395

Map Name: County Series

Map date: **1905**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1886
Revised 1905
Edition 1905
Copyright N/A
Levelled N/A

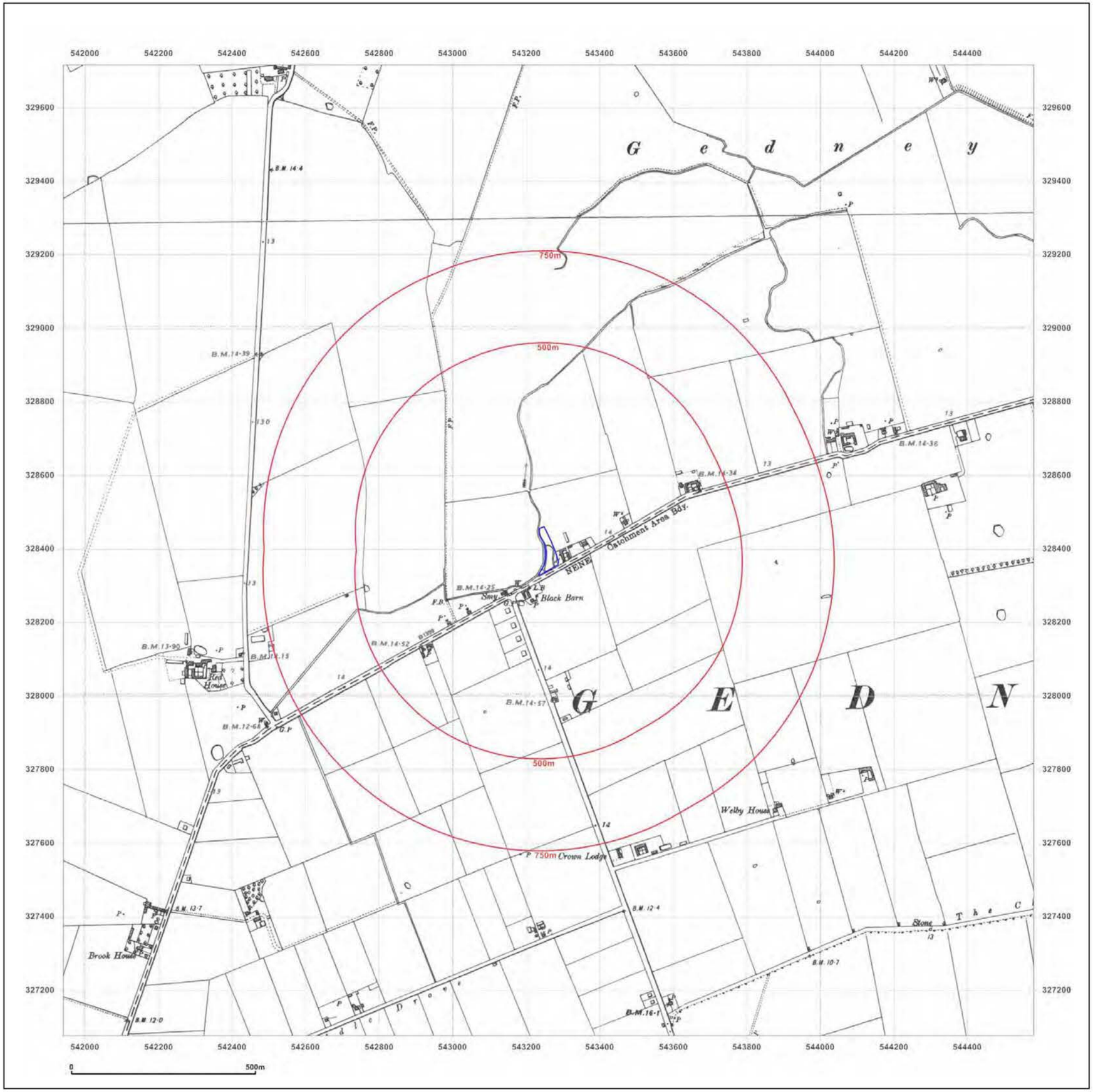
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 June 2018

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

TILSONS YARD BLACK BARN,
MAIN ROAD, GEDNEY DROVE
END, SPALDING, PE12 9PA

Client Ref: 0548-ds
Report Ref: GS-2391-5170825
Grid Ref: 543260, 328395

Map Name: County Series

Map date: **1946-1950**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1886
Revised 1946
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1886
Revised 1950
Edition N/A
Copyright N/A
Levelled N/A

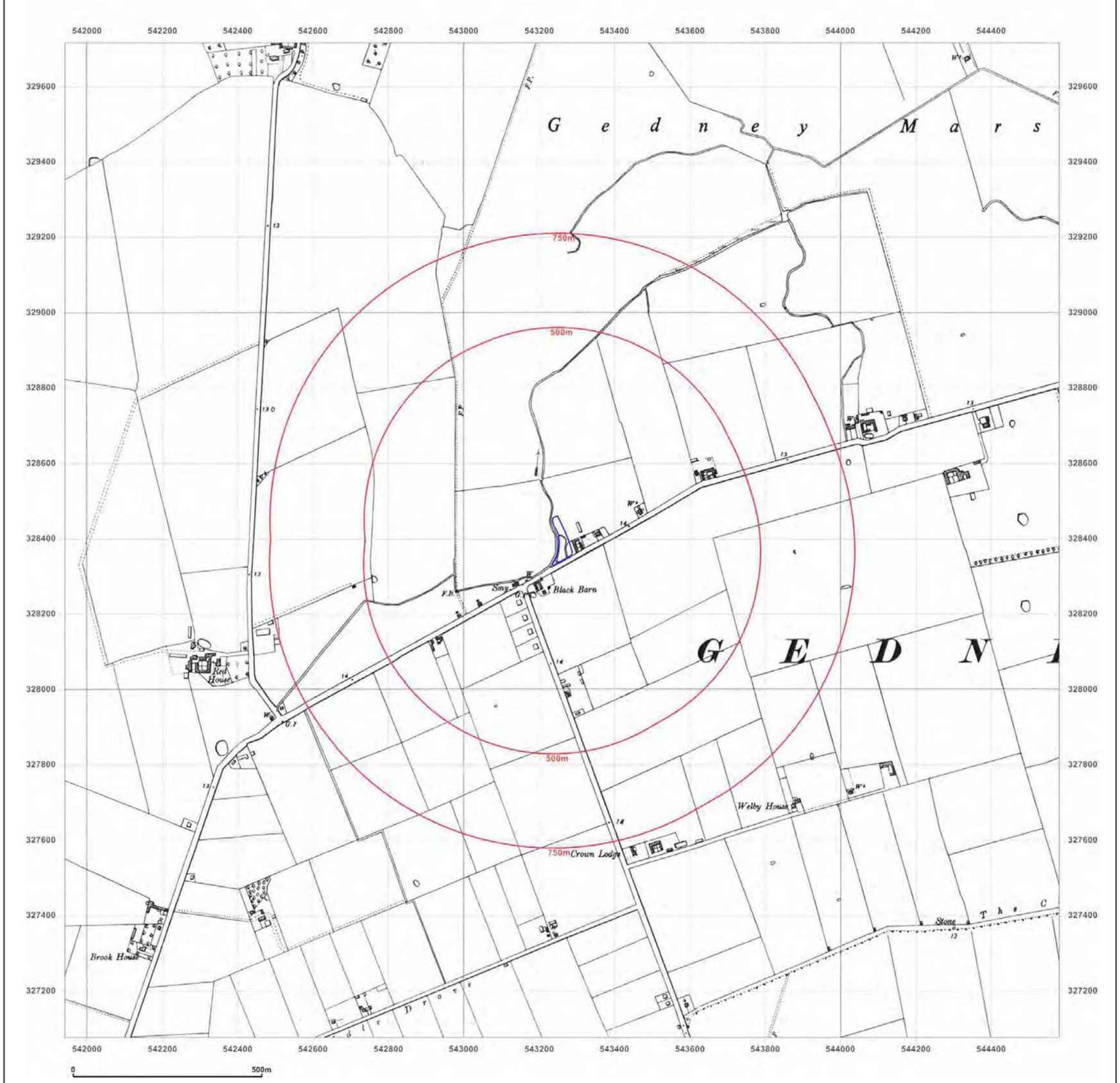
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 June 2018

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

TILSONS YARD BLACK BARN,
MAIN ROAD, GEDNEY DROVE END, SPALDING, PE12 9PA

Client Ref: 0548-ds
Report Ref: GS-2391-5170825
Grid Ref: 543260, 328395

Map Name: Provisional
Map date: **1955**
Scale: 1:10,560
Printed at: 1:10,560

N
W E
S

Surveyed 1950
Revised 1950
Edition N/A
Copyright N/A
Levelled N/A

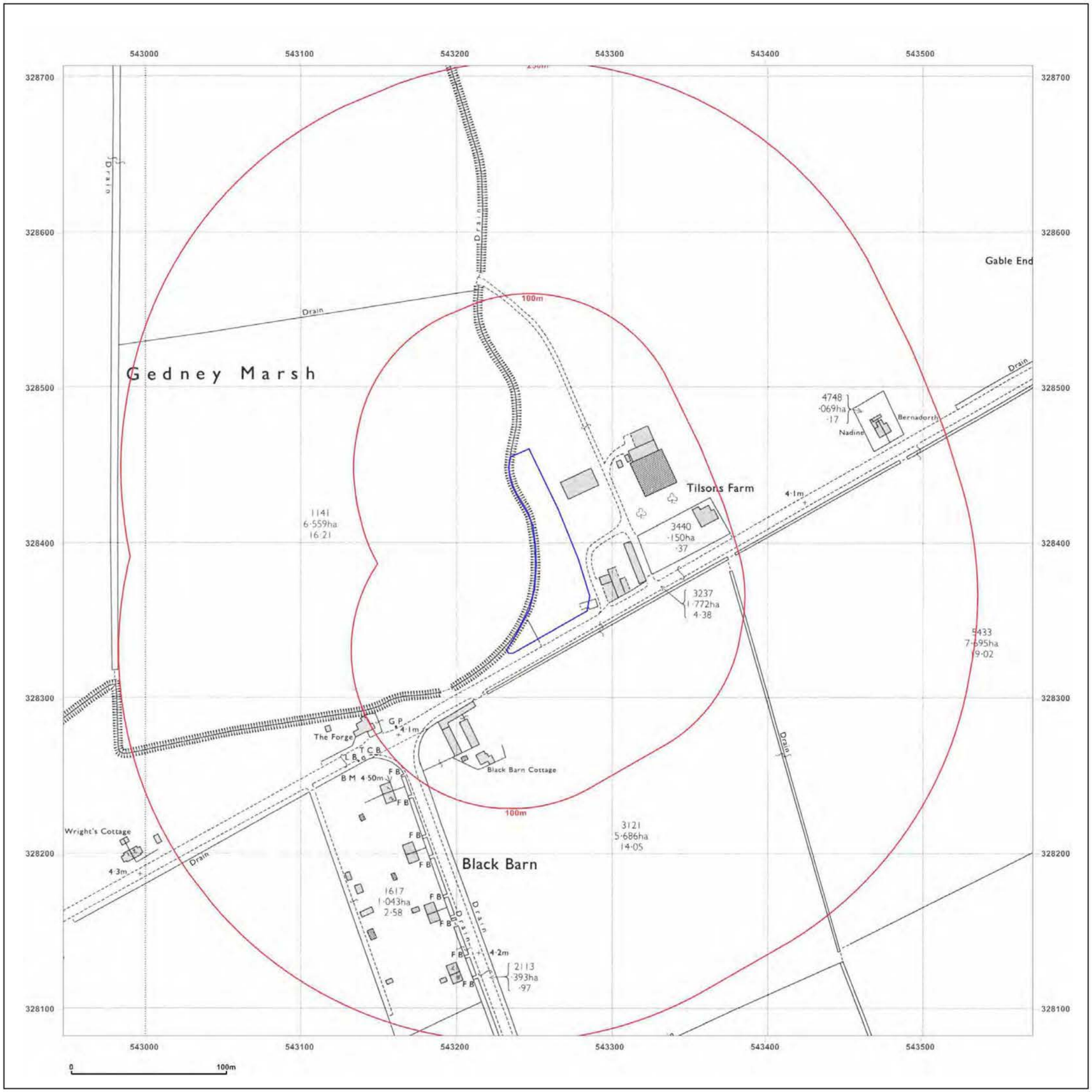
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 June 2018

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

TILSONS YARD BLACK BARN,
MAIN ROAD, GEDNEY DROVE END, SPALDING, PE12 9PA

Client Ref: 0548-ds
Report Ref: GS-2391-5170825
Grid Ref: 543260, 328395

Map Name: National Grid
Map date: **1973**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

Surveyed 1973
Revised 1973
Edition N/A
Copyright 1974
Levelled 1965

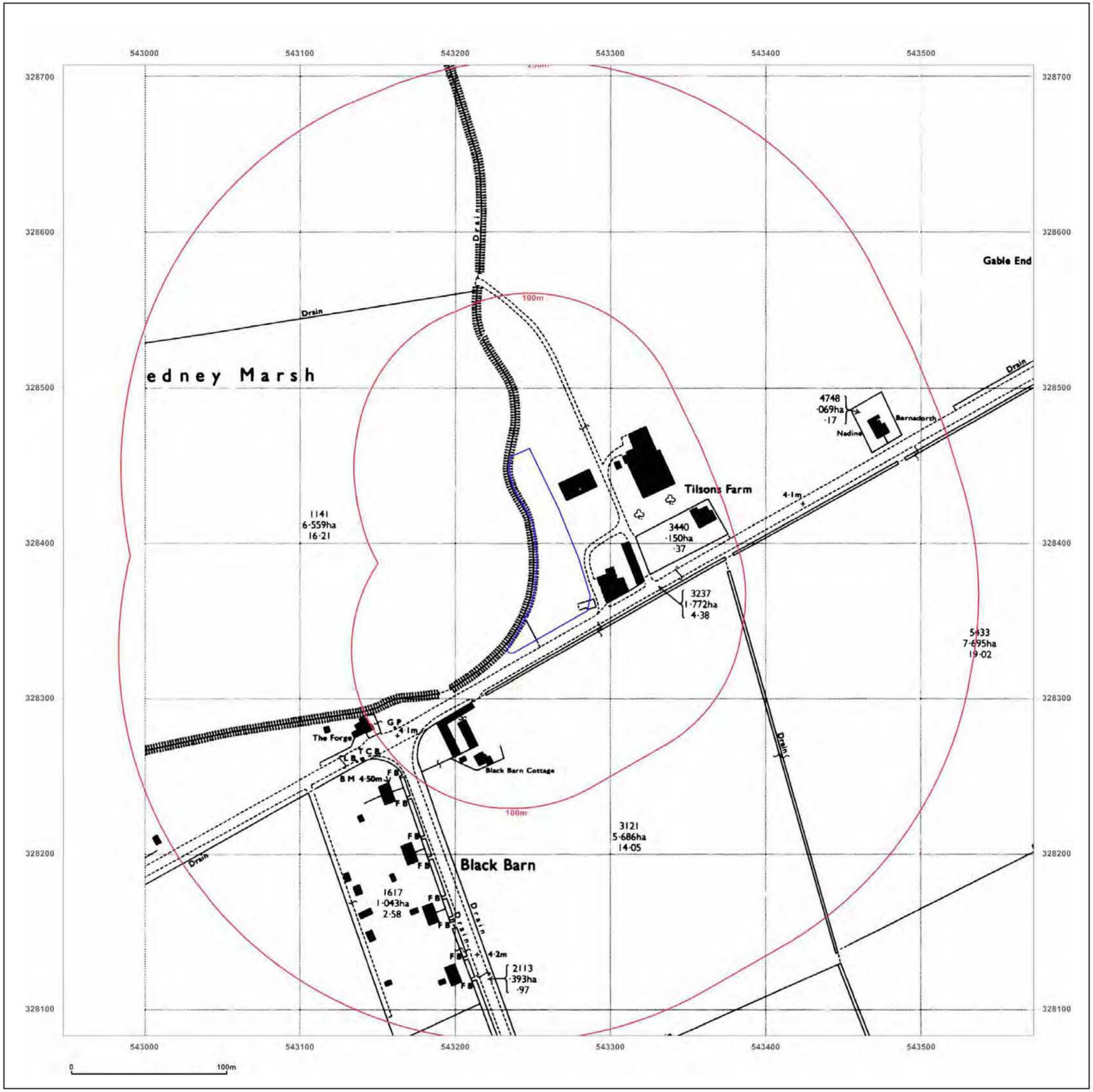
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 June 2018

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

TILSONS YARD BLACK BARN,
MAIN ROAD, GEDNEY DROVE
END, SPALDING, PE12 9PA

Client Ref: 0548-ds
Report Ref: GS-2391-5170825
Grid Ref: 543260, 328395

Map Name: National Grid
Map date: **1974**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

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

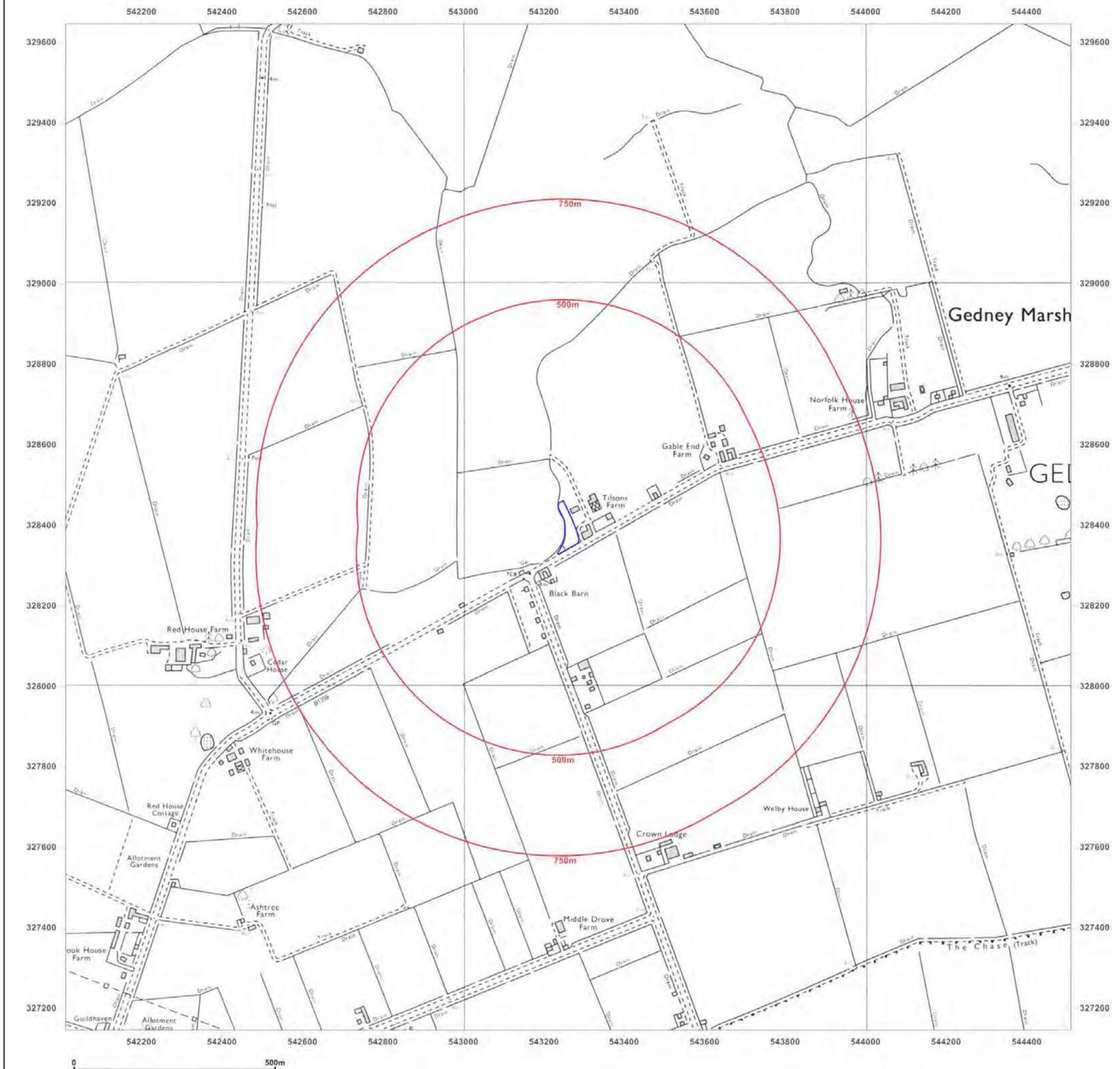
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 June 2018

