Desk Study Report

Project: S10565 Roughbirchworth Lane, Oxspring

Client: Ged Brearley and Daughters Ltd

Reference: S10565 R001

Date: May 2018

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Desk Study Report

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FOR AND ON BEHALF OF JNP GROUP

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Peter Dimberline, Chartered Architect Drawing No. 2017/28/01.

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1 INTRODUCTION

1.1.1 jnpgroup was instructed by Ged Brearley and Daughters Ltd to undertake a Phase I Site Assessment of a site off Roughbirchworth Lane, Oxspring (hereinafter referred to as 'the site'). This report is subject to the limitations presented in Appendix A.

1.1.2 It is understood that the existing buildings are to be demolished, and the site redeveloped with a number of new two-storey residential properties, with access roads, and private gardens. The proposed redevelopment is shown in Drawing No. 2017/28/01 by Peter Dimberline, Chartered Architect.

1.1.3 Any comments given are based on the understanding that the proposed redevelopment will be as detailed above.

1.2 Objectives

1.2.1 The purpose of the investigation was to address geoenvironmental issues relating to a proposed residential end-use of the site. The scope of work comprised desk study research and a site walkover. This report contains details of the site, development of an initial conceptual model, and a preliminary risk assessment with regard to contaminated land issues.

1.3 Methodology

1.3.1 This report has been compiled in accordance with the guidance given in the Environment Agency / Department of Environment, Food, and Rural Affairs (DEFRA) Contaminated Land Report 11 'Model Procedures for the Management of Land Contamination' (Environment Agency. 2004) and the Environment Agency's three reports entitled 'Guiding Principles for Land Contamination' (Environment Agency. 2010).

2 SITE DESCRIPTION

2.1.1 The site is located off Roughbirchworth Lane, Oxpring, South Yorkshire approximately 3.0 km south-east of Penistone (see Figure 1 Key Plan). The centre of the site is located at National Grid Reference 426758, 402046. The site covers an area of approximately 0.39 hectares.

2.1.2 The site is rectangular in shape, in the north-western portion there are derelict cottages and there is an agricultural barn on the northern boundary. In the south, the site is undeveloped and occupied by trees. The north-western half of the site is accessed via an unsurfaced path, the buildings on-site are arranged around a courtyard, the courtyard is partly surfaced with concrete which was noted to be in poor condition, other areas are unsurfaced. In the south-west portion of the site, the ground is unsurfaced. The north-western boundary of the site slopes steeply down a historical railway cutting. A selection of photographs taken during the site walkover are included as Appendix B.

2.1.3 The surrounding land uses are summarised in the following table.

Table 2.1: Surrounding Land Use

Direction	Land Use
North-West	Agricultural
North-East	Footpath, beyond which are commercial (school and Post Office) and residential buildings
South-West	Residential buildings and agricultural
South-East	Roughbirchworth Lane, beyond which is residential

2.1.4 A site inspection was carried by a jnpgroup engineer on 8th May 2018 and the following was noted:

- The site was noted to be roughly rectangular in shape, access was through an iron gate on the south-east boundary;
- There were buildings noted to be in a poor state of repair in the north of the site, these were brick built and of one and two-storey height. The buildings were not accessed as they were not deemed structurally sound by the engineer;
- The south of the site was heavily overgrown with trees and other foliage;
- The buildings in the north of the site were arranged around a small courtyard. In the centre of the courtyard there was a fire pit / cage, which had been extensively used;
- In the south-west of the courtyard area there was an above ground storage tank (AST), likely for fuel (however this was not confirmed), it was noted to be double skinned and in good condition, its capacity was 2,447 litres;
- In the north of the courtyard was a rectangular LPG tank, noted to be in poor condition;
- There were various areas of improperly stored waste across the site; including a pile of tyres and multiple paint pots stored directly on the ground;
- Potential asbestos cement sheet roofing was identified on agricultural buildings in the north of the site;
- Discarded potential asbestos cement sheets were identified, stacked on the eastern boundary of the site.

3 GEOLOGY, HYDROLOGY AND HYDROGEOLOGY

3.1 Geology

3.1.1 The geology of the site has been determined by reference to the 1:50,000 scale British Geological Survey (BGS) online Geoindex Tool (http://mapapps2.bgs.ac.uk/geoindex/home.html).

3.1.2 No artificial or Made Ground is indicated to be present underlying the site, however, from the aerial imagery viewed and from the site walkover, buildings are present in the north-west of the site.

3.1.3 No Superficial Geology is recorded at the site.

3.1.4 The underlying geology is indicated to be a sandstone outcrop (Grenoside Sandstone) of the Pennine Lower Coal Measures, which is described by the BGS as "*a fine-grained, thinly bedded, cross-laminated, micaceous and carbonaceous sandstone*".

3.1.5 There are five faults / coal seams denoted within 500 m of the site, the nearest being an inferred fault, 315 m south-east.

3.1.6 The following table details the risk of geological hazard potential on or underlying the site as identified in the Groundsure Report (included in Appendix C).

Table 3.1: Geological Hazards

Hazard	Risk
Shrinking or swelling clay	Negligible
Landslide ground	Very Low
Ground dissolution	Negligible
Compressible soils	Negligible
Collapsible soils	Very Low
Running sand	Negligible

3.1.7 Based upon the above, geological hazards are not considered to present a constraint to development.

3.2 BGS Borehole Records

3.2.1 jnpgroup has consulted online borehole records held by the BGS. The are records of two boreholes that exist within 250 m of the site. The boreholes encountered between 0.2 m and 0.4 m of topsoil over 0.5 m to 1.0 m of clay (weathered sandstone). This overlies Sandstone (Grenoside), the ultimate depth of which is not proven within either logs.

3.3 Background Soil Chemical Concentrations

3.3.1 The Groundsure Report provides an indication to the background concentrations of a number of metallic contaminants commonly recorded in soils:

- arsenic < 15 mg/kg;
- cadmium < 1.8 mg/kg;
- chromium 60 - 90 mg/kg;
- lead <100 mg/kg; and,
- nickel 15 – 30 mg/kg.

3.3.2 In addition, the UK Soil Observatory map viewer (http://www.ukso.org/mapViewer.html) provides an indication to the background concentrations of a number of metallic contaminants commonly recorded in soils:

- arsenic 15.91 mg/kg;

- cadmium 0.39 mg/kg;
- chromium 59.01 mg/kg;
- copper 26.58mg/kg
- lead 86.56 mg/kg;
- nickel 17.49 mg/kg;
- zinc 85.19 mg/kg

3.3.3 Therefore, naturally elevated concentrations of metals are not anticipated at the site or in close proximity.

3.4 Ground Workings, Mining History and Natural Cavities

- There are four historical surface ground working features identified on-site;
- There are no historic underground workings within 1 km of the site;
- There are five current ground workings on-site, the nearest of which is 202 m north-east and relates to surface mineral workings, the commodity being sandstone;
- The study site is located within the specified search distance of an identified mining area;
- No non-coal mining activities have been identified within 1 km of the site;
- There are no non-coal mining cavities located within 1 km of the site;
- There are no natural cavities located within 1 km of the site;
- No brine or gypsum extraction within 1 km of the site;
- No tin or clay mining areas within 1 km of the site.

3.5 Coal Mining

3.5.1 A Coal Mining Report (Appendix E) commissioned for the site indicates the following:

- There is no historical mining recorded at the site. Note that only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, are considered.
- Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep) are not present at the site;
- Spine roadways (at less than 30m) are not recorded at shallow depth at the site or within 10m of the boundary;
- No mine entries are recorded within, or within 100m, of the boundary of the site;
- There are no coal outcrops on the site. Faults, fissures or breaklines are not recorded on the site;
- The site is not situated within 500m of the boundary of a former opencast coal mining site;
- There are no Coal Authority managed tips within 500m of the boundary;
- The site is located close to an area where the Coal Authority has received information relating to past site investigation including coal mining risk investigation and/or remediation by third parties. This was located 7.9m to the east of the site;
- There are no sites where the Coal Authority has undertaken remedial works within, or within 50m of the site boundary;

- There is no evidence of coal mining related subsidence claims in relation to the site, or 50m of the site boundary, since 1994;
- There are no reports of alleged mine gas emissions within 500m of the boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission;
- There are no recorded Coal Authority mine water treatment schemes within 500m of the site;
- There is no record of future underground mining on the site. Note that only workings where the enquiry boundary would be within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, are considered;
- No licenses for undertaking surface coal mining, underground coal mining or underground coal gasification have been issued by the Coal Authority within 200m of the boundary;
- Court orders for the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof relating to the site are not recorded;
- No Section 46 notices (of the Coal Mining Subsidence Act 1991) have been issued, stating that the land is at risk of subsidence;
- The site is not in an area where a notice to withdraw support has been given. The site is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

3.5.2 In conclusion, risks associated with coal mining legacy have not been identified at the site.

3.1 Hydrology

3.1.1 The nearest surface water feature, the River Don, is located 499 m east of the site at NGR 427300, 402100.

3.1.2 River quality data from the publicly available River Basin Management Plans implemented by the Water Framework Directive indicates that this section of the River Don recorded a chemical quality of Good in 2016, ecological quality was reported to be Moderate in 2016. This has resulted in an overall river quality of Moderate in 2016.

3.1.3 The site does not lie in an area considered by the Environment Agency to be at risk of fluvial flooding.

3.1.4 The Groundsure Report does not identify any active surface water abstractions within 1km of the site.

3.2 Hydrogeology

3.2.1 The Aquifer Maps contained in the Groundsure Report indicates that the site is underlain by a Secondary-A aquifer. The aquifer status refers to Grenoside Sandstone.

3.2.2 The Environment Agency define a Secondary-A Aquifer as:

"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."

3.2.3 The overlying soils are classified as having a high leaching potential, although this is uncertain, as a worst-case vulnerability classification is assumed by the Environment Agency (EA) for urban areas.

3.2.4 The Groundsure Report does not identify any active licensed groundwater abstractions within 1 km of the site.

3.2.5 The site's proximity to groundwater Source Protection Zones (SPZs) was determined by reference to the Environment Agency's website. These zones show the risk of contamination from any activities that might cause pollution in the area, with the closer the activity, the greater the associated risk. The maps show three main zones (inner, outer and total catchment) to a groundwater source.

3.2.6 The site is not within a groundwater Source Protection Zone.

4 SITE HISTORY

4.1.1 The history of the site and the surrounding area has been determined from historical map extracts. Copies of these extracts are included in Appendix D. The historical land uses on site and in close proximity to the site are summarised in the following table:

Table 4.1: Site History Summary

Date	On-site Historical Land Use	Off-site Historical Land Use
1850	The site is occupied by Low House in the north-west of the site, in the south-east there are grounds belonging to the house.	A railway cutting (Manchester, Sheffield and Lincolnshire Railway) lies in a north-west / south-east orientation adjacent to the north-east of the site. There are quarries 100 m north-east and 600 m south-east. The remaining surroundings are predominantly undeveloped and likely in agricultural use. Oxspring Station (Goods) is approximately 250 m south-east of the site. The River Don is identified approximately 400 m north-east.
1891	No significant changes noted.	There is a school 150 m north-west. Oxpring Station (250 m south-east) is no longer depicted.
1893	There is a small rectangular building on the north-west boundary.	Oxspring Quarry (100 m north-east) is annotated as disused.
1903-1932	No significant changes noted.	No significant changes noted.
1938	Low House has been subdivided into multiple cottages and is annotated as Roughbirchworth Lodge.	Land adjacent to the south-west of the site is under development with residential buildings. A sewage works operated by Penistone RD Council is depicted approximately 400 m east.
1948-1951	No significant changes noted.	No significant changes noted.
1959	A small glass roofed structure is depicted in the south-eastern half of the site, likely a greenhouse.	There is a residential building 100 m south-east of the site. There are further residential developments to the east, beyond the railway cutting.
1965	No significant changes noted.	No significant changes noted.
1978	No significant changes noted.	There is residential development from 100 m south of the site. There is a garage 150 m north-east, its layout is in keeping with that of a petrol filling station.
1984-1988	No significant changes noted.	The railway cutting adjacent to the north-east is depicted as being dismantled.
1991-2014	No significant changes noted.	No significant changes noted.

4.2 Site History Summary

4.2.1 The site was developed from at least 1850 with a residential building (Low House), this was subdivided into cottages in the 1930s.

4.2.2 The nearby area was subject to localised quarrying, a railway cutting ran adjacent to the site. The surrounding area that has been developed has been predominantly for residential use.

5 INFORMATION HELD BY STATUTORY AUTHORITIES

5.1.1 This section details any relevant information held in the registers maintained by statutory bodies as identified in the Groundsure Report (Appendix C).

5.2 Waste Management Facilities

5.2.1 The Groundsure Report does not identify any licensed waste management facilities located within 1 km of the site.

5.2.2 Three historical landfills are located within 1 km of the site. The nearest two are summarised as follows:

- Land north of Sheffield Road, Bower Hill, Oxspring, located 170 m to the north-east of the site. Waste is recorded as being deposited in 1994 and the landfill was operated by Stevlorra Developments Limited, no further details are provided by the report;
- Bower Hill, Oxspring, located 297 m to the east of the site. The landfill received waste in 1996, and was operated by Mr. Walsh, no further details are supplied by the report.

5.3 Historic IPC, IPPC Part A and B Activities and Enforcements

5.3.1 The Groundsure Report indicates that:

- There are no historic IPC authorisations within 500 m of the study site;
- There are no Part A (1) and IPPC authorised activities within 1 km of the site;
- There are no Part A (2) and Part B activity and enforcements within 500 m of the site.

5.4 Pollution Incidents to Controlled Waters

5.4.1 There are no recorded pollution incidents to controlled waters according to the report.

5.5 Discharge Consents

5.5.1 The Groundsure Report identifies one licensed discharge consent within 1 km of the site, summarised as follows:

- 189 m to the south-east, issued to Toll Bar Close SPS in November 1989, revoked in September 2002, to discharge sewage effluent into the River Don.

5.6 Fuel Sites

5.6.1 The Groundsure Report identifies one fuel station entry within 500 m of the site, summarised as follows:

- Oxspring Garage, located 204 m east, no longer operational.

5.7 Historical and Contemporary Industrial Data

5.7.1 The Groundsure Report identifies one potentially contaminative industrial site within 250 m of the site, summarised as follows:

- Electricity sub-station located 192 m south-east, the activity is described as electrical features and is categorised as infrastructure and facilities.

5.8 Radon

5.8.1 The Groundsure Report states that the Health Protection Agency identified less than 1% of homes above the action level. The British Geological Survey Information Services Group indicates that no radon protection measures are necessary.

5.8.2 Reference to BRE211 'Radon: guidance on protective measures for new dwellings' indicates that the site does not lie within an area where geological information indicates that basic radon protection may be required. Therefore, no radon protection measures are considered necessary.

5.9 Environmentally Sensitive Areas

5.9.1 The sensitive land use map within the Groundsure Report indicates that there are no environmentally sensitive sites within 500 m of the site, there is a Nitrate Vulnerable Zone (NVZ) 901 m north. NVZs are designated areas where concentrations of nitrate in groundwater (due to agricultural practices) are above guideline values e.g. Drinking Water Standards. High concentrations of nitrate in groundwaters has given rise to environmental and health concerns and these have been reflected in the EC Nitrates Directive (91/676/EEC) which is aimed at reducing nitrate pollution in controlled waters from agriculture.

5.9.2 There is one area of green belt (the Liverpool, Manchester, and West Yorks Greenbelt) within 1 km of the site, 97 m north-west.

6 UK CONTAMINATED LAND LEGISLATIVE FRAMEWORK

6.1 Legislation on Contaminated Land

6.1.1 Given that the site is being assessed with the potential for future development, the most applicable appraisal relates to the requirements of the Planning Regime as described in the National Planning Policy Framework. In order to proceed with an assessment of contamination issues it is essential that there is compliance with UK guidance as detailed within reports published by the Environment Agency 'Model Procedures for the Management of Land Contamination' (Environment Agency, 2004), and 'Guiding Principles for Land Contamination' (Environment Agency, 2010).

6.1.2 Part IIA of the Environmental Protection Act, 1990, which was enacted by Section 57 of the Environment Act 1995, and the associated Contaminated Land (England) Regulations 2000 (SI 2000/227), was introduced on 1 April 2000. It created a new statutory regime for the identification and remediation of land where contamination poses an unacceptable risk to human health and the environment. The guidance was subject to a review by DEFRA in 2012, and a revision was published.

6.1.3 Part IIA provides a statutory definition of contaminated land:

"any land which appears to the Local Authority in whose area it is situated to be in such a condition by reason of substances in, on or under the land, that significant harm is being caused, or that there is a significant possibility of significant harm being caused, or that pollution of controlled waters is being or is likely to be caused".

6.1.4 Controlled waters are considered to be all groundwaters, inland surface waters, and estuarine and coastal waters.

6.1.5 To determine whether land falls under the Part IIA definition of contaminated land, the site should be evaluated in the context of a risk based framework. The assessment of contaminated land is typically a two-phase process, which is initially based on a qualitative assessment of the likelihood of complete pollution linkages, with a quantitative element that seeks to determine the degree and the significance of the harm. Land is only defined as 'Contaminated Land' if a "significant pollutant linkage" is present.

6.1.6 A pollutant linkage must comprise the following:

Source - a contaminant at a concentration capable of causing adverse health or environmental effects.

Receptor - there must be a receptor (e.g. human, controlled waters, ecological, or property) present, which may be at risk of harm or impact from the source.

Pathway - there must be an exposure pathway through which the receptor comes into contact with the contamination source.

6.1.7 Each of these elements can exist independently, but they create risk only when they are linked together, so that a particular contaminant affects a particular receptor, through a particular pathway.

6.1.8 The responsible authority then needs to consider whether the identified pollution linkage:

- is resulting in significant harm being caused to the receptor in the pollutant linkage;
- presents a significant possibility of significant harm being caused to that receptor;
- is resulting in the pollution of controlled waters, which constitute the receptor; or is likely to result in such pollution.

6.1.9 If a pollutant linkage is demonstrated, then the Part IIA legislation provides powers for remedial action to be enforced by the Local Authority in whose area the contaminated land is situated.

6.1.10 In addition, jnpgroup has undertaken a preliminary risk assessment based on the **probability** of receptor exposure to the identified source and the **consequences** of such exposure.

6.1.11 **Risk management**, which can include site surfacing, formal management systems, legal requirements; is then considered to provide an overall residual risk. The categories of environmental risk used by jnpgroup are given in Table 6.1 that follows.

Table 6.1: Risk Matrix

Environmental Risks		
HIGH		Issues within this category likely to provide a significant cost or liability. Further detailed investigation may be required to clarify the risk.
MEDIUM		It is possible that issues within this category may provide a cost or liability. Further investigation may be required to clarify the risk.
LOW		It is unlikely that issues within this category will provide a significant cost or liability. Basic investigation may be required to clarify the risk.
NONE		No source – pathway – receptor linkage present.

7 CONCEPTUAL MODEL AND PRELIMINARY RISK ASSESSMENT

7.1 General

7.1.1 This section uses information from field observations and historical maps to provide a conceptual model and qualitative assessment of the potential risks posed to human health and environmental receptors from potential on-site and off-site sources of contamination. The assessment is presented as a 'source-pathway-receptor' model in accordance with Part IIA of the Environmental Protection Act 1990.

7.1.2 The conceptual model has been developed assuming that the site will be redeveloped for residential housing with private gardens.

7.2 Potential Sources of Contamination

Potential On-site Sources of Contamination

- During the walkover, several sources of contamination were noted:
  - Notably the potential asbestos containing material (ACMs), as cement roof sheeting, noted on the rooves of the cottages and agricultural building in the north of the site, and also stockpiled along the eastern boundary.
  - The fuel tank on-site was raised above the ground and noted to be in good condition; however there was no dedicated bund or spill prevention associated with the tank.
  - The LPG tank noted on-site was in poor condition and was also not bunded, historical leaks cannot be ruled out.
  - The fire pit in the centre of the northern half of the site is considered to be a source of ash and polycyclic aromatic hydrocarbons (PAHs)
  - Housekeeping at the site was generally poor, with improperly stored liquid (paint) containers present on unsurfaced ground.
- Heavy metals, hydrocarbons, asbestos and soil gas associated with limited Made Ground materials may be present as a result of previous phases of development including imported and site generated fill materials.
- In accordance with C733 guidance, any structure built, refurbished or modified during the Twentieth Century has the potential to contain asbestos containing materials (ACM). In addition, any demolition material either stockpiled or used as backfill on site also has the potential to contain asbestos containing materials (intact or broken up).

Potential Off-Site Sources of Contamination

- A railway cutting was present adjacent to the north-east of the site between at least 1850 and 1984, railways are potential sources of contamination including: metals, hydrocarbon-based fuels (lubricants, degreasers) and asbestos (from brake linings).
- Since at least 1850 there has been small localised quarrying around the site, within 250 m. The quarries were annotated as being disused. It is considered likely that the quarries were backfilled around 1890. The bedrock Grenoside Sandstone and it is most likely that the pit was excavated to extract this. There is also no evidence of how deep the pit might have extended. However, as it is a historic surface ground working jnpgroup consider it likely to have been shallow (less than 5 m below ground level).

- If the area was backfilled or partially backfilled with material, jnpgroup consider that material used would have most likely to have been inert, with a low organic content, such as recycled soils, or rubble rather than domestic waste, chemical or industrial waste.
- Based upon guidance given in CL:AIRE research bulletin RB17 (CL:AIRE 2012), as likely depth of the infilled ground is unlikely to be greater than 5 m, and the soil atmosphere is likely to be aerobic and of small area, the former pit is unlikely to generate significant volumes of ground gas. RB17 indicates that even where ground gas is present from Made Ground and recycled soils, it generally does not pose a risk. In addition, RB17 indicates that based upon available case studies, sites where fill is > 30 years old, the gassing regime results in a characteristic situation 1 classification, where gas protection measures are not required. The last date of a recorded quarry was in the 1890s, so if the pit was backfilled or partially backfilled, it was over 100 years ago.

7.3 Receptors

7.3.1 The site is to be redeveloped for residential housing with private gardens. In addition, the site overlies a Secondary-A Aquifer (Grenoside Sandstone). The primary receptors considered to be potentially at risk from any identified contamination are as follows:

Human Health

- Construction workers during the redevelopment phase;
- Residential end users.

Controlled Waters

- The Grenoside Sandstone beneath the site is classified as a Secondary-A Aquifer; however, there are no licensed abstractions within 1km of the site and the site is not within an SPZ. jnpgroup consider groundwater to be a sensitive receptor;
- The nearest controlled surface water is 499 m to the east. jnpgroup does not consider this to be a sensitive receptor due to its significant distance from the site.

Ecological

- The site is not located within an environmentally designated sensitive area;
- Given the site setting sensitive species (bats) are considered to be potentially present at the site (subject to any ecological survey undertaken).

Property

- Concrete sulphate attack;
- Build-up of gases with potential for explosion.

7.4 Pathways

7.4.1 Potential contaminant migration pathways considered relevant to the site are:

Human Health

- Ingestion of contaminated soils and dust particles;
- Direct physical contact with near surface soils and contaminated dust particles;
- Inhalation of wind-blown contaminated dust;
- Inhalation of vapours and gases, migrating vertically into the atmosphere;

- Inhalation of vapours and gases, migrating vertically into buildings and confined spaces;
- Consumption of vegetables cultivated in contaminated soils;
- Consumption of soil attached to vegetables cultivated in contaminated soils.

Infrastructure

- Water supply pipework.

Controlled Waters

- Leaching of contaminants in Made Ground;
- Lateral migration of contaminated groundwater into the River Don;
- Vertical migration of contaminated shallow groundwater impacting deeper groundwater in the aquifer sequence;
- Run-off of site-derived contamination into the River Don during construction.

Ecological

- Migration of contamination through groundwater and subsequent uptake by plant roots;
- Direct contact between ecological receptors and contaminated surface water;
- Direct contact between ecological receptors and contaminated soils;
- Ingestion of contaminated soils/surface waters by ecological receptors;
- Inhalation of vapours or wind-blown dust by ecological receptors.

7.5 Pollutant Linkages

7.5.1 A 'pollutant linkage' describes the relationship between a contaminant, a pathway and a receptor, a 'pollutant' being the contaminant in a pollutant linkage. A contaminant, pathway and receptor must all be present for a pollutant linkage to exist, which forms the basis for determination that a piece of land is Contaminated Land. Potential sources, pathways and receptors have been assessed. The following table summarises the significant pollutant linkages potentially active at the site.

Table 7.1: Potential Source-Pathway-Receptor Linkages for Human Health Risk Assessment

Source	Pathway	Receptor
Contaminated soils	Ingestion of soil	On site female child: 0 - 6 yrs old
		On site construction worker
	Ingestion of household dust	On site female child: 0 - 6 yrs old
	Ingestion of contaminated vegetables	On site female child: 0 - 6 yrs old
	Ingestion of soil attached to vegetables	On site female child: 0 - 6 yrs old
	Dermal contact	On site female child: 0 - 6 yrs old
		On site construction worker
	Dermal contact with household dust	On site female child: 0 - 6 yrs old
	Inhalation of fugitive soil dust	On site construction worker
		On site female child: 0 - 6 yrs old
	Inhalation of fugitive household dust	On site female child: 0 - 6 yrs old
	Inhalation of vapours in outdoor air	On site female child: 0 - 6 yrs old
		On site construction worker
	Inhalation of vapours in indoor air	On site female child: 0 - 6 yrs old
	Contact with contaminated soils	Water supply pipework
Ground Gas and potential gas generated from backfilled pits	Vertical and Lateral Migration	End Users
		Residential Housing
		Services and Infrastructure

Table 7.2: Source Pathway Receptor Linkages for Controlled Waters Risk Assessment

Source	Pathway	Receptor
Contaminated soils	Leaching Mechanisms	Groundwater stored in the Grenoside Sandstone
Contaminated groundwater	Vertical migration	Groundwater stored in the Grenoside Sandstone

7.6 Preliminary Risk Assessment

7.6.1 From the information obtained from the desk study jnpgroup has undertaken a preliminary risk assessment.

Table 7.3: Preliminary Risk Assessment

Issue	Risk		Justification
LAND	MEDIUM		The site was historically residential in use; however, the site walkover identified several sources of potential contamination including asbestos and hydrocarbons / PAHs.
GROUNDWATER	MEDIUM		The site is located on productive strata (Secondary Aquifer) but is not within a SPZ.
SURFACE WATER	LOW		The nearest watercourse is approximately 500 m east of the site.
ECOLOGY	NONE		Based on the assumption that there are no sensitive/ protected species on site (subject to any ecological survey undertaken).

7.6.2 The conceptual model has been refined and the plausible pollutant linkages evaluated against generic criteria in accordance with joint DEFRA / Environment Agency publication 'Model Procedures for the Management of Land Contamination' (Environment Agency. 2004).

8 CONCLUSIONS OF DESK STUDY & RECOMMENDATIONS

8.1 Conclusions

8.1.1 The desk study has identified that: the geological succession below the site comprises Grenoside Sandstone of the Pennine Lower Coal Measures. Historically the site has been residential in nature, it was noted during a site walkover that there are several potential sources of contamination.

- Made Ground associated with previous development on-site;
- ACMs noted on-site;
- Fuel tanks on-site;
- Fire pit present on-site; and
- General poor housekeeping on unsurfaced areas.

8.1.2 Based on information contained within desk study, it is the opinion of jnpgroup that the potential site conditions provide a **MEDIUM to LOW** environmental risk and hence further investigation and assessment is required.

8.1.3 Risks associated with coal mining legacy have not been identified at the site.

8.1.4 Radon protection measures are not considered necessary in the construction of new dwellings.

8.2 Recommendations

8.2.1 Based on the conclusions from the desk study and the intended redevelopment of the site (as indicated on Drawing No. 2017/28/01, Peter Dimberline) jnpgroup recommends that the following intrusive works are undertaken:

- Chemical testing of Made Ground and natural soils beneath the site. This testing should concentrate on areas in proximity to the fuel tanks and fire pit, as these locations are considered the most likely sources of contamination. General coverage of the northern half of the site would also be required as a result of the risk of asbestos. Ideally, exploratory holes should be sited hydrogeologically down-gradient of the sources of contamination, should the site layout permit. The testing should comprise an extensive suite of hydrocarbon, asbestos, metals and PAH contaminants;
- Testing of the soils to identify volume change potential of any cohesive material, concrete classification, and design CBR values;
- The installation of gas monitoring standpipes, should significant thicknesses of putrescible material be encountered. Vapour monitoring should be undertaken if gross hydrocarbon contamination be encountered.

8.2.2 jnpgroup recommends that the scope of the intrusive works is agreed with the Regulatory Authorities as they may have particular requirements that need to be taken into account.

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Figures / Drawings

Figure 1

Site Location Plan

john newton & partners
jnpgroup
Consulting Engineers

Project:

Roughbirchworth Lane, Oxspring

Project No:

S10565

1) This drawing and the design and details depicted thereon are the copyright of Peter Dimberline Chartered Architect.
2) All dimensions on this drawing are to be checked by the Contractor and any discrepancies are to be reported to the Architect.
3) Do not scale critical dimensions off this drawing.
4) Contractor to ensure that all Health & Safety requirements (CDM Regulations) in relation to this project will be complied with.

Tree Canopy Line

Tree Canopy Line

steps

steps

LP

Out Building

Out Building

RPA's of retained trees denoted thus :

T47

T46

T47

T3

T1

BT

BT

6

5

4

3

2

1

7

8

9

10

11

12

13

form highway standard turning head here with potential to serve the likely future expansion of the development to the NW

proposed access road

indicative footprint of a 'signature' plot as part of future development including outbuildings on part of footprint of existing outbuildings

these five plots, (1 to 5 inclusive), will be founded on a specialist designed mini/micro-pile foundation including suspended beam/cantlivered foundations as required to ensure minimum disturbance to RPA's of T1, T3, T43, T46 and T47

pair of semi-detached houses here to reflect the scale/proportion of the existing dwellings adjacent the site

Road Sign

northwest boundary of application site

north

Rev. A March '18
Site layout plan amended to take into account the comments included in the: 'Arboricultural Report and Impact Assessment' Ref: AWA 2150, dated March 2018.

REVISIONS

PETER DIMBERLINE Dip Arch, RIBA
CHARTERED ARCHITECT

2 TIPSEY COURT, STAINCROSS
BARNSLEY, S75 6FZ

tel/fax (01226) 390947
email: pdimberline@tiscali.co.uk

CLIENT
Mr P Faxon

PROJECT
Proposed residential development

LOCATION
Site off Roughbirchworth Lane, Oxspring, (South of TP trail)

DRAWING
Proposed site layout

SCALES 1:200 DATE Dec' 17

DRWG No. 2017/28/01 REV. A

DRAWN BY PD

Proposed site plan at 1:200 at A1

Appendix A

Limitations

10 INTRODUCTION

10.1.1 This report is confidential and has been prepared solely for the benefit of the client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from jnpgroup; a charge may be levied against such approval. jnpgroup accepts no responsibility or liability for the consequences of this document being used for any purpose or project other than for which it was commissioned, and: this document to any third party with whom and agreement has not been executed.

10.1.2 Any comments given within this report are based on the understanding that the proposed works to be undertaken will be as described in the introduction and the information referred to and provided by others and will be assumed to be correct and will not have been checked by jnpgroup and jnpgroup will not accept any liability or responsibility for any inaccuracy in such information.

10.1.3 Any deviation from the recommendations or conclusions contained in this report should be referred to jnpgroup in writing for comment and jnpgroup reserves the right to reconsider their recommendations and conclusions contained within. jnpgroup will not accept any liability or responsibility for any changes or deviations from the recommendations noted in this report without prior consultation and our full approval.

10.1.4 The details contained within this report reflect the site conditions prevailing at the time of investigation. jnpgroup warrants the accuracy of this report up to and including that date. Additional information, improved practice or changes in legislation may necessitate this report having to be reviewed in whole or in part after that date. If necessary, this report should be referred back to jnpgroup for re-assessment and, if necessary, re-appraisal.

10.1.5 This report is only valid when used in its entirety. Any information or advice included in the report should not be relied upon until considered in the context of the whole report. Whilst this report and the opinion made herein are correct to the best of jnpgroup's belief, jnpgroup cannot guarantee the accuracy or completeness of any information provided by third parties.

10.1.6 The report represents the finding and opinions of experience geotechnical and geoenvironmental engineers. jnpgroup does not provide legal advice and the advice of lawyers may also be required.

