Geo-Environmental

DESK STUDY REPORT

for the site at

LAND AT SALPH END, BEDFORD,

BEDFORDSHIRE, MK41 0JR

on behalf of

MANOR OAK HOMES

Report:	**DESK STUDY REPORT**
Site:	**LAND AT SALPH END, BEDFORD, BEDFORDSHIRE, MK41 0JR**
Client:	**MANOR OAK HOMES**
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CONTENTS

FIGURES

APPENDICES

1.0 INTRODUCTION

Geo-Environmental Services Limited was instructed by Manor Oak Homes to undertake a desk based investigation of the geotechnical and geo-environmental factors pertaining to the proposed redevelopment of the Land at Salph End, Bedford, Bedfordshire, MK41 0JR (herein referred to as 'the site'). The site's location is presented in Figure 1.

The proposed development is understood to comprise: residential properties with private gardens, communal soft landscaping, estate roads and associated development infrastructure; open space; sports pitches; and a school.

1.1 Objectives

The investigation was to comprise a desk study of geotechnical and geo-environmental factors pertaining to the site, including a review of available historical maps and an examination of other available sources of geo-environmental information.

A Preliminary Risk Assessment (PRA) was to be undertaken as part of the desk study in accordance with CLR11. The objective of the risk assessment was to evaluate plausible pollutant linkages with respect to the proposed development, adjacent land uses, and the wider environment, in the context of planning, immediate liabilities under the Environment Protection Act 1990, and risks posed to Controlled Waters under the Water Resources Act.

1.2 Standards

Where practicable, the desk study was undertaken in accordance with the following documents and guidance:

- National Planning Policy Framework – March 2012
- Planning Policy Statement 23 – Planning and Pollution Control;
- Model Procedures for the Management of Contaminated Land, CLR11, DEFRA and Environment Agency 2004;
- Environment Agency Guidance on Requirements for Land Contamination Reports, Version 1 dated July 2005;
- BS10175:2011+A1:2013 - Investigation of Potentially Contaminated Sites - Code of Practice, BSI 2013;
- BS5930: 2015 - Code of Practice for Site Investigations, BSI 2015;
- EN ISO 14688 Geotechnical Investigation and Testing Part 1-2002 and Part 2-2004;
- BS1377: 1990 - Soils for Civil Engineering Purposes, BSI1990;
- NHBC Standards Chapter 4.1 Land Quality - Managing Ground Conditions;
- NHBC Standards Chapter 4.2 Building Near Trees;
- CIRIA C665 – Assessing risks posed by hazardous ground gases to buildings (2007);
- NHBC 10627-R01(04)- Guidance on evaluation of development proposals on sites where methane and carbon dioxide are present (2007);
- BS8485:2015+A1:2019 Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings;
- Department of Environment - Industry Profiles (1995 - 1996).

1.3 Conditions

The information collected from the desk study has been used to provide an interpretation of the geotechnical and environmental conditions pertaining to the site. The recommendations and opinions expressed in this report are based on the data obtained. Geo-Environmental takes no responsibility for conditions that have either not been revealed in the available records or that occur between or under points of any physical investigation. Whilst every effort has been made to interpret the conditions, such information is only indicative and liability cannot be accepted for its accuracy.

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2.0 DESK STUDY

The findings of the Phase I desk study are presented in the following section. A copy of the historical maps and other information obtained as part of the desk study are presented in Appendix A. Comments made in the following section regarding possible ground conditions on the site are based purely on the desk study and associated site walkover.

2.1 Site Description

A walkover inspection was undertaken on 17th July 2019. The site comprised an irregularly shaped parcel of land lying to the north-west of Salph End village. The site was located at NGR 507474,252848 and extended to c. 19.3Ha.

The site comprised two arable barley fields at the time of inspection with a large field forming the majority of the site and a smaller field in the west, separated by a dry ditch and deciduous hedgerow which ran north to south through the west of the site. Two mature oak trees were present in the central north and a dead standing tree was located in the west. Overhead electricity cables on poles ran north to south through the centre of the eastern field with further cables running from the centre of the eastern site boundary to connect with the north-south run of cables in the centre of the site. Pole-mounted electrical equipment was located in the centre of the eastern boundary. In the south-east corner of the site a plastic pipe was noted protruding into the site from a shed within an adjacent property. This was assumed to be for the waste water from a washing machine or similar, with no odour or staining observed.

Topographically, the site appeared broadly level in the west and central areas with a high point noted in the north-eastern corner of the site which sloped very gently downhill to the west, south-west and south.

The site boundaries comprised tall deciduous hedgerows and trees throughout, with the exception of a stand of coniferous trees located in the west where the site boundary was perpendicular to Ravensden Road. A dry ditch was noted running along the northern site boundary from the north-east corner connecting with the north-south running ditch entering the site in the north-west.

The site was bordered by woodland to the north and a golf course to the west. The residential area of Salph End was located to the south-east and east with a small grass field located directly to the south of the site. Ravensden Road was present to the north-west of the site with further arable land beyond.

Site photographs obtained during the site walkover are presented in Appendix B.

2.2 Geology

With reference to British Geological Survey (BGS) mapping, the geology of the site was anticipated to comprise the Peterborough Member. A tract of Alluvium was present in the west of the site and Oadby Member was located in the east and north-east. In addition, given the previous agricultural land use and nearby farms and residential development there remains the possibility that there may be areas of reworked, disturbed or Made Ground across the site.

BS5930:2015 defines **Made Ground** as anthropogenic ground in which the material has been placed without engineering control and/or manufactured by man in some way, such as through crushing or washing, or arising from an industrial process. Great variations in material type, thickness and degree of compaction invariably occur and there can be deleterious or harmful matter, as well as potentially methanogenic organic material. In addition, where identified it is not uncommon for asbestos to be present within Made Ground soils.

Alluvium is the most recent river or estuarine deposit and generally comprises silty clays usually with an appreciable

organic content. Lenses of sand and gravel are also commonly found, as are pockets of peat.

The **Oadby Member** is formed of grey poorly sorted sediments (clay to gravel), with subordinate lenses of sands and gravels, clay and silt, and silty clay with chalk and flint fragments.

The **Peterborough Member** is composed of mainly brownish-grey, fissile, organic-rich (bituminous) mudstones; shelly fauna dominated by crushed aragonitic ammonites and bivalves, including nuculoid and meleagrinella shell-beds. Subordinate beds of pale-medium grey, blocky mudstone. Several bands of cementstone nodules/concretions. Basal beds commonly silty, with Gryphaea-rich shell beds.

2.3 Hydrogeology

With reference to the Groundsure dataset, the Alluvium was recorded as a Secondary 'A' Aquifer and the Oadby Member was recorded as a Secondary Aquifer (undifferentiated). The bedrock geology (Peterborough Member) was recorded as Unproductive Strata.

Secondary 'A' Aquifers are are permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.

Secondary Undifferentiated aquifer is the assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.

Unproductive Strata are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

The site is indicated to be outside of any source protection zone (SPZ).

No ground water abstractions were identified within a radius of 1000m of the site boundary. The nearest recorded surface water abstraction was 1266m E – Well at Renhold, General Farming & Domestic, December 1967.

The BGS Groundwater Flood Susceptibility (GFS) Data map indicated that the site was within an area with potential for groundwater flooding to occur at surface.

2.4 Hydrology

With reference to the Groundsure dataset, the closest surface water feature was a ditch located on site.

No surface water abstractions were identified within a radius of 2000m of the site boundary.

No discharge consent to freshwater/rivers was identified within a radius of 500m of the site boundary.

No pollution incidents to controlled waters were recorded within a radius of 500m of the site boundary.

The very southern section of the site was indicated to be at a medium risk from Flooding from Rivers or Sea without Defences. The remainder of the site was not indicated to be at particular risk from flooding.

2.5 Historical Data

A summary of site history dating back to 1884 is presented in Table 2.1 and has been determined through examination of historical maps obtained as part of the desk study.

Date	On Site	Off Site
1884	Agricultural fields separated by hedgerows with some trees present. A pond was located in the south-west of the site.	Farm houses mapped to the east and south-east of the site labelled Abbey Farm and Salphend Farm respectively. A brick field and associated kiln was mapped c. 250m to the south-east of site. Marsh Wood mapped at boundary on north-west corner of site. River runs north-south beyond the eastern boundary labelled Renhold Brook.
1901	A ditch was shown running southwards through the west of the site from Marsh Wood to the pond.	No significant changes noted.
1926	No significant changes noted.	Tree planting to north east around Abbey Farm. Brick kiln no longer mapped.
1968	The ditch was noted to run through the whole of the site, exiting the site at the southernmost point.	Residential development was shown to have occurred c. 100m south-east of the site boundary around Southend Farm as well as c. 100m north-east of site boundary.
1969	No significant changes noted.	No significant changes noted.
1972	The pond in the south-west was no longer shown.	No significant changes noted.
1976	No significant changes noted.	No significant changes noted.
1978	No significant changes noted.	Residential development was shown to have occurred adjacent to the south-east site boundary.
1980	No significant changes noted.	Proposed golf course and playing fields labelled to the north-east of site.
1984	No significant changes noted.	No significant changes noted.
1986	No significant changes noted.	No significant changes noted.
1988	No significant changes noted.	Incomplete mapping. No significant changes noted.
1990	No significant changes noted.	Incomplete mapping. No significant changes noted.
1993-1995	Incomplete mapping. No significant changes noted.	Incomplete mapping. No significant changes noted.
2002-2014	No significant changes noted.	No significant changes noted.

Table 2.1 Summary of Site History

The site was shown from the historical mapping to comprise open fields with a ditch was noted to run through the whole of the site, exiting the site at the southernmost point for the duration of the mapping period. A pond was present in the south-west until 1972 which is assumed to have been backfilled.

The surrounding area comprised mainly agricultural land use with farms present to the east and south-east and residential development to south-east of site.

2.6 Sensitive Land Uses

A search was made of environmentally sensitive areas, including areas of green belt, scenic or natural beauty, parks, reserves, nitrate zones, protected conservation and scientific areas.

Five environmentally sensitive areas were recorded within 2000m of the site details of which are presented in Table 2.2.

Location	Name	Description	Type
306m W	Putnoe Wood	Local Nature Reserve	Natural England
308m W	Putnoe Wood	Ancient Woodland	Ancient and Semi-Natural Woodland
486m W	Mowsbury Hill	Local Nature Reserve	Natural England
1340m E	Not Supplied	Ancient Woodland	Ancient and Semi-Natural Woodland
1357m E	Not Supplied	Ancient Woodland	Ancient and Semi-Natural Woodland

Table 2.2 Environmentally Sensitive Areas within 2000m of the site boundary

The site was noted to be located within a recorded Nitrate Vulnerable Zone.

2.7 Environmental Data

Searches of other various environmental databases were made as part of the desk study, including air pollution control sites, Part IIA contaminated land, Integrated Pollution Control (IPC) and Integrated Pollution Prevention and Control (IPPC) site, registered radioactive substances, COMAH sites, explosives sites, Notification of Installations Handling Hazardous Substances (NIHHS) sites, planning permissions for sites involving hazardous substances, contemporary trade directories and fuel station registers.

Three contemporary trade directories were recorded within 250m of the site:

- 53m SE – Electricity Sub Station, Bedfordshire MK41, Active;
- 165m SE – Bagfast Agricultural, 56, Hookhams Lane, Renhold, Bedford, Bedfordshire, MK41 0JX, Agricultural Machinery and Goods, Active;
- 248m E - Electricity Sub Station, Bedfordshire MK41, Active.

No fuel station entries were recorded within 500m of the site.

2.8 Geotechnical Data

The site was recorded as being located outside of any coal or non-coal mining areas.

National databases for a number of geological hazards have been compiled by the BGS, and a summary of the hazard data pertaining to the site is presented in Table 2.3.

British Geological Survey (BGS) geological hazard assessments for the site are summarised in Table 2.3.

Hazard	Designation
Collapsible ground	Very Low
Compressible ground	Moderate
Ground dissolution	Negligible
Landslide	Very Low
Running sand	Low
Swelling clay	Moderate

Table 2.3 Summary of BGS Geological Hazards

2.9 Landfill and Ground Workings

A search of BGS recorded landfill sites, IPC registered waste sites, licensed waste management facilities, local authority recorded landfill sites, other registered landfill sites, waste transfer stations, and other waste treatment or disposal sites was undertaken as part of the desk study. Such sites may form an artificial source of ground gases, such as carbon dioxide and methane, where wastes are buried or disposed of to landfill.

Two such sites/features were recorded within 1000m of the site:

- 373m E, Hill Farm Renhold (Local Authority Historic Landfill);
- 498m E, Hill Farm, Renhold, Bedfordshire, Inert Industrial, Jan 1950 - Dec 1968 (Environment Agency Historic Landfill).

These two records are assumed to relate to the same site but to be phases of the same landfill site.

Sixteen areas of potentially infilled land were recorded within 300m of the site as shown in Table 2.4:

Distance(m)	Direction	Use	Date
10	W	Ponds	1976
10	W	Ponds	1983
36	E	Pond	1959
39	E	Pond	1900
39	E	Pond	1927
53	SE	Pond	1983
53	SE	Pond	1971
53	SE	Pond	1976
166	E	Unspecified Pit	1927
167	E	Unspecified Pit	1959
174	E	Ponds	1882
186	E	Pond	1959
190	E	Pond	1976
190	E	Pond	1971
191	E	Pond	1900
191	E	Pond	1927

Table 2.4 Summary of Infilled Land within 300m

2.10 Radon

Reference has been made to the Groundsure data report. The report indicated that the site lies within a lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level). As such, no radon protection measures are deemed necessary in the construction of new dwellings or extensions.

2.11 Geochemistry

Data obtained as part of the Groundsure Report provides details on the estimated soil chemistry for natural soils in the vicinity of the site. The estimated quality of natural soils beneath the subject site is presented in Table 2.5.

Determinant	Estimated Concentration (mg/kg)
Arsenic	<15-25
Cadmium	<1.8
Chromium	60-90
Lead	<100
Nickel	15-45

Table 2.5 Summary of Site Geochemistry

The natural background concentrations (where available) were below respective published Soil Guideline Values, Generic Assessment Criteria and Category 4 Screening Levels for the protection of human health under a residential land use.

However, these values are not necessarily representative of the site's soil chemistry. Furthermore, SGVs and GACs are dependent on pH and soil organic matter content. Therefore, concentrations of specific determinants and the utilised SGV/GAC cannot be determined without site specific investigation and analysis.

2.12 Previous Ground Investigations

Geo-Environmental was not aware of any previous ground investigations undertaken on site.

2.13 Asbestos

In line with current best practice, asbestos and ACM should be assumed to be potentially present within the shallow soils on site until proven otherwise.

2.14 Potential Contamination

The site was shown from the historical mapping to comprise open fields for agricultural use throughout the duration of the mapping period. A backfilled pond is located in the south-west of the site. There is a potential for pesticides to be present associated with the agricultural use of the site. In addition, given that previous development that has occurred in the vicinity of the site, including farms and later residential development, and the backfilled pond, there is the potential for Made Ground soils to be present. Made Ground is potentially present in the south-east and east of the site where off-site historical farm buildings and residential development is located.

The surrounding area comprised agricultural land, a golf course and residential use within the built up area of Salph End to the south-east.

The site's apparent previous use was as agricultural land. The specific former land use as farmland is not covered by the National House Building Council (NHBC), Environment Agency (EA) and Chartered Institute of Environmental Health (CIEH) publication 'Guidance for the Safe Development of Housing on Land Affected by Contamination'

(2008), which provides a summary of industrial profiles (1995 - 1996) published by the former Department of the Environment (DoE) (now part of the Department for Environment, Food and Rural Affairs [DEFRA]).

The potential contaminants associated with the site's former use and the potential presence of Made Ground include heavy metals, organic pollutants such as poly-aromatic hydrocarbons (PAH) and petroleum hydrocarbons/oils and asbestos (potentially introduced in Made Ground).

2.15 Ground Gas and Vapour Summary

The site has previously been used for agricultural land. If Made Ground is present and contained a significant amount of organic matter or organic contamination, it could have the potential to represent a source of ground gases/vapours. Made Ground within the backfilled pond may present a risk to buildings constructed directly over this feature. No other viable potential sources of ground gases have been identified on site or in close proximity to the site, with the identified historic landfill to the east being located over 250m from the site. The areas of infilled land identified in the site surroundings are not considered to represent viable sources of ground gas due to their limited size and distance from the site.

3.0 PRELIMINARY ASSESSMENT

Based on the findings of the desk study, the following sections summarise the anticipated geotechnical and environmental factors likely to impact the site.

3.1 Geotechnical Risk Assessment

3.1.1 Potential Geotechnical Issues

The following factors that might impact the geotechnical condition of the site were identified as part of the desk study:

- The possible presence of Made Ground which if encountered may affect the foundation design and construction.
- The presence of laterally and vertically variable strata and the impact these could have on further construction.
- The suitability of shallow soils as a bearing stratum for conventional foundations.
- Consideration of the volume change potential of any cohesive soils and the affect this could have on foundations.
- The possible presence of aggressive ground conditions (sulphates) which may affect the foundation design and construction.
- The possible presence of perched and shallow groundwater beneath the site.
- The presence of any trees on the site, which may have a significant impact on foundation design and construction if/where shrinkable soils are present.
- The suitability of the shallow soils for the use of soakaways on the site as part of the proposed development.

3.2 Preliminary Environmental Conceptual Site Model & Risk Assessment

3.2.1 Methodology

A Preliminary Risk Assessment (PRA) and Conceptual Site Model (CSM) has been prepared in accordance with CLR11 based on information obtained as part of the desk study. Possible risks associated with potential sources of contamination and sensitive receptors identified have been assessed following a source-pathway-receptor (SPR) approach in accordance with current UK protocols.

A risk may only exist where a plausible SPR linkage is present, and where the quantity or concentration of a contaminant is sufficient so as to cause harm. Under the statutory definition, "Contamination" may only strictly exist where contaminants pose a risk of harm to a receptor. Risk may be defined as a function of the likelihood and severity of any adverse effects arising from contamination. The risk classification has been assessed in accordance with CIRIA C552 (Rudland et al., 2001). A summary of how the risks are derived and their definitions are presented in Tables 3.1 & 3.2 below.

		Consequence			
		Severe	Medium	Mild	Minor
Probability	High Likelihood	Very high risk	High risk	Moderate risk	Moderate/low risk
	Likely	High risk	Moderate risk	Moderate/low risk	Low risk
	Low Likelihood	Moderate risk	Moderate/low risk	Low risk	Very low risk
	Unlikely	Moderate/low risk	Low risk	Very low risk	Very low risk

Table 3.1 Risk Ratings Matrix

Risk Rating	Definitions
Very high risk	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not already undertaken) and remediation are likely to be required.
High risk	Harm is likely to arise to a designated receptor from an identified hazard Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not already undertaken) is required and remediation works may be necessary in the short term and are likely over the longer term.
Moderate risk	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild.
Moderate to low risk	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is unlikely that any such harm would be severe, or if any harm were to occur it is probable that the harm would be relatively mild.
Low risk	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.
Very low risk	There is low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.

Table 3.2 Risk Ratings Definition

3.2.2 Summary of Plausible Sources

Possible sources of contamination identified or discounted as part of the desk study are summarised in Table 3.3.

Source	Description	Comments
Shallow Soils and Made Ground	General chemical quality of the near surface soils.	Possible elevated metals, organic, inorganic contaminants and asbestos.
Ground gases/vapours	Possible presence of Made Ground beneath the site in the south-east and within the backfilled pond in the south-west may be a potential source for vapours and ground gases.	Methane, carbon dioxide, depleted oxygen, volatile organic compounds and trace gases.
Brick Field and Brick Kiln	Mobile contaminants from this source may be present beneath the site.	Discounted - given this feature's distance from the site (c. 250m) there is not likely to be a pollutant pathway between the site and the source.
Naturally occurring aggressive ground conditions	Naturally occurring compounds in the ground which could damage buried concrete.	Possible elevated sulphate concentrations.

Table 3.3 Possible Sources of Contamination

3.2.3 Summary of Plausible Pathways

The plausible pathways are summarised in Table 3.4. These pathways are based on the proposed end use, commercial units.

Pathway	Description
Direct Contact	Ingestion of soil particles, inhalation of soil derived dust (including tracked back dust), dermal contact. Bioaccumulation within home grown vegetation.
Inhalation	Inhalation of soil dust both inside and outside of buildings.
	Inhalation of ground gas/vapours within buildings.
Vertical & Lateral Migration	Contaminant movement both vertically through leaching/gravity and horizontally along preferential pathways, e.g. services trenches, more permeable bedded strata or with groundwater.
Shallow Groundwater	Shallow groundwater or perched water is not anticipated to be present, but if encountered could result in the vertical and lateral migration of contaminants.
Chemical Attack	Attack of buried plastics and concrete by aggressive ground conditions.
Flooding	The majority of the site was indicated to be located outside of any current indicative tidal and fluvial flood plain. The very southern extent of the site is indicated to be at medium risk of flooding.

Table 3.4 Possible Contaminant Pathways

3.3.4 Summary of Plausible Receptors

Potential receptors associated with the site and its development, identified or otherwise discounted, are summarised in Table 3.5.

Receptor	Description	Comments
End Users	Future users of the proposed development.	The development will include residential properties with gardens, public open space sports pitches, a school and associated infrastructure.
Adjacent Land Users	Sensitive land uses identified within the immediate vicinity.	Adjacent land uses are a mixture of residential and agriculture.
Soft Landscaping	Areas of planting including lawns, shrubs, trees, etc.	Private gardens and soft landscaped areas are proposed.
Built Environment	Buried concrete for foundations and plastics for potable water supply pipes may be laid in contact with contaminated soils.	Aggressive ground conditions and depths of Made Ground may be present beneath the site.
Groundwater	Controlled Waters contained within the aquifer(s) beneath the site.	The site lies upon a Secondary A Aquifer, Secondary Aquifer and Unproductive Strata and is located outside any SPZ.
Surface Water	Controlled Waters within lakes, rivers, ponds, etc., or coastal waters.	The nearest surface water was an unnamed pond and inland river located on site.
Ecological Receptors	Sensitive areas of ecological significance.	5No. areas of Ancient Woodland / Nature Reserves were located within 2000m of the site. Despite this, the nearest is 306m west of the site. As such, this has not been considered further as part of this assessment at this stage.

Table 3.5 Possible Receptors of Contamination

Site workers involved in the preparation and construction of the development have not been considered in this assessment as the principal contractor is duty bound under the current CDM Regulations to undertake their own risk assessments with respect to their employees.

Whilst the above sources and receptors have been identified, Table 3.6 summarises the identified plausible pollution linkages and a qualitative assessment of the risks based on the desk study research:

Potential Source/Media	Potential Receptors	Possible Pathways	Probability	Consequence	Risk & Justification
Contaminants of Concern (Made Ground and Shallow Soils)	End Users	Direct contact and inhalation of soil derived dust	Likely	Mild	**Moderate/Low** Future occupiers are likely to come into direct contact with soils where soft landscaping is present. Where private gardens and soft landscaping is proposed it will be completed with uncontaminated soils in the near surface root zone. which will reduce
	Adjacent Land Users	Direct contact and inhalation of soil derived dust	Unlikely	Minor	**Very Low** Adjacent site users are unlikely to come into contact with the soils at the site. Where soft landscaping is proposed it will be completed with uncontaminated soils in the near surface root zone.
	Soft Landscaping	Root uptake	Likely	Minor	**Low** Soft landscaping is proposed on the site and thus, root uptake is possible. However, landscaping would be completed with uncontaminated soils in the near surface root zone. Furthermore, no clear evidence of harm to existing vegetation was observed. Where soft landscaping is proposed it will be completed with uncontaminated soils in the near surface root zone.
	Water Supply Pipes	Direct contact	Low	Minor	**Very Low** Water supply pipes are likely to come into contact with impacted soils depending upon depth of installation and extent of soil impact.
	Buildings and Infrastructure	Direct contact	Likely	Minor	**Low** Foundations and utilities will be placed within within potentially aggressive soils (e.g. sulphate). However, the consequence is anticipated to be minor.
	Groundwater	Vertical Migration	Unlikely	Minor	**Very Low** The site overlies a Secondary A Aquifer, Secondary Aquifer and Unproductive Strata. However, the desk study has not identified any significant sources of potentially mobile contamination on-site related to this source.

Potential Source/Media	Potential Receptors	Possible Pathways	Probability	Consequence	Risk & Justification
	Surface Water	Vertical and Lateral Migration	Unlikely	Minor	**Very Low** The nearest surface water features are a pond and seasonal ditch on site. However, the desk study has not identified any significant sources of potentially mobile contamination on-site related to this source.
Ground gases from any Made Ground	End Users	Inhalation	Unlikely	Medium	**Low** Future occupiers may inhale potential ground gases produced by any Made Ground. Should ground gases at concentrations of concern be identified, incorporation of gas protection measures could mitigate the risk of harm.
	Soft Landscaping	Root uptake	Unlikely	Minor	**Very low** Soft landscaping is not expected to be adversely affected by any ground gases from this source. No vegetation distress was noted during the site walkover survey.
	Buildings and infrastructure	Gas accumulation and potential explosion of flammable	Unlikely	Medium	**Low** Extensive putrescible material sufficient for significant methane production is not expected to be present limiting the potential for significant gas migration.
Ground gases from backfilled pond	End Users	Inhalation	Low likelihood	Medium	**Moderate/Low** Future occupiers may inhale potential ground gases produced by any Made Ground where buildings are directly over this feature. Should ground gases at concentrations of concern be identified, incorporation of gas protection measures could mitigate the risk of harm.
	Soft Landscaping	Root uptake	Unlikely	Minor	**Very low** Soft landscaping is not expected to be adversely affected by any ground gases from this source. No vegetation distress was noted during the site walkover survey.

Potential Source/Media	Potential Receptors	Possible Pathways	Probability	Consequence	Risk & Justification
	Buildings and infrastructure	Gas accumulation and potential explosion of flammable	Unlikely	Medium	**Low** Extensive putrescible material sufficient for significant methane production is not expected to be present limiting the potential for significant gas migration. Given the age of the backfilling (1972) any significant methane production would have stopped by now.
Naturally occurring aggressive ground conditions	End users	Direct contact and inhalation / ingestion of soil derived dust	Unlikely	Minor	**Very Low** No naturally occurring potential sources which could harm human health have been identified. The consequence is likely to be minor.
	Soft Landscaping	Root Uptake	Low	Minor	**Very Low** Soft landscaping is proposed. Where proposed it is unlikely to be affected by naturally occurring aggressive ground conditions. The consequence is likely to be
	Adjacent land users	Direct contact	Unlikely	Minor	**Very Low** No potential sources which could harm human health have been identified. The consequence is likely to be minor.
	Water supply pipes	Direct contact	Unlikely	Minor	**Very Low** No potential sources which could harm human health have been identified. The consequence is likely to be minor.
	Buildings and Infrastructure	Direct contact	Likely	Minor	**Low** Foundations will be placed within soils which may be an aggressive environment for concrete. However, the consequence is anticipated to be minor.

Table 3.6 Plausible Pollution Linkages

3.3 Preliminary Risk Assessment Summary

The Preliminary Risk Assessment (PRA) and Conceptual Site Model (CSM) developed from the information gathered as part of the desk study process have identified several plausible pollutant linkages that exist in relation to the proposed development of the site and the preliminary risk rating for most of the pollution linkages have been classified as low or very low. A moderate to low risk has been identified relating to the potential presence of Made Ground, the quality of shallow soils and the potential ground gases risk associated with the backfilled pond.

The potential pollutant linkages established within this desk study are not considered to prevent development on the subject site but could require remediation or the employment of risk mitigation measures to reduce the risks to key receptors.

In order to progress this assessment in line with the National Planning Policy Framework, to provide further characterisation of the site and refinement of the PRA and CSM, it is recommended that intrusive investigation and associated testing is undertaken to confirm the findings of the desk study report and to provide a robust risk assessment for the site and proposed development. As such it is recommended that geochemical and geotechnical investigation be carried out on the site to include analysis of soil samples for the range of potential contaminants identified within the desk study.

3.4 Preliminary Geotechnical Assessment Summary

The site is anticipated to be underlain by Alluvium, Oadby Member and the Peterborough Member. It is possible that conventional strip or pad foundations could be suitable for the proposed development where natural ground is encountered at ground level. However, where foundations are required in areas of Made Ground or infilled ground, which may be present to depth beneath areas of the site, a deeper or piled foundation solution may be required. The development should also take into account the presence of trees at the site if shrinkable soils are present. Localised deepening of foundations may be required in the vicinity of trees.

It is considered unlikely that soakaways would function effectively on this site, although this would be subject to formal testing. As such it may be necessary (subject to testing) to utilise on-site storage and attenuation of peak storm flow, through systems such as porous paving and cellular storage crates. The use of soakaways would also only be acceptable in areas remote from any contamination and infilled/Made Ground that may be identified on the site.

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

The desk study has shown the site to comprise open fields since the earliest mapping periods. The surrounding land use was mainly agricultural and residential to the south-east within the built up area of Salph End.

The proposed development is understood to comprise: residential properties with private gardens, communal soft landscaping, estate roads and associated development infrastructure; open space; sports pitches; and a school.

Very low to low risk ratings have been classified related to the potential ground gas risk and naturally occurring aggressive ground conditions at the site. A moderate to low risk rating has been assigned in relation to the potential for Made Ground to be present, the general quality of the shallow soils and the potential ground gases risk associated with the backfilled pond. Further assessment is required to better characterise the contamination status of the site to inform an update of the conceptual site model and allow a robust assessment of the risk to human health and the environment.

It is possible that conventional foundations would be suitable for parts of the proposed development, although any design should account for the potential presence of shrinkable soils as well as the presence of trees on site.

4.2 Recommendations

At this stage and based on the findings of the desk study and preliminary risk assessment, the following scope of works is recommended for the intrusive investigation on the site.

- Intrusive investigation works should be carried out in order to clarify the geotechnical and geo-environmental issues pertaining to redevelopment of the site.
- Targeted investigation of the backfilled pond to assess the extent, depth and nature of the material used to backfill this feature.
- Soil sampling and analysis should be undertaken to inform subsequent geotechnical and geo-environmental risk assessment.
- Laboratory analysis, on soil samples recovered from the exploratory holes for a range of geotechnical parameters to support foundation design.
- Laboratory analysis, on soil samples recovered from the exploratory holes, for an analytical suite to include the potential contaminants identified within the desk study and encountered during any intrusive investigation. The suite should include commonly occurring metals, non-metals, asbestos, TPH, PAH and pesticides.

It may be necessary to undertake remediation/risk mitigation measures on this site to break pollutant linkages and thus protect key receptors such as human health, controlled waters, built environment, soft landscaping and the like. The requirement and extent of any such remediation cannot be determined until such time as an intrusive investigation and associated testing has been completed.

Caveat

The data collected from the investigations have been used to provide an interpretation of the geo-environmental conditions pertaining to the site. The recommendations and opinions expressed in this report are based on the data obtained.

Geo-Environmental Service Limited takes no responsibility for conditions that either have not been revealed in the available records, or that occurs between or under points of physical investigation. Whilst every effort has been made to interpret the conditions, such information is only indicative and liability cannot be accepted for its accuracy.

Information contained in this report is intended for the use of the client and their agents, and Geo-Environmental Services Limited can take no responsibility for the use of this information by any third party for uses other than that described in this report.

It should be noted that in particular the concentrations and levels of mobile liquid and gaseous materials are likely to vary with time. The results obtained may therefore only be representative of the conditions at the time of sampling. Such reservations have been indicated in the text where such conditions are considered to apply.

Geo-Environmental Services Limited does not indemnify any third parties such as the vendor against any dispute or claim arising from any finding or result of this investigation or any claim or dispute arising as a result of any decisions made thereof.

Project:	Land at Salph End, Bedford, MK41 0JR			**Title**	Site Location Plan
Client:	Manor Oak Homes			**Geo-Environmental Services Ltd** **Unit 7 Danworth Farm, Cuckfield Road** **Hurstpierpoint, West Sussex BN6 9GL** **+44(0)1273 832972 www.gesl.net**	Geo-Environmental
Ref No:	GE18371	**Revision:**	0		
Drawn:	SA	**Date:**	18/07/2019		
Figure:	1	**Scale:**	Not To Scale		

Project:	Land at Salph End, Bedford, MK41 0JR			**Title**	Site Plan
Client:	Manor Oak Homes			**Geo-Environmental Services Ltd**	
Ref No:	GE18371	**Revision:**	0	**Unit 7 Danworth Farm, Cuckfield Road**	
Drawn:	SA	**Date:**	18/07/2019	**Hurstpierpoint, West Sussex BN6 9GL**	
Figure:	2	**Scale:**	Not To Scale	**+44(0)1273 832972 www.gesl.net**	

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Open Space 3.2ha

Developable area 10.4ha
Includes primary route

School area 2.1ha

Attenuation basins 0.75ha
Area excluded from open space calculation

Flood zone 1.88ha

Sports pitches 1.08ha

Primary route

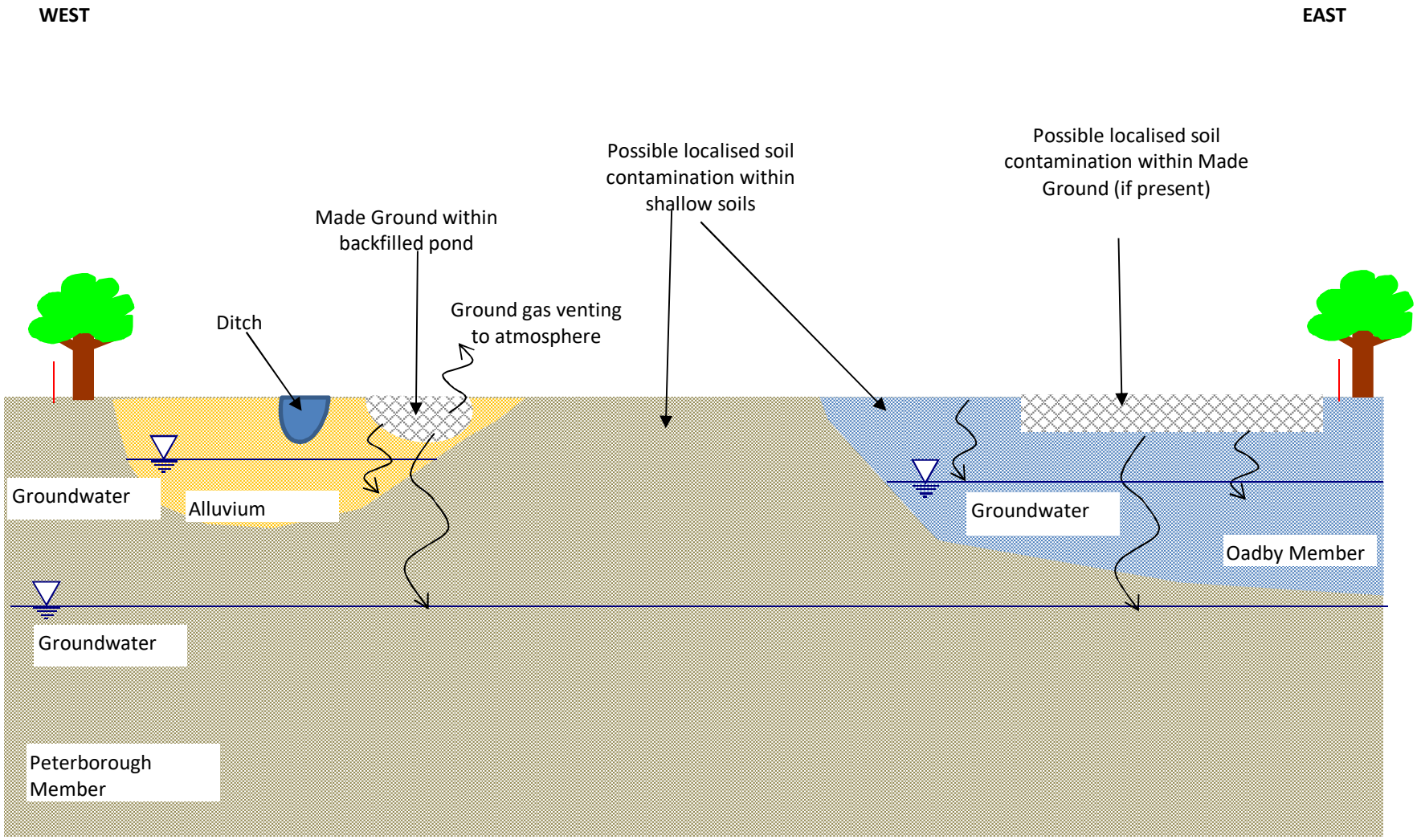
Easement

Revision:		Date:
A	Plan updated with revised distribution of POS and relocation of site access.	12.08.19 HW/DW

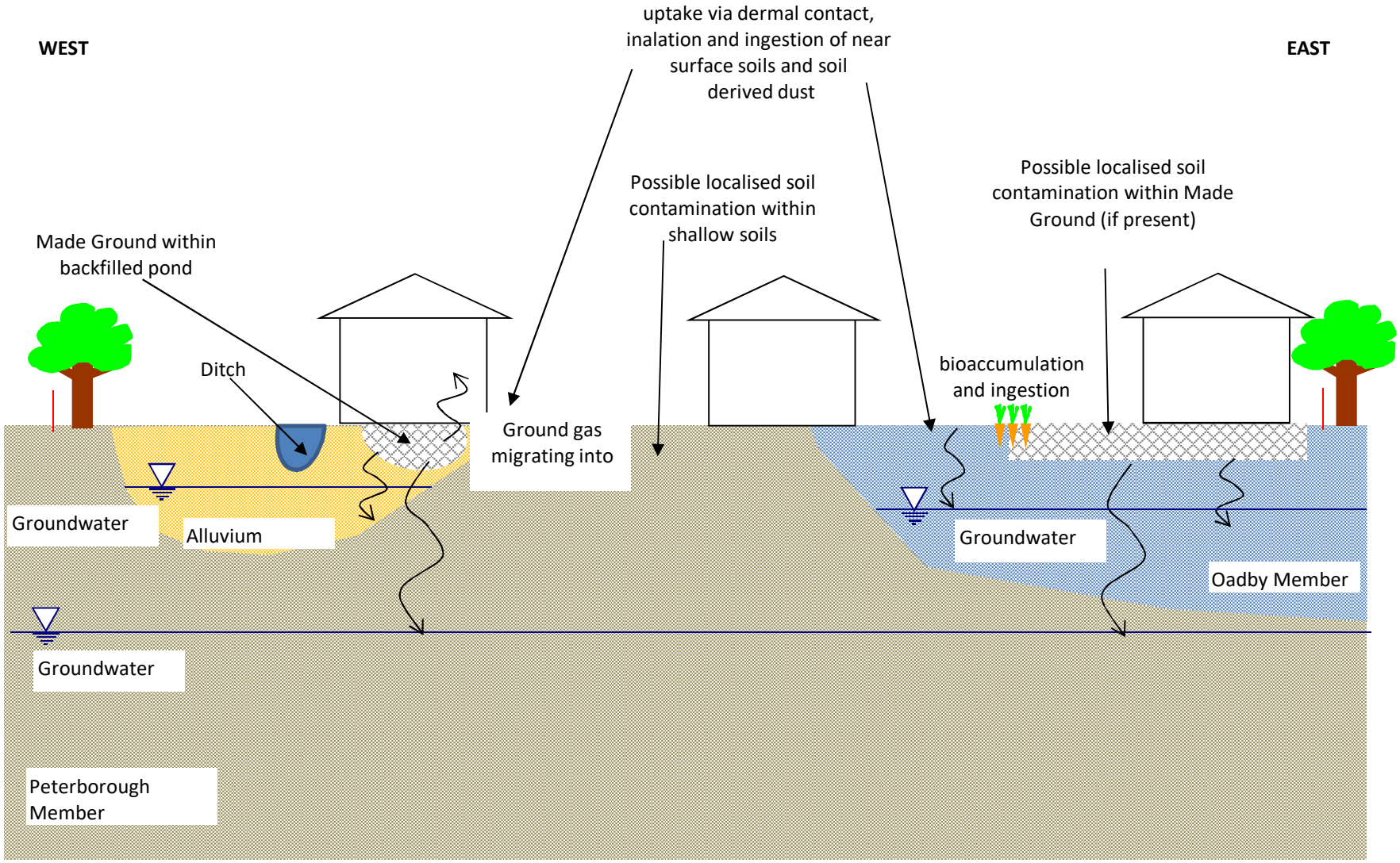
rgp
Architects · Project Managers · Quantity Surveyors
130 New Walk
Leicester, LE1 7JA
Tel: 0116 204 5800, Fax: 0116 204 5801
email: design@rg-p.co.uk, www.rg-p.co.uk

Project:	A development at Salph End, Bedford
Client:	Manor Oak Homes
Sheet title:	Parameters Plan
Ref:	40986 013A
Scale:	1:2500 @ A3
Date:	25.07.19
Drawn:	HW
Checked:	DW

Project:	Land at Salph End, Bedford, MK41 0JR			**Title**	Parameters Plan
Client:	Manor Oak Homes			**Geo-Environmental Services Ltd** **Unit 7 Danworth Farm, Cuckfield Road** **Hurstpierpoint, West Sussex BN6 9GL** **+44(0)1273 832972 www.gesl.net**	Geo-Environmental
Ref No:	GE18371	**Revision:**	0		
Drawn:	SA	**Date:**	30/08/2019		
Figure:	3	**Scale:**	Not To Scale		



Project:	Land at Salph End, Bedford, MK41 0JR			**Title**	Conceptual Site Model (Current Land Use)
Client:	Manor Oak Homes			**Geo-Environmental Services Ltd**	
Ref No:	GE18371	**Revision:**	0	**Unit 7 Danworth Farm, Cuckfield Road**	
Drawn:	SA	**Date:**	18/07/2019	**Hurstpierpoint, West Sussex BN6 9GL**	
Figure:	4	**Scale:**	Not To Scale	**+44(0)1273 832972 www.gesl.net**	Geo-Environmental



Project:	Land at Salph End, Bedford, MK41 0JR			**Title**	Conceptual Site Model (Proposed Land Use)
Client:	Manor Oak Homes			**Geo-Environmental Services Ltd**	
Ref No:	GE18371	**Revision:**	0	**Unit 7 Danworth Farm, Cuckfield Road**	
Drawn:	SA	**Date:**	18/07/2019	**Hurstpierpoint, West Sussex BN6 9GL**	
Figure:	5	**Scale:**	Not To Scale	**+44(0)1273 832972 www.gesl.net**	Geo-Environmental

APPENDIX A

Desk Study Information

Enviro Insight

Address:	**Land Off Ravensden Road, Renhold, Beford, MK41 0JG**
Date:	**8 Jul 2019**
Reference:	**GS-6153483**
Client:	**Geo-Environmental Services Ltd**

NW N NE

W E

SW S SE

Aerial Photograph Capture date:	19-Jun-2017
Grid Reference:	507474,252848
Site Size:	19.3477ha

Report Reference: GS-6153483
Client Reference: GE18371_PO1744

Contents Page

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	2	5
1.2 Additional Information – Historical Tank Database	0	0	1	0
1.3 Additional Information – Historical Energy Features Database	0	0	6	4
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 Historical military sites	0	0	0	0
1.7 Potentially Infilled Land	0	5	11	7

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	1	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	1	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	3	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	0

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	0	2
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	0	1	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	16	44	Not searched	Not searched
6.11 Surface water features within 250m of the study site	Yes	Yes	Yes	Not searched	Not searched	Not searched

Section 7: Flooding

7.1 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	Medium
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	Potential at Surface
7.8 BGS confidence rating for the Groundwater Flooding susceptibility areas	High

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	1	0	2
8.7 Records of Local Nature Reserves (LNR)	0	0	0	2	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	2	0	0	0	1	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	Moderate
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	Very Low
9.1.6 Maximum Running Sand hazard rating identified on the study site	Low
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 licences, 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.

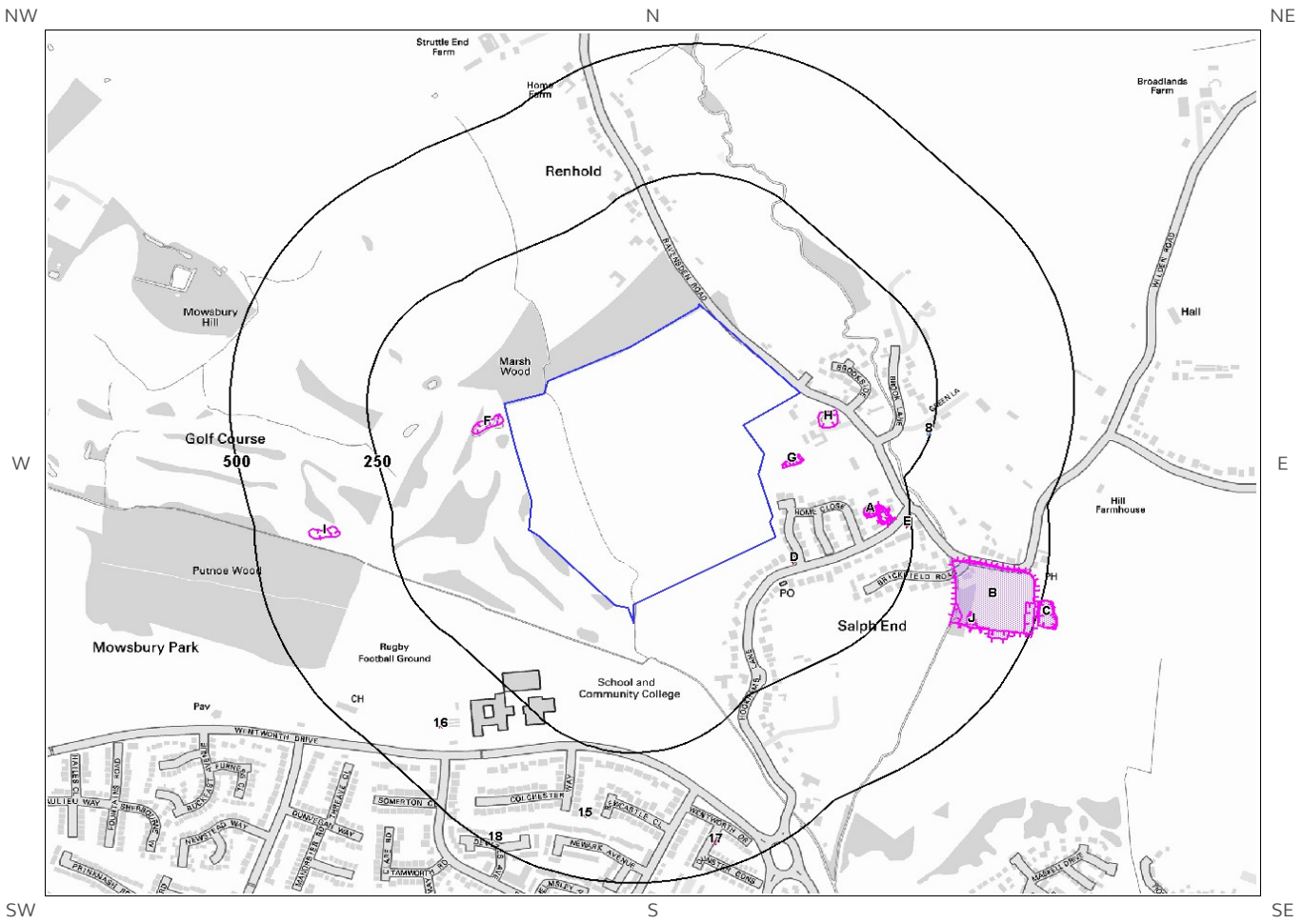
Note: Maps

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



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

Historical military sites

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: 7

ID	Distance [m]	Direction	Use	Date
1A	166	E	Unspecified Pit	1927
2A	167	E	Unspecified Pit	1959
3B	326	E	Brick Field	1882
4B	327	E	Brick Works	1900
5J	383	E	Unspecified Pit	1900
6C	496	E	Unspecified Pits	1959
7C	499	E	Unspecified Pit	1927

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: 1

ID	Distance (m)	Direction	Use	Date
8	241	E	Unspecified Tank	1997

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: 10

ID	Distance (m)	Direction	Use	Date
9D	52	SE	Electricity Substation	1968
10D	53	SE	Electricity Substation	1997
11D	53	SE	Electricity Substation	1993
12E	237	E	Electricity Substation	1993
13E	237	E	Electricity Substation	1997

14E	237	E	Electricity Substation	1968
15	379	S	Electricity Substation	1984
16	386	SW	Electricity Substation	1984
17	442	S	Electricity Substation	1978
18	487	SW	Electricity Substation	1984

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 Historical military sites

Certain military installations were not noted on historic mapping for security reasons. Whilst not all military land is necessarily of concern, Groundsure has researched and digitised a number of Ordnance Factories and other military industrial features (e.g. Ordnance Depots, Munitions Testing Grounds) which may be of contaminative concern. This research was drawn from a number of different sources, and should not be regarded as a definitive or exhaustive database of potentially contaminative military installations. The boundaries of sites within this database have been estimated from the best evidence available to Groundsure at the time of compilation.

Records of historical military sites within 500m of the search boundary: 0

Database searched and no data found.

1.7 Potentially Infilled Land

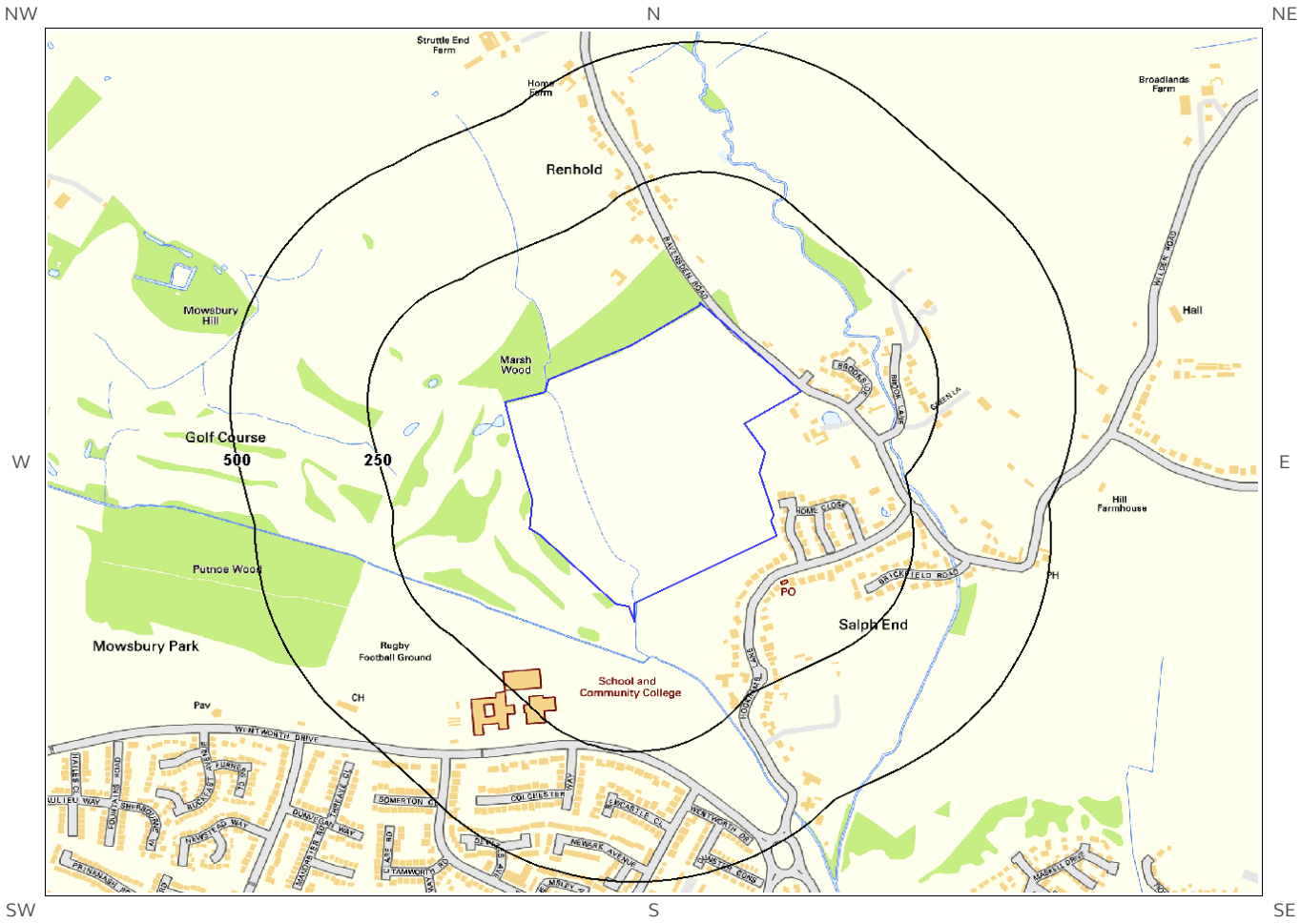
Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 23

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

ID	Distance(m)	Direction	Use	Date
19F	10	W	Ponds	1976
20F	10	W	Ponds	1983

21G	36	E	Pond	1959
22G	39	E	Pond	1900
23G	39	E	Pond	1927
24H	53	SE	Pond	1983
25H	53	SE	Pond	1971
26H	53	SE	Pond	1976
27A	166	E	Unspecified Pit	1927
28A	167	E	Unspecified Pit	1959
29A	174	E	Ponds	1882
30A	186	E	Pond	1959
31A	190	E	Pond	1976
32A	190	E	Pond	1971
33A	191	E	Pond	1900
34A	191	E	Pond	1927
35B	326	E	Brick Field	1882
36B	327	E	Brick Works	1900
37I	344	W	Pond	1976
38I	344	W	Pond	1983
39J	383	E	Unspecified Pit	1900
40C	496	E	Unspecified Pits	1959
41C	499	E	Unspecified Pit	1927

2. Environmental Permits, Incidents and Registers Map



- 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.