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

TILSONS YARD BLACK BARN,
MAIN ROAD, GEDNEY DROVE
END, SPALDING, PE12 9PA

Client Ref: 0548-ds
Report Ref: GS-2391-5170825
Grid Ref: 543260, 328395

Map Name: National Grid

Map date: **1978**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1973
Revised 1977
Edition N/A
Copyright 1978
Levelled 1975

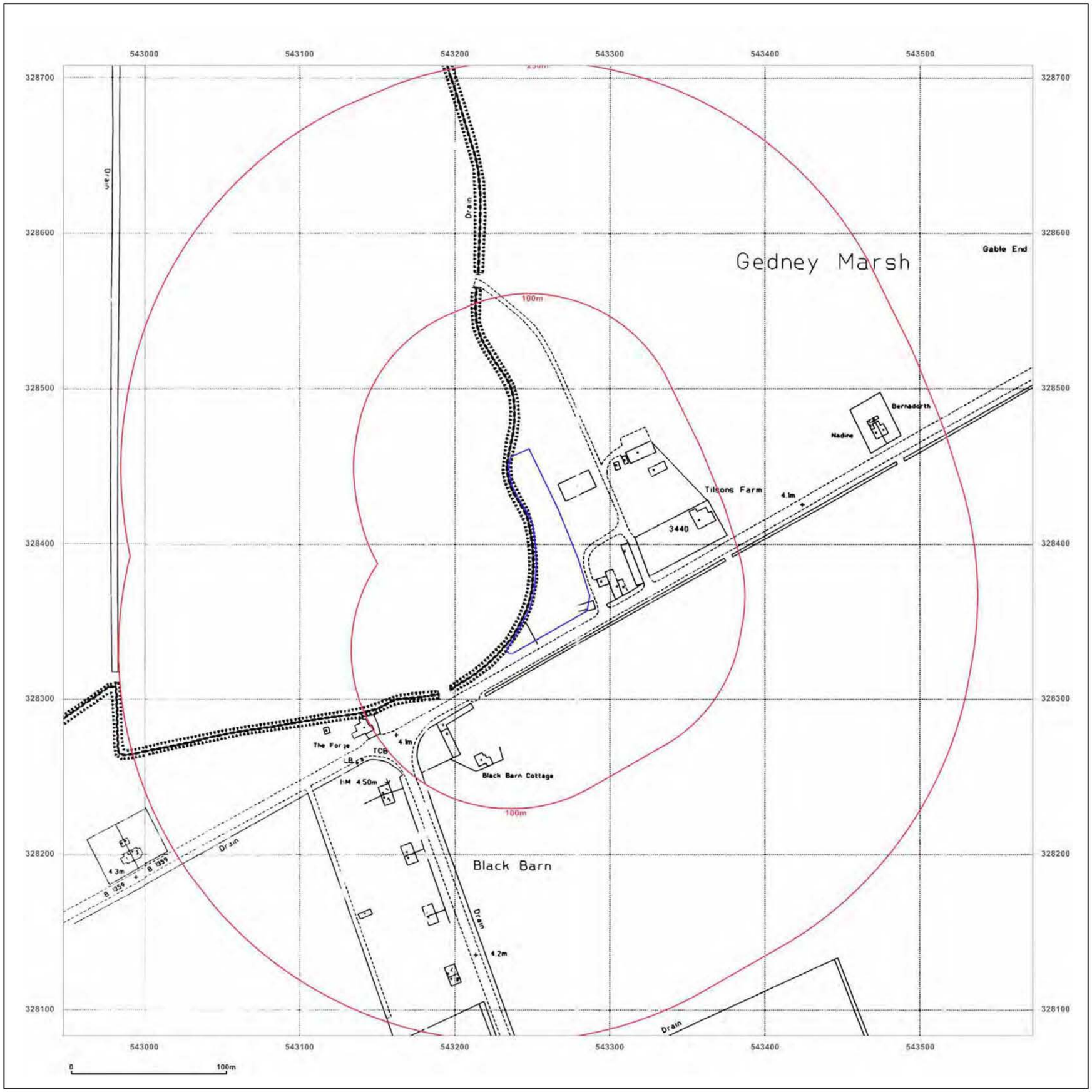
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 June 2018

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

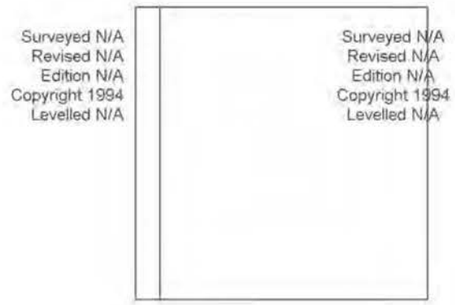
Site Details:

TILSONS YARD BLACK BARN,
MAIN ROAD, GEDNEY DROVE
END, SPALDING, PE12 9PA

Client Ref: 0548-ds
Report Ref: GS-2391-5170825
Grid Ref: 543260, 328395

Map Name: National Grid
Map date: 1994
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S



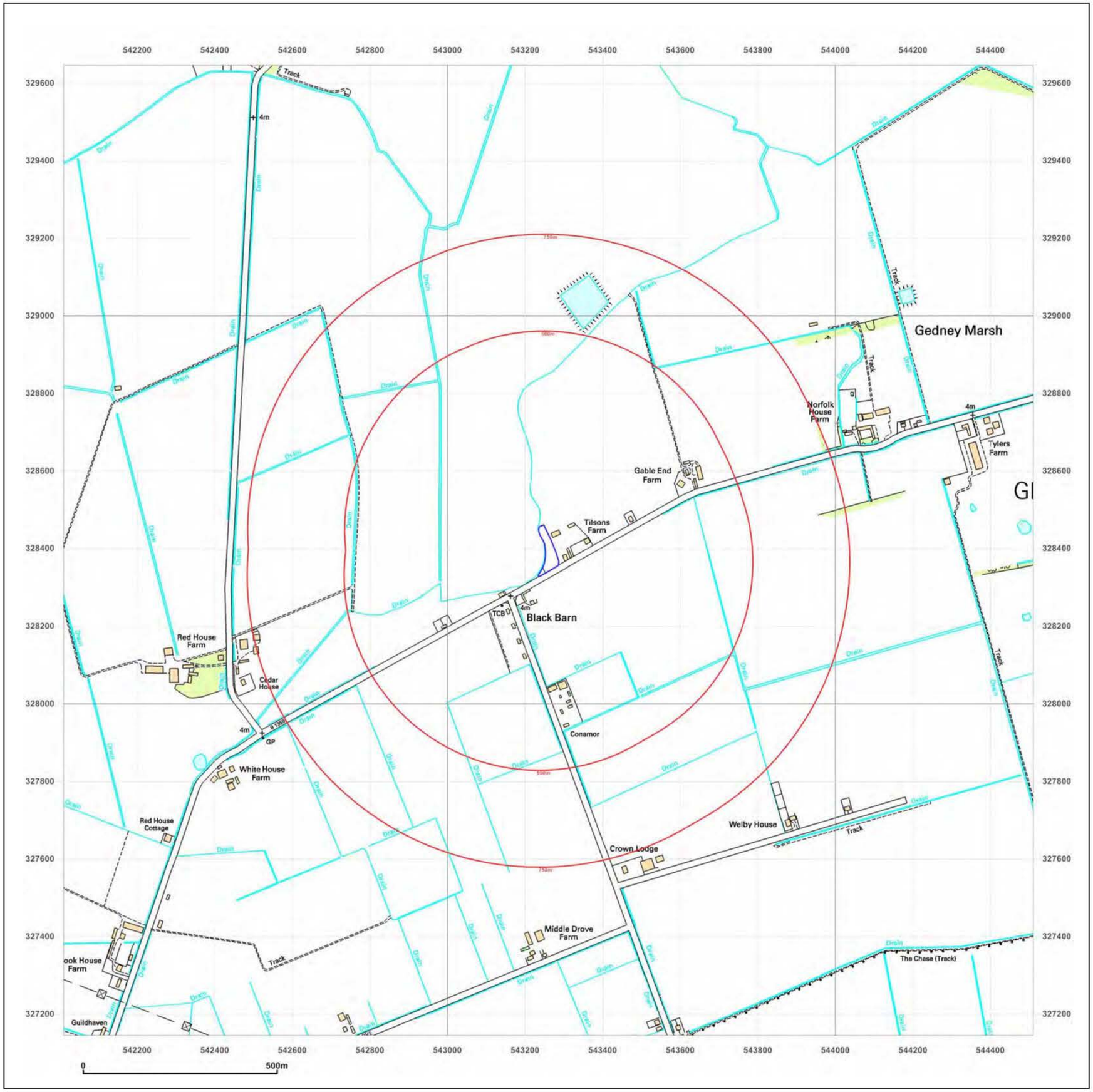
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 June 2018

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

TILSONS YARD BLACK BARN,
MAIN ROAD, GEDNEY DROVE
END, SPALDING, PE12 9PA

Client Ref: 0548-ds
Report Ref: GS-2391-5170825
Grid Ref: 543260, 328395

Map Name: 1:10,000 Raster
Map date: 2002
Scale: 1:10,000
Printed at: 1:10,000

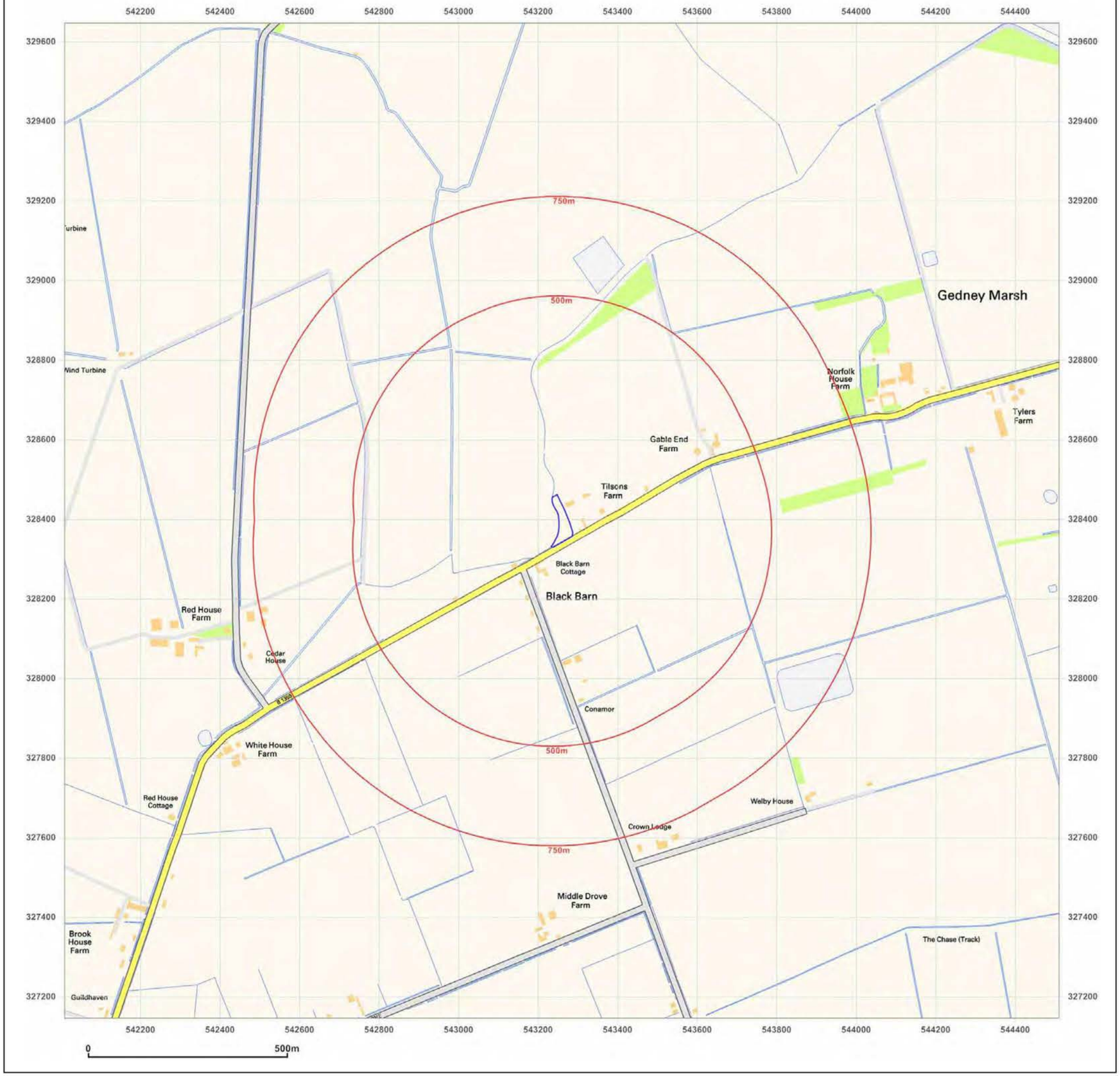
N
W E
S

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 June 2018

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

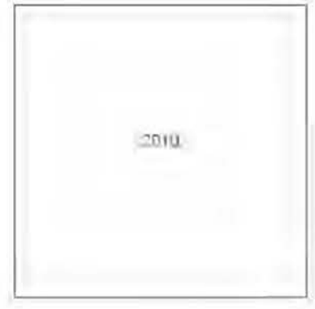
Site Details:

TILSONS YARD BLACK BARN,
MAIN ROAD, GEDNEY DROVE END, SPALDING, PE12 9PA

Client Ref: 0548-ds
Report Ref: GS-2391-5170825
Grid Ref: 543260, 328395

Map Name: National Grid
Map date: 2010
Scale: 1:10,000
Printed at: 1:10,000

N
W E
S



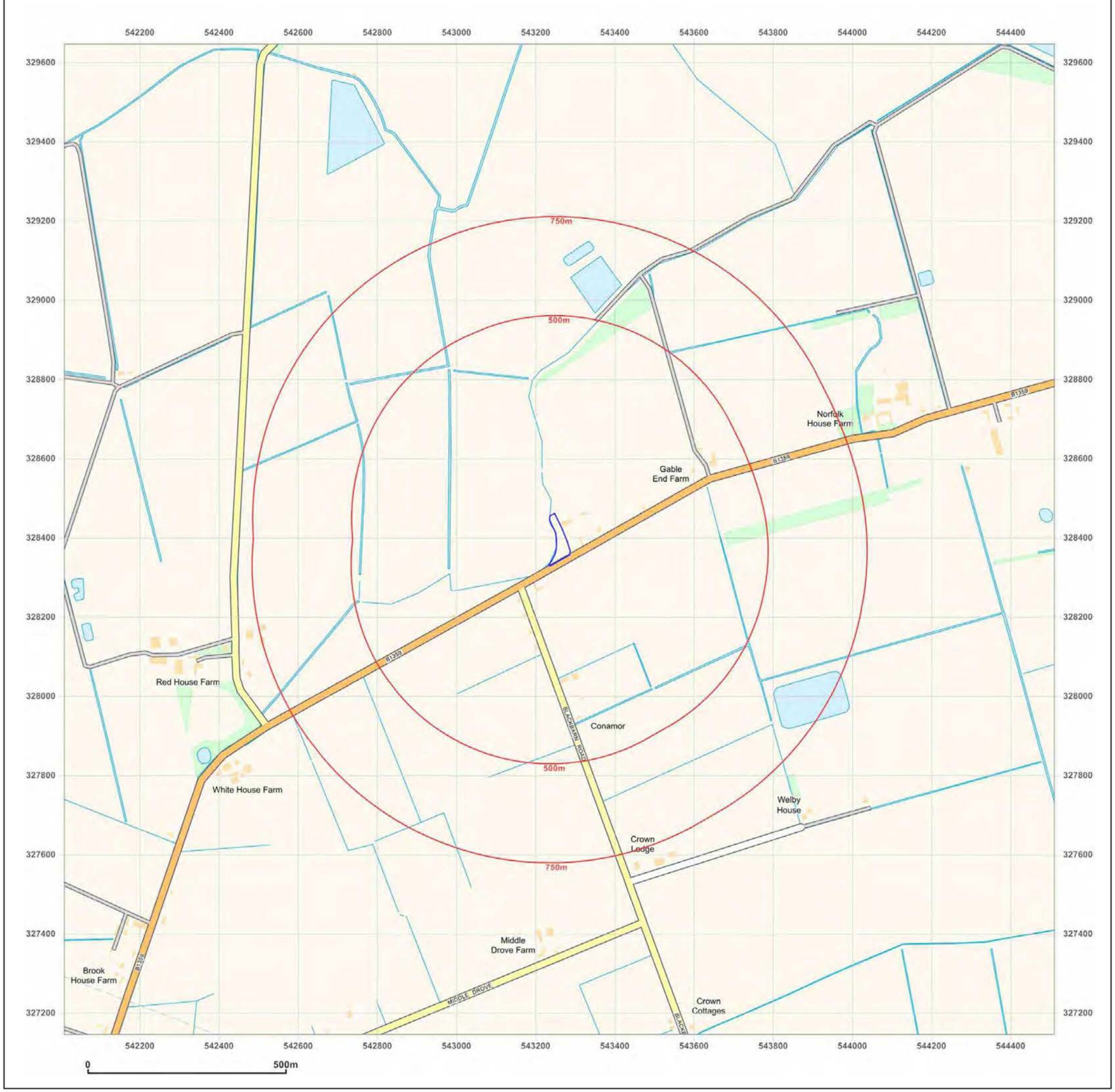
Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 June 2018

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

TILSONS YARD BLACK BARN,
MAIN ROAD, GEDNEY DROVE END, SPALDING, PE12 9PA

Client Ref: 0548-ds
Report Ref: GS-2391-5170825
Grid Ref: 543260, 328395

Map Name: National Grid
Map date: 2014
Scale: 1:10,000
Printed at: 1:10,000

N
W E
S

2018

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 June 2018

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

Goldfinch Environmental Limited

19, Palmer Street,
Bury St Edmunds,
Suffolk, IP31 3BZ

Groundsure Reference:	GS-2391-5170823
Your Reference:	0548-ds
Report Date	26 Jun 2018
Report Delivery Method:	Email - pdf

Enviro Insight

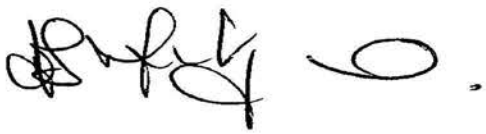
Address: TILSONS YARD BLACK BARN, MAIN ROAD, GEDNEY DROVE END, SPALDING, PE12 9PA

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,



Managing Director
Groundsure Limited

Enc.
Groundsure Enviroinsight

Enviro Insight

Address:	**TILSONS YARD BLACK BARN, MAIN ROAD, GEDNEY DROVE END, SPALDING, PE12 9PA**
Date:	**26 Jun 2018**
Reference:	**GS-2391-5170823**
Client:	**Goldfinch Environmental Limited**

NW N NE

W E

SW S SE

Aerial Photograph Capture date:	11-Sep-2015
Grid Reference:	543262,328396
Site Size:	0.31ha

Report Reference: GS-2391-5170823
Client Reference: 0548-ds

Groundsure
LOCATION INTELLIGENCE

Contents Page

Contents Page 3
Overview of Findings 6
Using this report 10
1. Historical Land Use 11
1. Historical Industrial Sites 12
1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping 12
1.2 Additional Information – Historical Tank Database 12
1.3 Additional Information – Historical Energy Features Database 12
1.4 Additional Information – Historical Petrol and Fuel Site Database 12
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database 13
1.6 Potentially Infilled Land 13
2. Environmental Permits, Incidents and Registers Map 14
2. Environmental Permits, Incidents and Registers 15
2.1 Industrial Sites Holding Licences and/or Authorisations 15
2.1.1 Records of historic IPC Authorisations within 500m of the study site: 15
2.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site: 15
2.1.3 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site: 15
2.1.4 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site: 15
2.1.5 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site: 15
2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site: 16
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations: 16
2.1.8 Records of Licensed Discharge Consents within 500m of the study site: 16
2.1.9 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site: 16
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site: 16
2.2 Dangerous or Hazardous Sites 16
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents 17
2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site: 17
2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site: 17
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990 17
3. Landfill and Other Waste Sites Map 18
3. Landfill and Other Waste Sites 19
3.1 Landfill Sites 19
3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site: 19
3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site: 19
3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site: 19
3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site: 19
3.2 Other Waste Sites 19
3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site: 19
3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site: 20
4. Current Land Use Map 21
4. Current Land Uses 22
4.1 Current Industrial Data 22
4.2 Petrol and Fuel Sites 22
4.3 National Grid High Voltage Underground Electricity Transmission Cables 22
4.4 National Grid High Pressure Gas Transmission Pipelines 23