10.1.7 It should be noted that the following were not included as part of the agreed scope of works with the client: detailed ecological surveys and assessment; groundwater monitoring and sampling; geotechnical requirements etc.

10.1.8 jnpgroup has provided advice and made recommendations based on the findings of the work undertaken, however this is subject to the approval / acceptance by the relevant Regulatory Authorities.

10.2 Objectives

10.2.1 The work undertaken to provide the basis of this report comprised a study of available documented information from a variety of sources (including the Client), together with (where appropriate) a brief walk over inspection of the site. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only to the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, jnpgroup reserves the right to review such information and, if warranted, to modify the opinions accordingly. It should be noted that any risks identified in this report are perceived risks based on the information reviewed; actual risks can only be assessed following a physical investigation of the site.

Appendix B

Site Walkover Photographs

Entrance to the northern portion of the site

Northern portion of the site

Derelict cottages in northern portion of the site

Potential asbestos containing material discarded on-site

Fire Pit in centre of courtyard in northern portion of the site.

LPG tank

Northern boundary of the site

Historical railway cutting adjacent to the north-east

Appendix C

Groundsure Report

JNG Group

3rd Floor, Marlborough House, 48 Holly Walk,
LEAMINGTON SPA, CV32 5SY

Groundsure Reference:	GS-4939004
Your Reference:	S10565
Report Date	2 May 2018
Report Delivery Method:	Email - pdf

Enviro Insight

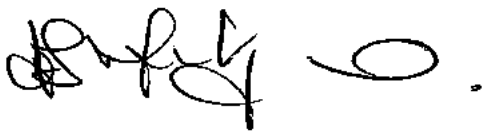
Address: ROUGHBIRCHWORTH COTTAGE, ROUGHBIRCHWORTH LANE, OXSPRING, BARNSLEY, S36 8YZ

Dear Sir/ Madam,

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

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

Yours faithfully,



Managing Director
Groundsure Limited

Enc.
Groundsure Enviroinsight

Enviro Insight

Address:	**ROUGHBIRCHWORTH COTTAGE, ROUGHBIRCHWORTH LANE, OXSPRING, BARNSLEY, S36 8YZ**
Date:	**2 May 2018**
Reference:	**GS-4939004**
Client:	**JNG Group**

NW N NE

W E

SW S SE

Aerial Photograph Capture date: 07-Jun-2013
Grid Reference: 426762,402048
Site Size: 0.39ha

Report Reference: GS-4939004
Client Reference: S10565

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	5	0	8	31
1.2 Additional Information – Historical Tank Database	0	0	0	3
1.3 Additional Information – Historical Energy Features Database	0	0	2	0
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	3	0
1.6 Potentially Infilled Land	5	0	8	25

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	1	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	1
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	1	2	0	0
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	0	0
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	0	0	4

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	0	0	1	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	1	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 Are there any records of Artificial Ground and Made Ground present beneath the study site?	None identified
5.2 Are there any records of Superficial Ground and Drift Geology present beneath the study site?	None 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 Are there any records of Strata Classification in the Superficial Geology within 500m of the study site?	Identified
6.2 Are there any 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	6
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	2	2
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)	2	0	0	0	Not searched	Not searched

Section 6: Hydrogeology and Hydrology

	0-500m					
	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Is there any Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site?	No	No	No	Yes	No	No
6.10 Ordnance Survey MasterMap Water Network entries within 500m of the site	0	0	2	28	Not searched	Not searched
6.11 Surface water features within 250m of the study site	No	No	Yes	Not searched	Not searched	Not searched

Section 7: Flooding

7.1 Are there any Enviroment Agency Zone 2 floodplains within 250m of the study site?	Identified
7.2 Are there any Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	Identified
7.3 What is the Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site?	Very Low
7.4 Are there any Flood Defences within 250m of the study site?	None identified
7.5 Are there any areas benefiting from Flood Defences within 250m of the study site?	None identified
7.6 Are there any areas used for Flood Storage within 250m of the study site?	None identified
7.7 What is the maximum BGS Groundwater Flooding susceptibility within 50m of the study site?	Potential at Surface
7.8 What is the BGS confidence rating for the Groundwater Flooding susceptibility areas?	Low

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	2	1	9
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	0	0	0	0	1	0
8.14 Records of Green Belt land	0	0	1	0	0	0

Section 9: Natural Hazards

9.1 What is the maximum risk of natural ground subsidence?	Very Low
9.1.1 What is the maximum Shrink-Swell hazard rating identified on the study site?	Negligible
9.1.2 What is the maximum Landslides hazard rating identified on the study site?	Very Low
9.1.3 What is the maximum Soluble Rocks hazard rating identified on the study site?	Negligible
9.1.4 What is the maximum Compressible Ground hazard rating identified on the study site?	Negligible
9.1.5 What is the maximum Collapsible Rocks hazard rating identified on the study site?	Very Low
9.1.6 What is the maximum Running Sand hazard rating identified on the study site?	Negligible
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 Are there any coal mining areas within 75m of the study site?	Identified
10.2 Are there any Non-Coal Mining areas within 50m of the study site boundary?	None identified
10.3 Are there any brine affected areas within 75m of the study site?	None identified

Using this report

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

1. Historical Industrial Sites

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

2. Environmental Permits, Incidents and Registers

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

3. Landfills and Other Waste Sites

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

4. Current Land Uses

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

5. Geology

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

6. Hydrogeology and Hydrology

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

7. Flooding

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

8. Designated Environmentally Sensitive Sites

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

9. Natural Hazards

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

10. Mining

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

11. Contacts

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

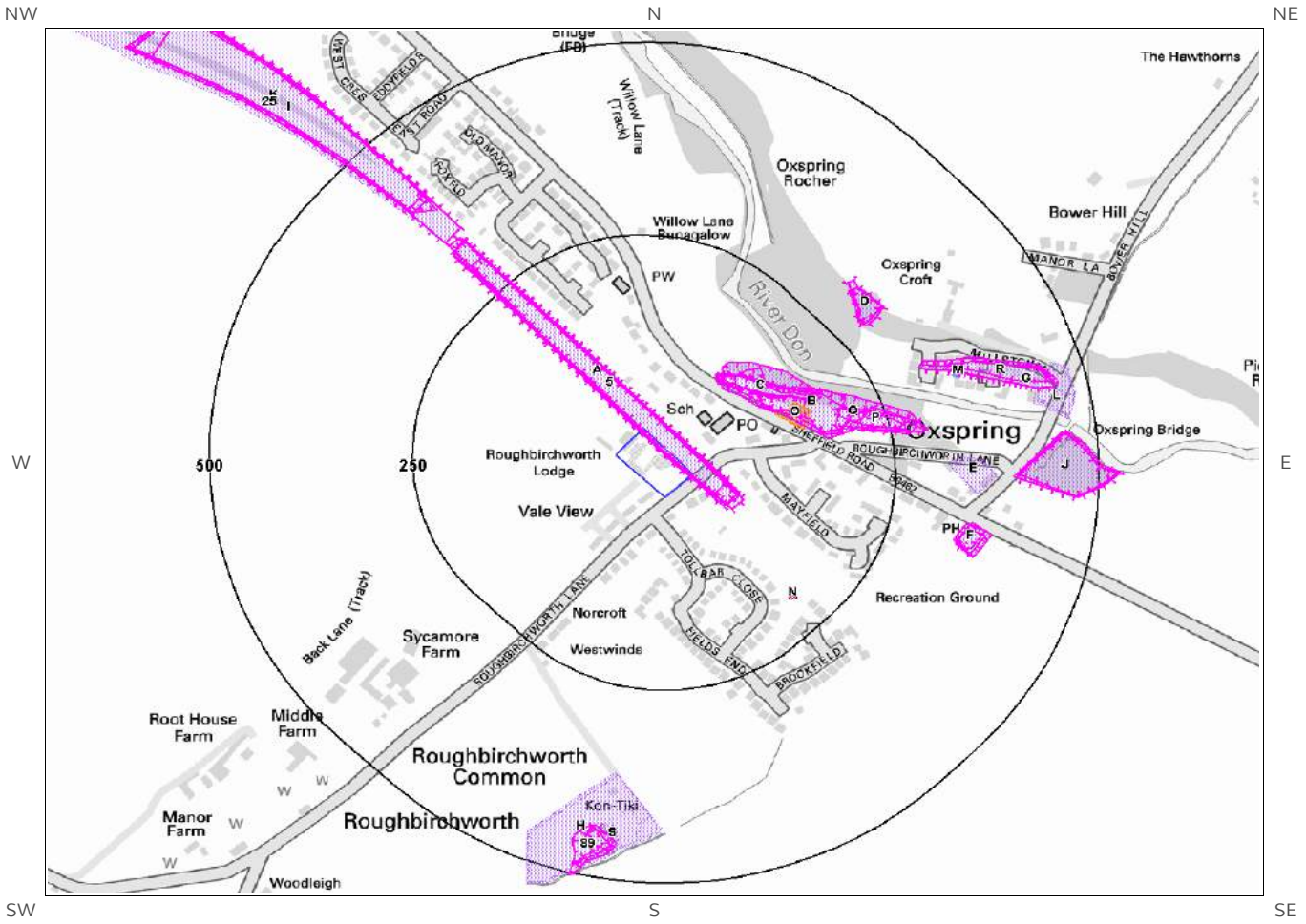
Note: Maps

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

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

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

1. Historical Land Use



Site Outline

250
500
Search Buffers (m)

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

Industrial Land Use

Potentially Infilled Land

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

Energy Features

Petrol Stations

Tanks

Garages

1. Historical Industrial Sites

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

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

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 44

ID	Distance [m]	Direction	Use	Date
1A	0	On Site	Cuttings	1904
2A	0	On Site	Cuttings	1948
3A	0	On Site	Cuttings	1891
4A	0	On Site	Cuttings	1938
5	0	On Site	Cuttings	1951
6B	104	NE	Unspecified Disused Quarry	1904
7B	105	NE	Unspecified Ground Workings	1891
8C	110	NE	Unspecified Disused Quarry	1938
9C	111	NE	Unspecified Disused Quarry	1948
10B	113	NE	Unspecified Heap	1965
11C	115	NE	Unspecified Disused Quarry	1951
12P	187	E	Unspecified Ground Workings	1951
13Q	196	NE	Unspecified Pit	1948
14D	283	NE	Unspecified Quarry	1938
15D	285	NE	Unspecified Quarry	1948
16D	287	NE	Unspecified Quarry	1965
17D	287	NE	Unspecified Quarry	1951
18D	287	NE	Unspecified Quarry	1987
19G	312	NE	Unspecified Disused Mill	1938
20E	314	E	Disused Corn Mill	1904
21E	316	E	Corn Mill	1891
22F	337	E	Unspecified Tank	1951
23F	337	E	Unspecified Pit	1965
24G	341	NE	Unspecified Disused Mill	1951
25	341	NW	Railway Sidings	1891
26I	341	NW	Cuttings	1891
27H	360	S	Unspecified Mill	1904
28H	363	S	Unspecified Mill	1948
29H	364	S	Unspecified Mill	1951
30H	364	S	Unspecified Mill	1965

31H	366	S	Unspecified Mill	1938
32I	380	NW	Cuttings	1938
33J	394	E	Sewage Works	1948
34I	397	NW	Cuttings	1951
35J	398	E	Sewage Works	1938
36J	398	E	Sewage Works	1938
37J	399	E	Unspecified Works	1965
38J	399	E	Unspecified Works	1987
39J	399	E	Sewage Works	1951
40K	404	NW	Cuttings	1948
41K	404	NW	Cuttings	1904
42S	429	S	Unspecified Mill	1891
43L	436	E	Unspecified Mill	1904
44L	440	E	Unspecified Disused Mill	1948

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: 3

ID	Distance (m)	Direction	Use	Date
45M	344	E	Tanks	1993
46M	344	E	Tanks	1984
47M	344	E	Tanks	

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: 2

ID	Distance (m)	Direction	Use	Date
48N	195	SE	Electricity Substation	1982
49N	196	SE	Electricity Substation	1993

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: 3

ID	Distance (m)	Direction	Use	Date
50O	127	NE	Garage	1988
51O	127	NE	Garage	1993
52O	127	NE	Garage	

1.6 Potentially Infilled Land

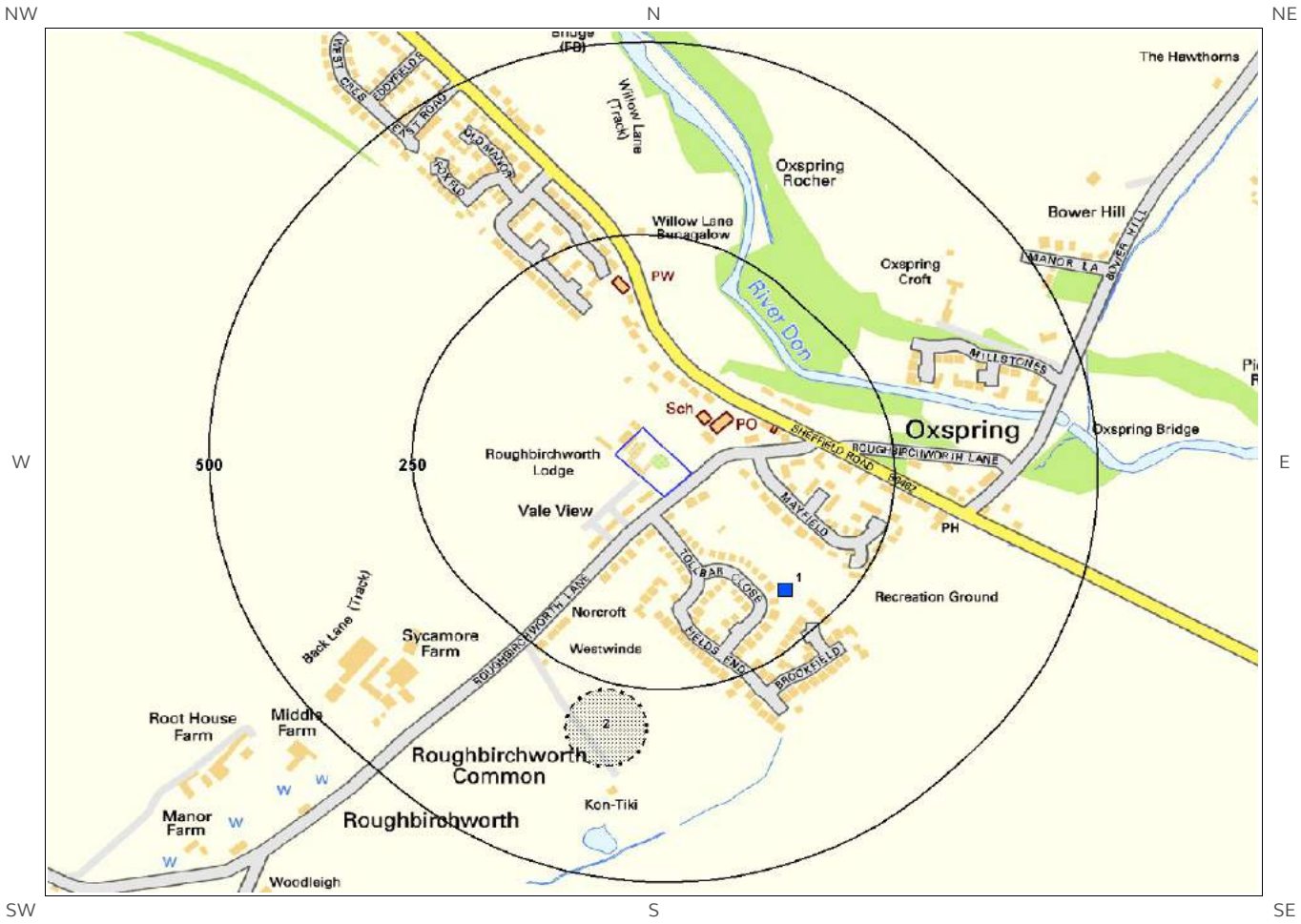
Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 38

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

ID	Distance(m)	Direction	Use	Date
53A	0	On Site	Cuttings	1891
54A	0	On Site	Cuttings	1938
55A	0	On Site	Cuttings	1951
56A	0	On Site	Cuttings	1904
57A	0	On Site	Cuttings	1948
58B	104	NE	Unspecified Disused Quarry	1904
59O	105	NE	Unspecified Ground Workings	1891
60C	110	NE	Unspecified Disused Quarry	1938
61C	111	NE	Unspecified Disused Quarry	1948
62B	113	NE	Unspecified Heap	1965
63C	115	NE	Unspecified Disused Quarry	1951
64P	187	E	Unspecified Ground Workings	1951
65Q	196	NE	Unspecified Pit	1948
66D	283	NE	Unspecified Quarry	1938
67D	285	NE	Unspecified Quarry	1948
68D	287	NE	Unspecified Quarry	1965
69D	287	NE	Unspecified Quarry	1951

70D	287	NE	Unspecified Quarry	1987
71R	312	NE	Water Body	1938
72R	314	NE	Water Body	1904
73R	314	NE	Water Body	1948
74F	333	E	Reservoir	1948
75F	333	E	Reservoir	1904
76F	336	E	Reservoir	1938
77F	337	E	Unspecified Pit	1965
78R	341	NE	Water Body	1951
79I	341	NW	Cuttings	1891
80K	380	NW	Cuttings	1938
81J	394	E	Sewage Works	1948
82K	397	NW	Cuttings	1951
83J	398	E	Sewage Works	1938
84J	398	E	Sewage Works	1938
85J	399	E	Sewage Works	1951
86K	404	NW	Cuttings	1948
87K	404	NW	Cuttings	1904
88S	433	S	Pond	1904
89	434	S	Pond	1891
90S	438	S	Pond	1987

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:

1

The following Licensed Discharge Consents records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
1	189	SE	426920 401880	Address: TOLL BAR CLOSE SPS, TOLL BAR CLOSE, OXSPRING, SHEFFIELD, SOUTH YORKSHIRE Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: WADC431 Permit Version: 1	Receiving Water: RIVER DON Status: REVOKED (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 02/11/1989 Effective Date: 02-Nov-1989 Revocation Date: 17/09/2002

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: 1

The following COMAH & NIHHS Authorisation records provided by the Health and Safety Executive are represented as polygons or buffered points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	Company	Address	Operational Status	Tier
2	258	S	Conoco Ltd	Conoco Ltd, Blackmoor Terminal, Oxspring, Sheffield, S36 8YR	Historical NIHHS Site	-

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

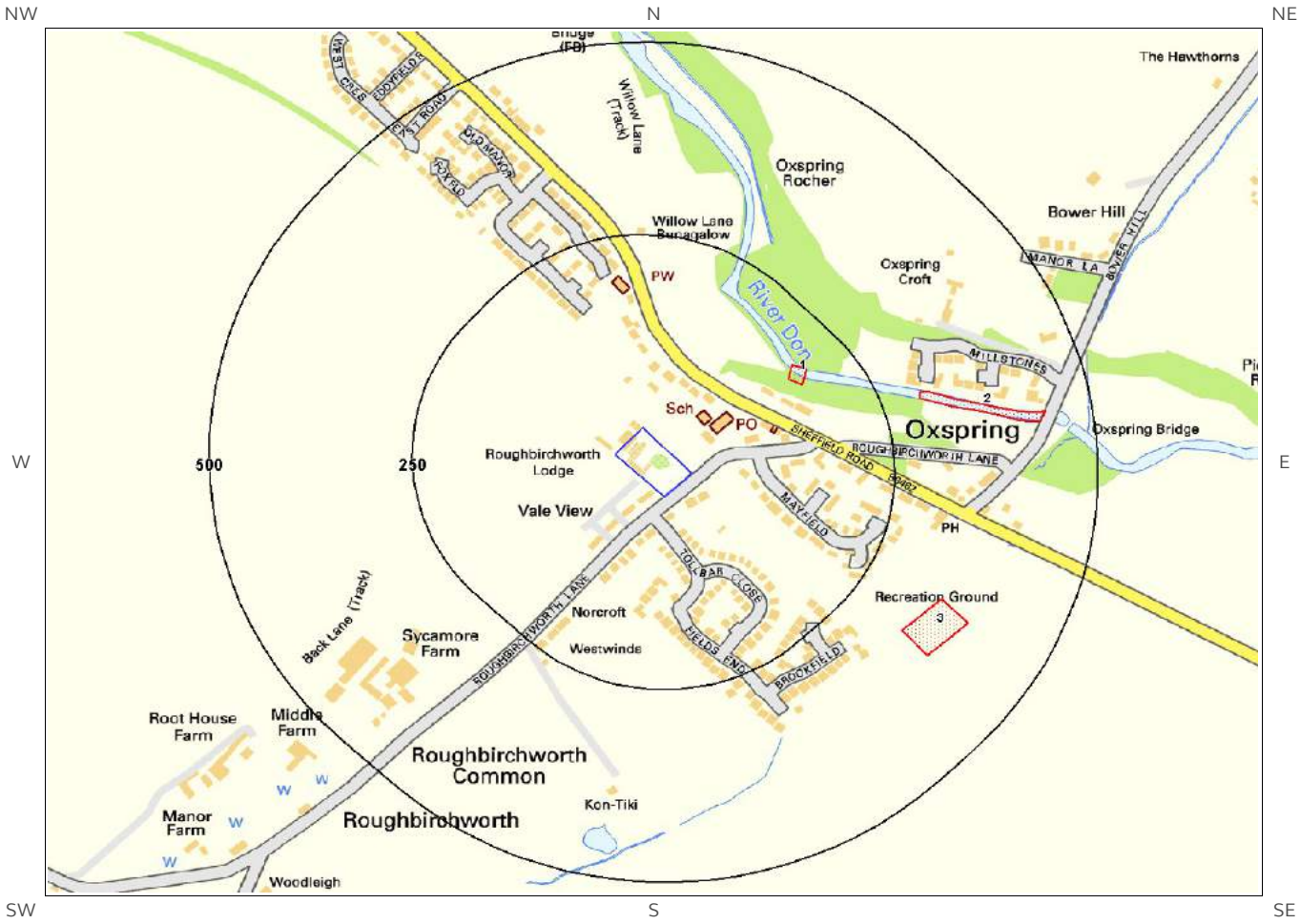
Database searched and no data found.

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

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

Database searched and no data found.

3. Landfill and Other Waste Sites Map



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:

3

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	170	NE	426900 402100	Site Address: Land north of Sheffield Road, Bower Hill, Oxspring Waste Licence: - Site Reference: 4400/(161) Waste Type: - Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: Stevlorra Developments Limited Licence Holder: Stevlorra First Recorded: 31-Dec-1994 Last Recorded: 31-Dec-1994
2	297	E	427100 402100	Site Address: Bower Hill, Oxspring Waste Licence: - Site Reference: - Waste Type: - Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: Mr Walsh Licence Holder: Mr Walsh First Recorded: 31-Dec-1966 Last Recorded: 31-Dec-1996
3	329	SE	427100 401800	Site Address: Oxspring Recreation Ground, Sheffield Road, Oxspring, Sheffield Waste Licence: Yes Site Reference: B389, 4400/B389, 20B389(85), WD20 B389 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: 05-Aug-1983 Licence Surrendered: 17-May-1988 Licence Holder Address: c/o Mrs S Morton, Clerk, 48 Mayfield, Oxspring, Sheffield Operator: Oxspring Parish Council Licence Holder: Oxspring Parish Council First Recorded: 05-Aug-1983 Last Recorded: 17-May-1988

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

0

Database searched and no data found.

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

0

Database searched and no data found.

3.2 Other Waste Sites

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

0

Database searched and no data found.

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

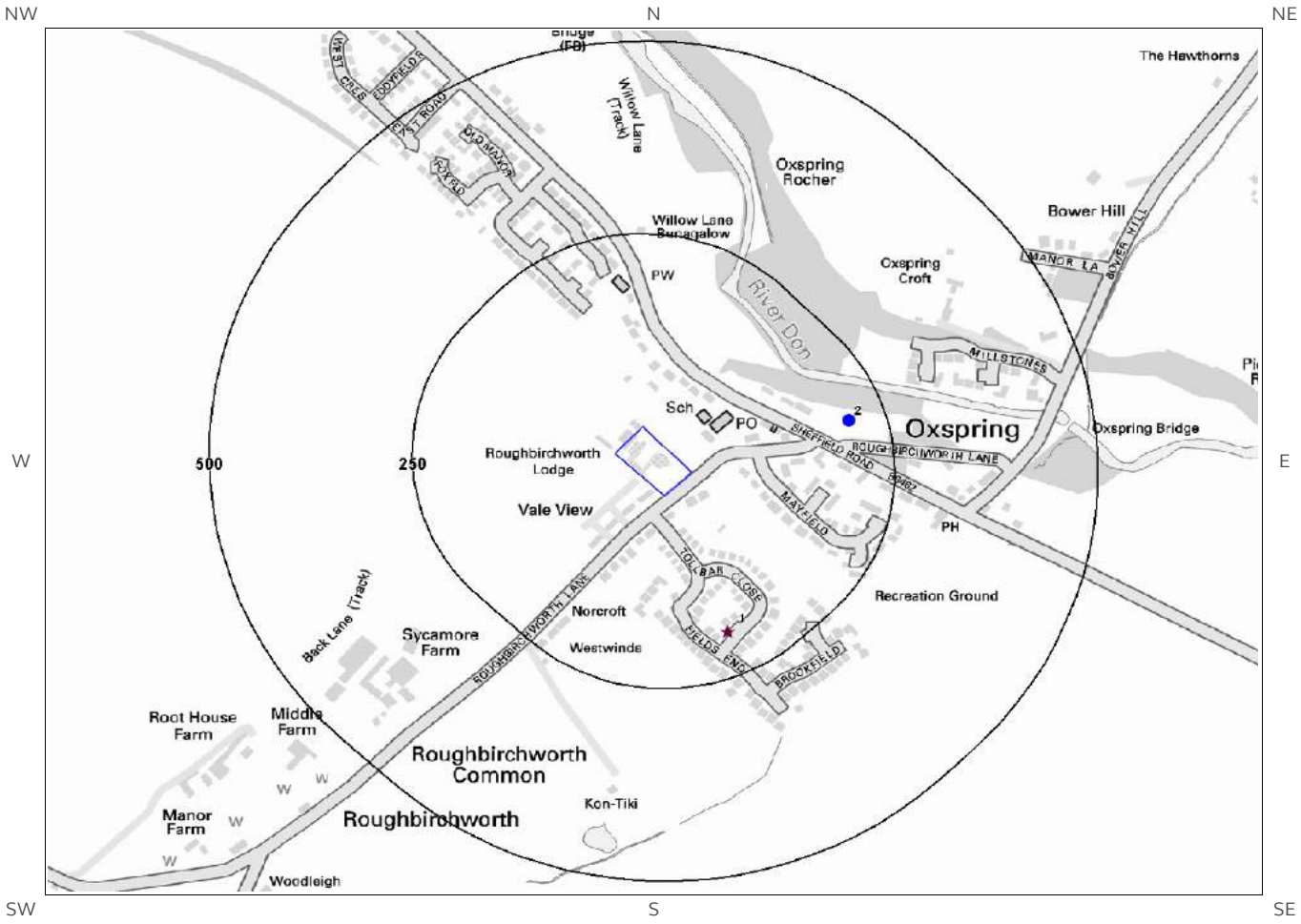
4

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

ID	Distance (m)	Direction	NGR	Details	
Not shown	1268	NW	425701 402821	Site Address: Laurence Works Ind Estate, Springvale, Penistone, South Yorkshire, S36 6HF Type: 75kte Vehicle Depollution Facility Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: BUL037 EPR reference: EA/EPR/LB3537RK/V002 Operator: Bulk Metals Limited Waste Management licence No: 104775 Annual Tonnage: 74999.0	Issue Date: 04/06/2013 Effective Date: - Modified: 13/09/2016 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Bulk Metals Ltd Correspondence Address: -
Not shown	1286	NW	425670 402810	Site Address: Unit 1, Sheffield Road, Penistone, Sheffield, South Yorkshire, S36 6HF Type: Household, Commercial & Industrial Waste T Stn Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: PEN005 EPR reference: - Operator: Penistone Waste Management Ltd Waste Management licence No: 65406 Annual Tonnage: 25000.0	Issue Date: 04/05/2005 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: - Correspondence Address: Unit 1, Sheffield Road, Penistone, Sheffield, South Yorkshire, S36 6HF

ID	Distance (m)	Direction	NGR	Details	
Not shown	1286	NW	425670 402810	Site Address: Laurence Works, Sheffield Road, Penistone, Sheffield, South Yorkshire, S36 6HF Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: PEN005 EPR reference: EA/EPR/EP3992ZW/A001 Operator: Penistone Waste Management Ltd Waste Management licence No: 65406 Annual Tonnage: 25000.0	Issue Date: 04/05/2005 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Penistone Waste Management Correspondence Address: -
Not shown	1286	NW	425670 402810	Site Address: Laurence Works, Sheffield Road, Penistone, Sheffield, South Yorkshire, S36 6HF Type: Household, Commercial & Industrial Waste T Stn Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: BWM001 EPR reference: EA/EPR/FB3939RN/V002 Operator: Bulk Waste Management Limited Waste Management licence No: 65406 Annual Tonnage: 24999.0	Issue Date: 04/05/2005 Effective Date: 19/04/2012 Modified: 14/12/2012 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Lawrence Works Correspondence Address: -

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: 1

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

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	192	SE	Electricity Sub Station	426849 401825	S36	Electrical Features	Infrastructure and Facilities

4.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: 1

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

ID	Distance (m)	Direction	NGR	Company	Address	LPG	Status
2	204	E	426998 402099	Obsolete	Oxspring Garage, Sheffield Road, Sheffield Road, Oxspring, Sheffield, South Yorkshire, S30 6YQ	Not Applicable	Obsolete

4.3 National Grid High Voltage Underground Electricity Transmission Cables

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

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

Database searched and no data found.

4.4 National Grid High Pressure Gas Transmission Pipelines

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

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

Database searched and no data found.

5. Geology

5.1 Artificial Ground and Made Ground

Database searched and no data found.

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

5.2 Superficial Ground and Drift Geology

Database searched and no data found.