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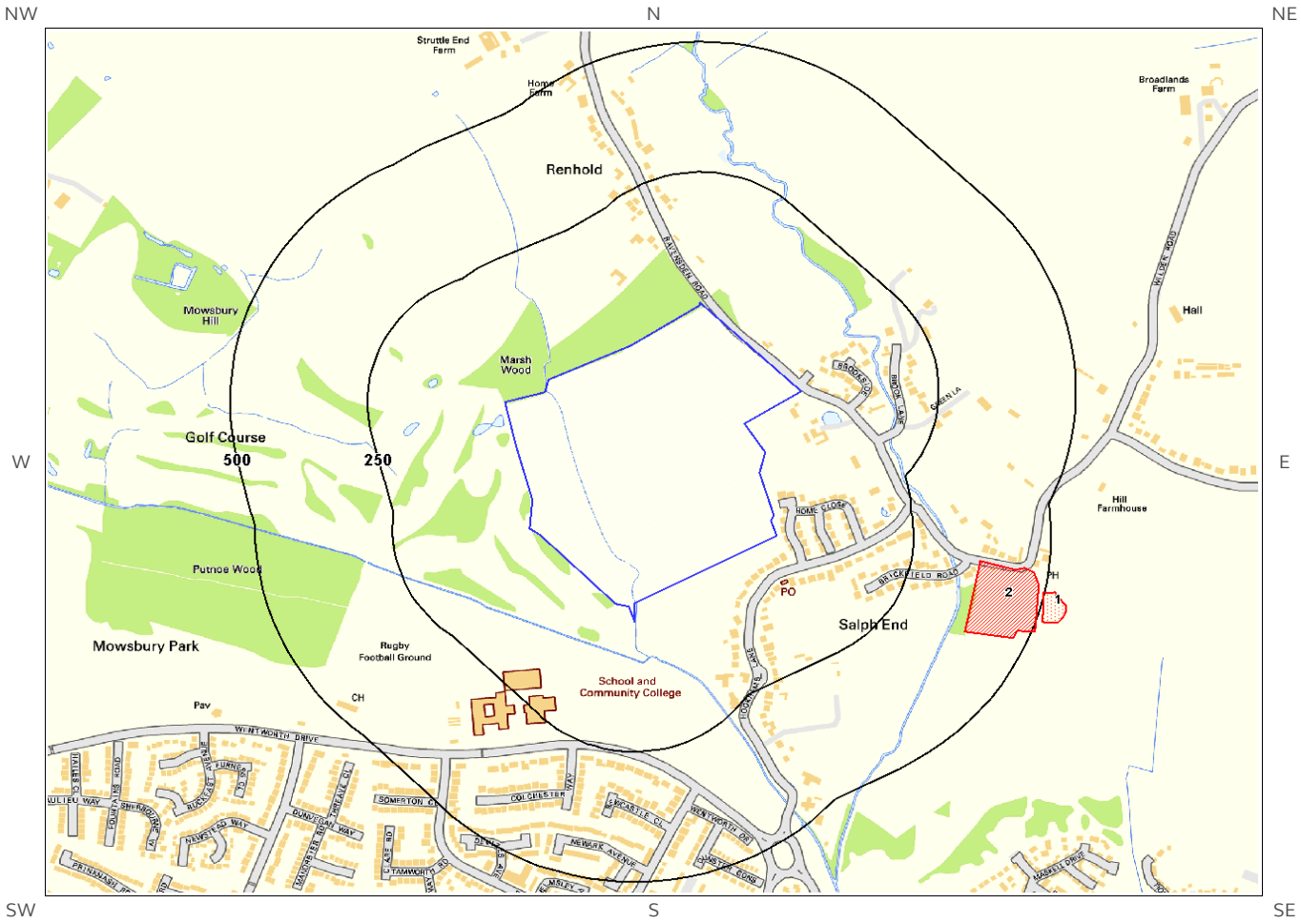
3. Landfill and Other Waste Sites Map



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:

1

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

ID	Distance (m)	Direction	NGR	Details	
1	498	E		Site Address: Hill Farm, Renhold, Bedfordshire Waste Licence: - Site Reference: PIT 32 Waste Type: Inert, Industrial Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: 01-Jan-1950 Last Recorded: 31-Dec-1968

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:

1

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

ID	Distance (m)	Direction	NGR	Site Address	Source	Data Type
2	373	E	508115 252601	Hill farm Renhold	Historical Maps	Polygon

3.2 Other Waste Sites

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

0

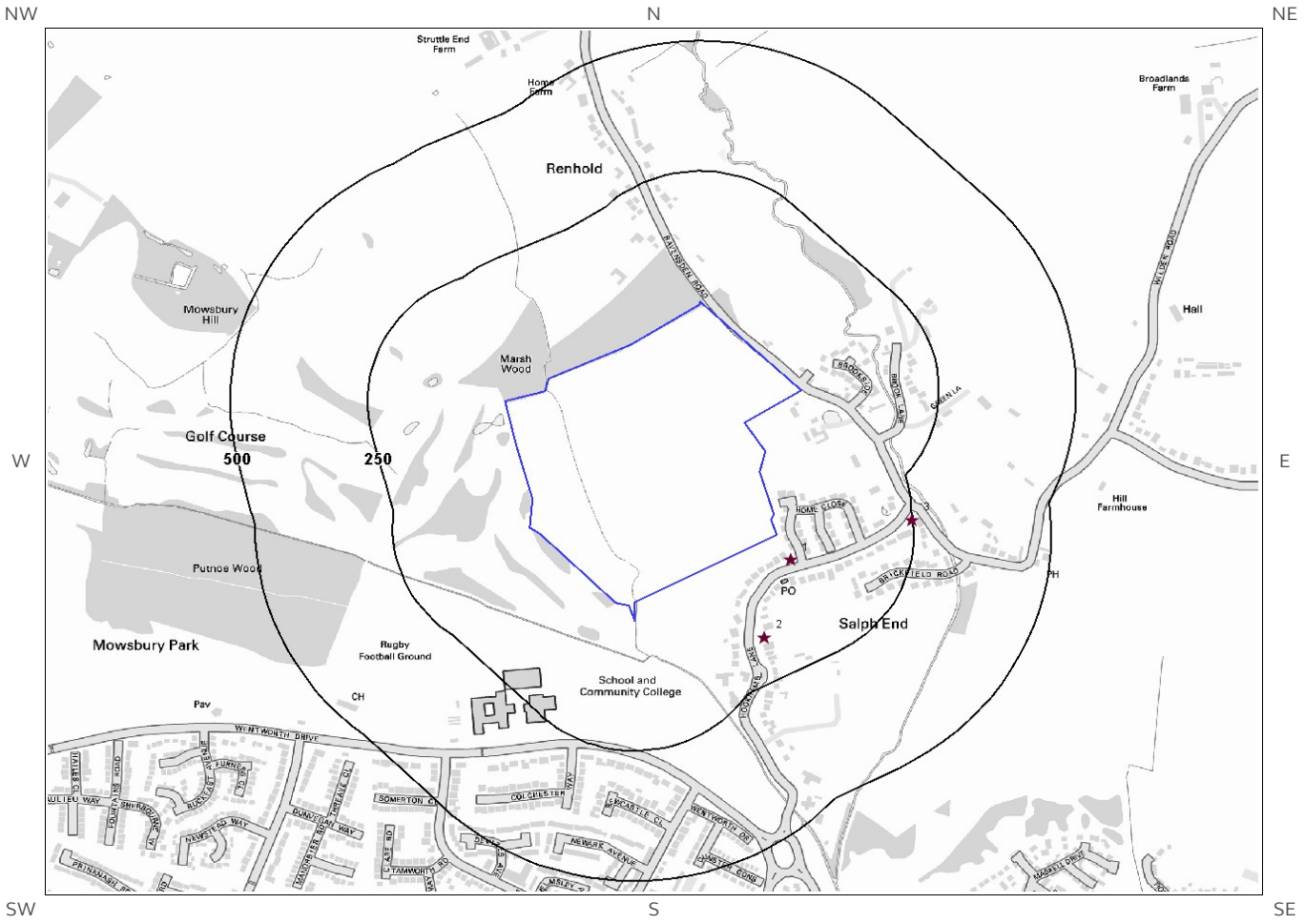
Database searched and no data found.

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



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: 3

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

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	53	SE	Electricity Sub Station	507730 252676	Bedfordshire, MK41	Electrical Features	Infrastructure and Facilities
2	165	SE	Bagfast Agricultural	507681 252527	56, Hookhams Lane, Renhold, Bedford, Bedfordshire, MK41 0JX	Agricultural Machinery and Goods	Industrial Products
3	248	E	Electricity Sub Station	507951 252753	Bedfordshire, MK41	Electrical Features	Infrastructure and Facilities

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: 0

Database searched and no data found.

5. Geology

5.1 Artificial Ground and Made Ground

Database searched and no data found.

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

5.2 Superficial Ground and Drift Geology

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

Lex Code	Description	Rock Type
ALV-XCZ	ALLUVIUM	CLAY AND SILT
ODT-DMTN	OADBY MEMBER	DIAMICTON

5.3 Bedrock and Solid Geology

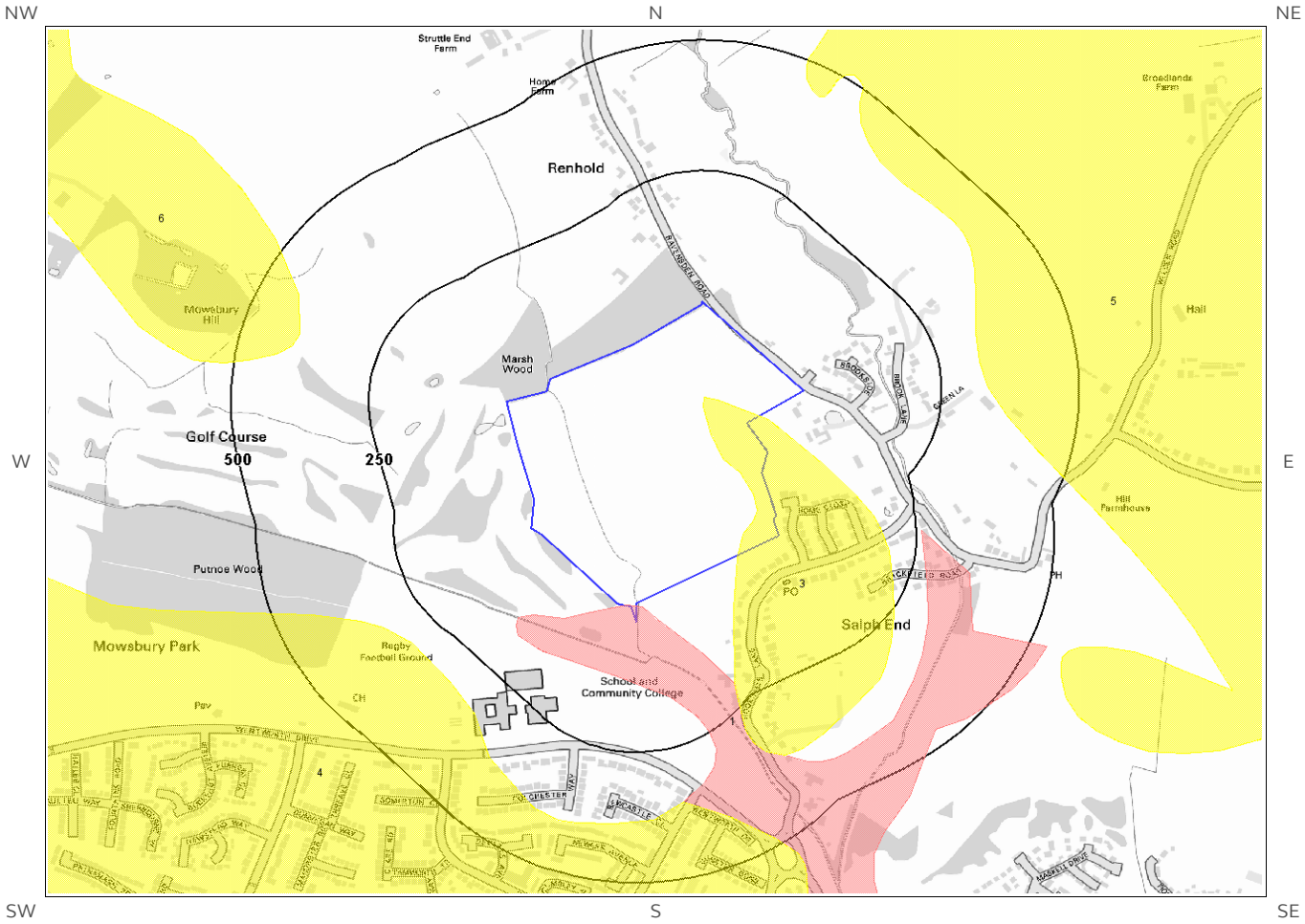
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
PET-MDST	PETERBOROUGH MEMBER	MUDSTONE

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

6 Hydrogeology and Hydrology

6a. Aquifer Within Superficial Geology



Site Outline

250
500
Search Buffers (m)

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

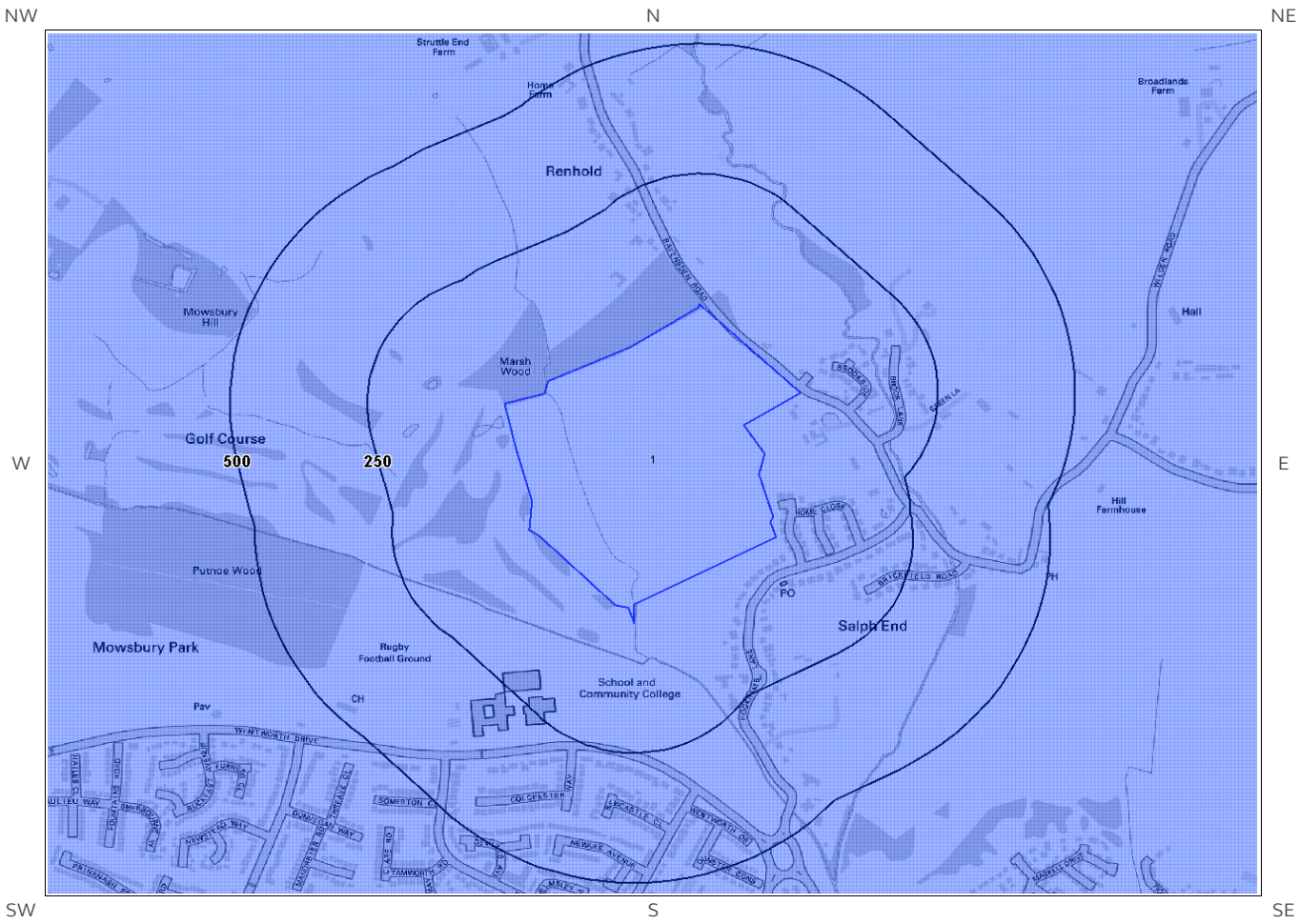
Secondary (B) Aquifer - Lower Permeability Layers

Secondary Aquifer - Undifferentiated Layers

Unproductive

Unknown (lakes and landslip)

6b. Aquifer Within Bedrock Geology and Abstraction Licences



Site Outline

250
500
Search Buffers (m)

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

Secondary (B) Aquifer - Lower Permeability Layers

Groundwater Abstraction Licence

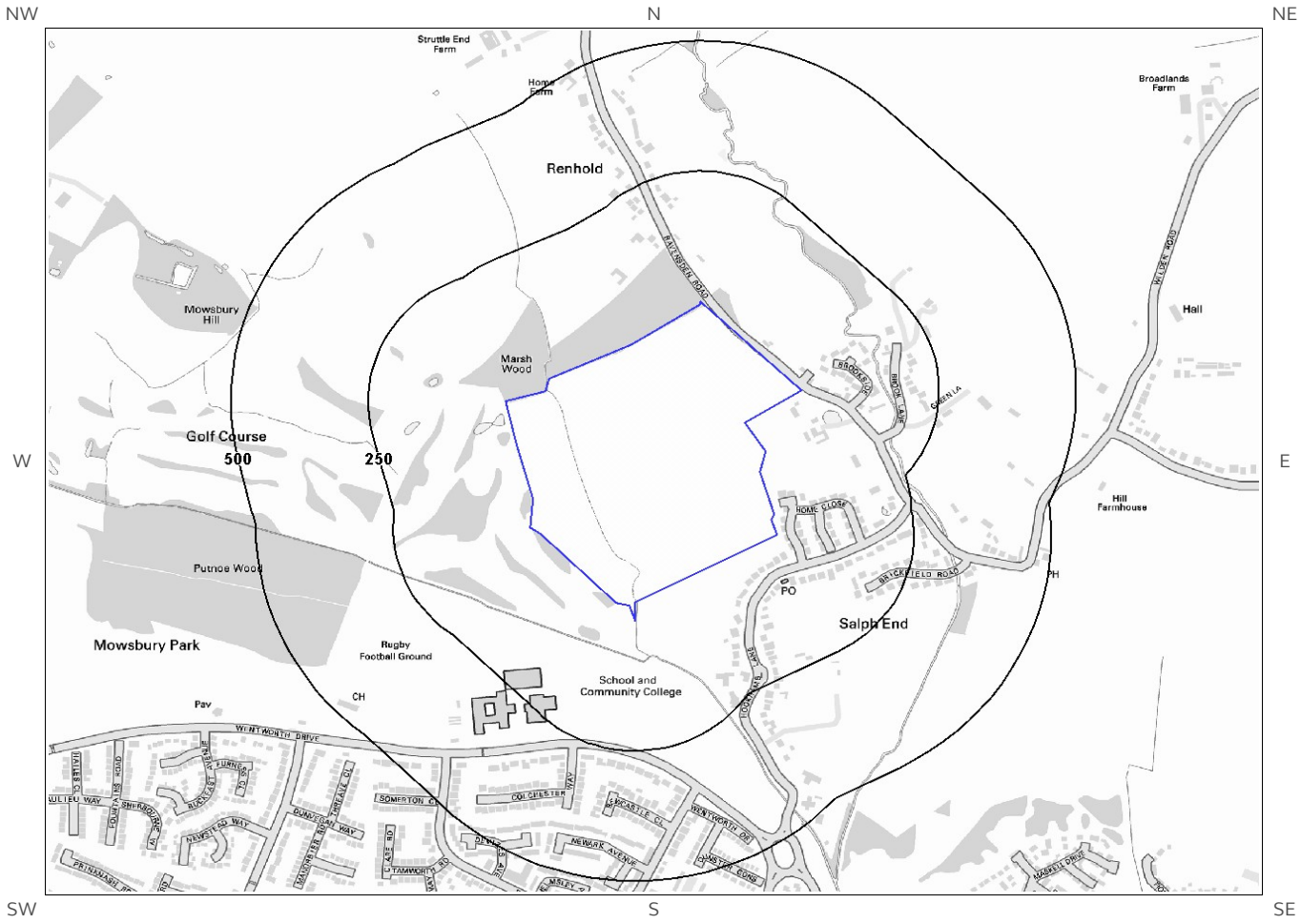
Secondary Aquifer - Undifferentiated Layers

Unproductive

Unknown (lakes and landslip)

Surface Water Abstraction Licence

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



Site Outline

250
500
Search Buffers (m)

Source Protection Zone 1 - Inner Catchment

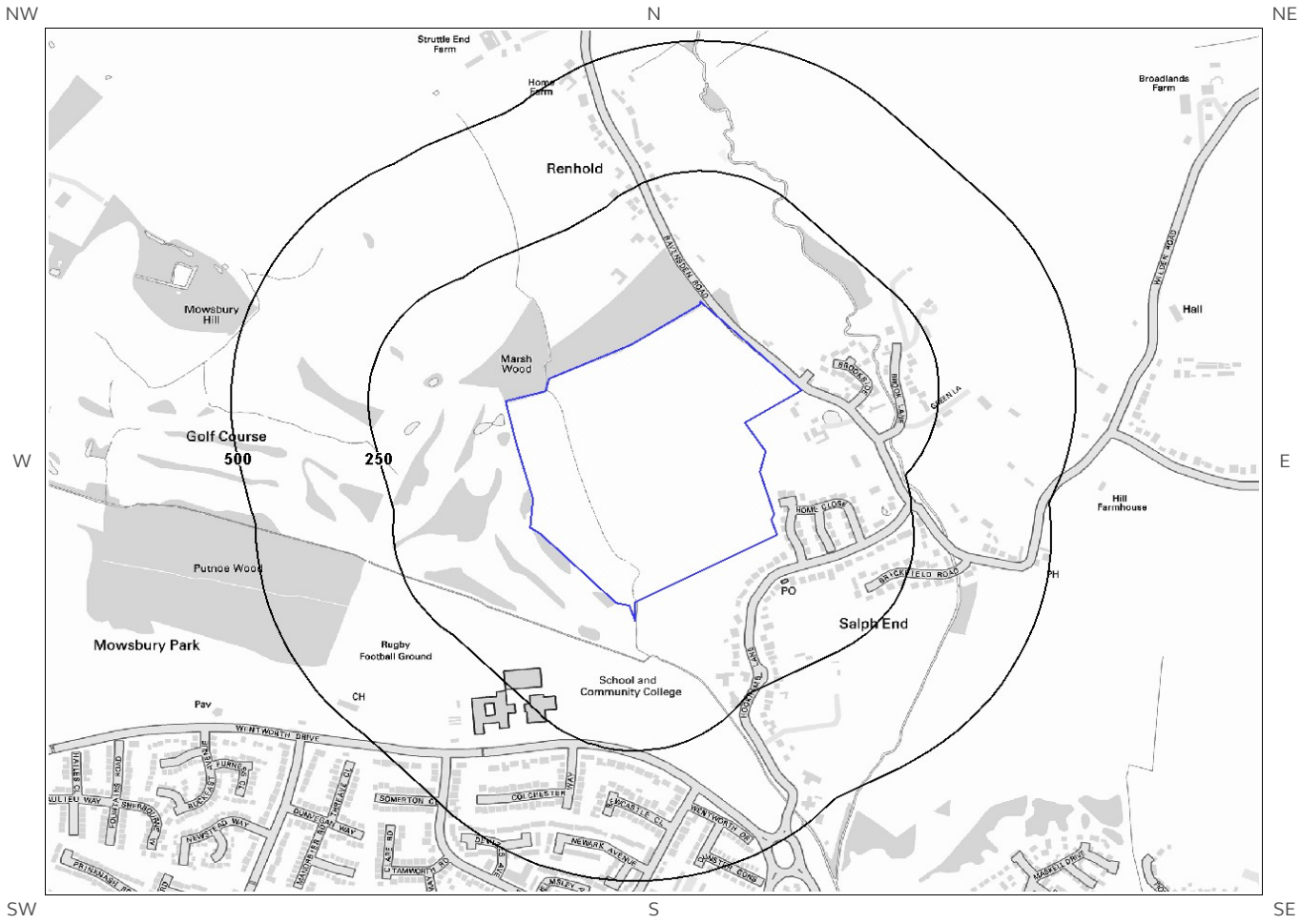
Source Protection Zone 2 - Outer Catchment

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



Site Outline

250
500
Search Buffers (m)

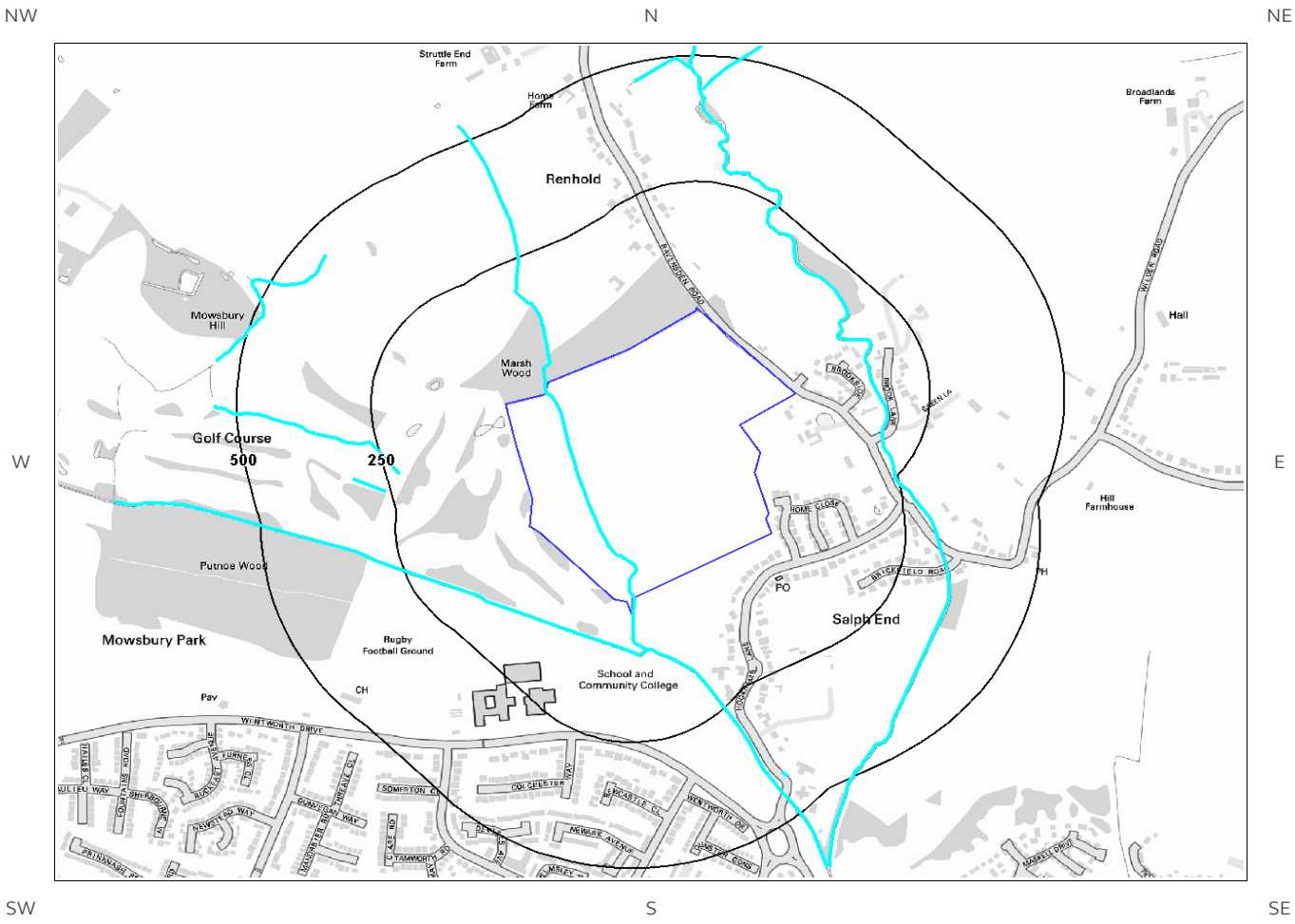
Source Protection Zone 1 - Inner Catchment

Source Protection Zone 2C - Outer Catchment within Confined Aquifer

Source Protection Zone 3C - Total Catchment within Confined Aquifer

Potable Water Abstraction Licence

6e. Hydrology – Watercourse Network and River Quality



Site Outline

250
500
Search Buffers (m)

Watercourse type

- Tidal River
- Inland River
- Canal
- Lock or Flight of Locks
- Lake, Reservoir, or Marsh
- Foreshore
- Drain or Transfer

Watercourse level

- On ground surface
- Underground or Elevated
- Level unknown

- General Quality Assessment: Biology
- General Quality Assessment: Chemistry

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	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
3	0	On Site	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
4	309	SW	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
5	323	E	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
6	397	W	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

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	1266	E	509000 252800	Status: Historical Licence No: 6/33/12/*G/0052 Details: General Farming & Domestic Direct Source: GROUND WATER SOURCE OF SUPPLY Point: WELL AT RENHOLD Data Type: Point Name: KERRISON	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 01/12/1967 Expiry Date: - Issue No: 100 Version Start Date: 01/12/1967 Version End Date:
Not shown	1397	E	509000 252200	Status: Historical Licence No: 6/33/12/*G/0052 Details: General Farming & Domestic Direct Source: GROUND WATER SOURCE OF SUPPLY Point: WELL AT RENHOLD Data Type: Point Name: KERRISON	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 01/12/1967 Expiry Date: - Issue No: 100 Version Start Date: 01/12/1967 Version End Date:

6.4 Surface Water Abstraction Licences

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

Database searched and no data found.

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 Identified

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
41	S	Minor Aquifer/Low Leaching Potential	L	Soils in which pollutants are unlikely to penetrate the soil layer because either water movement is largely horizontal, or they have the ability to attenuate diffuse pollutants.

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	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
20	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
2	67 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.8
21	67 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.8
3	72 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.1
22	72 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.1
4	135 NE	Renhold Brook	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.7
23	135 NE	Renhold Brook	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.7
5	177 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
24	177 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
6	186 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
25	186 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
7	225 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
26	225 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
8	240 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
27	240 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
9	241 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
28	241 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
10	258 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
29	258 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
11	261 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
12	261	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	W			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
30	261 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
31	261 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
13	331 E	Renhold Brook	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
32	331 E	Renhold Brook	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
14	336 E	Renhold Brook	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.2
33	336 E	Renhold Brook	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.2
15	353 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
34	353 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
16	358 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
35	358 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
17	416 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	416 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): Not Provided
18	420 N	Renhold Brook	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.8
Not shown	420 N	Renhold Brook	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.8
19	427 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
20	427 N	Ravensden Brook	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.1
Not shown	427 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	427 N	Ravensden Brook	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.1
21	435 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
40	435 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
22	438 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
41	438 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
23	441 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
42	441 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
24	448 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	448 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
25	452 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	452 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
26	457 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.5
Not shown	457 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.5
27	463 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	463 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
28	477 N	Ravensden Brook	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.3
Not shown	477 N	Ravensden Brook	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.3
29	483 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
48	483 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
30	487	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Underground

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	NW			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
49	487 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
31	489 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
50	489 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

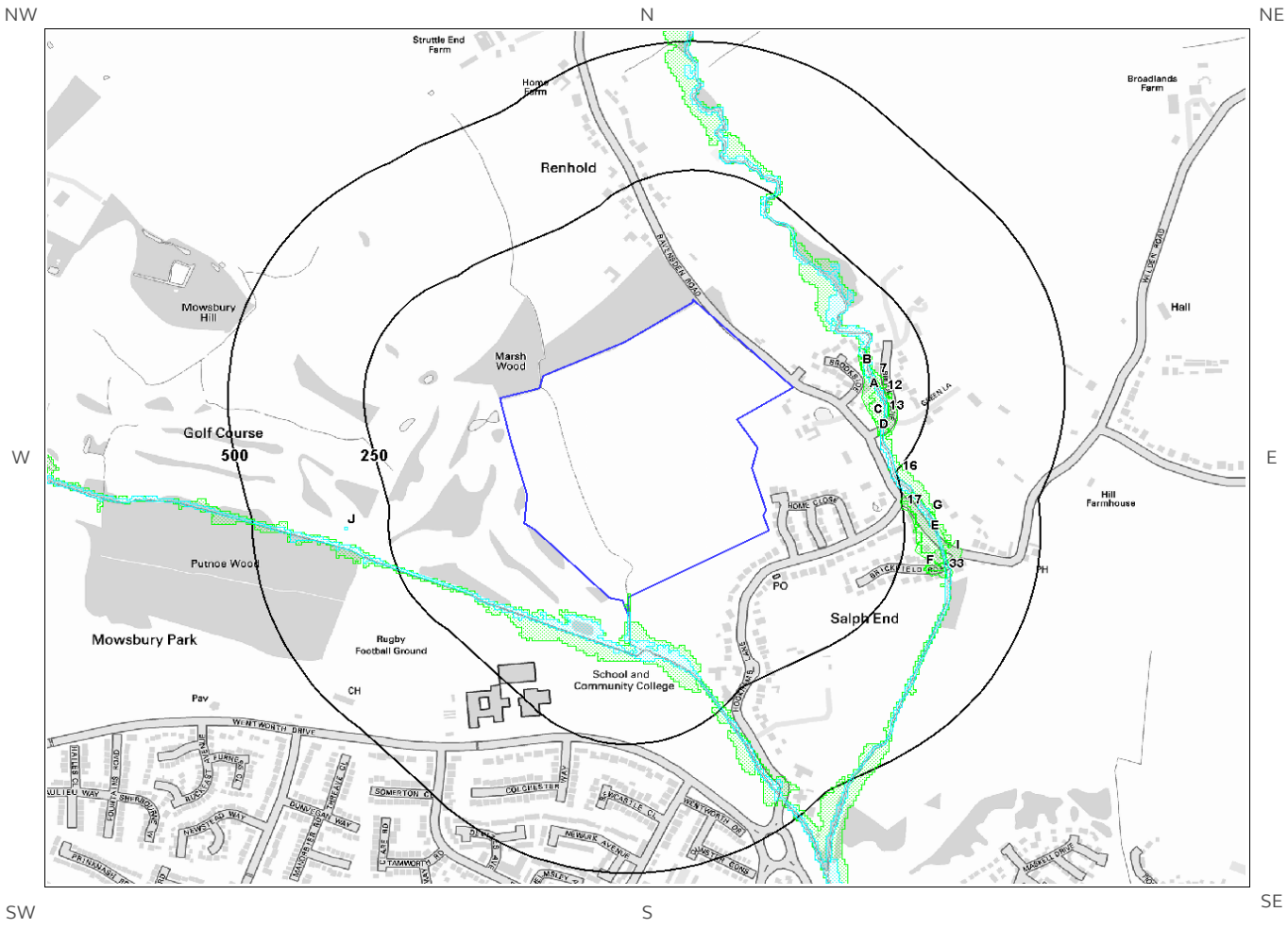
6.11 Surface Water Features

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
0	On Site
0	On Site
10	W
35	W
66	S
133	NE
178	NW
182	SE
225	W
241	W

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



Site Outline

100
250
Search Buffers (m)

Zone 2 Floodplain

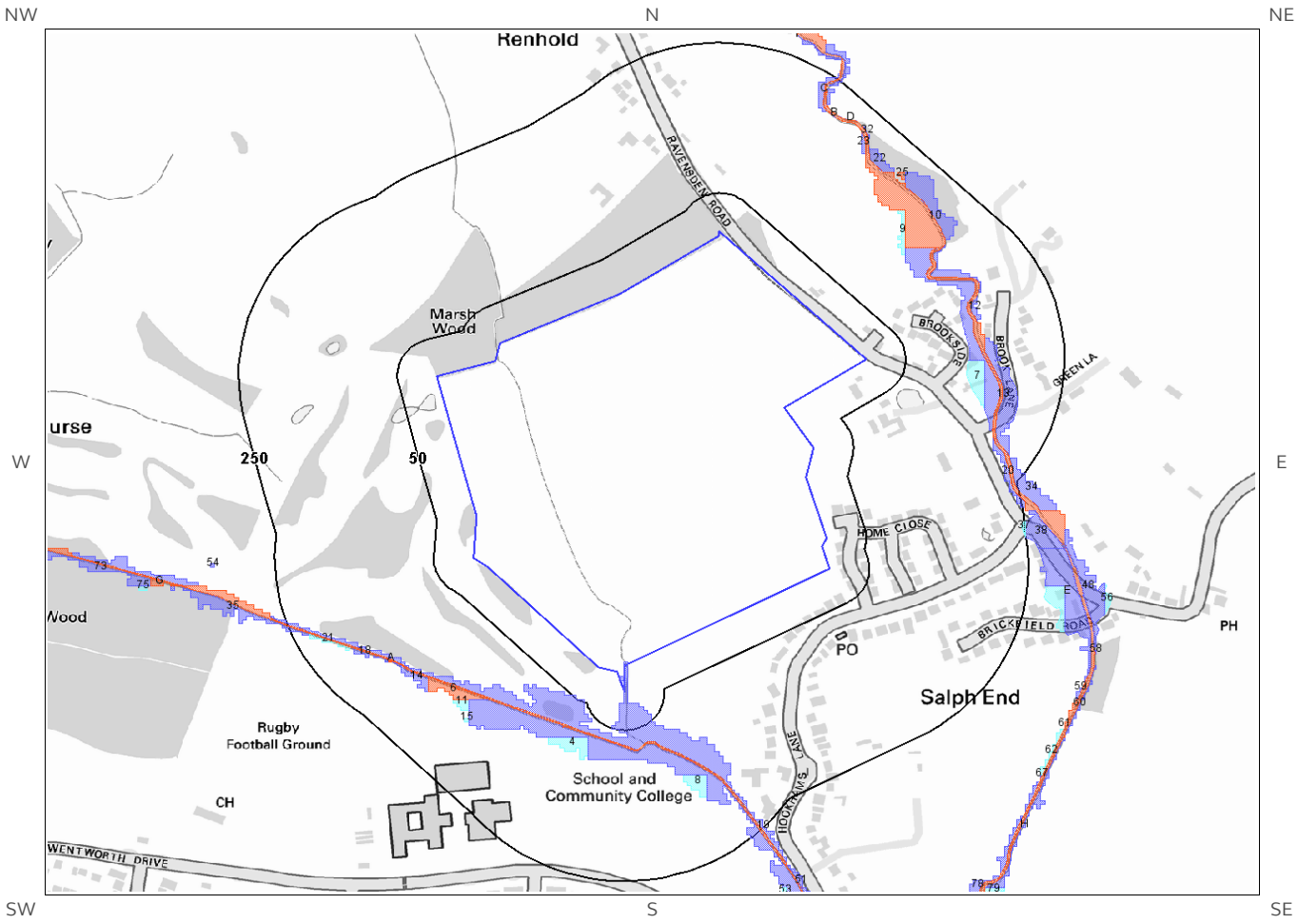
Zone 3 Floodplain

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



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	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
2	120	NE	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
3A	127	E	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
4B	129	E	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
5A	130	E	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
6B	130	E	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
7	147	E	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
8B	148	E	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
9C	155	E	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
10C	159	E	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
11A	159	E	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
12	170	E	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
13	170	E	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
14D	177	SE	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
15D	179	SE	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
16	185	SE	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
17	246	E	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
18E	249	E	20-Jun-2019	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	20-Jun-2019	Zone 3 - (Fluvial Models)

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

Highest risk of flooding onsite — Medium

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 Medium (greater than 1 in 100 but less than 1 in 30) chance of flooding in any given year.

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

ID	Distance (m)	Direction	RoFRas flood Risk
1	0.0	On Site	Medium

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 — Identified

Clearwater Flooding or Superficial Deposits Flooding — Superficial Deposits Flooding

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

Potential at Surface

Where potential for groundwater flooding to occur at surface is indicated, this means that given the geological conditions in the area groundwater flooding hazard should be considered in all land-use planning decisions. It is recommended that other relevant information e.g. records of previous incidence of groundwater flooding, rainfall, property type, and land drainage information be investigated in order to establish relative, but not absolute, risk of groundwater flooding.

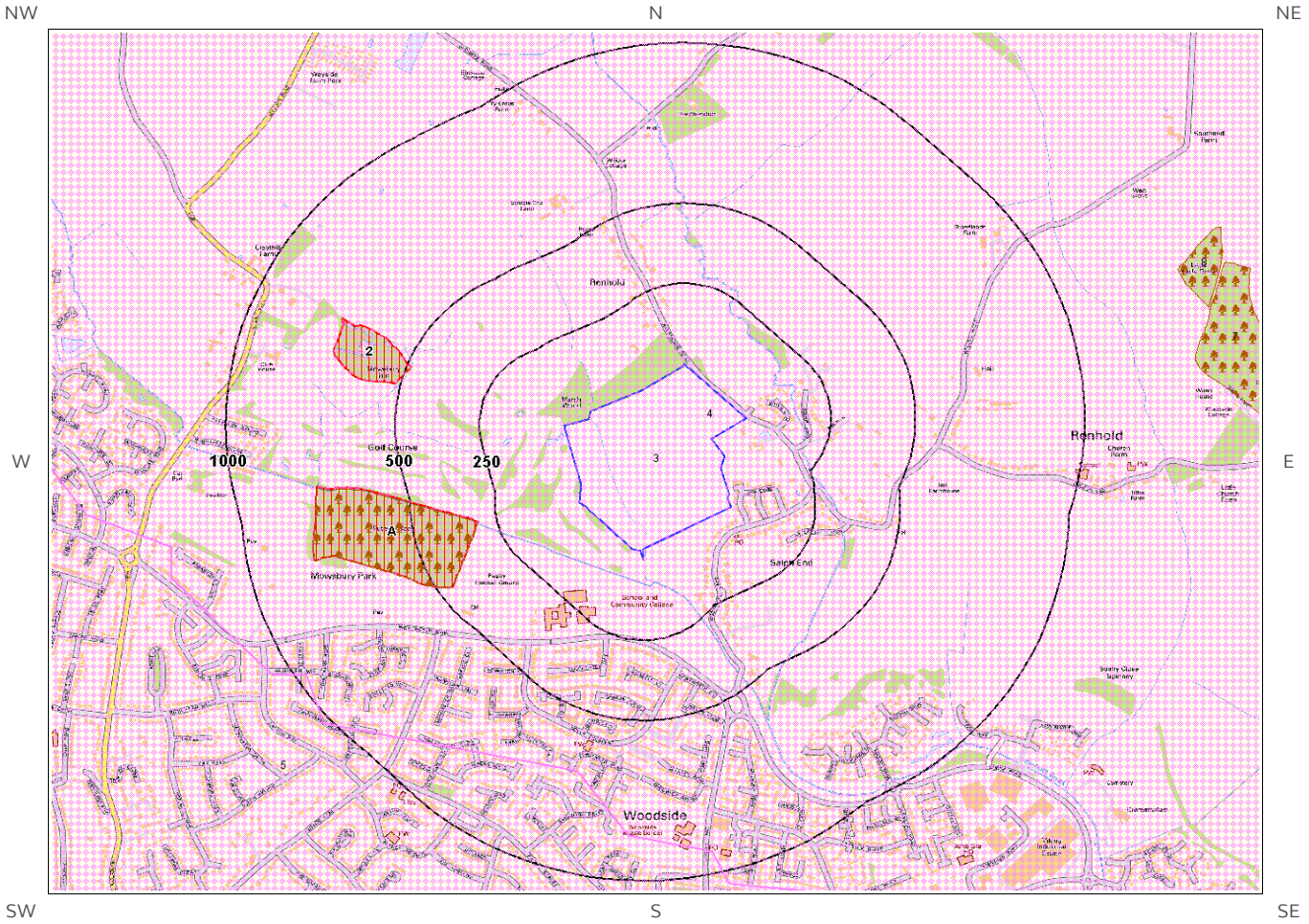
7.8 Groundwater Flooding Confidence Areas

British Geological Survey confidence rating in this result — High

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



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	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:

3

The following records of Designated Ancient Woodland provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	Ancient Woodland Name	Data Source
6A	308	W	PUTNOE WOOD	Ancient and Semi-Natural Woodland
7	1340	E	UNKNOWN	Ancient and Semi-Natural Woodland
8	1357	E	UNKNOWN	Ancient and Semi-Natural Woodland

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

2

The following Local Nature Reserve (LNR) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	LNR Name	Data Source
1A	306	W	Putnoe Wood	Natural England
2	486	W	Mowsbury Hill	Natural England

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:

3

The following Nitrate Vulnerable Zone records produced by DEFRA are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	NVZ Name	Data Source
3	0	On Site	Existing	DEFRA
4	0	On Site	Existing	DEFRA
5	687	S	Existing	DEFRA

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 — Moderate

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

Hazard
Ground conditions predominantly high plasticity. Do not plant or remove trees or shrubs near to buildings without expert advice about their effect and management. 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 probable increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a probable increase in insurance risk 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 — Very Low

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

Hazard
Deposits with potential to collapse when loaded and saturated are unlikely to be present. 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 — Low

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

Hazard
Possibility of running sand problems after major changes in ground conditions. Normal maintenance to avoid leakage of water-bearing services or water bodies (ponds, swimming pools) should reduce likelihood of problems due to running sand. For new build consider possibility of running sand into trenches or excavations if water table is high or sandy strata are exposed to water. Avoid concentrated water inputs to site. Unlikely to be an increase in construction costs due to potential for running sand. For existing property no significant increase in insurance risk due to running sand problems is likely.

* 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: Bedford Council (Unitary)
Phone: 01234 267422
Web: http://www.bedford.gov.uk/
Address: Bedford Borough Council, Borough Hall, Cauldwell Street,

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

Standard Terms and Conditions

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

https://www.groundsure.com/terms-and-conditions-feb11-2019

Geo Insight

Address:	**Land Off Ravensden Road, Renhold, Beford, MK41 0JG**
Date:	**8 Jul 2019**
Reference:	**GS-6153484**
Client:	**Geo-Environmental Services Ltd**

NW N NE

W E

SW S SE

Aerial Photograph Capture date:	19-Jun-2017
Grid Reference:	507474,252848
Site Size:	19.3477ha

Groundsure
LOCATION INTELLIGENCE

Contents Page

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?*	Yes
	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

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	0	5	11	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	1	2

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 Cornwall and Devon Metalliferous Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0

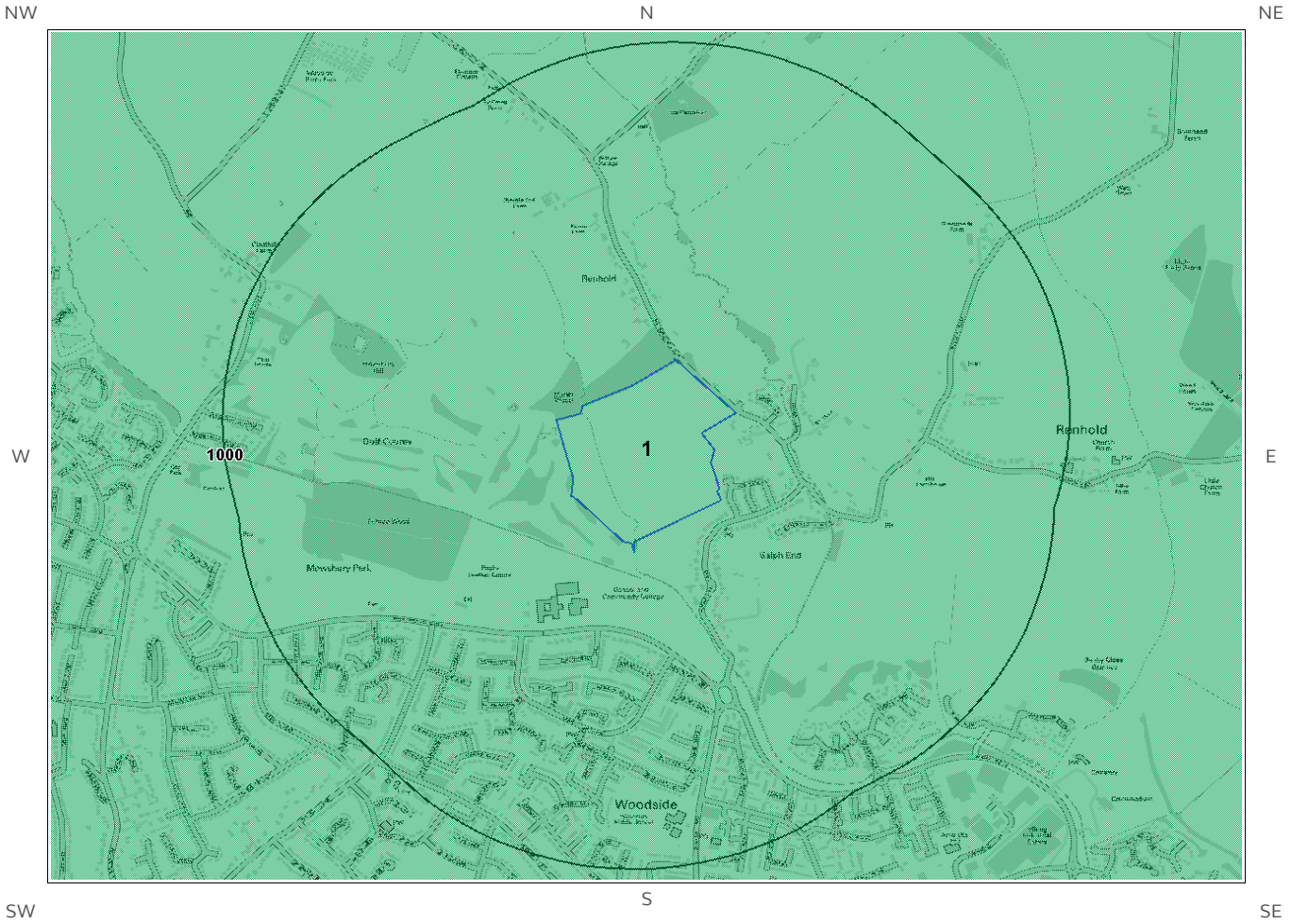
Section 6: Natural Ground Subsidence	On-site
6.1 Shrink-Swell Clay	Moderate
6.2 Landslides	Very Low
6.3 Ground Dissolution of Soluble Rocks	Negligible
6.4 Compressible Deposits	Moderate
6.5 Collapsible Deposits	Very Low
6.5 Running Sand	Low

Section 7: Borehole Records	On-site	0-50m	51-250
7 BGS Recorded Boreholes	0	0	1

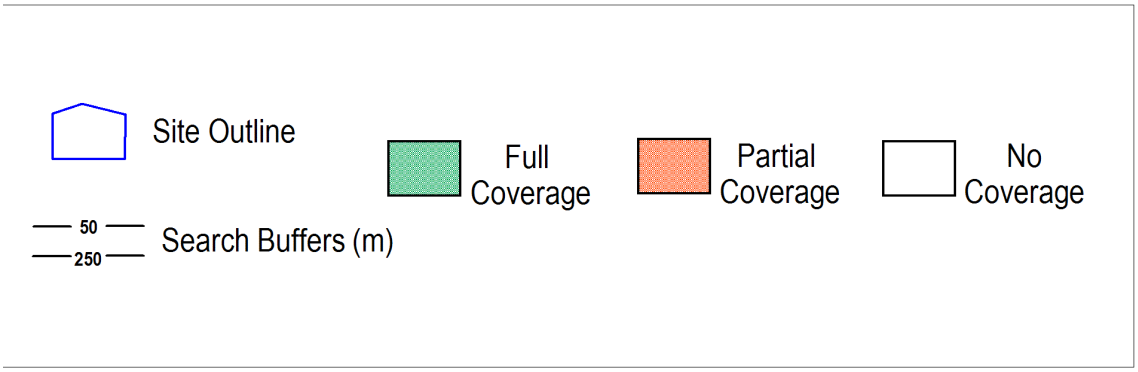
Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250
8 Records of Background Soil Chemistry	8	0	0

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



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	Some deposits are mapped	Full	Full	No coverage
N2	1828.0	Some deposits are mapped	Full	Full	No coverage

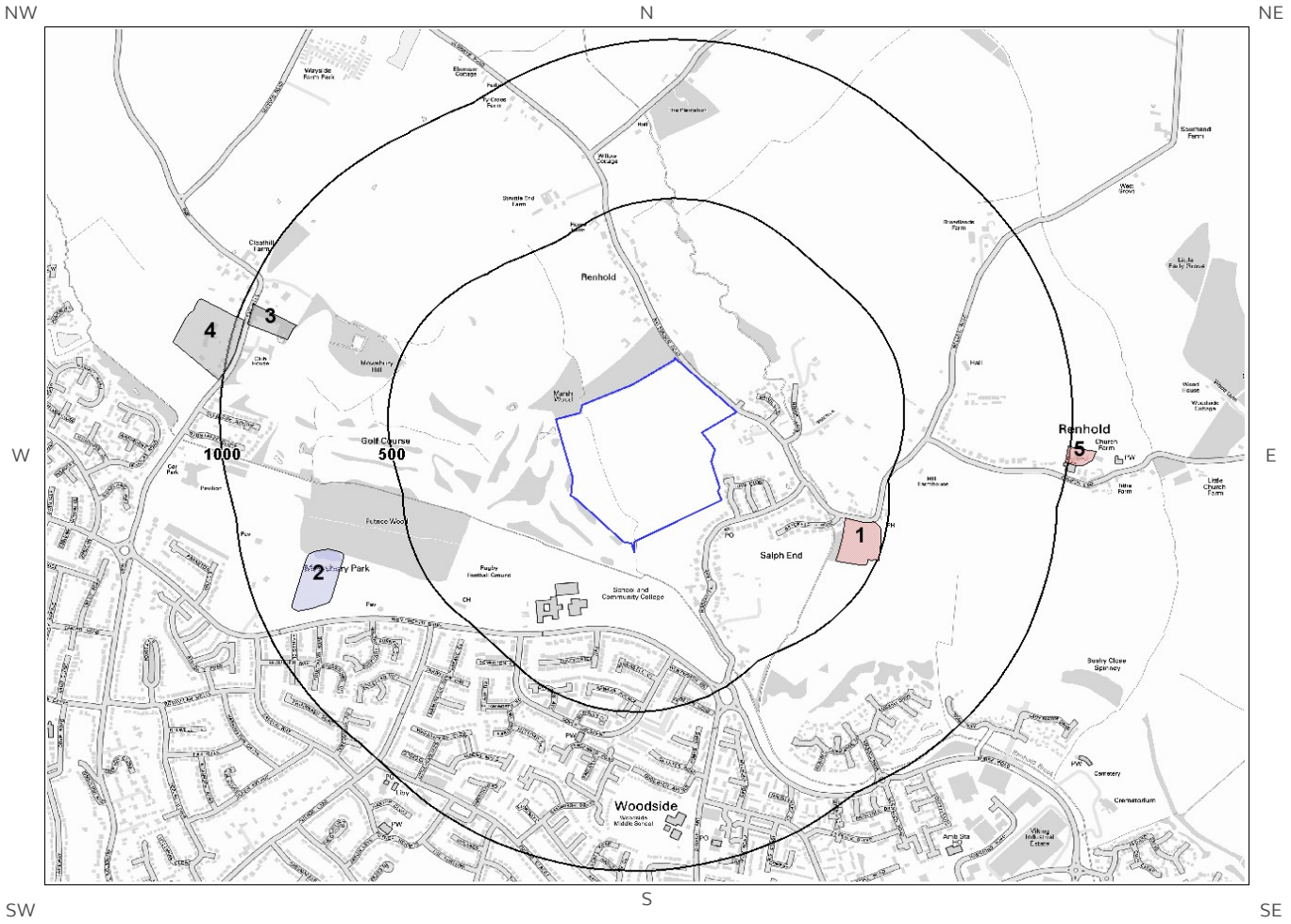
Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not 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)