5. Geology 24
5.1 Artificial Ground and Made Ground 24
5.2 Superficial Ground and Drift Geology 24
5.3 Bedrock and Solid Geology 24
6 Hydrogeology and Hydrology 25
6a. Aquifer Within Superficial Geology 25
6b. Aquifer Within Bedrock Geology and Abstraction Licenses 26
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses 27
6d. Hydrogeology – Source Protection Zones within confined aquifer 28
6e. Hydrology – Watercourse Network and River Quality 29
6.Hydrogeology and Hydrology 30
6.1 Aquifer within Superficial Deposits 30
6.2 Aquifer within Bedrock Deposits 30
6.3 Groundwater Abstraction Licences 30
6.4 Surface Water Abstraction Licences 33
6.5 Potable Water Abstraction Licences 34
6.6 Source Protection Zones 34
6.7 Source Protection Zones within Confined Aquifer 34
6.8 Groundwater Vulnerability and Soil Leaching Potential 34
6.9 River Quality 34
6.9.1 Biological Quality: 34
6.9.2 Chemical Quality: 35
6.10 Ordnance Survey MasterMap Water Network 35
6.11 Surface Water Features 39
7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea) 40
7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map 41
7 Flooding 42
7.1 River and Coastal Zone 2 Flooding 42
7.2 River and Coastal Zone 3 Flooding 42
7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating 43
7.4 Flood Defences 43
7.5 Areas benefiting from Flood Defences 43
7.6 Areas benefiting from Flood Storage 43
7.7 Groundwater Flooding Susceptibility Areas 43
7.8 Groundwater Flooding Confidence Areas 44
8. Designated Environmentally Sensitive Sites Map 45
8. Designated Environmentally Sensitive Sites 46
8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site: 46
8.2 Records of National Nature Reserves (NNR) within 2000m of the study site: 46
8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site: 46
8.4 Records of Special Protection Areas (SPA) within 2000m of the study site: 46
8.5 Records of Ramsar sites within 2000m of the study site: 46
8.6 Records of Ancient Woodland within 2000m of the study site: 47
8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site: 47
8.8 Records of World Heritage Sites within 2000m of the study site: 47
8.9 Records of Environmentally Sensitive Areas within 2000m of the study site: 47
8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site: 47
8.11 Records of National Parks (NP) within 2000m of the study site: 47
8.12 Records of Nitrate Sensitive Areas within 2000m of the study site: 47
8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site: 48

8.14 Records of Green Belt land within 2000m of the study site:.....48
9. Natural Hazards Findings 49
9.1 Detailed BGS GeoSure Data.....49
9.1.1 Shrink Swell.....49
9.1.2 Landslides.....49
9.1.3 Soluble Rocks.....49
9.1.4 Compressible Ground.....50
9.1.5 Collapsible Rocks.....50
9.1.6 Running Sand.....50
9.2 Radon.....51
9.2.1 Radon Affected Areas.....51
9.2.2 Radon Protection.....51
10. Mining 52
10.1 Coal Mining.....52
10.2 Non-Coal Mining.....52
10.3 Brine Affected Areas.....52
Contact Details 53
Standard Terms and Conditions 55

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	0	0	4	1
1.2 Additional Information – Historical Tank Database	0	0	0	0
1.3 Additional Information – Historical Energy Features Database	0	0	0	0
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	0	0
1.6 Potentially Infilled Land	4	0	0	0

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	0
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/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	0	0
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/Natural Resources Wales Registered Landfill Sites	0	0	0	0	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	0	0	0	0	0	0
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	0	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	0	0	0

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

Section 5: Geology	
5.1 Records of Artificial Ground and Made Ground present beneath the study site	None identified
5.2 Records of Superficial Ground and Drift Geology present beneath the study site	Identified
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 Records of Strata Classification in the Superficial Geology within 500m of the study site	Identified
6.2 Records of Strata Classification in the Bedrock Geology within 500m of the study site	Identified

	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	7	8
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	1	0	5
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

Section 6: Hydrogeology and Hydrology

	0-500m					
	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site	No	No	No	No	No	No
6.10 Ordnance Survey MasterMap Water Network entries within 500m of the site	2	0	8	48	Not searched	Not searched
6.11 Surface water features within 250m of the study site	Yes	No	Yes	Not searched	Not searched	Not searched

Section 7: Flooding

7.1 Enviroment Agency Zone 2 floodplains within 250m of the study site	Identified
7.2 Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	Identified
7.3 Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site	High
7.4 Flood Defences within 250m of the study site	None identified
7.5 Areas benefiting from Flood Defences within 250m of the study site	None identified
7.6 Areas used for Flood Storage within 250m of the study site	None identified
7.7 Maximum BGS Groundwater Flooding susceptibility within 50m of the study site	Not Prone
7.8 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

Section 8: Designated Environmentally Sensitive Sites	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
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 Maximum risk of natural ground subsidence	Moderate
9.1.1 Maximum Shrink-Swell hazard rating identified on the study site	Low
9.1.2 Maximum Landslides hazard rating identified on the study site	Very Low
9.1.3 Maximum Soluble Rocks hazard rating identified on the study site	Negligible
9.1.4 Maximum Compressible Ground hazard rating identified on the study site	Moderate
9.1.5 Maximum Collapsible Rocks hazard rating identified on the study site	Negligible
9.1.6 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 site 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 Coal mining areas within 75m of the study site	None identified
10.2 Non-Coal Mining areas within 50m of the study site boundary	None identified
10.3 Brine affected areas within 75m of the study site	None identified

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.

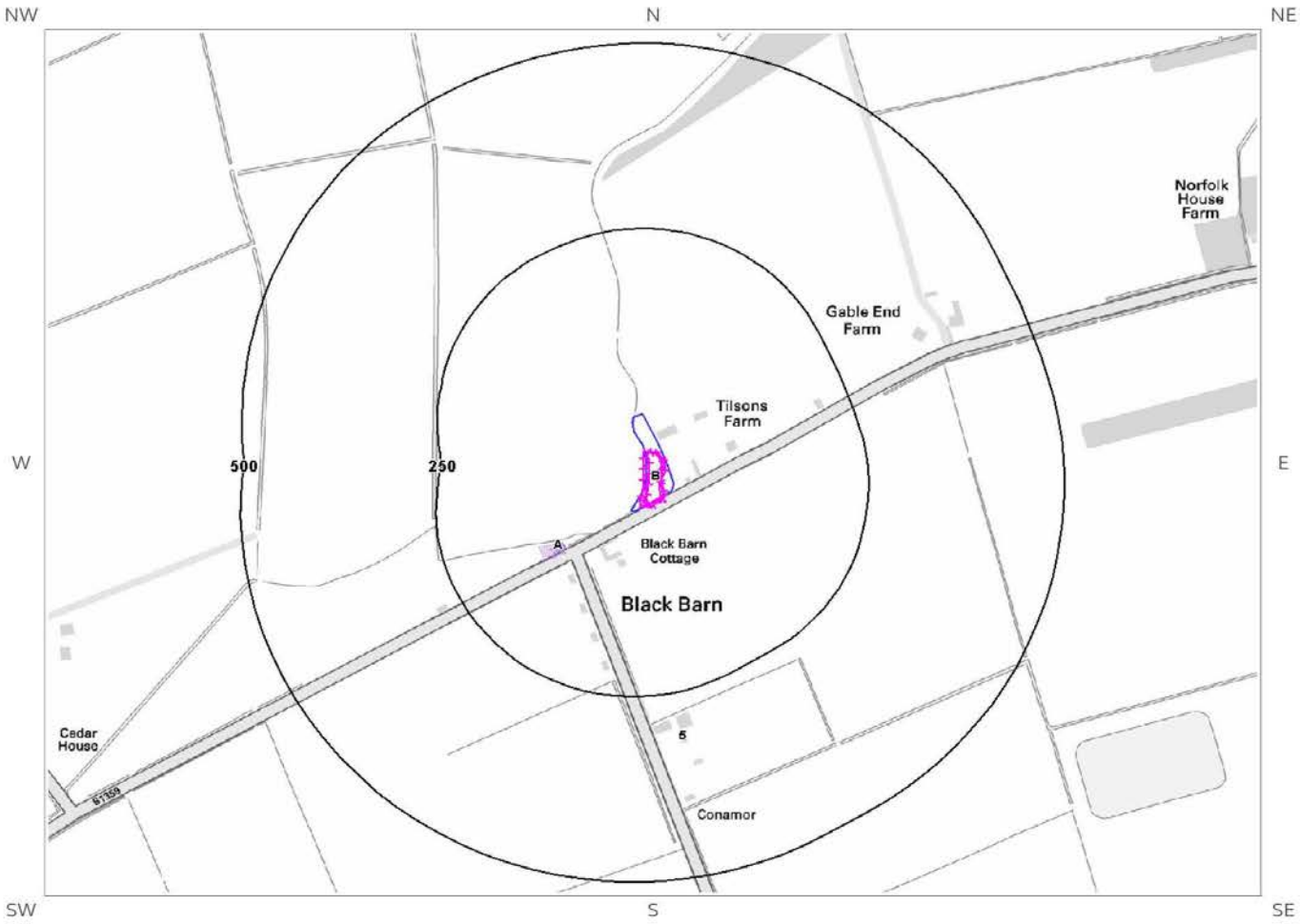
Note: Maps

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



© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

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: 5

ID	Distance [m]	Direction	Use	Date
1A	98	SW	Smithy	1950
2A	98	SW	Smithy	1903
3A	99	SW	Smithy	1905
4A	101	SW	Smithy	1955
5	309	S	Unspecified Tank	1976

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: 0

Database searched and no data found.

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: 0

Database searched and no data found.

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: 0

Database searched and no data found.

1.6 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 4

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

ID	Distance(m)	Direction	Use	Date
6B	0	On Site	Pond	1887
7B	0	On Site	Pond	1955
8B	0	On Site	Pond	1950
9B	0	On Site	Pond	1905

2. Environmental Permits, Incidents and Registers Map

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

- 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/Natural Resources Wales 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:

0

Database searched and no data found.

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/Natural Resources Wales Recorded Pollution Incidents

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

0

Database searched and no data found.

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

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

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

Site Outline

250
500
Search Buffers (m)

EA/NRW Active Landfill

EA/NRW Historic Landfill

BGS / DoE Survey Landfill

Historic and Planned Waste Sites

EA/NRW 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/Natural Resources Wales landfill data within 1000m of the study site:

0

Database searched and no data found.

3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site:

0

Database searched and no data found.

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:

0

Database searched and no data found.

3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site:

0

Database searched and no data found.

---

4. Current Land Use Map

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

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: 0

Database searched and no data found.

4.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: 0

Database searched and no data found.

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: 1

The following National Grid high pressure gas transmission pipelines records are represented as linear features on the Current Land Use map:

ID	Distance (m)	Direction	Details	
1	391	N	Pipe Name: FM07 - Gosberton to Tydd St Giles Pipe Number: Feeder 7 Pipeline Safety Regulations Number: - Ownership: National Grid	Maximum Operating Pressure (Bar): - Pipeline Diameter (mm): 900mm Wall Thickness (mm): -mm Year of commission: - Abandonment Status: Not Abandoned

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-XCZ	TIDAL FLAT DEPOSITS	CLAY AND SILT

5.3 Bedrock and Solid Geology

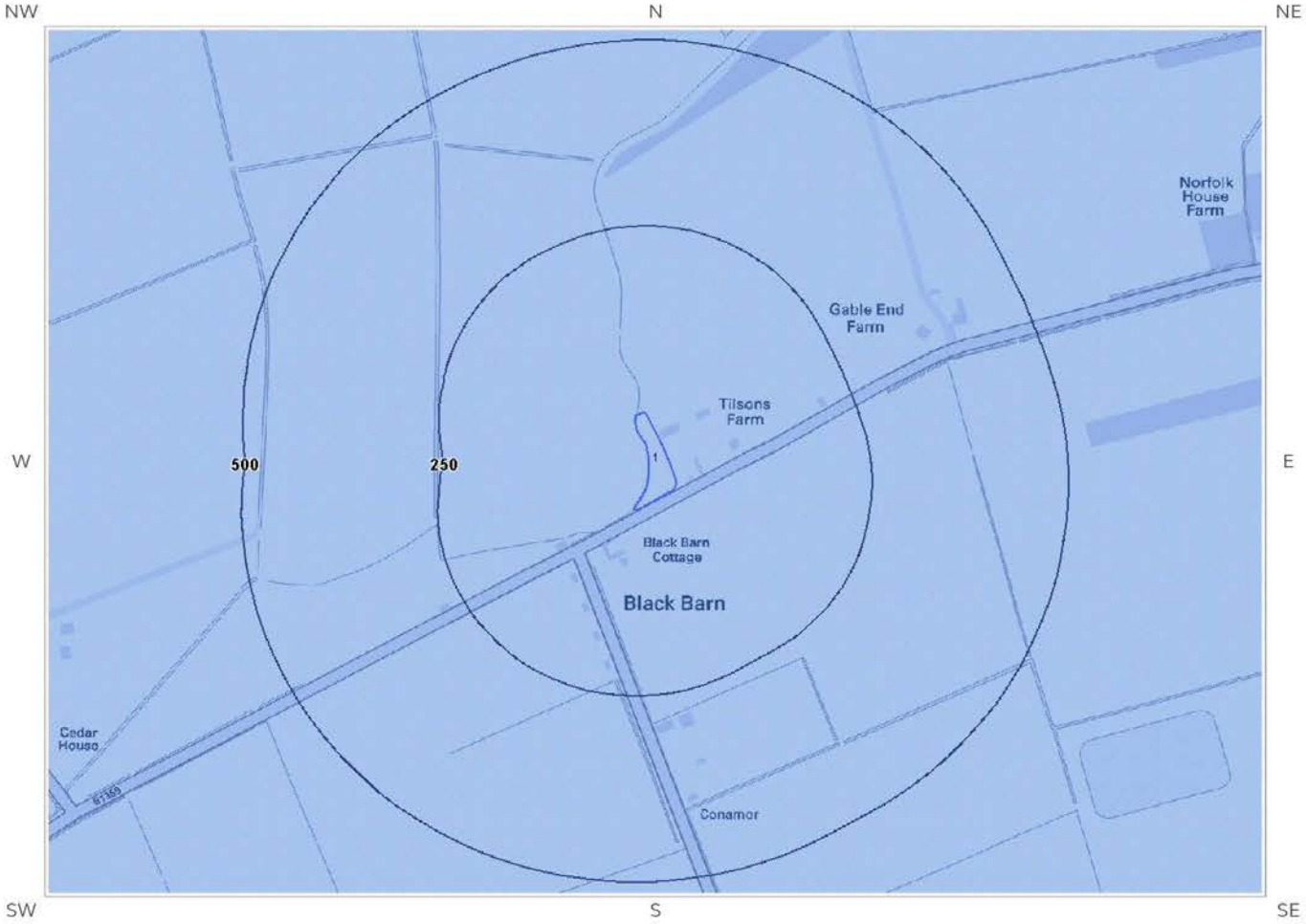
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
AMC-MDST	AMPTHILL CLAY FORMATION	MUDSTONE

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

6 Hydrogeology and Hydrology

6a. Aquifer Within Superficial Geology



© Crown copyright and database rights 2018
Ordnance Survey license 100035207.

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

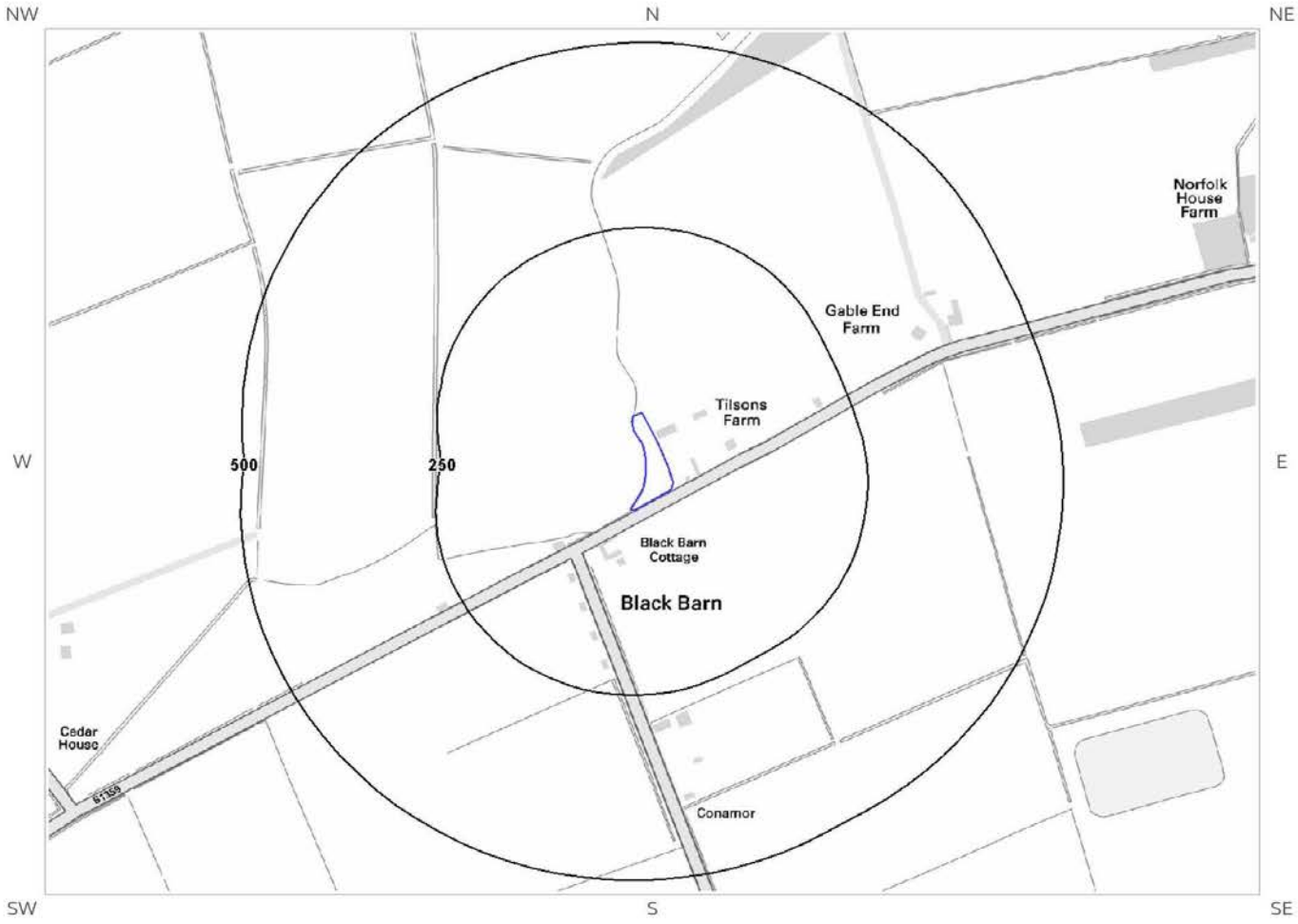
Unknown (lakes and landslip)

6b. Aquifer Within Bedrock Geology and Abstraction Licenses

© Crown copyright and database rights 2018
Ordnance Survey license 100035207.

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



© Crown copyright and database rights 2018
Ordnance Survey license 100035207.