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

5.3 Bedrock and Solid Geology

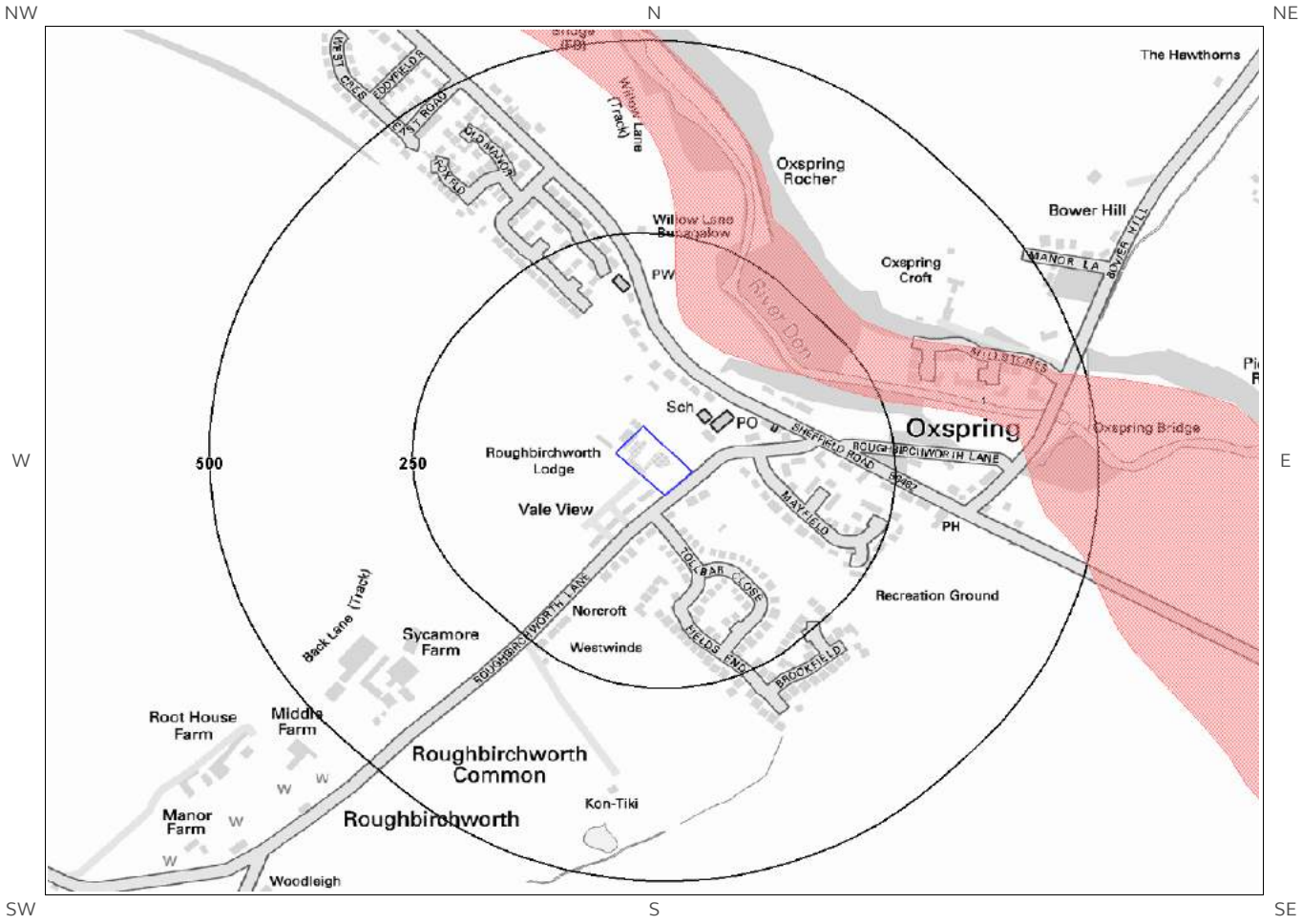
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
GR-SDST	GRENOSIDE SANDSTONE	SANDSTONE

(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

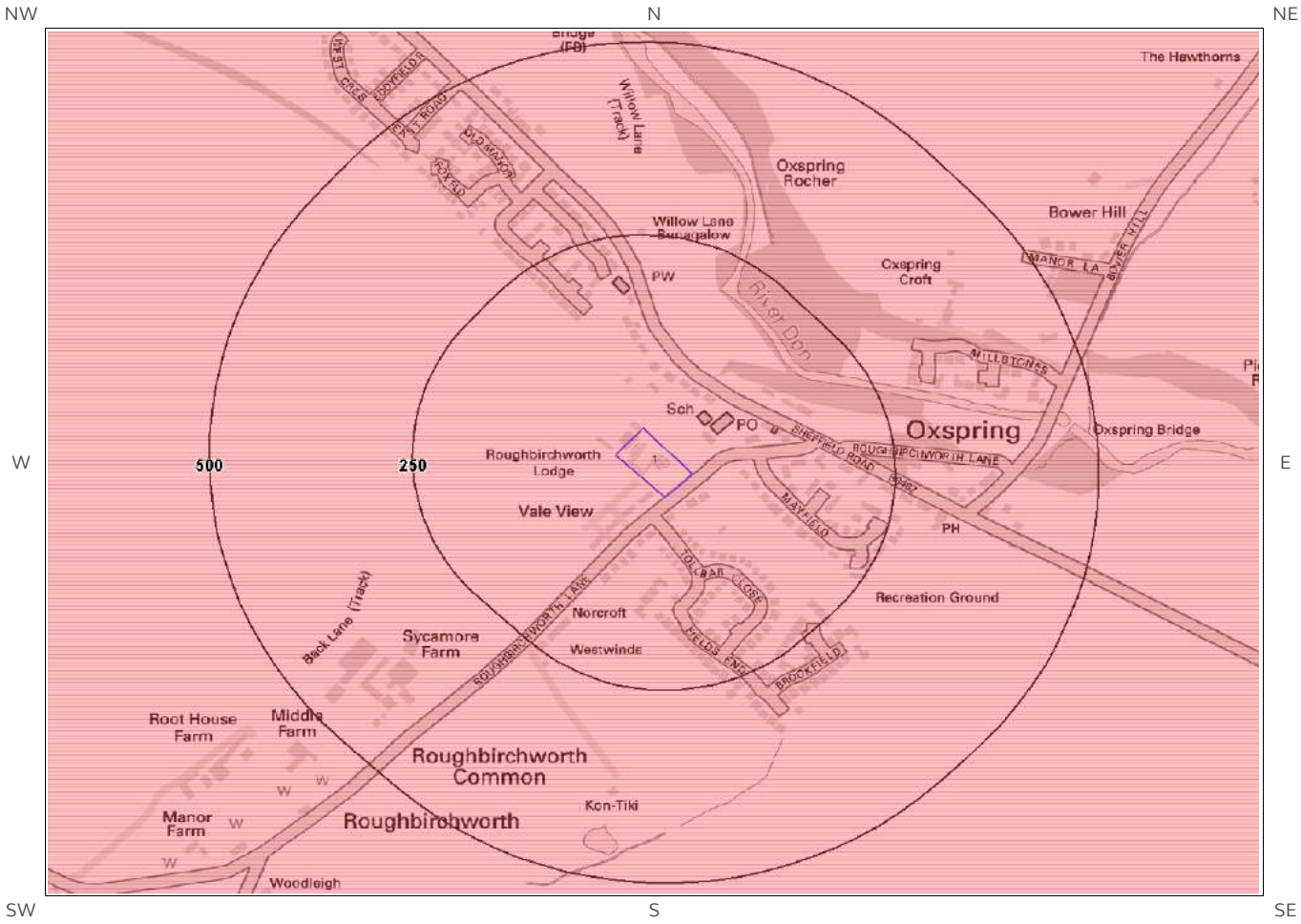
Secondary (B) Aquifer - Lower Permeability Layers

Secondary Aquifer - Undifferentiated Layers

Unproductive

Unknown (lakes and landslip)

6b. Aquifer Within Bedrock Geology and Abstraction Licenses



Site Outline

250
500
Search Buffers (m)

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

Secondary (B) Aquifer - Lower Permeability Layers

Groundwater Abstraction Licence

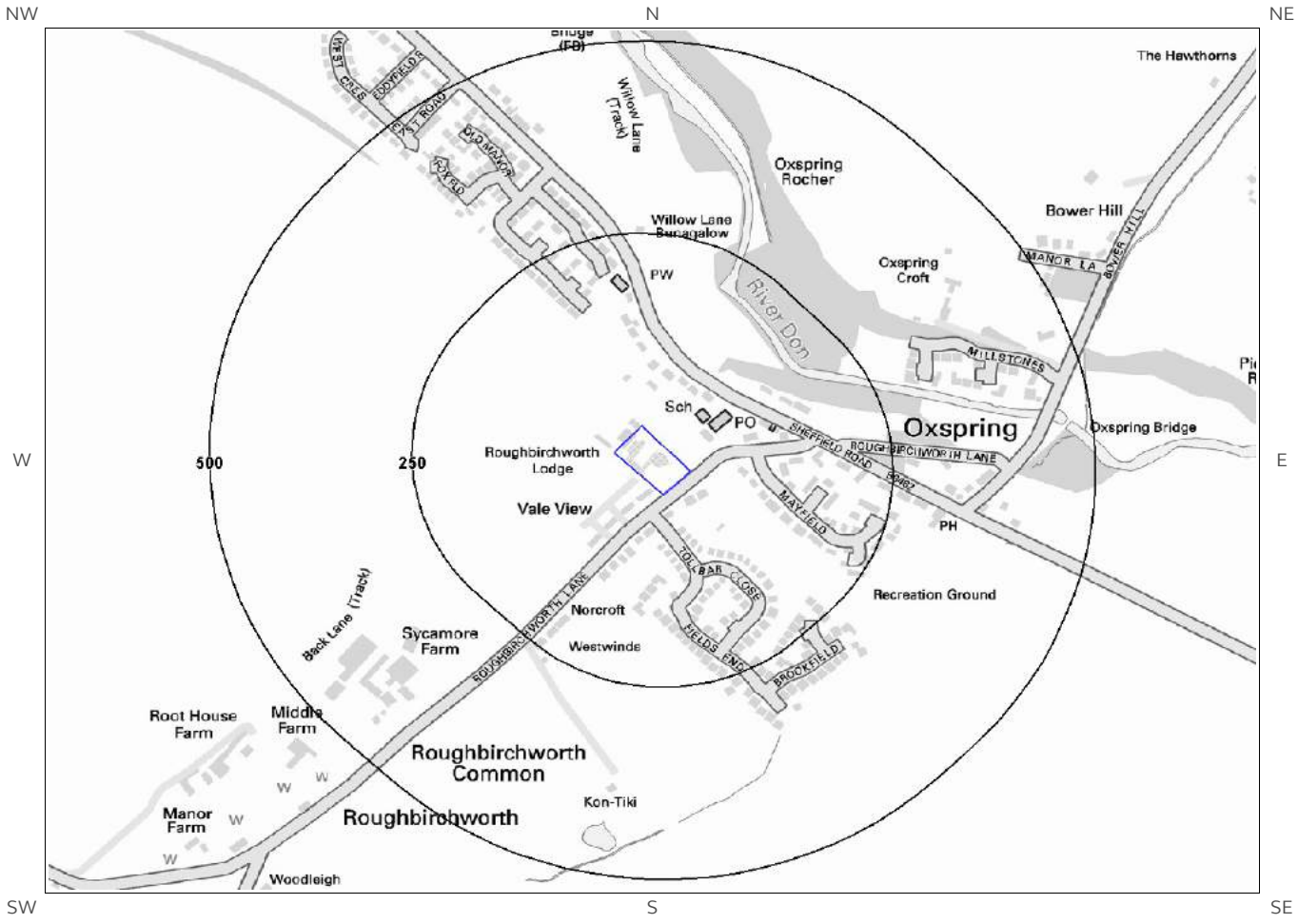
Secondary Aquifer - Undifferentiated Layers

Unproductive

Unknown (lakes and landslip)

Surface Water Abstraction Licence

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



Site Outline

250 500 Search Buffers (m)

Source Protection Zone 1 - Inner Catchment

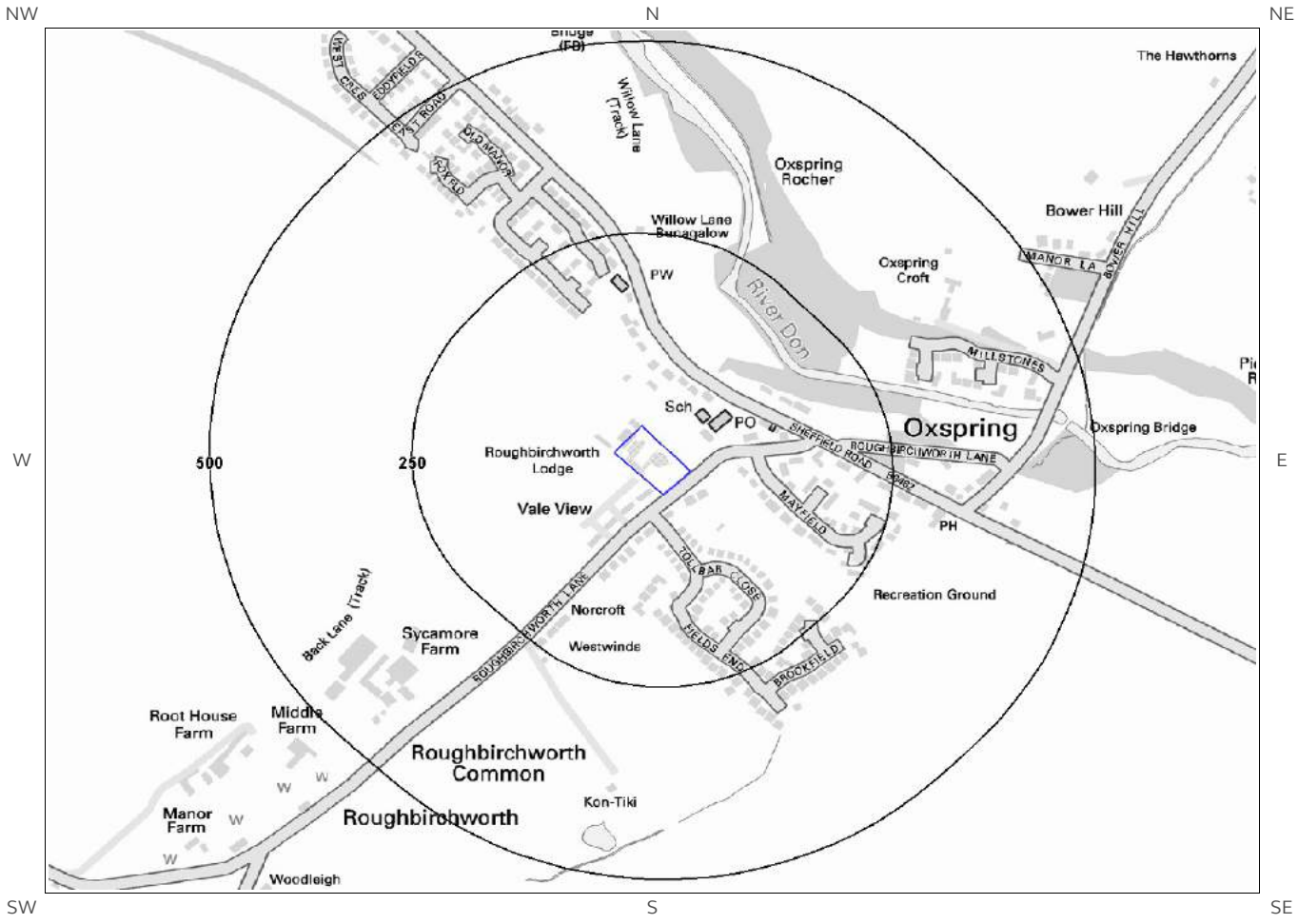
Source Protection Zone 2 - Outer Catchment

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)

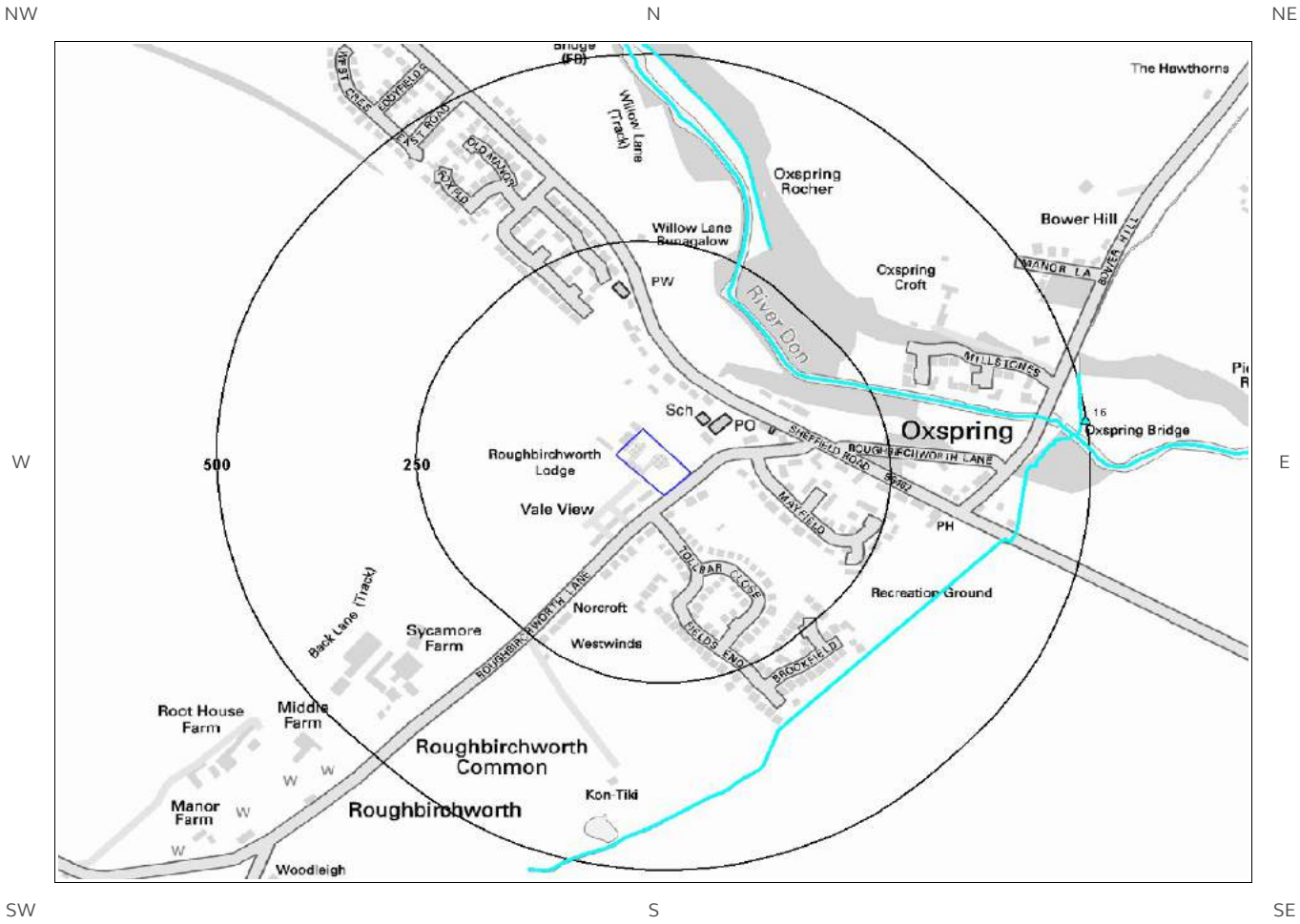
Source Protection Zone 1 - Inner Catchment

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)

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

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

6.Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

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

From 1 April 2010, the Environment Agency/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	134	NE	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

6.2 Aquifer within Bedrock Deposits

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

From 1 April 2010, the Environment Agency/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	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

6.3 Groundwater Abstraction Licences

Are there any 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	1626	S	427060 400400	Status: Historical Licence No: 2/27/05/144 Details: General Farming & Domestic Direct Source: Groundwaters Point: Spring - Oxspring Data Type: Point Name: PLANT	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: 0311902 Original Start Date: 30/6/1966 Expiry Date: - Issue No: 100 Version Start Date: 15/2/1968 Version End Date:
Not shown	1626	S	427060 400400	Status: Historical Licence No: 2/27/05/144 Details: General Farming & Domestic Direct Source: Groundwaters Point: Gravity Data Type: Point Name: PLANT	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: 311902 Original Start Date: 30/6/1966 Expiry Date: - Issue No: 100 Version Start Date: 15/2/1968 Version End Date:
Not shown	1817	SW	425500 400700	Status: Historical Licence No: 2/27/05/020 Details: General Farming & Domestic Direct Source: Groundwaters Point: Well - Coal Measures - Oxspring Data Type: Point Name: STUART	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: 00460 Original Start Date: 14/12/1965 Expiry Date: - Issue No: 100 Version Start Date: 14/12/1965 Version End Date:
Not shown	1872	SW	425800 400400	Status: Historical Licence No: 2/27/05/001 Details: General Farming & Domestic Direct Source: Groundwaters Point: Borehole - Coal Measures - Oxspring Data Type: Point Name: STUART	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: 00080 Original Start Date: 1/12/1965 Expiry Date: - Issue No: 100 Version Start Date: 1/12/1965 Version End Date:
Not shown	1909	NW	425000 402900	Status: Historical Licence No: 2/27/05/010 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Groundwaters Point: Borehole X2 - Coal Measures - Penistone Data Type: Point Name: WILLIAM COOK HI-TEC INTEGRITY LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: 45 Original Start Date: 7/12/1965 Expiry Date: - Issue No: 100 Version Start Date: 31/5/1996 Version End Date:
Not shown	1909	NW	425000 402900	Status: Historical Licence No: 2/27/05/010 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Groundwaters Point: Borehole X2 Data Type: Point Name: WILLIAM COOK HI-TEC INTEGRITY LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: 45 Original Start Date: 7/12/1965 Expiry Date: - Issue No: 100 Version Start Date: 31/5/1996 Version End Date:

6.4 Surface Water Abstraction Licences

Are there any Surface Water Abstraction Licences within 2000m of the study site? Identified

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

ID	Distance (m)	Direction	NGR	Details	
Not shown	754	NW	426300 402700	Status: Historical Licence No: 2/27/05/104 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Surface Water Point: River Don Data Type: Point Name: WINTERBOTTOM (WIREDRAWERS) LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: 4322 Original Start Date: 17/3/1966 Expiry Date: - Issue No: 100 Version Start Date: 17/3/1966 Version End Date:
Not shown	754	NW	426300 402700	Status: Historical Licence No: 2/27/05/104 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Surface Water Point: River Don -- Pump Data Type: Point Name: WINTERBOTTOM (WIREDRAWERS) LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: 4322 Original Start Date: 17/3/1966 Expiry Date: - Issue No: 100 Version Start Date: 17/3/1966 Version End Date:
Not shown	1777	SE	427890 400620	Status: Historical Licence No: 2/27/05/201 Details: Hydroelectric Power Generation Direct Source: Surface Water Point: River Don - The Old Mill - Thurgoland Data Type: Point Name: ROLLINSON	Annual Volume (m^3): 10249200 Max Daily Volume (m^3): 28080 Application No: 8268 Original Start Date: 4/9/2007 Expiry Date: 31/3/2017 Issue No: 2 Version Start Date: 5/3/2008 Version End Date:
Not shown	1778	SE	427900 400626	Status: Active Licence No: 2/27/05/201/R01 Details: Hydroelectric Power Generation Direct Source: Surface Water Point: River Don - The Old Mill - Thurgoland Data Type: Point Name: ROLLINSON	Annual Volume (m^3): 10249200 Max Daily Volume (m^3): 28080 Application No: NPS/WR/021584 Original Start Date: 1/4/2017 Expiry Date: 31/3/2029 Issue No: 1 Version Start Date: 1/4/2017 Version End Date:

6.5 Potable Water Abstraction Licences

Are there any Potable Water Abstraction Licences within 2000m of the study site? None identified

Database searched and no data found.

6.6 Source Protection Zones

Are there any 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

Are there any 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

Is there any 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
0	On Site	Minor Aquifer/High Leaching Potential	H3	Coarse textured or moderately shallow soils which readily transmit non-adsorbed pollutants and liquid discharges but have some ability to attenuate adsorbed pollutants because of their clay or organic matter content.
0	On Site	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

Is there any Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site? Identified

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

Chemical quality data is based on the General Quality Assessment Headline Indicators scheme (GQAHI). In England, each chemical sample is measured for ammonia and dissolved oxygen. In Wales, the samples are measured for biological oxygen demand (BOD), ammonia and dissolved oxygen. The results are graded from A ('Very Good') to F ('Bad').

The following Chemical Quality records are shown on the Hydrology Map (6e):

					Chemical Quality Grade				
ID	Distance (m)	Direction	NGR	River Quality Grade	2005	2006	2007	2008	2009
16	499	E	427300 402100	River Name: River Don Reach: Cubley Brook Cheesebottom Stw End/Start of Stretch: Sample Point NGR	A	A	A	A	A

6.10 Ordnance Survey MasterMap Water Network

Are there any Ordnance Survey MasterMap Water Network entries within 500m of the study site? None identified

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	186 NE	River Don	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 11.2
9	186 NE	River Don	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 11.2
2	288 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 2.0
10	288 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 2.0

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
3	328 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
11	328 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
4	343 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
Not shown	343 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
5	390 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 1.1
Not shown	390 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 1.1
6	401 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
Not shown	401 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
7	415 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
Not shown	415 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
8	420 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
Not shown	420 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
9	425 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
10	425 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
Not shown	425 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
Not shown	425 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
11	466 E	River Don	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
Not shown	466 E	River Don	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
12	470 E	River Don	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 12.5
Not shown	470 E	River Don	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 12.5
13	481 E	River Don	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 12.5
Not shown	481 E	River Don	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 12.5
14	484 E	River Don	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 12.6
15	484 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
Not shown	484 E	River Don	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 12.6
Not shown	484 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Don and Rother Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided

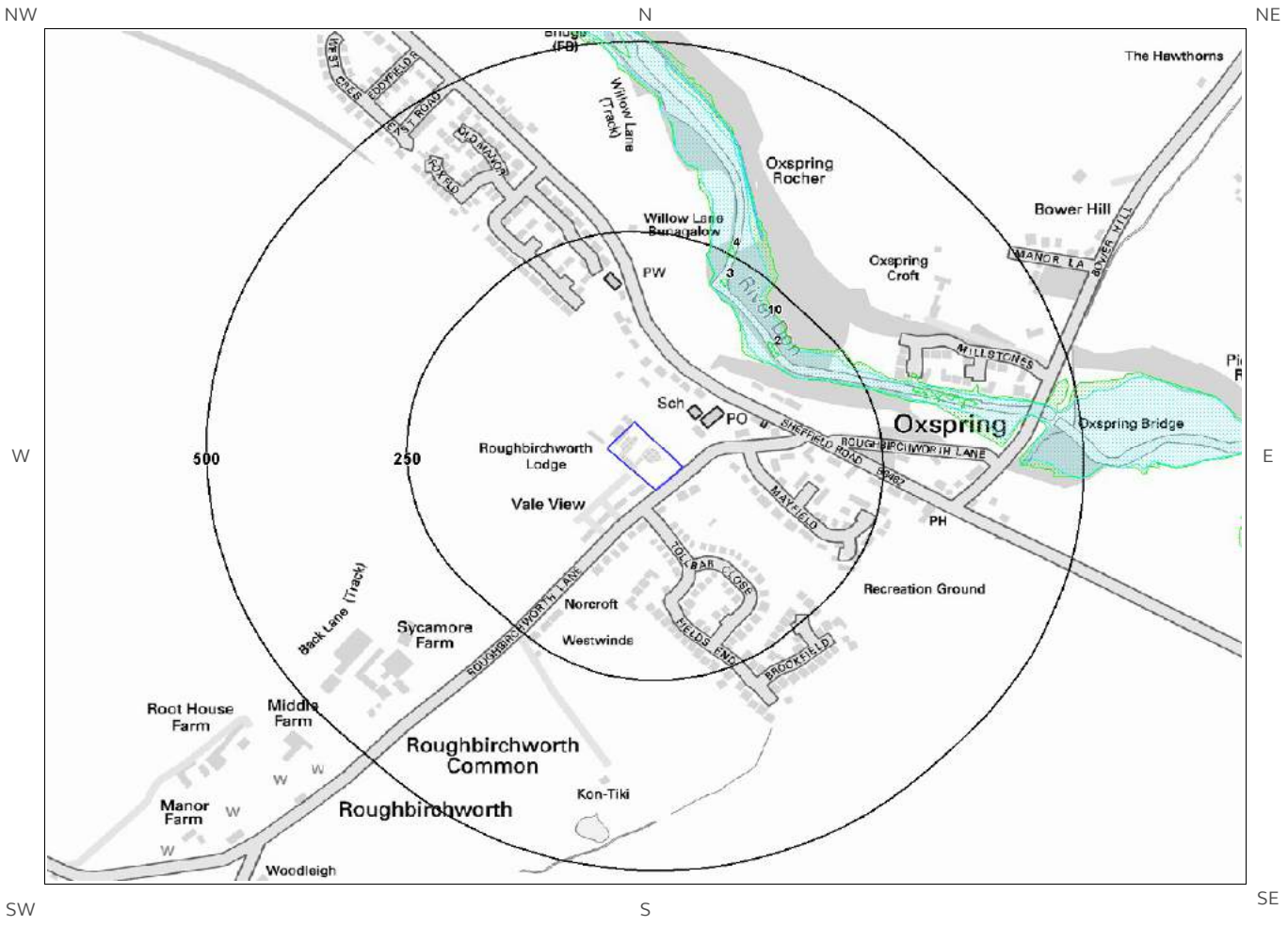
6.11 Surface Water Features

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

The following surface water records are not represented on mapping:

Distance (m)	Direction
182	NE

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

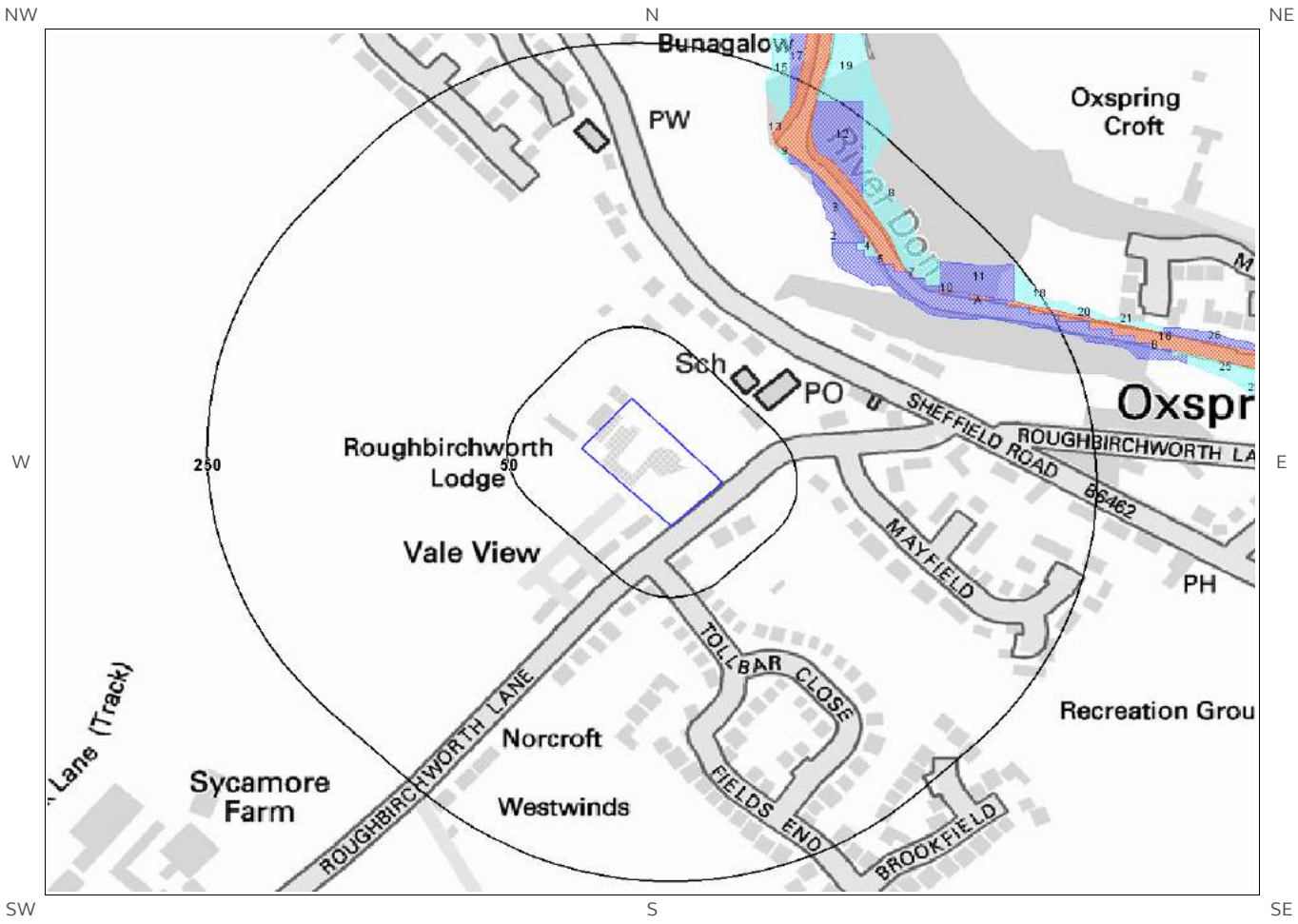
Zone 3 Floodplain

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

Is the site within 250m of an Environment Agency/Natural Resources Wales Zone 2 floodplain? 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	161	NE	19-Mar-2018	Zone 2 - (Fluvial /Tidal Models)
2	184	NE	19-Mar-2018	Zone 2 - (Fluvial /Tidal Models)
3	210	NE	19-Mar-2018	Zone 2 - (Fluvial /Tidal Models)
4	245	NE	19-Mar-2018	Zone 2 - (Fluvial /Tidal Models)

7.2 River and Coastal Zone 3 Flooding

Is the site within 250m of an Environment Agency/Natural Resources Wales Zone 3 floodplain? 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	168	NE	19-Mar-2018	Zone 3 - (Fluvial Models)

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

What is the highest risk of flooding onsite? Very Low

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 Very Low (less than 1 in 1000) chance of flooding in any given year.

7.4 Flood Defences

Are there any Flood Defences within 250m of the study site? None identified

Database searched and no data found.

7.5 Areas benefiting from Flood Defences

Are there any areas benefiting from Flood Defences within 250m of the study site? None identified

7.6 Areas benefiting from Flood Storage

Are there any areas used for Flood Storage within 250m of the study site? None identified

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site? Identified

Does this relate to Clearwater Flooding or Superficial Deposits Flooding? Clearwater 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 What is the 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.