Artificial Ground Legend

Site Outline

500
1000
Search Buffers (m)

Made Ground (undivided)

Disturbed Ground (undivided)

Worked Ground (undivided)

Landscaped Ground (undivided)

Infilled Ground

Reclaimed Ground

1. Geology 1:10,000 scale

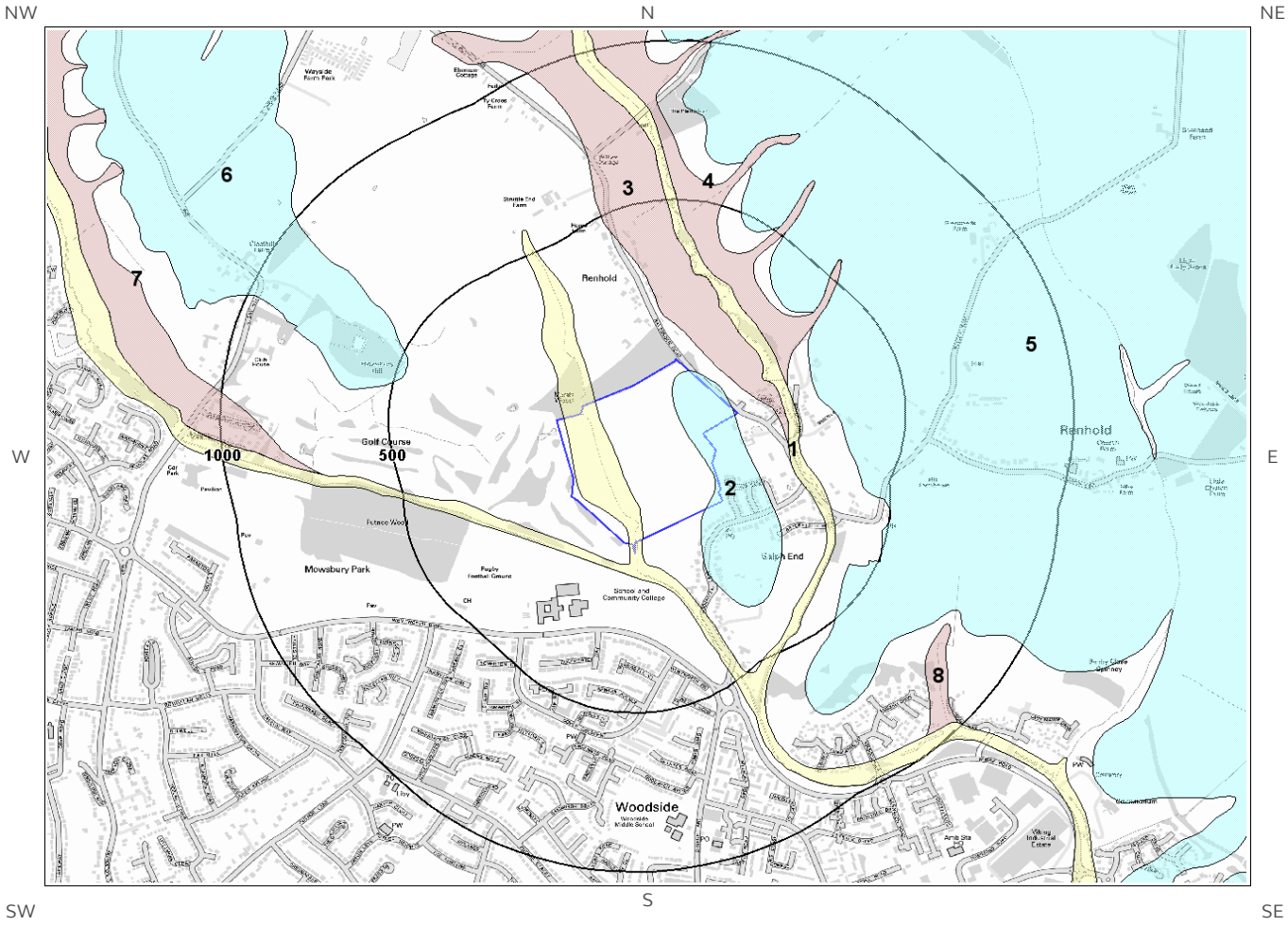
1.1 Artificial Ground

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? Yes

ID	Distance	Direction	LEX Code	Description	Rock Description
1	374.0	E	WMGR-ARTDP	Infilled Ground	Artificial Deposit

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



Artificial Ground Legend

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? Yes

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	ALV-XCZ	Alluvium - Clay And Silt	Clay And Silt
2	0.0	On Site	ODT-DMTN	Oadby Member - Diamicton	Diamicton
3	65.0	NE	HEAD-XCZSV	Head - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
4	169.0	NE	HEAD-XCZSV	Head - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
5	241.0	E	ODT-DMTN	Oadby Member - Diamicton	Diamicton
6	474.0	W	ODT-DMTN	Oadby Member - Diamicton	Diamicton

1.2.2 Landslip

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

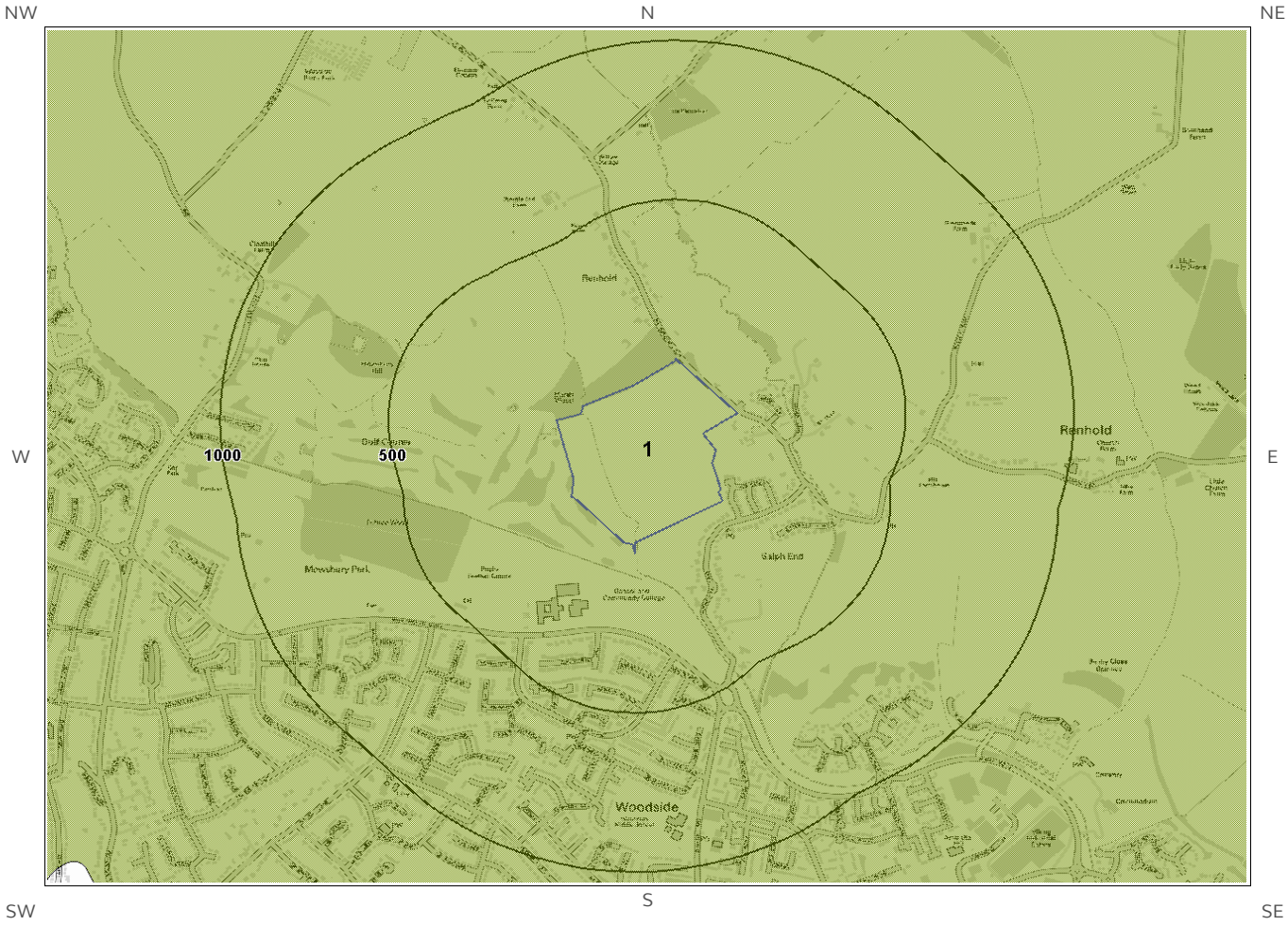
No

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

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.

ID	Distance (m)	Direction	LEX Code	Description	Rock Age
1	0.0	On Site	PET-MDST	Peterborough Member - Mudstone	Callovian Age

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

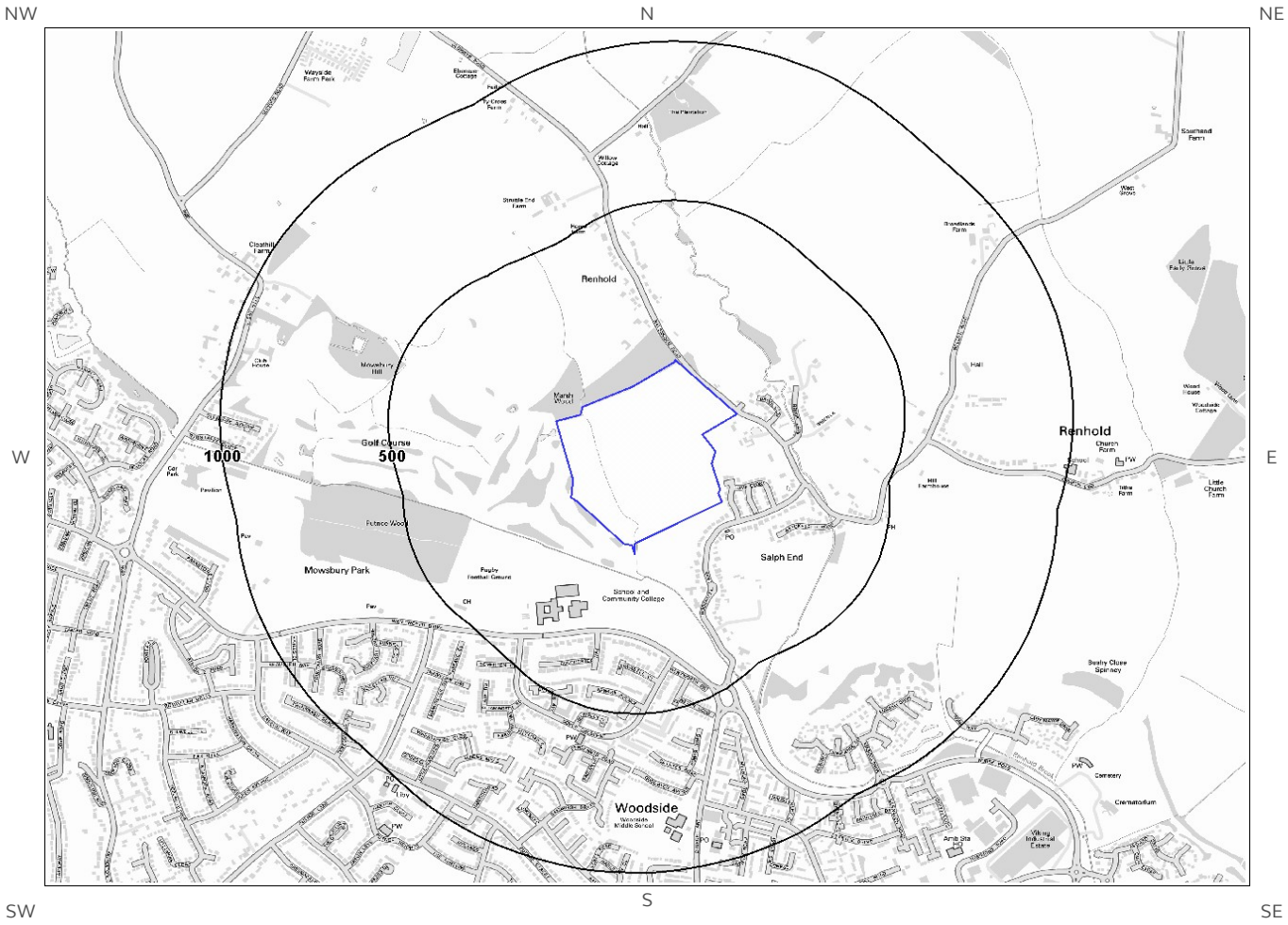
Database searched and no data found at this scale.

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



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: 203

2.1.1 Artificial/ Made Ground

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

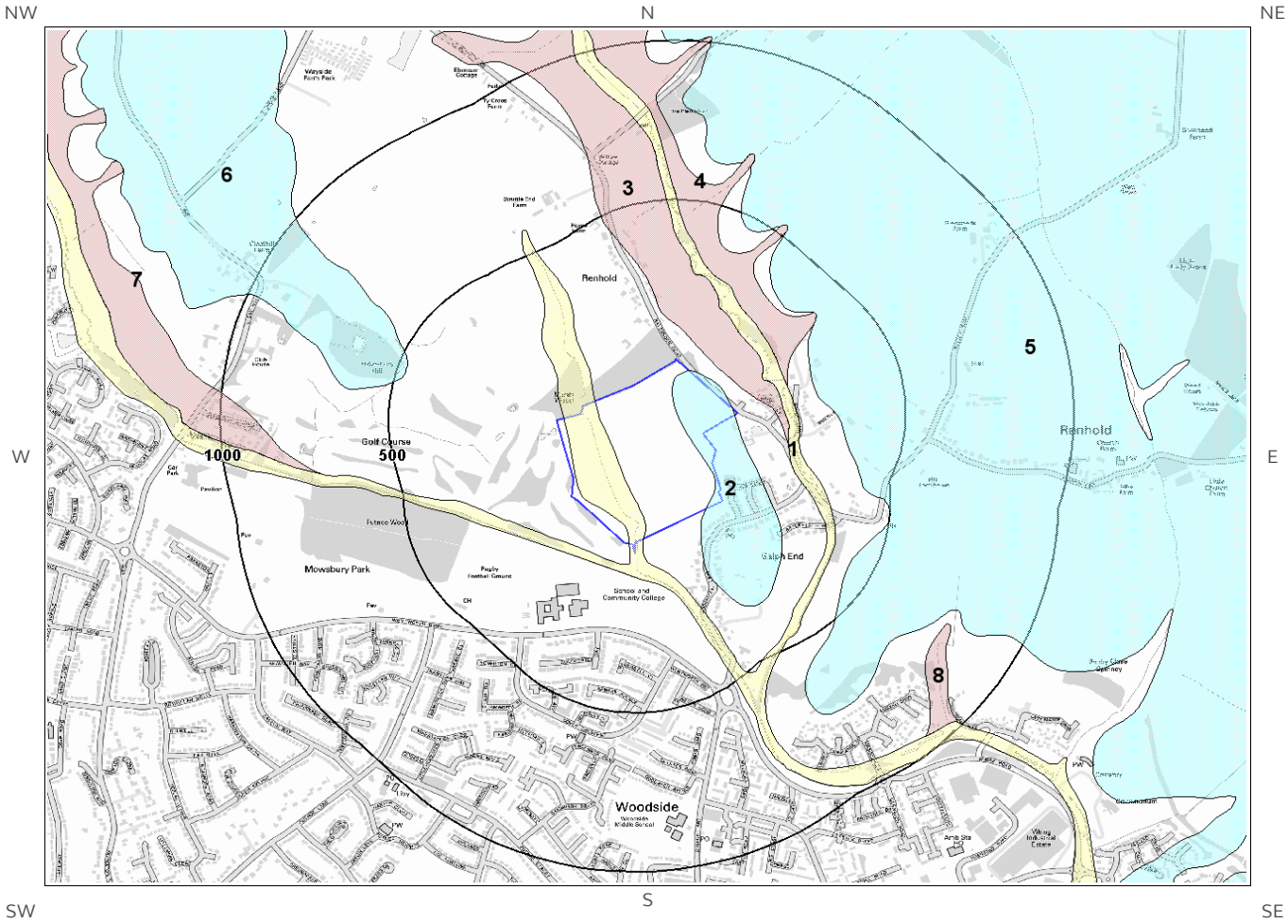
Database searched and no data found.

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)



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	ALV-XCZ	ALLUVIUM	CLAY AND SILT
2	0.0	On Site	ODT-DMTN	OADBY MEMBER	DIAMICTON
3	65.0	NE	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL
4	169.0	NE	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL
5	241.0	E	ODT-DMTN	OADBY MEMBER	DIAMICTON
6	474.0	W	ODT-DMTN	OADBY MEMBER	DIAMICTON

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	Mixed	Moderate	Low
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.

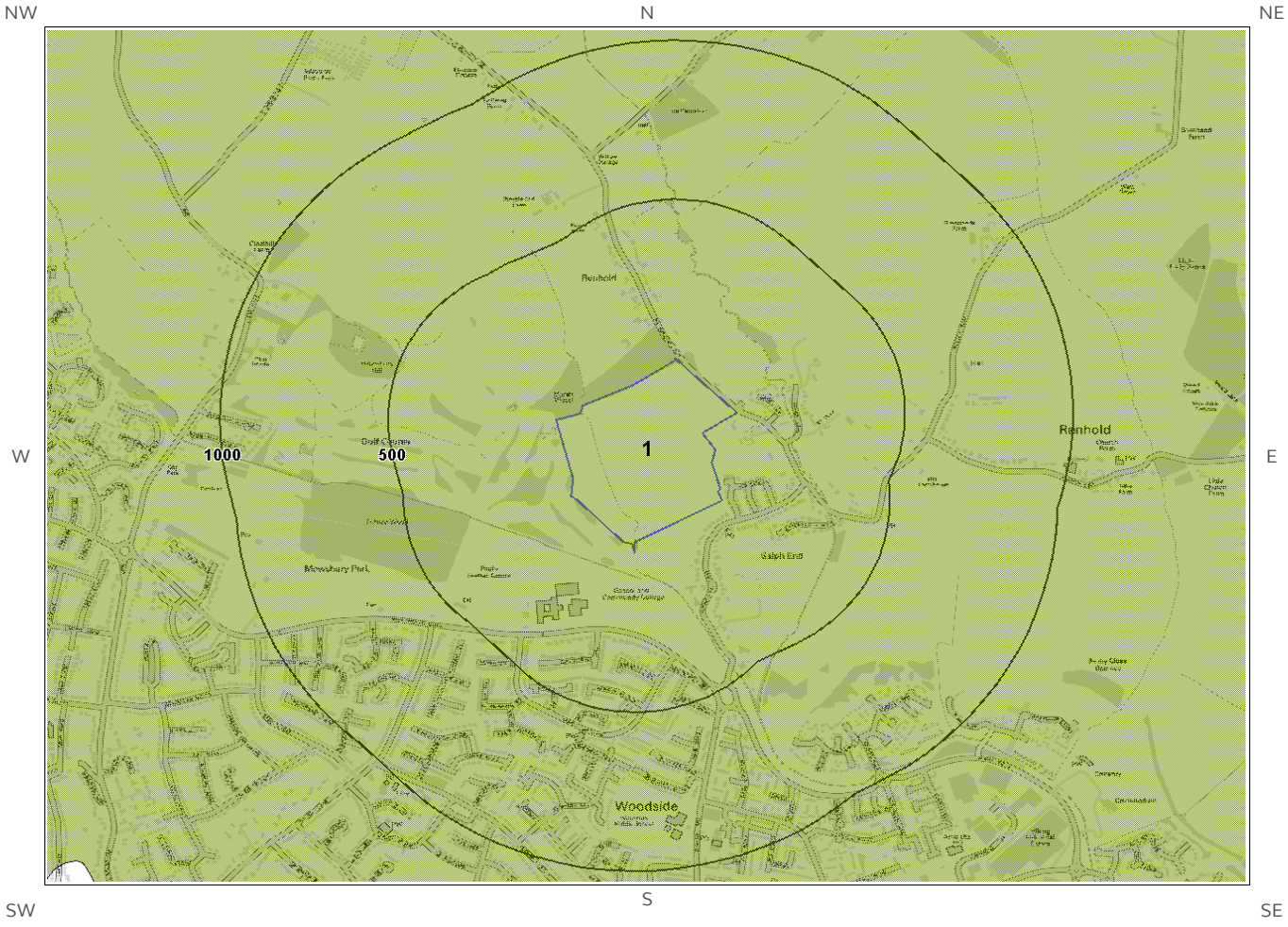
This Geology shows the main components as discrete layers, there are: Artificial/ Made Ground, Superficial/ Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

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)



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: 203

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	PET-MDST	PETERBOROUGH MEMBER - MUDSTONE	CALLOVIAN

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.

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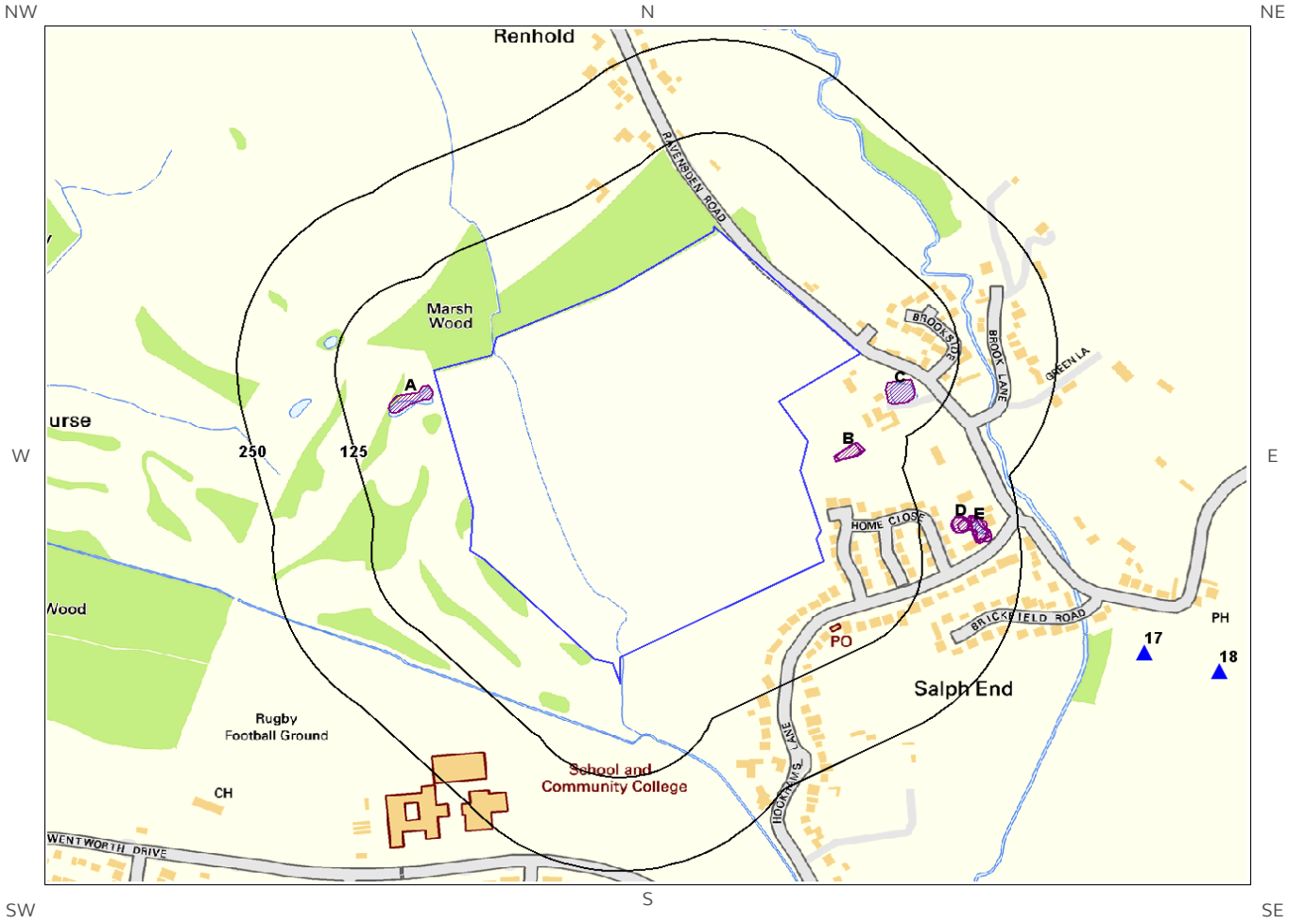
4 Ground Workings map



Ground Workings Legend

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	10.0	W	507181 252941	Ponds	1983
2A	10.0	W	507181 252941	Ponds	1976
3B	36.0	E	507734 252869	Pond	1959
4B	39.0	E	507738 252870	Pond	1900
5B	39.0	E	507738 252870	Pond	1927
6C	53.0	SE	507801 252950	Pond	1983
7C	53.0	SE	507801 252950	Pond	1976
8C	53.0	SE	507801 252950	Pond	1971
9D	166.0	E	507878 252772	Unspecified Pit	1927
10D	167.0	E	507877 252772	Unspecified Pit	1959
11D	174.0	E	507896 252764	Ponds	1882
12D	186.0	E	507900 252767	Pond	1959
13E	190.0	E	507901 252766	Pond	1976
14E	190.0	E	507901 252766	Pond	1971
15E	191.0	E	507904 252767	Pond	1927
16E	191.0	E	507904 252767	Pond	1900

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

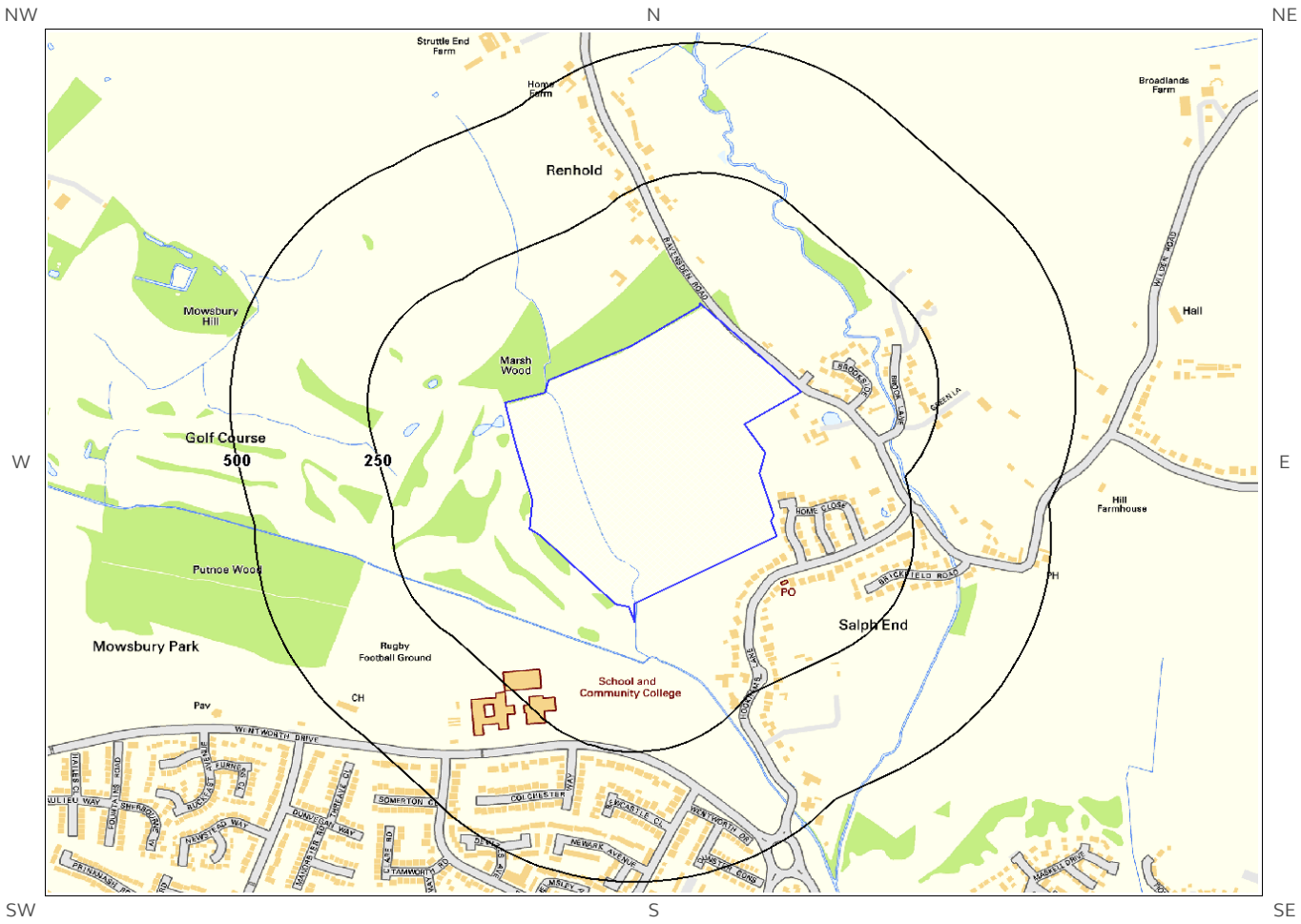
This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

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

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

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
17	424.0	E	508110 252600	Clay & Shale	Salph End Brick Field	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
18	522.0	E	508205 252575	Clay & Shale	Salph End Brick Field	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	910.0	W	506355 253290	Clay & Shale	Cleathill Brick Works	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

5 Mining, Extraction & Natural Cavities map



Mining, Extraction and Natural Cavities Legend

Site Outline

Search Buffers (m)
250
500

Historical Mining

Non-Coal Mining Cavities

Natural Cavities (point data)

Natural Cavities (polygon data)

Non-Coal Mining

Highly likely

Likely

Unlikely

Highly unlikely

Rare

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 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 Cornwall and Devon Metalliferous Mining

This dataset provides information on metalliferous mining areas in Cornwall/Devon and is derived from records held by Mining Searches UK.

Are there any Cornwall and Devon Metalliferous Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.10 Clay Mining

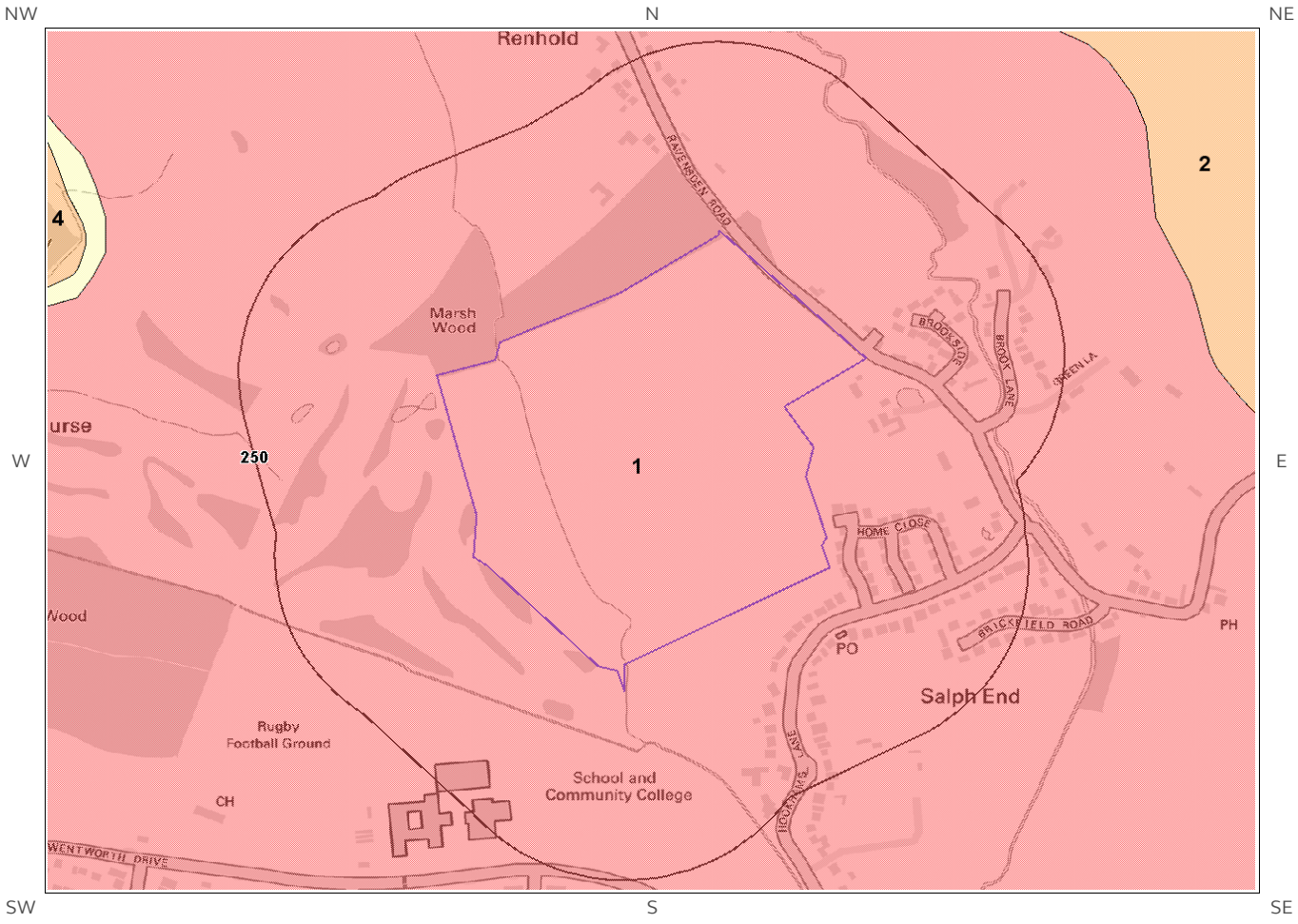
This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

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

Database searched and no data found.

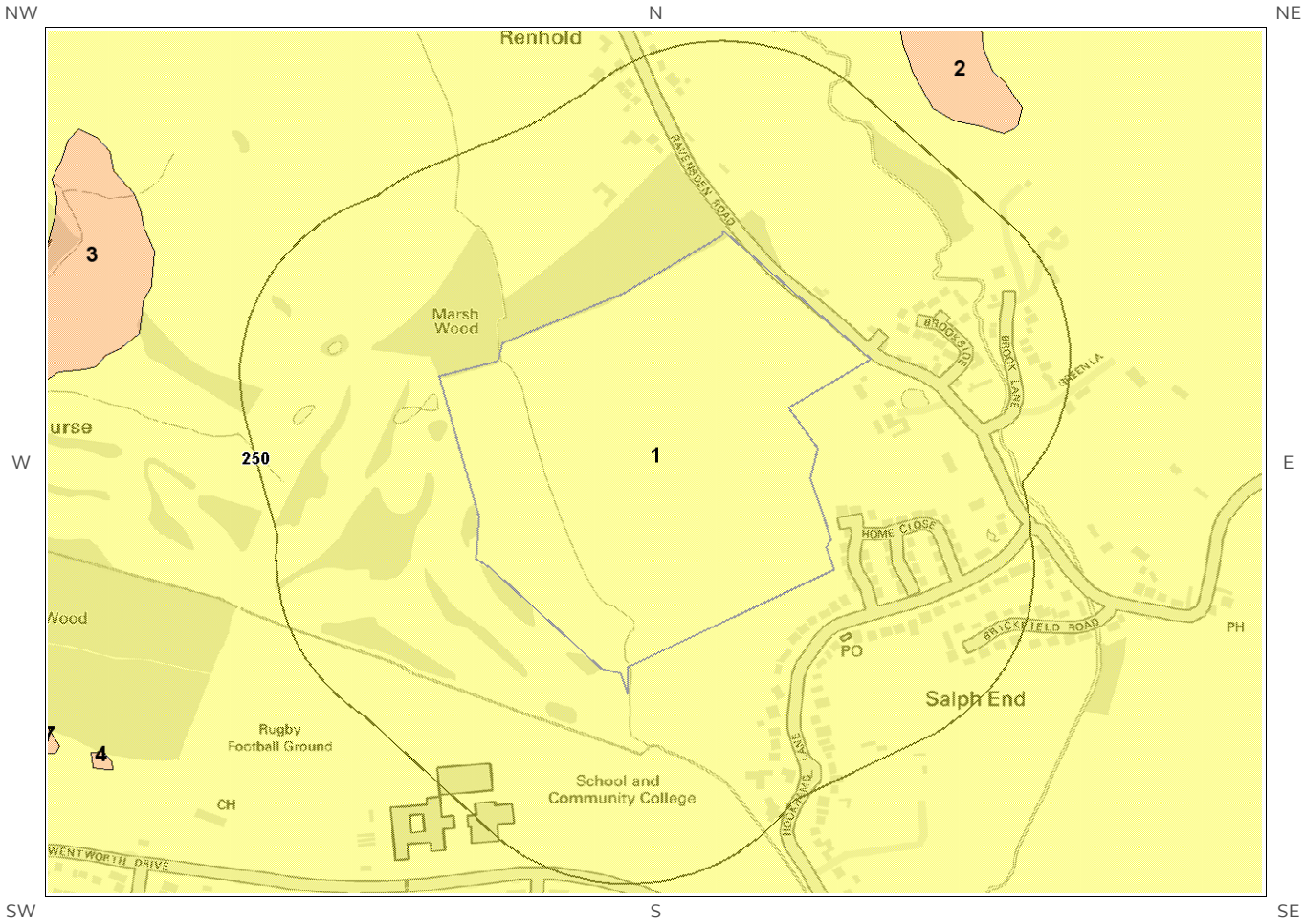
6 Natural Ground Subsidence

6.1 Shrink-Swell Clay map



Shrink Swell Clay Legend

6.2 Landslides map



Landslides Legend

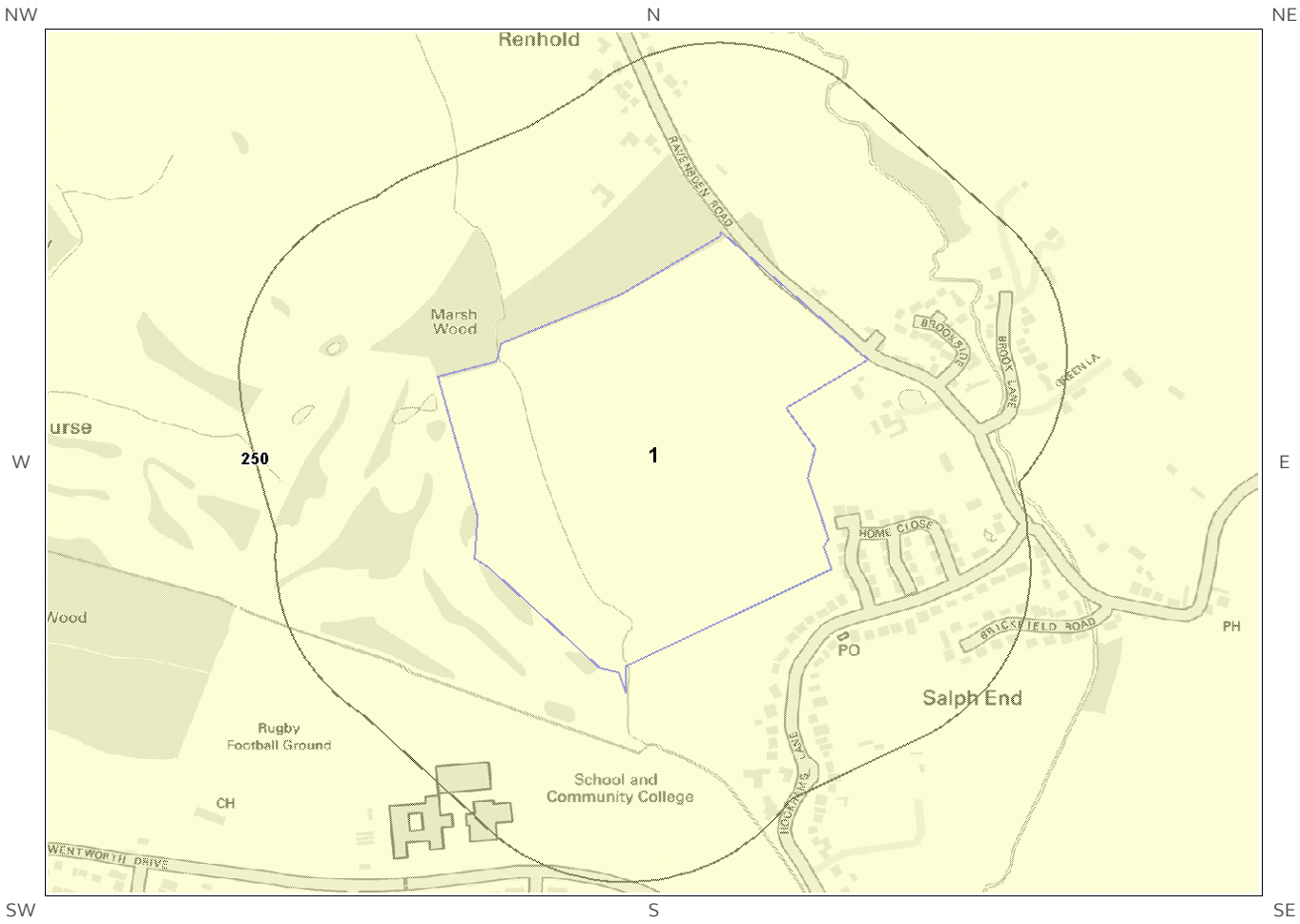
Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

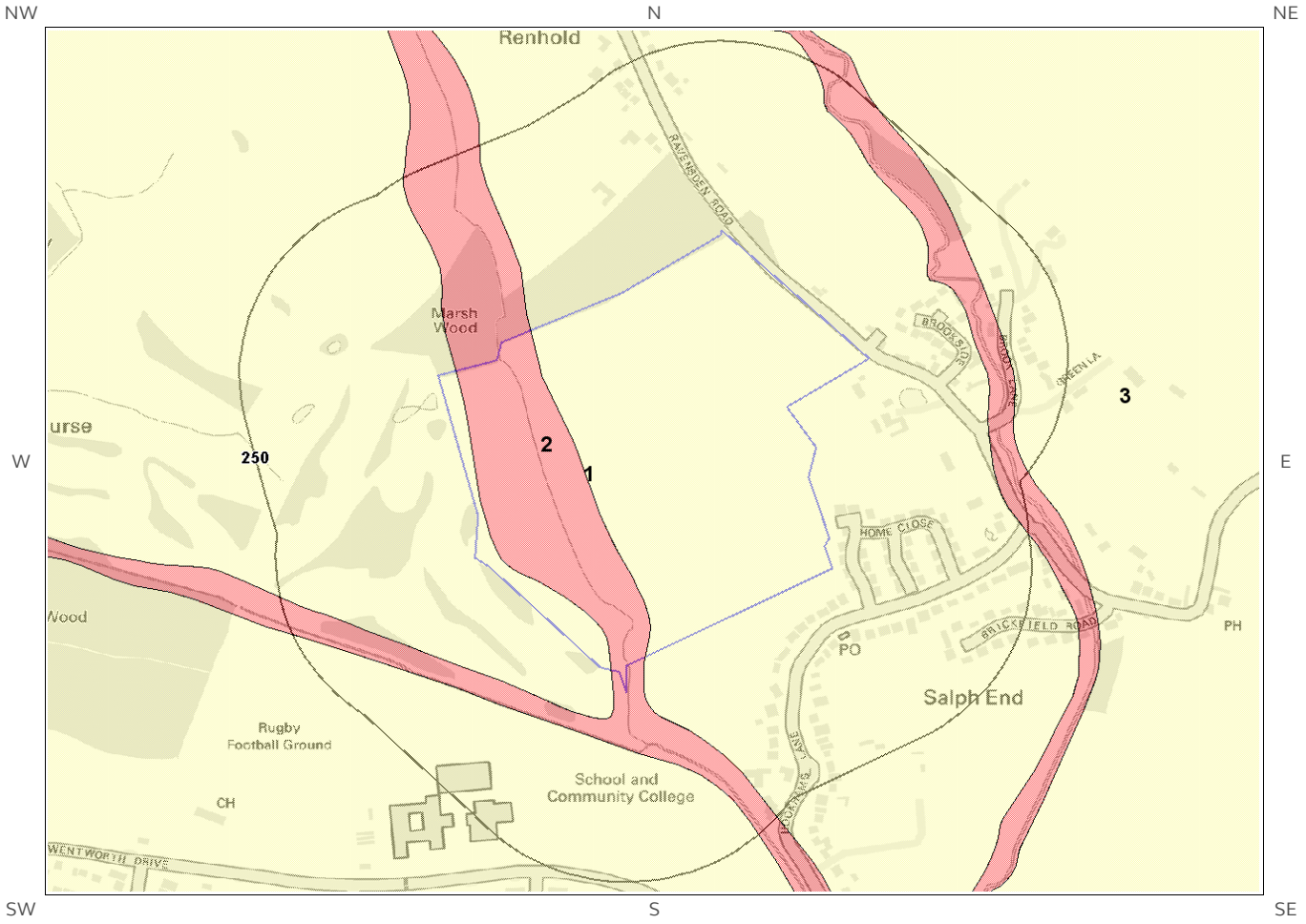
Low
Moderate
High

6.3 Ground Dissolution of Soluble Rocks map



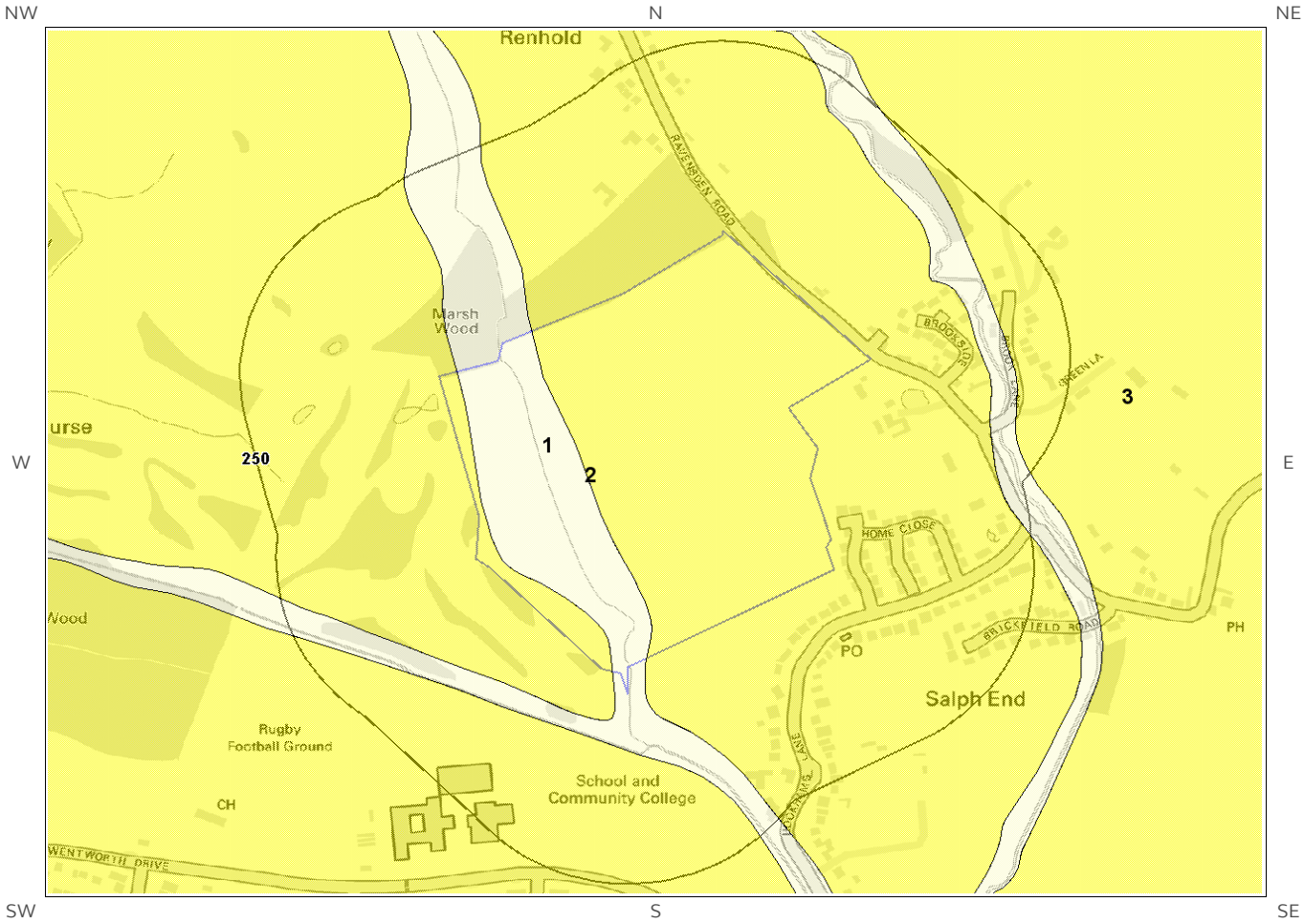
Ground Dissolution Soluble Rocks Legend

6.4 Compressible Deposits map



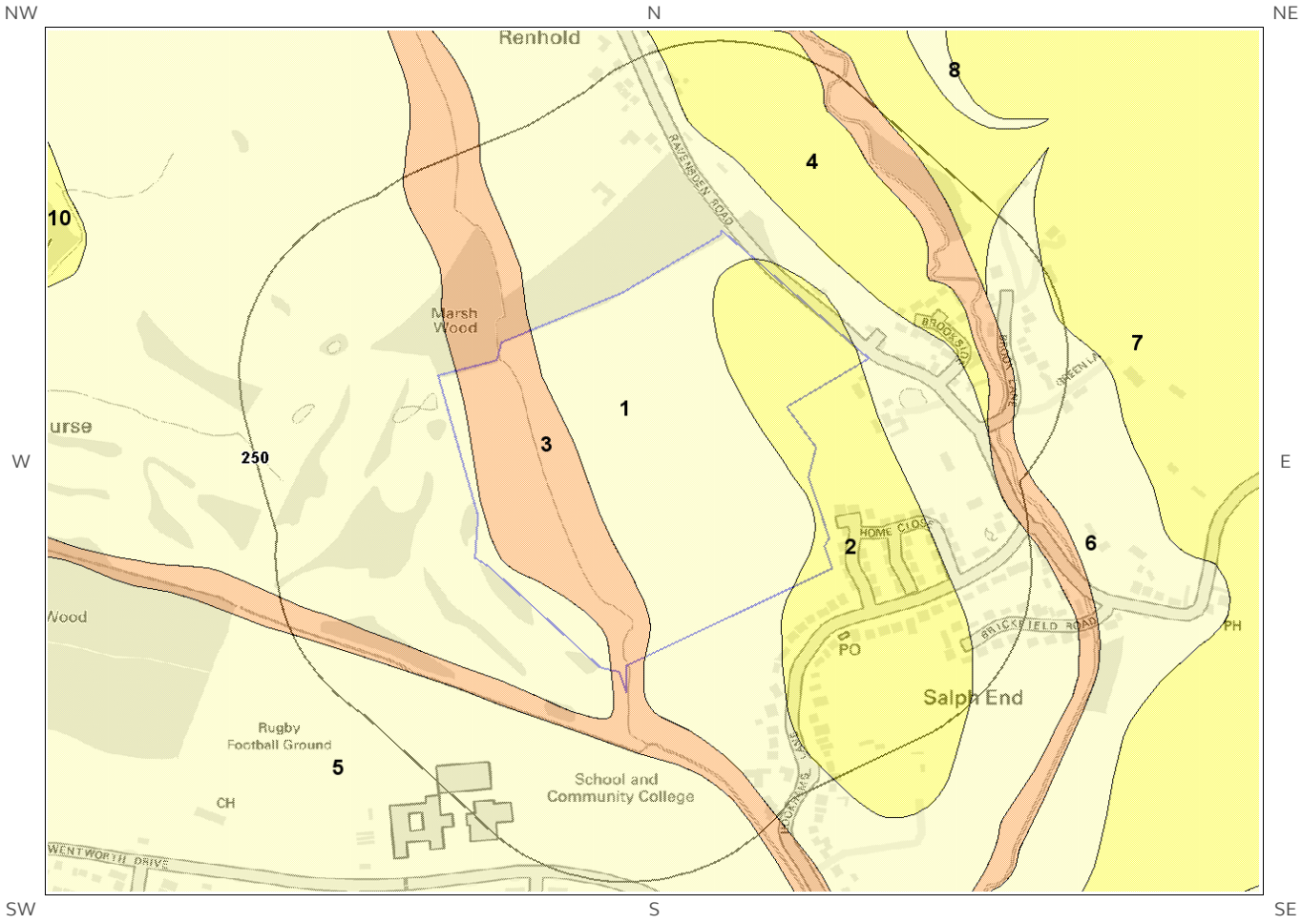
Compressible Deposits Legend

6.5 Collapsible Deposits map



Collapsible Deposits Legend

6.6 Running Sand map



Running Sand Legend

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	Moderate	Ground conditions predominantly high plasticity. Do not plant or remove trees or shrubs near to buildings without expert advice about their effect and management. 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 probable increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a probable increase in insurance risk 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	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.
2	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:

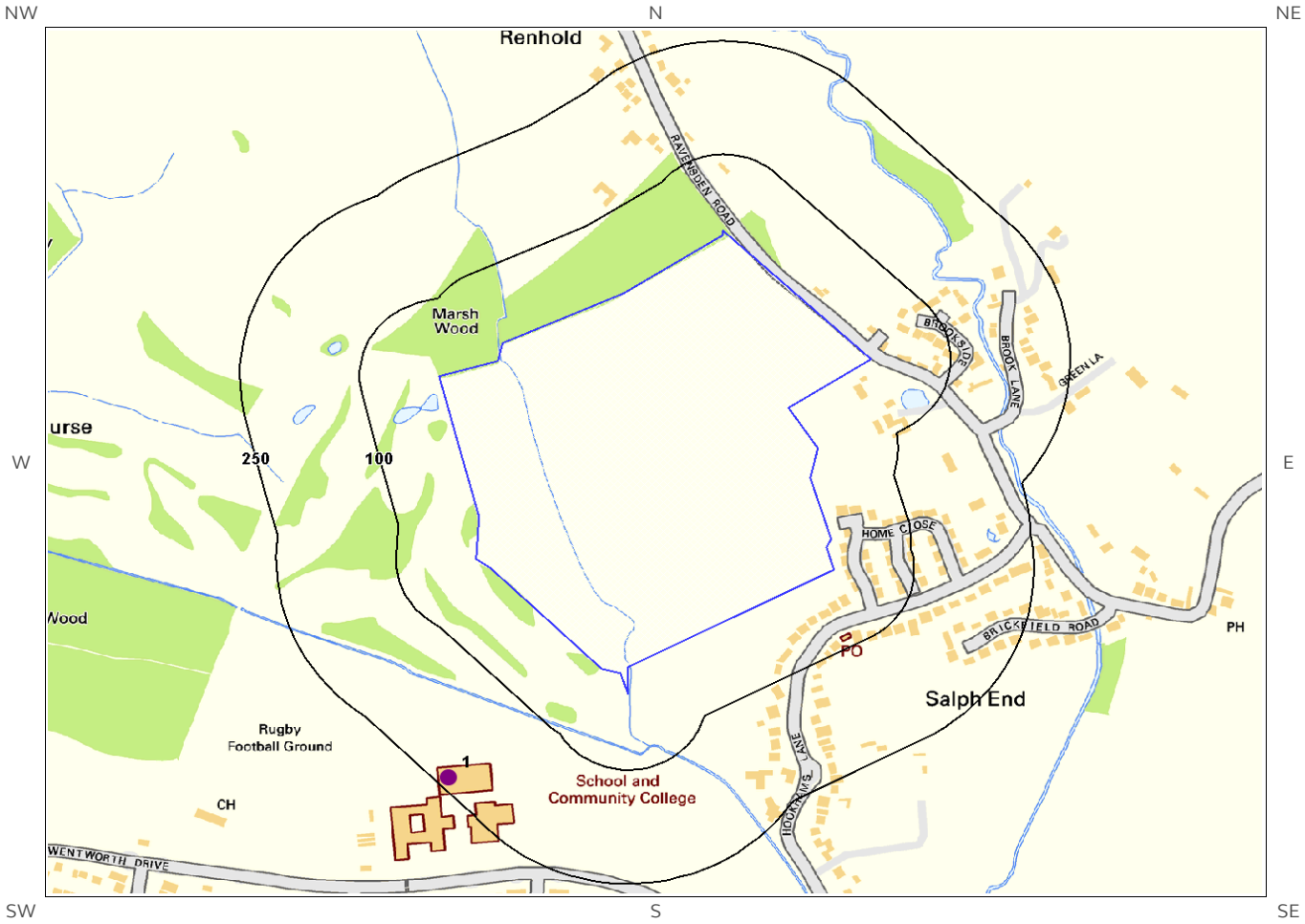
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for collapsible deposits identified. No actions required to avoid problems due to collapsible deposits. No special ground investigation required, or increased construction costs or increased financial risk due to potential problems with collapsible deposits.
2	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. 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	Negligible	No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.
2	0.0	On Site	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.
3	0.0	On Site	Low	Possibility of running sand problems after major changes in ground conditions. Normal maintenance to avoid leakage of water-bearing services or water bodies (ponds, swimming pools) should reduce likelihood of problems due to running sand. For new build - consider possibility of running sand into trenches or excavations if water table is high or sandy strata are exposed to water. Avoid concentrated water inputs to site. Unlikely to be an increase in construction costs due to potential for running sand. For existing property - no significant increase in insurance risk due to running sand problems is likely.