Site Outline

250 — 500 — Search Buffers (m)

Source Protection Zone 1 - Inner Catchment

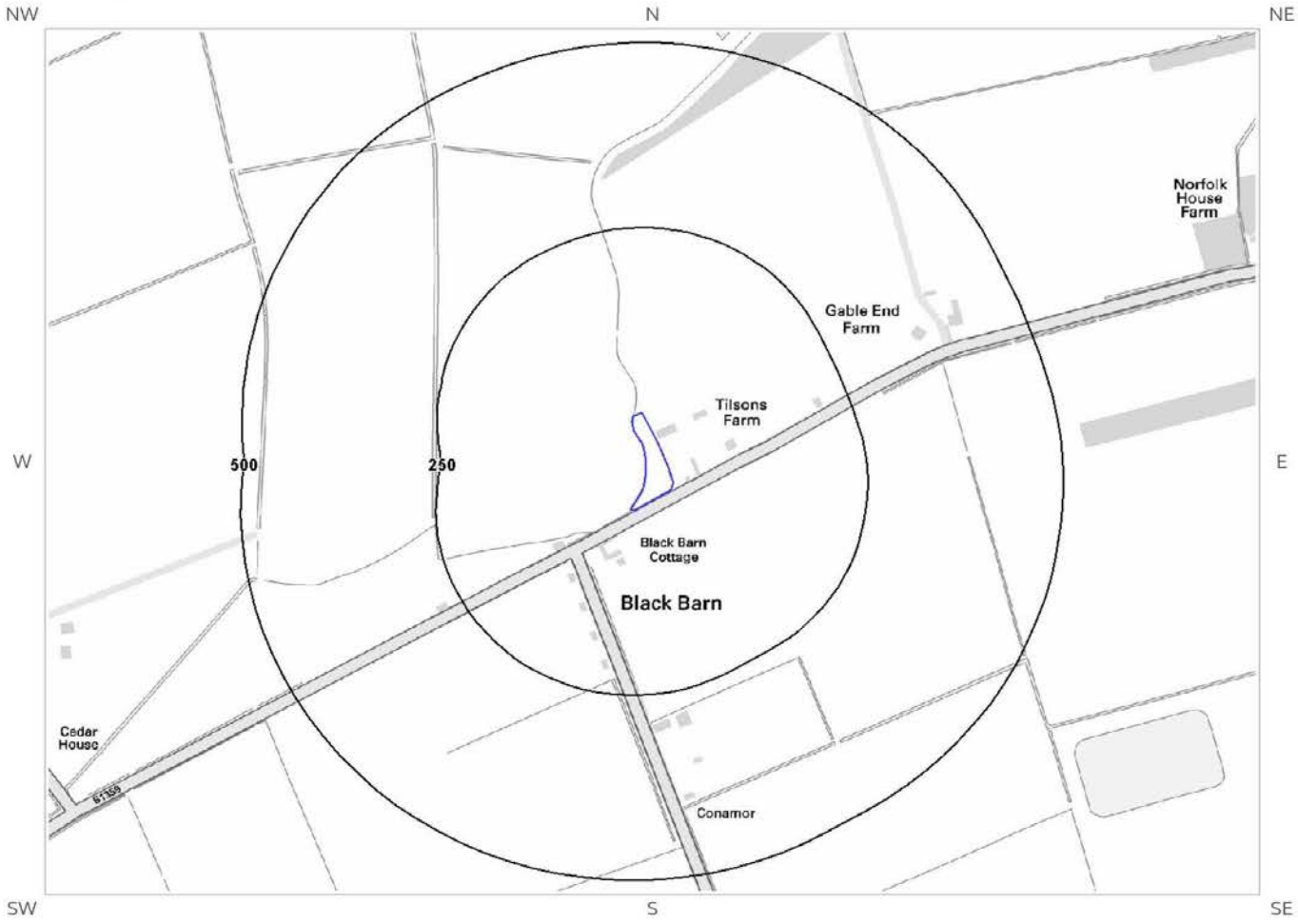
Source Protection Zone 2 - Outer Catchment

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



© Crown copyright and database rights 2018
Ordnance Survey license 100035207.

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

Site Outline

250
500
Search Buffers (m)

6e. Hydrology – Watercourse Network and River Quality

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

Site Outline

250
500
Search Buffers (m)

Tidal River
Inland River
Underground or Elevated Tidal River
Underground or Elevated Inland River
Foreshore
General Quality Assessment: Chemistry

Canal
Underground or Elevated Canal
Lock or Flight of Locks
Lake, Reservoir, or Marsh
Drain or Transfer
General Quality Assessment: Biology

6.Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

Records of strata classification within the superficial geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales'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

6.2 Aquifer within Bedrock Deposits

Records of strata classification within the bedrock geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales'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

6.3 Groundwater Abstraction Licences

Groundwater Abstraction Licences within 2000m of the study site Identified

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details	
Not shown	529	N	543108 329356	Status: Active Licence No: AN/031/0014/027 Details: Spray Irrigation - Storage Direct Source: Ground Water Source Of Supply Point: Abstraction Area 2 - Gedney Marsh Data Type: Region Name: J E Piccaver and Co (Gedney Marsh)	Annual Volume (m^3): 90000 Max Daily Volume (m^3): 1500 Original Application No: NPS/WR/018661 Original Start Date: 16/6/2015 Expiry Date: 31/3/2026 Issue No: 1 Version Start Date: 16/6/2015 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	862	W	542390 328150	Status: Active Licence No: 5/31/14/*G/0267 Details: Spray Irrigation - Storage Direct Source: Ground Water Source Of Supply Point: Catchpit C - Red House Farm, Gedney Marsh Data Type: Point Name: W B WRIGHT & SONS LTD	Annual Volume (m³): 98678 Max Daily Volume (m³): 480 Original Application No: N1455 Original Start Date: 30/8/2007 Expiry Date: 31/3/2026 Issue No: 1 Version Start Date: 30/8/2007 Version End Date:
Not shown	862	W	542390 328150	Status: Active Licence No: 5/31/14/*G/0267 Details: Spray Irrigation - Direct Direct Source: Ground Water Source Of Supply Point: Catchpit C - Red House Farm, Gedney Marsh Data Type: Point Name: W B WRIGHT & SONS LTD	Annual Volume (m³): 98678 Max Daily Volume (m³): 480 Original Application No: N1455 Original Start Date: 30/8/2007 Expiry Date: 31/3/2026 Issue No: 1 Version Start Date: 30/8/2007 Version End Date:
Not shown	880	SW	542440 327950	Status: Active Licence No: 5/31/14/*G/0267 Details: Spray Irrigation - Storage Direct Source: Ground Water Source Of Supply Point: Catchpit A - Red House Farm, Gedney Marsh Data Type: Point Name: W B WRIGHT & SONS LTD	Annual Volume (m³): 98678 Max Daily Volume (m³): 480 Original Application No: N1455 Original Start Date: 30/8/2007 Expiry Date: 31/3/2026 Issue No: 1 Version Start Date: 30/8/2007 Version End Date:
Not shown	880	SW	542440 327950	Status: Active Licence No: 5/31/14/*G/0267 Details: Spray Irrigation - Direct Direct Source: Ground Water Source Of Supply Point: Catchpit A - Red House Farm, Gedney Marsh Data Type: Point Name: W B WRIGHT & SONS LTD	Annual Volume (m³): 98678 Max Daily Volume (m³): 480 Original Application No: N1455 Original Start Date: 30/8/2007 Expiry Date: 31/3/2026 Issue No: 1 Version Start Date: 30/8/2007 Version End Date:
Not shown	896	W	542400 328000	Status: Active Licence No: 5/31/14/*G/0267 Details: Spray Irrigation - Direct Direct Source: Ground Water Source Of Supply Point: Catchpit B - Red House Farm, Gedney Marsh Data Type: Point Name: W B WRIGHT & SONS LTD	Annual Volume (m³): 98678 Max Daily Volume (m³): 480 Original Application No: N1455 Original Start Date: 30/8/2007 Expiry Date: 31/3/2026 Issue No: 1 Version Start Date: 30/8/2007 Version End Date:
Not shown	896	W	542400 328000	Status: Active Licence No: 5/31/14/*G/0267 Details: Spray Irrigation - Storage Direct Source: Ground Water Source Of Supply Point: Catchpit B - Red House Farm, Gedney Marsh Data Type: Point Name: W B WRIGHT & SONS LTD	Annual Volume (m³): 98678 Max Daily Volume (m³): 480 Original Application No: N1455 Original Start Date: 30/8/2007 Expiry Date: 31/3/2026 Issue No: 1 Version Start Date: 30/8/2007 Version End Date:
Not shown	1003	W	542280 328020	Status: Active Licence No: 5/31/14/*G/0267 Details: Spray Irrigation - Direct Direct Source: Ground Water Source Of Supply Point: Catchpit D - Red House Farm, Gedney Marsh Data Type: Point Name: W B WRIGHT & SONS LTD	Annual Volume (m³): 98678 Max Daily Volume (m³): 480 Original Application No: N1455 Original Start Date: 30/8/2007 Expiry Date: 31/3/2026 Issue No: 1 Version Start Date: 30/8/2007 Version End Date:
Not shown	1003	W	542280 328020	Status: Active Licence No: 5/31/14/*G/0267 Details: Spray Irrigation - Storage Direct Source: Ground Water Source Of Supply Point: Catchpit D - Red House Farm, Gedney Marsh Data Type: Point Name: W B WRIGHT & SONS LTD	Annual Volume (m³): 98678 Max Daily Volume (m³): 480 Original Application No: N1455 Original Start Date: 30/8/2007 Expiry Date: 31/3/2026 Issue No: 1 Version Start Date: 30/8/2007 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1185	W	542050 328270	Status: Active Licence No: 5/31/14/*G/0267 Details: Spray Irrigation - Direct Direct Source: Ground Water Source Of Supply Point: Catchpit E - Red House Farm, Gedney Marsh Data Type: Point Name: W B WRIGHT & SONS LTD	Annual Volume (m^3): 98678 Max Daily Volume (m^3): 480 Original Application No: N1455 Original Start Date: 30/8/2007 Expiry Date: 31/3/2026 Issue No: 1 Version Start Date: 30/8/2007 Version End Date:
Not shown	1185	W	542050 328270	Status: Active Licence No: 5/31/14/*G/0267 Details: Spray Irrigation - Storage Direct Source: Ground Water Source Of Supply Point: Catchpit E - Red House Farm, Gedney Marsh Data Type: Point Name: W B WRIGHT & SONS LTD	Annual Volume (m^3): 98678 Max Daily Volume (m^3): 480 Original Application No: N1455 Original Start Date: 30/8/2007 Expiry Date: 31/3/2026 Issue No: 1 Version Start Date: 30/8/2007 Version End Date:
Not shown	1587	NE	544594 329554	Status: Historical Licence No: AN/031/0014/027 Details: Spray Irrigation - Storage Direct Source: Ground Water Source Of Supply Point: G Data Type: Region Name: J E Piccaver and Co (Gedney Marsh)	Annual Volume (m^3): 90000 Max Daily Volume (m^3): 1500 Original Application No: NPS/WR/018661 Original Start Date: 16/6/2015 Expiry Date: 31/3/2026 Issue No: 1 Version Start Date: 16/6/2015 Version End Date:
Not shown	1587	NE	544594 329554	Status: Active Licence No: AN/031/0014/027 Details: Spray Irrigation - Storage Direct Source: Ground Water Source Of Supply Point: Abstraction Area 1 - Gedney Marsh Data Type: Region Name: J E Piccaver and Co (Gedney Marsh)	Annual Volume (m^3): 90000 Max Daily Volume (m^3): 1500 Original Application No: NPS/WR/018661 Original Start Date: 16/6/2015 Expiry Date: 31/3/2026 Issue No: 1 Version Start Date: 16/6/2015 Version End Date:
Not shown	1746	NE	544682 329457	Status: Historical Licence No: AN/032/0011/008 Details: Spray Irrigation - Storage Direct Source: Ground Water Source Of Supply Point: Catchpit At Gedney Marsh Data Type: Point Name: J E Piccaver and Co (Gedney Marsh)	Annual Volume (m^3): 70000 Max Daily Volume (m^3): 4320 Original Application No: NPS/WR/007321 Original Start Date: 1/11/2012 Expiry Date: 31/3/2026 Issue No: 1 Version Start Date: 1/4/2014 Version End Date:
Not shown	1751	NE	544741 329376	Status: Historical Licence No: AN/032/0011/008 Details: Spray Irrigation - Storage Direct Source: Ground Water Source Of Supply Point: Catchpit At Gedney Marsh Data Type: Point Name: J E Piccaver and Co (Gedney Marsh)	Annual Volume (m^3): 70000 Max Daily Volume (m^3): 4320 Original Application No: NPS/WR/007321 Original Start Date: 1/11/2012 Expiry Date: 31/3/2026 Issue No: 1 Version Start Date: 1/4/2014 Version End Date:

6.4 Surface Water Abstraction Licences

Surface Water Abstraction Licences within 2000m of the study site — Identified

The following Surface Water Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details	
17	372	N	543111 328807	Status: Active Licence No: AN/031/0014/028 Details: Spray Irrigation - Storage Direct Source: Surface Water Source Of Supply Point: Surface Water Abstraction At Gedney Marsh Data Type: Point Name: J E Piccaver and Co (Gedney Marsh)	Annual Volume (m^3): 90000 Max Daily Volume (m^3): 1500 Application No: NPS/WR/018665 Original Start Date: 16/6/2015 Expiry Date: 31/3/2020 Issue No: 1 Version Start Date: 16/6/2015 Version End Date:
Not shown	1496	W	541790 328840	Status: Active Licence No: 5/31/14/*S/0268 Details: Spray Irrigation - Storage Direct Source: Surface Water Source Of Supply Point: Unnamed Field Drain C - Red House Farm, Gedney Marsh Data Type: Point Name: W B WRIGHT & SONS LTD	Annual Volume (m^3): 5000 Max Daily Volume (m^3): 480 Application No: N1455 Original Start Date: 30/8/2007 Expiry Date: 31/3/2026 Issue No: 1 Version Start Date: 30/8/2007 Version End Date:
Not shown	1600	W	541640 328580	Status: Active Licence No: 5/31/14/*S/0268 Details: Spray Irrigation - Storage Direct Source: Surface Water Source Of Supply Point: Unnamed Field Drain B - Red House Farm, Gedney Marsh Data Type: Point Name: W B WRIGHT & SONS LTD	Annual Volume (m^3): 5000 Max Daily Volume (m^3): 480 Application No: N1455 Original Start Date: 30/8/2007 Expiry Date: 31/3/2026 Issue No: 1 Version Start Date: 30/8/2007 Version End Date:
Not shown	1681	NW	541760 329260	Status: Active Licence No: 5/31/14/*S/0268 Details: Spray Irrigation - Storage Direct Source: Surface Water Source Of Supply Point: Unnamed Field Drains D - Red House Farm, Gedney Marsh Data Type: Point Name: W B WRIGHT & SONS LTD	Annual Volume (m^3): 5000 Max Daily Volume (m^3): 480 Application No: N1455 Original Start Date: 30/8/2007 Expiry Date: 31/3/2026 Issue No: 1 Version Start Date: 30/8/2007 Version End Date:
Not shown	1784	W	541450 328270	Status: Active Licence No: 5/31/14/*S/0268 Details: Spray Irrigation - Storage Direct Source: Surface Water Source Of Supply Point: Unnamed Field Drain A - Red House Farm, Gedney Marsh Data Type: Point Name: W B WRIGHT & SONS LTD	Annual Volume (m^3): 5000 Max Daily Volume (m^3): 480 Application No: N1455 Original Start Date: 30/8/2007 Expiry Date: 31/3/2026 Issue No: 1 Version Start Date: 30/8/2007 Version End Date:
Not shown	1896	N	543506 330339	Status: Active Licence No: AN/031/0014/031 Details: Spray Irrigation - Storage Direct Source: Surface Water Source Of Supply Point: Dawsmere Creek Data Type: Point Name: Loveden Estates Limited	Annual Volume (m^3): 70000 Max Daily Volume (m^3): 2000 Application No: NPS/WR/022746 Original Start Date: 4/9/2017 Expiry Date: 31/3/2026 Issue No: 1 Version Start Date: 4/9/2017 Version End Date:

6.5 Potable Water Abstraction Licences

Potable Water Abstraction Licences within 2000m of the study site — None identified

Database searched and no data found.

6.6 Source Protection Zones

Source Protection Zones within 500m of the study site — None identified

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

Source Protection Zones within the Confined Aquifer within 500m of the study site — None identified

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

Environment Agency/Natural Resources Wales information on groundwater vulnerability and soil leaching potential within 500m of the study site — None identified

Database searched and no data found.

6.9 River Quality

Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site — None identified

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

Database searched and no data found.

6.10 Ordnance Survey MasterMap Water Network

Ordnance Survey MasterMap Water Network entries within 500m of the study site

This watercourse information is provided by Ordnance Survey MasterMap Water Network. The data provides a detailed centre line following the curve of the waterway precisely, so all distances provided in the report should be understood as measurements to the centreline rather than a measurement to the nearest point of the watercourse. Underground watercourses are inferred from entry and exit points so caution is advised in using these to indicate precise locations of underground watercourses when planning site investigation and development.

The following Ordnance Survey MasterMap Water Network records are represented on the Hydrology Map (6e):

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
1	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
18	0 On Site	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
2	52 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
19	52 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
3	94 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Nene Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
20	94 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Nene Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
4	224 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Nene Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
5	224 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Nene Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.8
21	224 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Nene Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
22	224 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Nene Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.8
6	251 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
23	251 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
7	252 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
24	252 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
8	253 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 4.5
25	253 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 4.5
9	259 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Nene Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
26	259 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Nene Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
10	267 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Nene Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
27	267 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Nene Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
11	277 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Nene Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.8
28	277 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Nene Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.8
12	293 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Nene Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.2
29	293 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Nene Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.2

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
13	346 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.4
Not shown	346 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.4
14	375 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Nene Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
31	375 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Nene Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
15	380 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Nene Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 1.7
16	380 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Nene Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.0
32	380 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Nene Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 1.7
33	380 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Nene Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.0
17	401 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Nene Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 4.1
34	401 SE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Nene Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 4.1
18	447 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: Underground Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
Not shown	447 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: Underground Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
19	454 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 4.5
Not shown	454 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 4.5
20	455 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Nene Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.6

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
Not shown	455 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Nene Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.6
21	457 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Nene Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
Not shown	457 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Nene Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
22	458 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 4.5
23	458 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 4.5
Not shown	458 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 4.5
Not shown	458 NW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 4.5
24	472 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.7
Not shown	472 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.7
25	475 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Nene Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.9
Not shown	475 E	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Nene Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.9
26	480 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
Not shown	480 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
27	489 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.9
Not shown	489 W	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.9

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
28	497 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
Not shown	497 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
29	498 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.7
Not shown	498 NE	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Welland Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.7

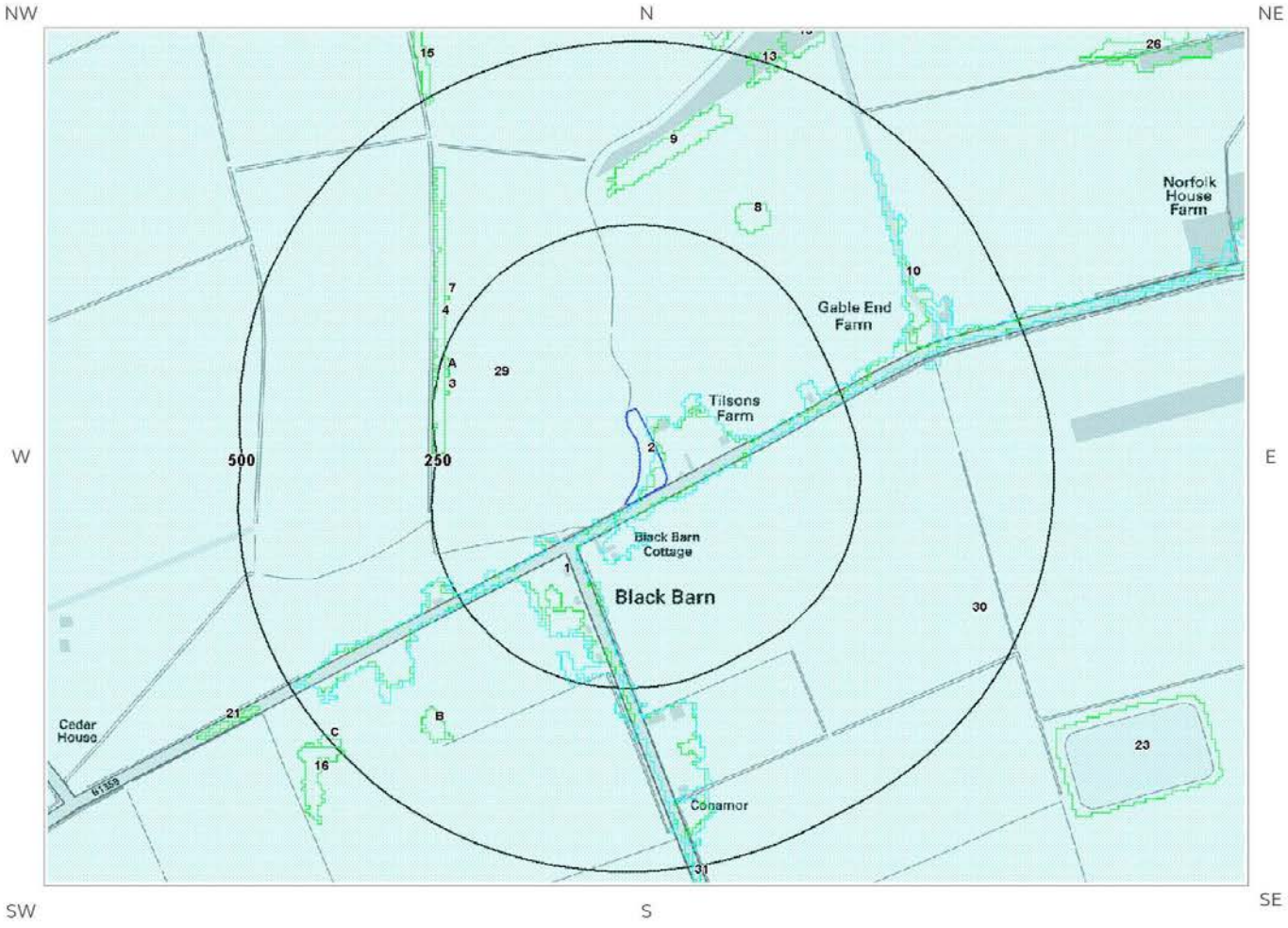
6.11 Surface Water Features

Surface water features within 250m of the study site — Identified

The following surface water records are not represented on mapping:

Distance (m)	Direction
0	On Site
52	SW
55	SW
94	SW
117	N
222	S
224	S

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



© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

Site Outline

100
250
Search Buffers (m)

Zone 2 Floodplain

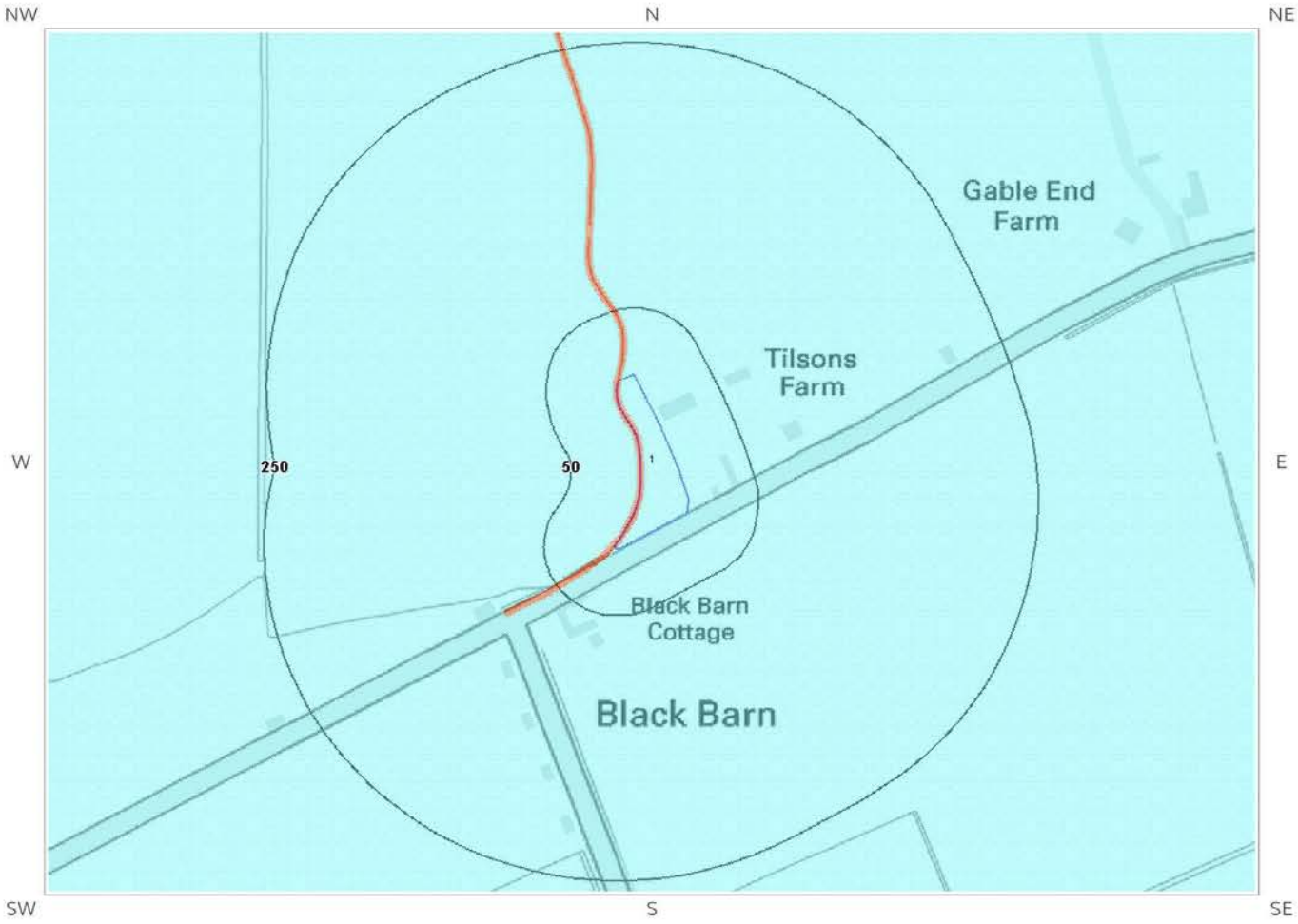
Zone 3 Floodplain

Flood Defences

Area used for Flood Storage

Area Benefiting from Flood Defences

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



© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

Site Outline

100
250
Search Buffers (m)

RoFRaS Rating
Very Low
Low
Medium
High

7 Flooding

7.1 River and Coastal Zone 2 Flooding

Environment Agency/Natural Resources Wales Zone 2 floodplain within 250m — Identified

Environment Agency/Natural Resources Wales 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
1	0	On Site	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
2	0	On Site	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
3	232	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
4	234	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
5A	236	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
6A	239	W	29-May-2018	Zone 2 - (Fluvial /Tidal Models)

7.2 River and Coastal Zone 3 Flooding

Environment Agency/Natural Resources Wales Zone 3 floodplain within 250m — Identified

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
1	0	On Site	30-May-2018	Zone 3 - (Fluvial Models)
2	0	On Site	30-May-2018	Zone 3 - (Fluvial Models)
3	15	S	30-May-2018	Zone 3 - (Fluvial Models)

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

Highest risk of flooding onsite — High

The Environment Agency/Natural Resources Wales 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 High (1 in 30 or greater) 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	High

7.4 Flood Defences

Flood Defences within 250m of the study site — None identified

Database searched and no data found.

7.5 Areas benefiting from Flood Defences

Areas benefiting from Flood Defences within 250m of the study site — None identified

7.6 Areas benefiting from Flood Storage

Areas used for Flood Storage within 250m of the study site — None identified

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site — None identified

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 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.

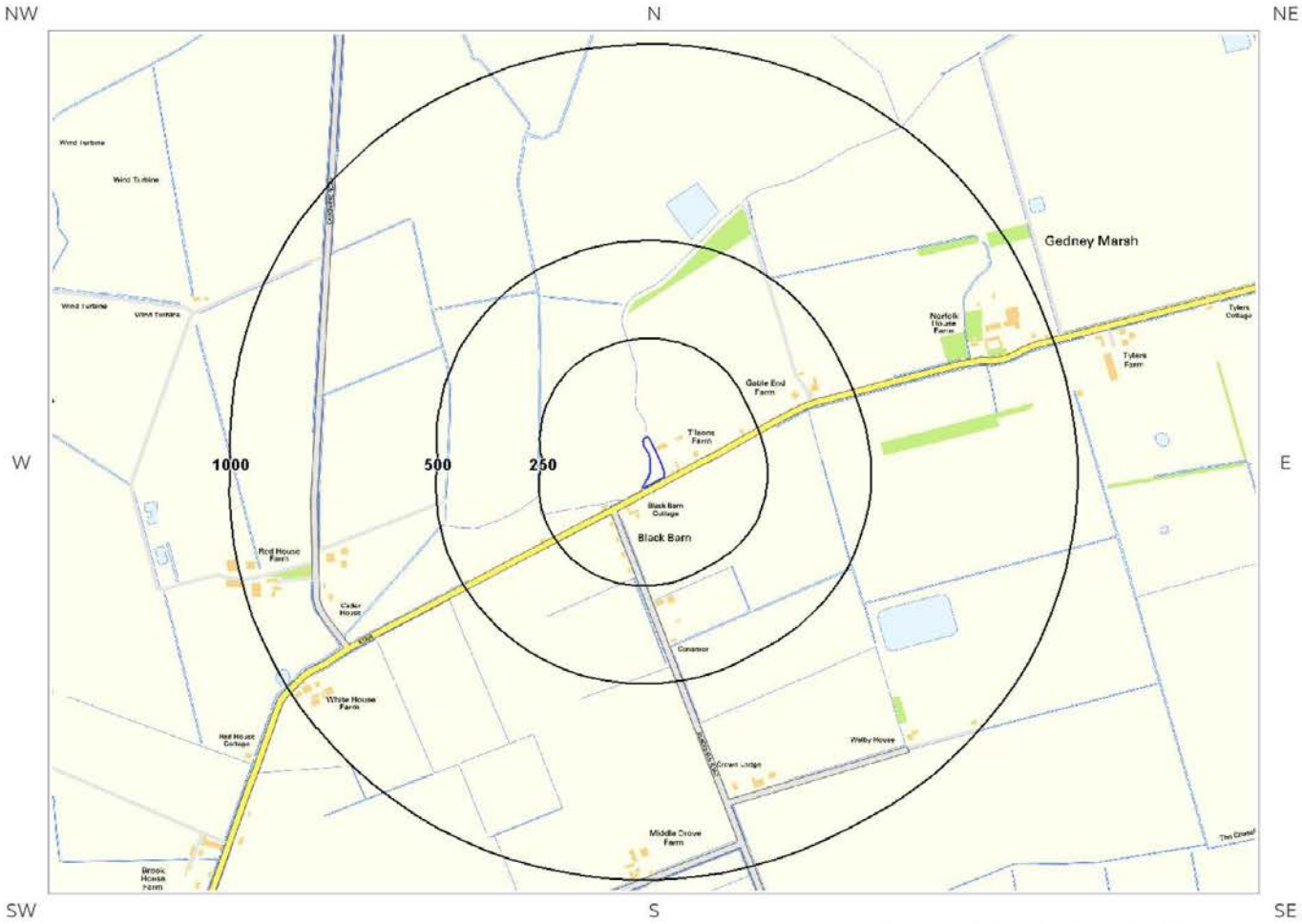
7.8 Groundwater Flooding Confidence Areas

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



© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

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

Designated Environmentally Sensitive Sites within 2000m of the study site	None identified

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

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

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

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

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

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

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.

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

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 site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

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

Coal mining areas within 75m of the study site — None identified

Database searched and no data found.

10.2 Non-Coal Mining

Non-Coal Mining areas within 50m of the study site boundary — None identified

Database searched and no data found.

10.3 Brine Affected Areas

Brine affected areas within 75m of the study site — None identified
Guidance: No Guidance Required.

Contact Details

Groundsure Helpline
Telephone: 08444 159 000
info@groundsure.com

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

Environment Agency
National Customer Contact Centre, PO Box 544
Rotherham, S60 1BY
Tel: 03708 506 506
Web: **www.environment-agency.gov.uk**
Email: enquiries@environment-agency.gov.uk

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

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

Ordnance Survey
Adanac Drive, Southampton
SO16 0AS
Tel: 08456 050505

Local Authority
Authority: South Holland District Council
Phone: 01775 761 161
Web: http://www.sholland.gov.uk/
Address: Council Offices, Priory Road, Spalding, Lincolnshire, PE11

Gemapping PLC
Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW
Tel: 01252 845444

Acknowledgements: Site of Special Scientific Interest, National Nature Reserve, Ramsar Site, Special Protection Area, Special Area of Conservation data is provided by, and used with the permission of, Natural England/Natural Resources Wales who retain the Copyright and Intellectual Property Rights for the data.
PointX © Database Right/Copyright, Thomson Directories Limited © Copyright Link Interchange Network Limited © Database Right/Copyright and Ordnance Survey © Crown Copyright and/or Database Right. All Rights Reserved. Licence Number [03421028].
This report has been prepared in accordance with the Groundsure Ltd standard Terms and Conditions of business for work of this nature.

Standard Terms and Conditions

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

https://www.groundsure.com/terms-and-conditions-may25-2018

Groundsure
LOCATION INTELLIGENCE

Goldfinch Environmental Limited

19, Palmer Street,
Bury St Edmunds,
Suffolk, IP31 3BZ

Groundsure Reference:	GS-2391-5170824
Your Reference:	0548-ds
Report Date	26 Jun 2018
Report Delivery Method:	Email - pdf

Geo Insight

Address: TILSONS YARD BLACK BARN, MAIN ROAD, GEDNEY DROVE END, SPALDING, PE12 9PA

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,

Managing Director
Groundsure Limited

Enc.
Groundsure Geo Insight

Geo Insight

Address:	**TILSONS YARD BLACK BARN, MAIN ROAD, GEDNEY DROVE END, SPALDING, PE12 9PA**
Date:	**26 Jun 2018**
Reference:	**GS-2391-5170824**
Client:	**Goldfinch Environmental Limited**

NW N NE

W E

SW S SE

Aerial Photograph Capture date:	11-Sep-2015
Grid Reference:	543262,328396
Site Size:	0.31ha

Groundsure
LOCATION INTELLIGENCE

Contents Page

Contents Page 3
Overview of Findings 5
1:10,000 Scale Availability 8
Availability of 1:10,000 Scale Geology Mapping 9
1 Geology (1:10,000 scale) 10
1.1 Artificial Ground map (1:10,000 scale) 10
1. Geology 1:10,000 scale 11
1.1 Artificial Ground 11
1.2 Superficial Deposits and Landslips map (1:10,000 scale) 12
1.2 Superficial Deposits and Landslips 13
1.2.1 Superficial Deposits/ Drift Geology 13
1.2.2 Landslip 13
1.3 Bedrock and linear features map (1:10,000 scale) 14
1.3 Bedrock and linear features 15
1.3.1 Bedrock/ Solid Geology 15
1.3.2 Linear features 15
2 Geology 1:50,000 Scale 16
2.1 Artificial Ground map 16
2. Geology 1:50,000 scale 17
2.1 Artificial Ground 17
2.1.1 Artificial/ Made Ground 17
2.1.2 Permeability of Artificial Ground 17
2.2 Superficial Deposits and Landslips map (1:50,000 scale) 18
2.2 Superficial Deposits and Landslips 19
2.2.1 Superficial Deposits/ Drift Geology 19
2.2.2 Permeability of Superficial Ground 19
2.2.3 Landslip 19
2.2.4 Landslip Permeability 19
2.3 Bedrock and linear features map (1:50,000 scale) 20
2.3 Bedrock, Solid Geology & linear features 21
2.3.1 Bedrock/Solid Geology 21
2.3.2 Permeability of Bedrock Ground 21
2.3.3 Linear features 21
3 Radon Data 22
3.1 Radon Affected Areas 22
3.2 Radon Protection 22
4 Ground Workings map 23
4 Ground Workings 24
4.1 Historical Surface Ground Working Features derived from Historical Mapping 24
4.2 Historical Underground Working Features derived from Historical Mapping 24
4.3 Current Ground Workings 24
5 Mining, Extraction & Natural Cavities 26
5.1 Historical Mining 26
5.2 Coal Mining 26
5.3 Johnson Poole and Bloomer 26
5.4 Non-Coal Mining 26
5.5 Non-Coal Mining Cavities 27
5.6 Natural Cavities 27
5.7 Brine Extraction 27
5.8 Gypsum Extraction 27
5.9 Tin Mining 27
5.10 Clay Mining 28
6 Natural Ground Subsidence 29
6.1 Shrink-Swell Clay map 29
6.2 Landslides map 30
6.3 Ground Dissolution of Soluble Rocks map 31
6.4 Compressible Deposits map 32
6.5 Collapsible Deposits map 33
6.6 Running Sand map 34

6 Natural Ground Subsidence 35
6.1 Shrink-Swell Clays 35
6.2 Landslides 35
6.3 Ground Dissolution of Soluble Rocks 36
6.4 Compressible Deposits 36
6.5 Collapsible Deposits 36
6.6 Running Sands 36
7 Borehole Records 38
8 Estimated Background Soil Chemistry 39
9 Railways and Tunnels map 40
9 Railways and Tunnels 41
9.1 Tunnels 41
9.2 Historical Railway and Tunnel Features 41
9.3 Historical Railways 42
9.4 Active Railways 42
9.5 Railway Projects 42

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 and 1:10,000 Digital Geological Map of Great Britain, BGS Geosure data; BRITPITS database; Non-coal 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 1:10,000 Scale

1.1 Artificial Ground	1.1 Is there any Artificial Ground/ Made Ground present beneath the study site at 1:10,000 scale?	No
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site at 1:10,000 scale?*	No
	1.2.2 Are there any records of landslip within 500m of the study site boundary at 1:10,000 scale?	No
1.3 Bedrock, Solid Geology and linear features	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 of linear features within 500m of the study site boundary at 1:10,000 scale?	No

Section 2: Geology 1:50,000 Scale

2.1 Artificial Ground	2.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	No
	2.1.2 Are there any records relating to permeability of artificial ground within the study site*boundary?	No
2.2 Superficial Geology and Landslips	2.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?*	Yes
	2.2.2 Are there any records of permeability of superficial ground within 500m of the study site?	Yes
	2.2.3 Are there any records of landslip within 500m of the study site boundary?	No
	2.2.4 Are there any records relating to permeability of landslips within the study site* boundary?	No

Groundsure
LOCATION INTELLIGENCE

Section 2: Geology 1:50,000 Scale

2.3 Bedrock, Solid Geology and linear features	2.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	2.3.2 Are there any records relating to permeability of bedrock ground within the study site boundary?	Yes
	2.3.3 Are there any records of linear features within 500m of the study site boundary?	No

Section 3: Radon

3. Radon	3.1Is 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.
	3.2Radon Protection	No radon protective measures are necessary.

Section 4: Ground Workings	On-site	0-50m	51-250	251-500	501-1000
4.1 Historical Surface Ground Working Features from Small Scale Mapping	3	0	0	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	0	0	0	0	0
4.3 Current Ground Workings	0	0	0	0	0

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.1 Historical Mining	0	0	0	0	0
5.2 Coal Mining	0	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
5.4 Non-Coal Mining*	0	0	0	0	0
5.5 Non-Coal Mining Cavities	0	0	0	0	0
5.5 Natural Cavities	0	0	0	0	0

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Tin Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0

Section 6: Natural Ground Subsidence	On-site
6.1 Shrink-Swell Clay	Low
6.2 Landslides	Very Low
6.3 Ground Dissolution of Soluble Rocks	Negligible
6.4 Compressible Deposits	Moderate
6.5 Collapsible Deposits	Negligible
6.5 Running Sand	Moderate

Section 7: Borehole Records	On-site	0-50m	51-250
7 BGS Recorded Boreholes	0	0	0

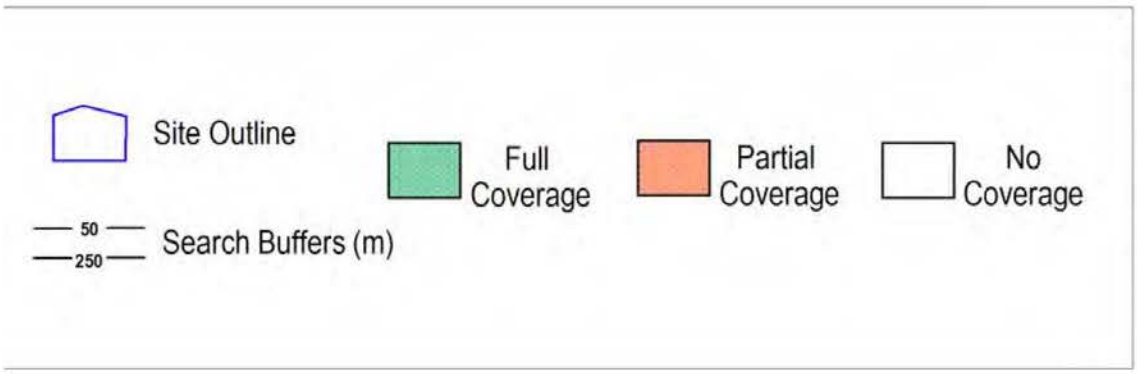
Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250
8 Records of Background Soil Chemistry	1	1	0

Section 9: Railways and Tunnels	On-site	0-50m	51-250	250-500
9.1 Tunnels	0	0	0	Not Searched
9.2 Historical Railway and Tunnel Features	0	0	0	Not Searched
9.3 Historical Railways	0	0	0	Not Searched
9.4 Active Railways	0	0	0	Not Searched
9.5 Railway Projects	0	0	0	0

1:10,000 Scale Availability

1_10,000 Availability Legend

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.



Availability of 1:10,000 Scale Geology Mapping

The following information represents the availability of the key components of the 1:10,000 scale geological data.