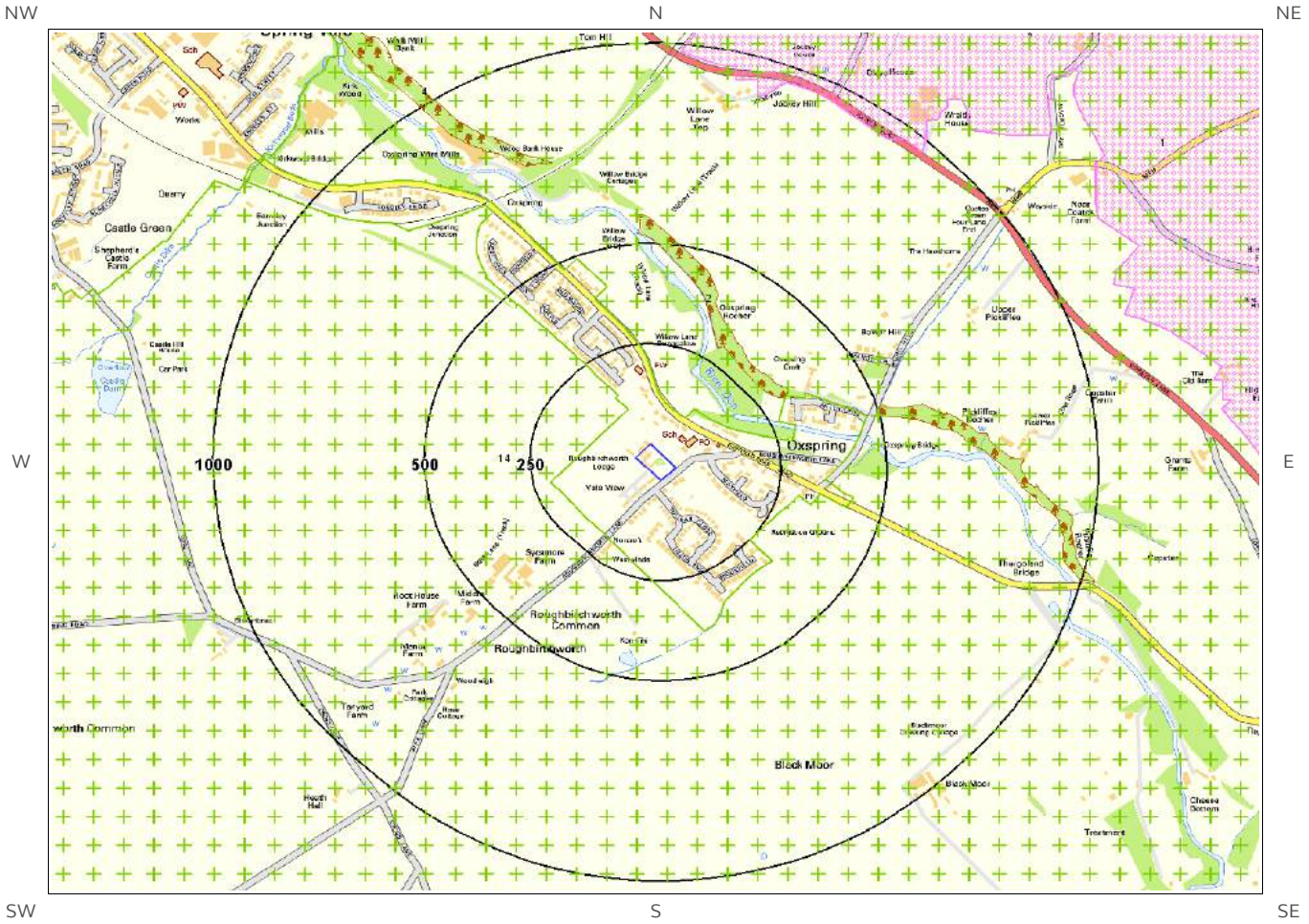
7.8 Groundwater Flooding Confidence Areas

What is the British Geological Survey confidence rating in this result? Low

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

Presence of 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:

12

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
2	283	NE	UNKNOWN	Ancient and Semi-Natural Woodland
3	500	E	UNKNOWN	Ancient and Semi-Natural Woodland
4	740	N	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1695	NE	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1742	NE	UNKNOWN	Ancient Replanted Woodland
Not shown	1755	N	UNKNOWN	Ancient Replanted Woodland
Not shown	1792	NE	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1828	S	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1935	N	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1946	S	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1977	NE	UNKNOWN	Ancient Replanted Woodland
Not shown	1981	NW	UNKNOWN	Ancient and Semi-Natural Woodland

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

1

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
1	901	N	Existing	DEFRA

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

1

Green Belt data contains Ordnance Survey data © Crown copyright and database right [2015].

ID	Distance	Direction	Green Belt Name	Local Authority Name
14	97	NW	Liverpool, Manchester and West Yorks Greenbelt	Barnsley District (B)

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

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

9.1.1 Shrink Swell

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

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

Hazard
Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.

9.1.2 Landslides

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

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

Hazard
Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

9.1.3 Soluble Rocks

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

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

Hazard
Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

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

9.1.4 Compressible Ground

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

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

Hazard
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.

9.1.5 Collapsible Rocks

What is the 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

What is the maximum Running Sand** hazard rating identified on the study site? Negligible

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

Hazard
No indicators for 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.

* 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

Are there any coal mining areas within 75m of the study site? Identified

The following coal mining information provided by the Coal Authority is not represented on Mapping:

Distance (m)	Direction	Details
0	On Site	The study site is located within the specified search distance of an identified mining area. Further details concerning this can be obtained from the Coal Authority Helpline on 0845 762 6848.

10.2 Non-Coal Mining

Are there any Non-Coal Mining areas within 50m of the study site boundary? None identified

Database searched and no data found.

10.3 Brine Affected Areas

Are there any 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: Barnsley Metropolitan Borough Council
Phone: 01226 770770
Web: http://www.barnsley.gov.uk/
Address: PO Box 634, Barnsley, South Yorkshir, S70 9GG

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-sept-2016

Groundsure
LOCATION INTELLIGENCE

JNG Group

3rd Floor, Marlborough House, 48 Holly Walk,
LEAMINGTON SPA, CV32 5SY

Groundsure Reference:	GS-4939005
Your Reference:	S10565
Report Date	2 May 2018
Report Delivery Method:	Email - pdf

Geo Insight

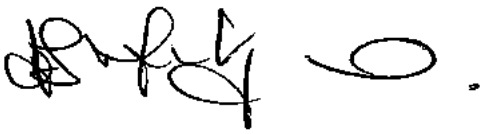
Address: ROUGHBIRCHWORTH COTTAGE, ROUGHBIRCHWORTH LANE, OXSPRING, BARNSLEY, S36 8YZ

Dear Sir/ Madam,

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

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

Yours faithfully,



Managing Director
Groundsure Limited

Enc.
Groundsure Geo Insight

Geo Insight

Address:	**ROUGHBIRCHWORTH COTTAGE, ROUGHBIRCHWORTH LANE, OXSPRING, BARNSLEY, S36 8YZ**
Date:	**2 May 2018**
Reference:	**GS-4939005**
Client:	**JNG Group**

NW N NE

W E

SW S SE

Aerial Photograph Capture date:	07-Jun-2013
Grid Reference:	426762,402048
Site Size:	0.39ha

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?*	No
	1.2.2 Are there any records of landslip within 500m of the study site boundary at 1:10,000 scale?	No
1.3 Bedrock, Solid Geology and linear features	1.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	1.3.2 Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale?	Yes

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?*	No
	2.2.2 Are there any records of permeability of superficial ground within 500m of the study site?	No
	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?	Yes

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	4	0	7	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	0	0	0	0	6
4.3 Current Ground Workings	0	0	1	1	3

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	1	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
5.4 Non-Coal Mining*	0	0	0	0	0
5.5 Non–Coal Mining Cavities	0	0	0	0	0
5.5 Natural Cavities	0	0	0	0	0

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

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

Section 7: Borehole Records	On-site	0-50m	51-250
7 BGS Recorded Boreholes	0	2	0

Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250
8 Records of Background Soil Chemistry	2	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	4	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

Site Outline

Full Coverage

Partial Coverage

No Coverage

50
250
Search Buffers (m)

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	Some deposits are mapped
N2	1711.0	Some deposits are mapped	Full	Full	Some deposits are mapped

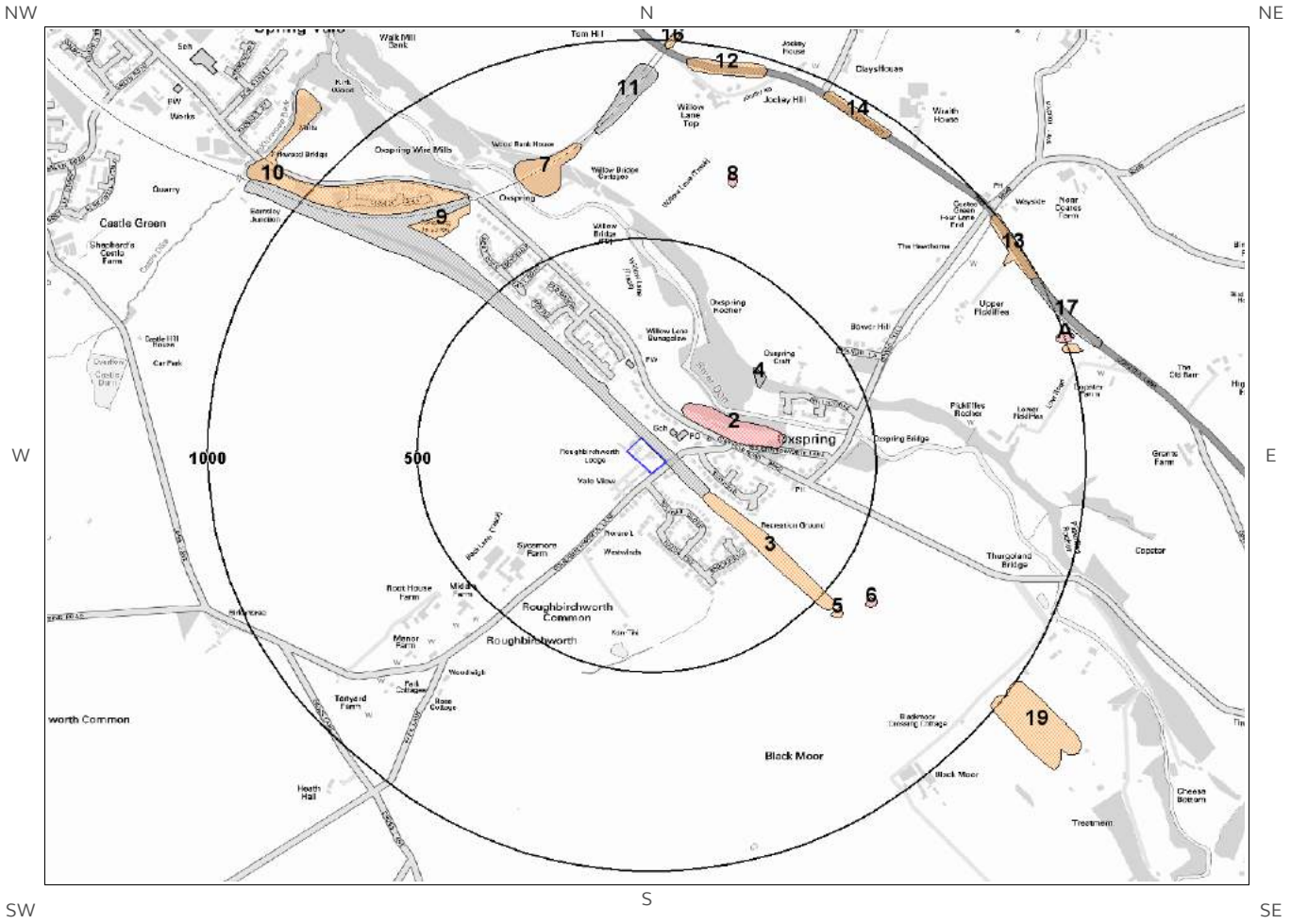
Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not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

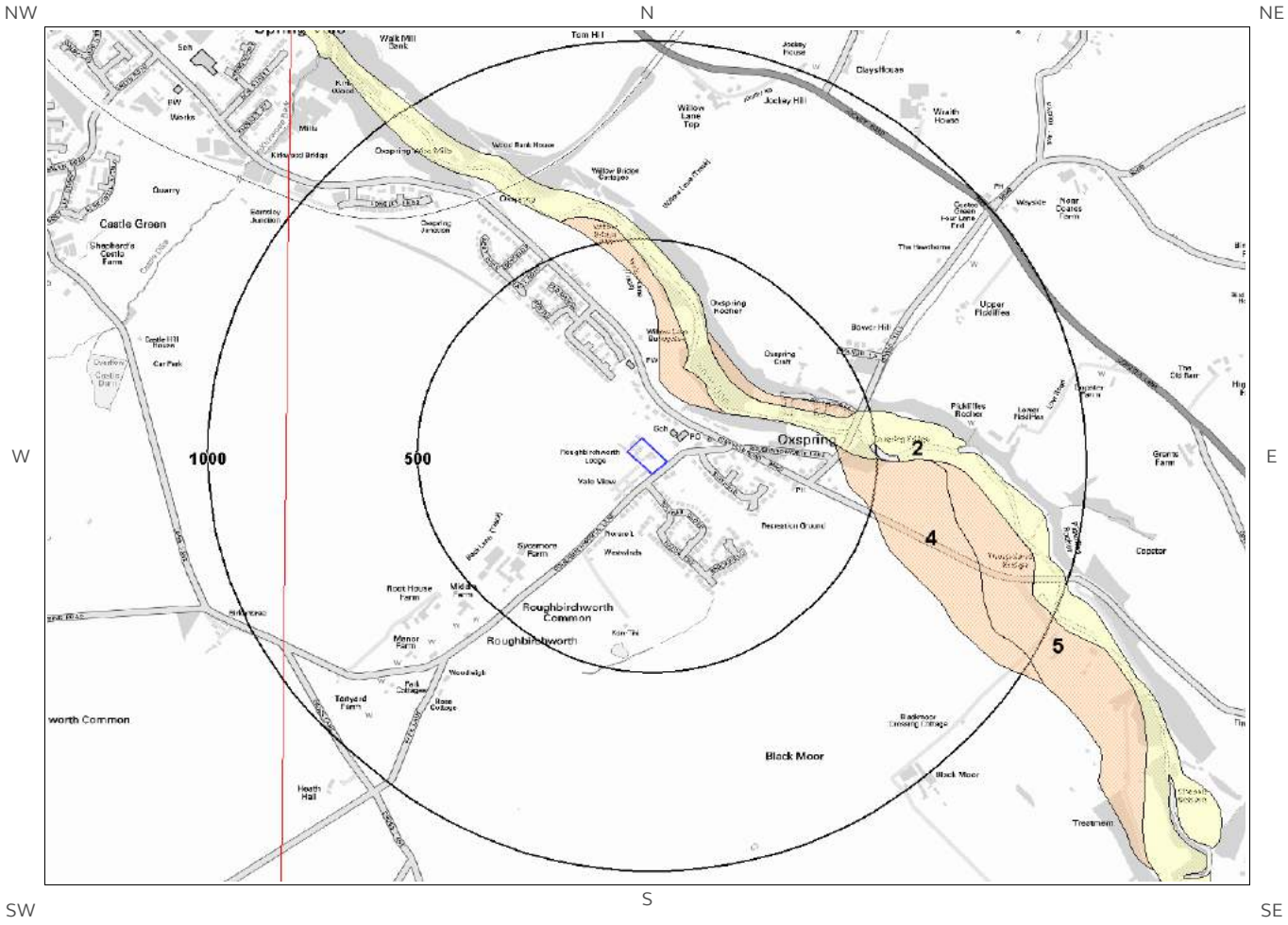
1.1 Artificial Ground

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	0.0	On Site	WGR-VOID	Worked Ground (Undivided)	Void
2	112.0	NE	WMGR-ARTDP	Infilled Ground	Artificial Deposit
3	125.0	SE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
4	287.0	NE	WGR-VOID	Worked Ground (Undivided)	Void

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	131.0	NE	RTD2-XSV	River Terrace Deposits, 2 - Sand And Gravel	Sand And Gravel
2	183.0	NE	ALV-XCZ	Alluvium - Clay And Silt	Clay And Silt
3	251.0	NE	RTD2-XSV	River Terrace Deposits, 2 - Sand And Gravel	Sand And Gravel
4	403.0	E	RTD2-XSV	River Terrace Deposits, 2 - Sand And Gravel	Sand And Gravel

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

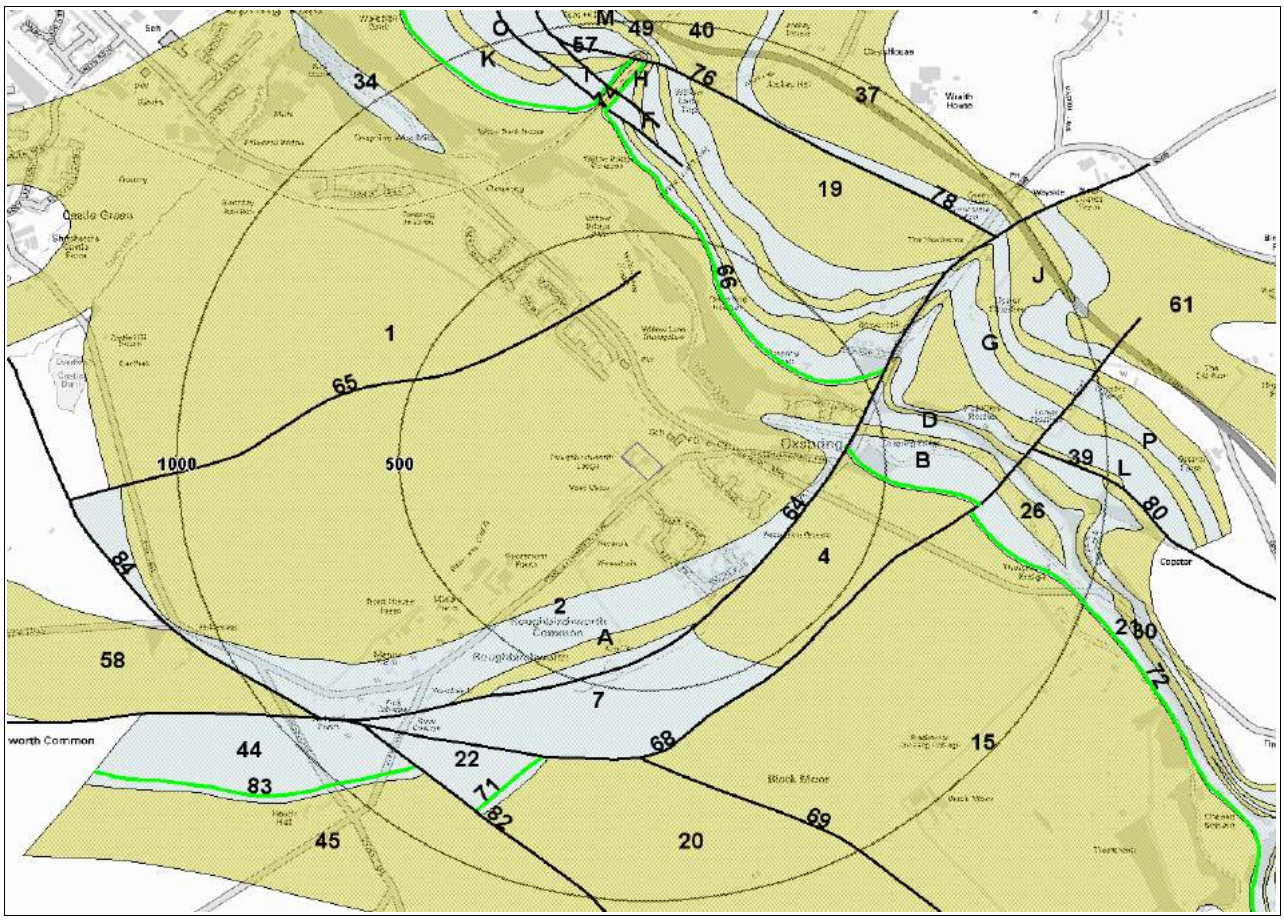
This Geology shows the main components as discrete layers, these are: Artificial / Made Ground, Superficial / Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

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

NW N NE

W E

SW S SE



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	GR-SDST	Grenoside Sandstone - Sandstone	Langsettian Sub-age
2	210.0	SE	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
3A	302.0	SE	GR-SDST	Grenoside Sandstone - Sandstone	Langsettian Sub-age
4	315.0	SE	GR-SDST	Grenoside Sandstone - Sandstone	Langsettian Sub-age
5	352.0	NE	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
6A	356.0	S	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
7	365.0	S	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
8	397.0	NE	PF-SDST	Penistone Flags - Sandstone	Langsettian Sub-age
9B	411.0	E	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
10C	425.0	NE	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
11B	436.0	E	PF-SDST	Penistone Flags - Sandstone	Langsettian Sub-age
12D	455.0	E	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
13C	473.0	NE	PF-SDST	Penistone Flags - Sandstone	Langsettian Sub-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? Yes

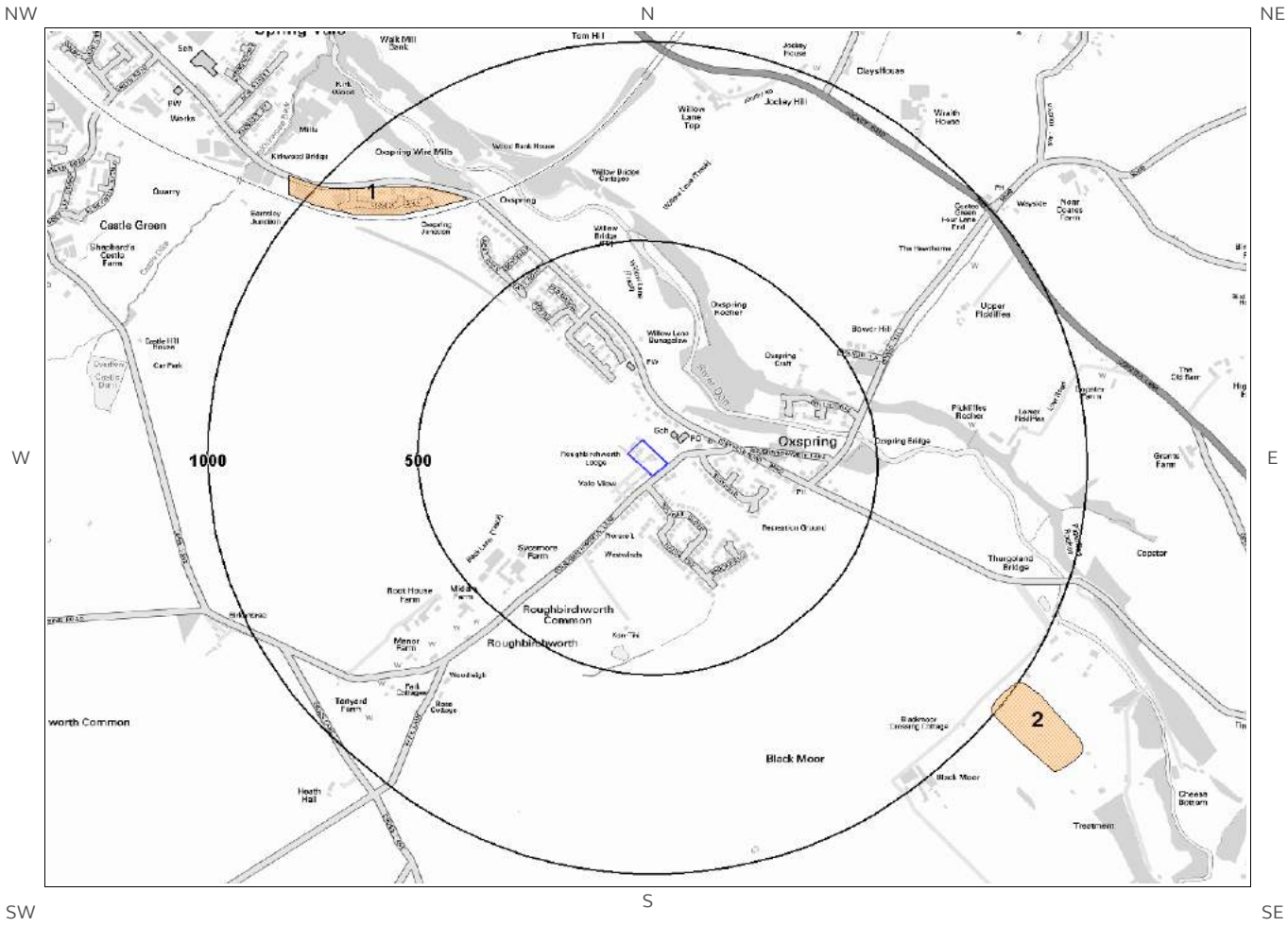
ID	Distance (m)	Direction	Category Description	Feature Description
64	315.0	SE	FAULT	Normal fault, inferred
65	333.0	NW	FAULT	Normal fault, inferred
66	360.0	NE	ROCK	Coal seam, inferred
67B	412.0	E	ROCK	Coal seam, inferred

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: 087

2.1.1 Artificial/ Made Ground

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

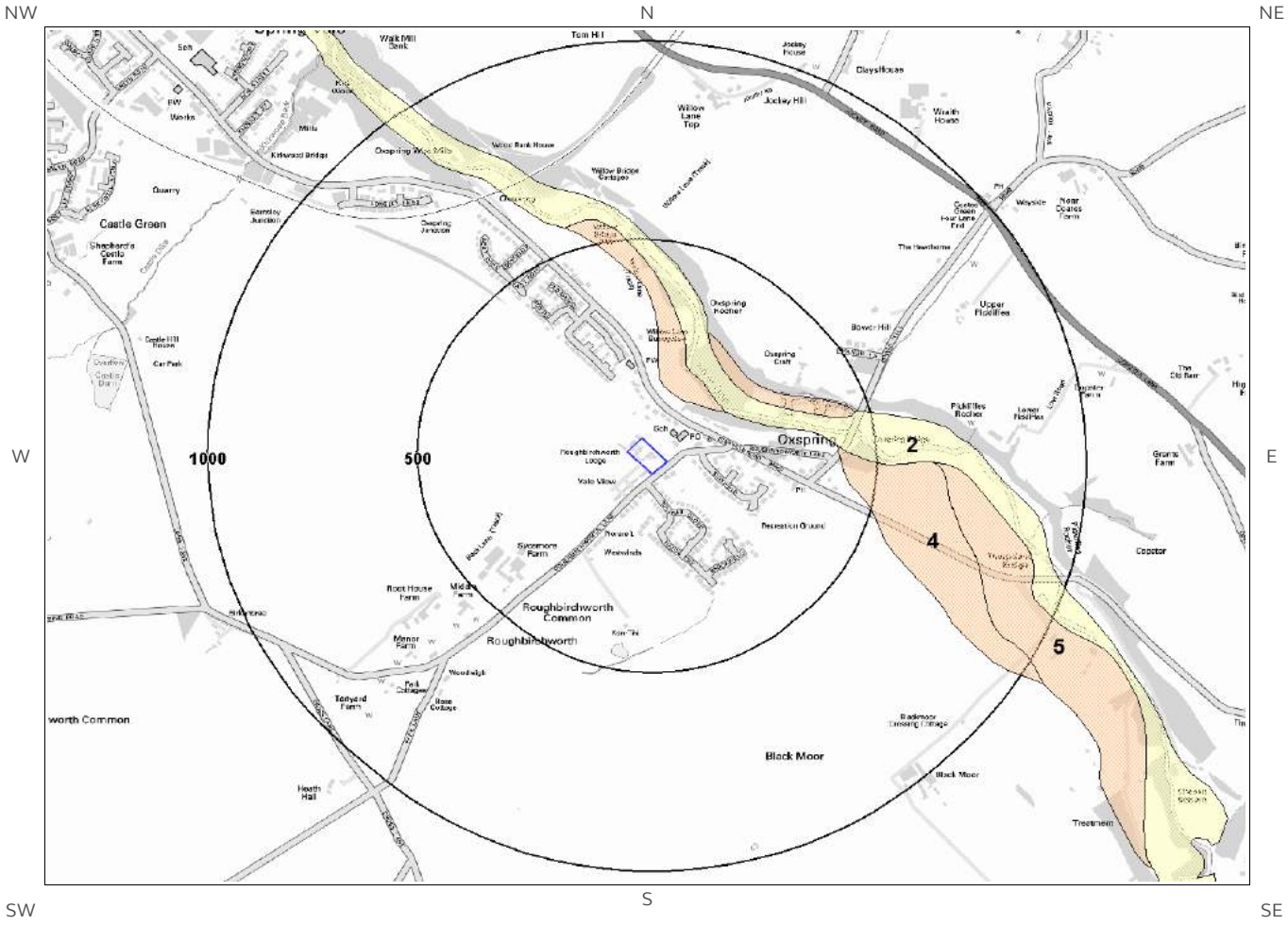
Database searched and no data found.

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	134.0	NE	RTD2-XSV	RIVER TERRACE DEPOSITS, 2	SAND AND GRAVEL
2	188.0	NE	ALV-XCZ	ALLUVIUM	CLAY AND SILT
3	251.0	NE	RTD2-XSV	RIVER TERRACE DEPOSITS, 2	SAND AND GRAVEL
4	407.0	E	RTD2-XSV	RIVER TERRACE DEPOSITS, 2	SAND AND GRAVEL

2.2.2 Permeability of Superficial Ground

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

Database searched and no data found.

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

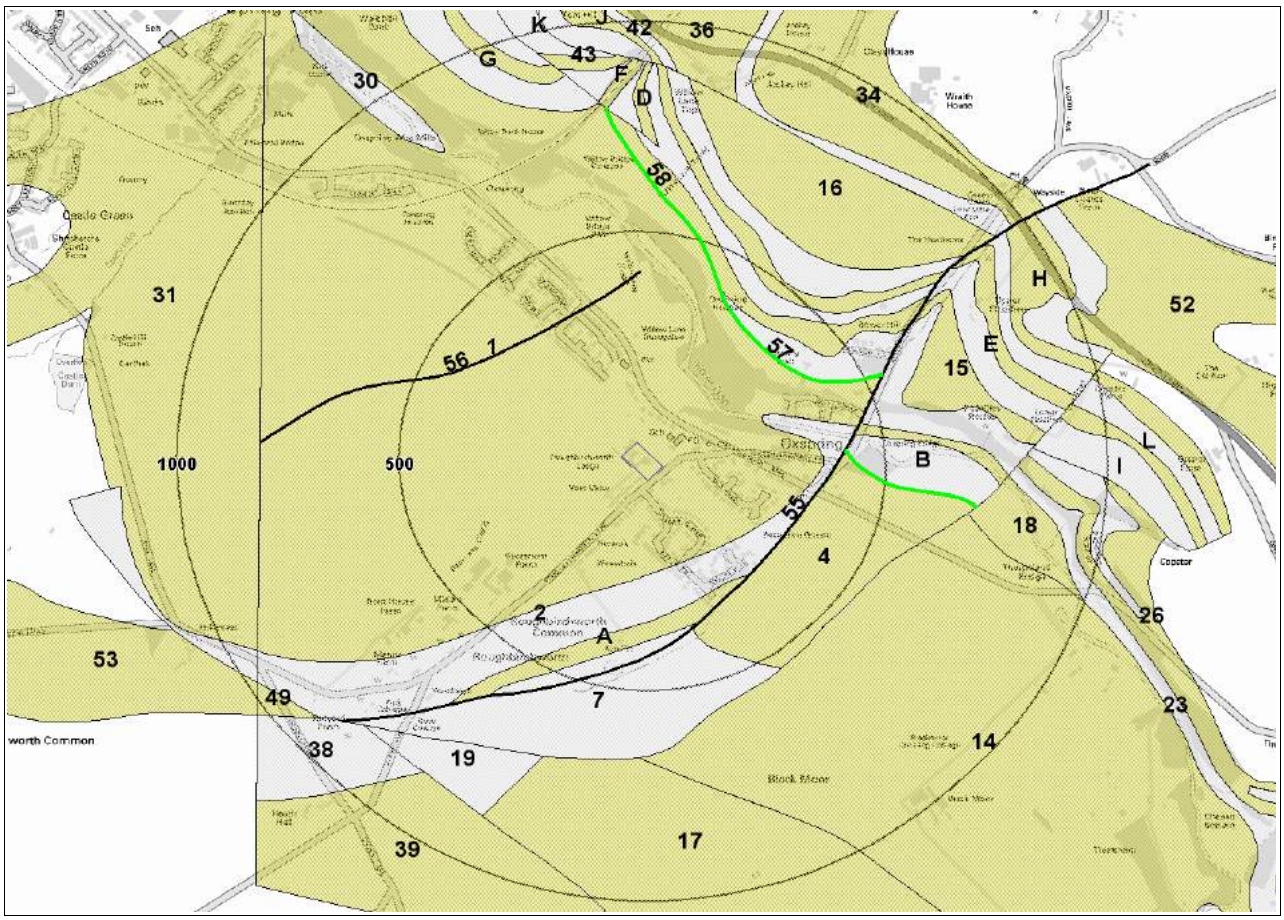
Database searched and no data found.