7 Borehole Records map



Borehole Records Legend

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: 1

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	236.0	SW	507222 252448	TL05SE28	6	MARK RUTHERFORD SCHOOL SALPH END 3

The borehole records are available using the hyperlinks below: Please note that if the donor of the borehole record has requested the information be held as commercial-in-confidence, the additional data will be held separately by the BGS and a formal request must be made for its release.

#1: scans.bgs.ac.uk/sobi_scans/boreholes/525011

8 Estimated Background Soil Chemistry

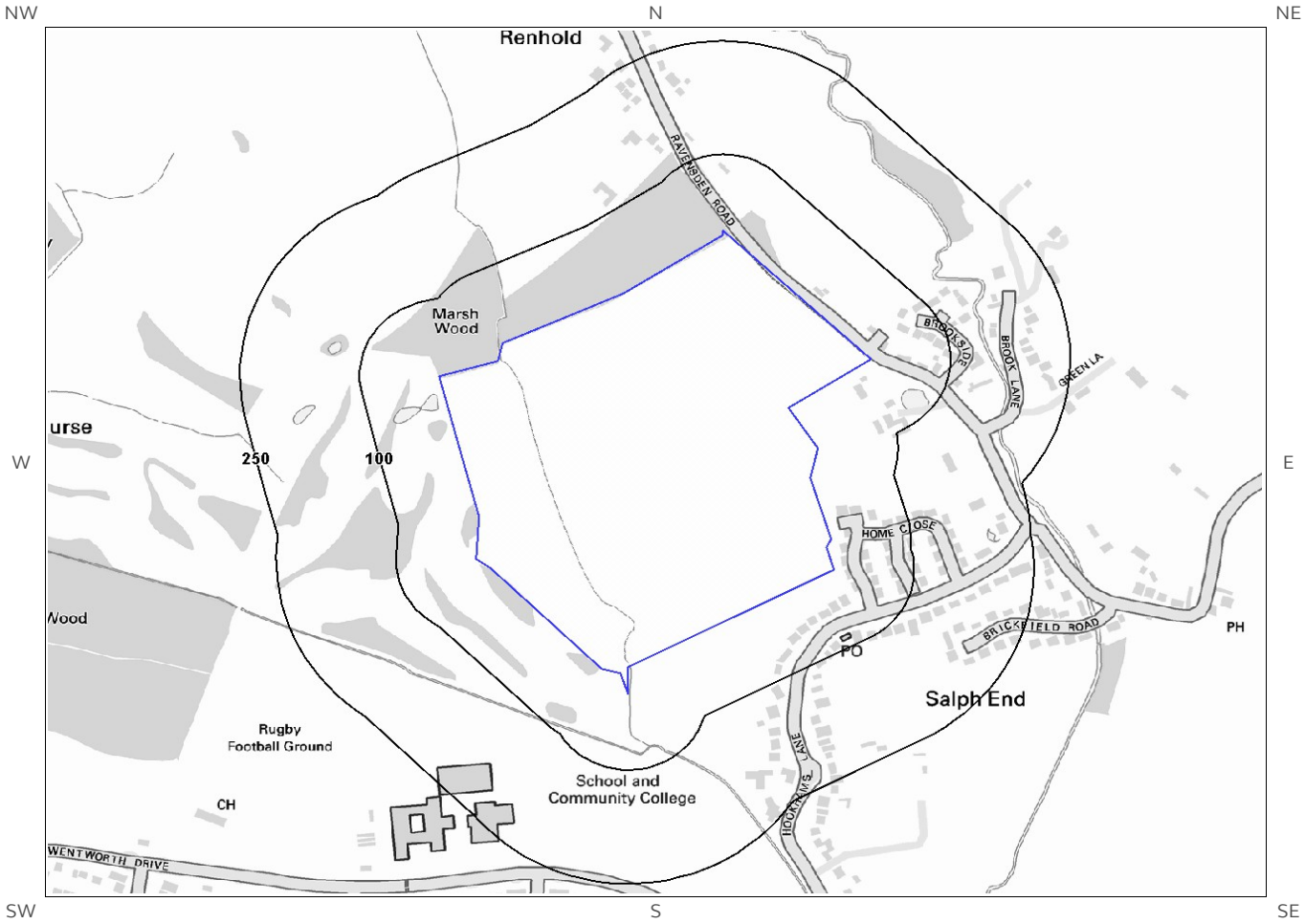
Records of background estimated soil chemistry within 250m of the study site boundary: 8

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 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	<100 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	<100 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	<100 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	<100 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	<100 mg/kg
0.0	On Site	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	<100 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	<100 mg/kg

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

9 Railways and Tunnels map



Railways and Tunnels Legend

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

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

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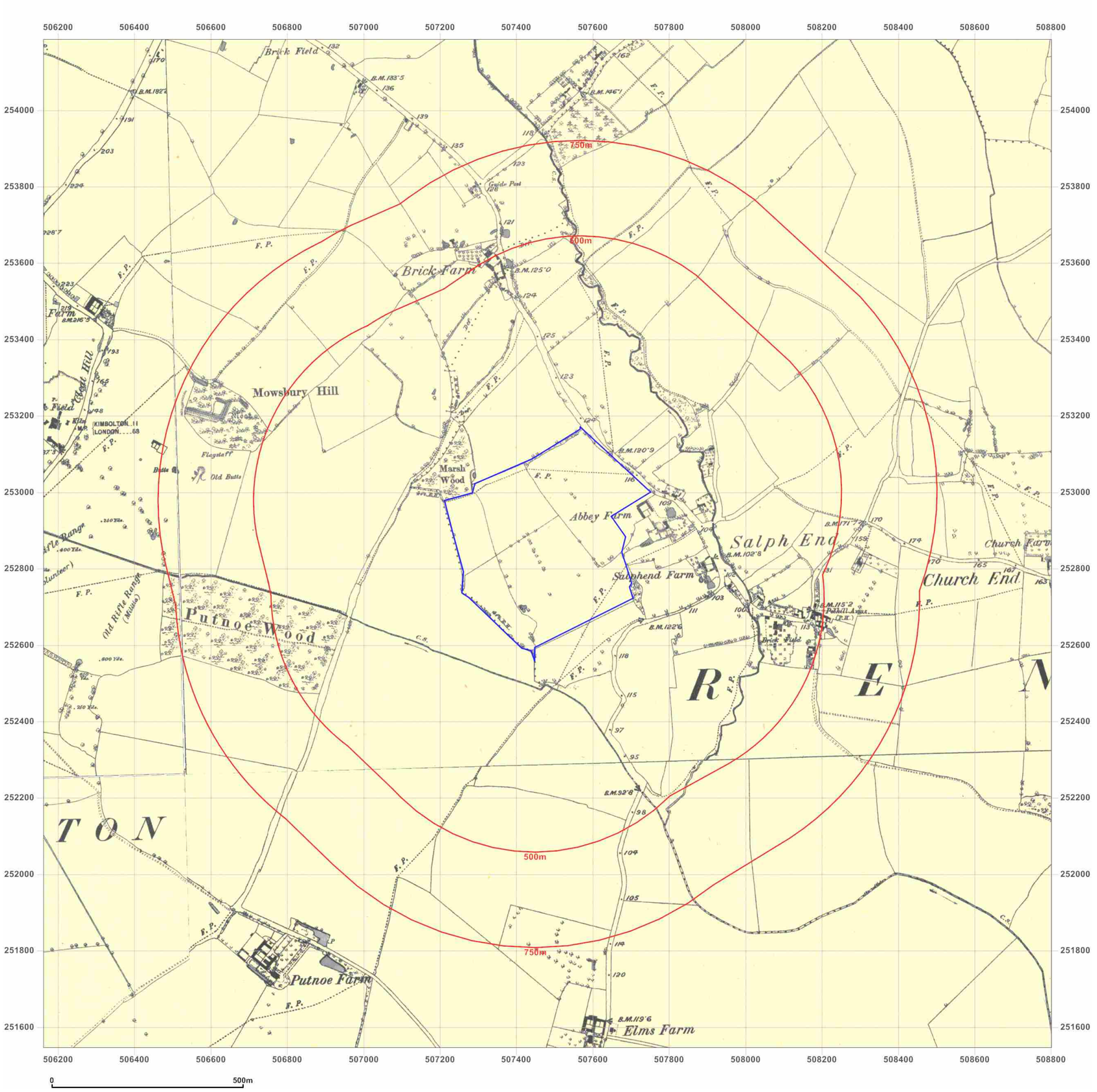

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485
Grid Ref: 507481, 252865

Map Name: County Series

Map date: **1882**

Scale: 1:10,560

Printed at: 1:10,560

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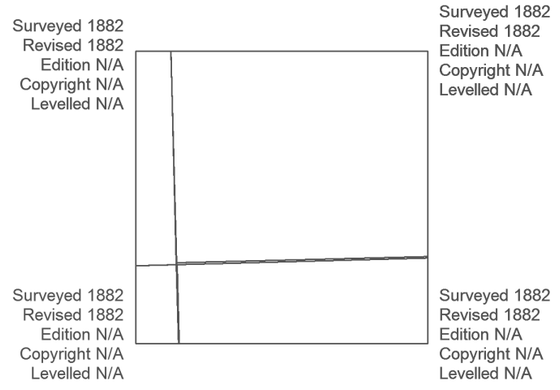

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Production date: 08 July 2019

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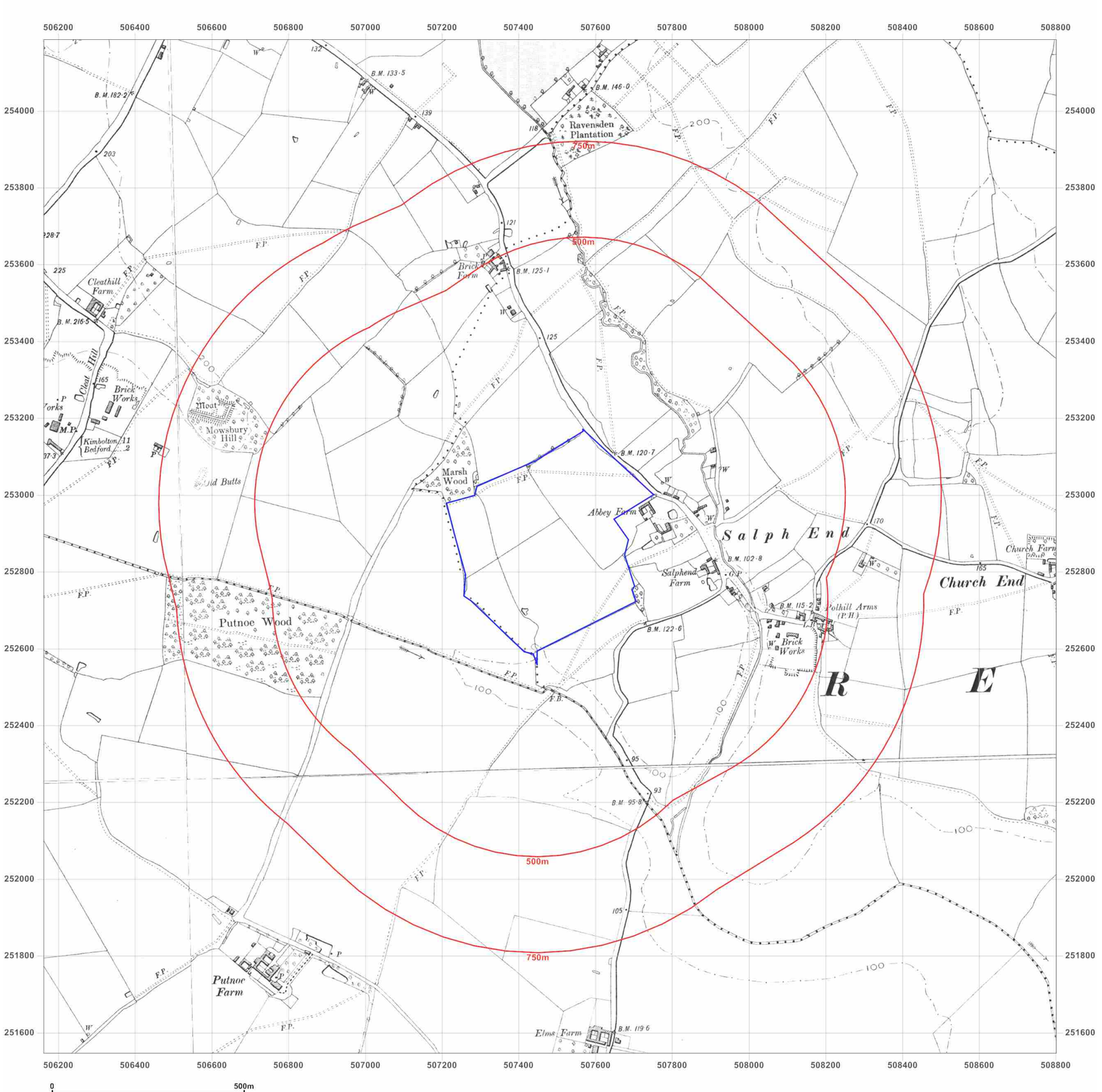

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
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Client Ref: GE18371_PO1744
Report Ref: GS-6153485
Grid Ref: 507481, 252865

Map Name: County Series

Map date: **1900**

Scale: 1:10,560

Printed at: 1:10,560

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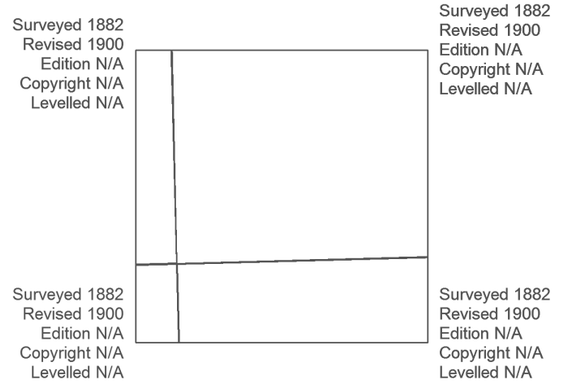

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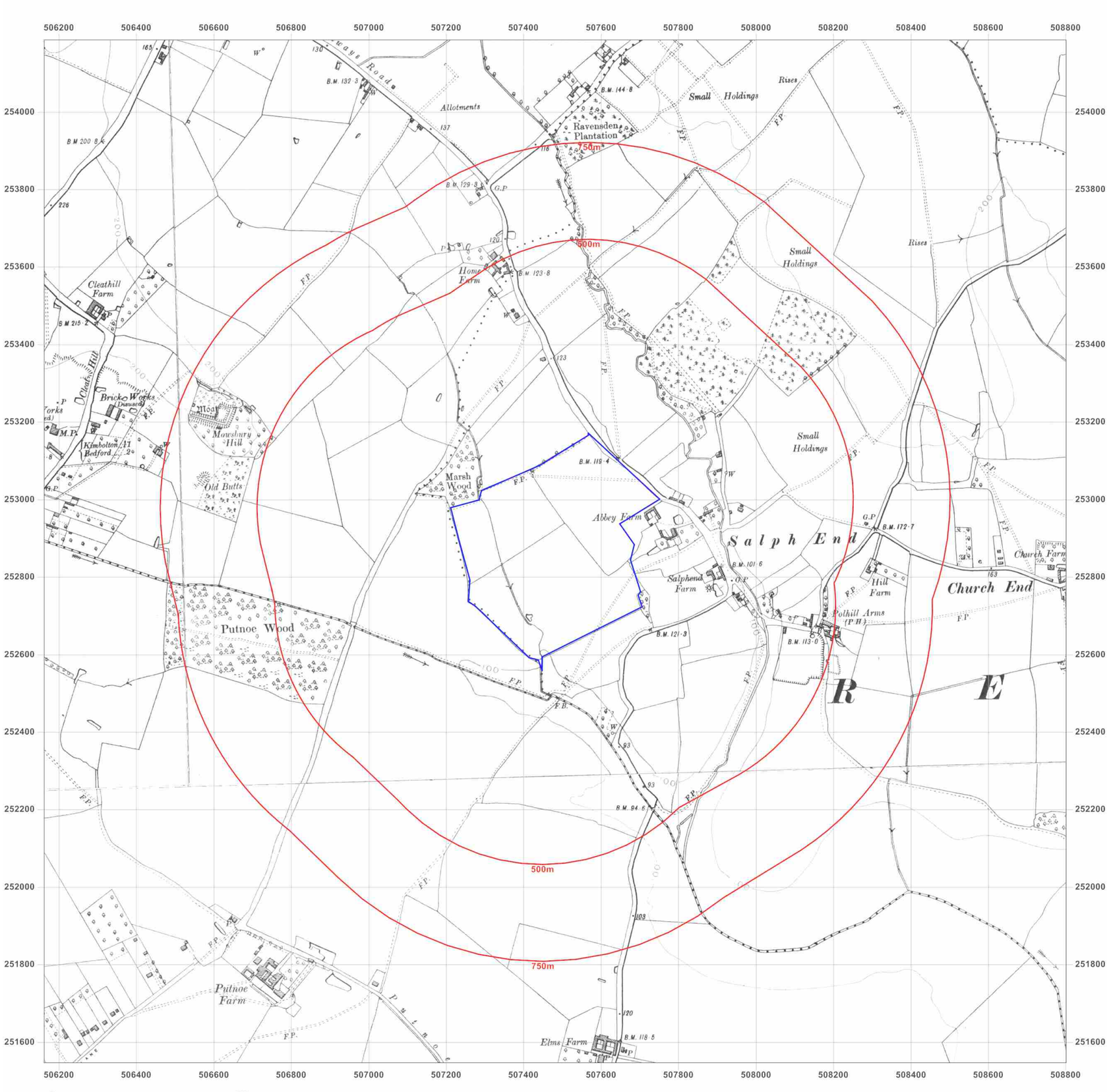

Groundsure INSIGHTS

Site Details:

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Client Ref: GE18371_PO1744
Report Ref: GS-6153485
Grid Ref: 507481, 252865

Map Name: County Series

Map date: **1924-1927**

Scale: 1:10,560

Printed at: 1:10,560

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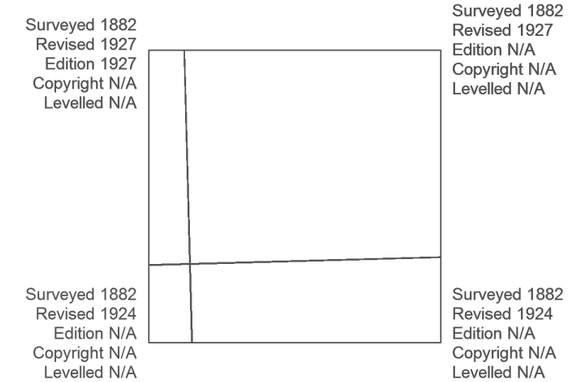

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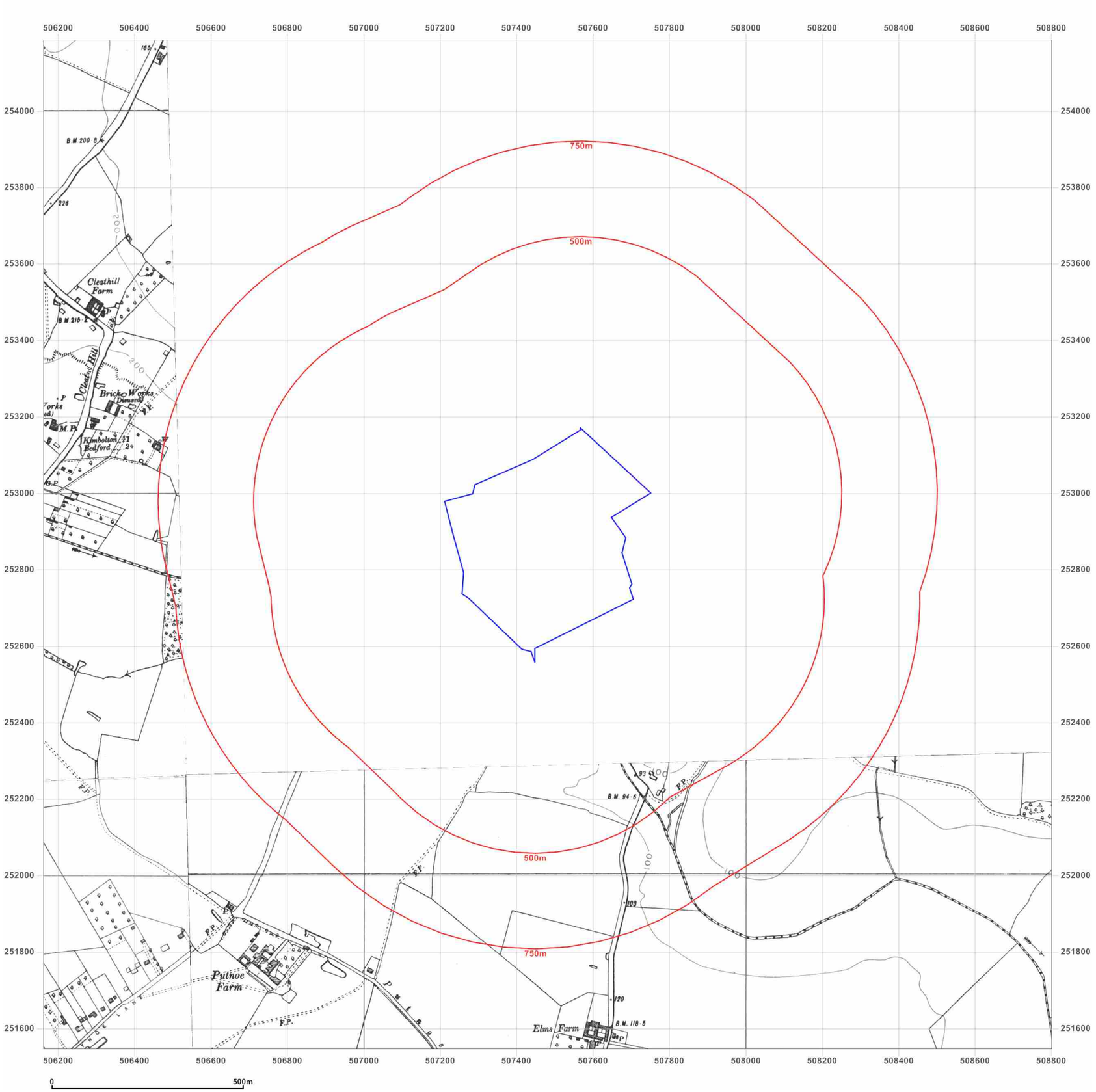

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
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Client Ref: GE18371_PO1744
Report Ref: GS-6153485
Grid Ref: 507481, 252865

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1882
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1882
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1882
Revised 1938
Edition N/A
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Levelled N/A

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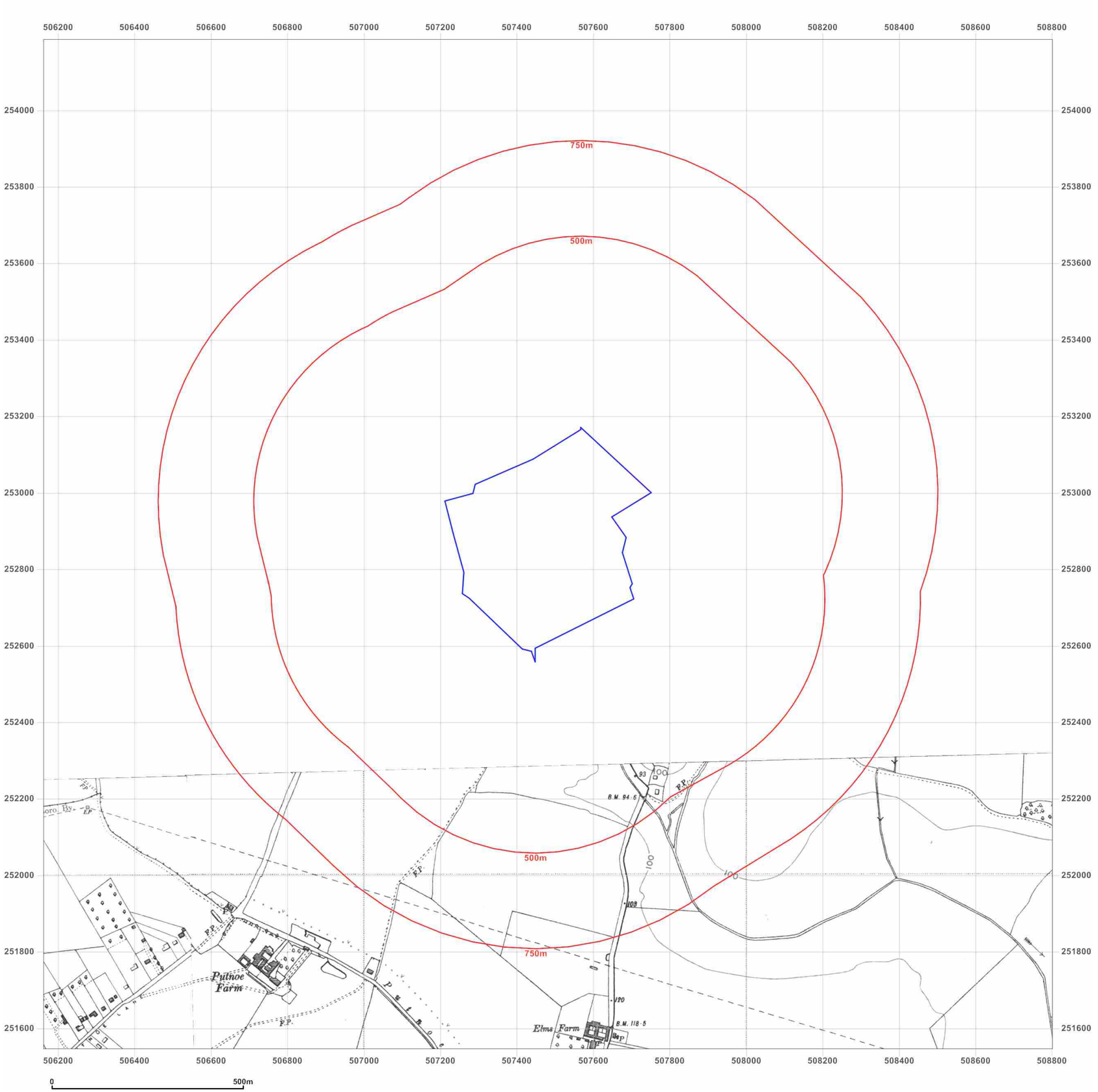

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485
Grid Ref: 507481, 252865

Map Name: County Series

Map date: **1946-1948**

Scale: 1:10,560

Printed at: 1:10,560

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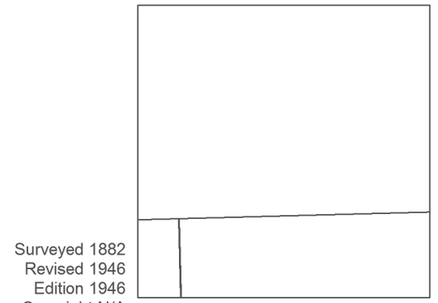

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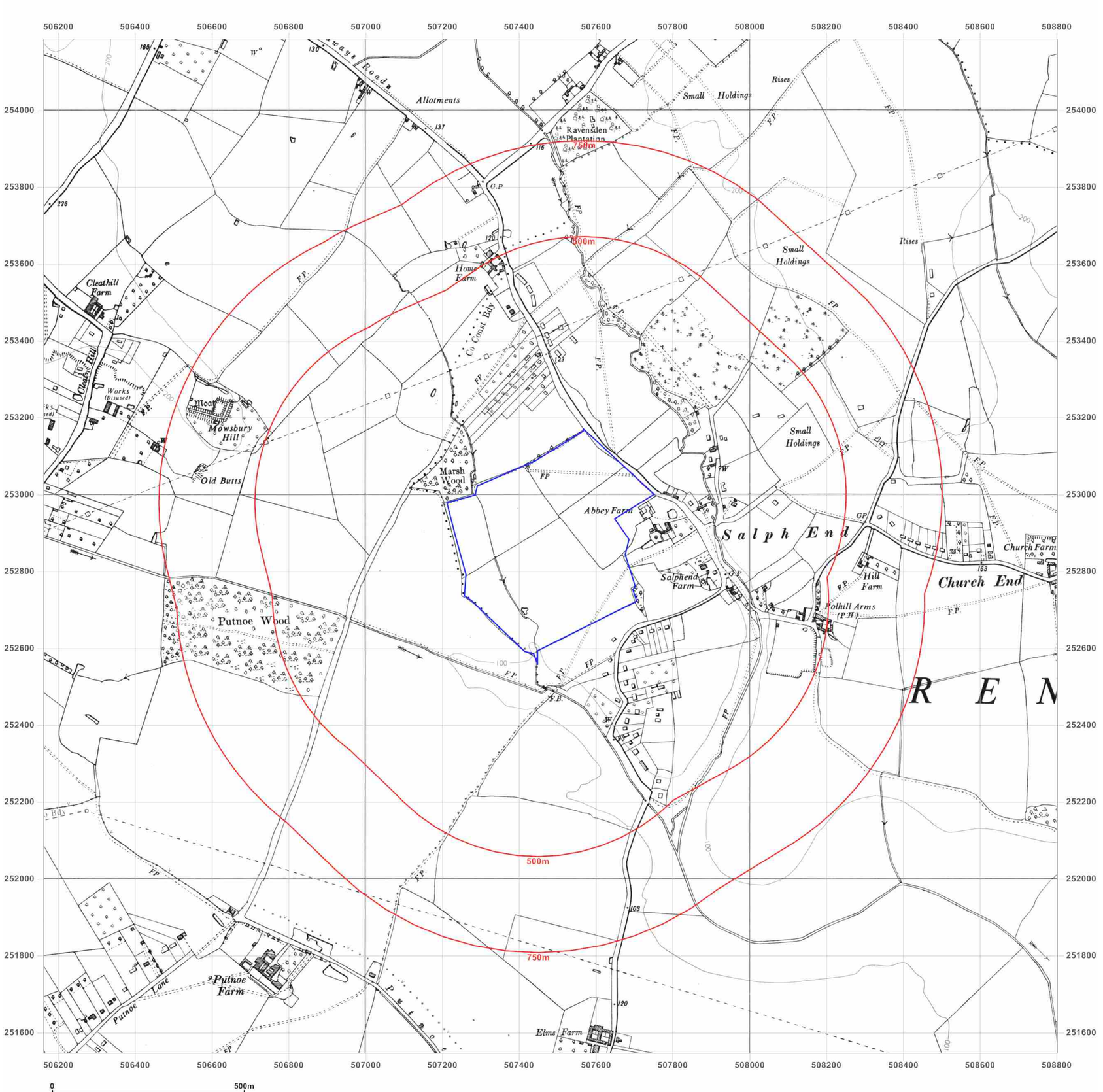

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485
Grid Ref: 507481, 252865

Map Name: Provisional

Map date: **1959**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1951
Revised 1959
Edition N/A
Copyright N/A
Levelled N/A

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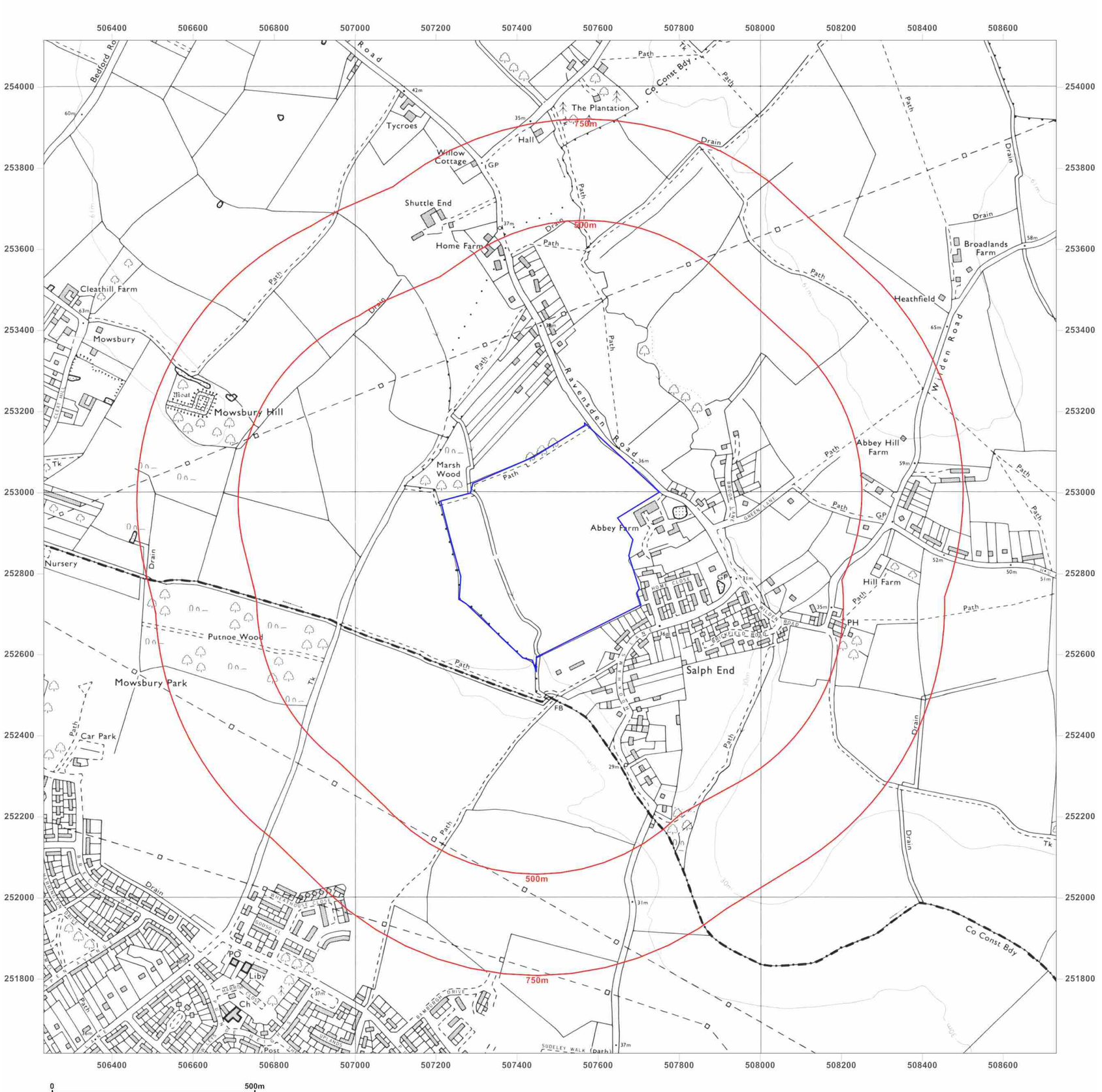

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485
Grid Ref: 507481, 252865

Map Name: National Grid

Map date: **1972**

Scale: 1:10,000

Printed at: 1:10,000

N
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Surveyed 1970
Revised 1972
Edition N/A
Copyright 1972
Levelled N/A

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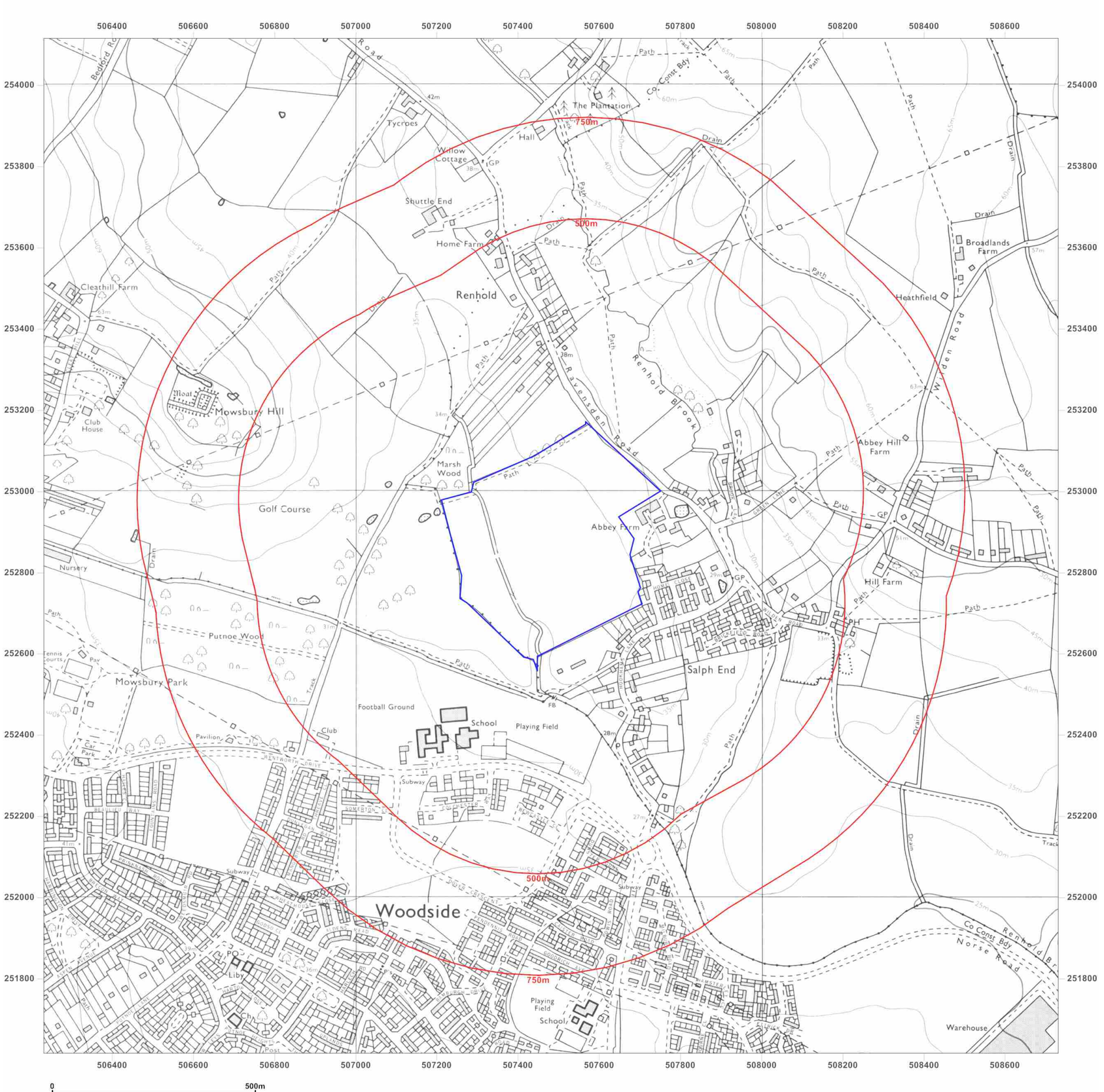

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485
Grid Ref: 507481, 252865

Map Name: National Grid

Map date: **1978**

Scale: 1:10,000

Printed at: 1:10,000

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Surveyed 1976
Revised 1978
Edition N/A
Copyright 1978
Levelled 1974

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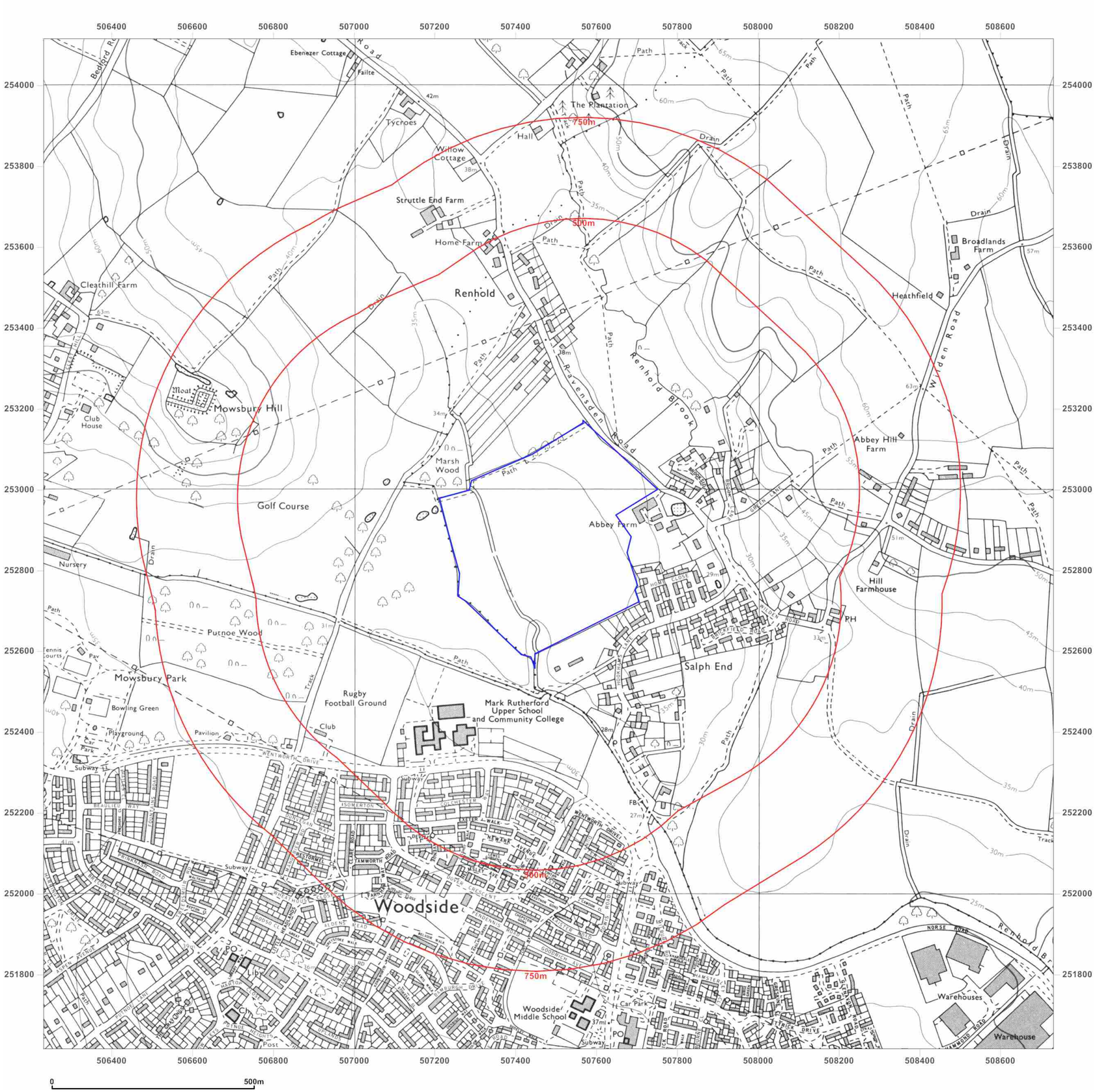

Groundsure INSIGHTS

Site Details:

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Client Ref: GE18371_PO1744
Report Ref: GS-6153485
Grid Ref: 507481, 252865

Map Name: National Grid

Map date: **1983**

Scale: 1:10,000

Printed at: 1:10,000

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Surveyed 1983
Revised 1983
Edition N/A
Copyright N/A
Levelled N/A

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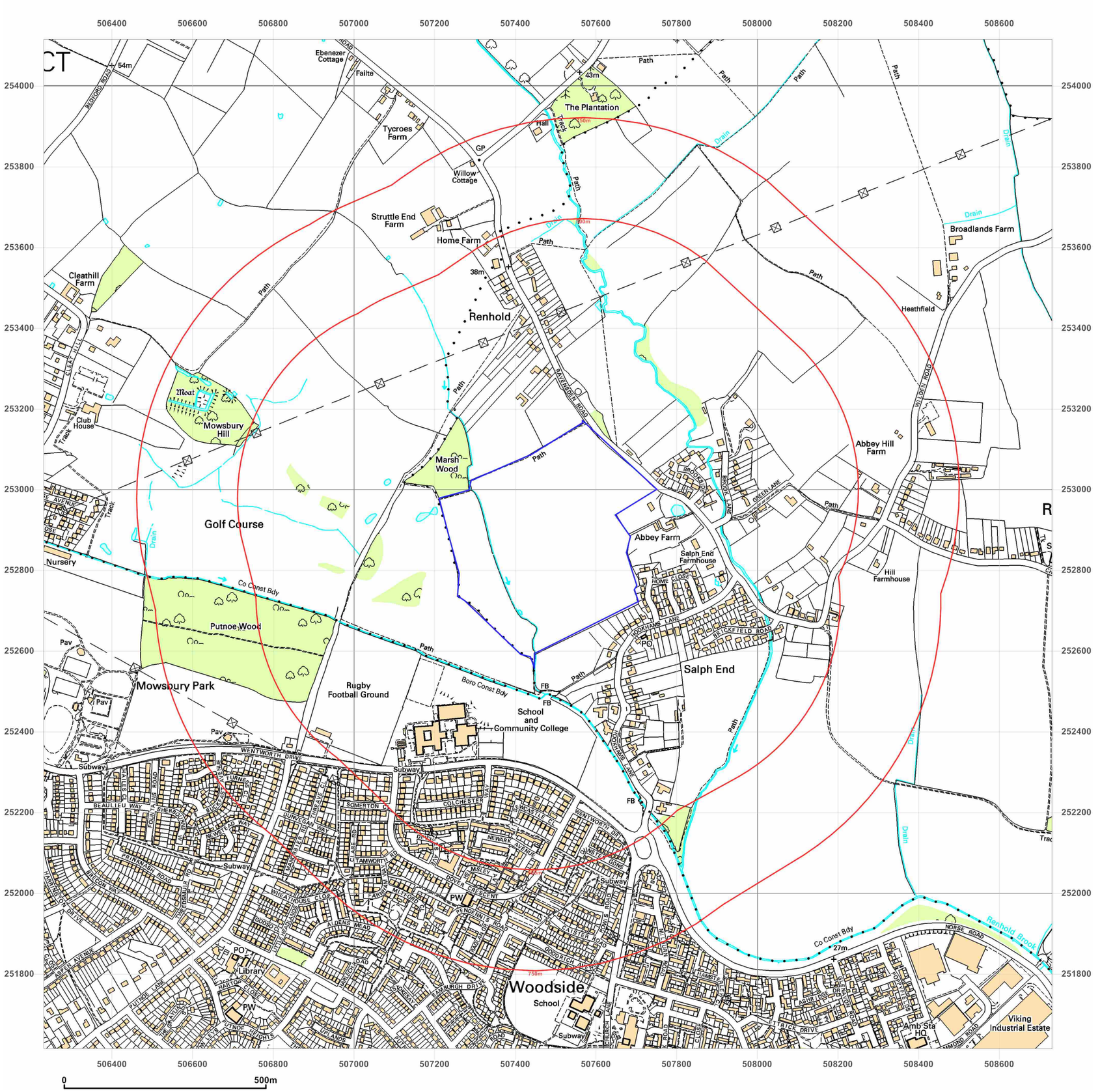

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485
Grid Ref: 507481, 252865

Map Name: 1:10,000 Raster

Map date: **2002**

Scale: 1:10,000

Printed at: 1:10,000

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2002

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Groundsure INSIGHTS

Site Details:

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Client Ref: GE18371_PO1744
Report Ref: GS-6153485
Grid Ref: 507481, 252865

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

N
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2010

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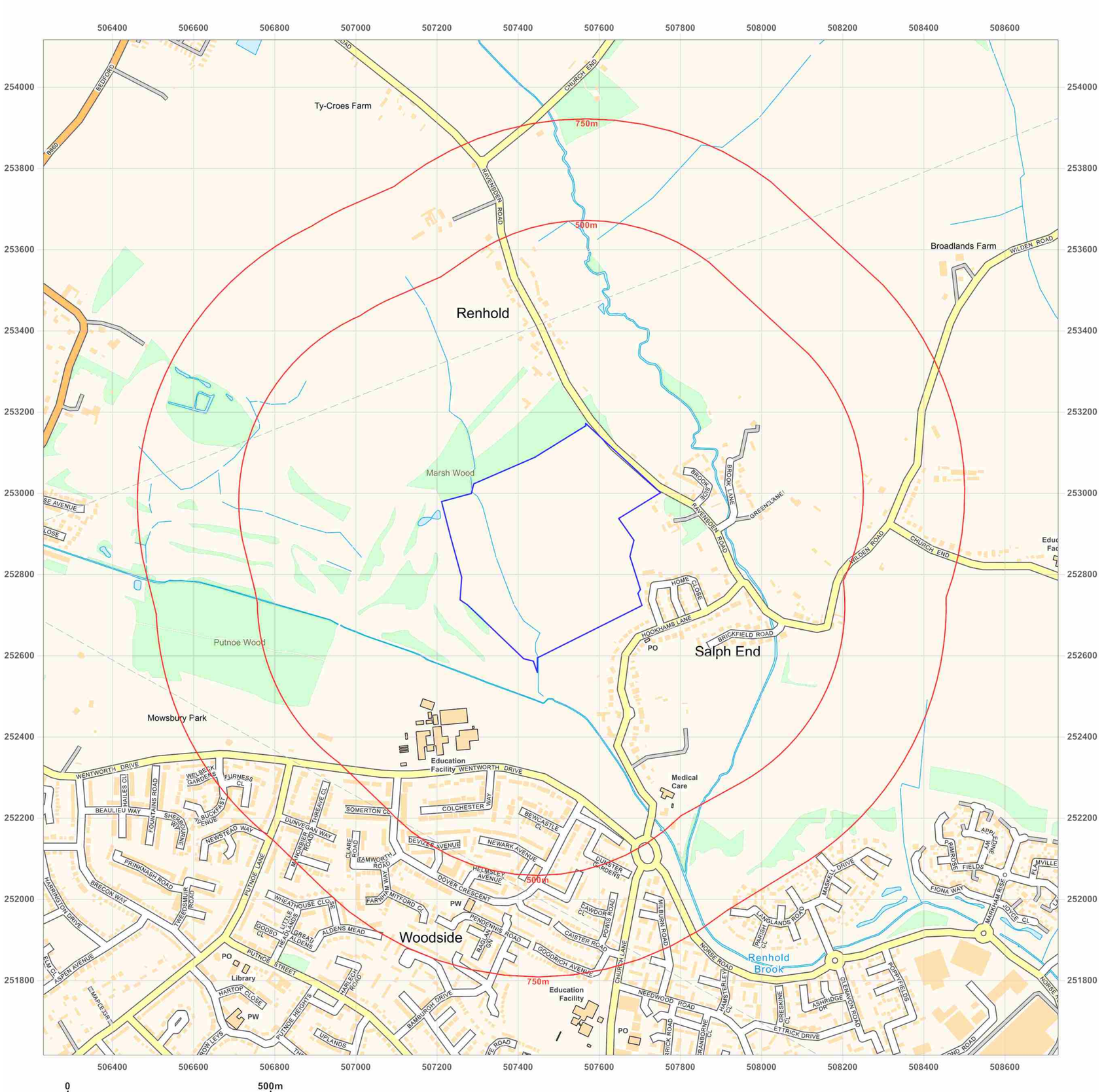

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485
Grid Ref: 507481, 252865