ID	Distance	Artificial Coverage	Superficial Coverage	Bedrock Coverage	Mass Movement Coverage
1	0.0	No deposits are mapped	No coverage	No coverage	No coverage

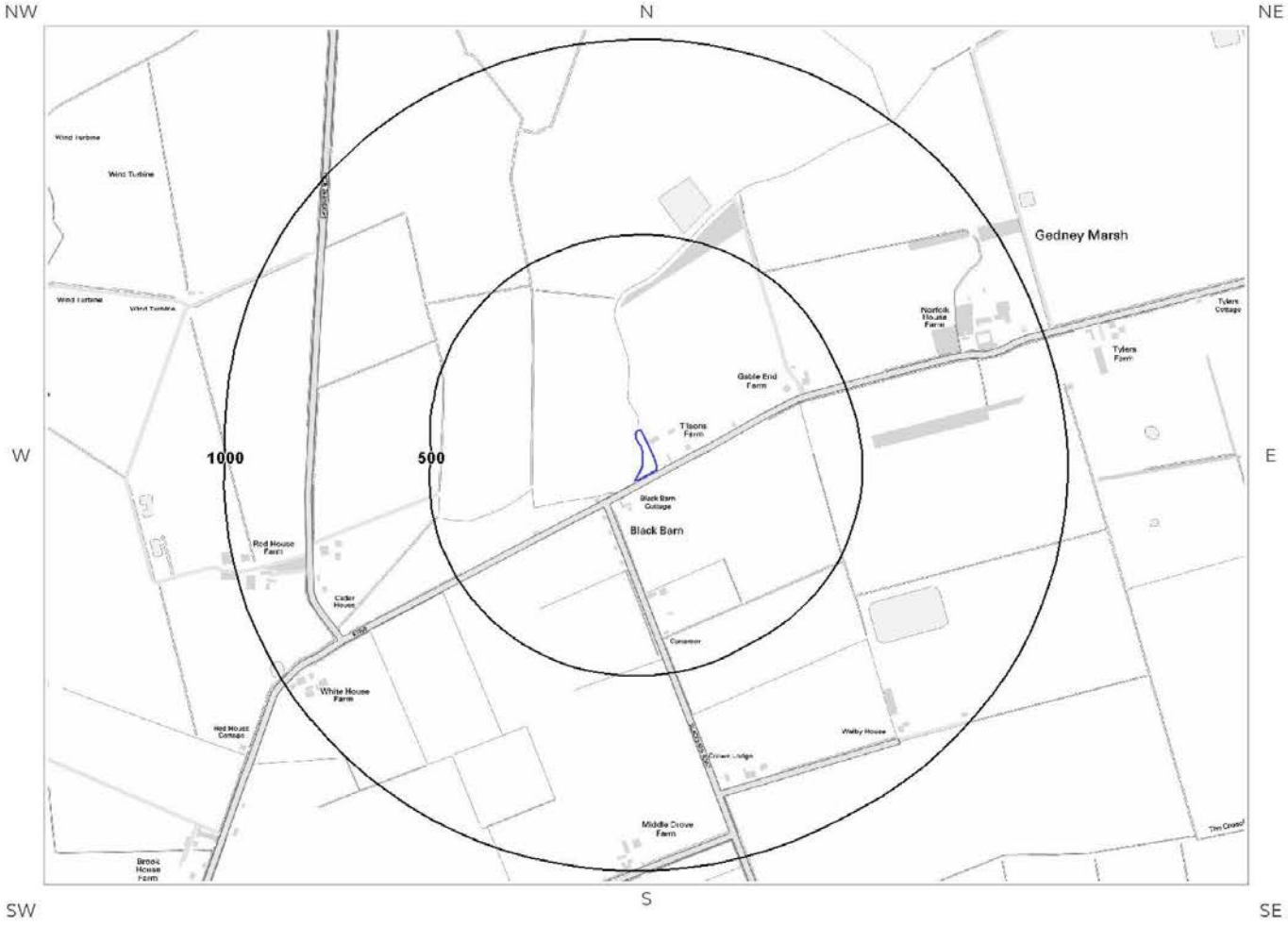
Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not all themes are mapped or available on every map sheet. Therefore a coverage layer showing the availability of the four themes is presented above.

The definitions of coverage are as follows:

Geology	Full Coverage	Partial Coverage	No Coverage
Bedrock	The whole tile has been mapped	Some but not all the tile has been mapped	No coverage
Superficial	The whole tile has been mapped	Some but not all of the tile has been mapped	No coverage
Artificial	Some deposits are mapped on this tile	-	No deposits are mapped
Mass Movement	Some deposits are mapped on this tile	-	No coverage

1 Geology (1:10,000 scale).

1.1 Artificial Ground map (1:10,000 scale)



© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

Artificial Ground Legend

Site Outline

500
1000
Search Buffers (m)

Made Ground (undivided)

Worked Ground (undivided)

Infilled Ground

Disturbed Ground (undivided)

Landscaped Ground (undivided)

Reclaimed Ground

1. Geology 1:10,000 scale

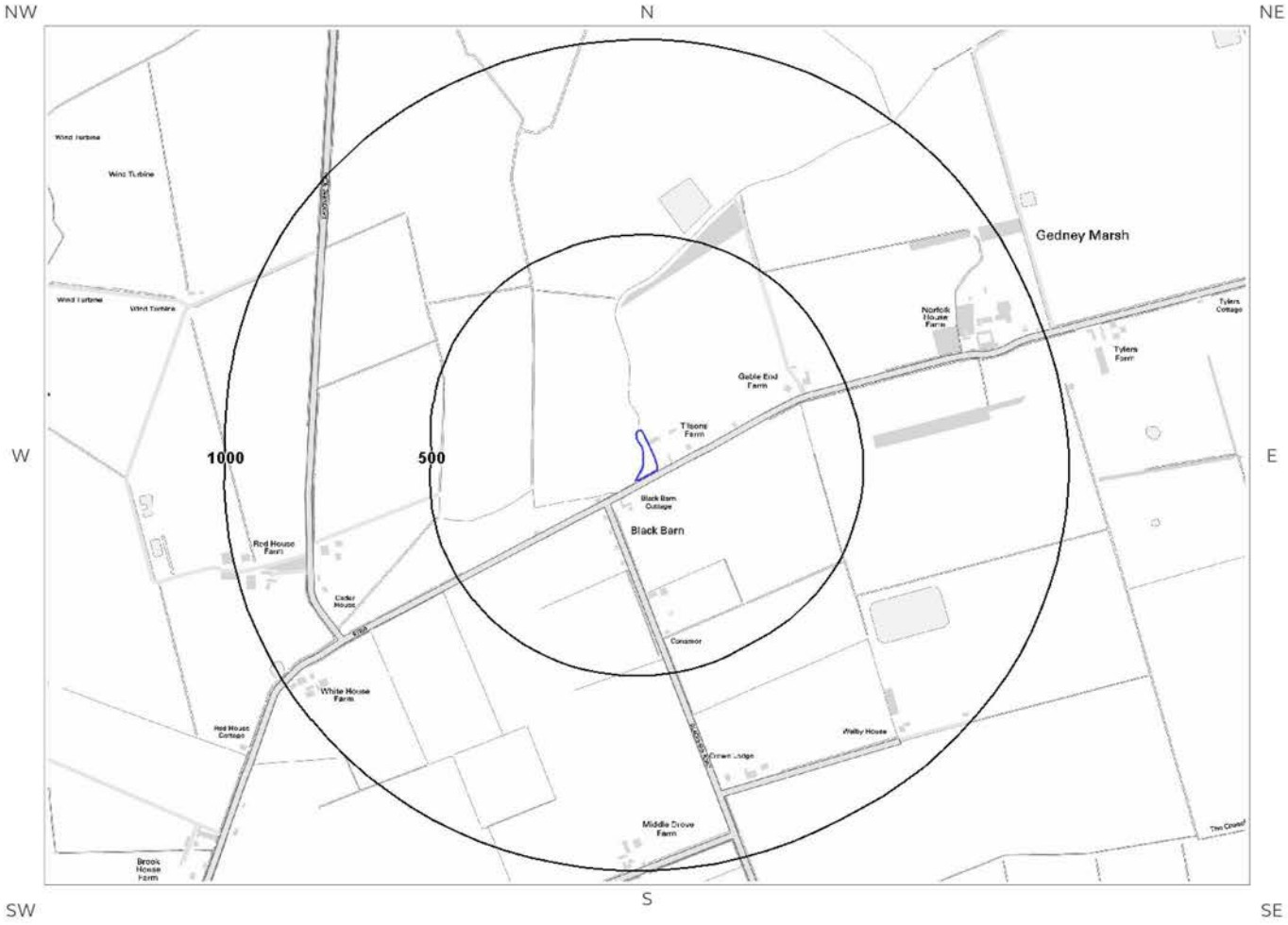
1.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

Are there any records of Artificial/ Made Ground within 500m of the study site boundary at 1:10,000 scale? No

Database searched and no data found.

1.2 Superficial Deposits and Landslips map (1:10,000 scale)



Artificial Ground Legend

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

Site Outline

500
1000
Search Buffers (m)

1.2 Superficial Deposits and Landslips

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping

1.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary at 1:10,000 scale? No

Database searched and no data found.

1.2.2 Landslip

Are there any records of Landslip within 500m of the study site boundary at 1:10,000 scale?

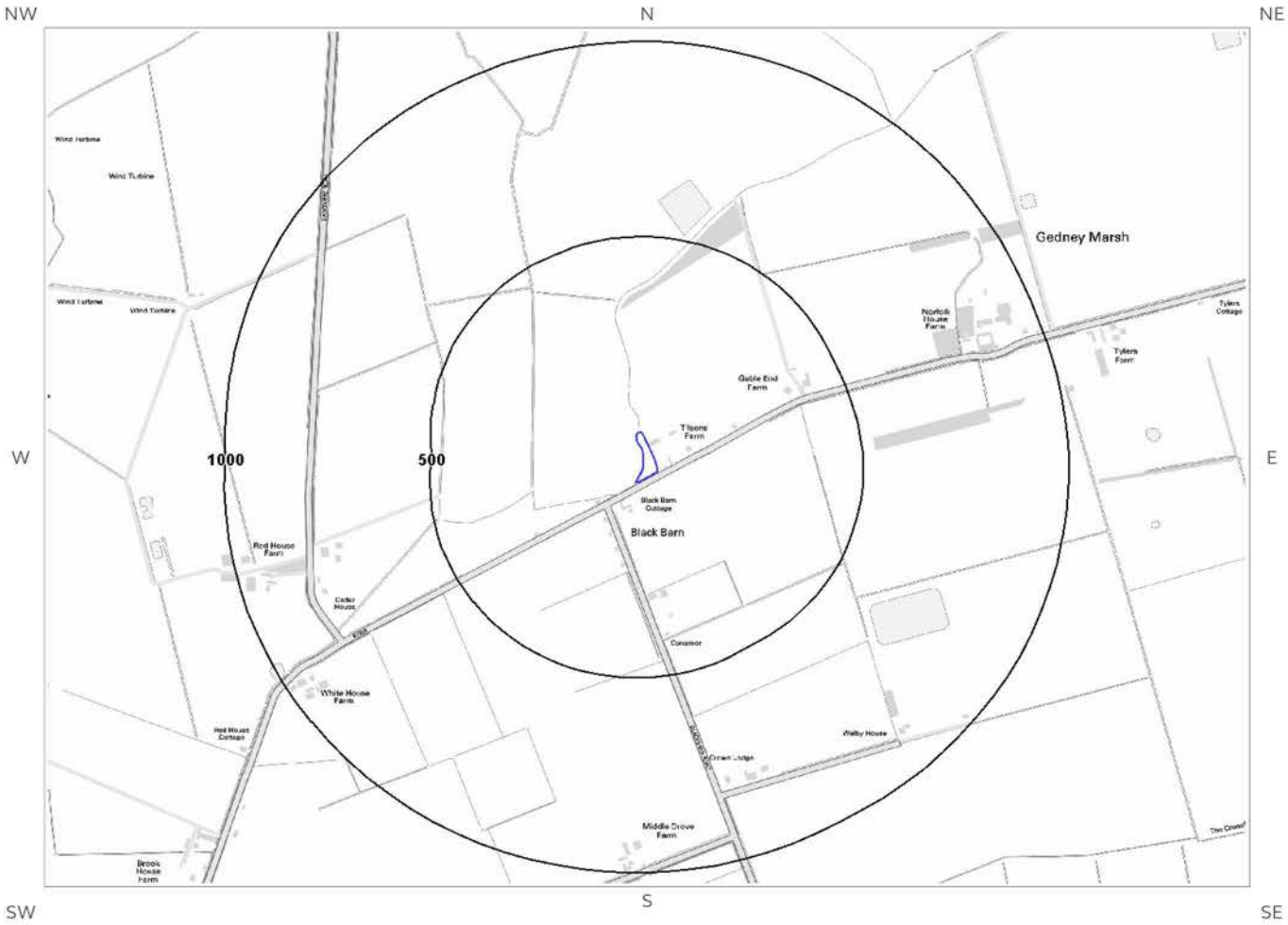
No

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 1:10,000 scale

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.

1.3 Bedrock and linear features map (1:10,000 scale)



Bedrock and linear features Legend

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

Site Outline

500
1000
Search Buffers (m)

1.3 Bedrock and linear features

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

1.3.1 Bedrock/ Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary at 1:10,000 scale.

Database searched and no data found at this scale.

1.3.2 Linear features

Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale? No

Database searched and no data found at this scale.

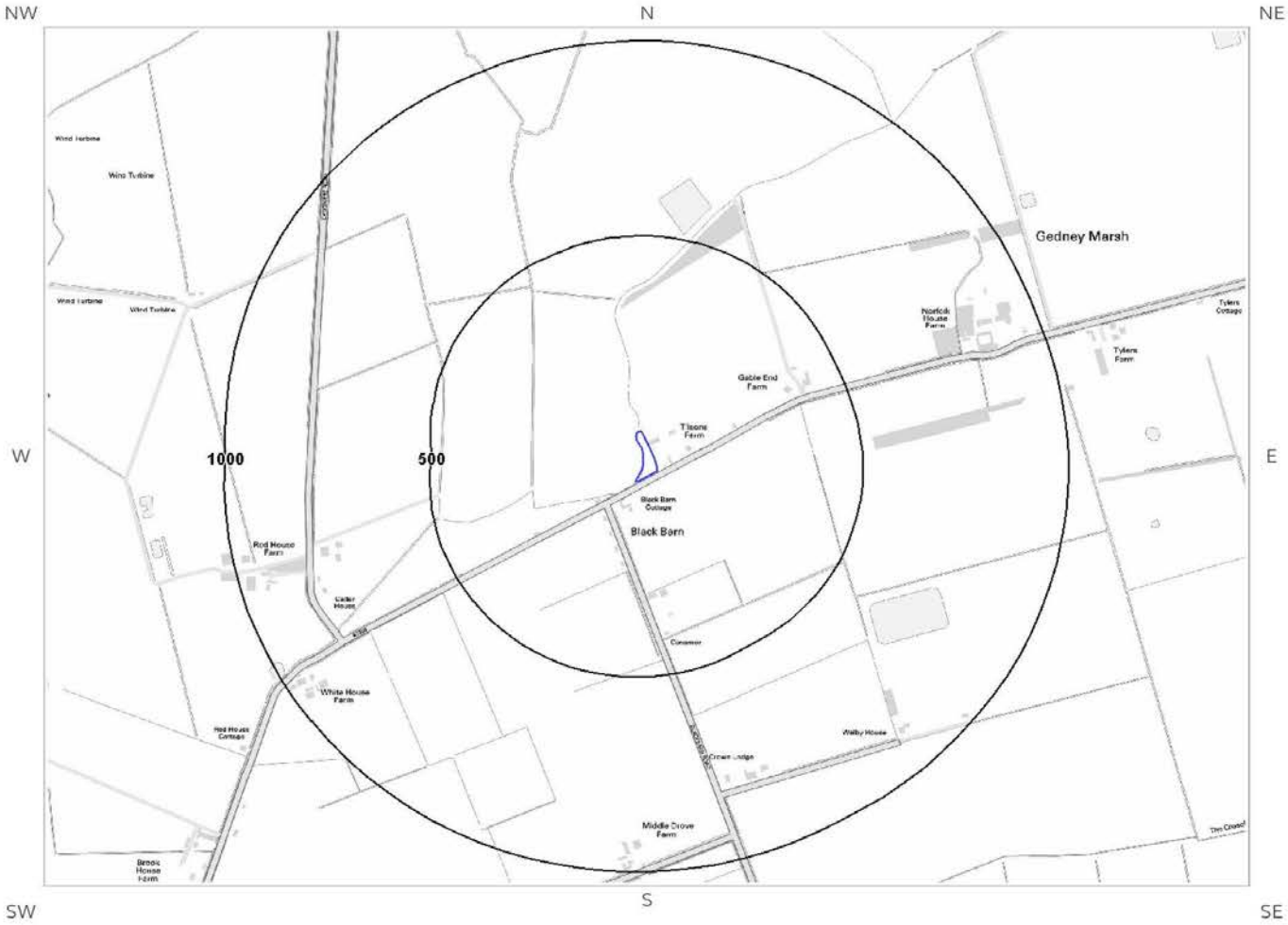
The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of great Britain at 1:10,000 scale.

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.

---

2 Geology 1:50,000 Scale

2.1 Artificial Ground map



© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

Site Outline

500
1000
Search Buffers (m)

Made Ground (undivided)

Disturbed Ground (undivided)

Worked Ground (undivided)

Landscaped Ground (undivided)

Infilled Ground

Reclaimed Ground

2. Geology 1:50,000 scale

2.1 Artificial Ground

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

2.1.1 Artificial/ Made Ground

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

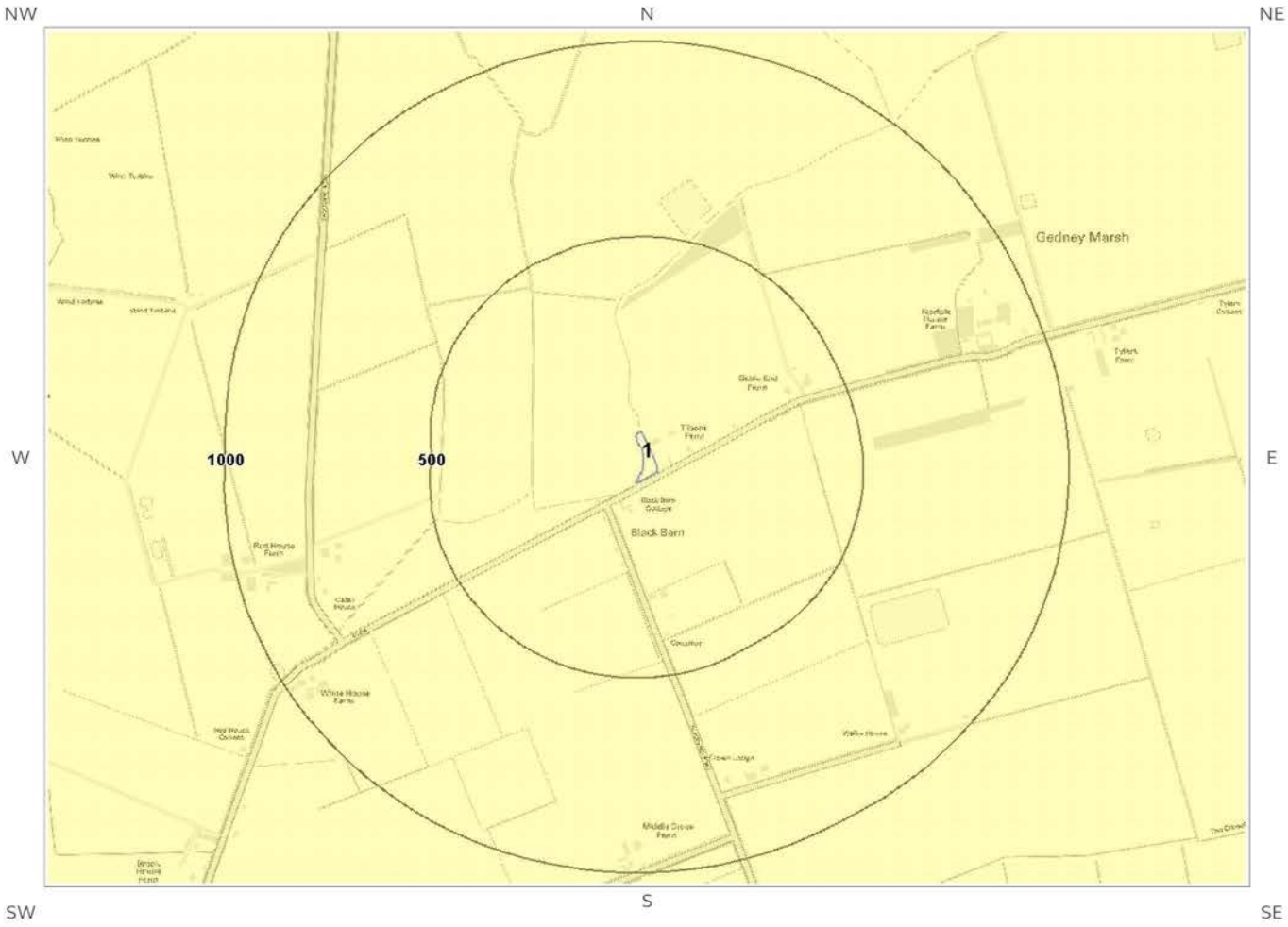
Database searched and no data found.