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

NW N NE

W E

SW S SE



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: 087

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	GR-SDST	GRENOSIDE SANDSTONE - SANDSTONE	WESTPHALIAN
2	209.0	SE	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
3A	298.0	SE	GR-SDST	GRENOSIDE SANDSTONE - SANDSTONE	WESTPHALIAN
4	315.0	SE	GR-SDST	GRENOSIDE SANDSTONE - SANDSTONE	WESTPHALIAN
5A	355.0	S	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
6	358.0	NE	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
7	365.0	S	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
8B	411.0	E	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
9C	421.0	NE	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
10B	436.0	E	PF-SDST	PENISTONE FLAGS - SANDSTONE	WESTPHALIAN
11	455.0	E	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
12C	470.0	NE	PF-SDST	PENISTONE FLAGS - SANDSTONE	WESTPHALIAN

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	High	Moderate

2.3.3 Linear features

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

ID	Distance	Direction	Category Description	Feature Description
55	315.0	SE	FAULT	Fault, inferred
56	332.0	NW	FAULT	Fault, inferred
57	358.0	NE	ROCK	Coal seam, inferred
58	410.0	NE	ROCK	Coal seam, inferred
59B	411.0	E	ROCK	Coal seam, inferred

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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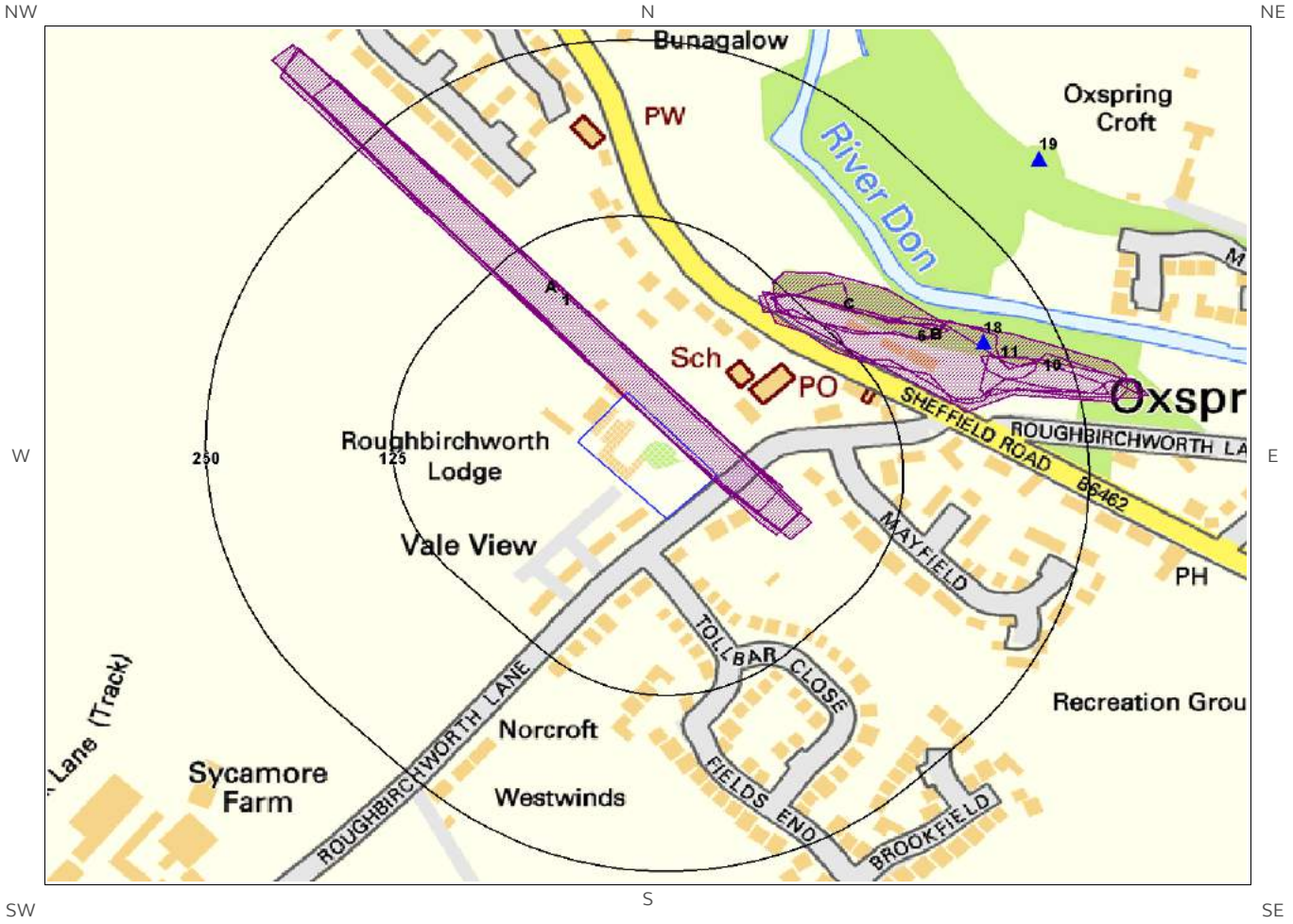
4 Ground Workings map



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
1	0.0	On Site	426678 402171	Cuttings	1951
2A	0.0	On Site	426662 402183	Cuttings	1891
3A	0.0	On Site	426686 402162	Cuttings	1948
4A	0.0	On Site	426666 402183	Cuttings	1904
5B	104.0	NE	426964 402127	Unspecified Disused Quarry	1904
6	105.0	NE	426952 402122	Unspecified Ground Workings	1891
7C	111.0	NE	426902 402144	Unspecified Disused Quarry	1948
8B	113.0	NE	426962 402126	Unspecified Heap	1965
9C	115.0	NE	426901 402144	Unspecified Disused Quarry	1951
10	187.0	E	427036 402101	Unspecified Ground Workings	1951
11	196.0	NE	427001 402108	Unspecified Pit	1948

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? Yes

The following Historical Underground Working Features are provided by Groundsure:

ID	Distance (m)	Direction	NGR	Use	Date
Not shown	903.0	N	426901 403199	Tunnel	1948

ID	Distance (m)	Direction	NGR	Use	Date
Not shown	903.0	N	426901 403199	Tunnel	1903
Not shown	904.0	N	426901 403200	Tunnel	1891
Not shown	917.0	N	426909 403211	Tunnel	1987
Not shown	917.0	N	426909 403211	Tunnel	1951
Not shown	918.0	N	426909 403211	Tunnel	1965

4.3 Current Ground Workings

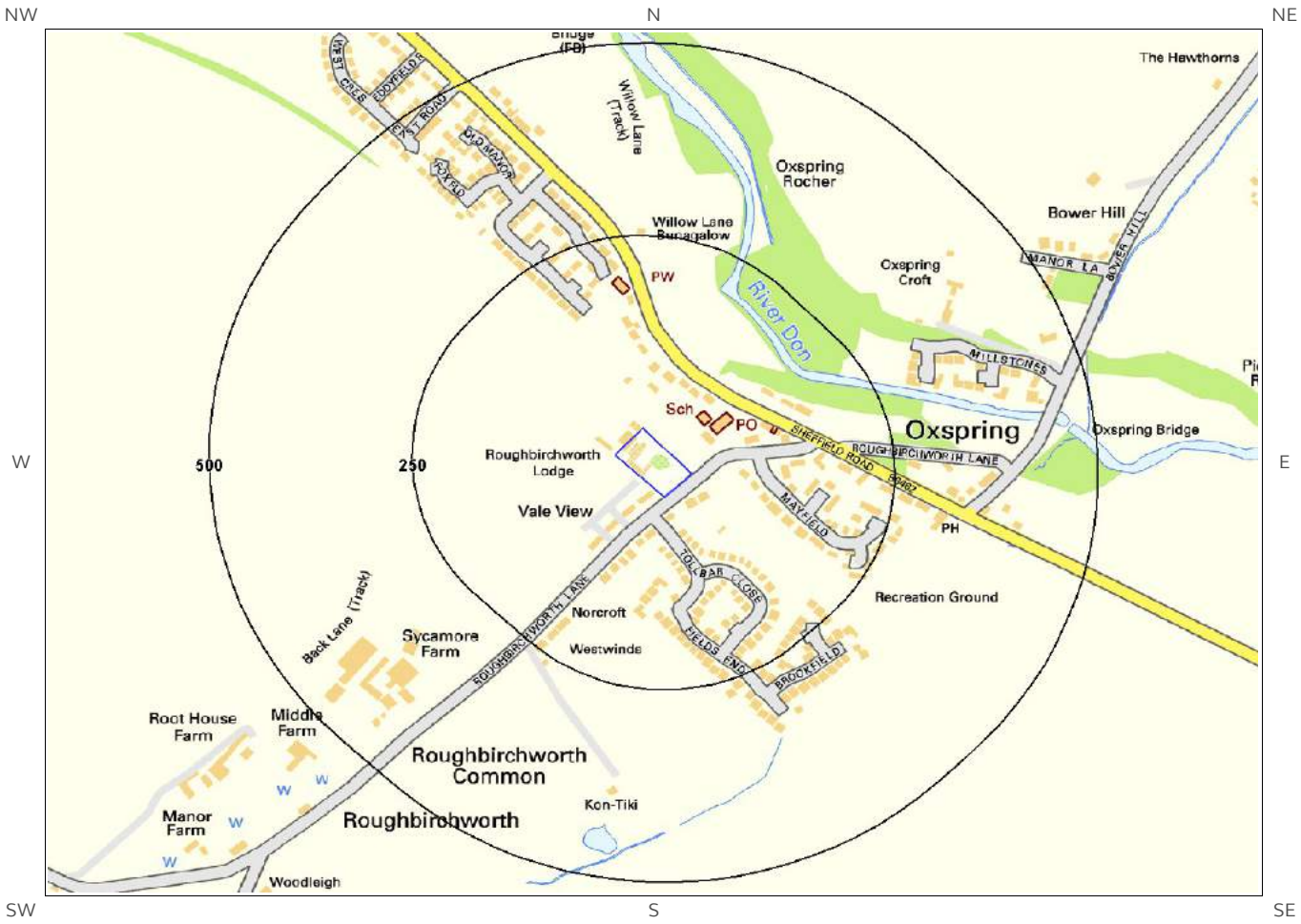
This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

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
18	202.0	NE	426984 402126	Sandstone	Oxspring	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
19	311.0	NE	427021 402256	Sandstone	Oxspring House	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	615.0	SE	427321 401696	Sandstone	Oxspring	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	737.0	N	426993 402785	Sandstone	Jockey Hill	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	987.0	SE	427708 401631	Sandstone	Thurgoland Bank	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)

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? Yes

The following Coal Mining information provided by the Coal Authority is not represented on Mapping:

Distance (m)	Direction	Details
0.0	On Site	The study site is located within the specified search distance of an identified mining area. Further details concerning this can be obtained from the Coal Authority Helpline on 0845 762 6848.

5.3 Johnson Poole and Bloomer

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

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

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

5.4 Non-Coal Mining

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

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

Database searched and no data found.

5.5 Non-Coal Mining Cavities

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

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

Database searched and no data found.

5.6 Natural Cavities

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

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

Database searched and no data found.

5.7 Brine Extraction

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

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

Database searched and no data found.

5.8 Gypsum Extraction

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

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

Database searched and no data found.

5.9 Tin Mining

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

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

Database searched and no data found.

5.10 Clay Mining

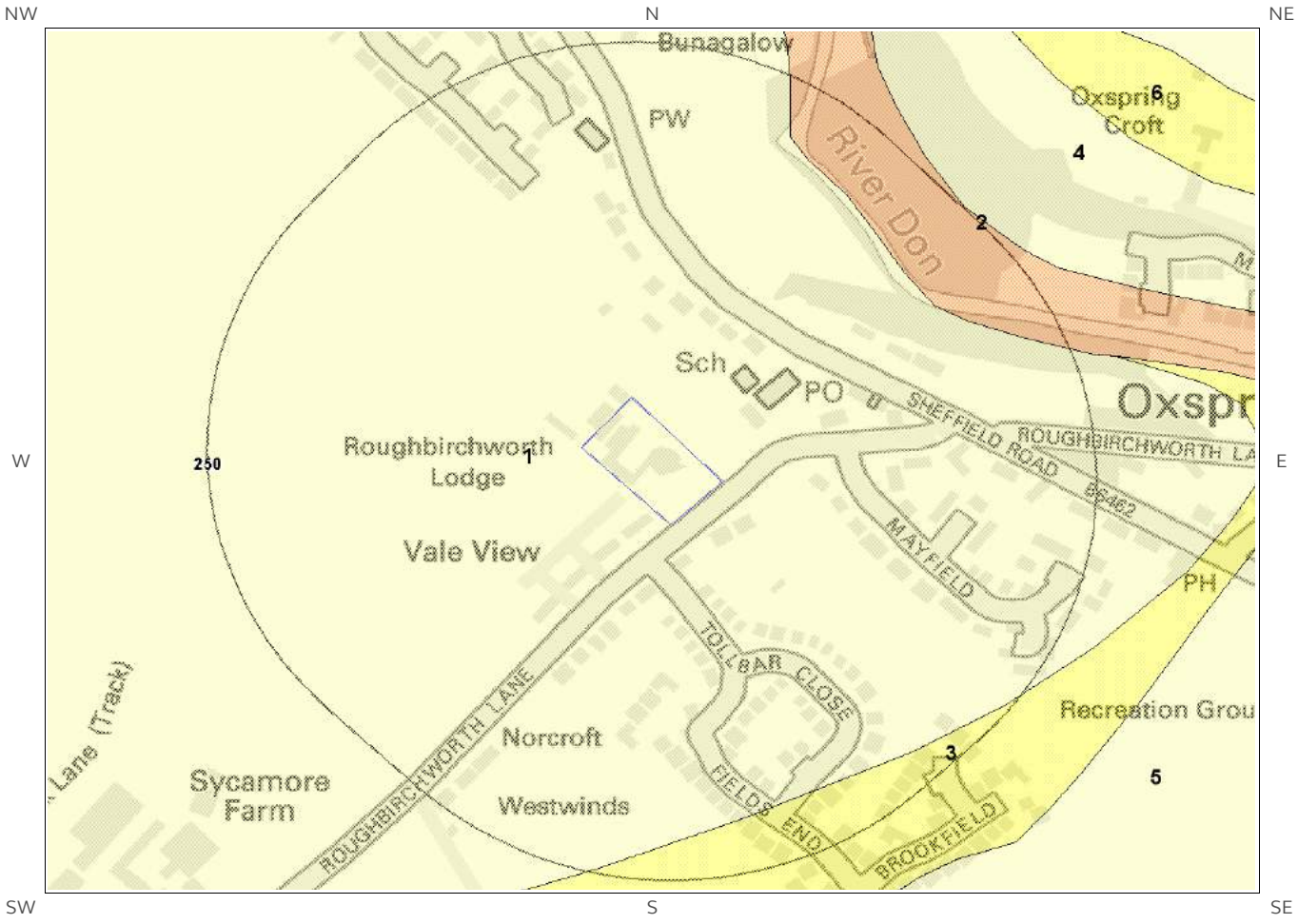
This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

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

Database searched and no data found.

6 Natural Ground Subsidence

6.1 Shrink-Swell Clay map



Shrink Swell Clay Legend

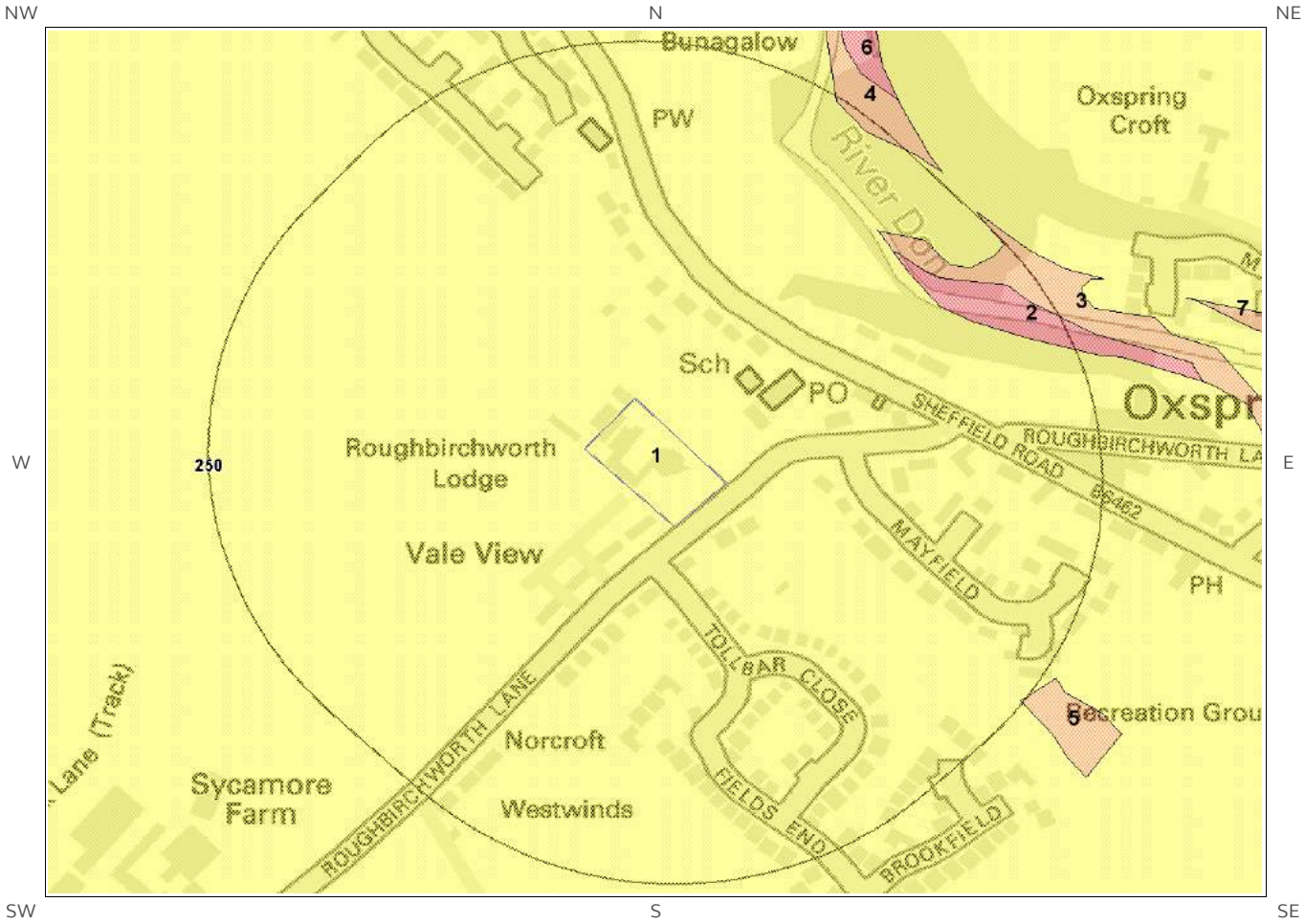
Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

Low
Moderate
High

6.2 Landslides map



Landslides Legend

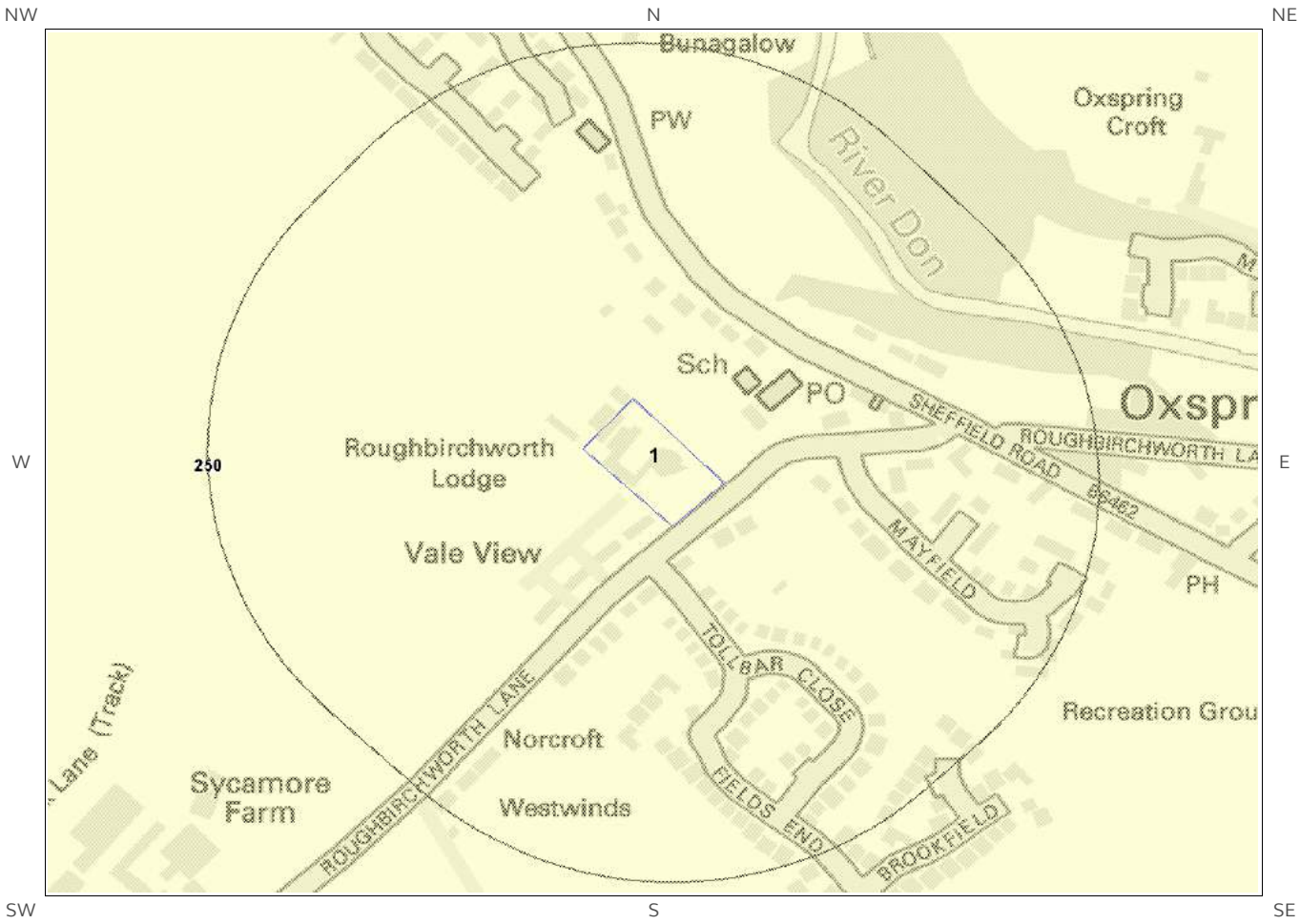
Site Outline

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

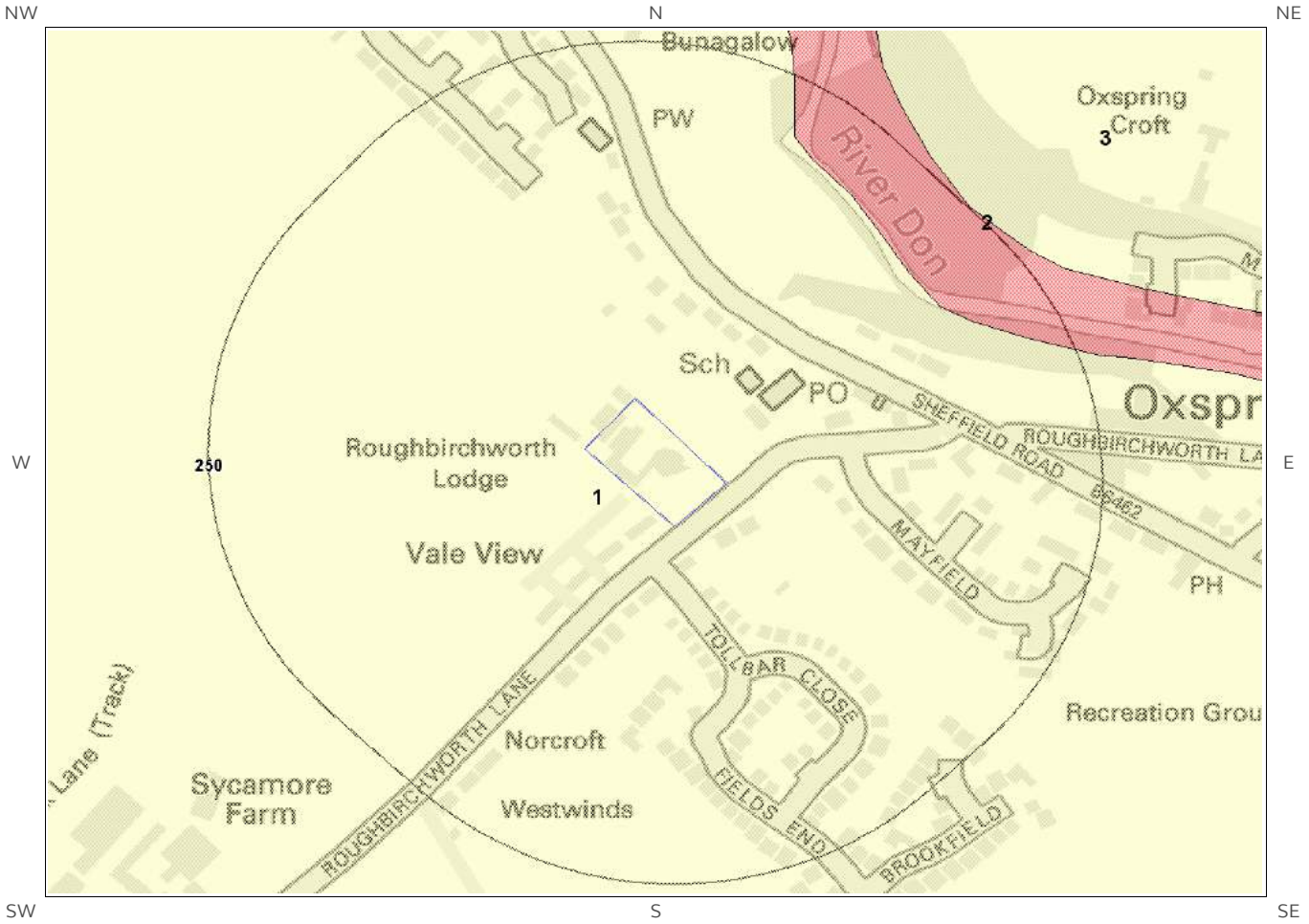
Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

Low
Moderate
High

6.4 Compressible Deposits map



Compressible Deposits Legend

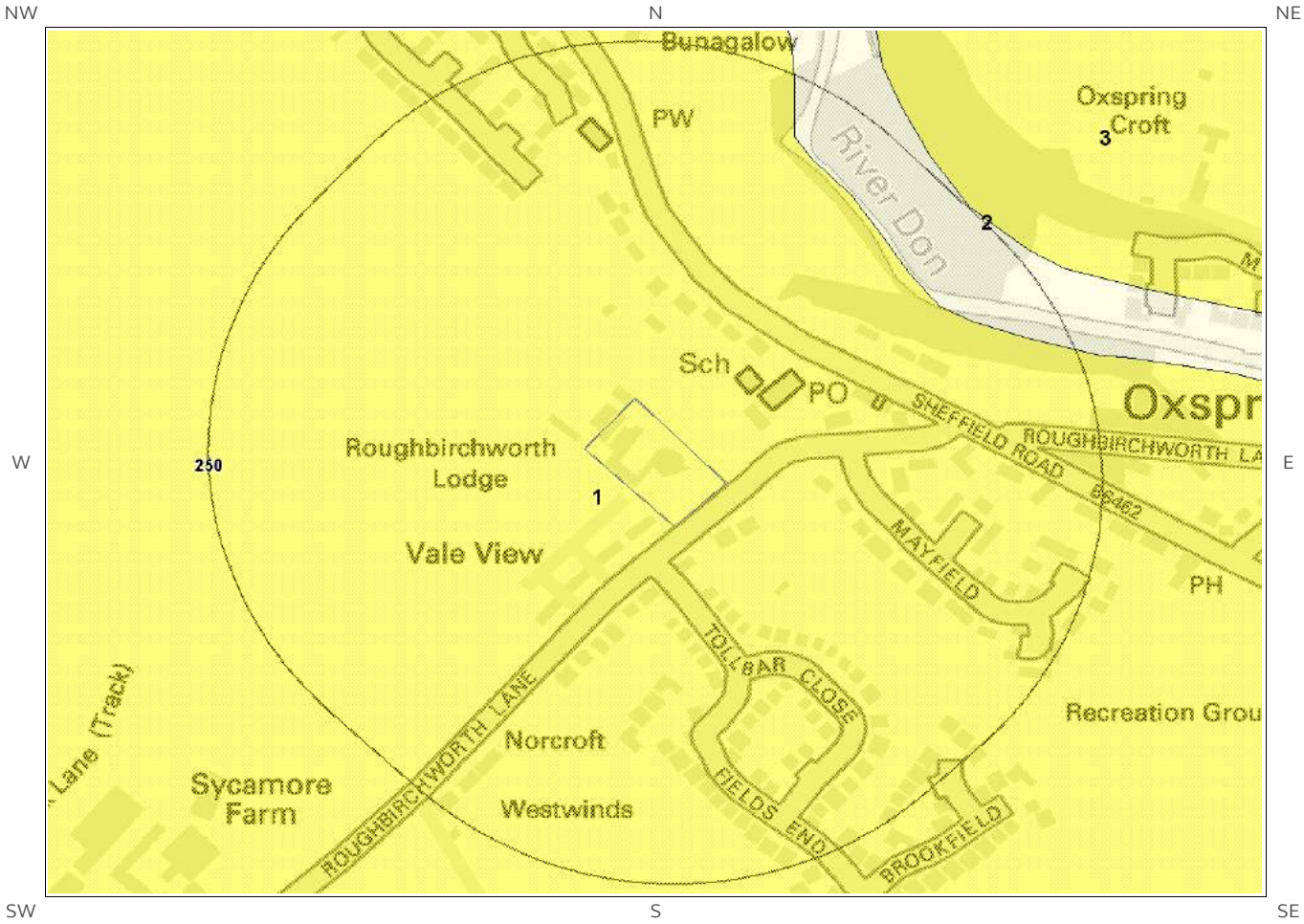
Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

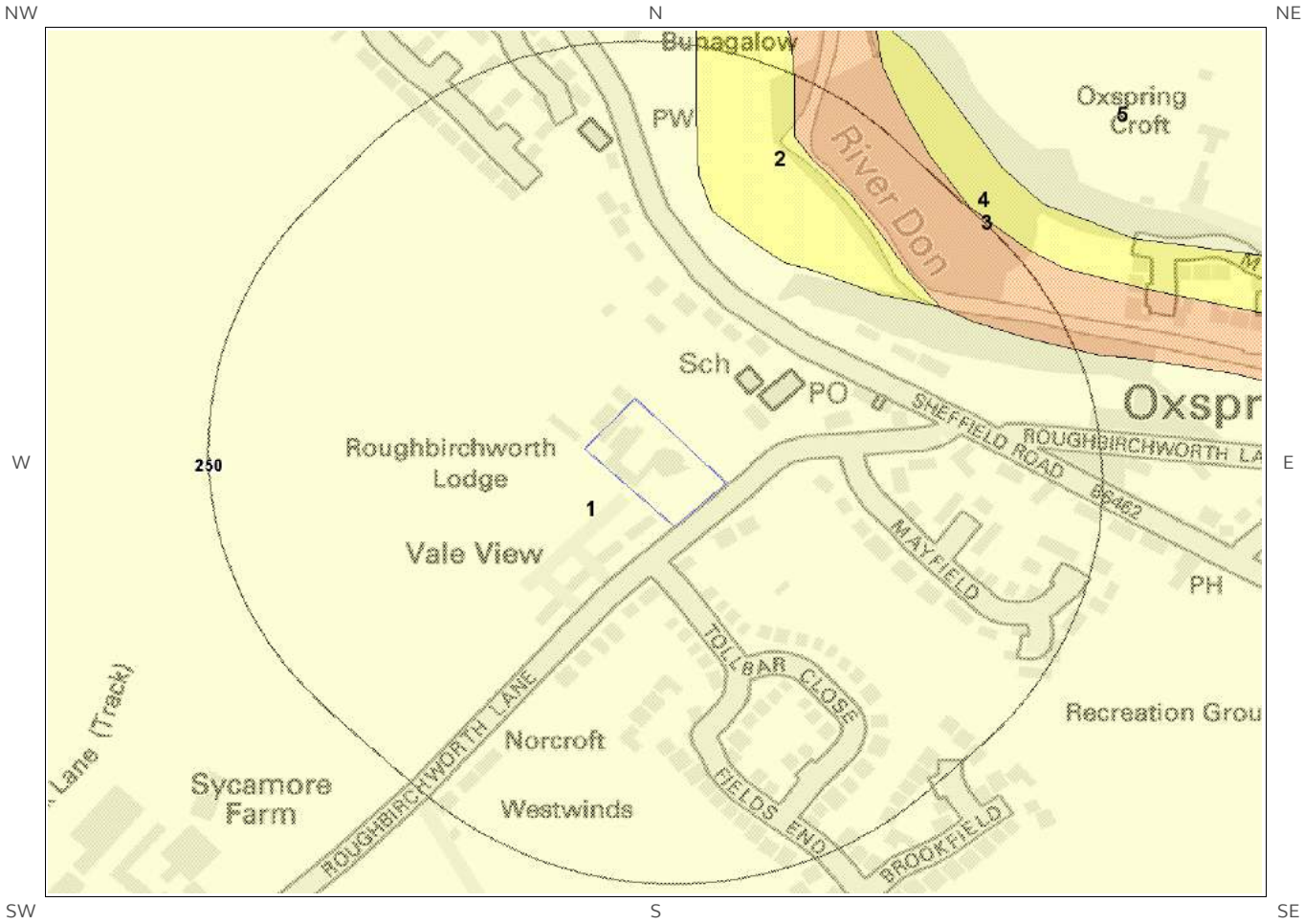
Low
Moderate
High

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? Very Low

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	Negligible	Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.