Map Name: National Grid

Map date: **2014**

Scale: 1:10,000

Printed at: 1:10,000

N
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2014

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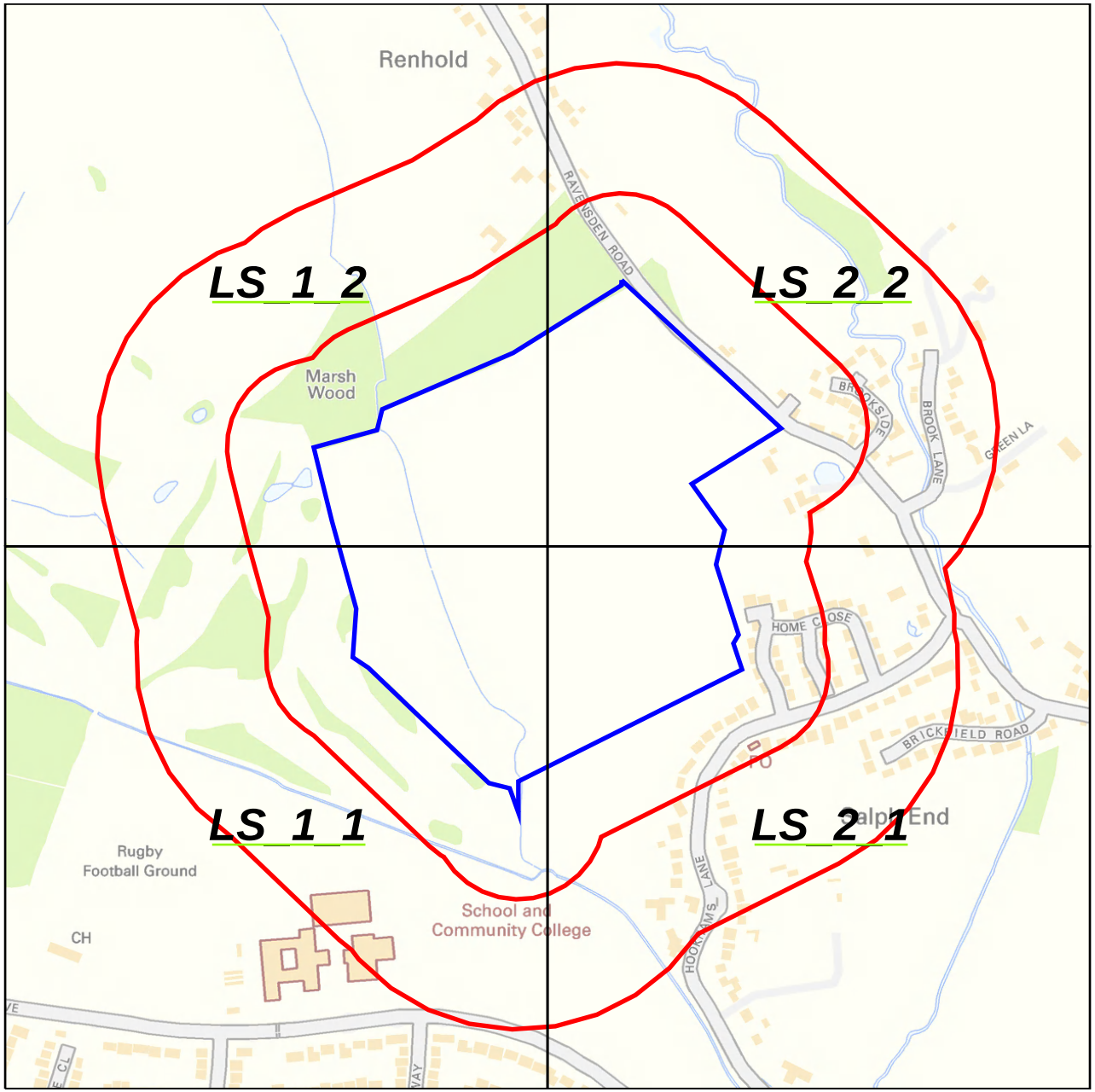

Groundsure INSIGHTS

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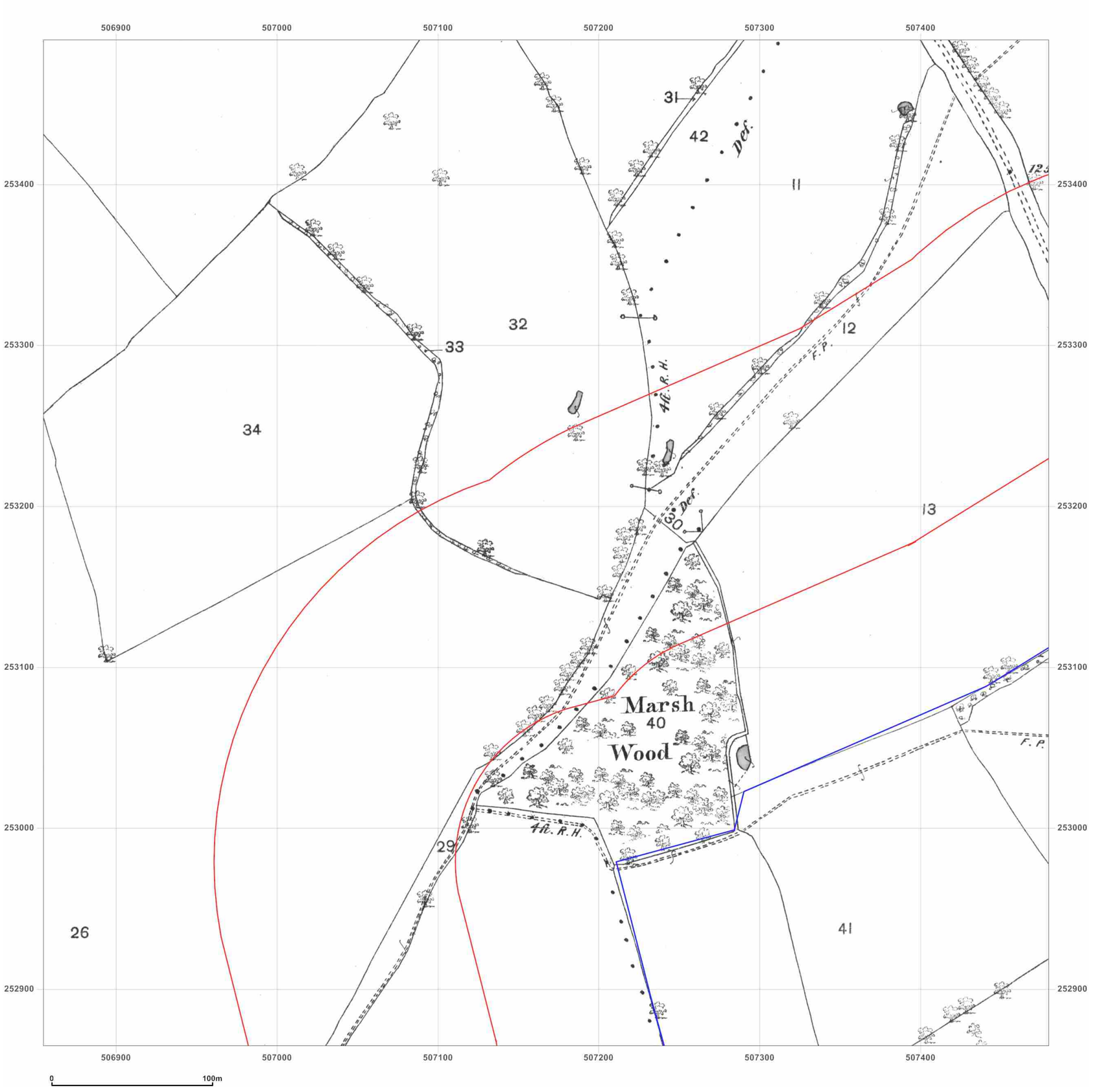
1:2500 Scale Grid Index



Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_1_2
Grid Ref: 507167, 253177

Map Name: County Series

Map date: **1884**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1884
Revised 1884
Edition N/A
Copyright N/A
Levelled N/A

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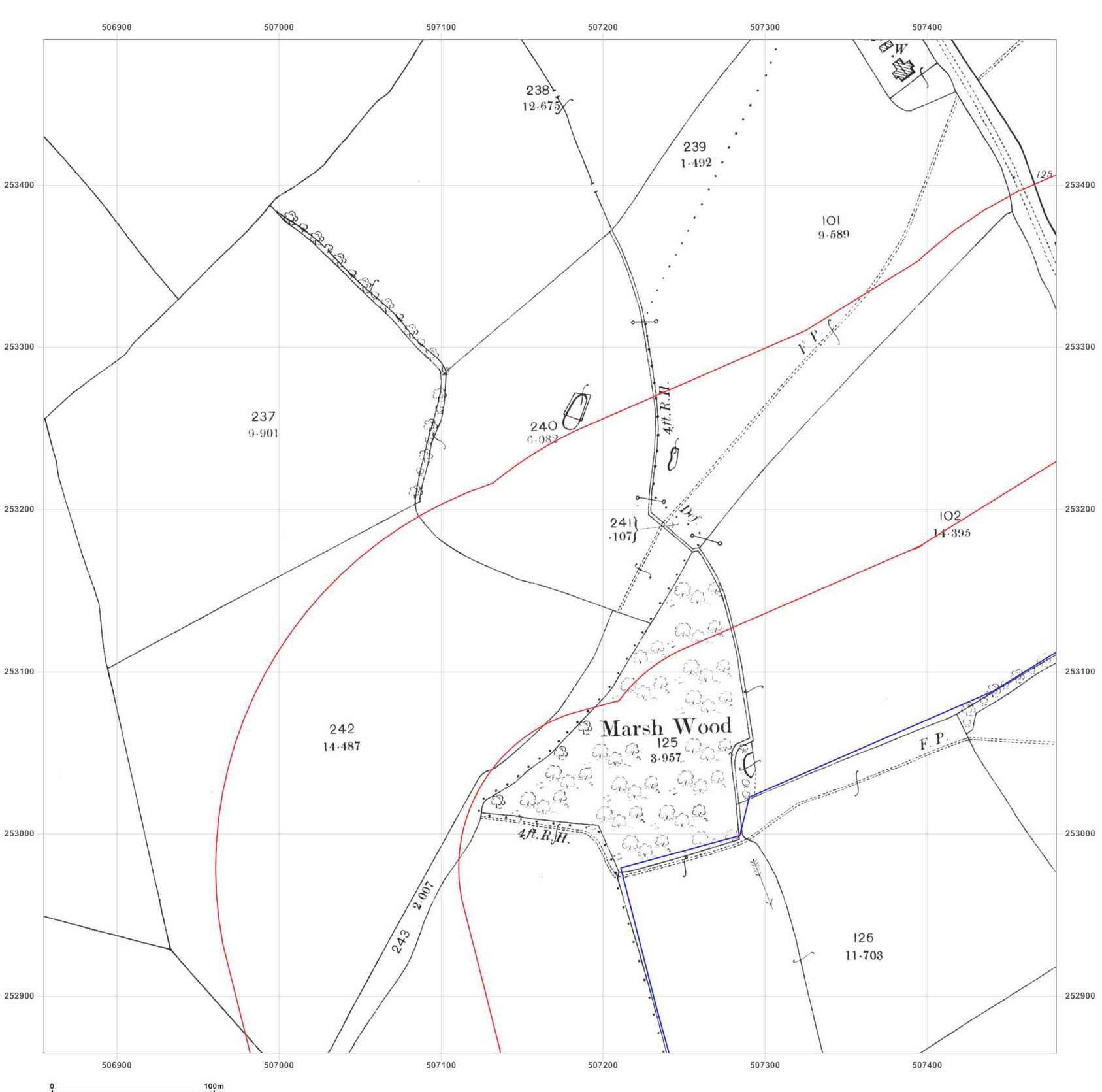

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_1_2
Grid Ref: 507167, 253177

Map Name: County Series
Map date: **1901**
Scale: 1:2,500
Printed at: 1:2,500

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Surveyed 1901
Revised 1901
Edition N/A
Copyright N/A
Levelled N/A

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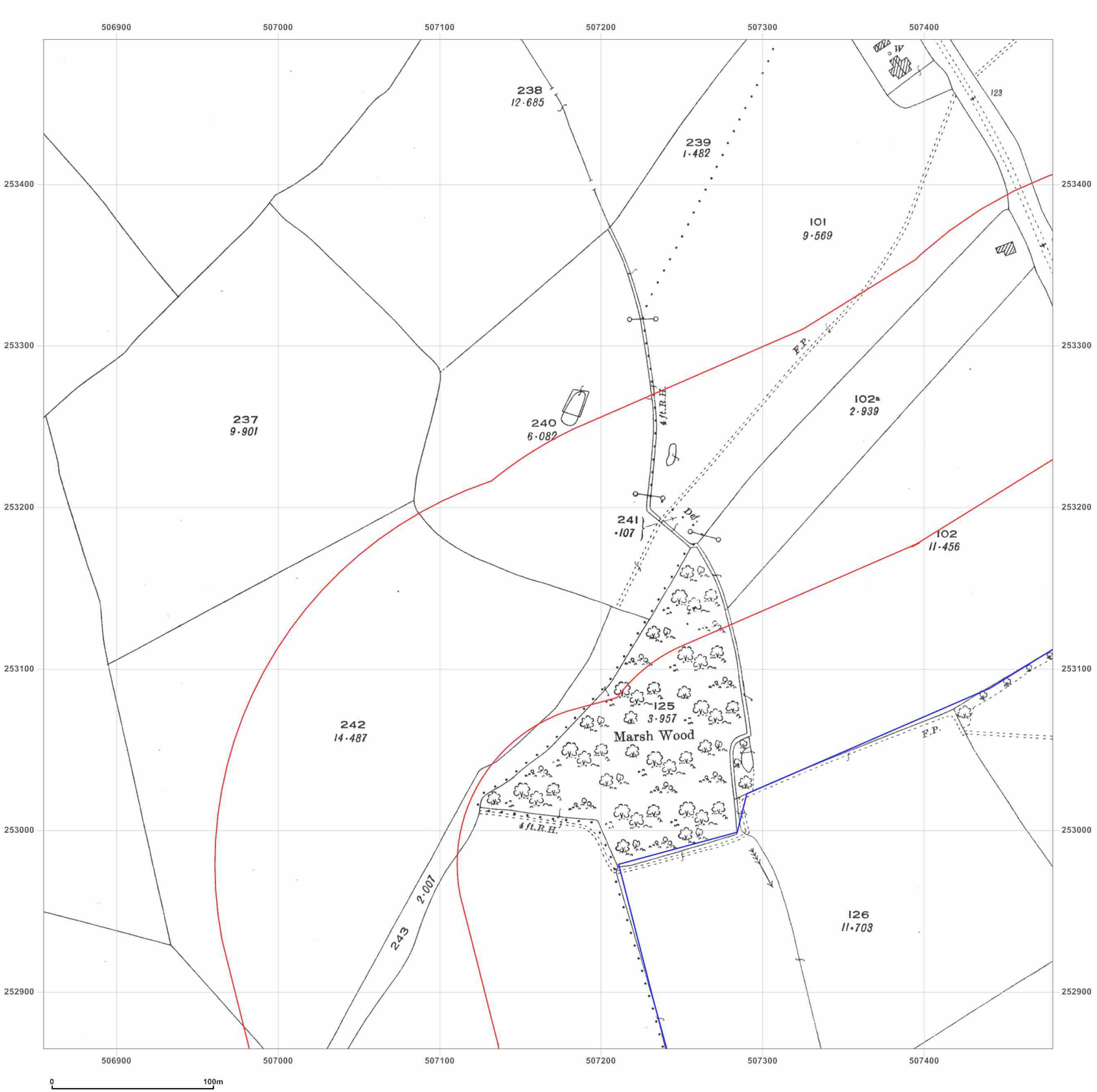

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_1_2
Grid Ref: 507167, 253177

Map Name: County Series
Map date: **1926**
Scale: 1:2,500
Printed at: 1:2,500

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Surveyed 1926
Revised 1926
Edition N/A
Copyright N/A
Levelled N/A

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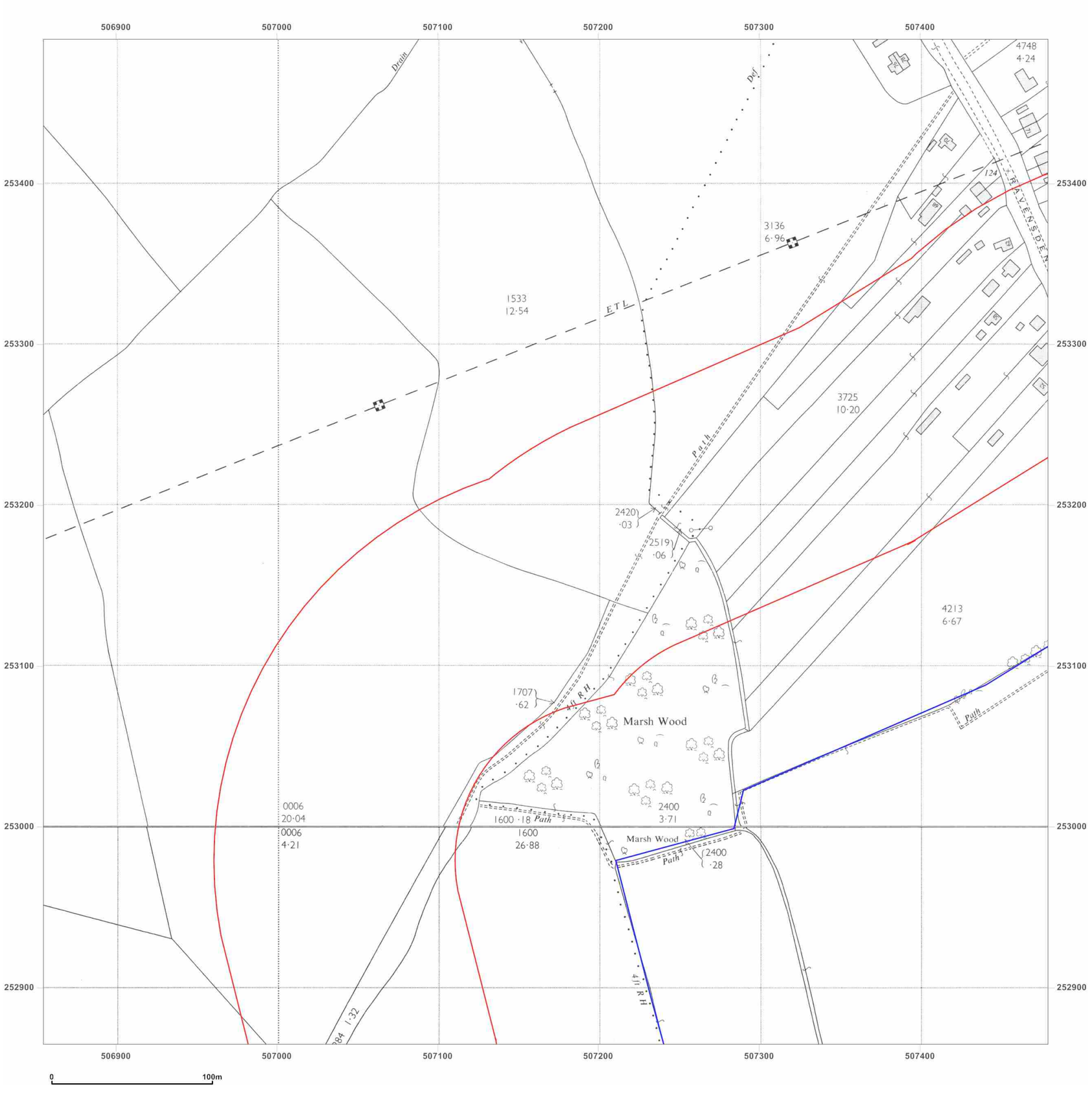

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_1_2
Grid Ref: 507167, 253177

Map Name: National Grid

Map date: **1968**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1968
Revised 1968
Edition N/A
Copyright 1969
Levelled 1959

Surveyed 1968
Revised 1968
Edition N/A
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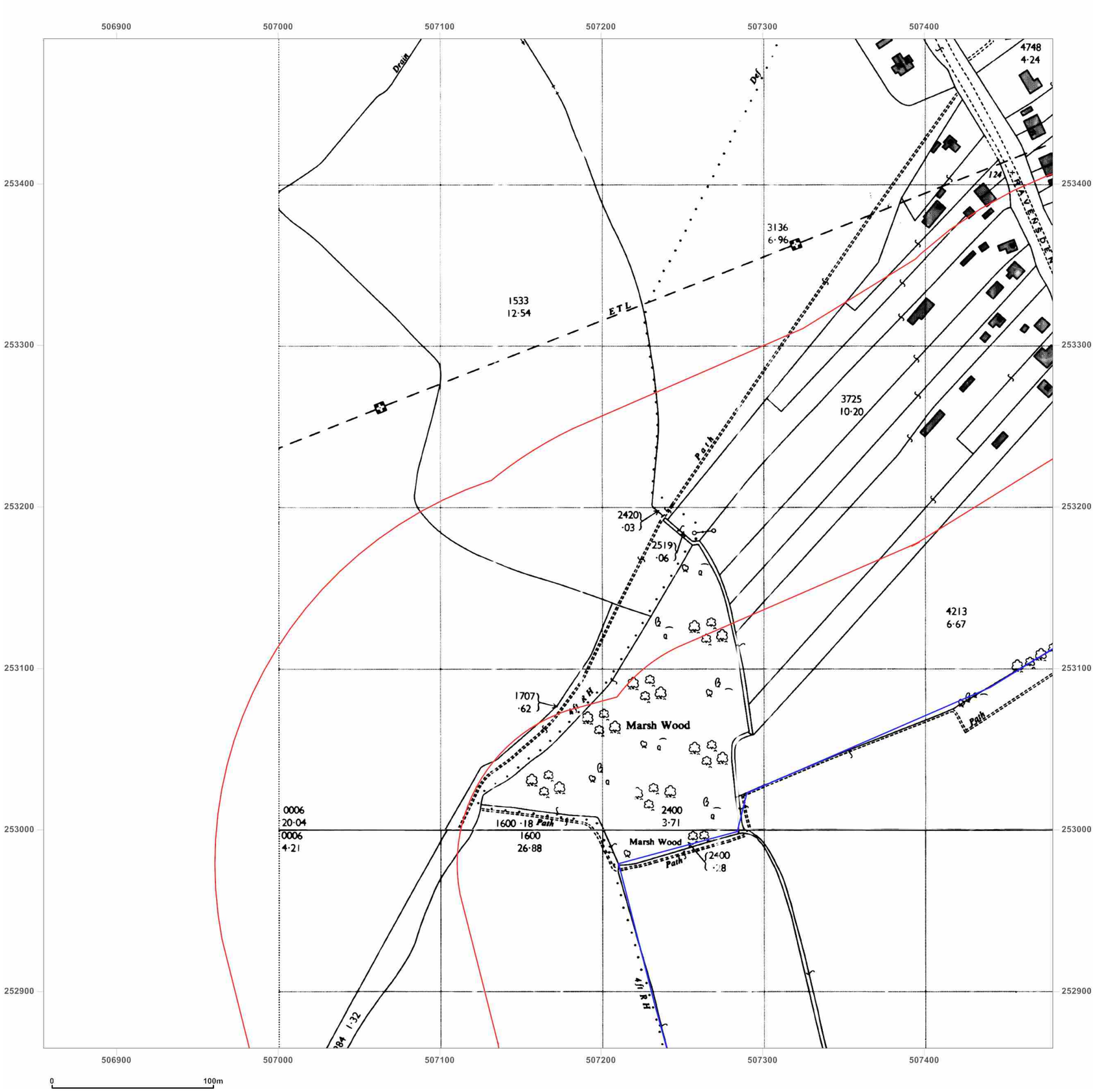

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_1_2
Grid Ref: 507167, 253177

Map Name: National Grid

Map date: **1969**

Scale: 1:2,500

Printed at: 1:2,500

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

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

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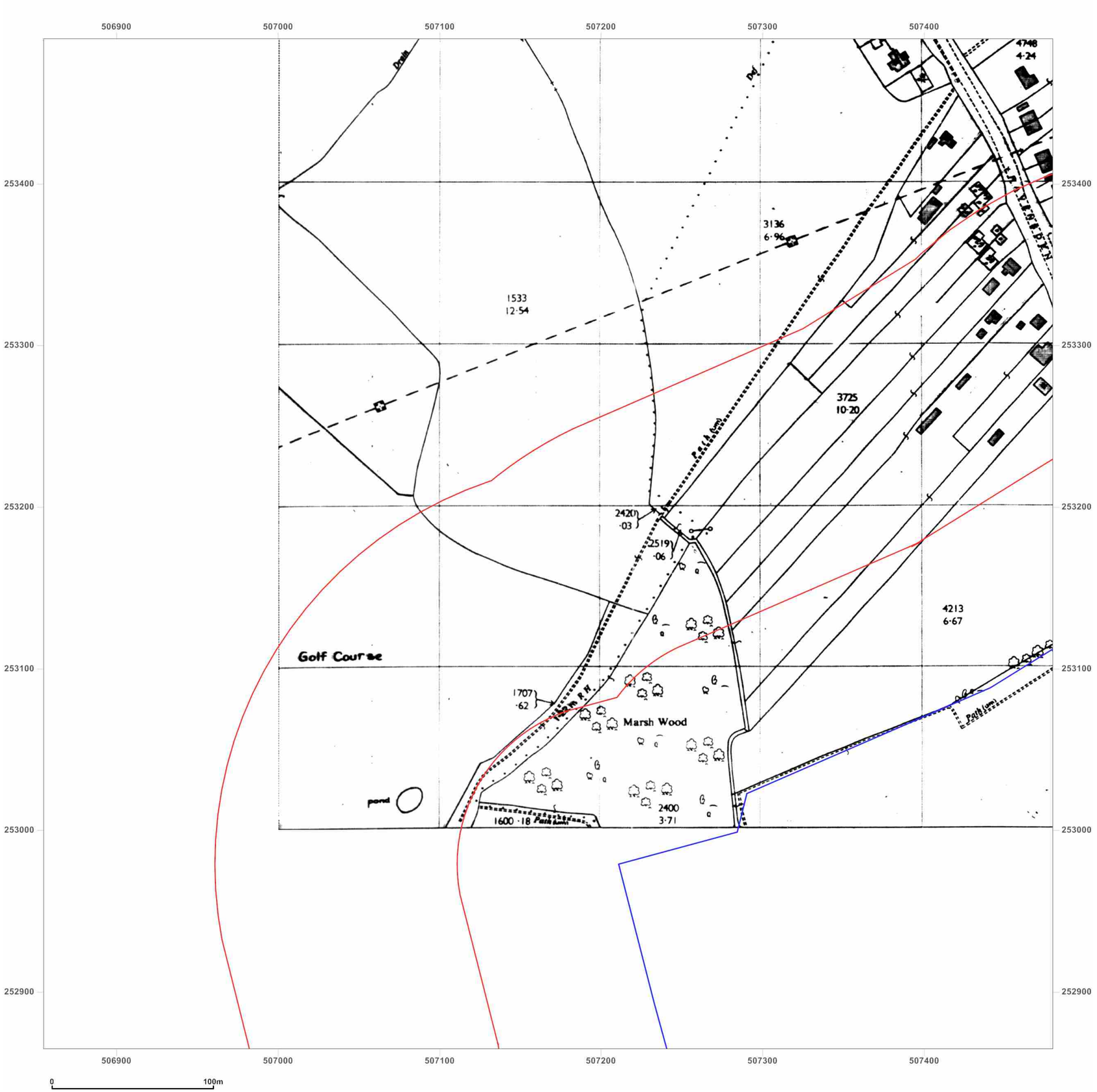

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_1_2
Grid Ref: 507167, 253177

Map Name: National Grid

Map date: **1990**

Scale: 1:2,500

Printed at: 1:2,500

N
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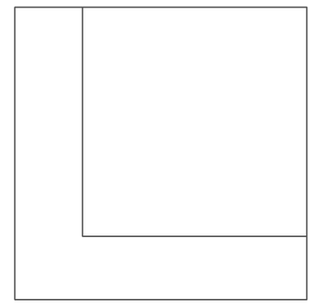
Surveyed 1959
Revised 1990
Edition N/A
Copyright 1990
Levelled 1959



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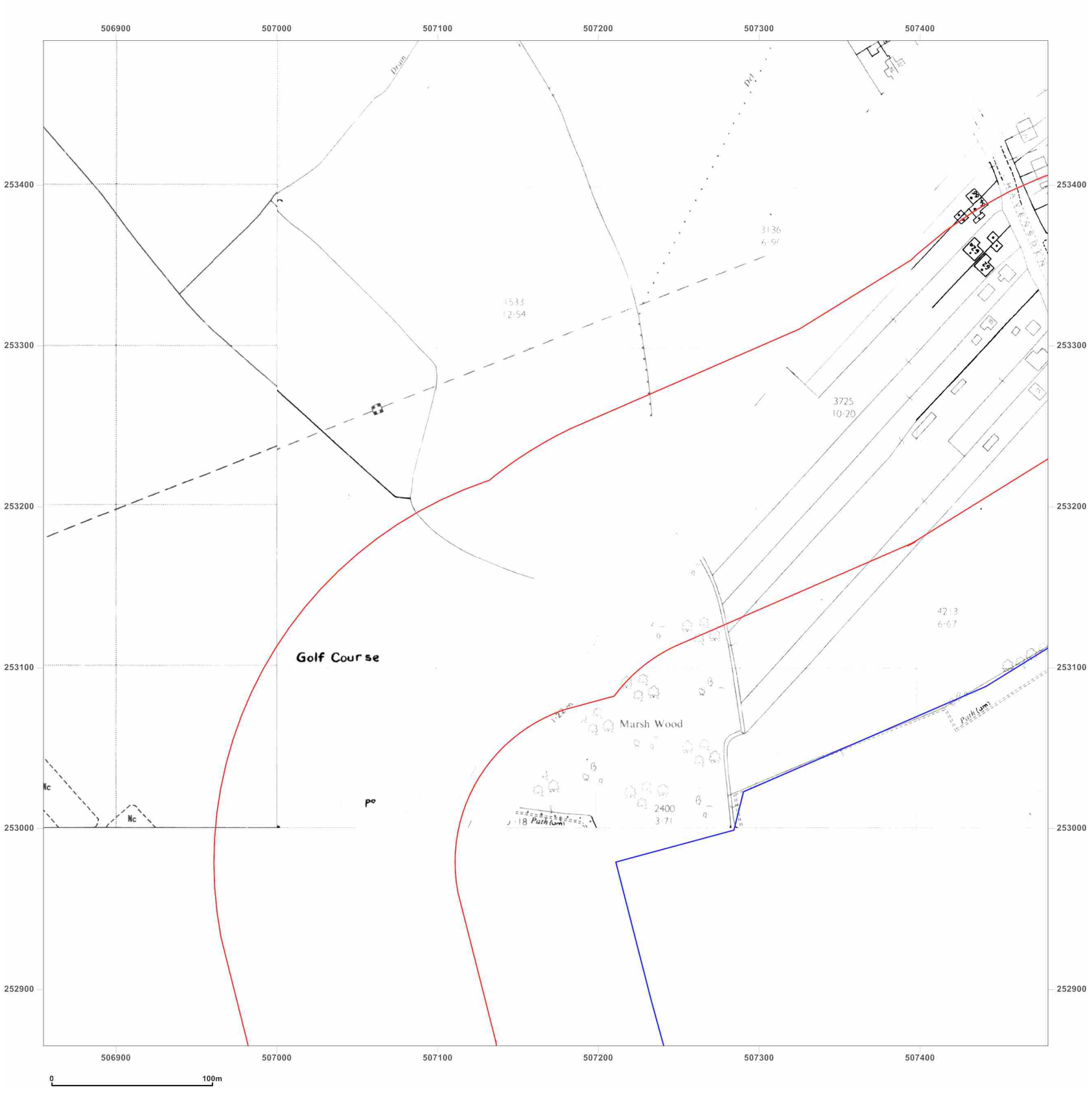

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_1_2
Grid Ref: 507167, 253177

Map Name: National Grid
Map date: **1990-1993**
Scale: 1:2,500
Printed at: 1:2,500

N
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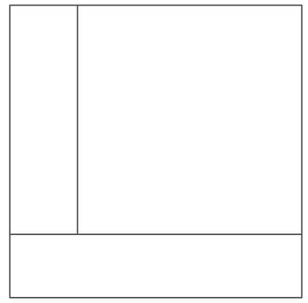
Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1990
Levelled 1959



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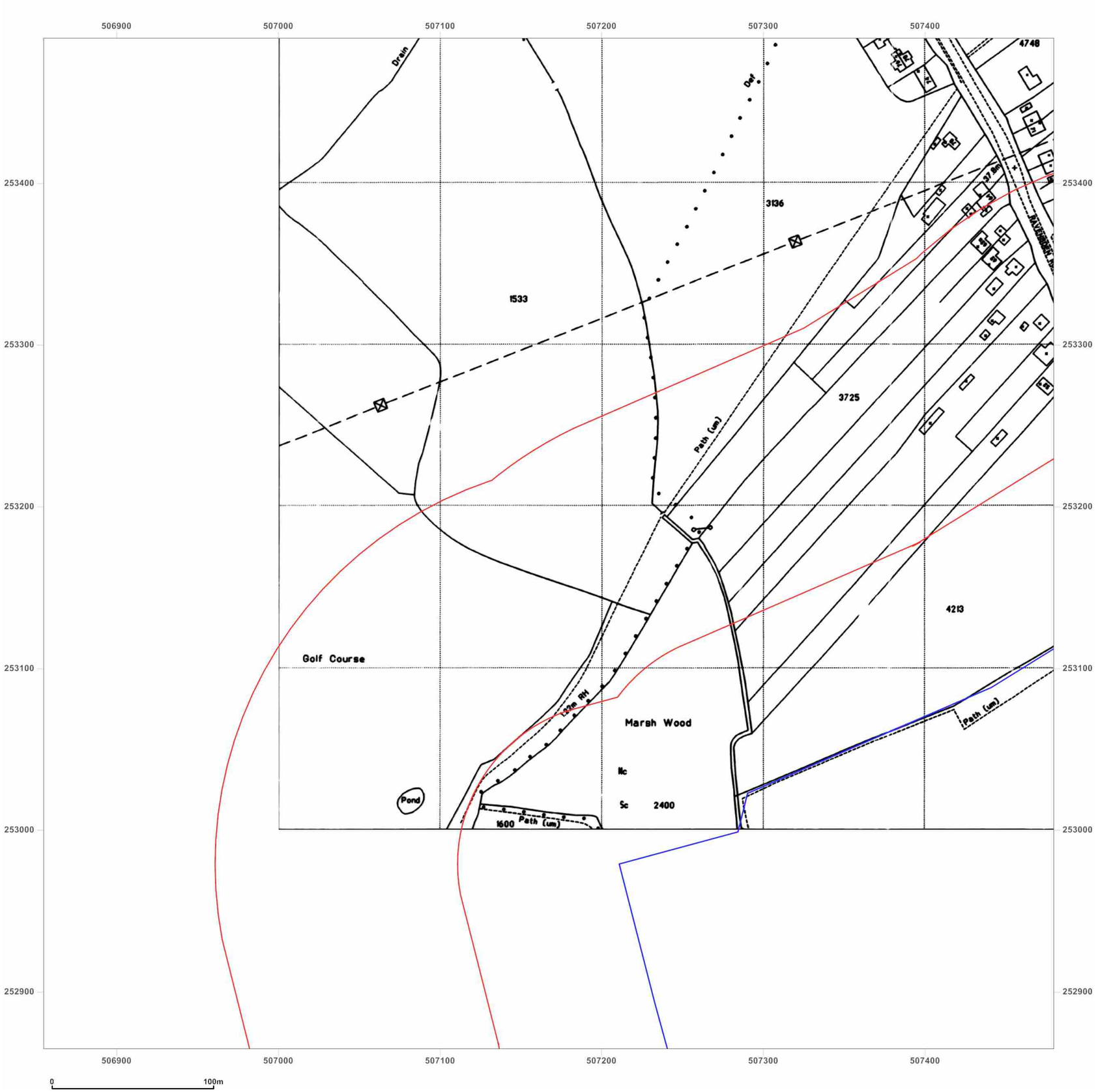

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_1_2
Grid Ref: 507167, 253177

Map Name: National Grid

Map date: **1993**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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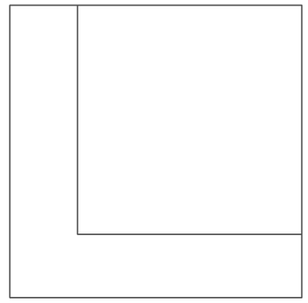
Surveyed N/A
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A



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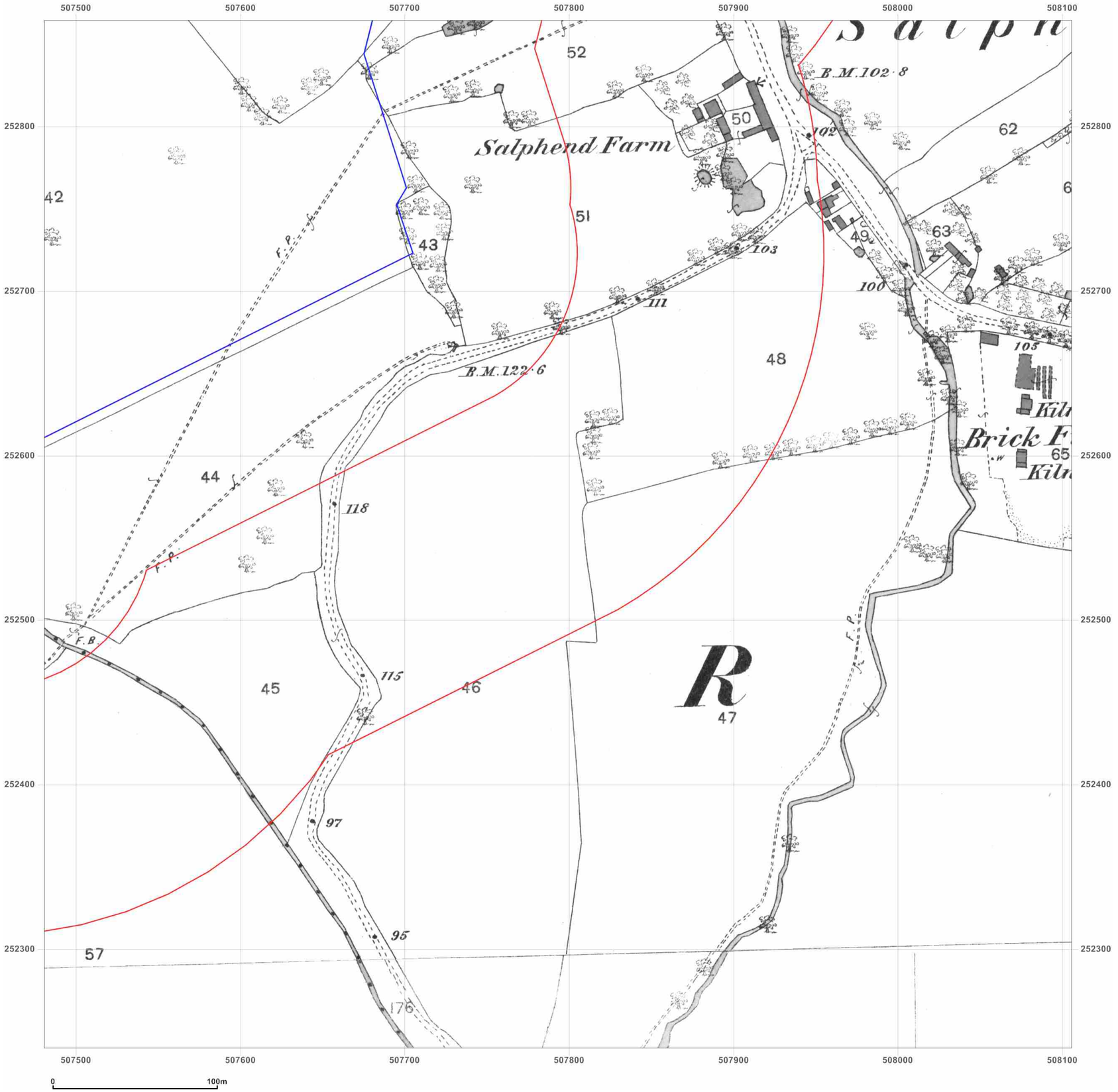

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_2_1
Grid Ref: 507793, 252552

Map Name: County Series

Map date: **1884**

Scale: 1:2,500

Printed at: 1:2,500

N
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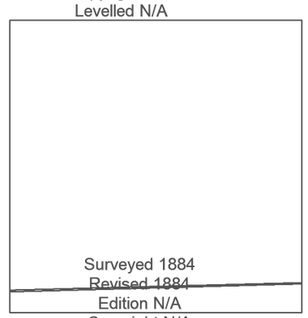
Surveyed 1884
Revised 1884
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1884
Revised 1884
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 08 July 2019

Map legend available at:
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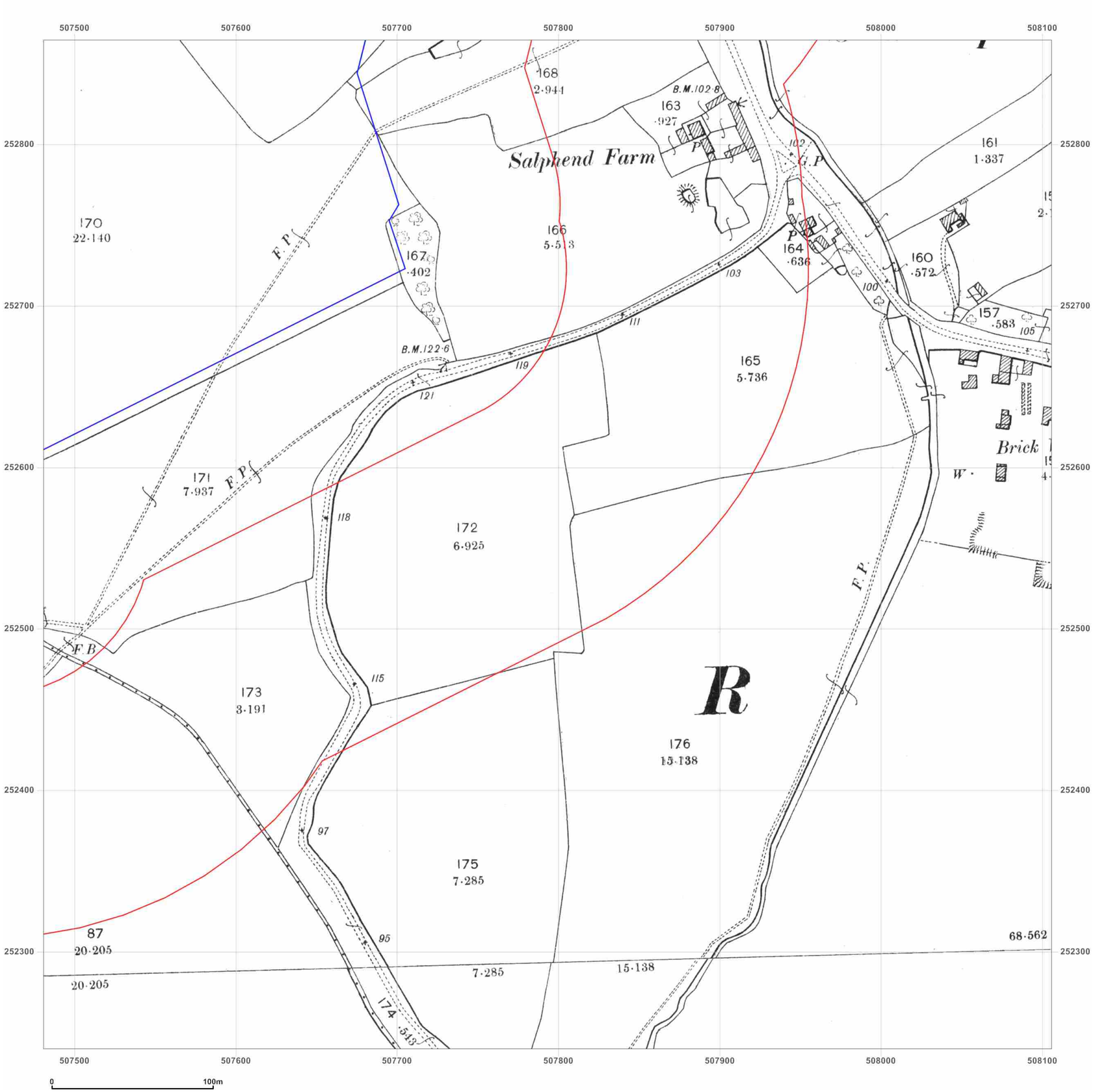


Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_2_1
Grid Ref: 507793, 252552

Map Name: County Series

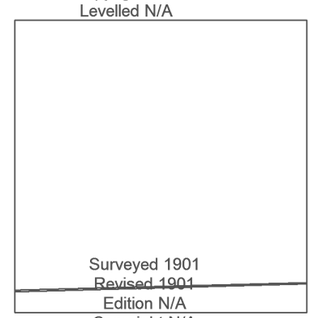
Map date: **1901**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1901
Revised 1901
Edition N/A
Copyright N/A
Levelled N/A



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Production date: 08 July 2019

Map legend available at:
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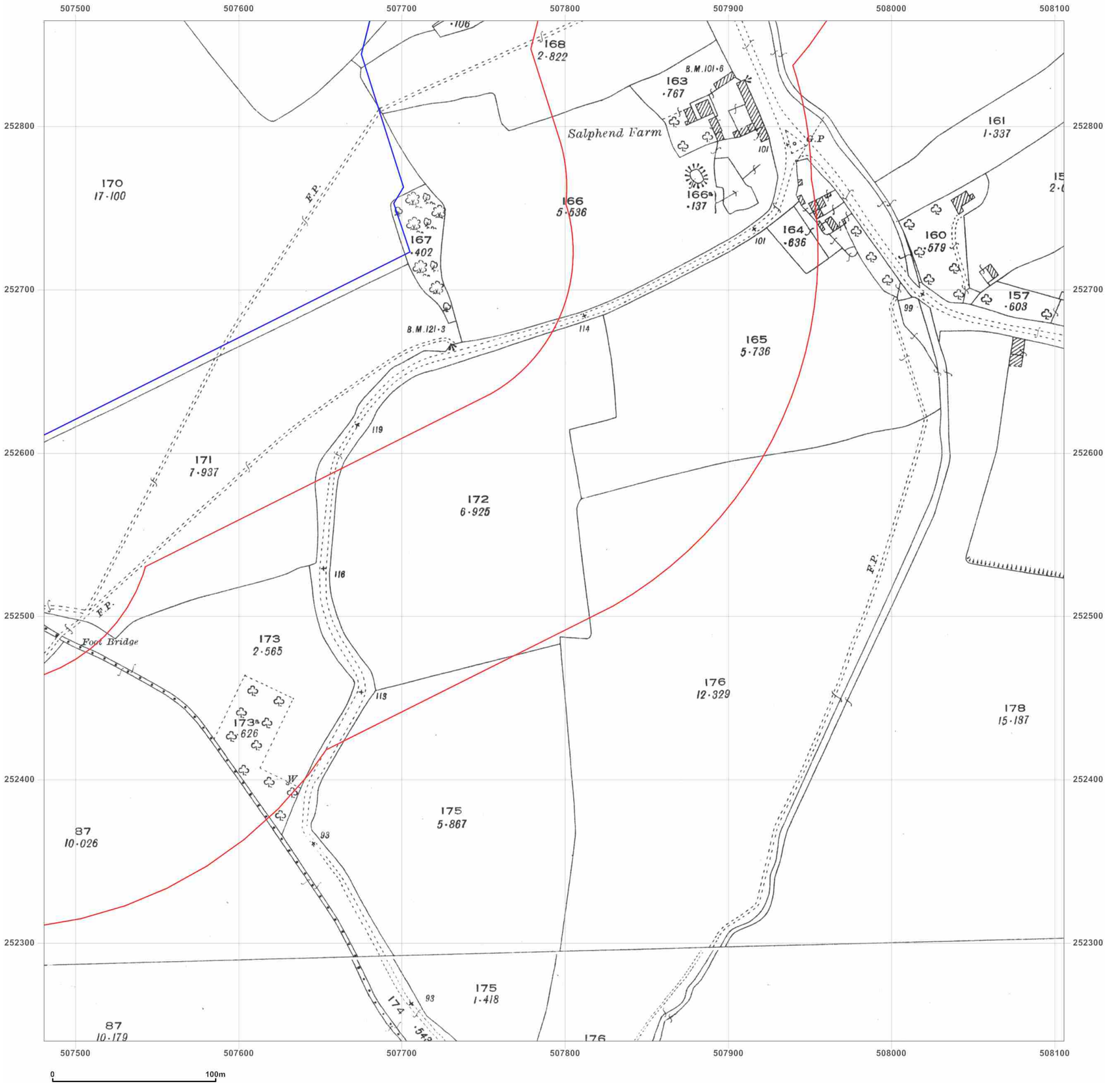

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_2_1
Grid Ref: 507793, 252552

Map Name: County Series

Map date: **1926**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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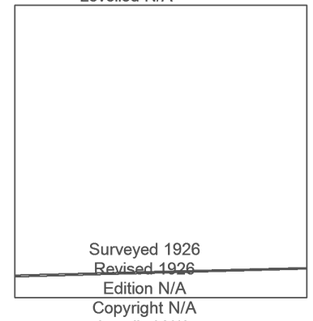
Surveyed 1926
Revised 1926
Edition N/A
Copyright N/A
Levelled N/A



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Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_2_1
Grid Ref: 507793, 252552

Map Name: National Grid

Map date: **1968**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1969
Levelled 1959

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1969
Levelled 1959

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Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_2_1
Grid Ref: 507793, 252552

Map Name: National Grid

Map date: **1969**

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

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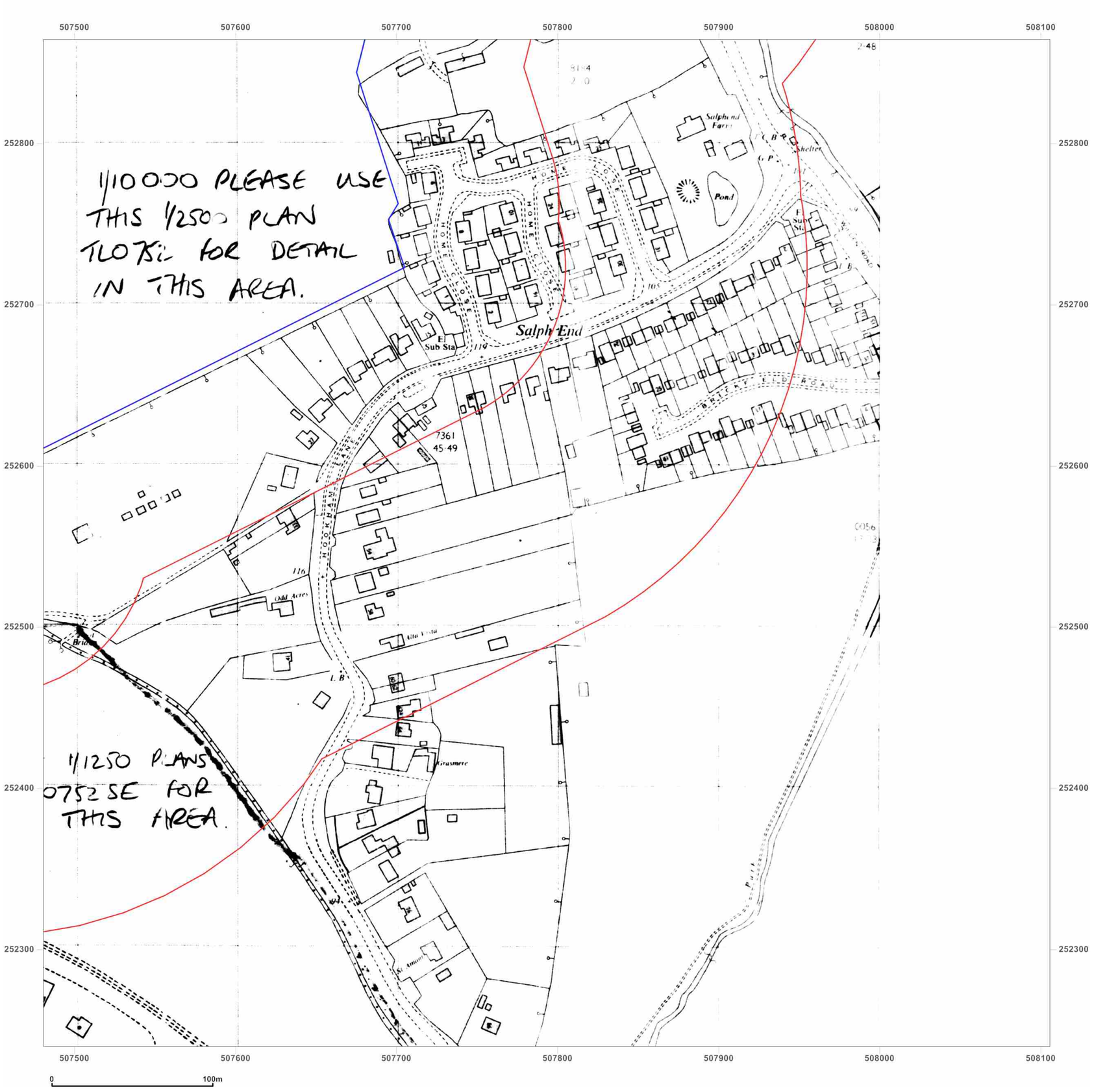

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_2_1
Grid Ref: 507793, 252552

Map Name: National Grid

Map date: **1976**

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

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Production date: 08 July 2019

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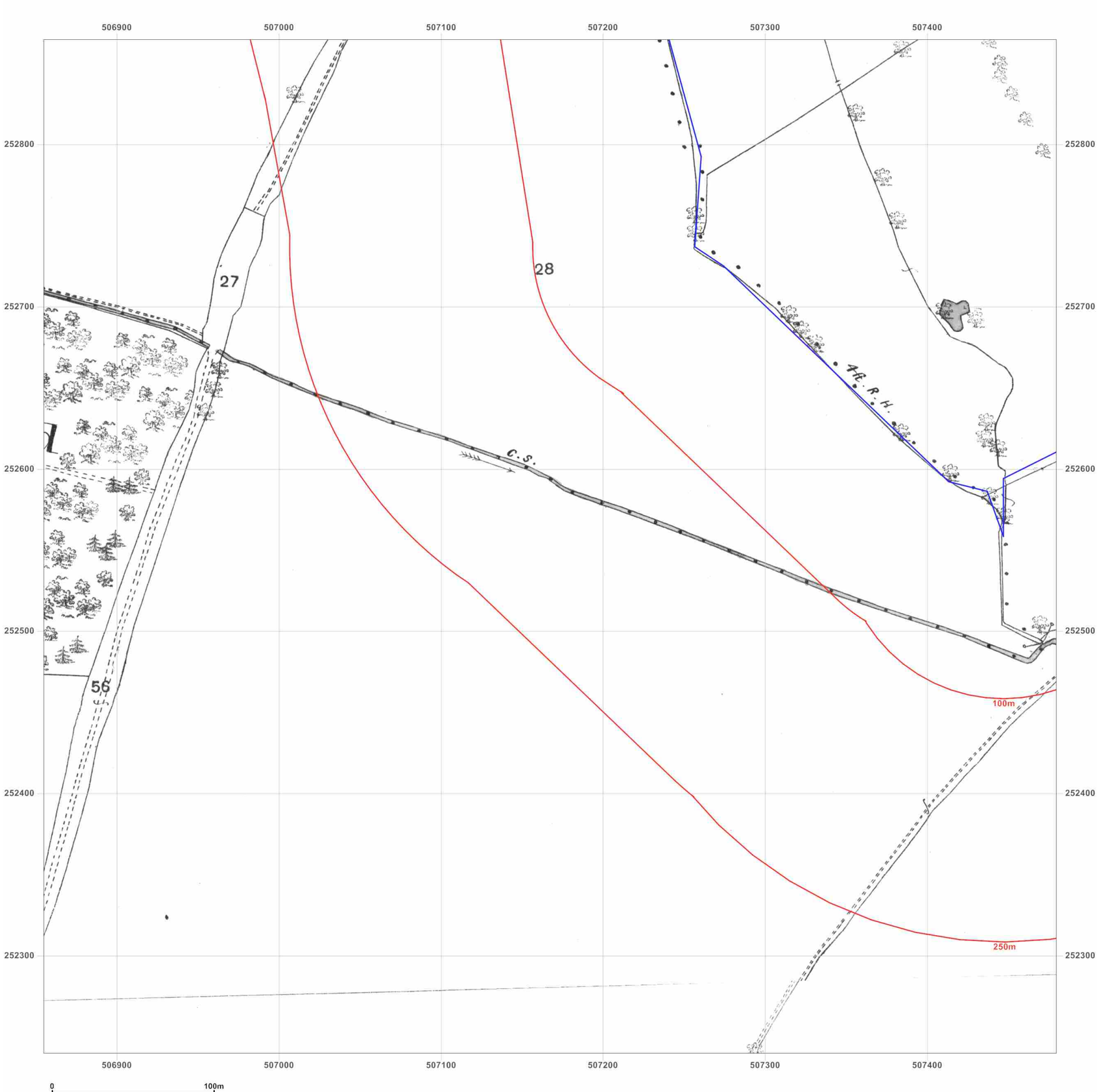