2.1.2 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.

2.2 Superficial Deposits and Landslips map (1:50,000 scale)



© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

Site Outline

500
1000
Search Buffers (m)

2.2 Superficial Deposits and Landslips

2.2.1 Superficial Deposits/ Drift Geology

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

ID	Distance	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	TFD-XCZ	TIDAL FLAT DEPOSITS	CLAY AND SILT

2.2.2 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

2.2.3 Landslip

Are there any records of Landslip 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, there 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.

2.2.4 Landslip Permeability

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

Database searched and no data found.

2.3 Bedrock and linear features map (1:50,000 scale)

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

Site Outline

500
1000
Search Buffers (m)

2.3 Bedrock, Solid Geology & linear features

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

2.3.1 Bedrock/Solid Geology

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

ID	Distance	Direction	LEX Code	Rock Description	Rock Age
1	0.0	On Site	AMC-MDST	AMPTHILL CLAY FORMATION - MUDSTONE	OXFORDIAN

2.3.2 Permeability of Bedrock Ground

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

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

2.3.3 Linear features

Are there any records of linear features 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 nation wide coverage.

3 Radon Data

3.1 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.

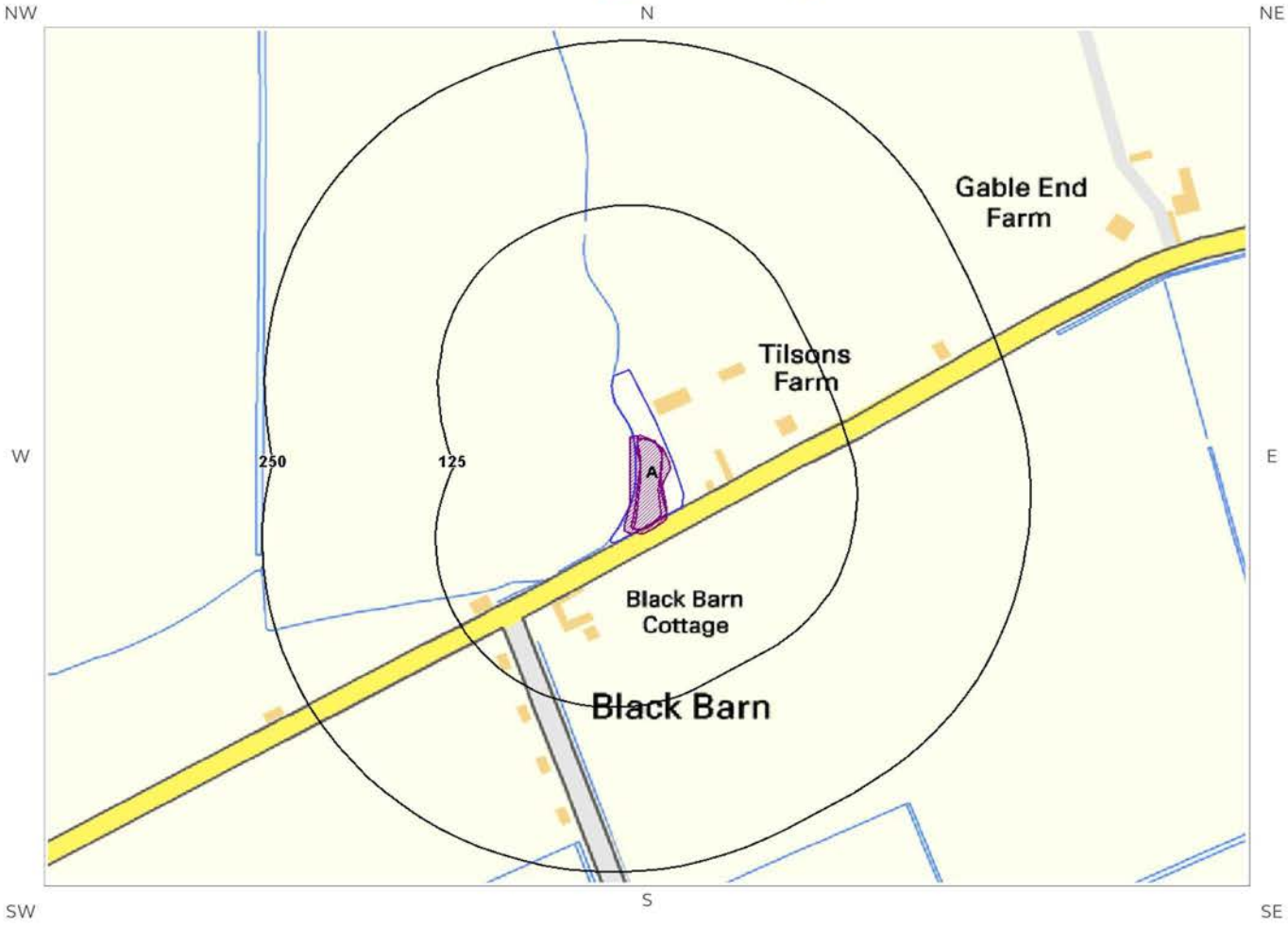
The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

3.2 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.

---

4 Ground Workings map



Ground Workings Legend

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

Site Outline

125
250
Search Buffers (m)

Historic Surface Ground Workings

Historic Underground Workings

Current Ground Workings

4 Ground Workings

4.1 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

ID	Distance (m)	Direction	NGR	Use	Date
1A	0.0	On Site	543264 328372	Pond	1887
2A	0.0	On Site	543262 328374	Pond	1950
3A	0.0	On Site	543258 328374	Pond	1950

4.2 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.

4.3 Current Ground Workings

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

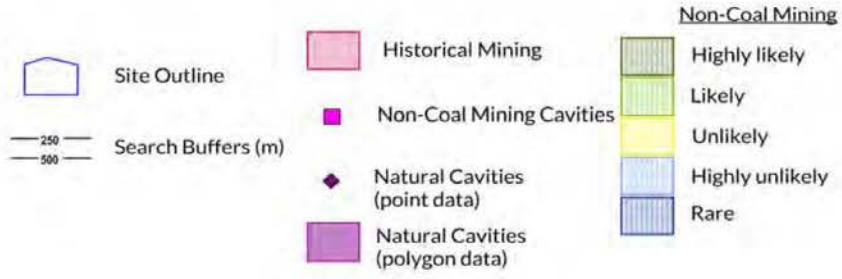
Are there any BGS Current Ground Workings within 1000m of the study site boundary? No

Database searched and no data found.

5 Mining, Extraction & Natural Cavities map

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

Mining, Extraction and Natural Cavities Legend



5 Mining, Extraction & Natural Cavities

5.1 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.

5.2 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.

5.3 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.

5.4 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.

5.5 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.

5.6 Natural Cavities

This dataset provides information based on the Peter Brett Associates natural cavities database. The dataset is made up of points and polygons. Where polygons are used these represent an area in which it is expected the cavities could be found. It does not indicate that cavities are present everywhere within the polygon, and caution should be used in the interpretation of this data.

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

Database searched and no data found.

5.7 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.

5.8 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.

5.9 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.

5.10 Clay Mining

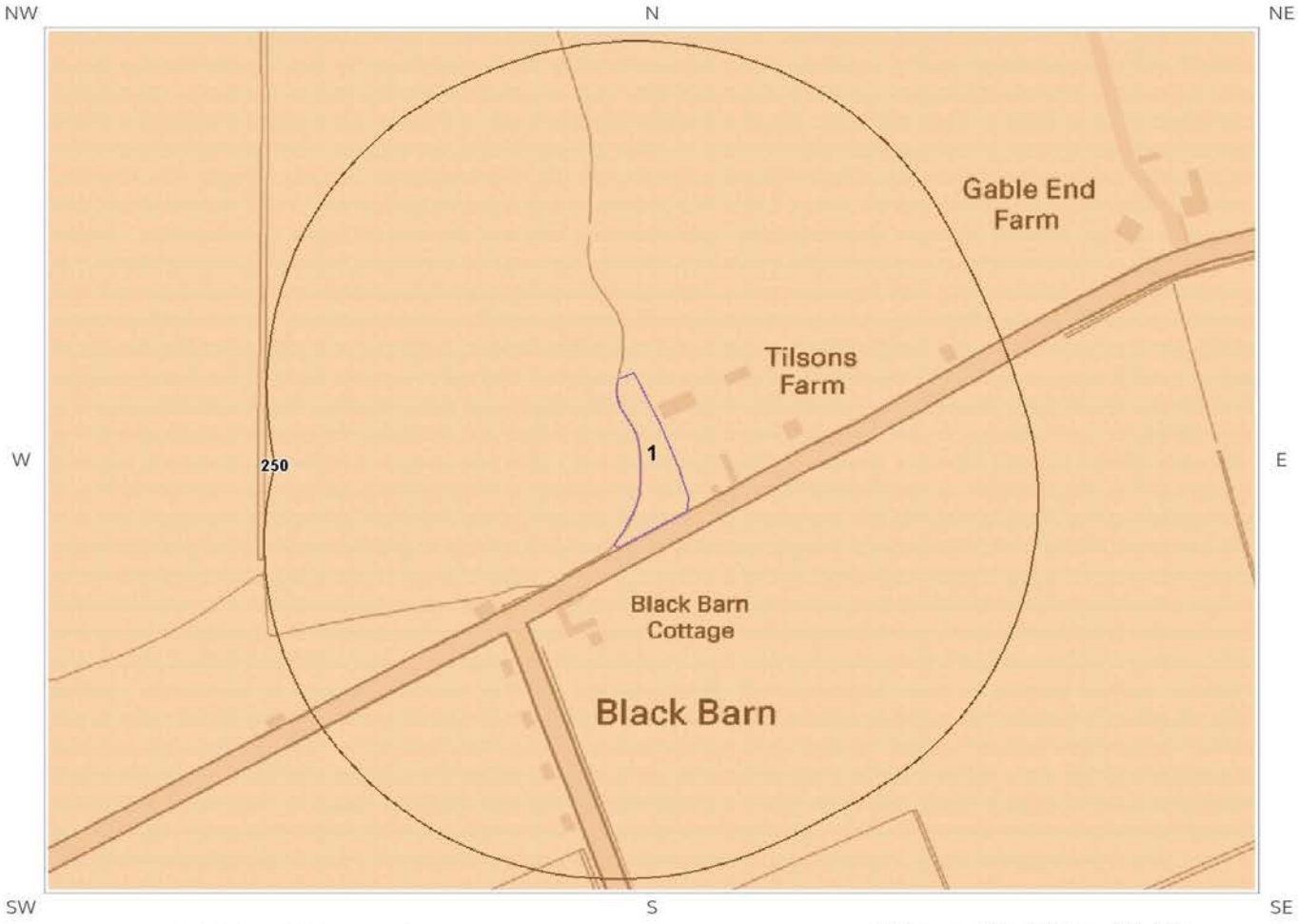
This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

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

Database searched and no data found.

6 Natural Ground Subsidence

6.1 Shrink-Swell Clay map



Shrink Swell Clay Legend

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

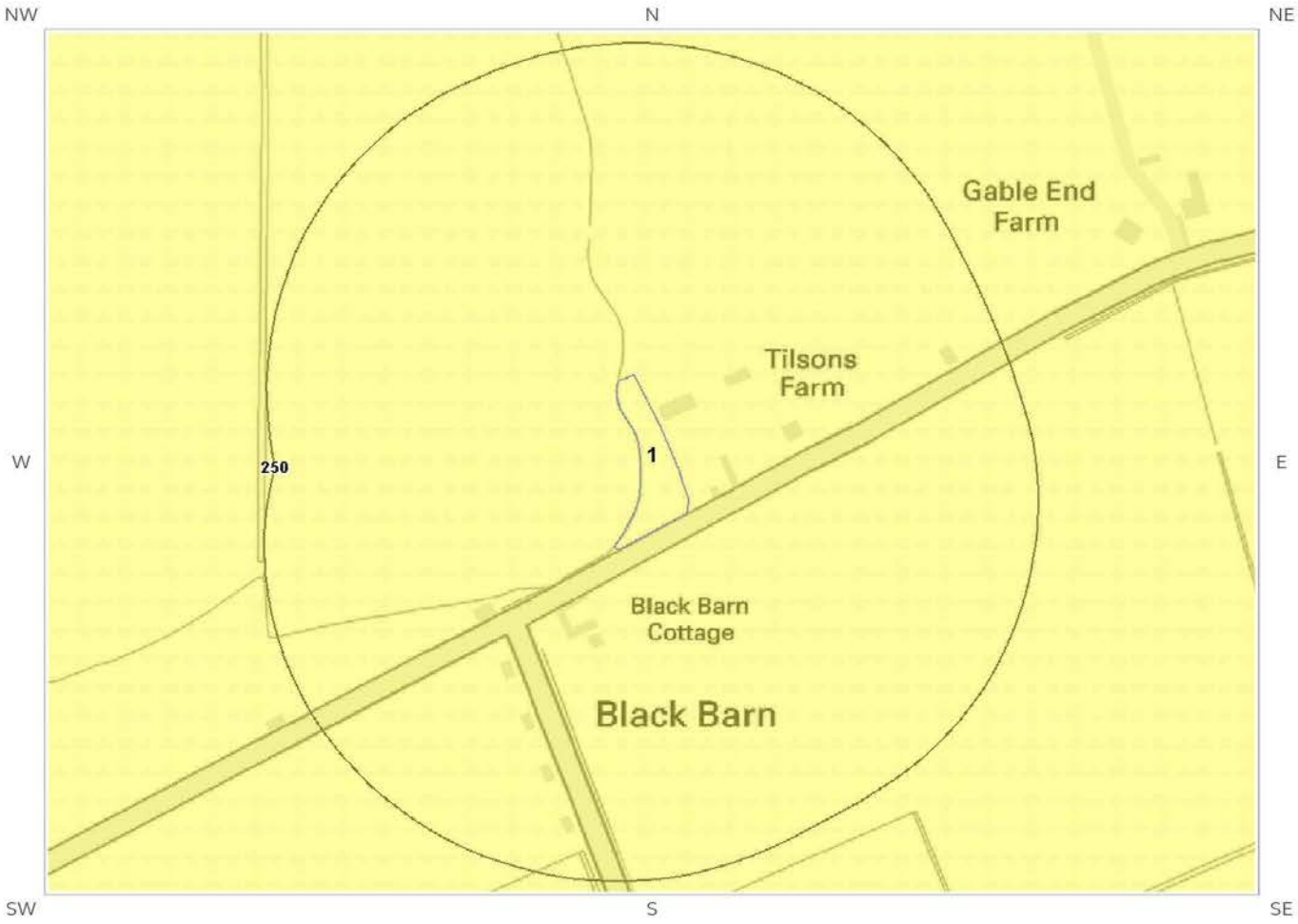
Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

Low
Moderate
High

6.2 Landslides map



Landslides Legend

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

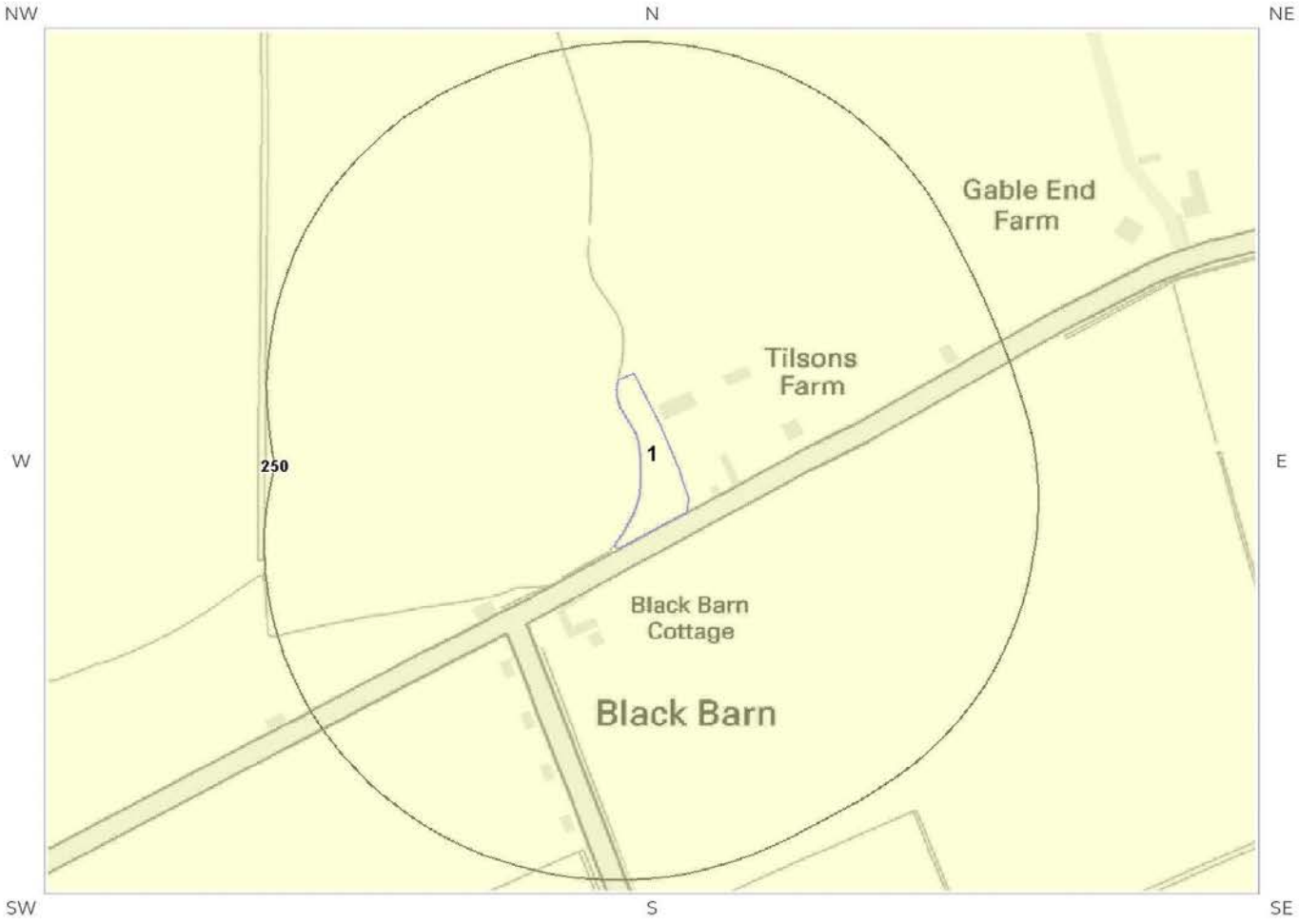
Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