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.

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.

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

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.

6.5 Collapsible Deposits

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

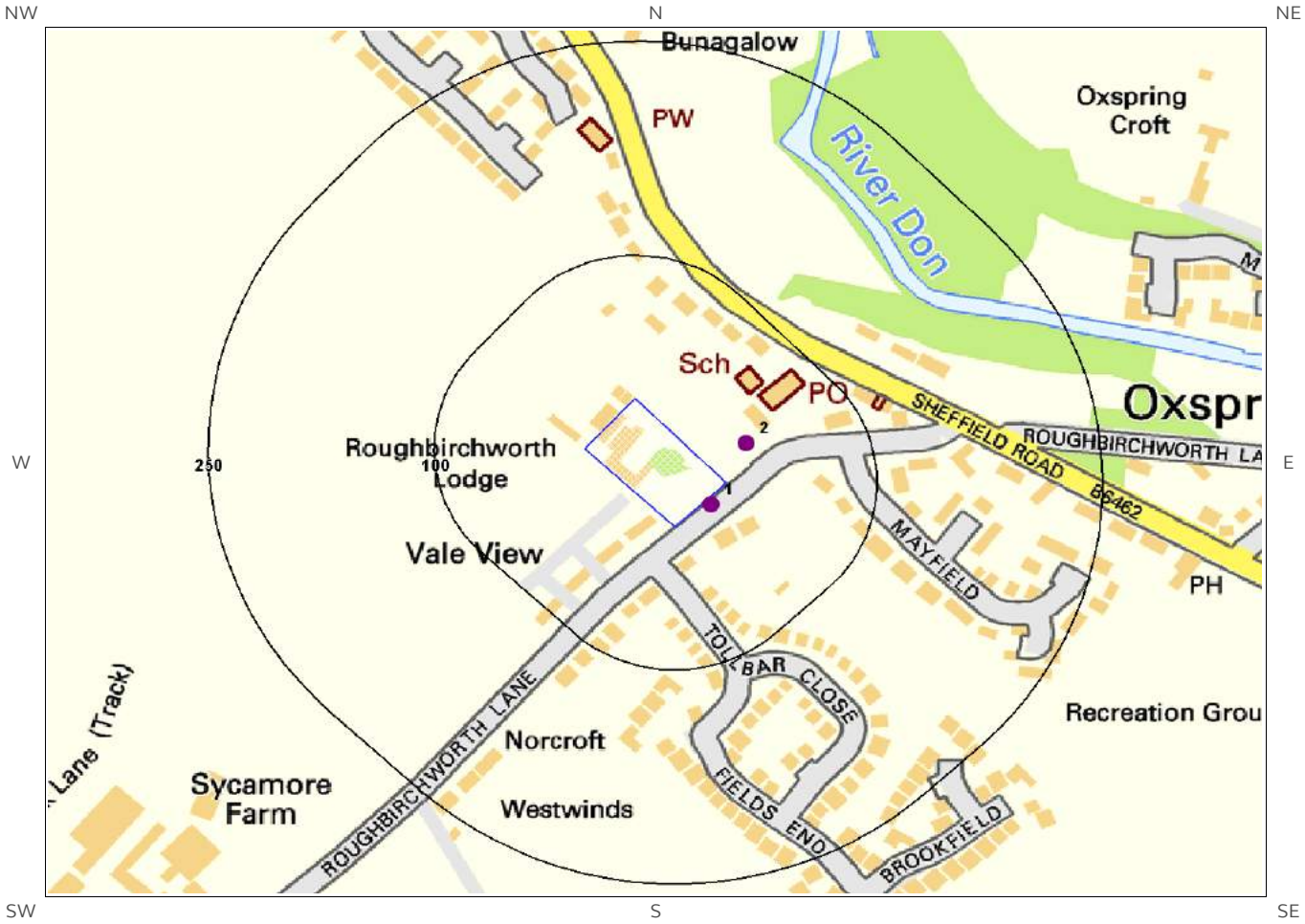
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible 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.

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: 2

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	4.0	SE	426795 402016	SE20SE22/B	11.0	FOOTBRIDGE AT ROUGH BIRCHWORTH LANE-OXSPRING 2 BH
2	28.0	NE	426818 402059	SE20SE22/A	6.0	FOOTBRIDGE AT ROUGH BIRCHWORTH LANE-OXSPRING 2 BH

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/56330
#2: scans.bgs.ac.uk/sobi_scans/boreholes/56329

8 Estimated Background Soil Chemistry

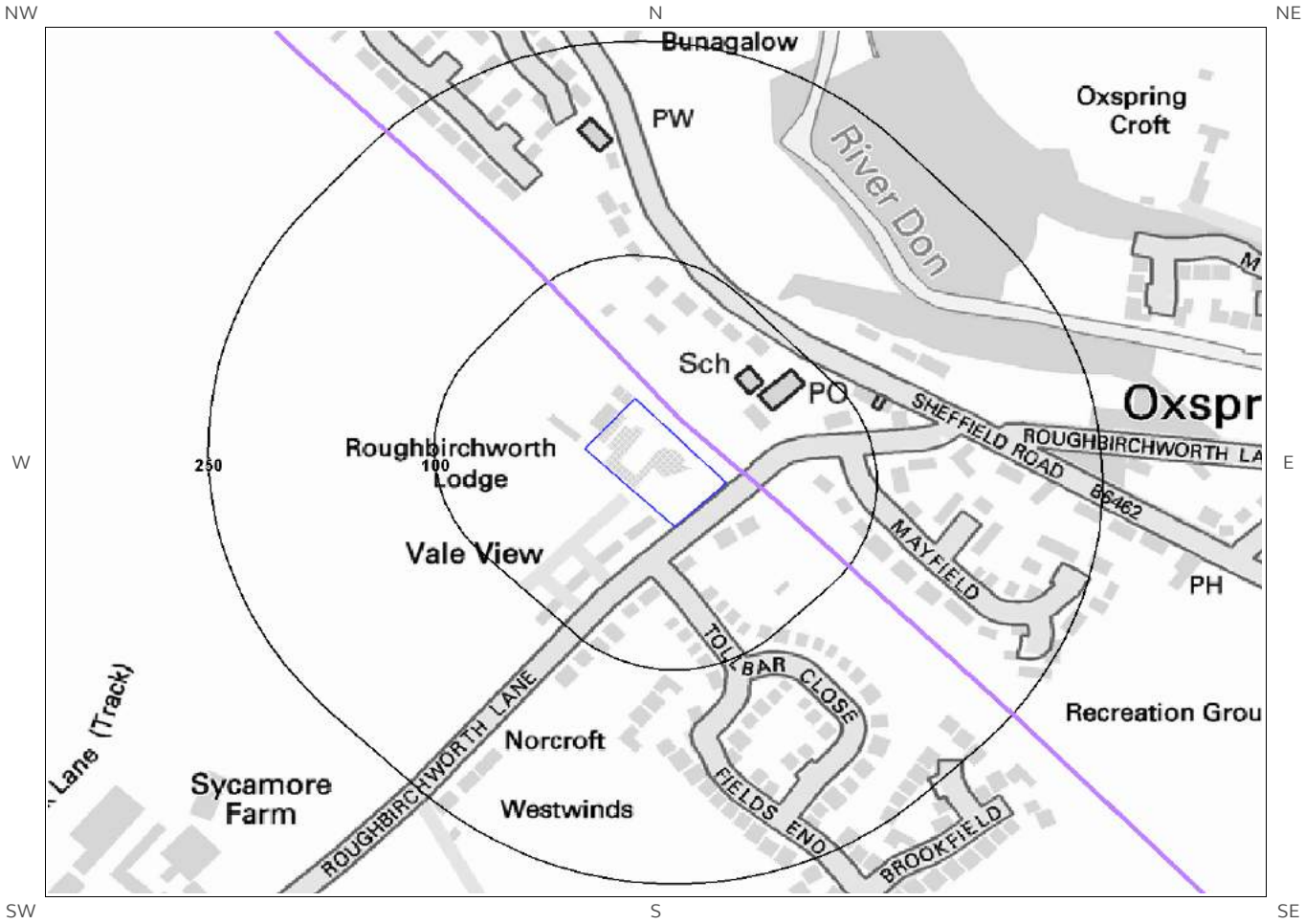
Records of background estimated soil chemistry within 250m of the study site boundary: 2

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

Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	S	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg

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

9 Railways and Tunnels map



Railways and Tunnels Legend

- 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? Yes

Distance (m)	Direction	Status
10	NE	Abandoned
13	NE	Abandoned
15	E	Abandoned
36	E	Abandoned

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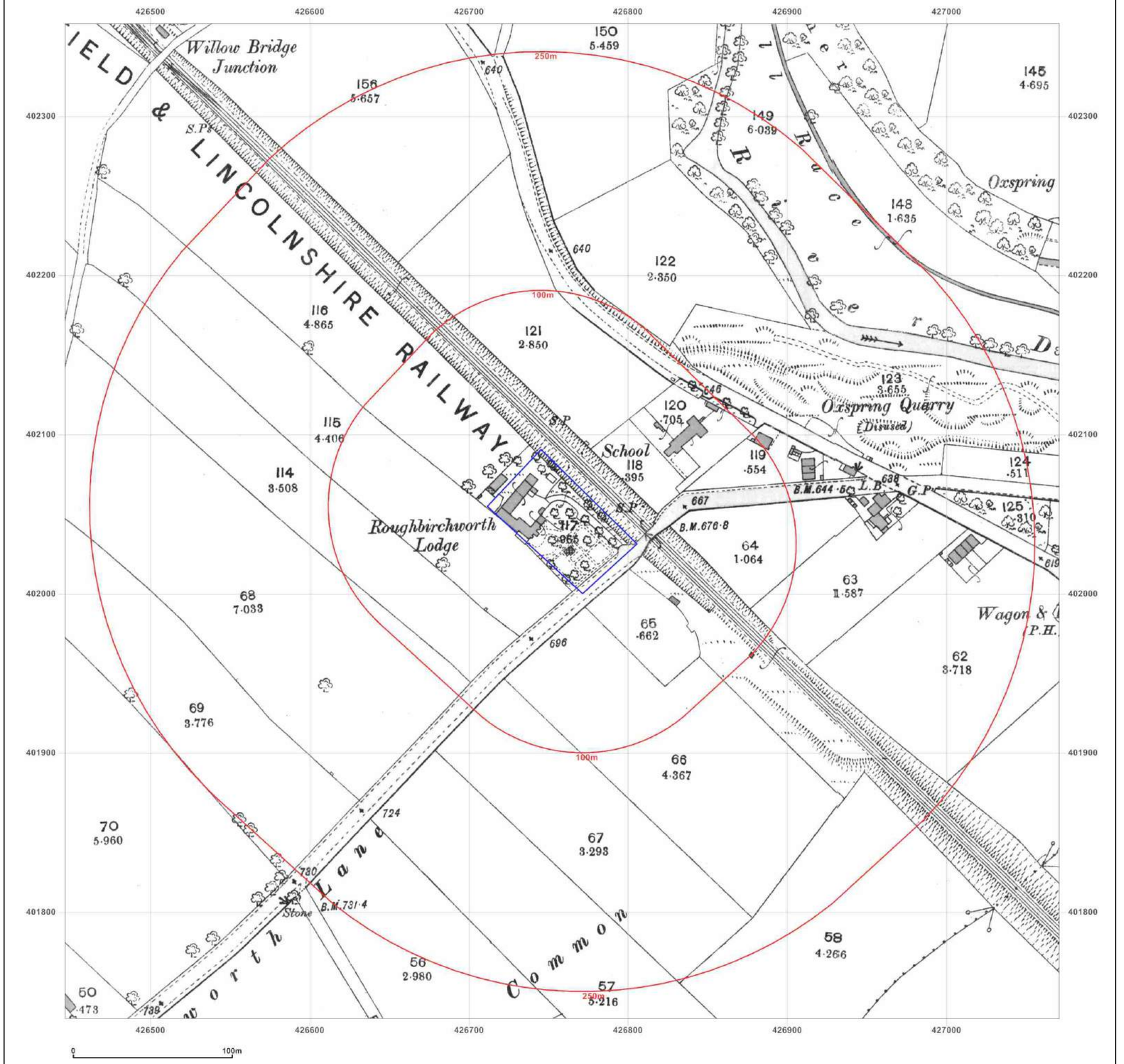
Waterman Place
Reading
Berkshire RG1 8DN
Tel: +44 (0)118 950 0761 E-mail:**reading@pba.co.uk**
Website:**http://www.peterbrett.com/home**

Standard Terms and Conditions

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

Appendix D

Historical Map Extracts



Groundsure INSIGHTS

Site Details:

ROUGHBIRCHWORTH COTTAGE,
ROUGHBIRCHWORTH LANE,
OXSPRING, BARNSLEY, S36 8YZ

Client Ref: S10565
Report Ref: GS-4939006
Grid Ref: 426758, 402046

Map Name: County Series

Map date: **1893**

Scale: 1:2,500

Printed at: 1:2,500

N
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S

Surveyed 1893
Revised 1893
Edition N/A
Copyright N/A
Levelled N/A

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W: www.groundsure.com

Production date: 02 May 2018

Map legend available at:
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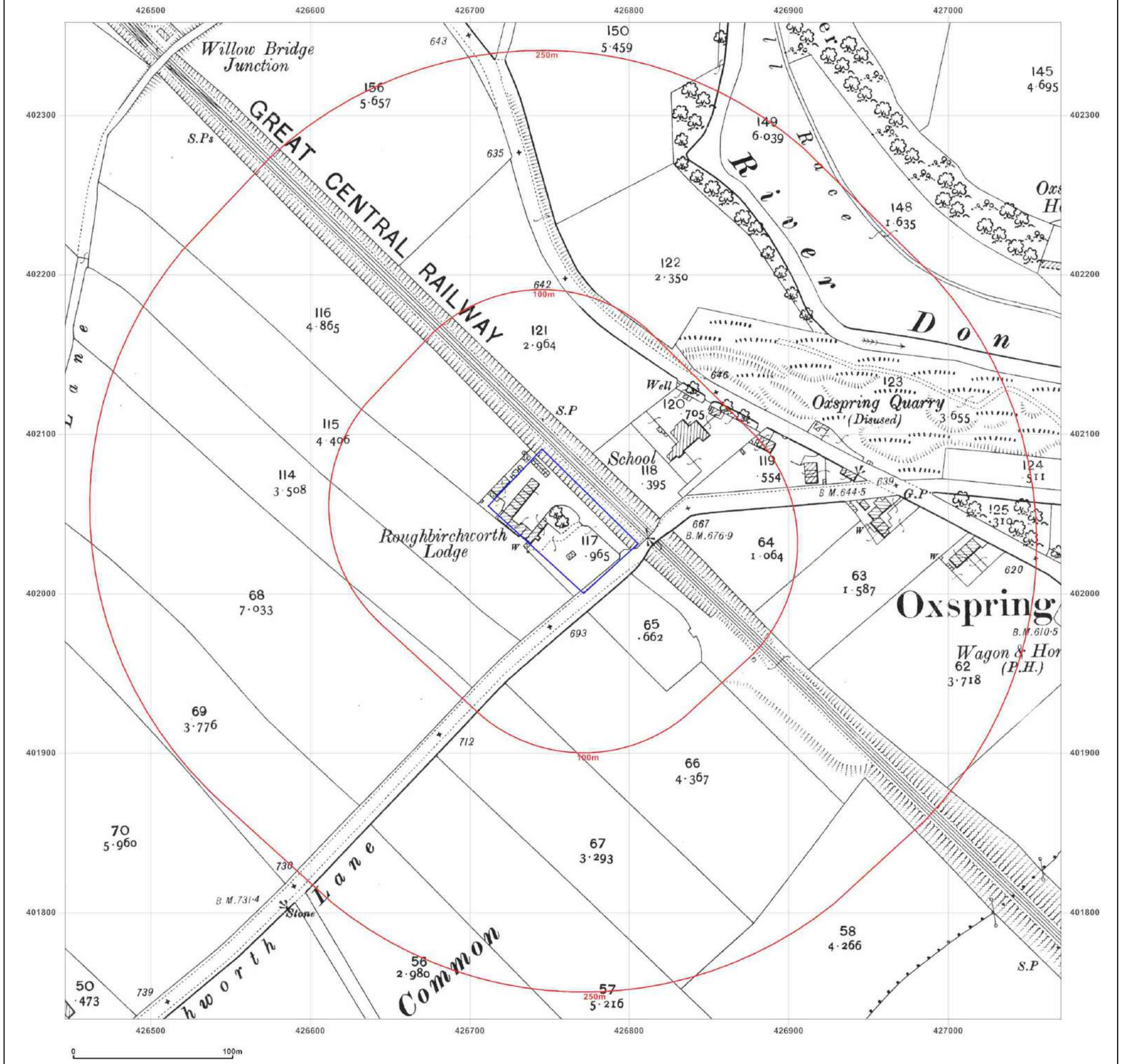

Groundsure INSIGHTS

Site Details:

ROUGHBIRCHWORTH COTTAGE,
ROUGHBIRCHWORTH LANE,
OXSPRING, BARNSLEY, S36 8YZ

Client Ref: S10565
Report Ref: GS-4939006
Grid Ref: 426758, 402046

Map Name: County Series

Map date: **1905**

Scale: 1:2,500

Printed at: 1:2,500

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

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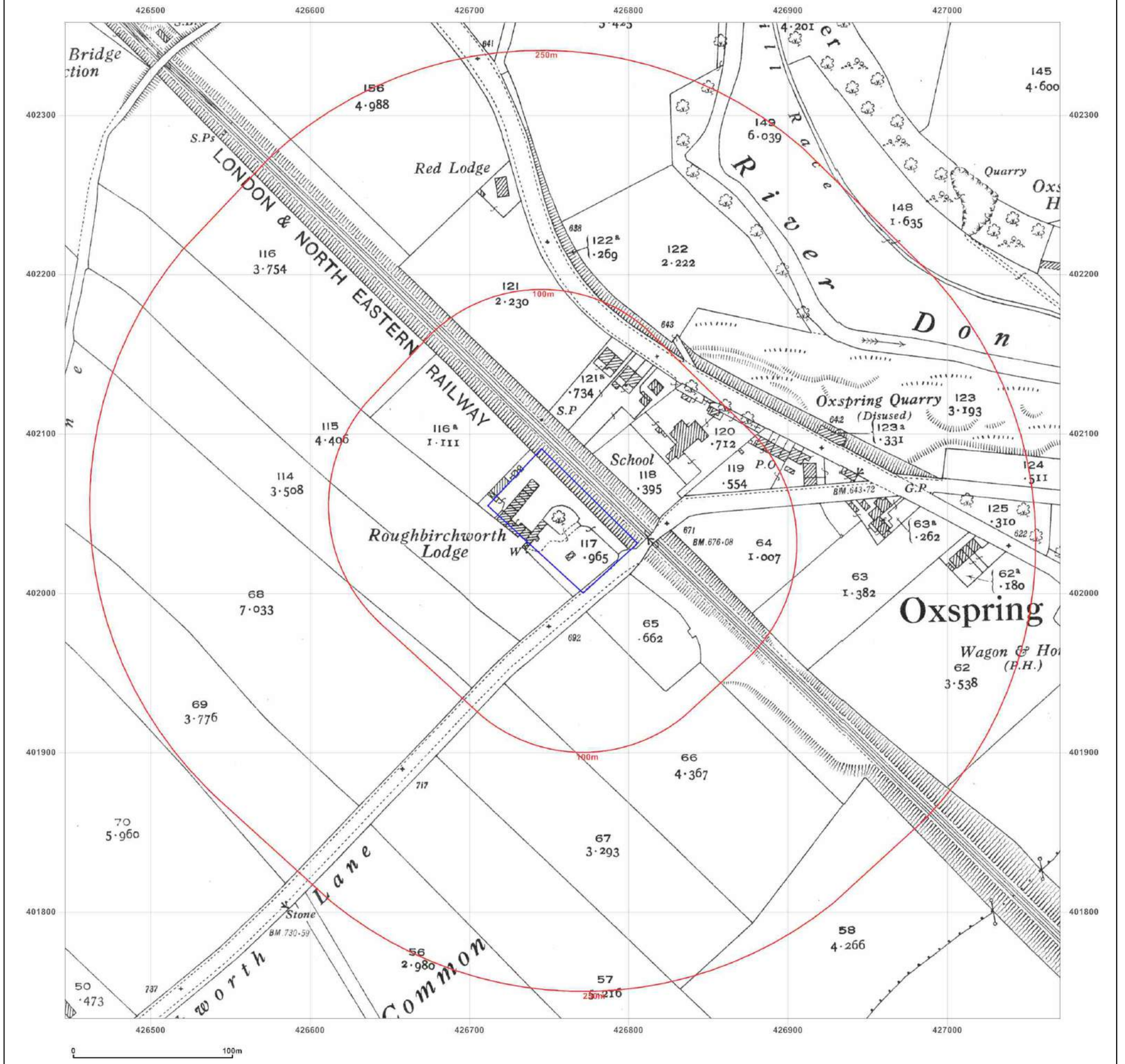

Groundsure INSIGHTS

Site Details:

ROUGHBIRCHWORTH COTTAGE,
ROUGHBIRCHWORTH LANE,
OXSPRING, BARNSLEY, S36 8YZ

Client Ref: S10565
Report Ref: GS-4939006
Grid Ref: 426758, 402046

Map Name: County Series

Map date: **1931**

Scale: 1:2,500

Printed at: 1:2,500

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

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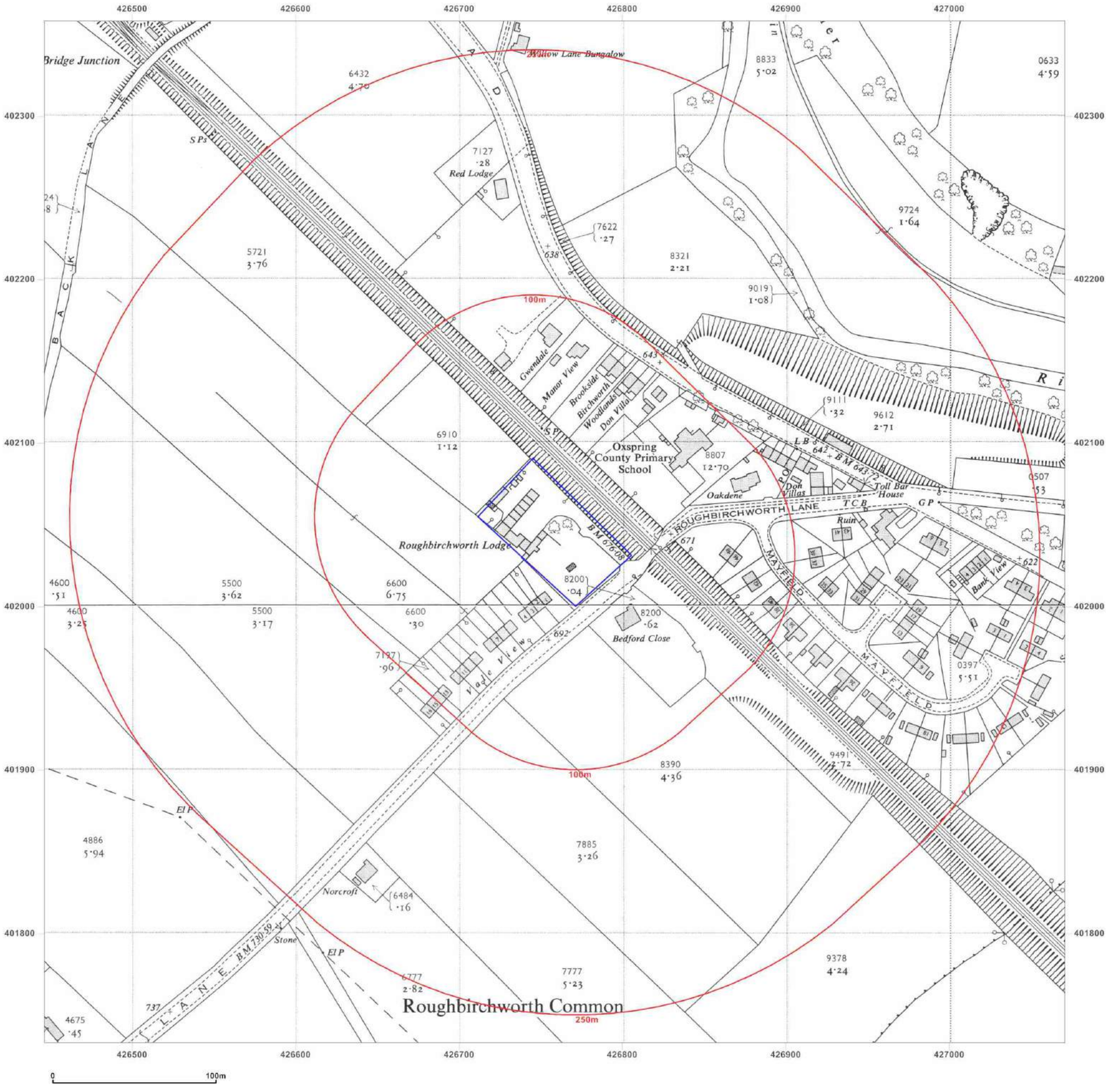

Groundsure INSIGHTS

Site Details:

ROUGHBIRCHWORTH COTTAGE,
ROUGHBIRCHWORTH LANE,
OXSPRING, BARNSLEY, S36 8YZ

Client Ref: S10565
Report Ref: GS-4939006
Grid Ref: 426758, 402046

Map Name: National Grid

Map date: **1959**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed N/A
Revised 1959
Edition N/A
Copyright 1960
Levelled 1930

Surveyed 1959
Revised 1959
Edition N/A
Copyright 1961
Levelled 1930

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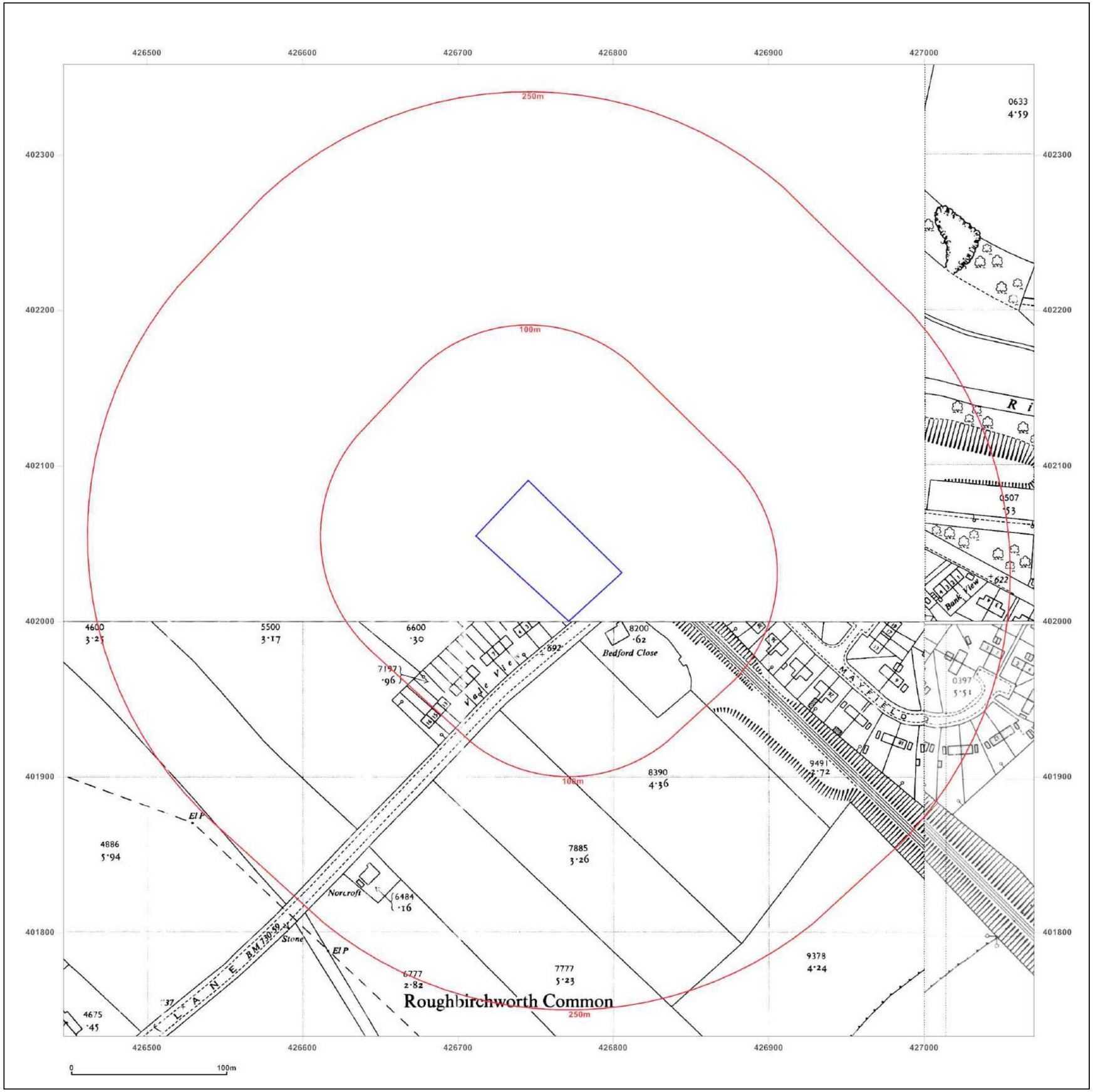

Groundsure INSIGHTS

Site Details:

ROUGHBIRCHWORTH COTTAGE,
ROUGHBIRCHWORTH LANE,
OXSPRING, BARNSLEY, S36 8YZ

Client Ref: S10565
Report Ref: GS-4939006
Grid Ref: 426758, 402046

Map Name: National Grid
Map date: **1960-1961**
Scale: 1:2,500
Printed at: 1:2,500

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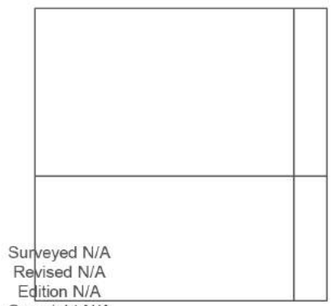