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_1_1
Grid Ref: 507167, 252552

Map Name: County Series

Map date: **1884**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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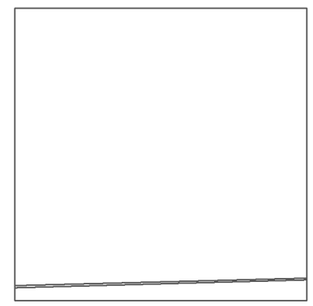
Surveyed 1884
Revised 1884
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1884
Revised 1884
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 08 July 2019

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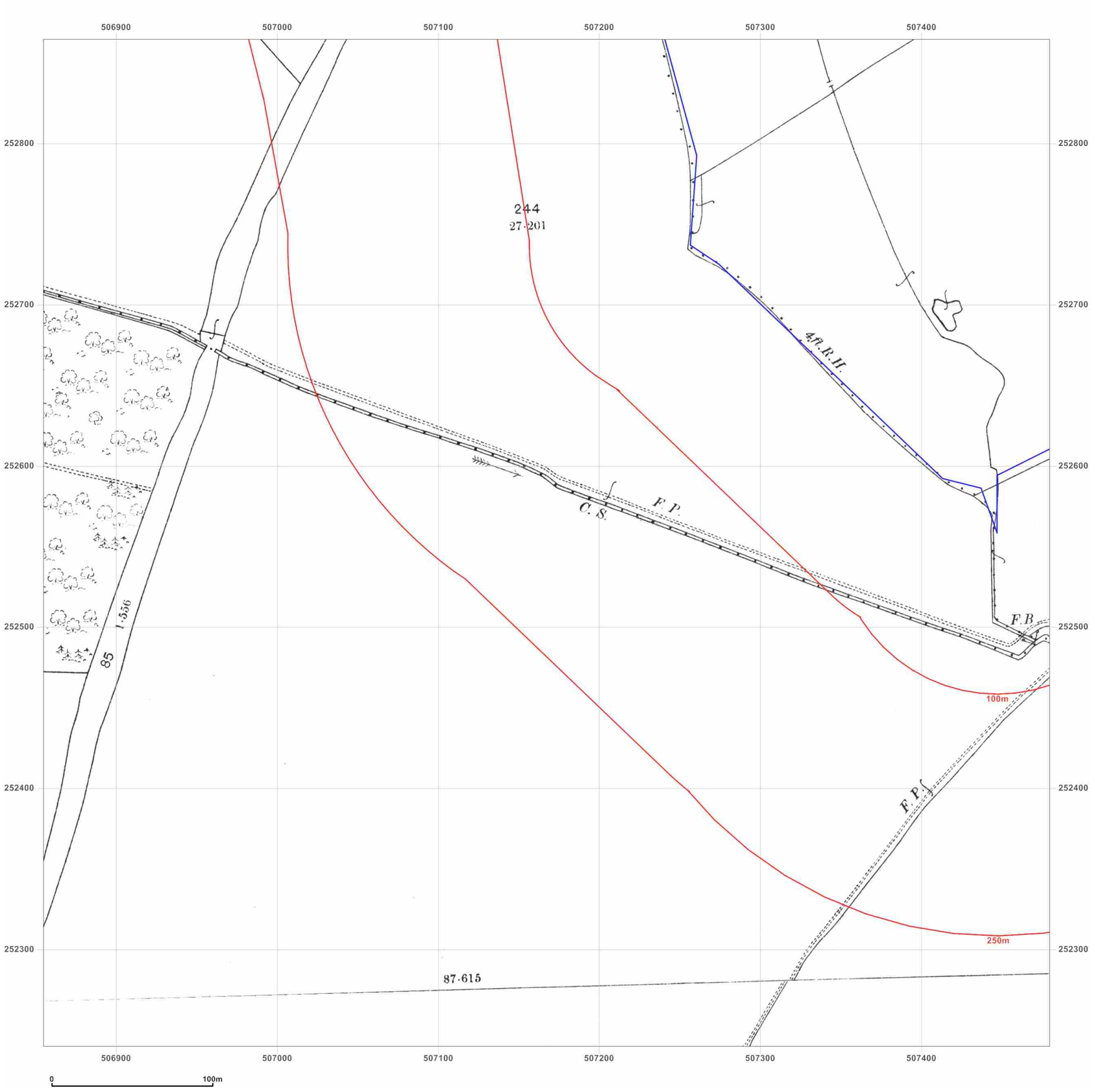

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_1_1
Grid Ref: 507167, 252552

Map Name: County Series

Map date: **1901**

Scale: 1:2,500

Printed at: 1:2,500

N
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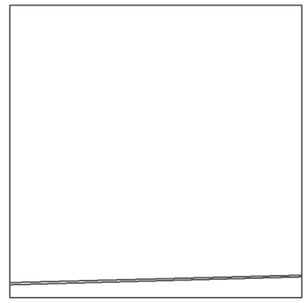
Surveyed 1901
Revised 1901
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1901
Revised 1901
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 08 July 2019

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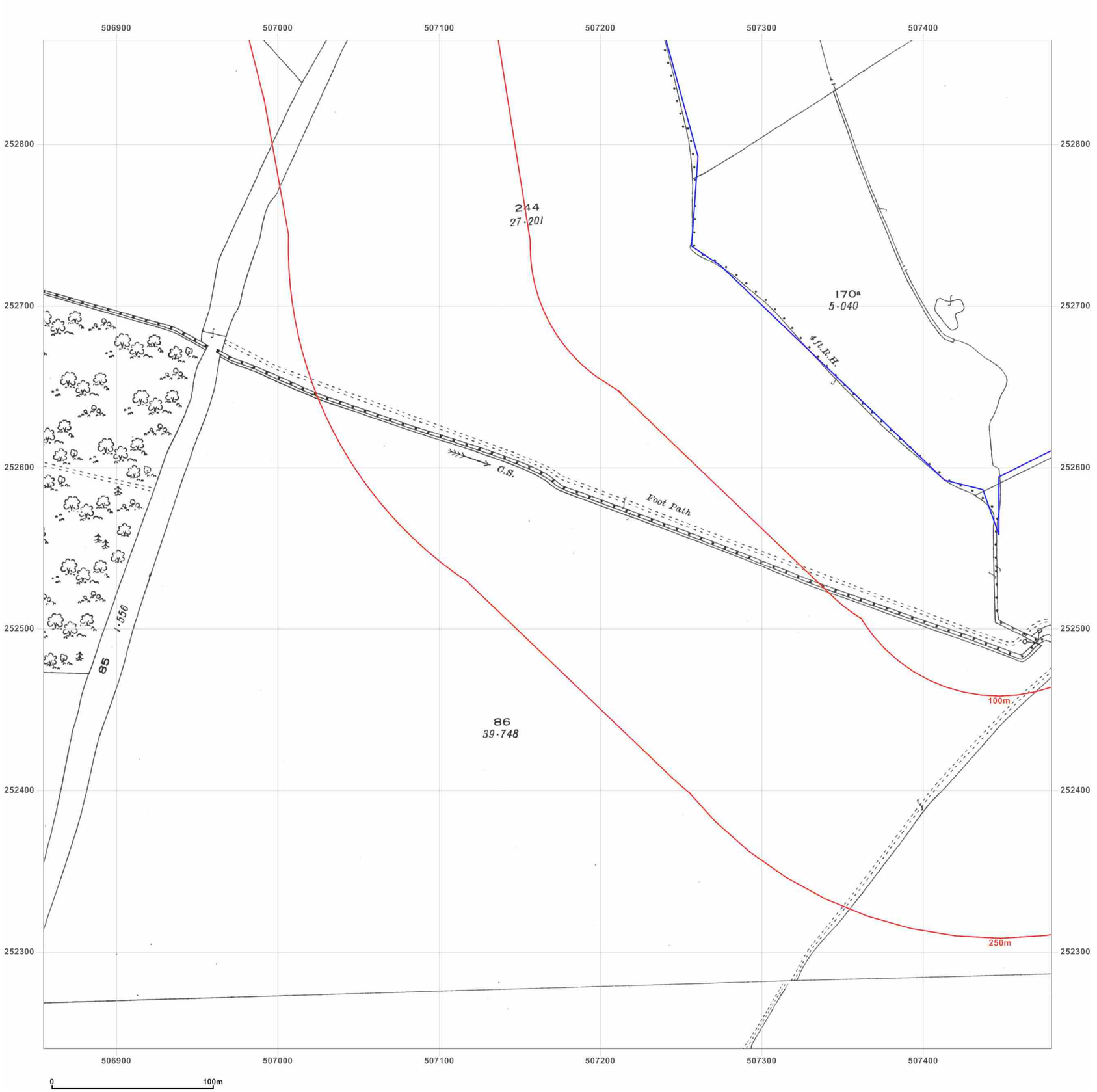

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_1_1
Grid Ref: 507167, 252552

Map Name: County Series

Map date: **1926**

Scale: 1:2,500

Printed at: 1:2,500

N
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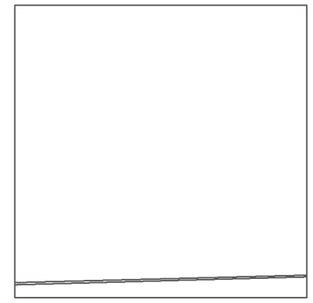
Surveyed 1926
Revised 1926
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1926
Revised 1926
Edition N/A
Copyright N/A
Levelled N/A

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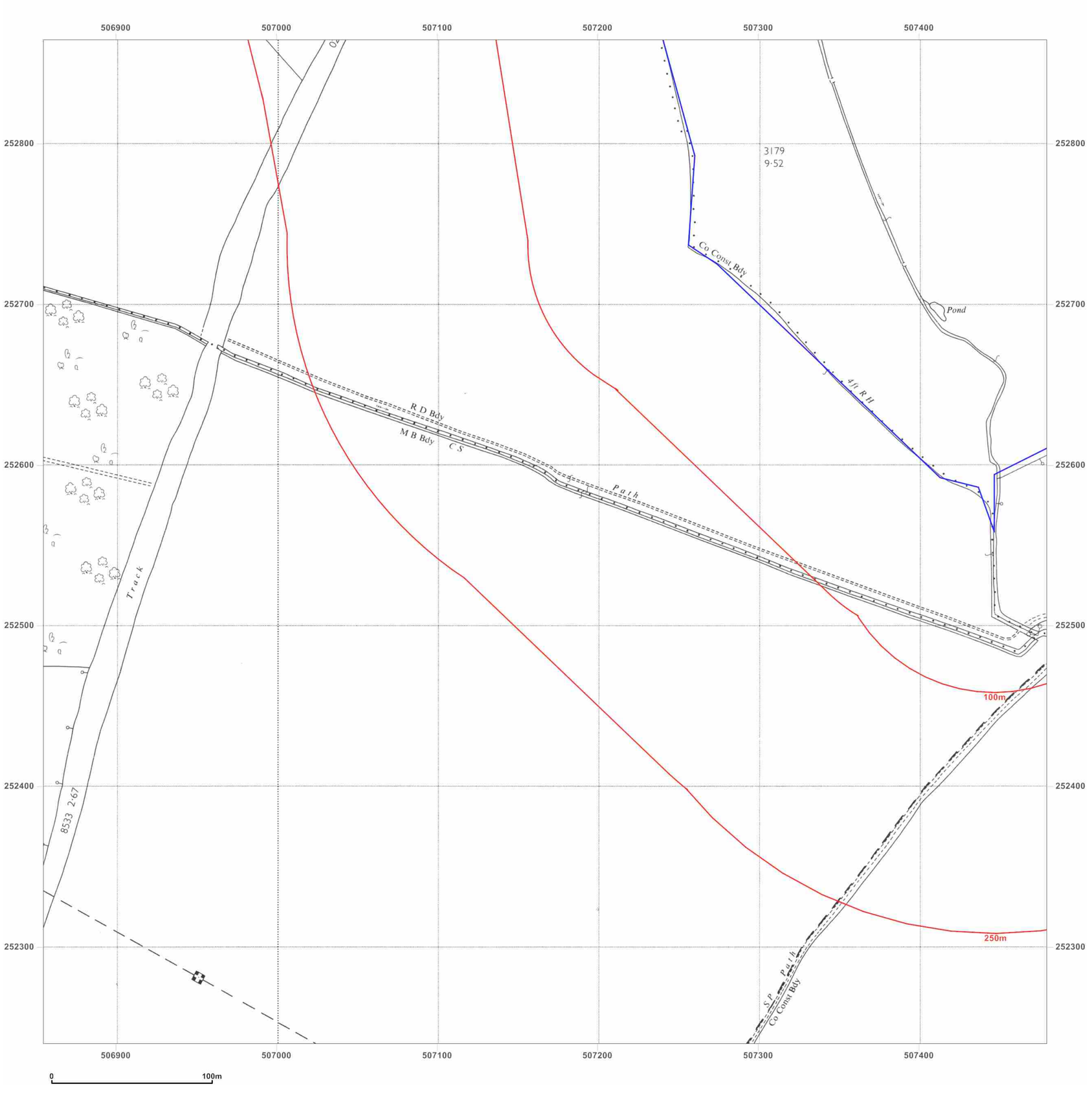

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_1_1
Grid Ref: 507167, 252552

Map Name: National Grid

Map date: **1968**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1969
Levelled 1959

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Production date: 08 July 2019

Map legend available at:
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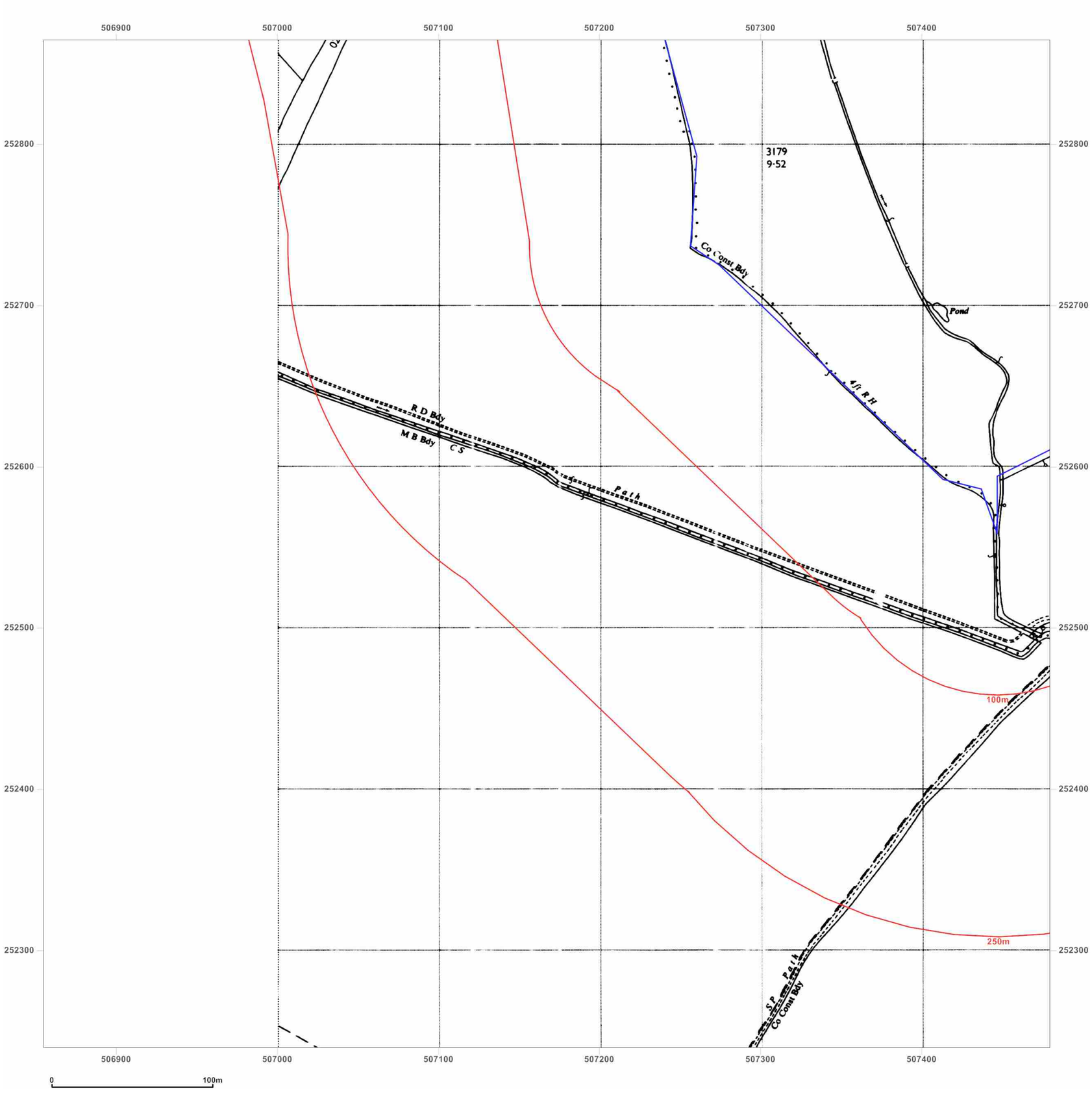

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_1_1
Grid Ref: 507167, 252552

Map Name: National Grid

Map date: **1969**

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

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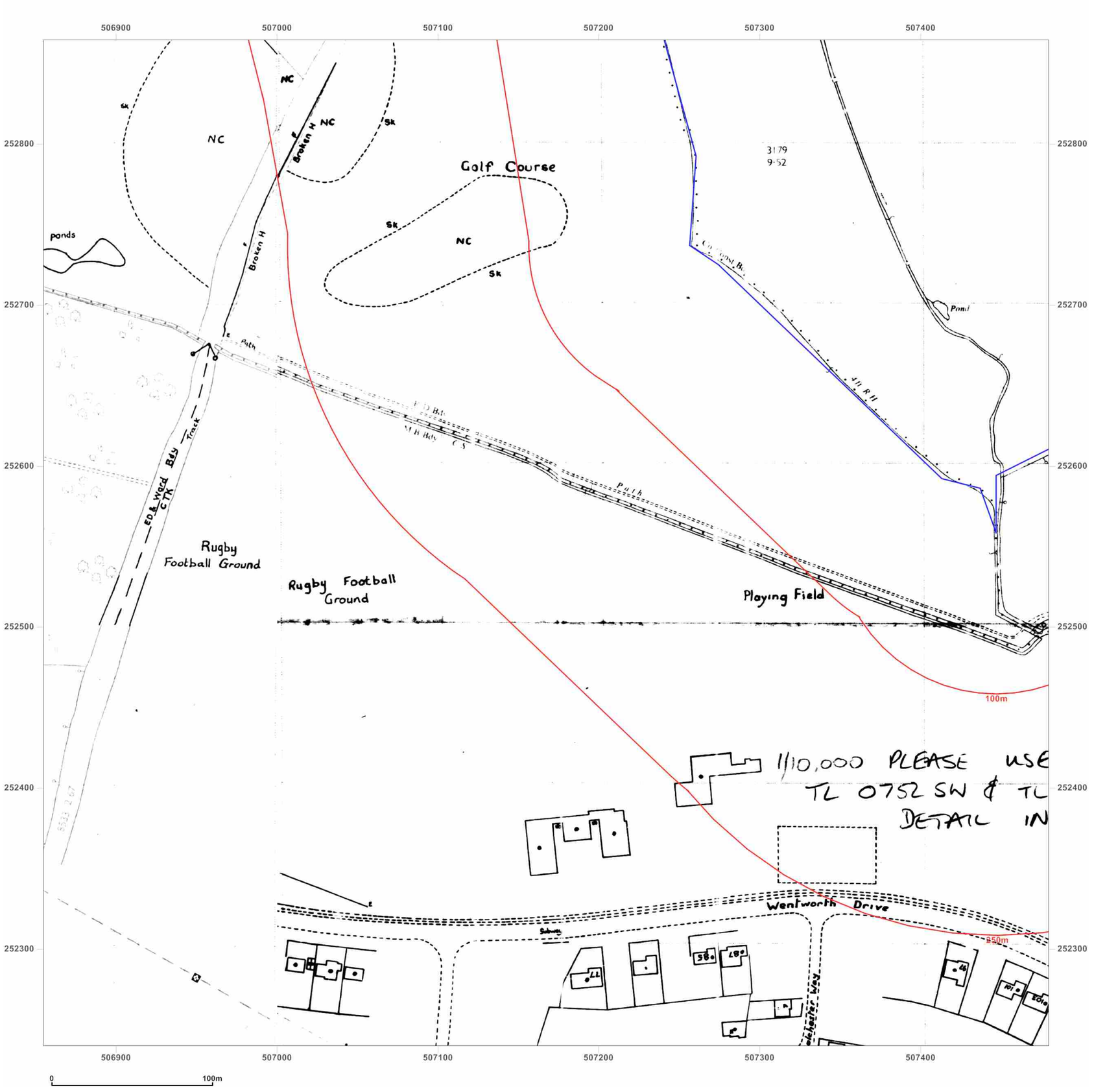

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_1_1
Grid Ref: 507167, 252552

Map Name: National Grid

Map date: **1976-1980**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1980
Levelled 1971

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

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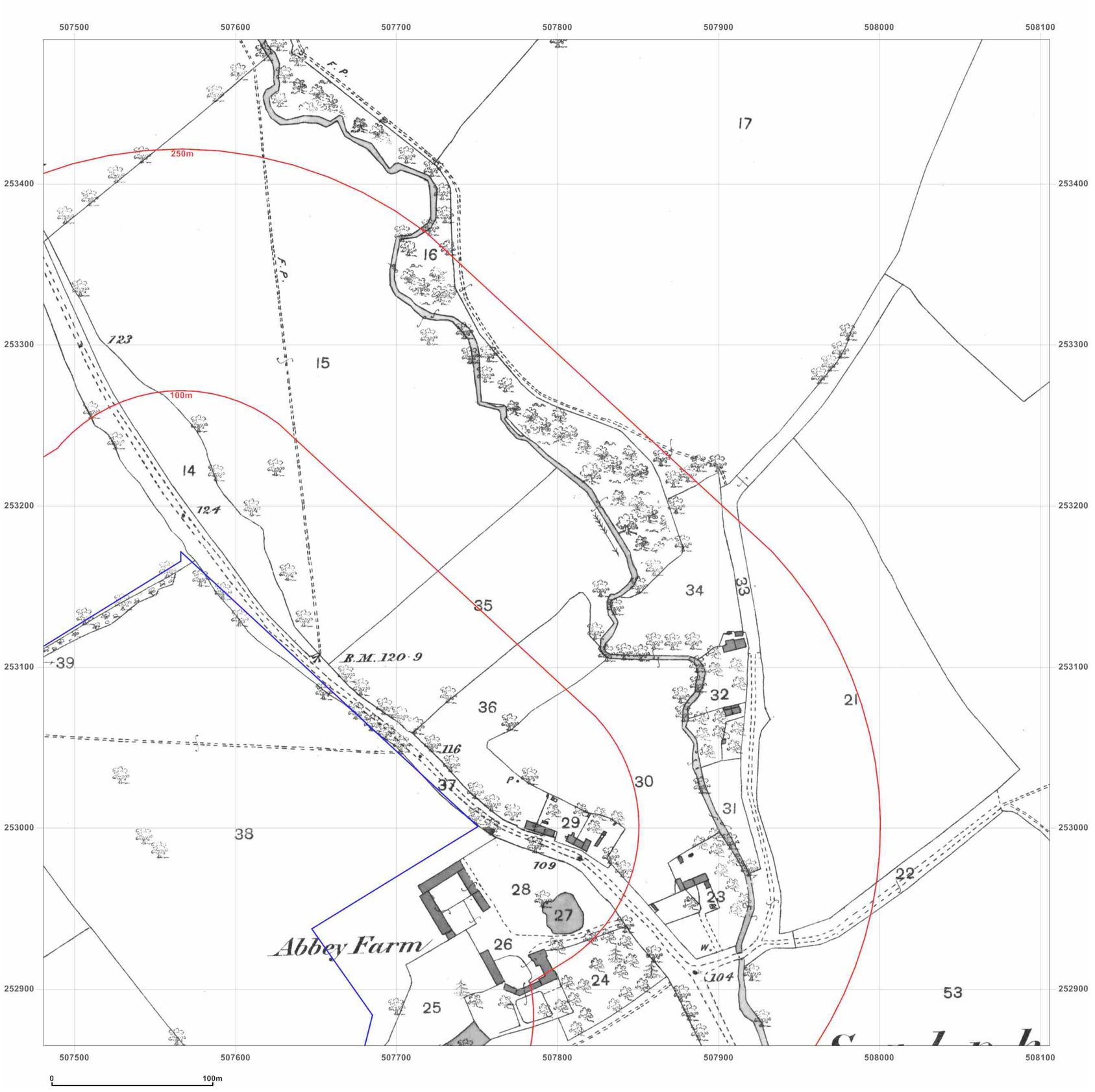

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_2_2
Grid Ref: 507793, 253177

Map Name: County Series

Map date: **1884**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1884
Revised 1884
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 08 July 2019

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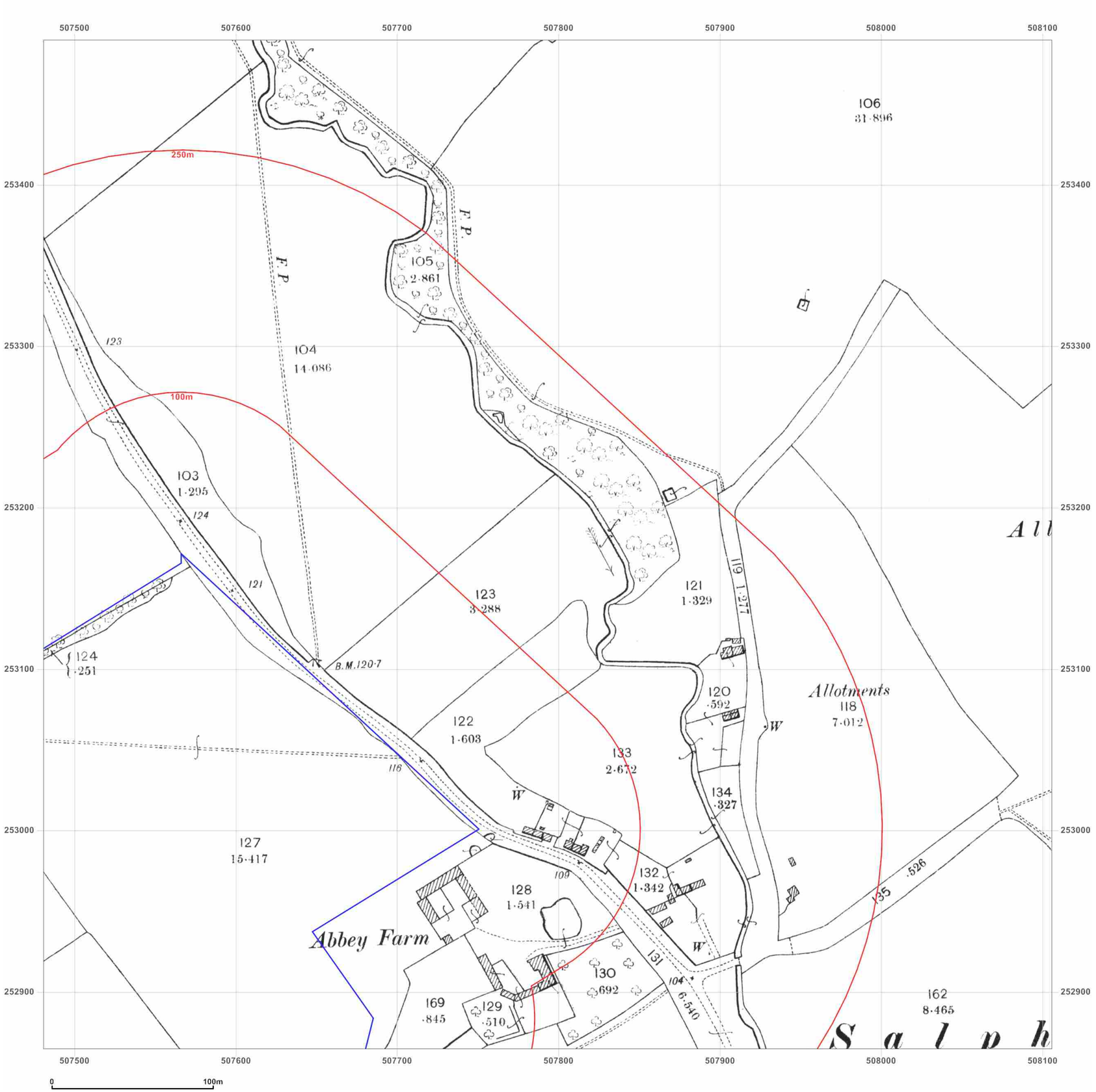

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_2_2
Grid Ref: 507793, 253177

Map Name: County Series

Map date: **1901**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1901
Revised 1901
Edition N/A
Copyright N/A
Levelled N/A

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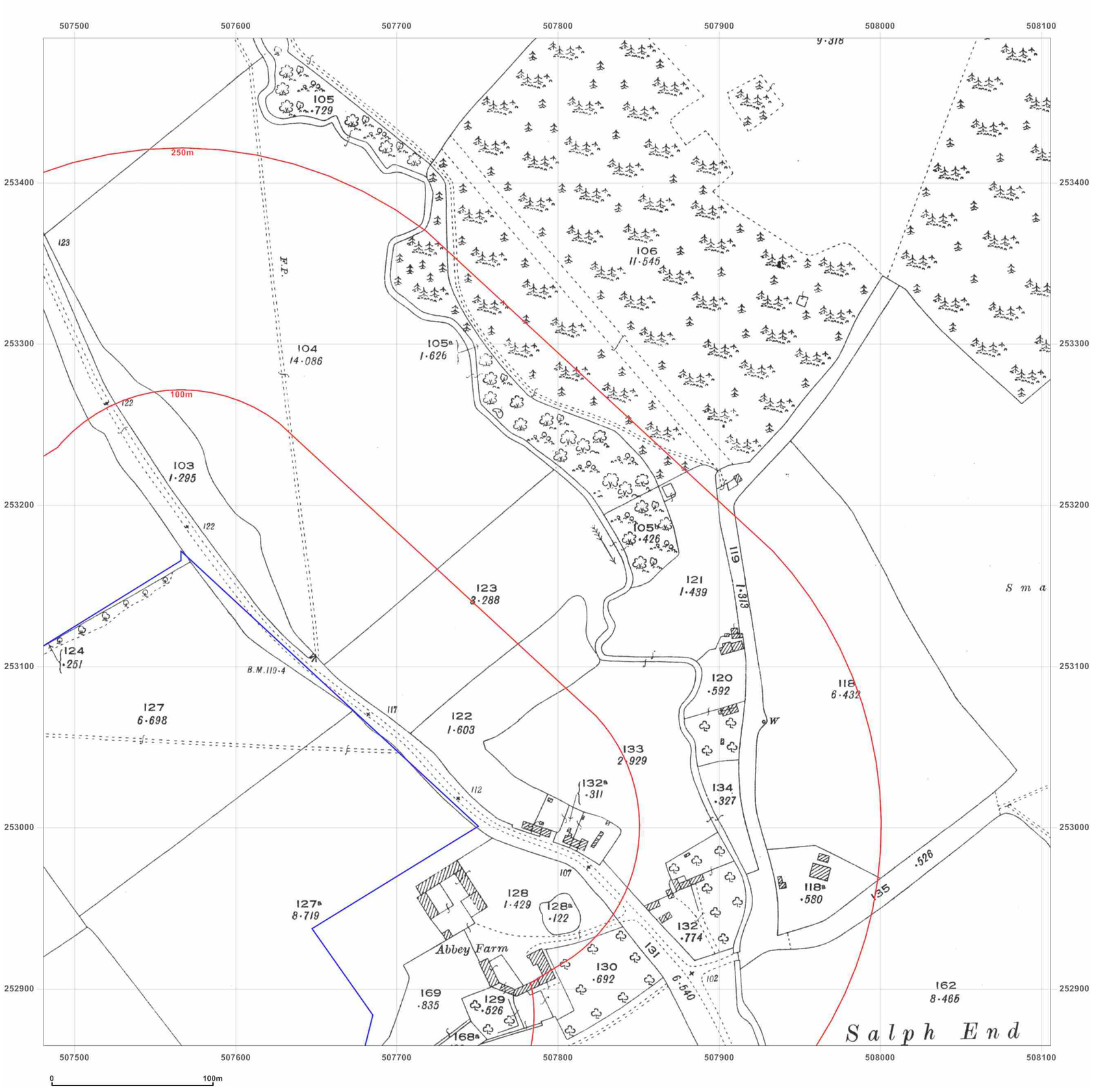

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_2_2
Grid Ref: 507793, 253177

Map Name: County Series

Map date: **1926**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1926
Revised 1926
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 08 July 2019

Map legend available at:
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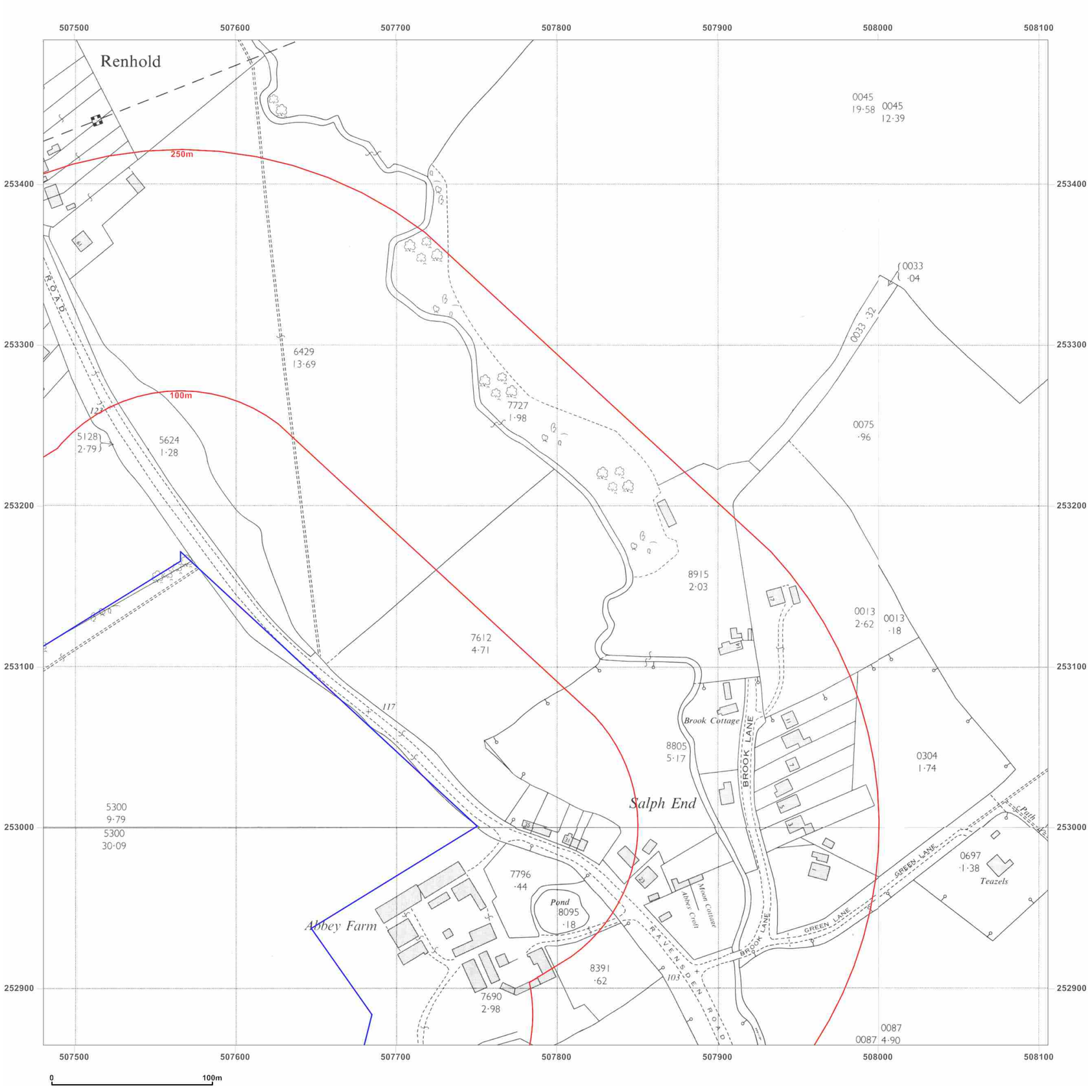

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_2_2
Grid Ref: 507793, 253177

Map Name: National Grid

Map date: **1968**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1968
Revised 1968
Edition N/A
Copyright 1969
Levelled 1959

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1970
Levelled 1959

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1969
Levelled 1959

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1969
Levelled 1959

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Production date: 08 July 2019

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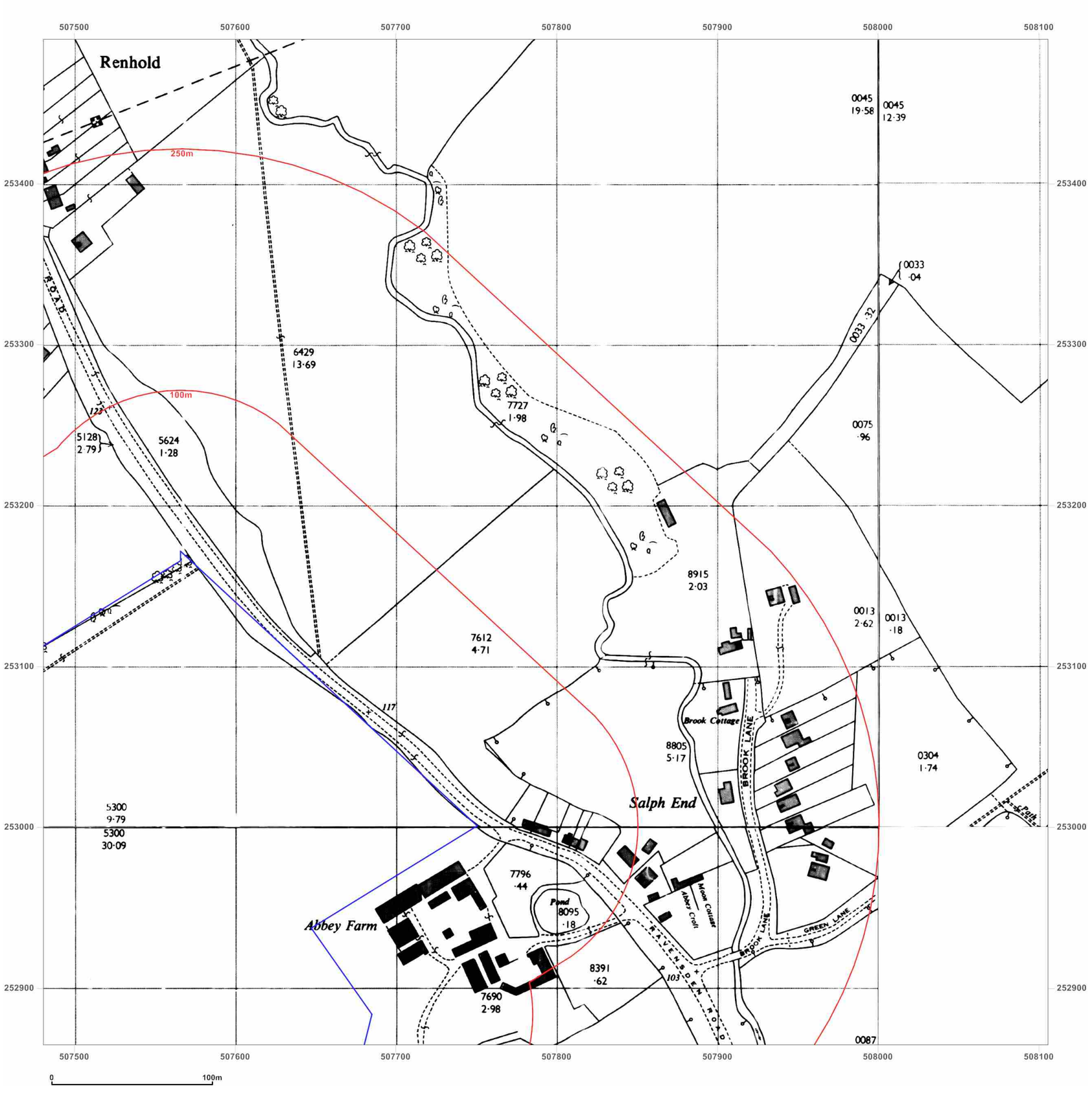

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_2_2
Grid Ref: 507793, 253177

Map Name: National Grid

Map date: **1969-1970**

Scale: 1:2,500

Printed at: 1:2,500

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

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

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

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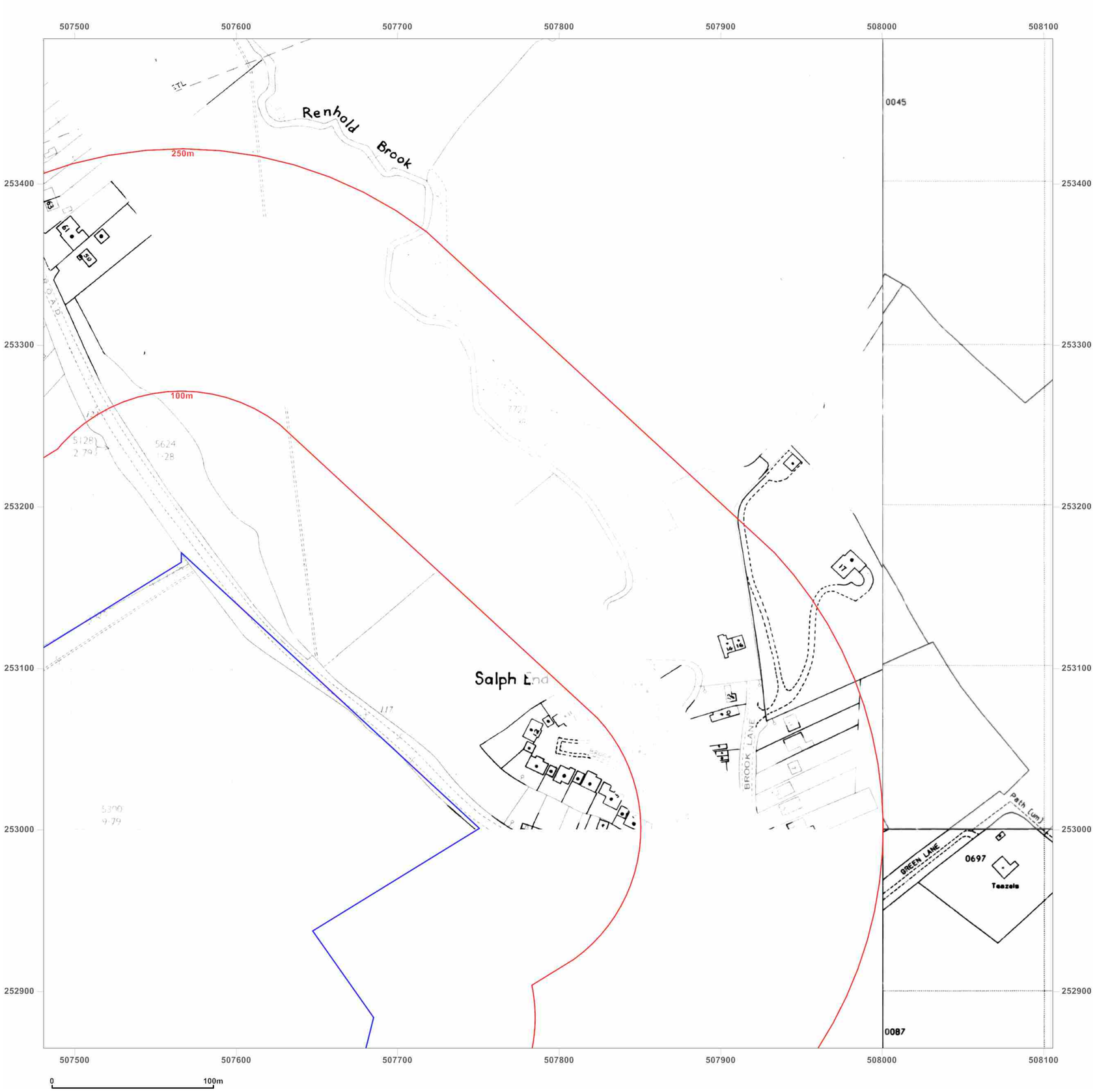

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_2_2
Grid Ref: 507793, 253177

Map Name: National Grid

Map date: **1990-1993**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1990
Levelled 1959

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

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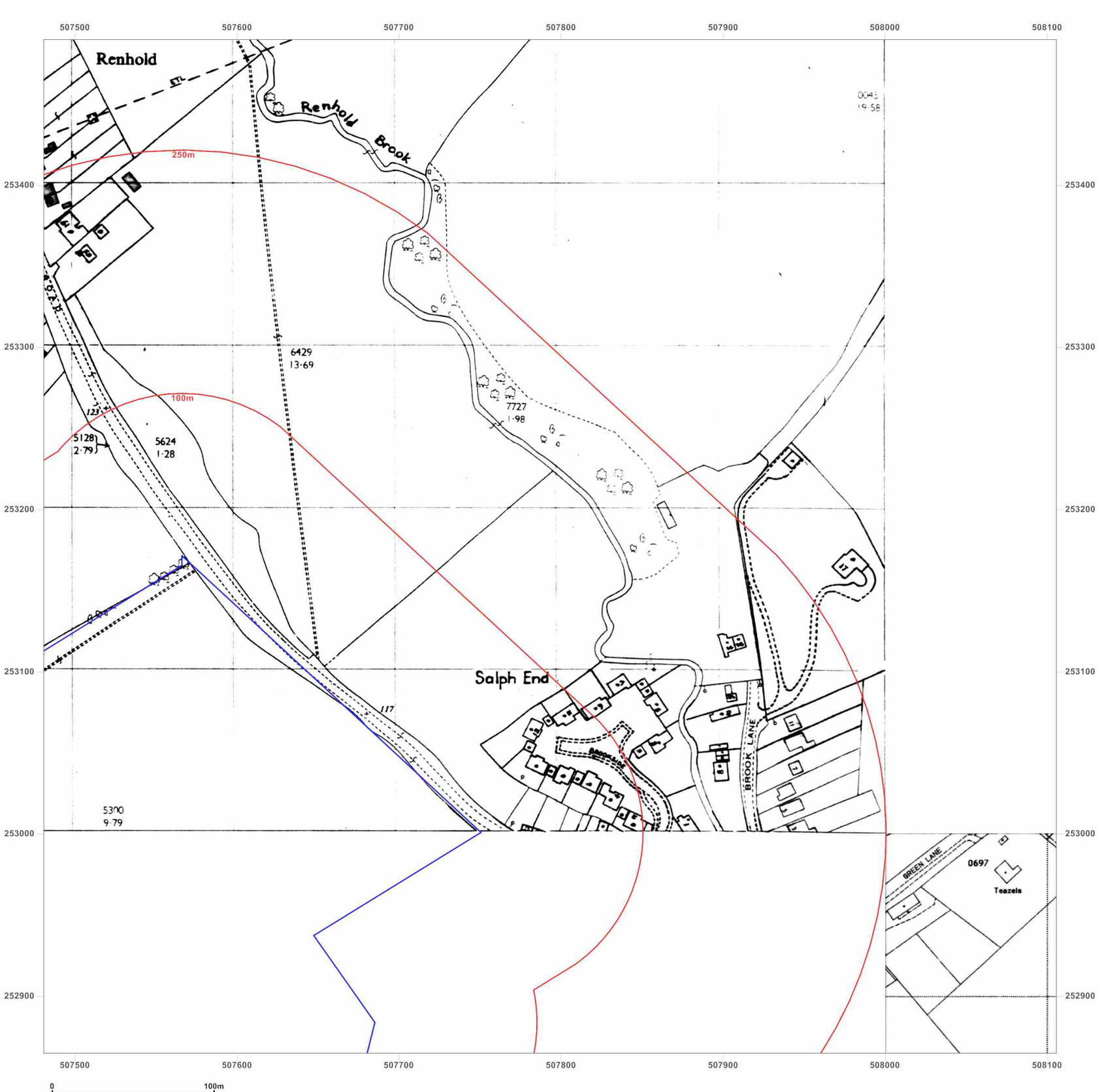

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_2_2
Grid Ref: 507793, 253177

Map Name: National Grid

Map date: **1990-1995**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1959
Revised 1990
Edition N/A
Copyright 1990
Levelled 1959

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

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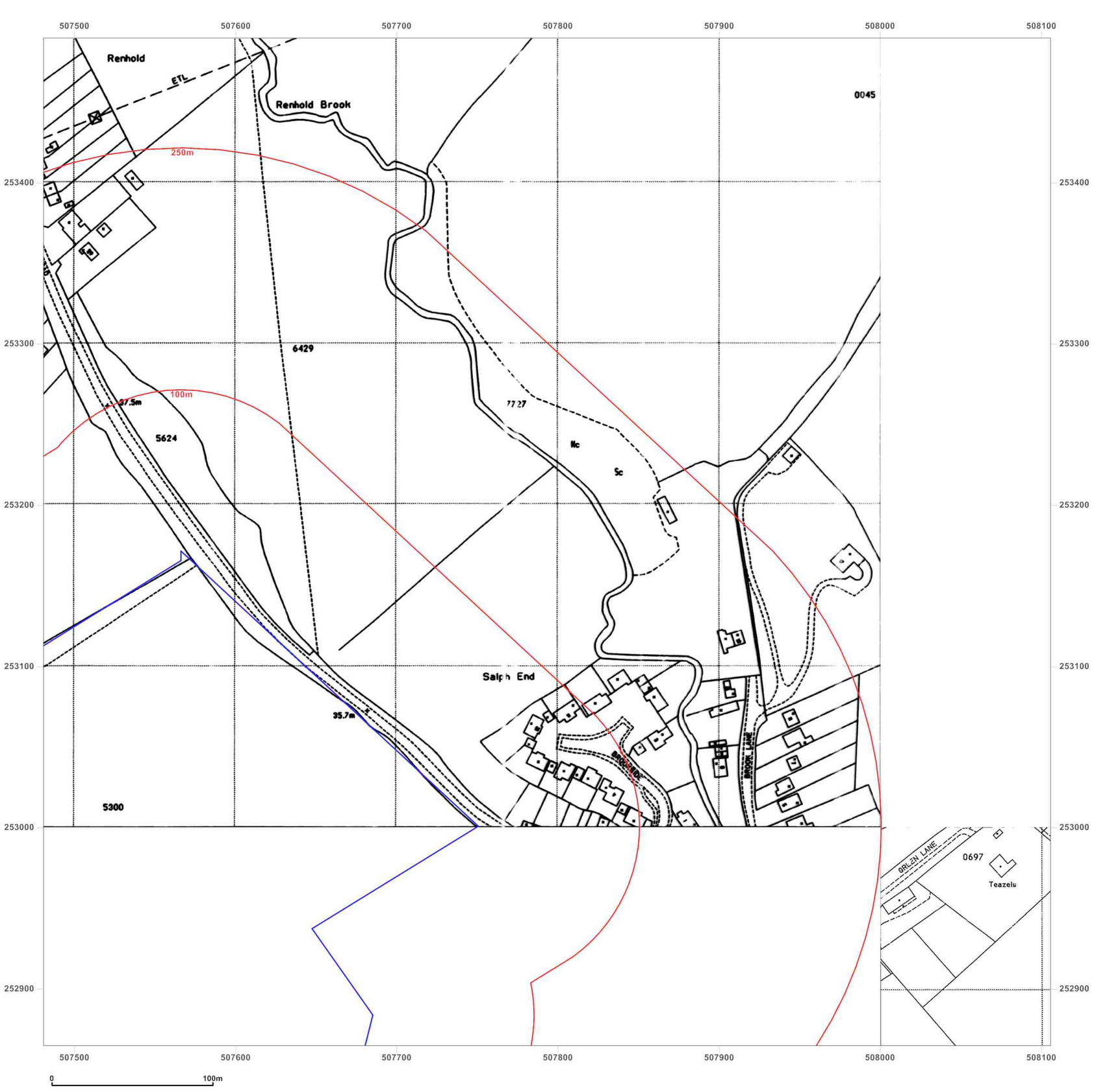

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_2_2
Grid Ref: 507793, 253177