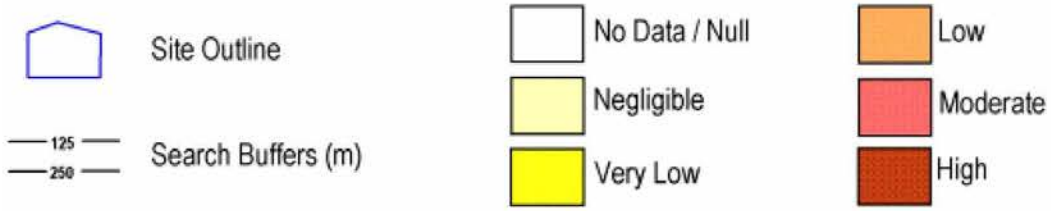
Low
Moderate
High

6.3 Ground Dissolution of Soluble Rocks map

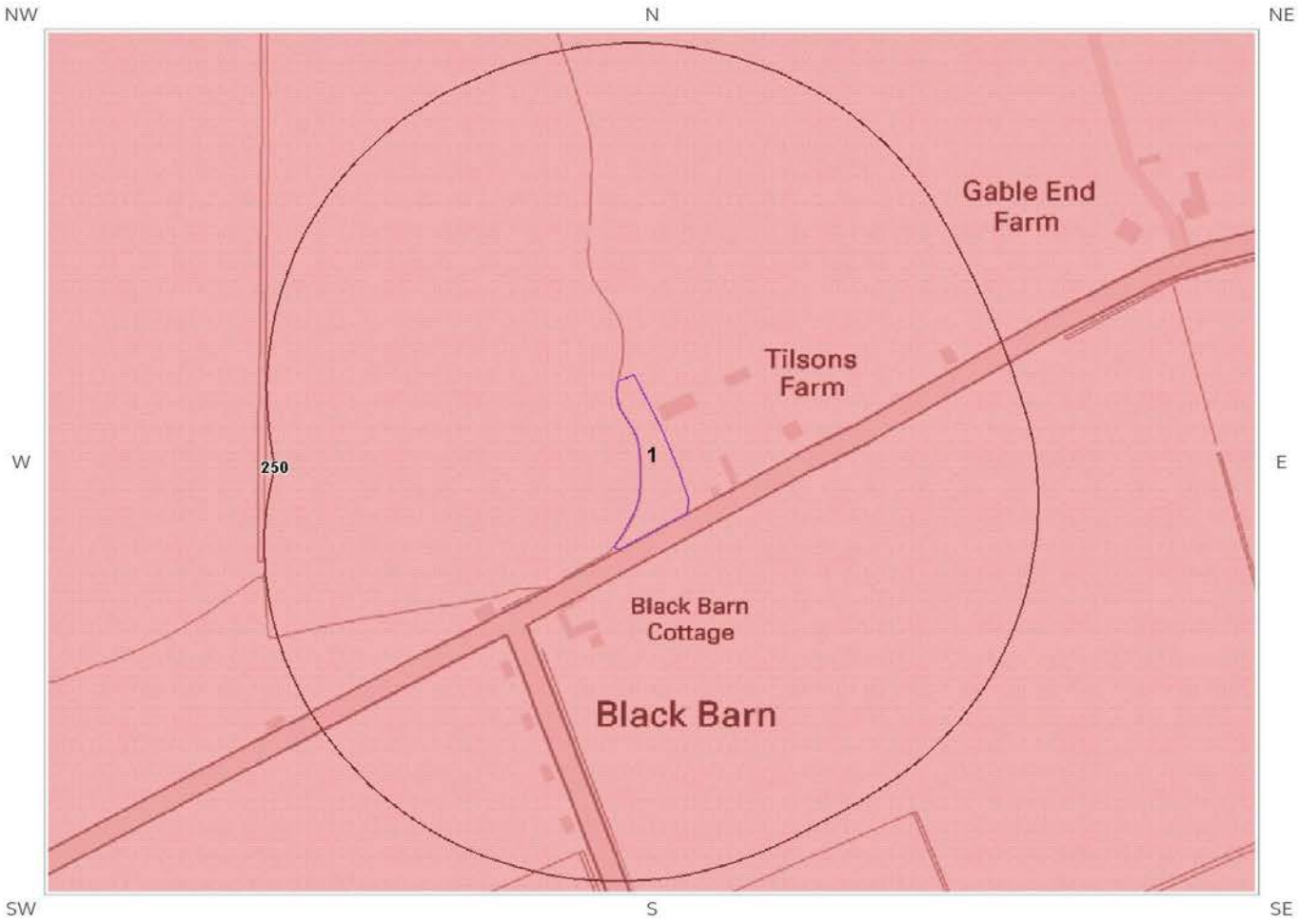


Ground Dissolution
Soluble Rocks Legend

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.



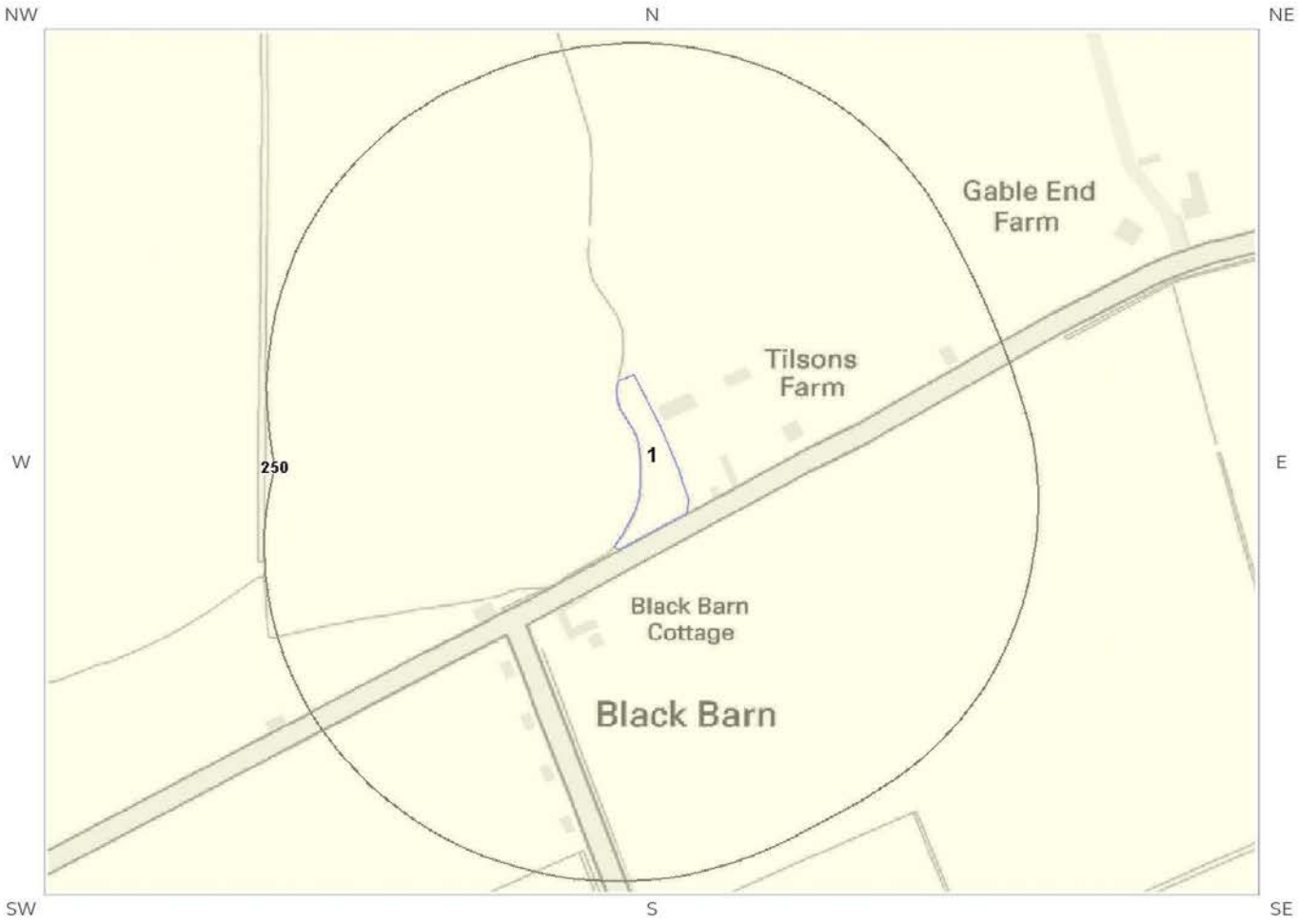
6.4 Compressible Deposits map



Compressible Deposits Legend

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

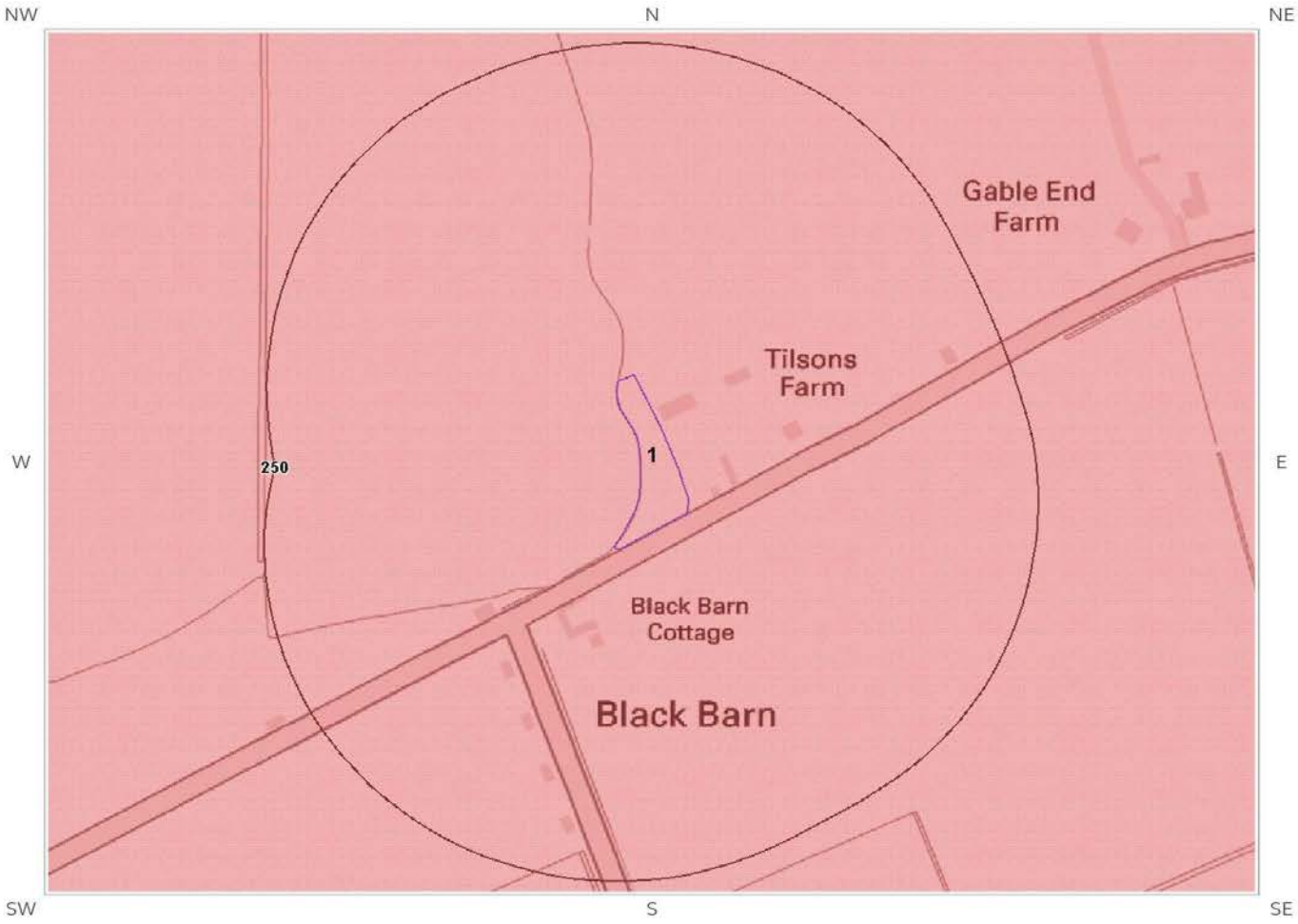
6.5 Collapsible Deposits map



Collapsible Deposits Legend

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

6.6 Running Sand map



Running Sand Legend

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

Low
Moderate
High

6 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

6.1 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.

6.2 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.

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

6.3 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.

6.4 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. 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.

6.5 Collapsible Deposits

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

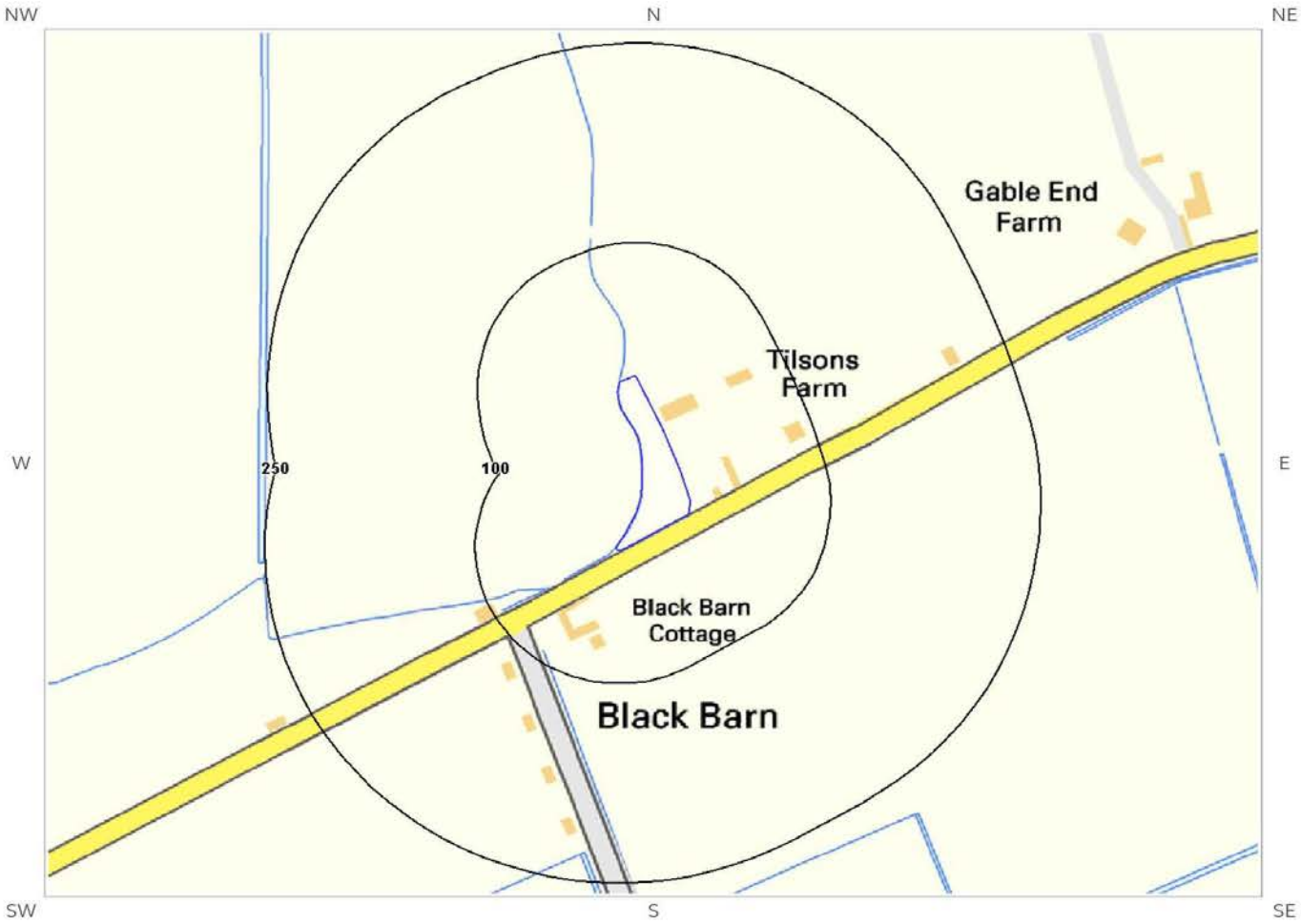
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for collapsible deposits identified. No actions required to avoid problems due to collapsible deposits. No special ground investigation required, or increased construction costs or increased financial risk due to potential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

6.6 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.

7 Borehole Records map



Borehole Records Legend

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

Site Outline

Borehole Locations

125
250
Search Buffers (m)

7 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.

8 Estimated Background Soil Chemistry

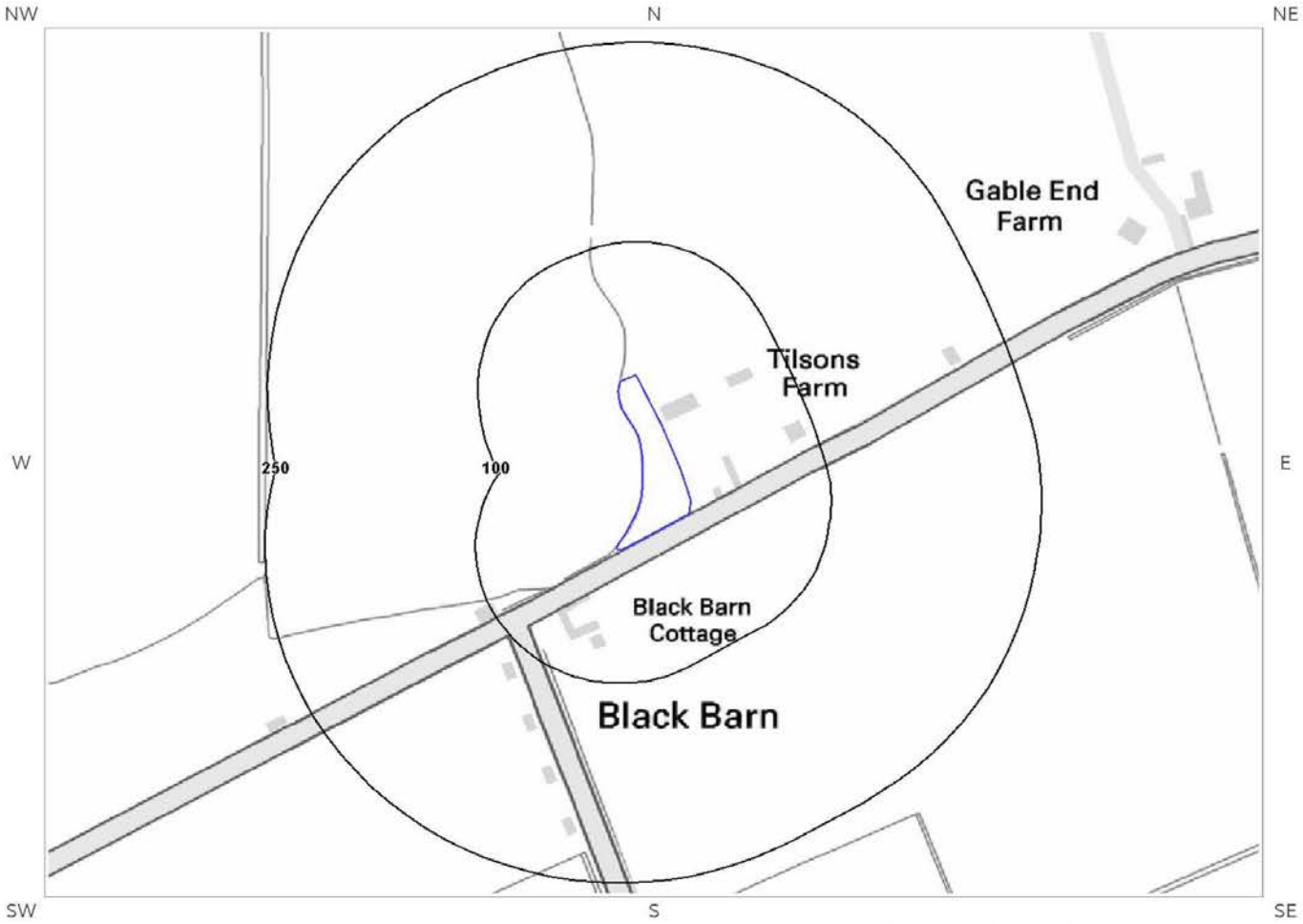
Records of background estimated soil chemistry within 250m of the study site boundary: 2

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
39.0	N	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.

9 Railways and Tunnels map



Railways and Tunnels Legend

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.
© OpenStreetMapContributors

- Site Outline
- 250 / 500 Search Buffers (m)
- 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

9 Railways and Tunnels

9.1 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.

9.2 Historical Railway and Tunnel Features

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

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

Database searched and no data found.

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

9.3 Historical Railways

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

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

Database searched and no data found.

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.

9.4 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.

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.

9.5 Railway Projects

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

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

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

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

Please note that this assessment takes account of both the original Phase 2b proposed route and the amended route proposed in 2016. As the Phase 2b route is still under consultation, Groundsure are providing information on both options until the final route is formally confirmed. Practitioners should take account of this uncertainty when advising clients.

Contact Details

Groundsure Helpline

Telephone: 08444 159 000
info@groundsure.com

British Geological Survey Enquiries

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

British Gypsum

British Gypsum Ltd
East Leake
Loughborough
Leicestershire
LE12 6HX

The Coal Authority

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

Public Health England

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

Johnson Poole & Bloomer Limited

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

Ordnance Survey

Adanac Drive, Southampton
SO16 0AS

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

Getmapping PLC

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

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

Acknowledgements: Ordnance Survey © Crown Copyright and/or Database Right. All Rights Reserved. Licence Number [03421028]. This report has been prepared in accordance with the Groundsure Ltd standard Terms and Conditions of business for work of this nature.

Standard Terms and Conditions

Groundsure's Terms and Conditions can be viewed online at this link:
https://www.groundsure.com/terms-and-conditions-may25-2018