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OXSPRING, BARNSLEY, S36 8YZ

Client Ref: S10565
Report Ref: GS-4939006
Grid Ref: 426758, 402046

Map Name: National Grid

Map date: **1978**

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

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

Surveyed 1978
Revised 1978
Edition N/A
Copyright 1979
Levelled 1959

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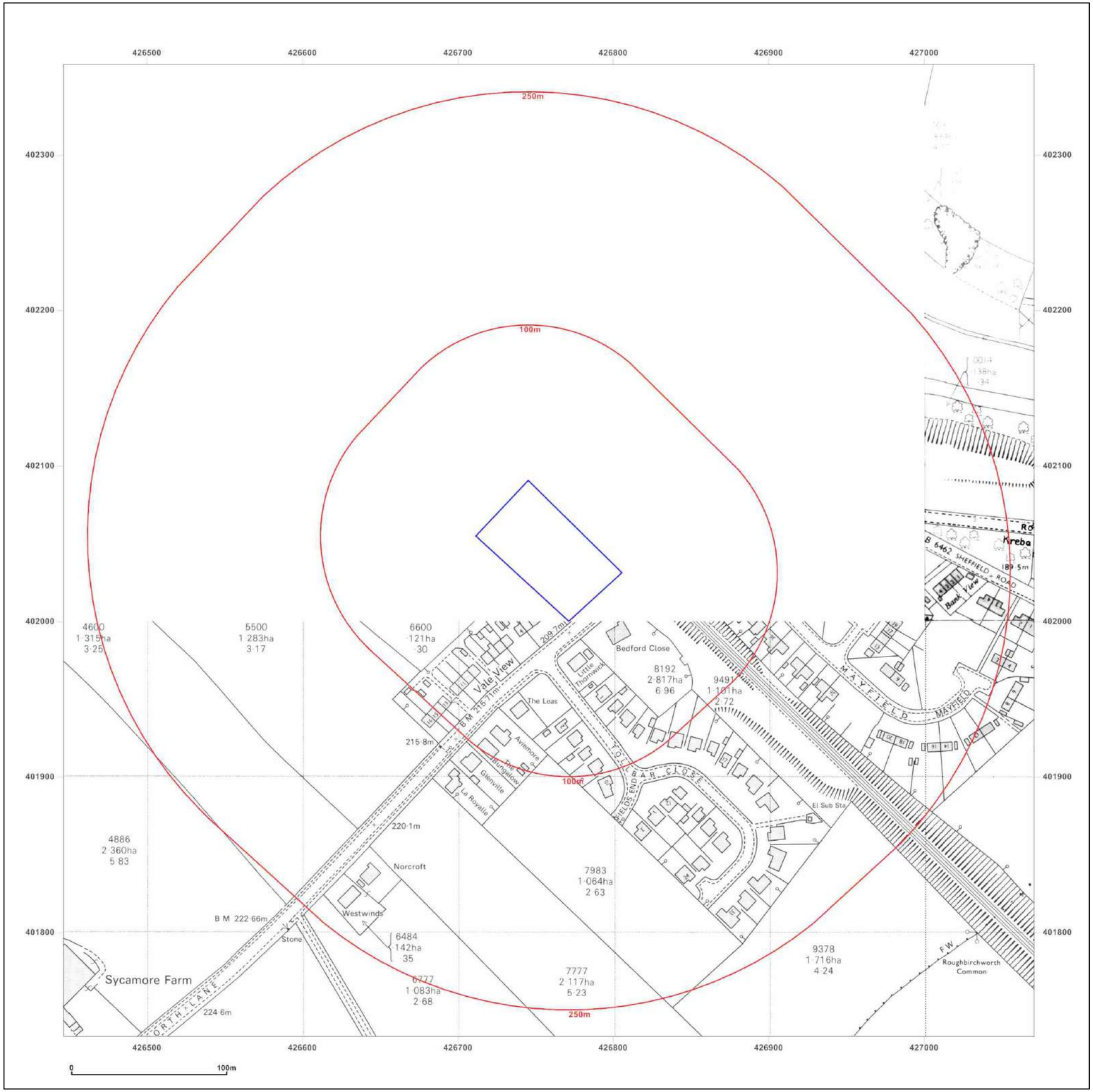

Groundsure INSIGHTS

Site Details:

ROUGHBIRCHWORTH COTTAGE,
ROUGHBIRCHWORTH LANE,
OXSPRING, BARNSLEY, S36 8YZ

Client Ref: S10565
Report Ref: GS-4939006
Grid Ref: 426758, 402046

Map Name: National Grid
Map date: **1982-1984**
Scale: 1:2,500
Printed at: 1:2,500

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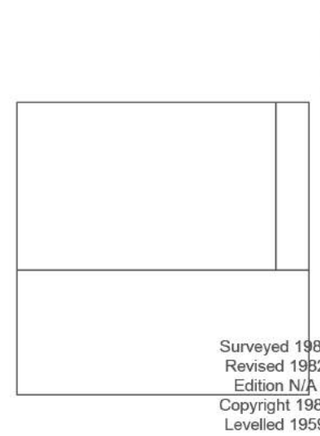

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Production date: 02 May 2018

Map legend available at:
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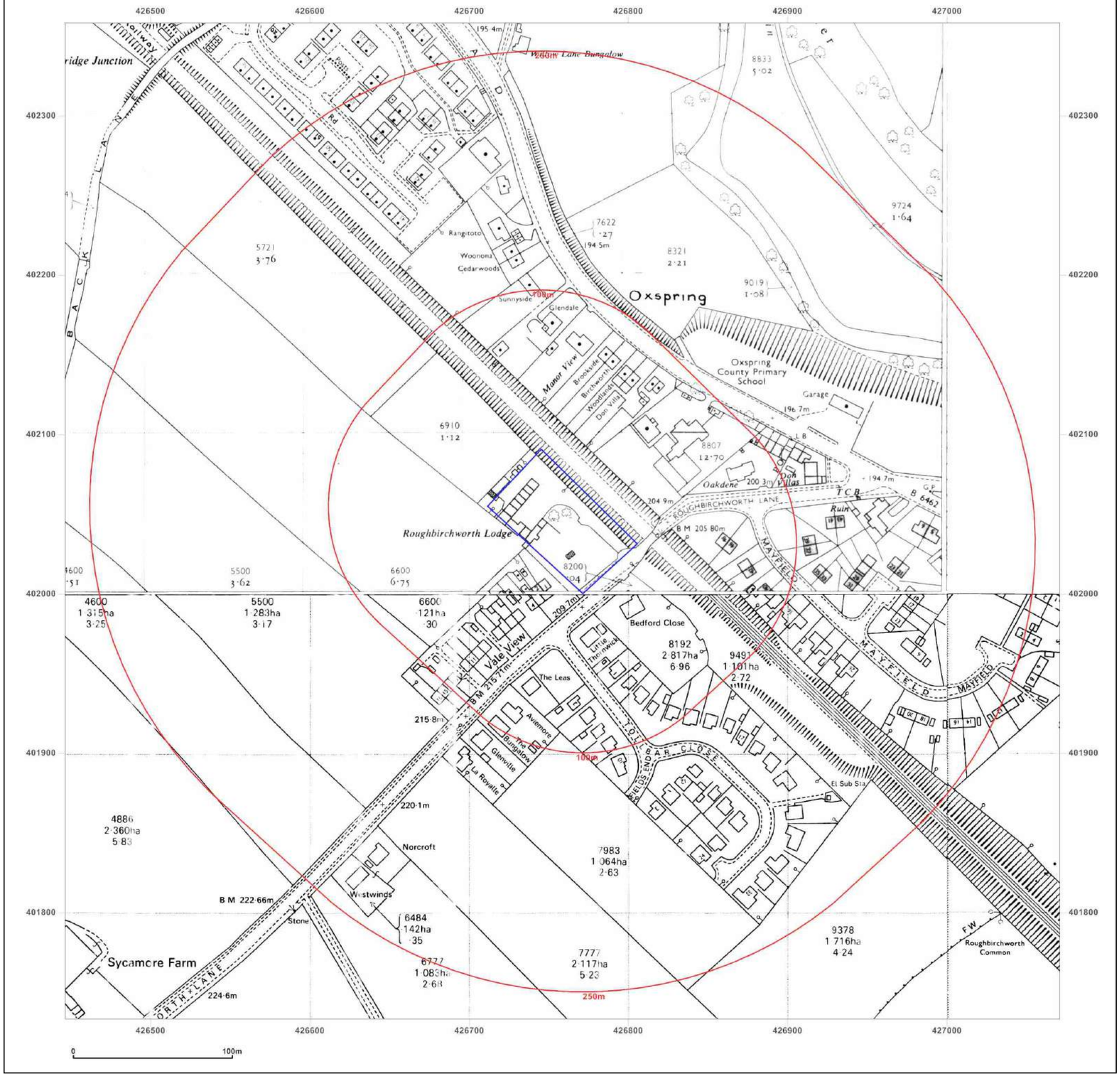

Groundsure INSIGHTS

Site Details:

ROUGHBIRCHWORTH COTTAGE,
ROUGHBIRCHWORTH LANE,
OXSPRING, BARNSLEY, S36 8YZ

Client Ref: S10565
Report Ref: GS-4939006
Grid Ref: 426758, 402046

Map Name: National Grid

Map date: **1984-1988**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1963
Revised 1988
Edition N/A
Copyright 1988
Levelled 1963

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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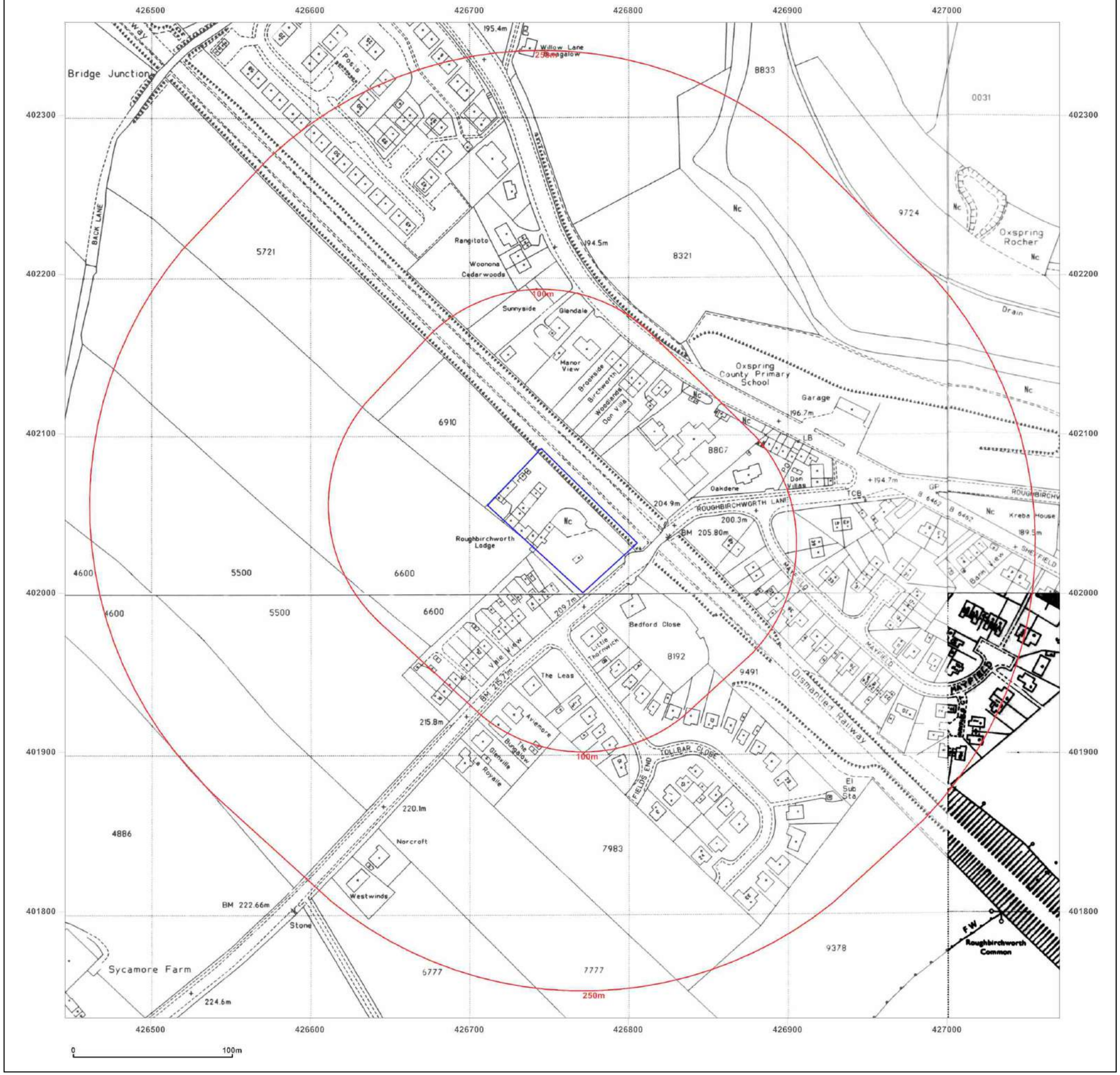

Groundsure INSIGHTS

Site Details:

ROUGHBIRCHWORTH COTTAGE,
ROUGHBIRCHWORTH LANE,
OXSPRING, BARNSLEY, S36 8YZ

Client Ref: S10565
Report Ref: GS-4939006
Grid Ref: 426758, 402046

Map Name: National Grid

Map date: **1991-1993**

Scale: 1:2,500

Printed at: 1:2,500

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

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

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

Surveyed 1959
Revised 1982
Edition N/A
Copyright 1991
Levelled 1959

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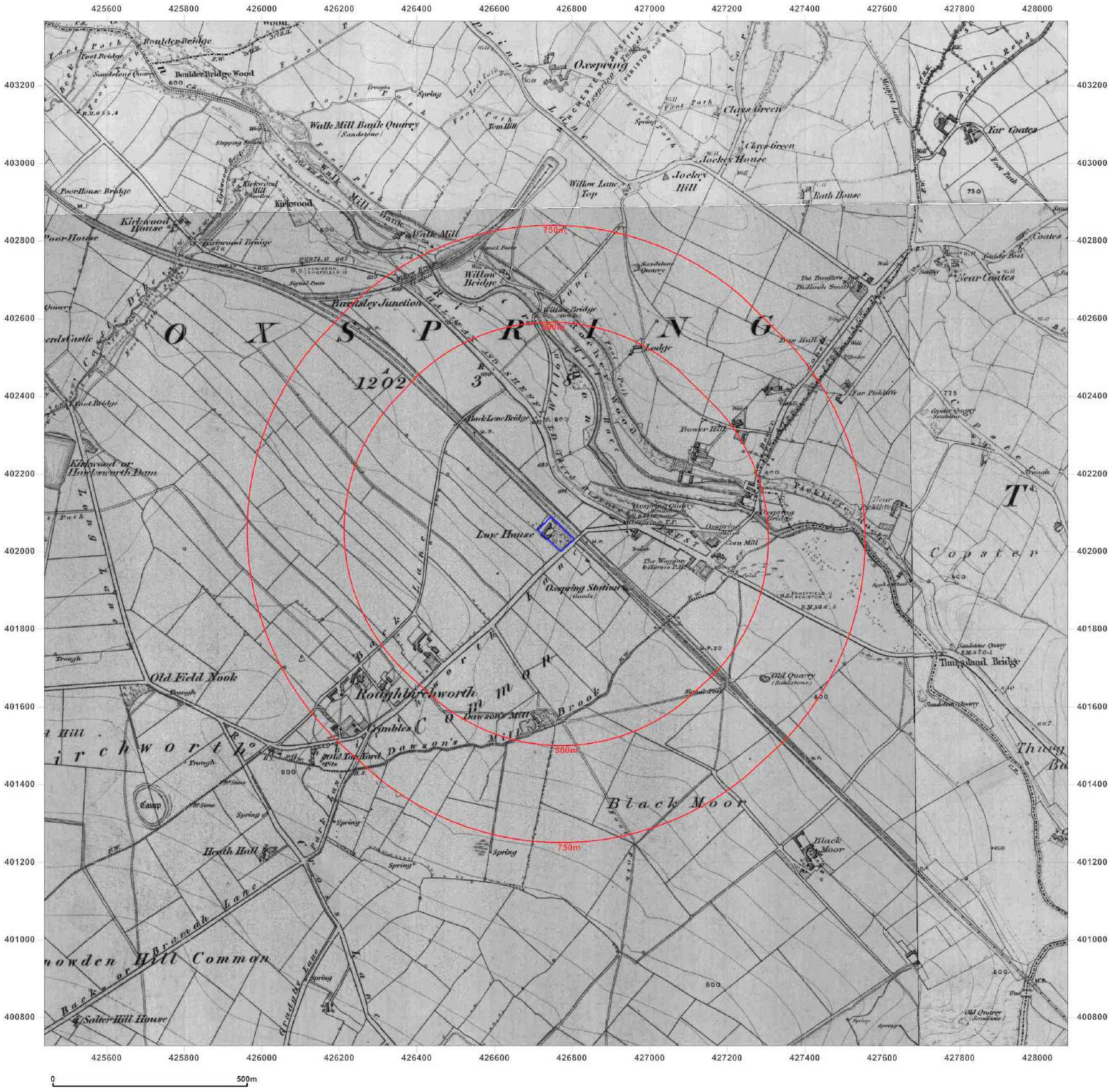
Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

ROUGHBIRCHWORTH
COTTAGE,
ROUGHBIRCHWORTH LANE,
OXSPRING, BARNSLEY, S36
8YZ

Client Ref: S10565
Report Ref: GS-4939006
Grid Ref: 426758, 402046

Map Name: County Series
Map date: **1850-1855**
Scale: 1:10,560
Printed at: 1:10,560

N
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Surveyed 1850
Revised N/A
Edition 1854
Copyright N/A
Levelled N/A

Surveyed 1851
Revised N/A
Edition 1850
Copyright N/A
Levelled N/A

Surveyed 1851
Revised N/A
Edition 1854
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Surveyed 1851
Revised N/A
Edition 1855
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Levelled N/A

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W: www.groundsure.com

Production date: 02 May 2018

Map legend available at:
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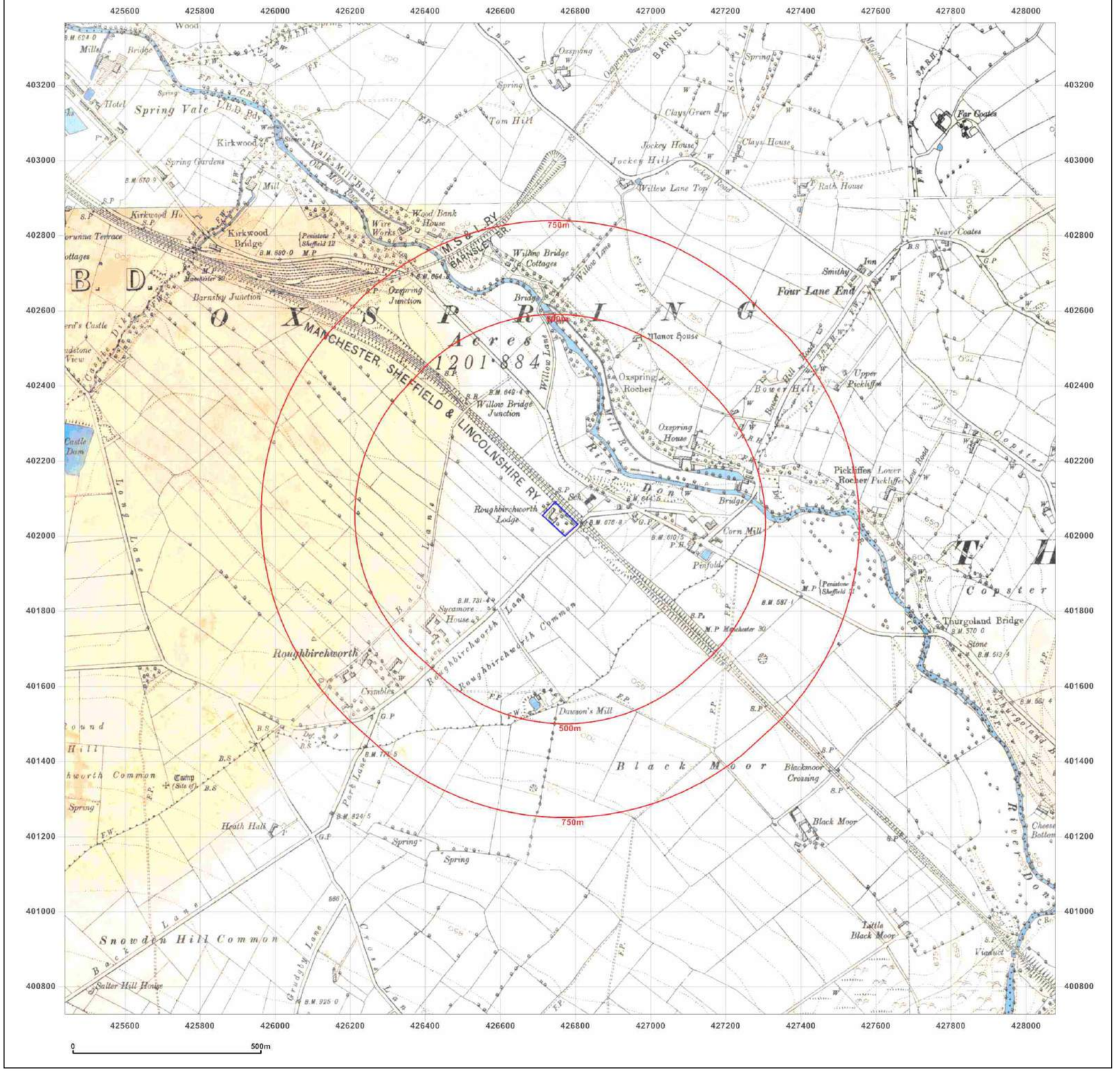

Groundsure INSIGHTS

Site Details:

ROUGHBIRCHWORTH COTTAGE,
ROUGHBIRCHWORTH LANE,
OXSPRING, BARNSLEY, S36 8YZ

Client Ref: S10565
Report Ref: GS-4939006
Grid Ref: 426758, 402046

Map Name: County Series

Map date: **1891**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1891
Revised 1891
Edition N/A
Copyright N/A
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Surveyed 1891
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Copyright N/A
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Surveyed 1891
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Revised 1891
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 02 May 2018

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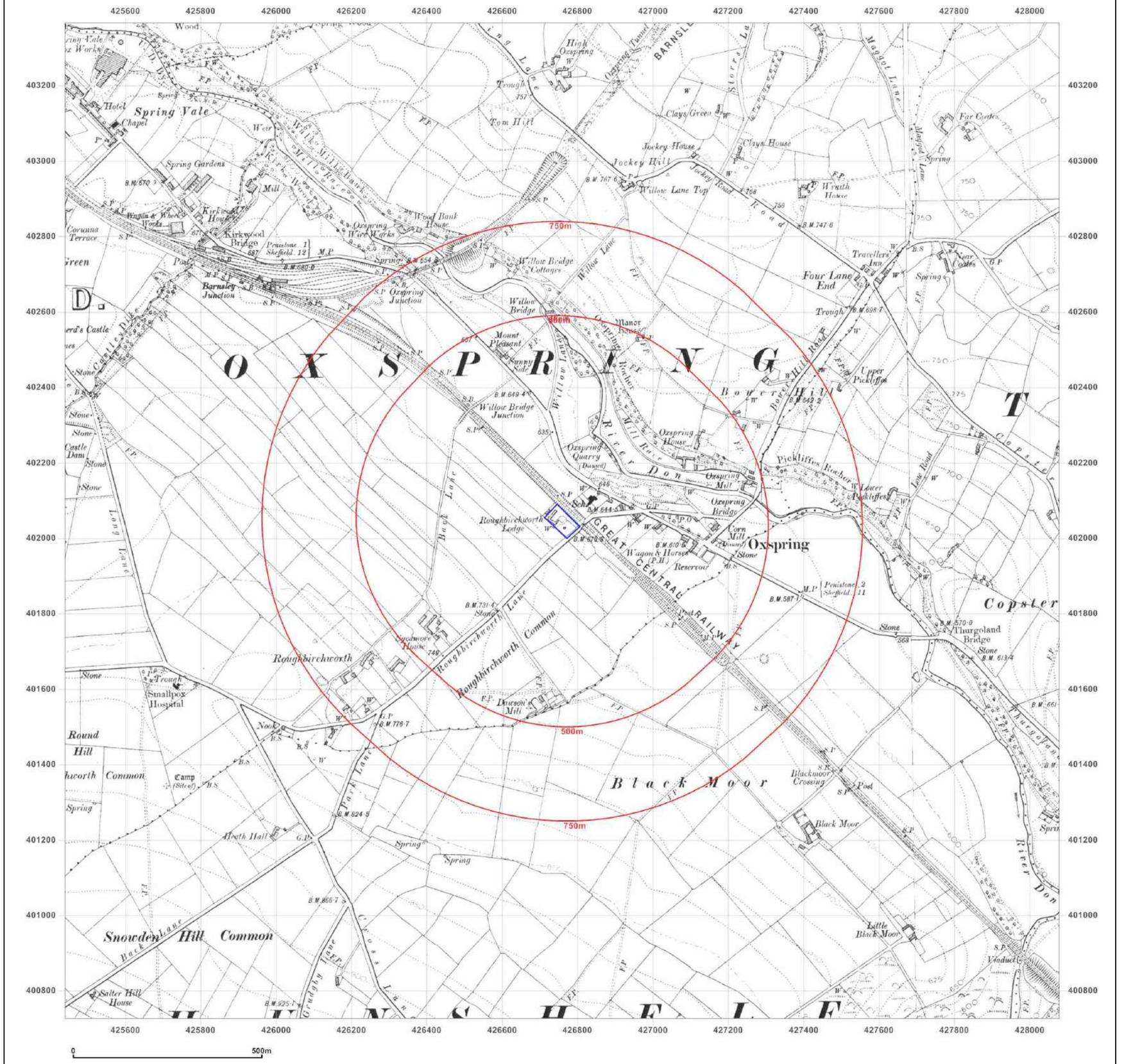

Groundsure INSIGHTS

Site Details:

ROUGHBIRCHWORTH COTTAGE,
ROUGHBIRCHWORTH LANE,
OXSPRING, BARNSLEY, S36 8YZ

Client Ref: S10565
Report Ref: GS-4939006
Grid Ref: 426758, 402046

Map Name: County Series

Map date: **1903-1904**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1892
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1891
Revised 1904
Edition N/A
Copyright N/A
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Surveyed 1891
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Edition N/A
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Surveyed 1891
Revised 1903
Edition N/A
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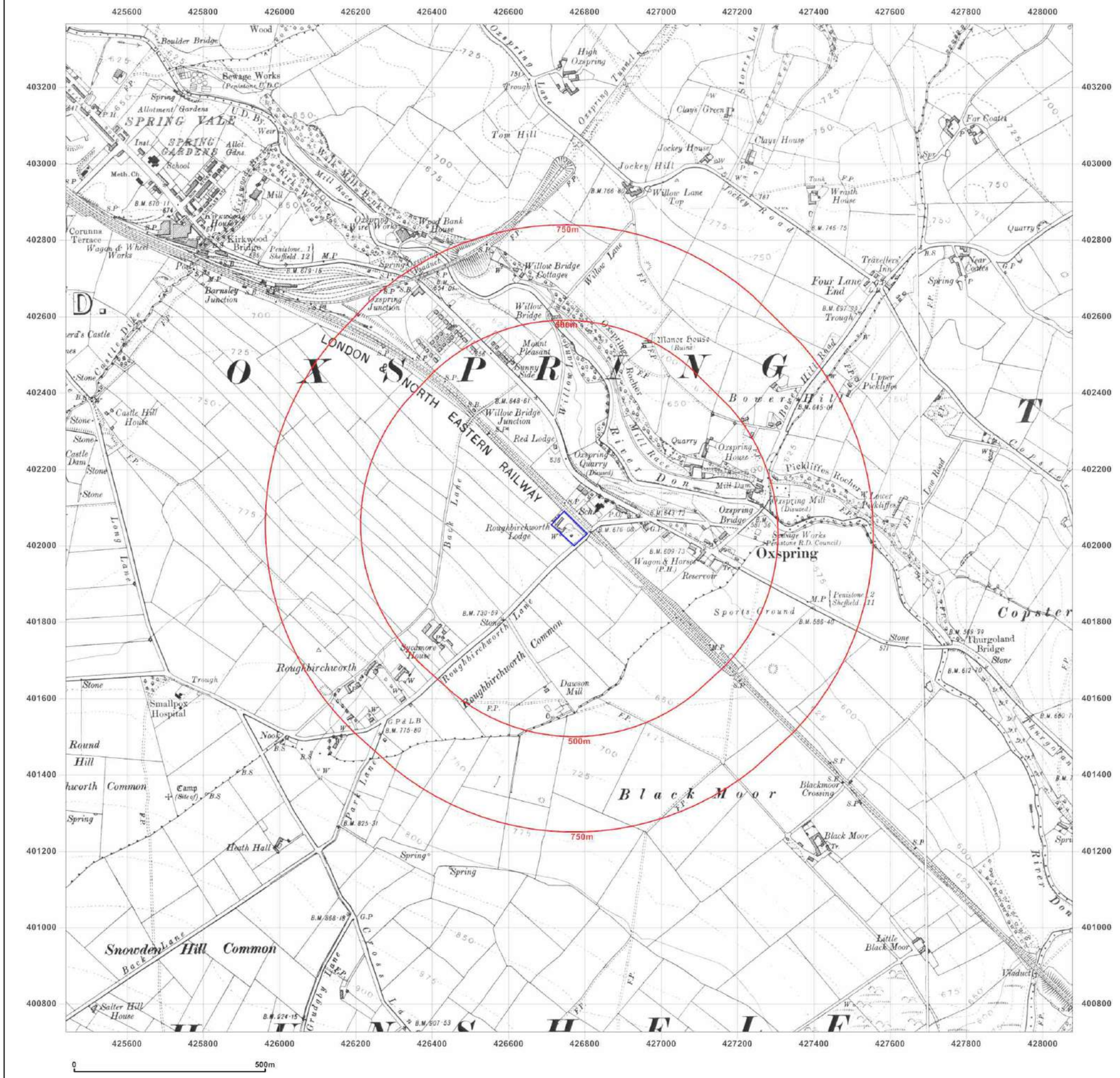

Groundsure INSIGHTS

Site Details:

ROUGHBIRCHWORTH COTTAGE,
ROUGHBIRCHWORTH LANE,
OXSPRING, BARNSLEY, S36 8YZ

Client Ref: S10565
Report Ref: GS-4939006
Grid Ref: 426758, 402046

Map Name: County Series

Map date: **1929-1932**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1851
Revised 1929
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1851
Revised 1929
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1851
Revised 1929
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1851
Revised 1932
Edition N/A
Copyright N/A
Levelled N/A