Map Name: National Grid

Map date: **1993-1995**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

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

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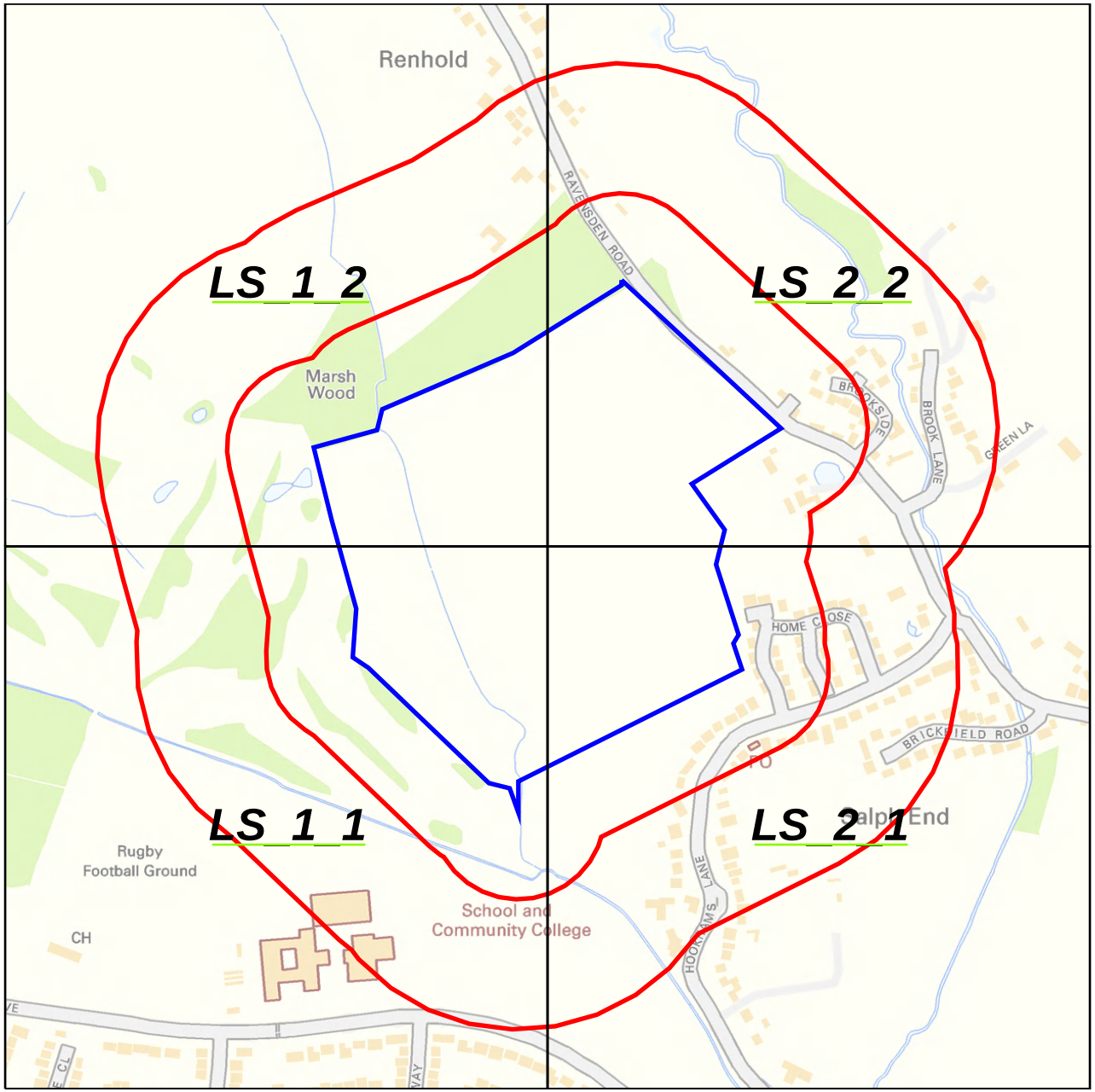

Groundsure INSIGHTS

N
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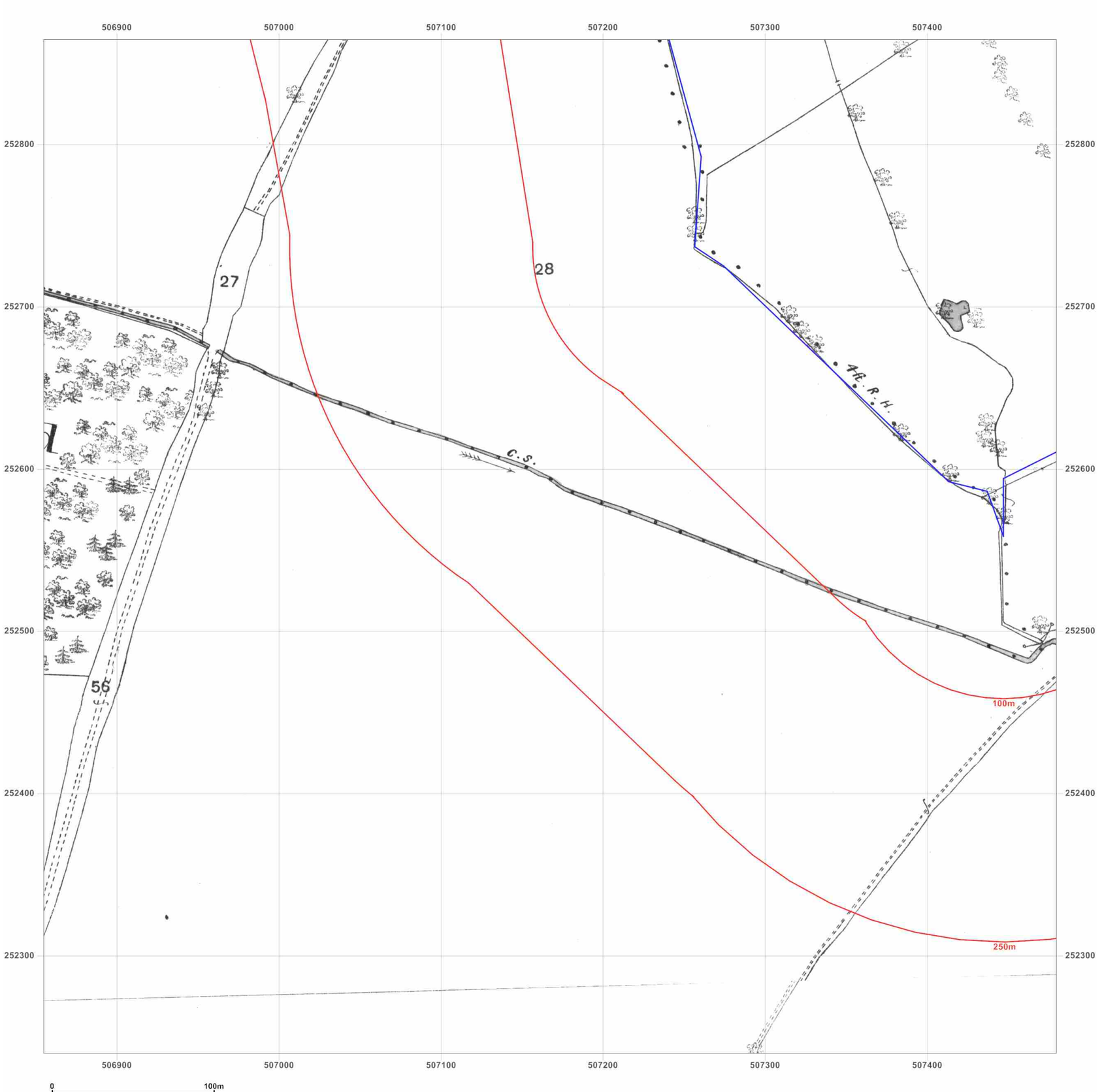
1:2500 Scale Grid Index



Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_1_1
Grid Ref: 507167, 252552

Map Name: County Series

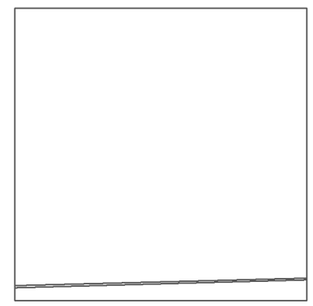
Map date: **1884**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1884
Revised 1884
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1884
Revised 1884
Edition N/A
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Levelled N/A

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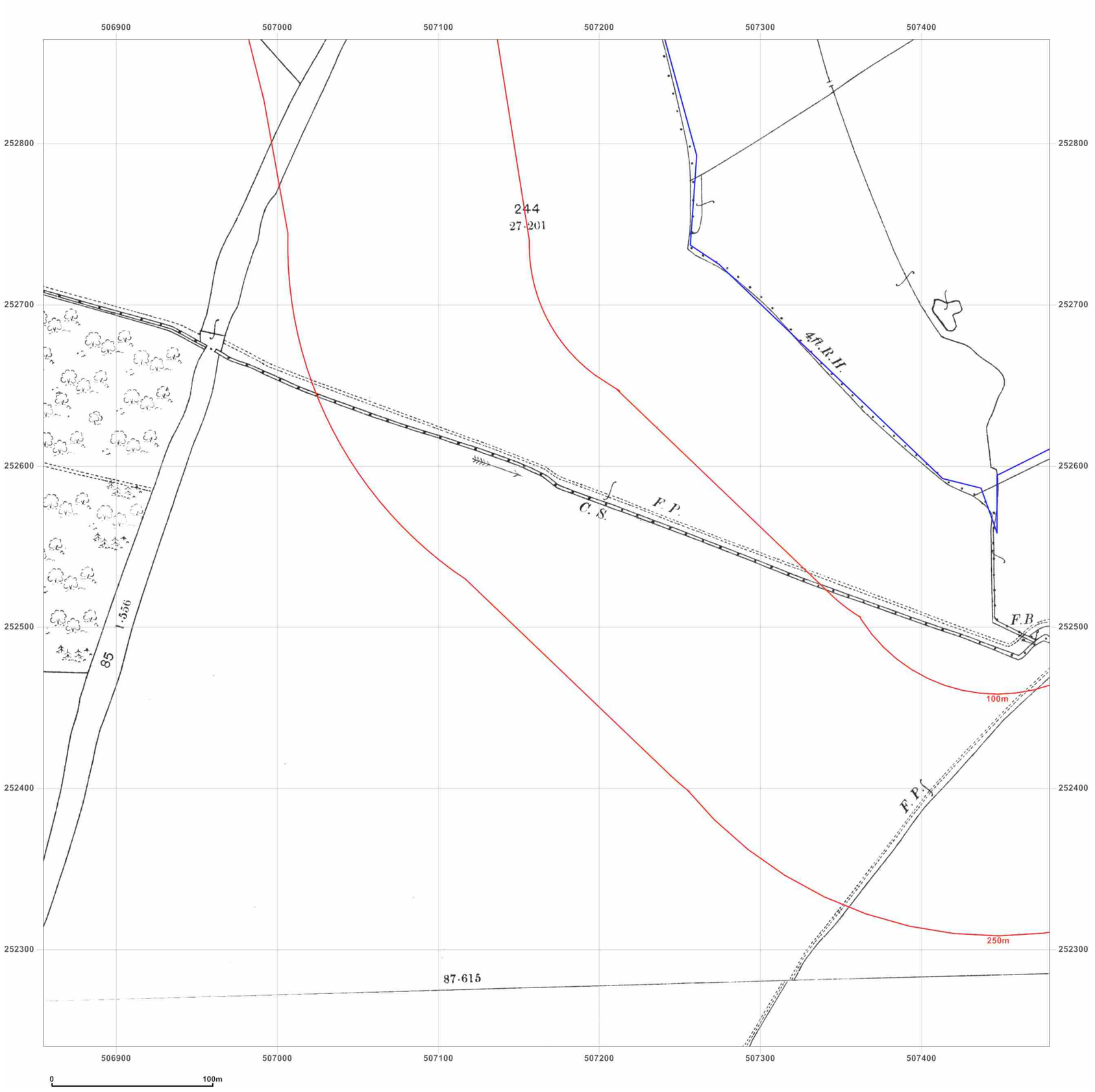


Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_1_1
Grid Ref: 507167, 252552

Map Name: County Series

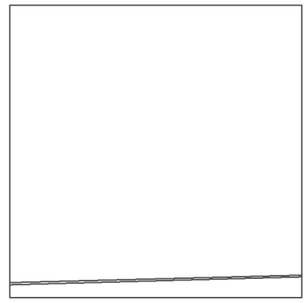
Map date: **1901**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1901
Revised 1901
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1901
Revised 1901
Edition N/A
Copyright N/A
Levelled N/A

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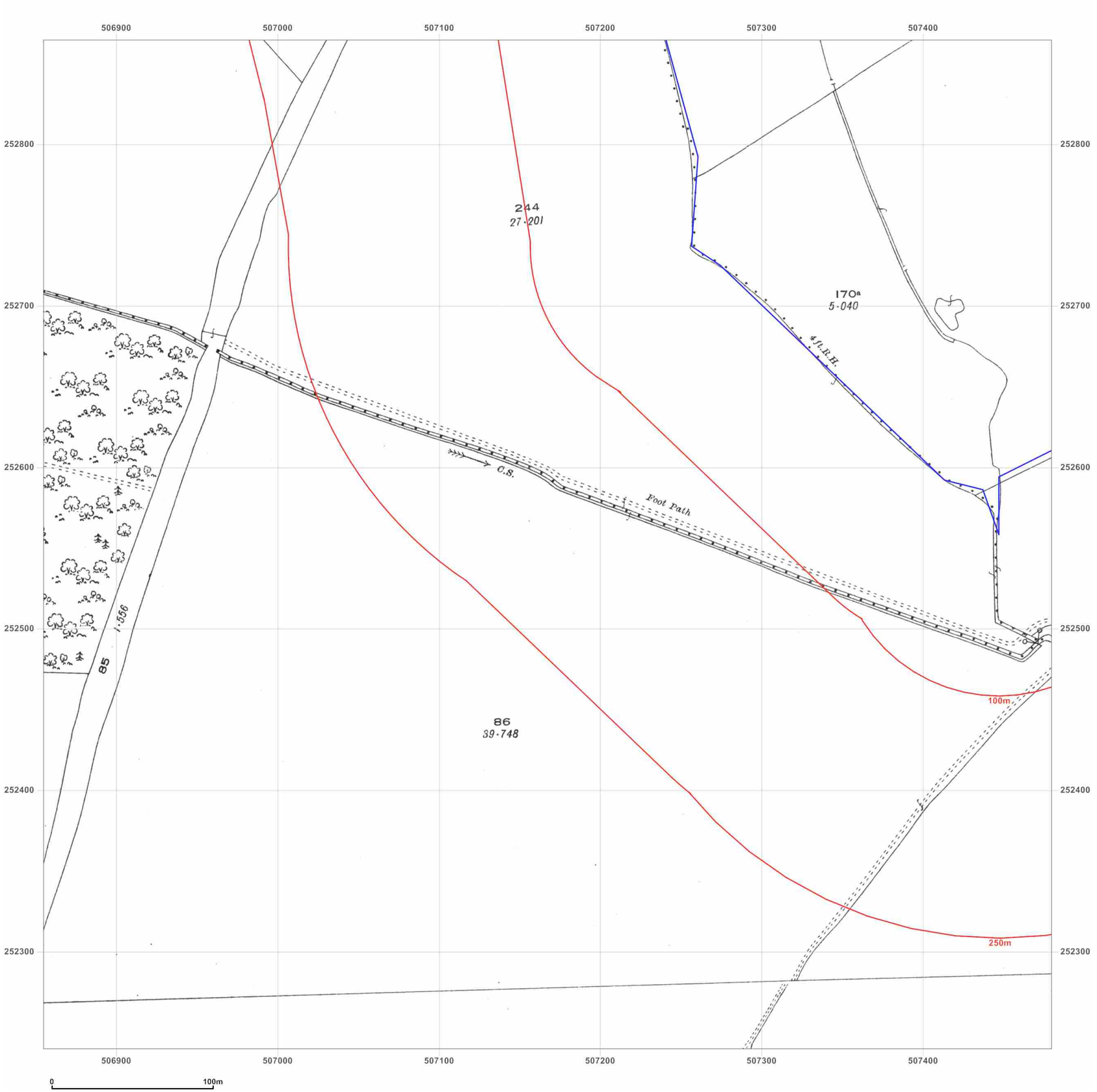


Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_1_1
Grid Ref: 507167, 252552

Map Name: County Series

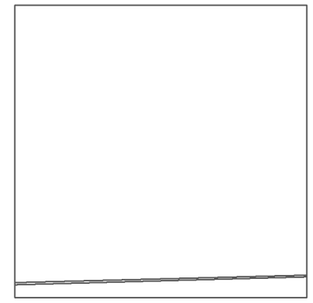
Map date: **1926**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1926
Revised 1926
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1926
Revised 1926
Edition N/A
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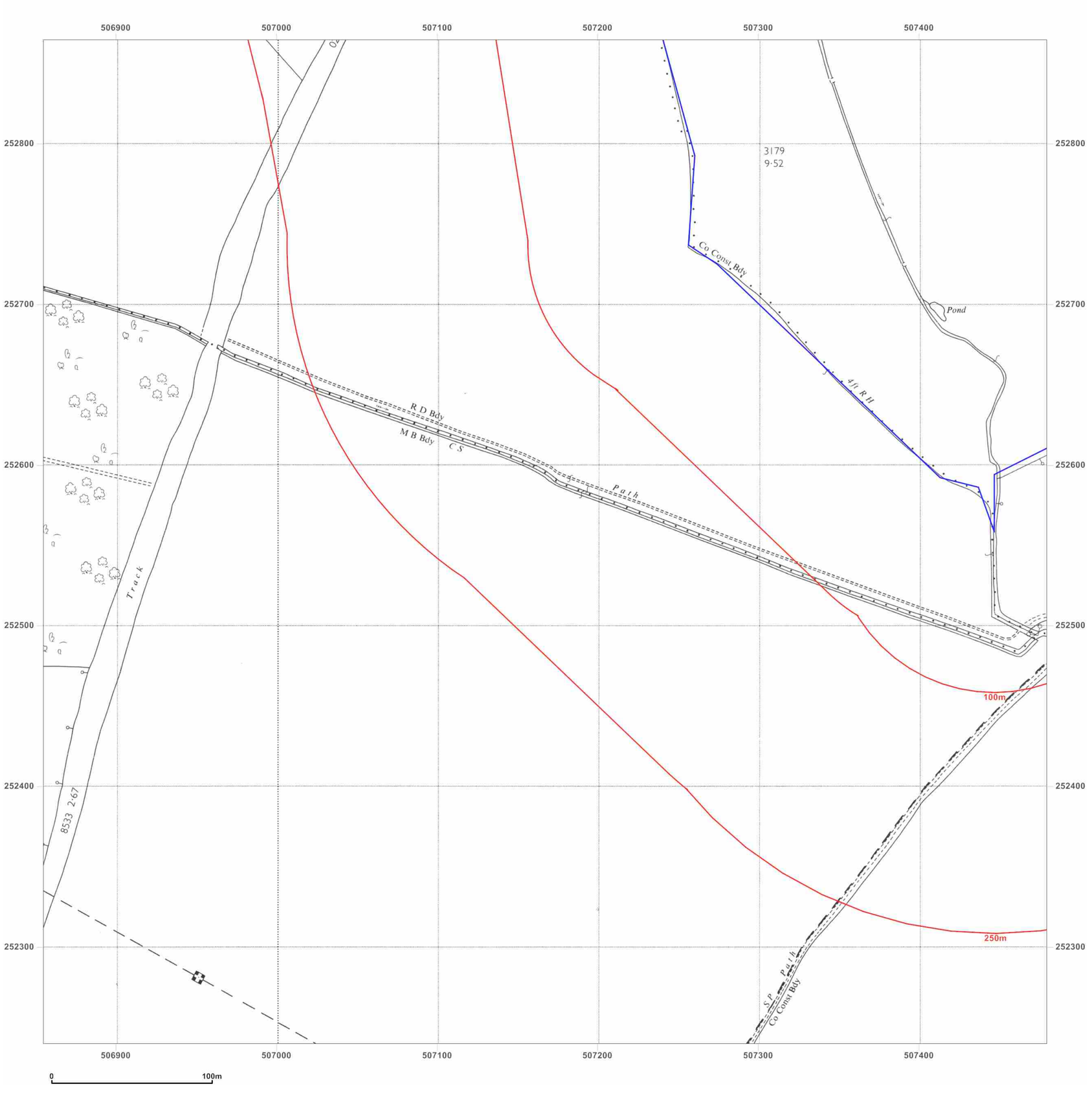

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_1_1
Grid Ref: 507167, 252552

Map Name: National Grid

Map date: **1968**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1969
Levelled 1959

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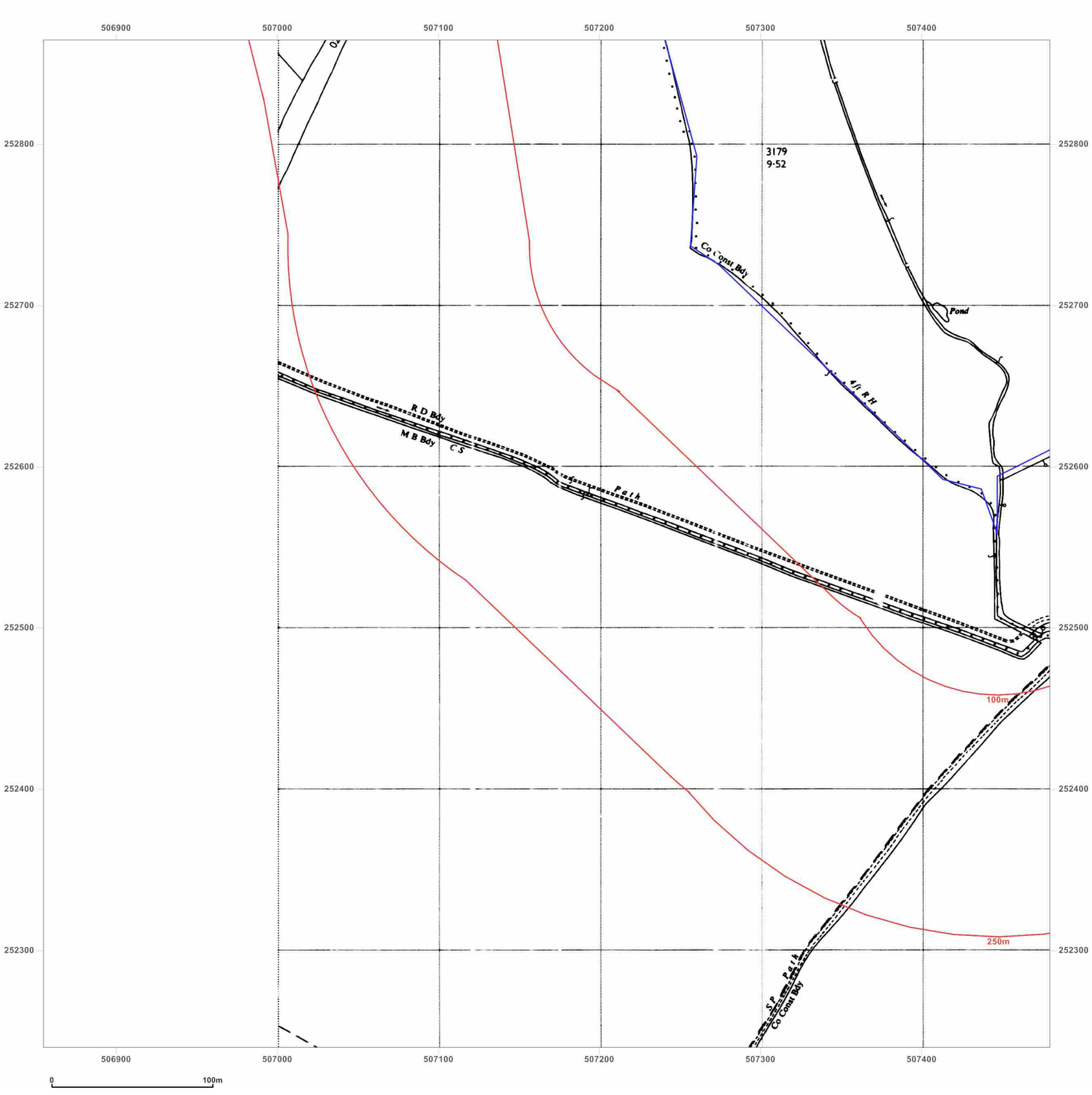

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_1_1
Grid Ref: 507167, 252552

Map Name: National Grid

Map date: **1969**

Scale: 1:2,500

Printed at: 1:2,500

N
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S

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

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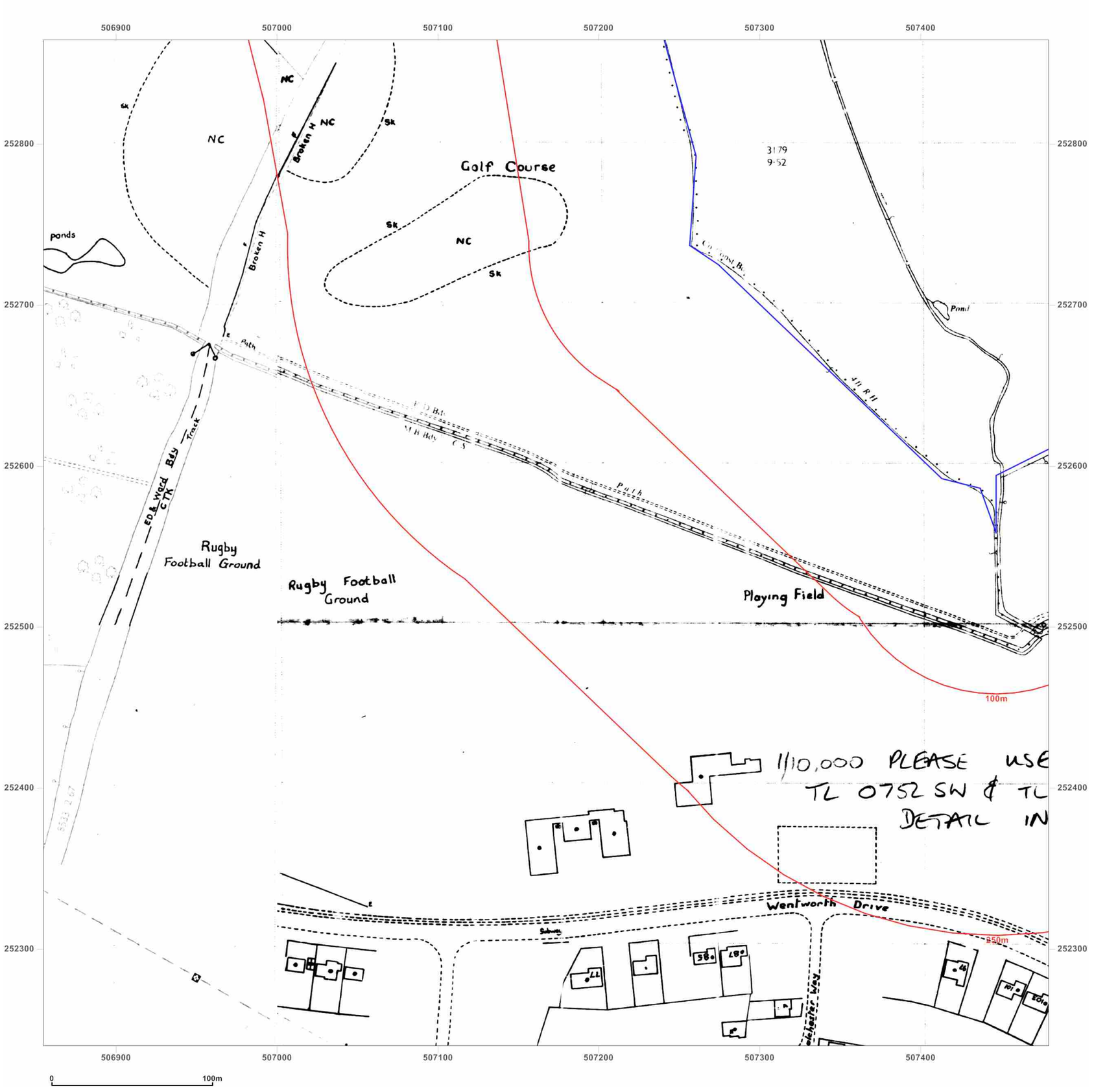

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_1_1
Grid Ref: 507167, 252552

Map Name: National Grid

Map date: **1976-1980**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1980
Levelled 1971

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Revised N/A
Edition N/A
Copyright N/A
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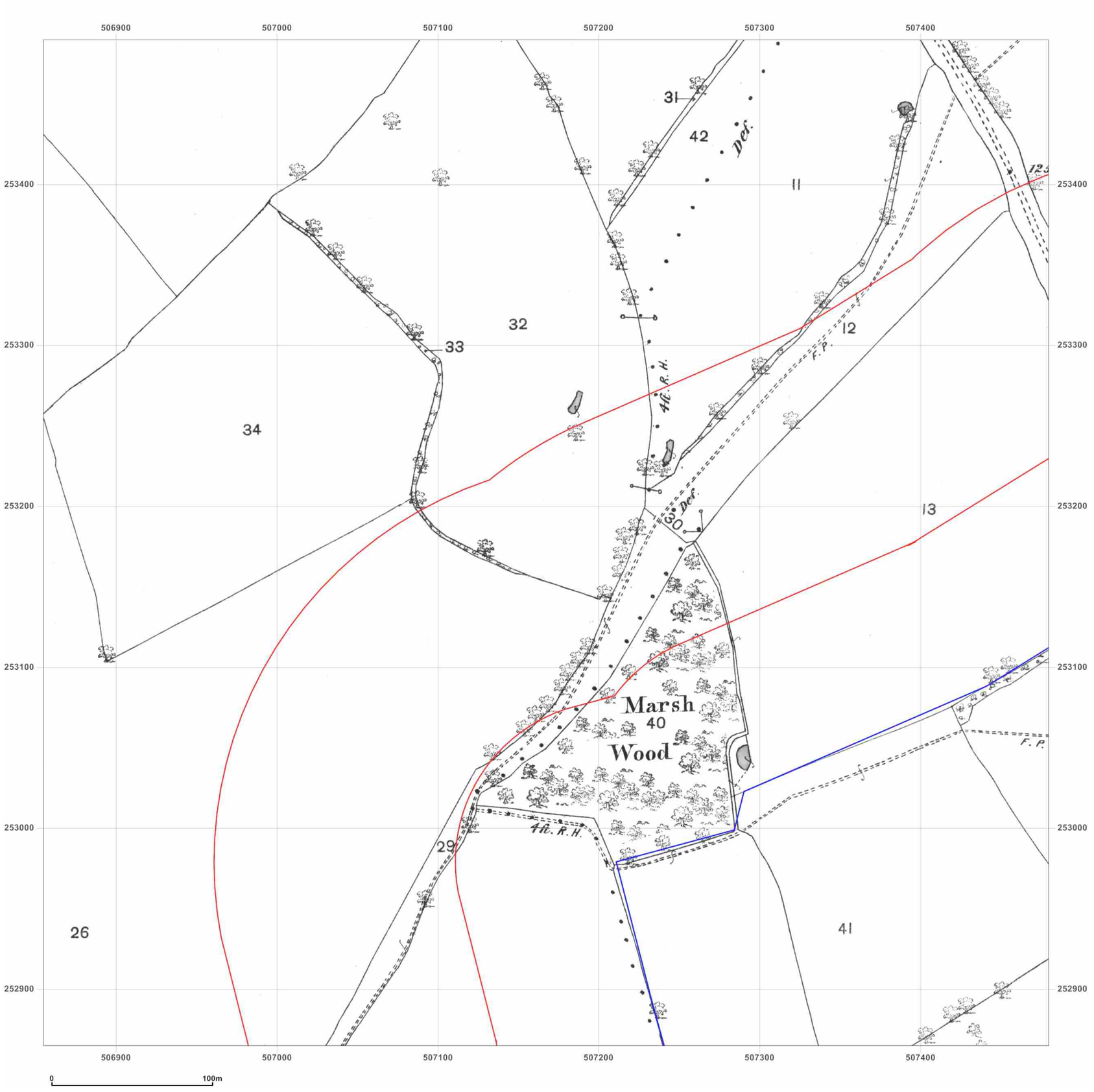

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_1_2
Grid Ref: 507167, 253177

Map Name: County Series

Map date: **1884**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1884
Revised 1884
Edition N/A
Copyright N/A
Levelled N/A

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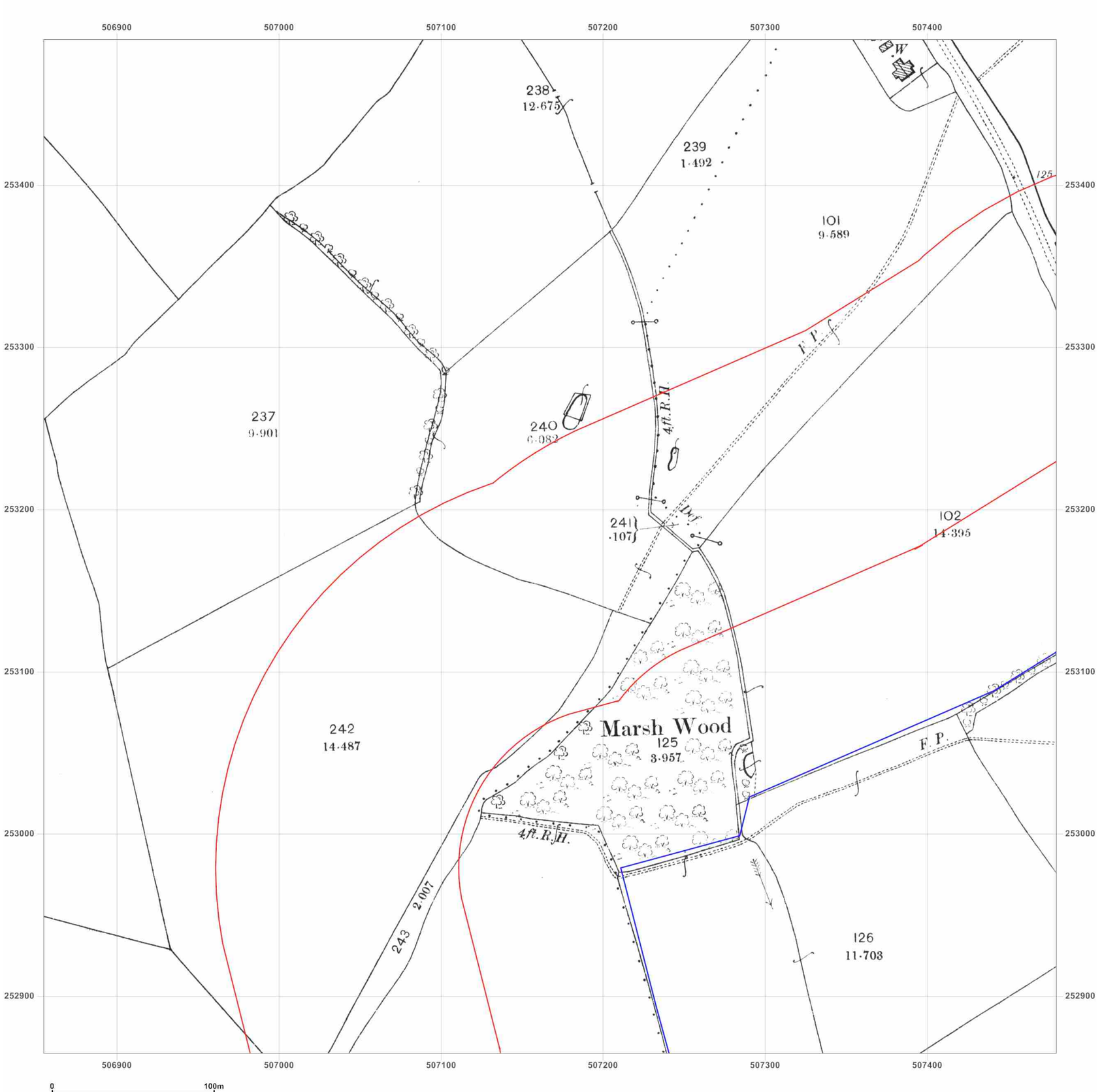

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_1_2
Grid Ref: 507167, 253177

Map Name: County Series
Map date: **1901**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
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Surveyed 1901
Revised 1901
Edition N/A
Copyright N/A
Levelled N/A

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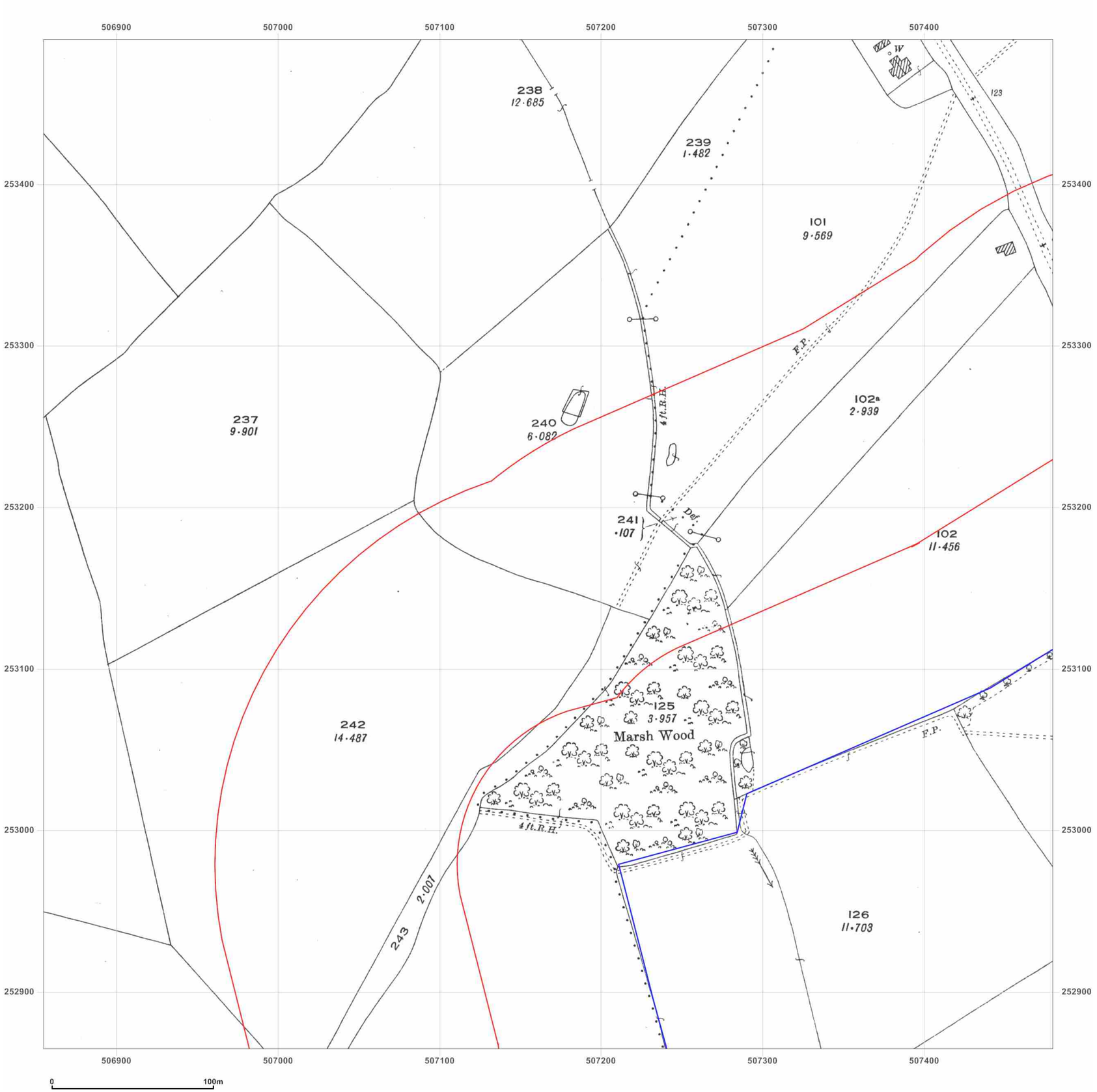

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_1_2
Grid Ref: 507167, 253177

Map Name: County Series
Map date: **1926**
Scale: 1:2,500
Printed at: 1:2,500

N
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Surveyed 1926
Revised 1926
Edition N/A
Copyright N/A
Levelled N/A

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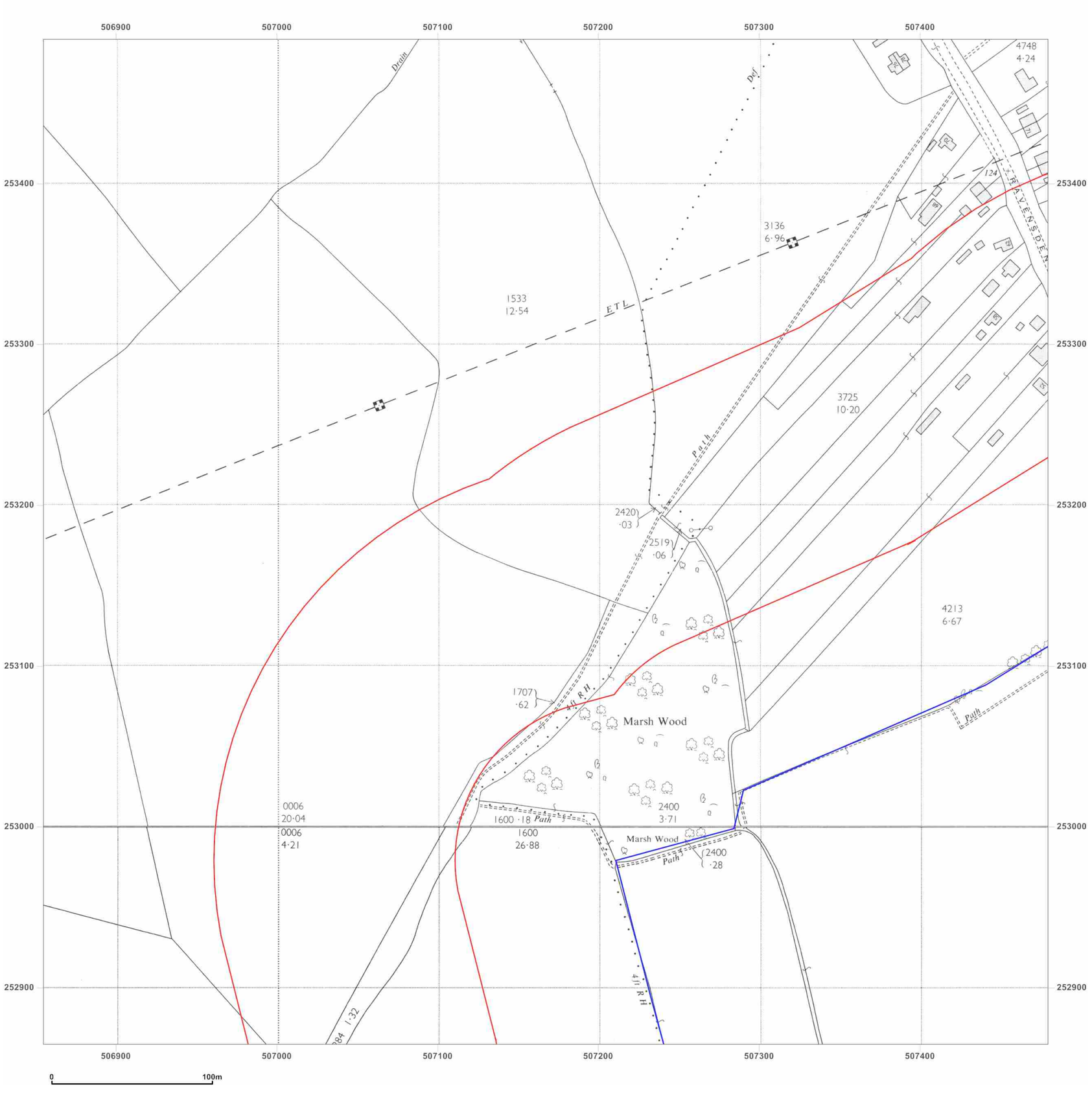

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_1_2
Grid Ref: 507167, 253177

Map Name: National Grid

Map date: **1968**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1968
Revised 1968
Edition N/A
Copyright 1969
Levelled 1959

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1969
Levelled 1959

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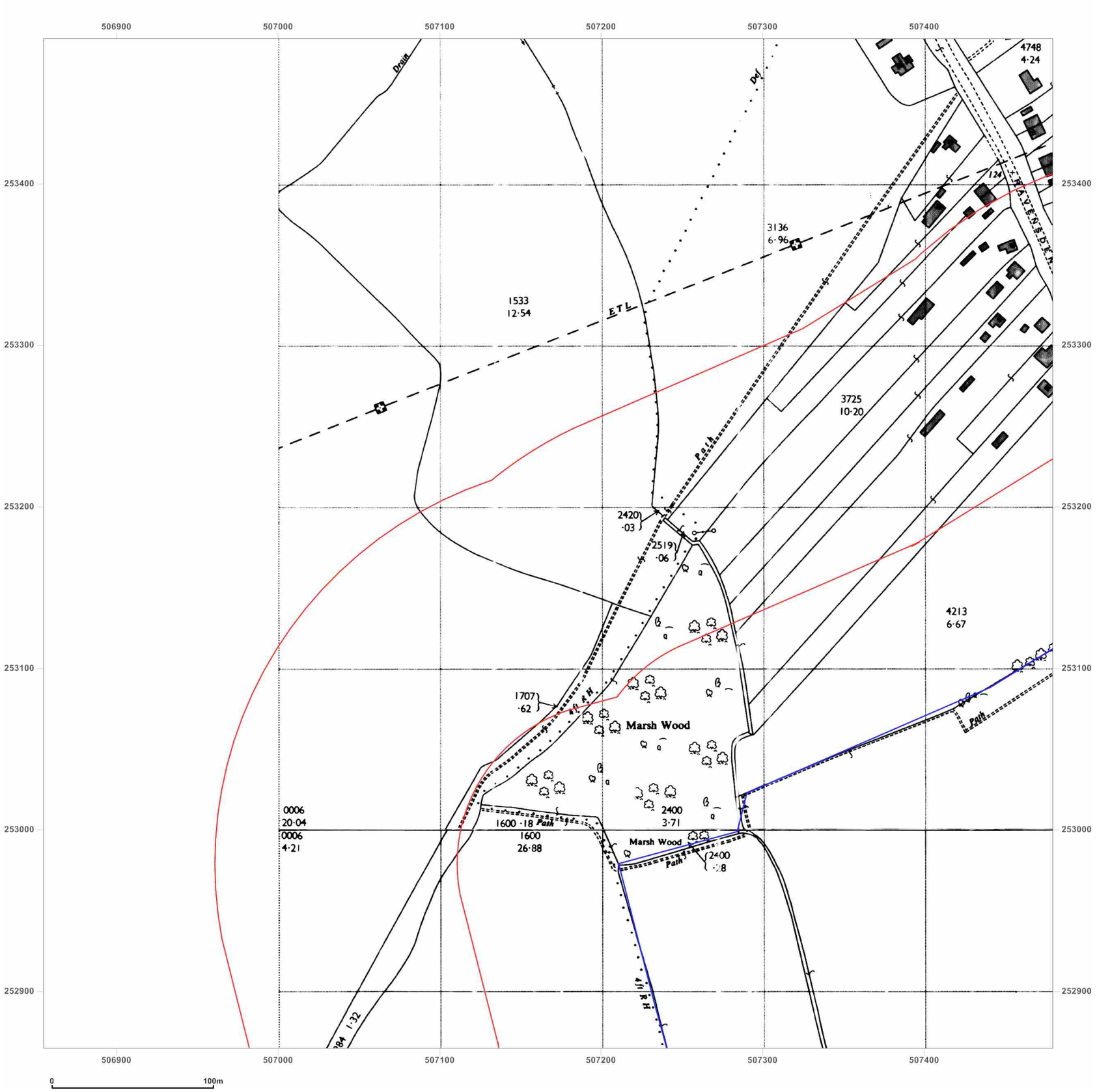

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_1_2
Grid Ref: 507167, 253177

Map Name: National Grid

Map date: **1969**

Scale: 1:2,500

Printed at: 1:2,500

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

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

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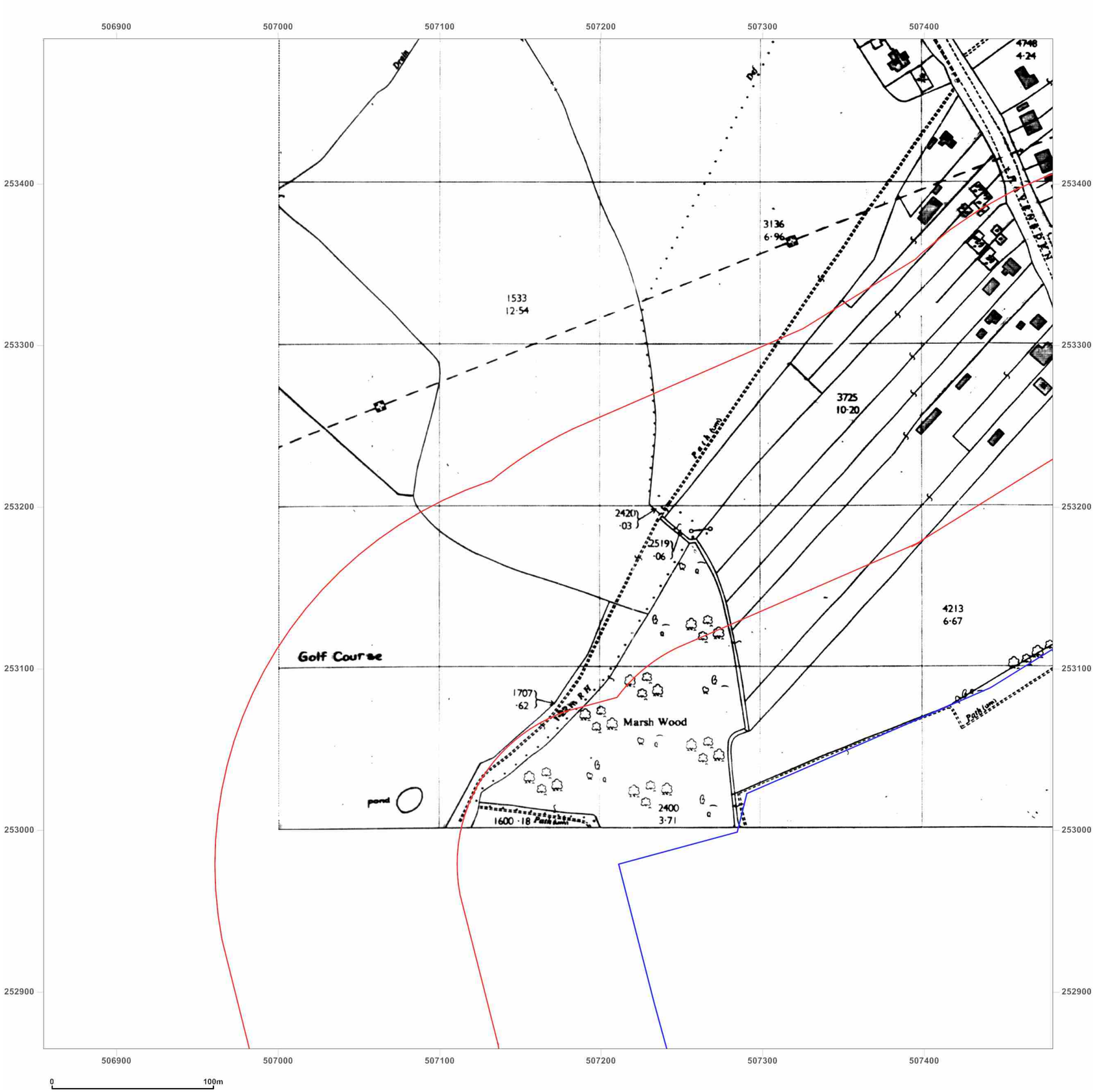

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_1_2
Grid Ref: 507167, 253177

Map Name: National Grid

Map date: **1990**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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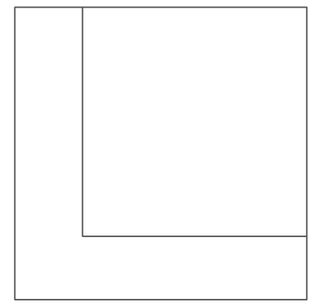
Surveyed 1959
Revised 1990
Edition N/A
Copyright 1990
Levelled 1959



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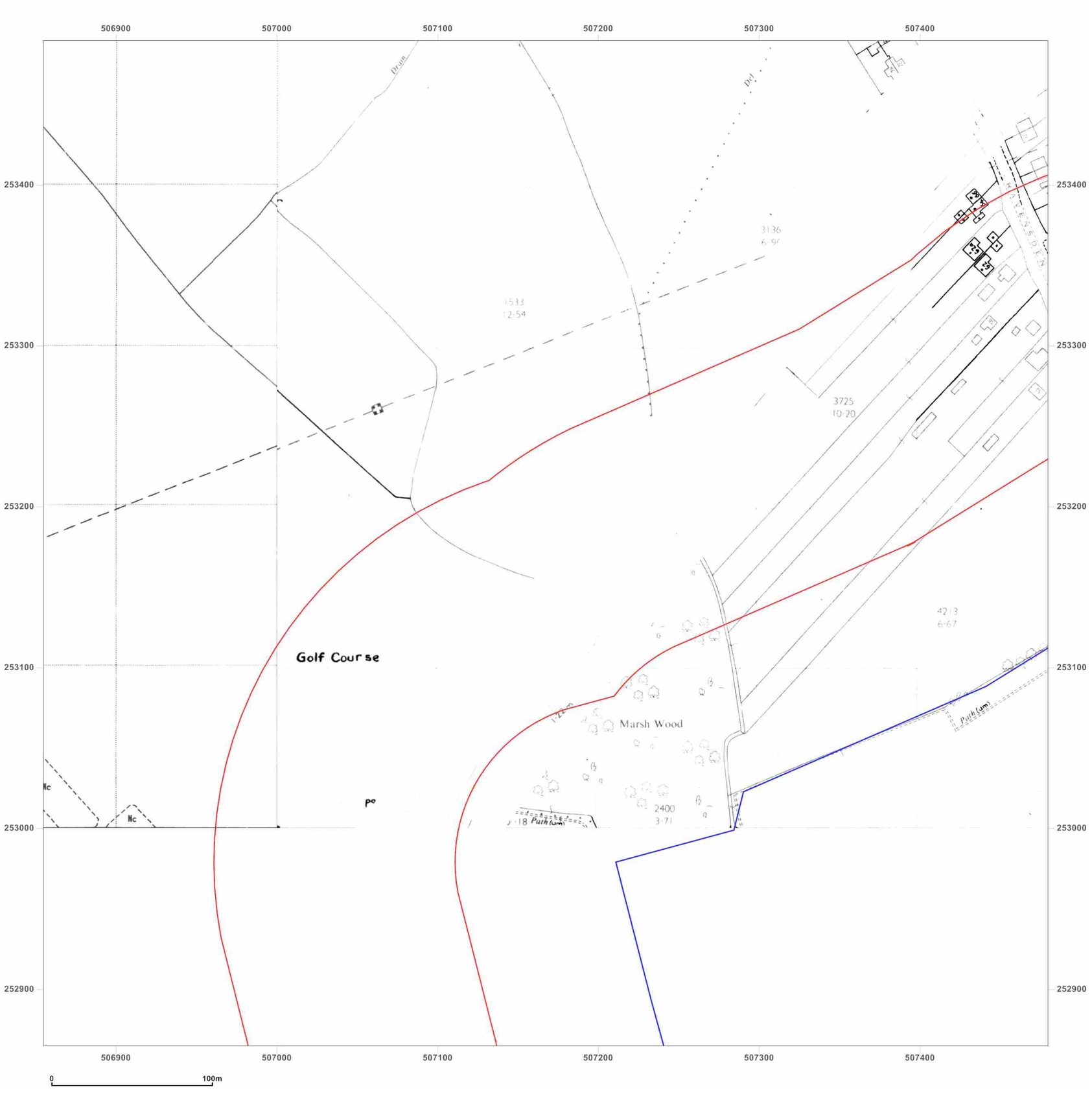

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_1_2
Grid Ref: 507167, 253177

Map Name: National Grid
Map date: **1990-1993**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
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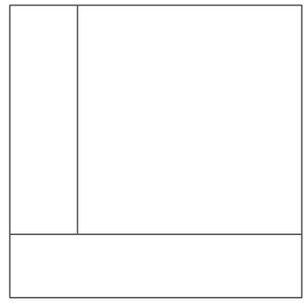
Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1990
Levelled 1959



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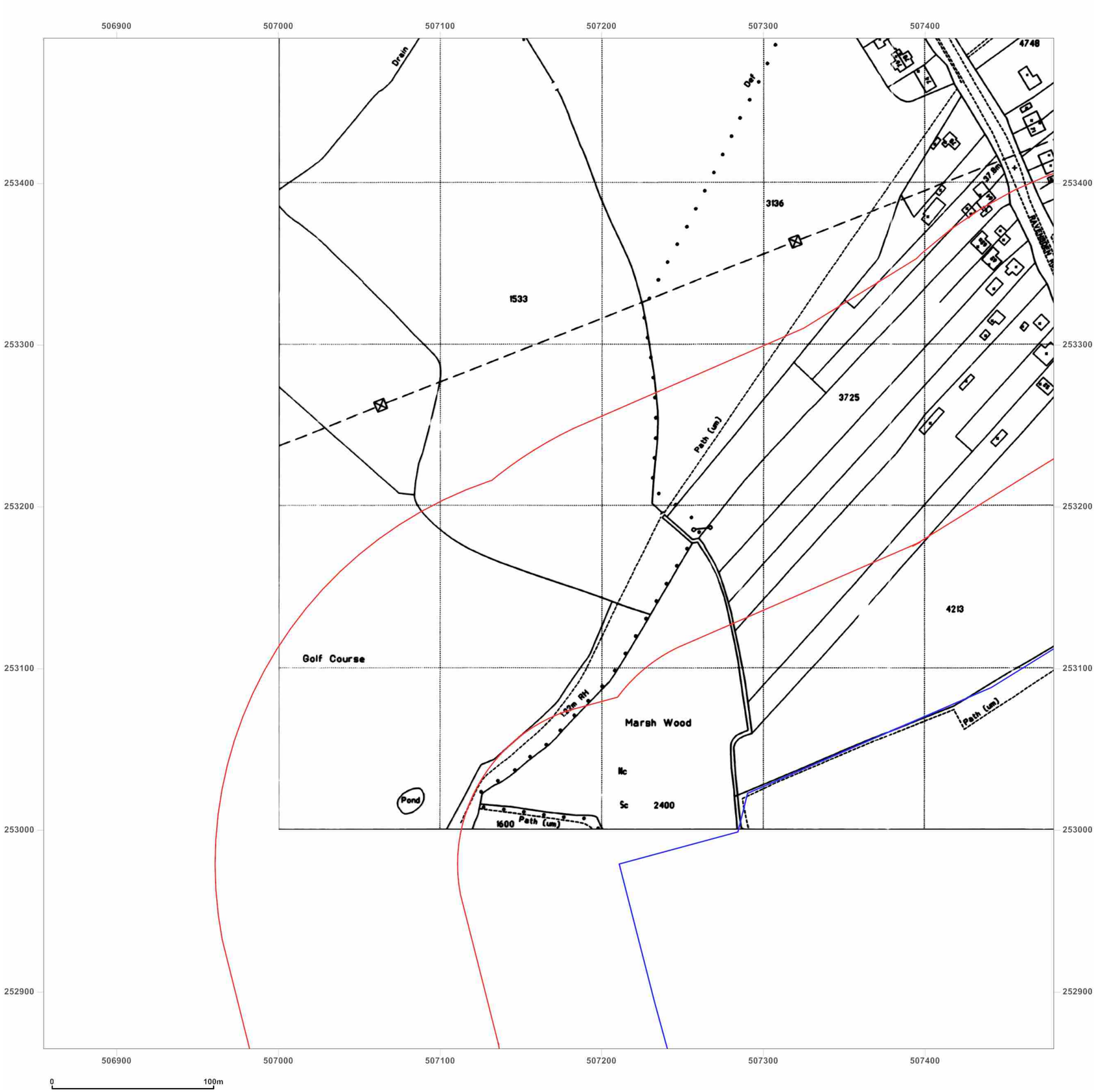


Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_1_2
Grid Ref: 507167, 253177

Map Name: National Grid

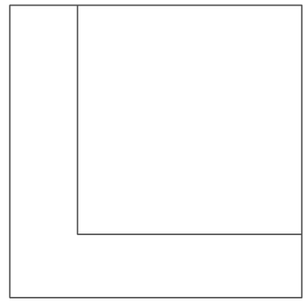
Map date: **1993**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A



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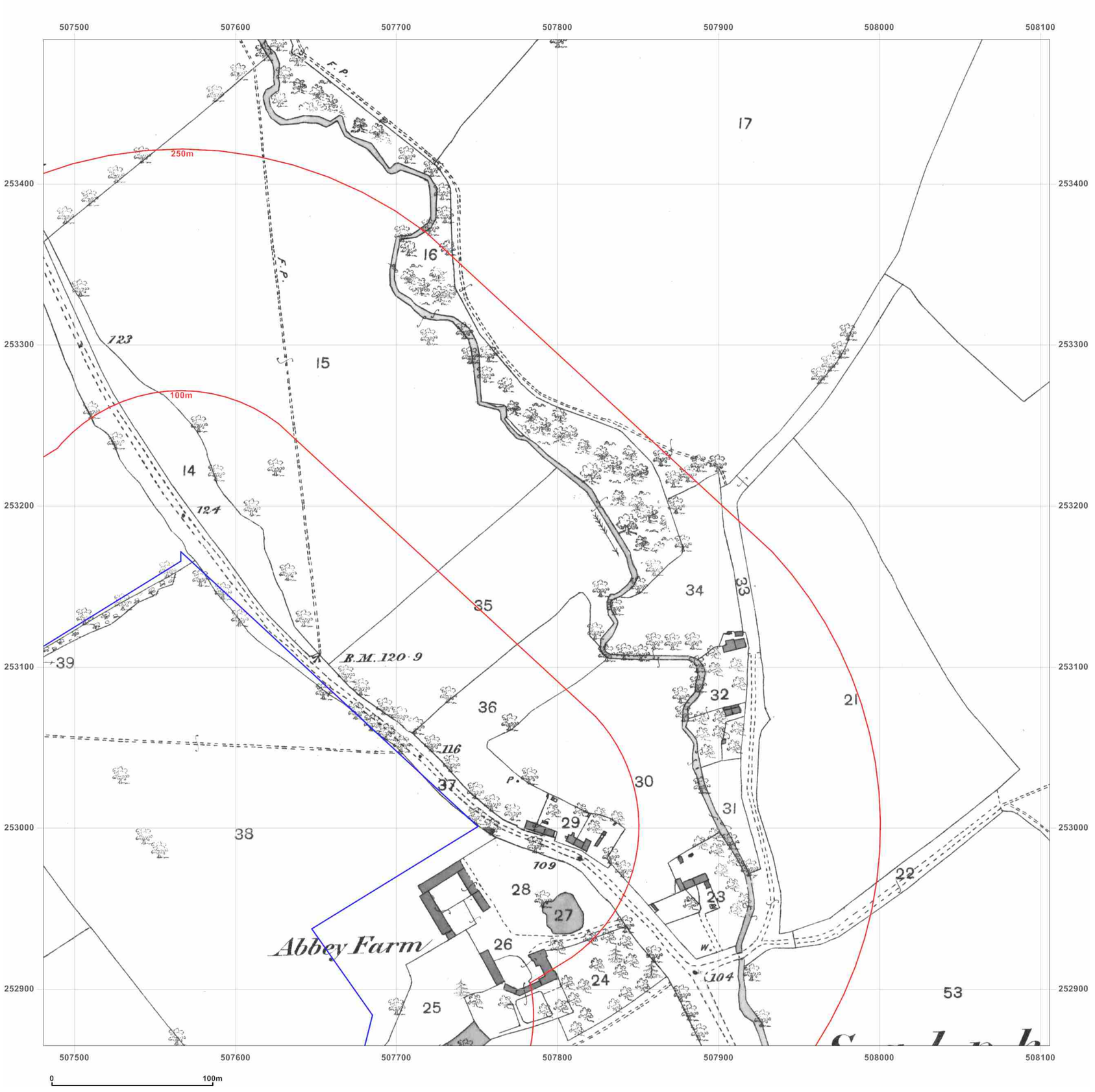

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_2_2
Grid Ref: 507793, 253177

Map Name: County Series

Map date: **1884**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1884
Revised 1884
Edition N/A
Copyright N/A
Levelled N/A

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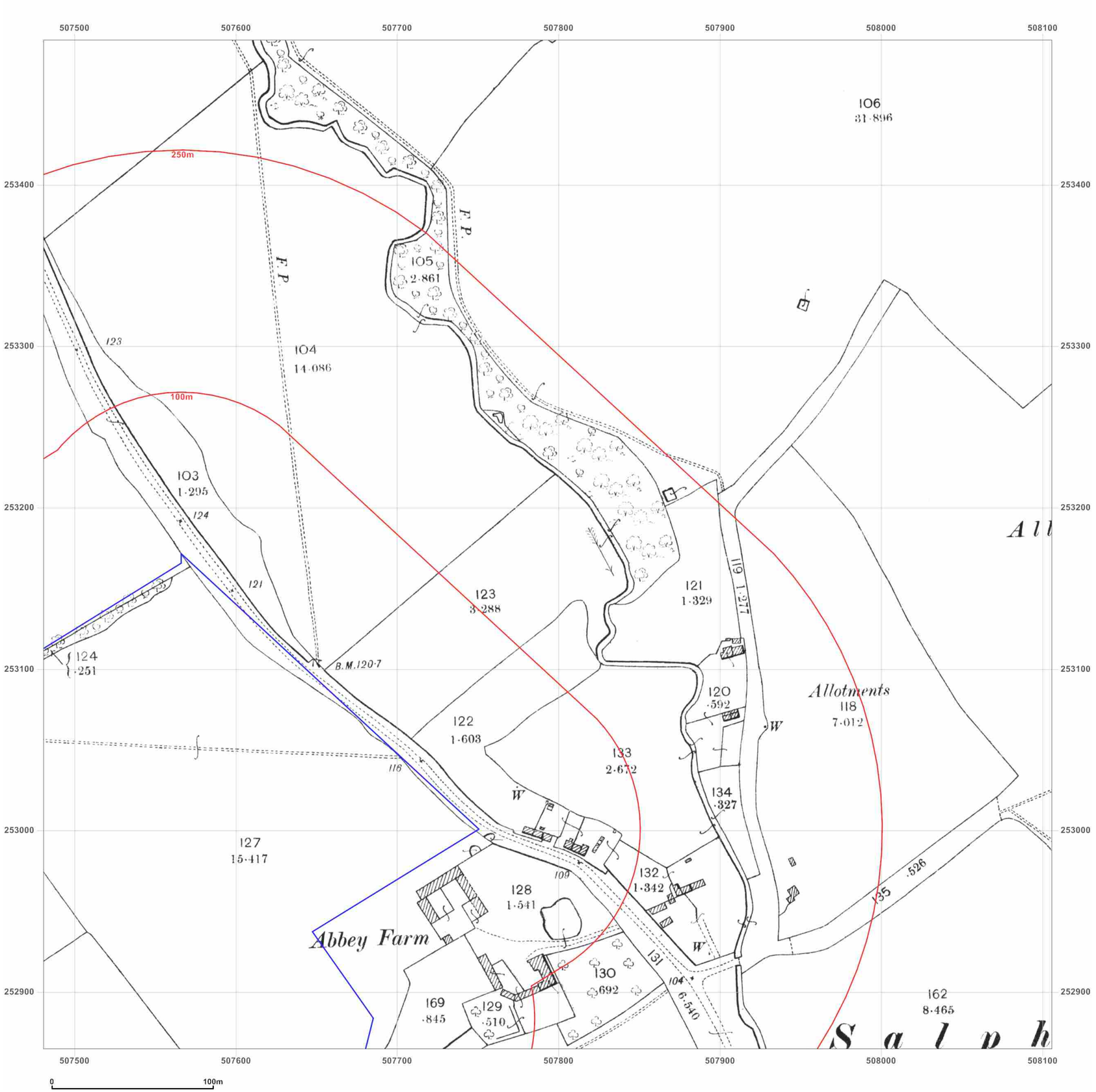

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_2_2
Grid Ref: 507793, 253177

Map Name: County Series

Map date: **1901**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1901
Revised 1901
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 08 July 2019

Map legend available at:
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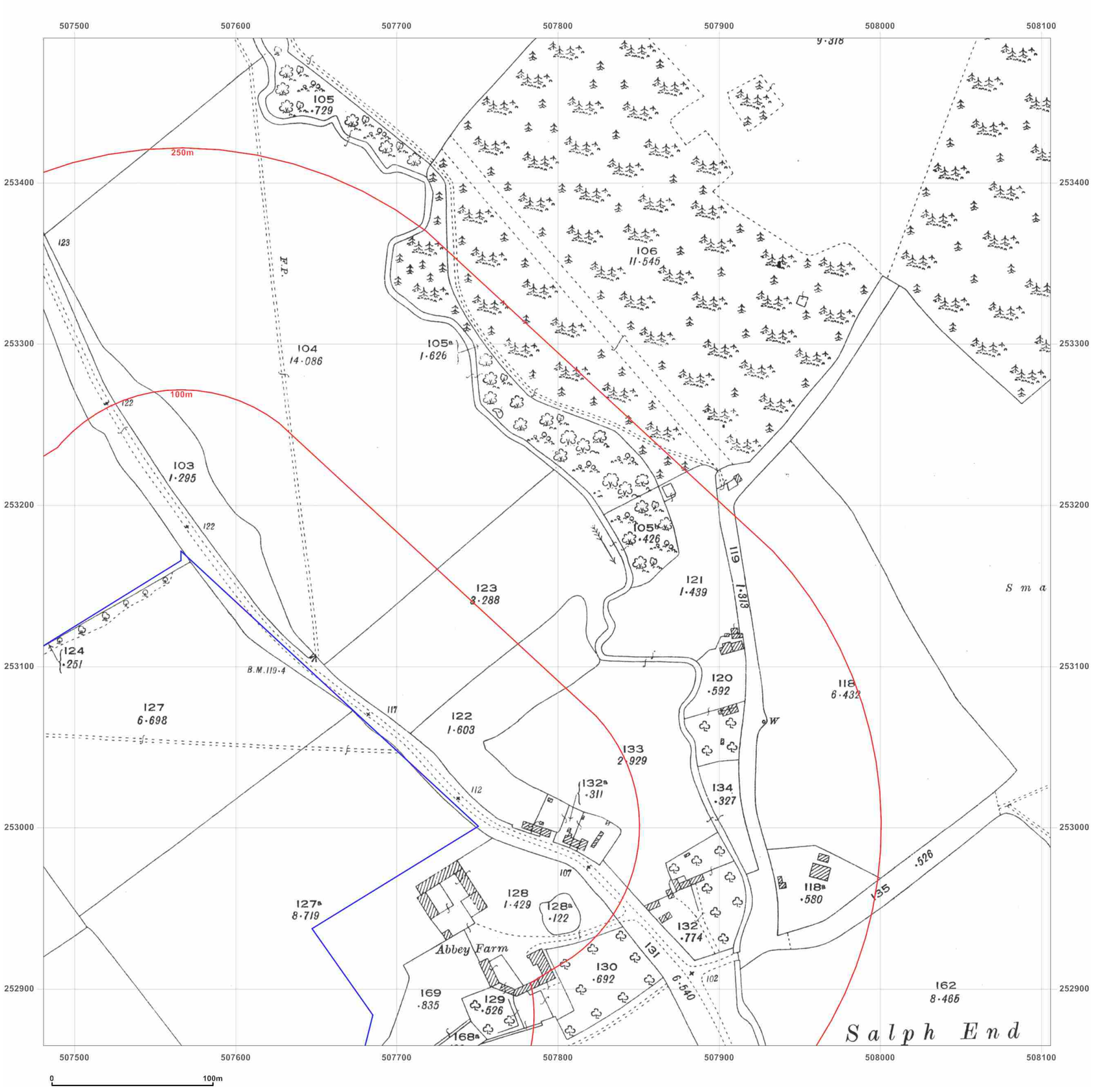

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_2_2
Grid Ref: 507793, 253177

Map Name: County Series

Map date: **1926**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1926
Revised 1926
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 08 July 2019

Map legend available at:
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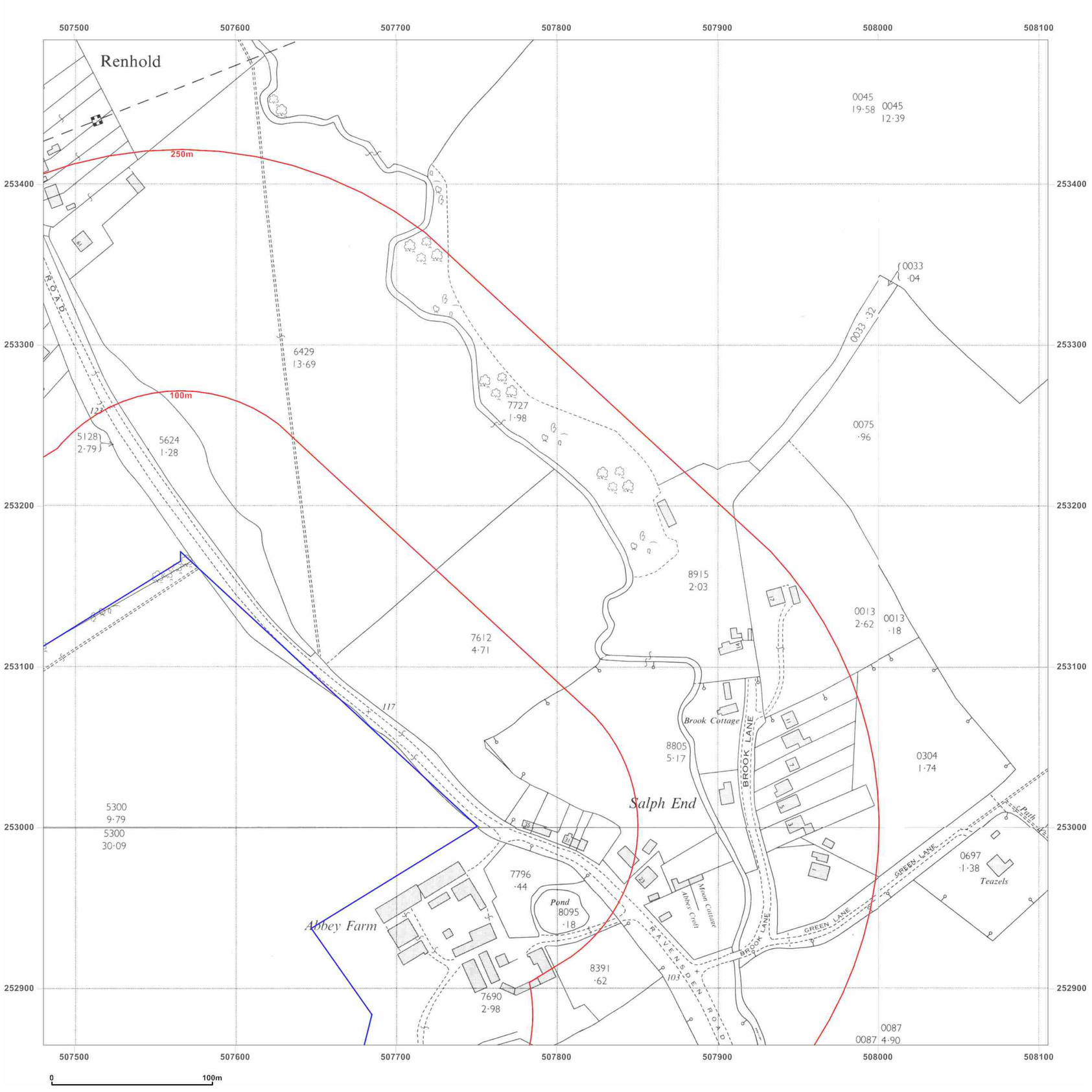

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_2_2
Grid Ref: 507793, 253177

Map Name: National Grid

Map date: **1968**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1968
Revised 1968
Edition N/A
Copyright 1969
Levelled 1959

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1970
Levelled 1959

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1969
Levelled 1959

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1969
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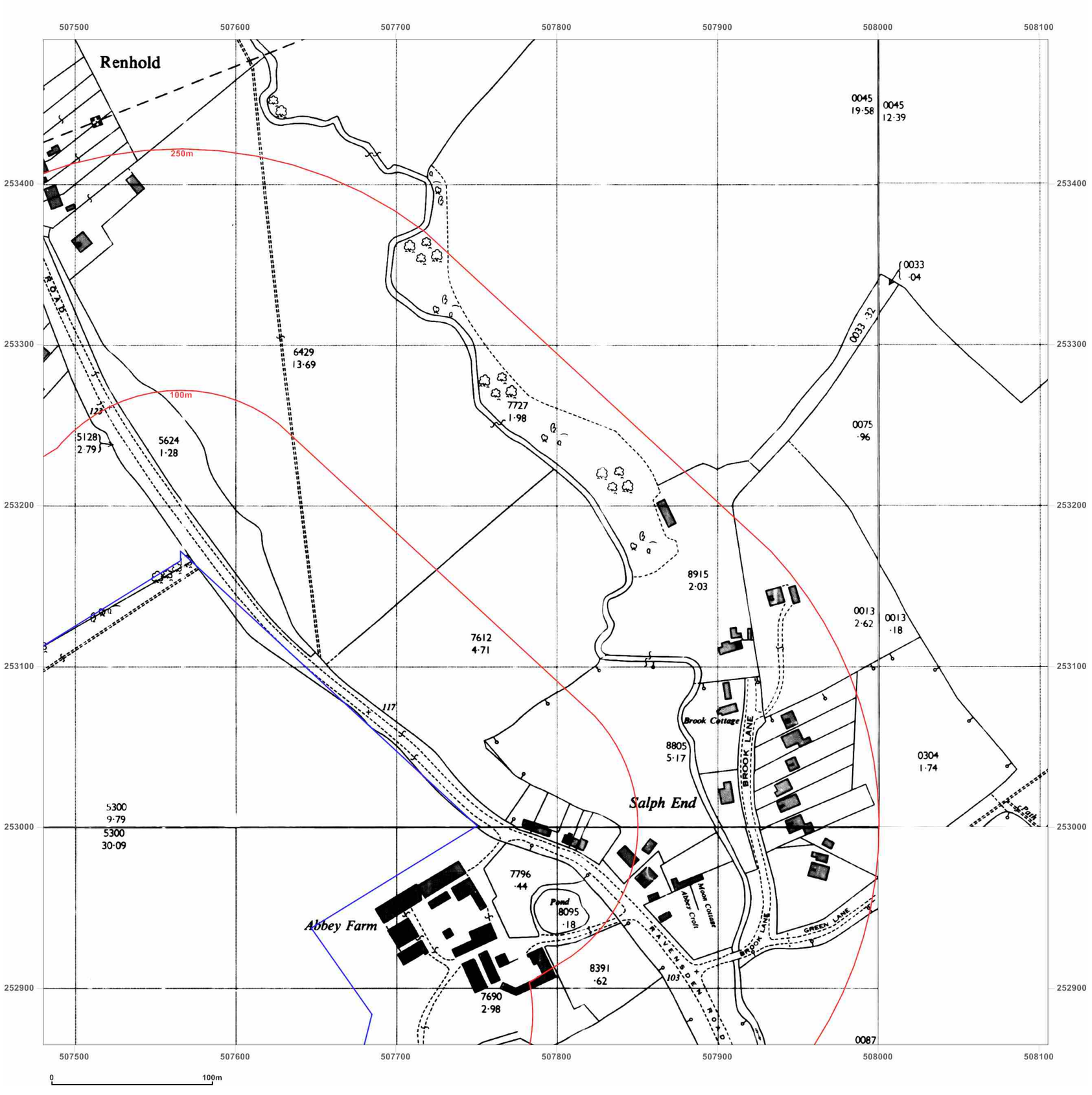

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_2_2
Grid Ref: 507793, 253177

Map Name: National Grid

Map date: **1969-1970**

Scale: 1:2,500

Printed at: 1:2,500

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

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

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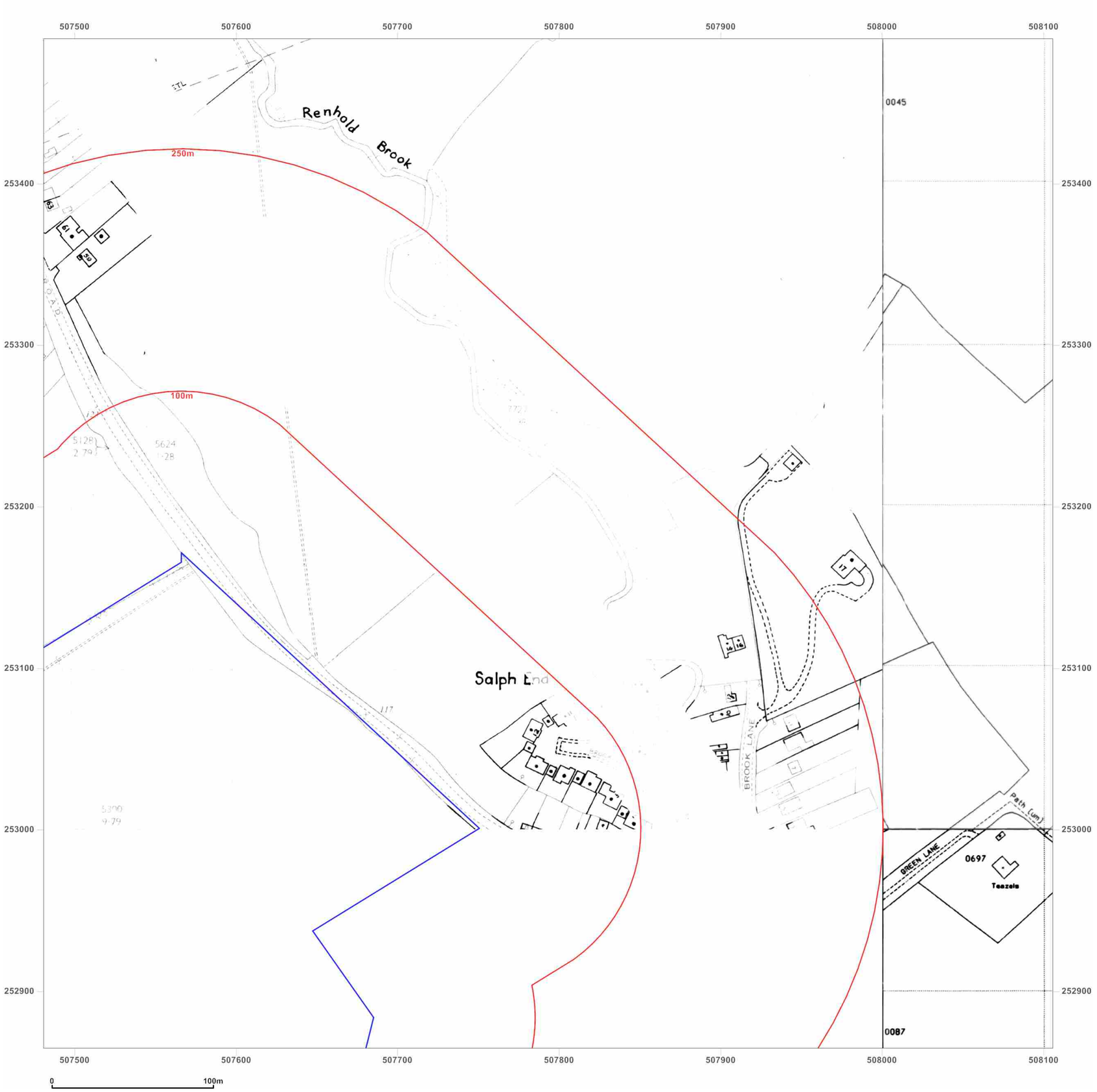

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_2_2
Grid Ref: 507793, 253177

Map Name: National Grid

Map date: **1990-1993**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1990
Levelled 1959

Surveyed 1993
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
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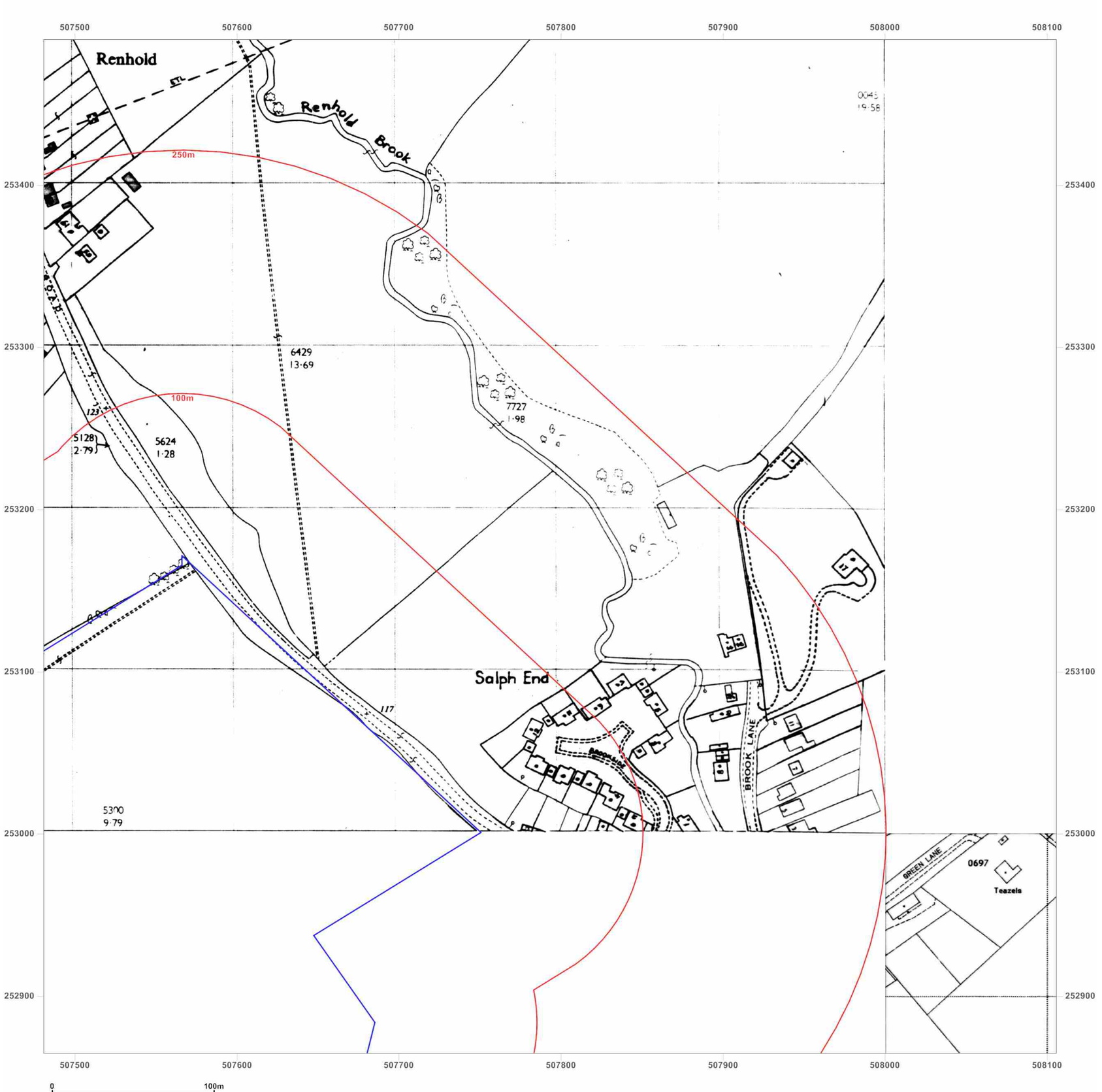

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_2_2
Grid Ref: 507793, 253177

Map Name: National Grid

Map date: **1990-1995**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1959
Revised 1990
Edition N/A
Copyright 1990
Levelled 1959

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

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Production date: 08 July 2019

Map legend available at:
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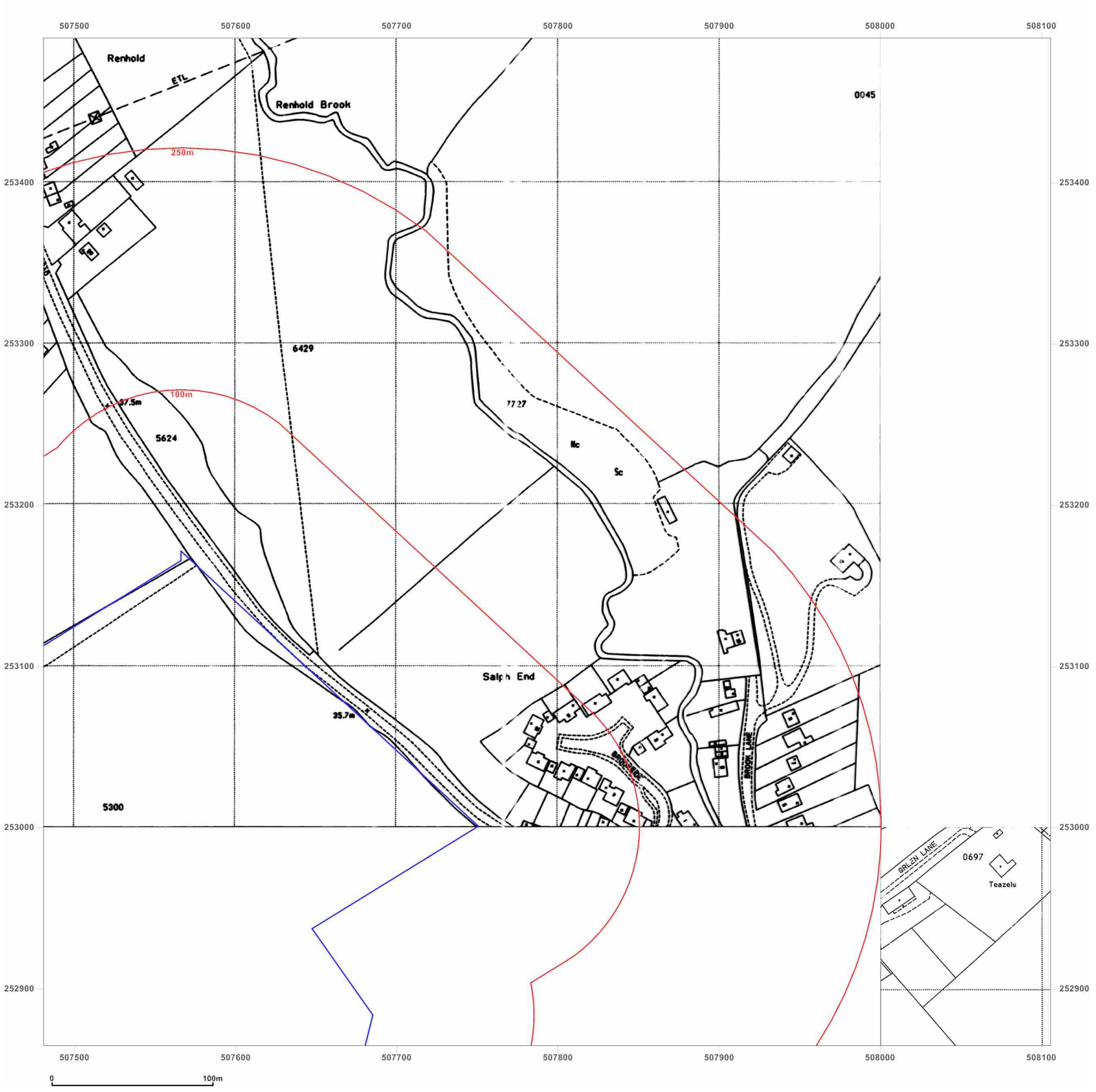

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_2_2
Grid Ref: 507793, 253177

Map Name: National Grid

Map date: **1993-1995**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

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

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Production date: 08 July 2019

Map legend available at:
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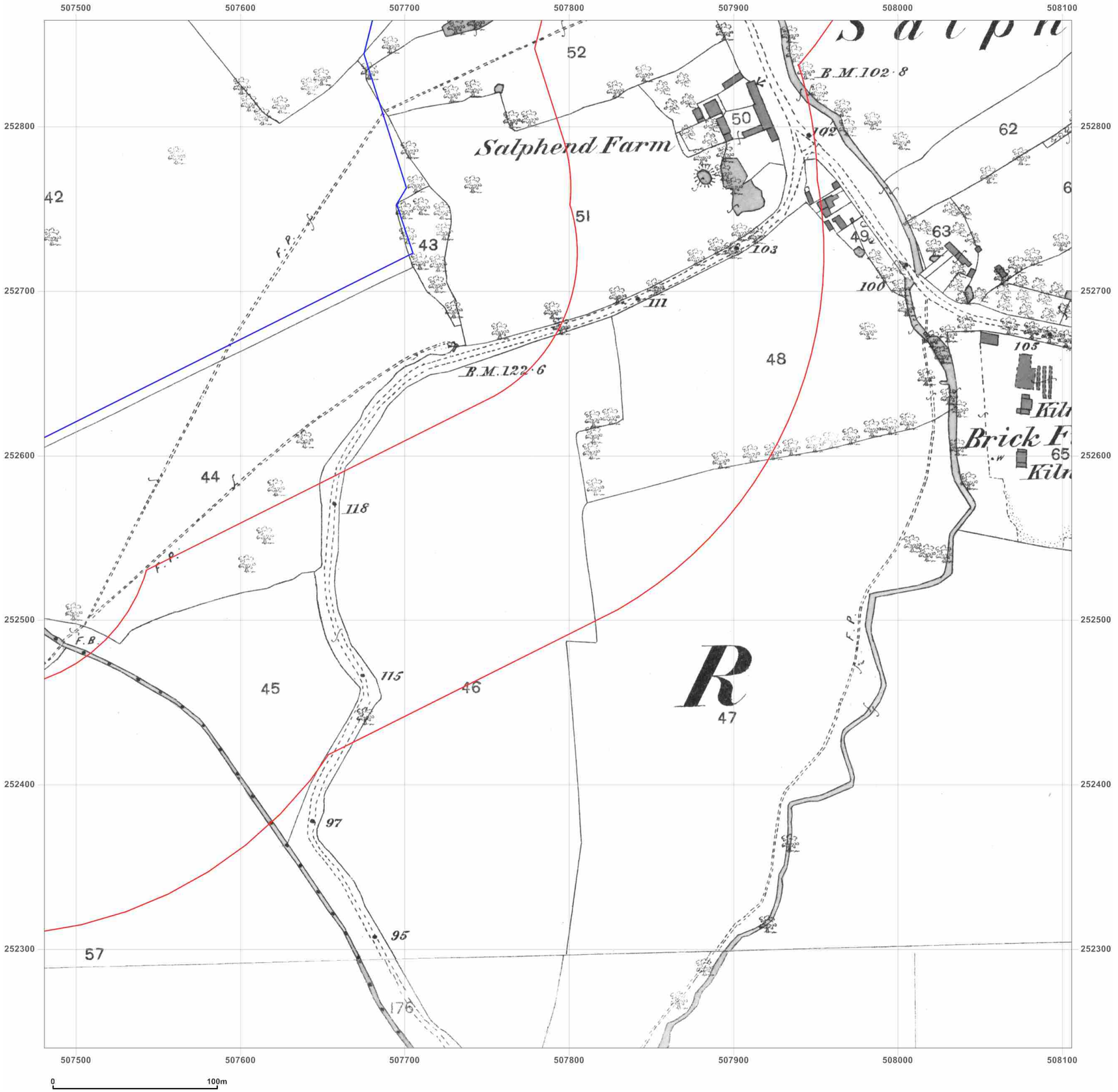

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_2_1
Grid Ref: 507793, 252552

Map Name: County Series

Map date: **1884**

Scale: 1:2,500

Printed at: 1:2,500

N
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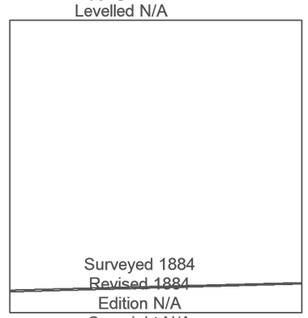
Surveyed 1884
Revised 1884
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1884
Revised 1884
Edition N/A
Copyright N/A
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Production date: 08 July 2019

Map legend available at:
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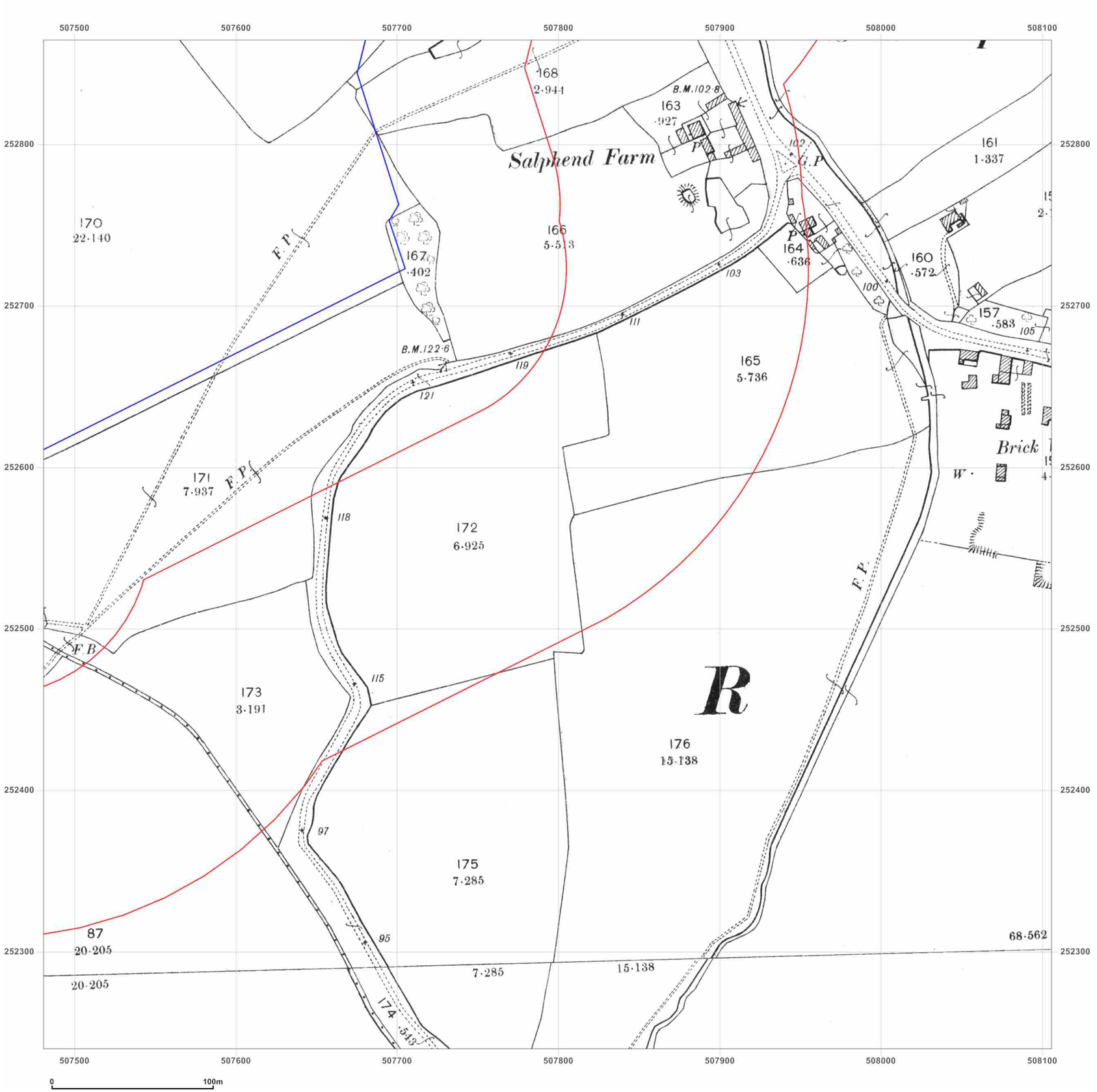

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_2_1
Grid Ref: 507793, 252552

Map Name: County Series

Map date: **1901**

Scale: 1:2,500

Printed at: 1:2,500

N
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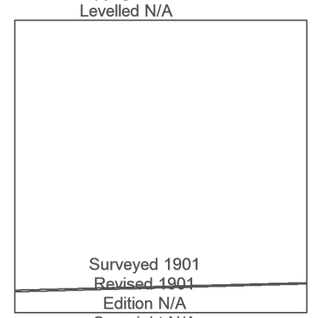
Surveyed 1901
Revised 1901
Edition N/A
Copyright N/A
Levelled N/A



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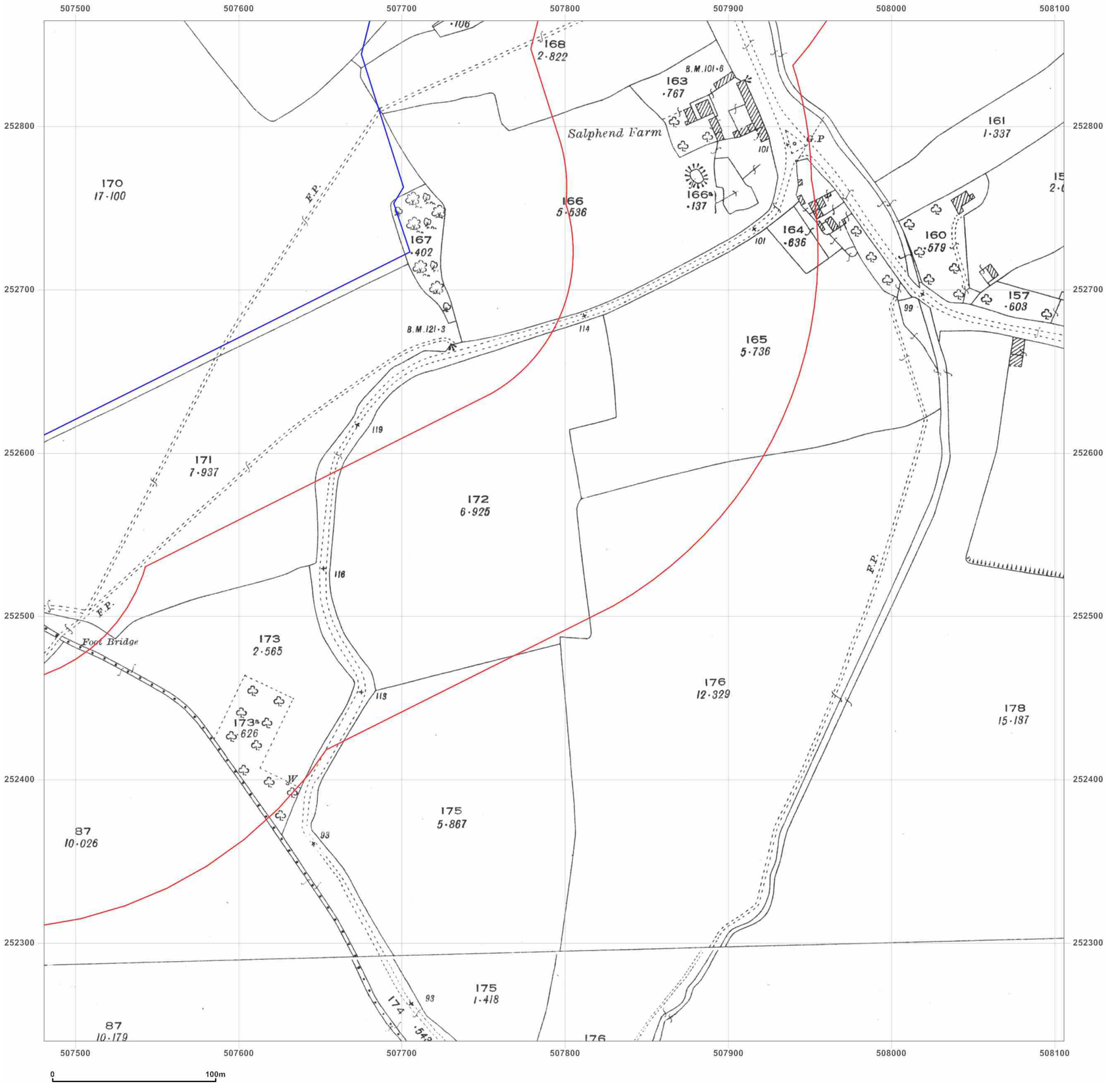

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_2_1
Grid Ref: 507793, 252552

Map Name: County Series

Map date: **1926**

Scale: 1:2,500

Printed at: 1:2,500

N
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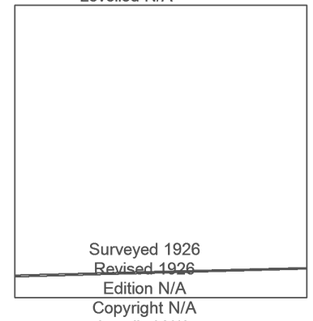
Surveyed 1926
Revised 1926
Edition N/A
Copyright N/A
Levelled N/A



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Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_2_1
Grid Ref: 507793, 252552

Map Name: National Grid

Map date: **1968**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1968
Revised 1968
Edition N/A
Copyright 1969
Levelled 1959

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1969
Levelled 1959

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Production date: 08 July 2019

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Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_2_1
Grid Ref: 507793, 252552

Map Name: National Grid

Map date: **1969**

Scale: 1:2,500

Printed at: 1:2,500

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

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Production date: 08 July 2019

Map legend available at:
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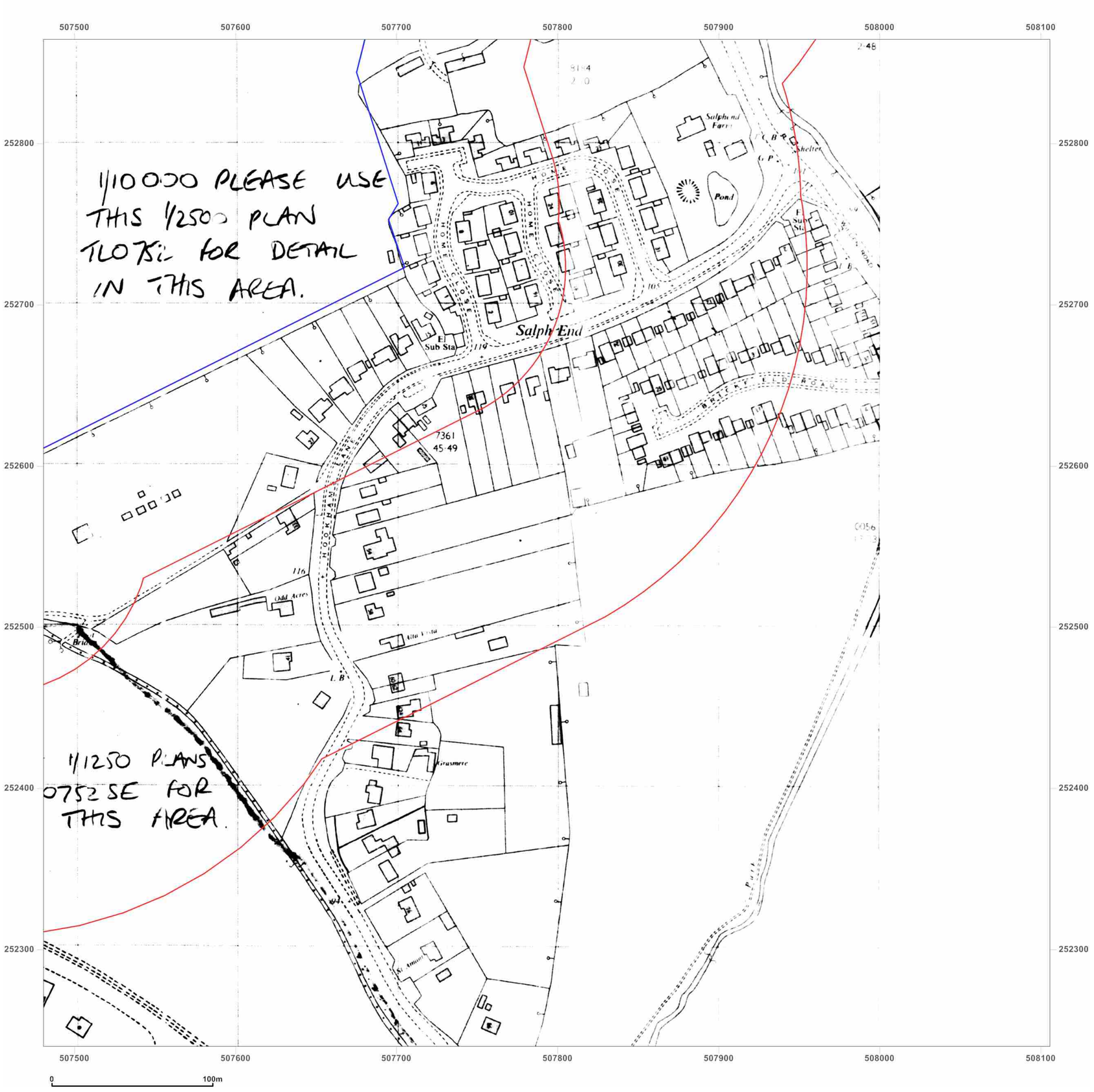

Groundsure INSIGHTS

Site Details:

Land Off Ravensden Road,
Renhold, Beford, MK41 0JG

Client Ref: GE18371_PO1744
Report Ref: GS-6153485_LS_2_1
Grid Ref: 507793, 252552

Map Name: National Grid

Map date: **1976**

Scale: 1:2,500

Printed at: 1:2,500

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

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APPENDIX B

Site Photographs

Plate 1 – View south along eastern site boudary

Plate 2 – View west along northern site boundary

Plate 3 – View east across the north of the site

Plate 4 – View south-west from the north-western corner of the site

Plate 5 – View north across the west of the site

Plate 6 – View north of the ditch running through the site

Plate 7 – View north-east across the site

Plate 8 – Pipe from shed in the site in the south-east corner

Plate 9 – View north-west across the site

Plate 10 – View east of the stand of coniferous trees on the site boundary

Plate 11 – View north along the eastern site boundary

Plate 12 – Pole mounted electrical equipment on the eastern site boundary