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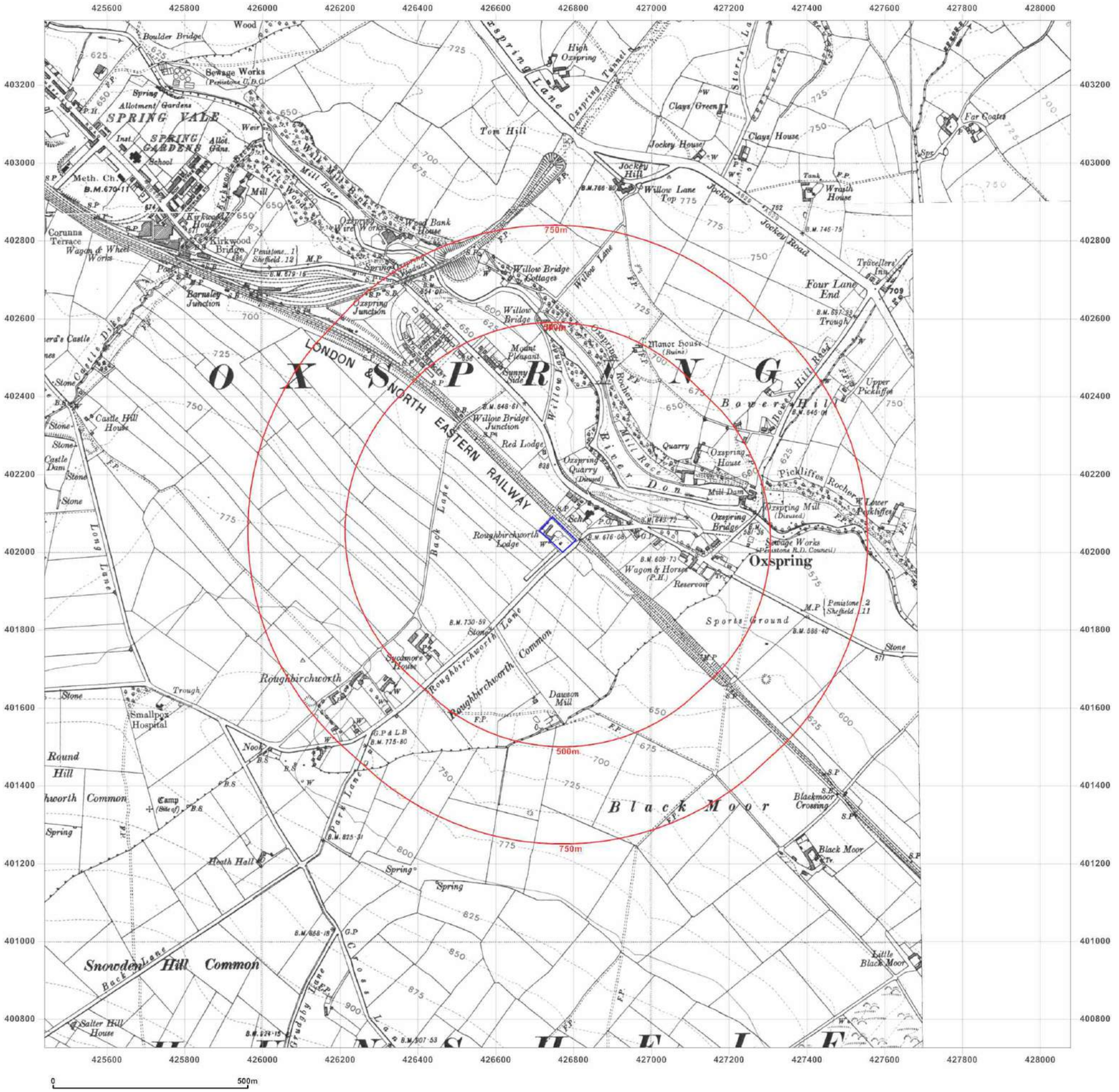
Production date: 02 May 2018

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



Groundsure INSIGHTS

Site Details:

ROUGHBIRCHWORTH COTTAGE,
ROUGHBIRCHWORTH LANE,
OXSPRING, BARNSLEY, S36 8YZ

Client Ref: S10565
Report Ref: GS-4939006
Grid Ref: 426758, 402046

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

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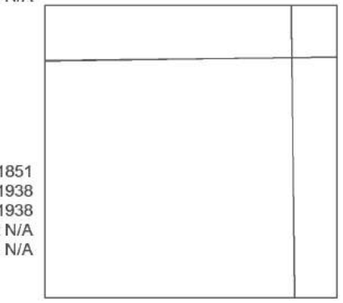
Surveyed 1851
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

Surveyed 1851
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1851
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

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Production date: 02 May 2018

Map legend available at:
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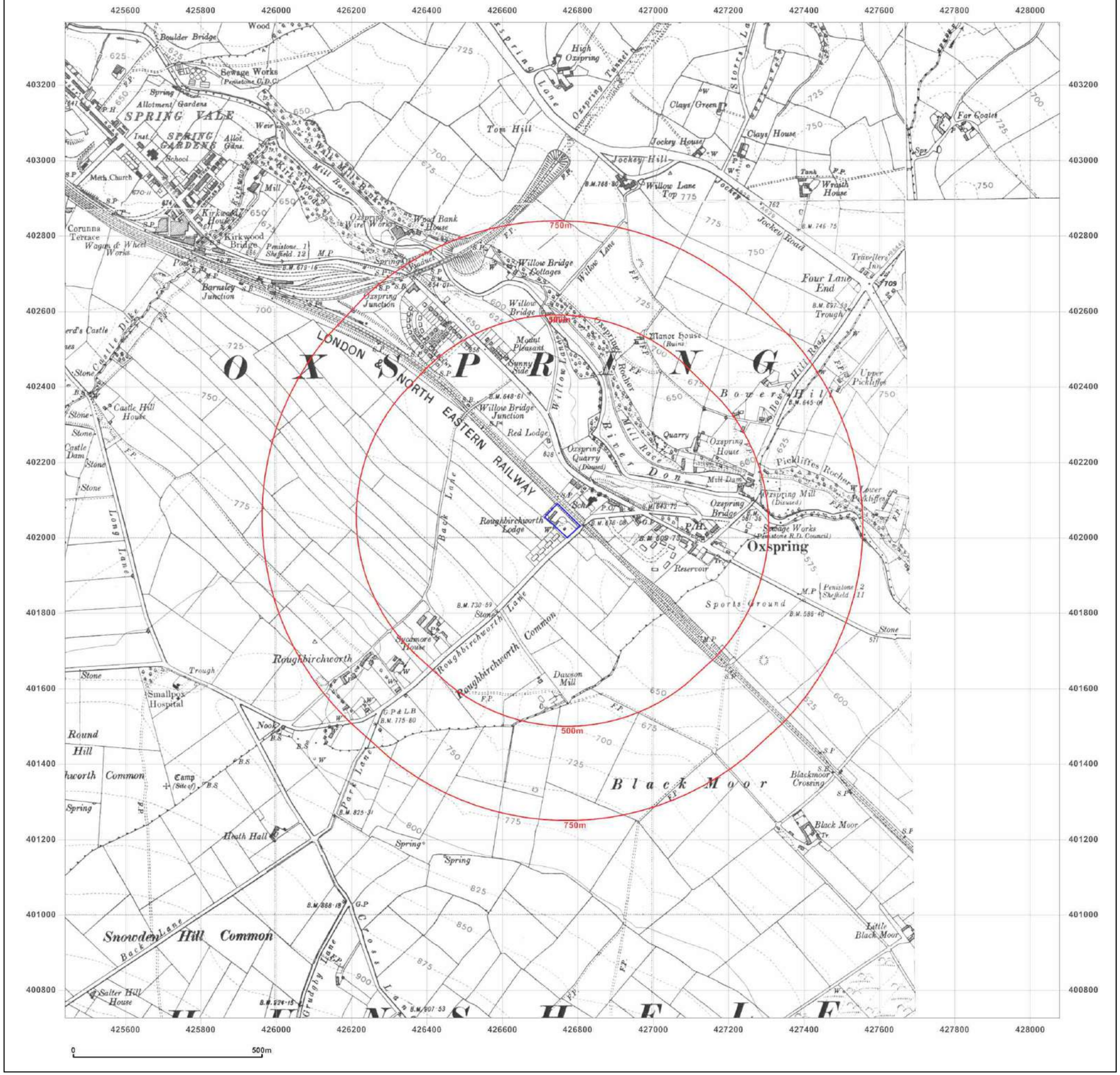

Groundsure INSIGHTS

Site Details:

ROUGHBIRCHWORTH COTTAGE,
ROUGHBIRCHWORTH LANE,
OXSPRING, BARNSLEY, S36 8YZ

Client Ref: S10565
Report Ref: GS-4939006
Grid Ref: 426758, 402046

Map Name: County Series

Map date: **1948**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1851
Revised 1948
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1851
Revised 1948
Edition 1948
Copyright N/A
Levelled N/A

Surveyed 1851
Revised 1948
Edition N/A
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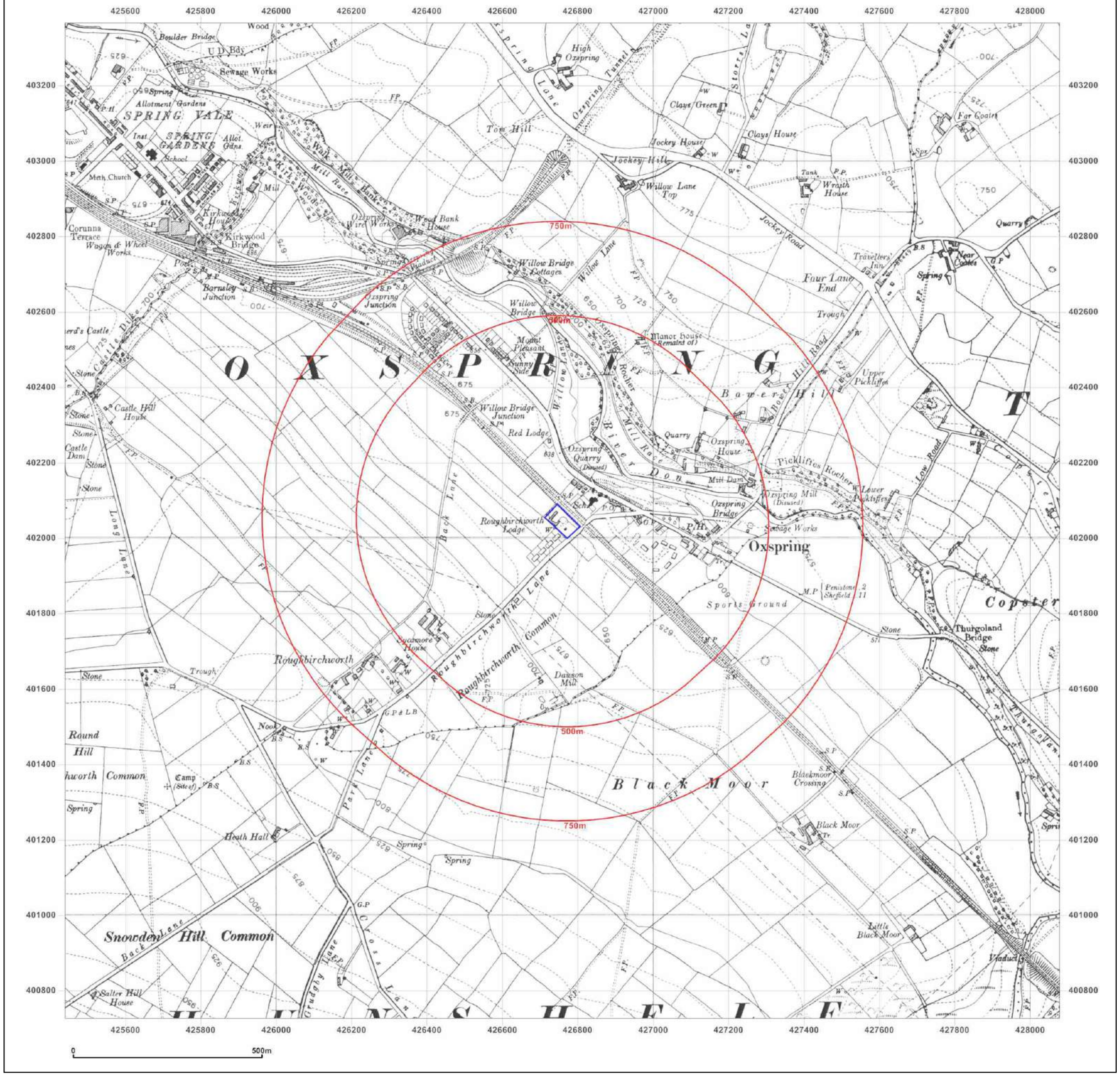

Groundsure INSIGHTS

Site Details:

ROUGHBIRCHWORTH COTTAGE,
ROUGHBIRCHWORTH LANE,
OXSPRING, BARNSLEY, S36 8YZ

Client Ref: S10565
Report Ref: GS-4939006
Grid Ref: 426758, 402046

Map Name: Provisional

Map date: **1951**

Scale: 1:10,560

Printed at: 1:10,560

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

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Map legend available at:
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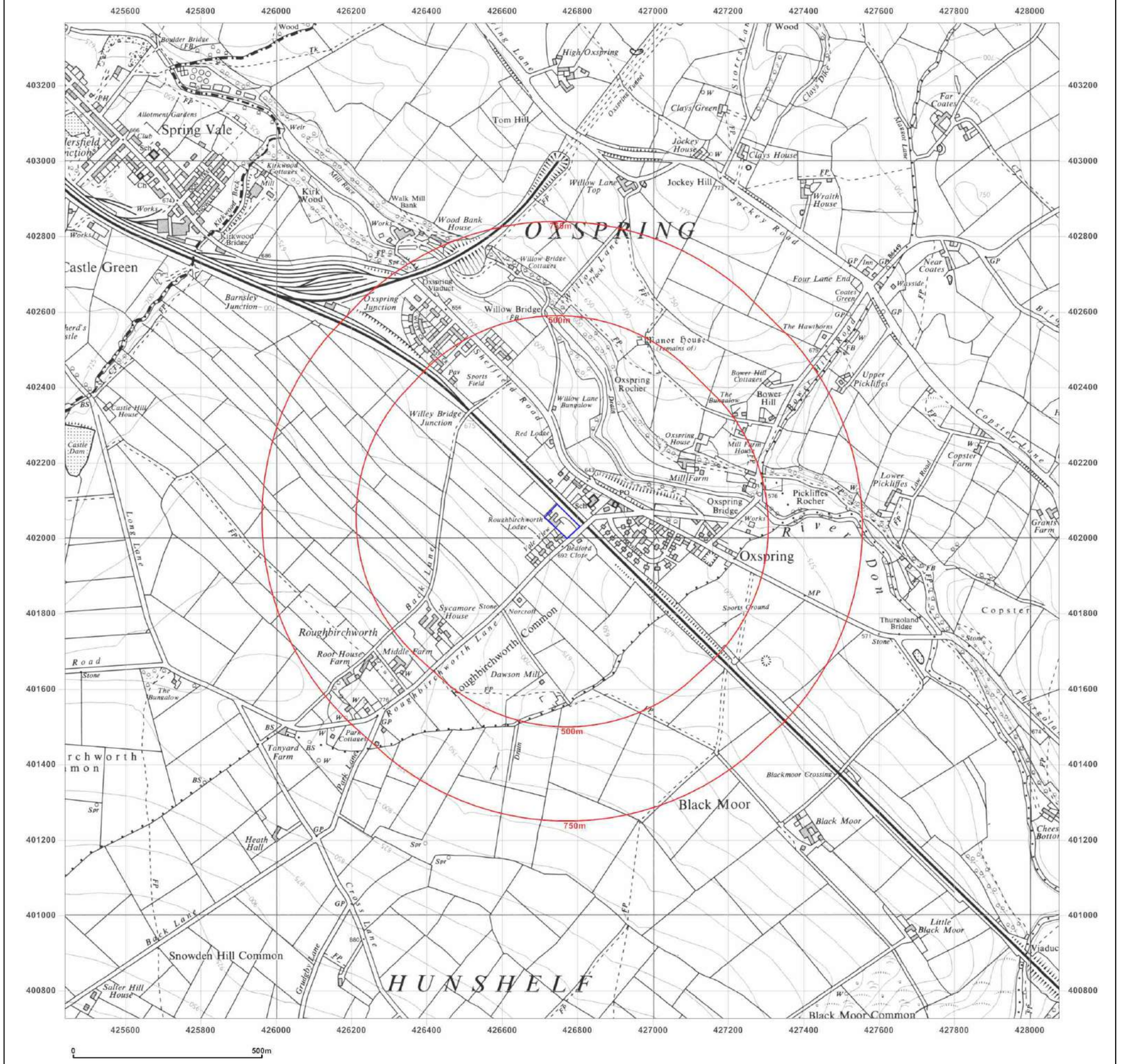

Groundsure INSIGHTS

Site Details:

ROUGHBIRCHWORTH COTTAGE,
ROUGHBIRCHWORTH LANE,
OXSPRING, BARNSLEY, S36 8YZ

Client Ref: S10565
Report Ref: GS-4939006
Grid Ref: 426758, 402046

Map Name: Provisional

Map date: **1965**

Scale: 1:10,560

Printed at: 1:10,560

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

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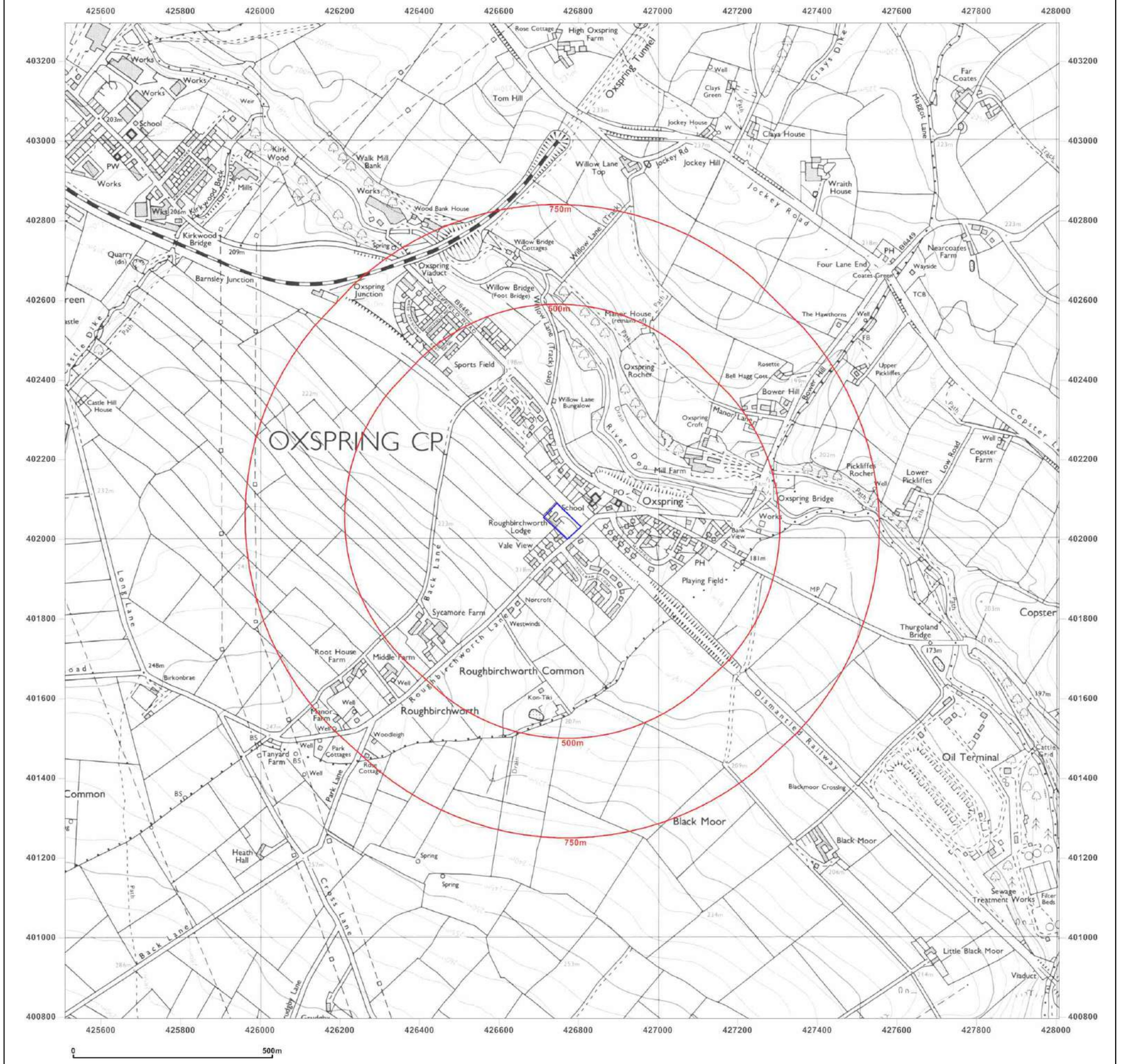
Production date: 02 May 2018

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



Groundsure INSIGHTS

Site Details:

ROUGHBIRCHWORTH COTTAGE,
ROUGHBIRCHWORTH LANE,
OXSPRING, BARNSLEY, S36 8YZ

Client Ref: S10565
Report Ref: GS-4939006
Grid Ref: 426758, 402046

Map Name: National Grid

Map date: **1987**

Scale: 1:10,000

Printed at: 1:10,000

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Surveyed 1984
Revised 1987
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 02 May 2018

Map legend available at:
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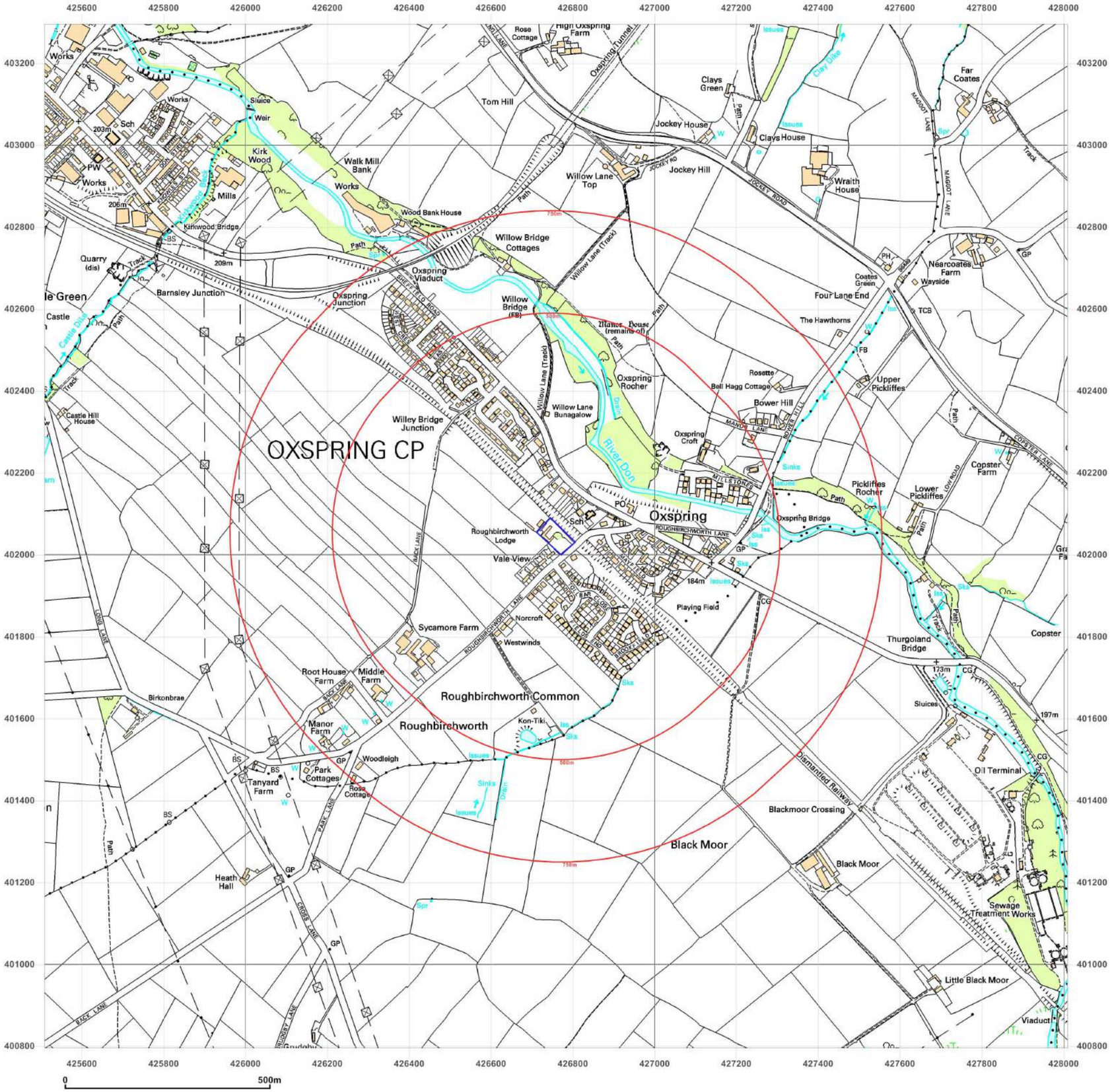

Groundsure INSIGHTS

Site Details:

ROUGHBIRCHWORTH COTTAGE,
ROUGHBIRCHWORTH LANE,
OXSPRING, BARNSLEY, S36 8YZ

Client Ref: S10565
Report Ref: GS-4939006
Grid Ref: 426758, 402046

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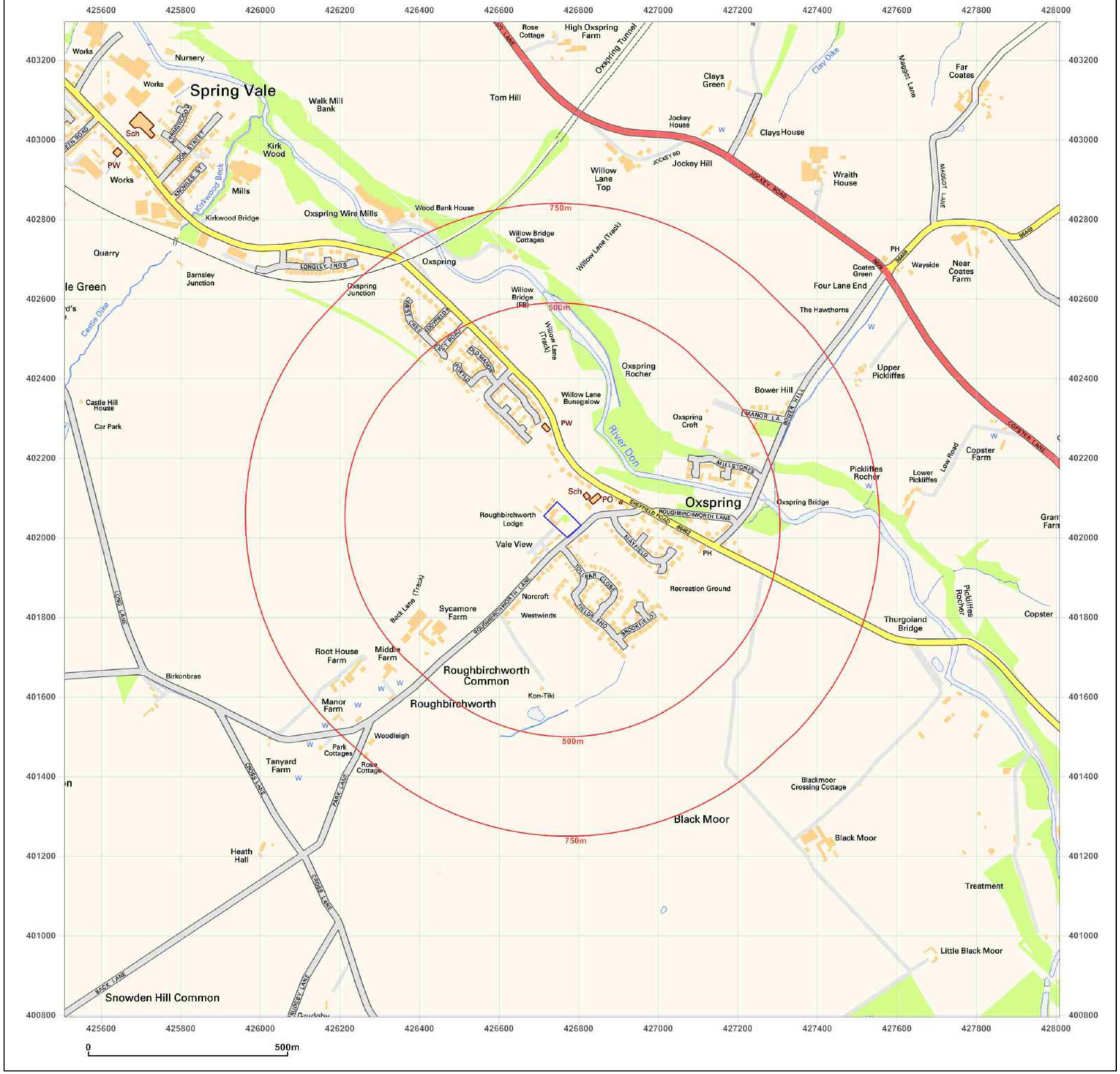
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 02 May 2018

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



Groundsure INSIGHTS

Site Details:

ROUGHBIRCHWORTH COTTAGE,
ROUGHBIRCHWORTH LANE,
OXSPRING, BARNSLEY, S36 8YZ

Client Ref: S10565
Report Ref: GS-4939006
Grid Ref: 426758, 402046

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

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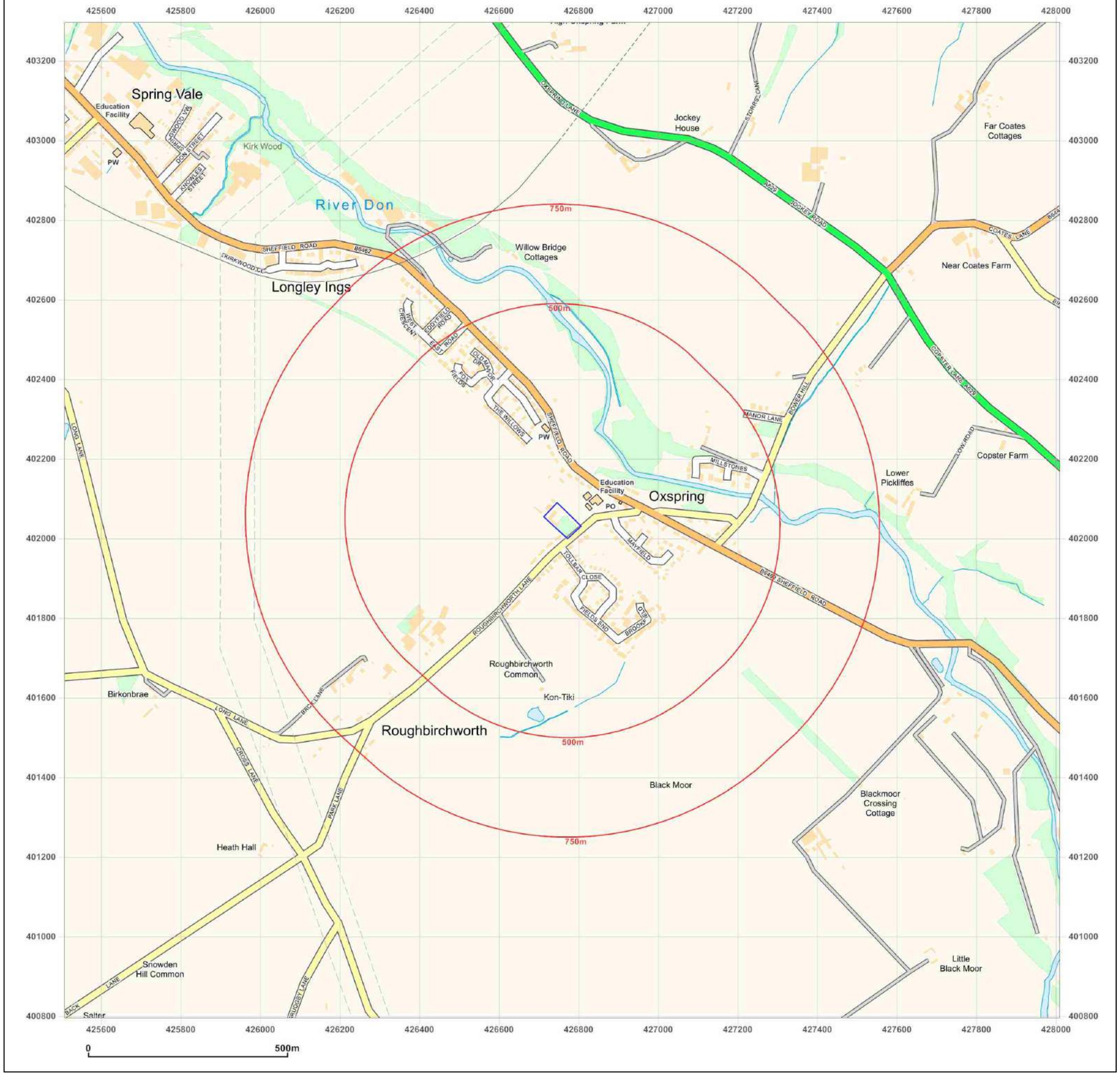
2010

Powered by OS

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

Production date: 02 May 2018

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



Groundsure INSIGHTS

Site Details:

ROUGHBIRCHWORTH COTTAGE,
ROUGHBIRCHWORTH LANE,
OXSPRING, BARNSLEY, S36 8YZ

Client Ref: S10565
Report Ref: GS-4939006
Grid Ref: 426758, 402046

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

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

Production date: 02 May 2018

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

Appendix E

Coal Mining Report

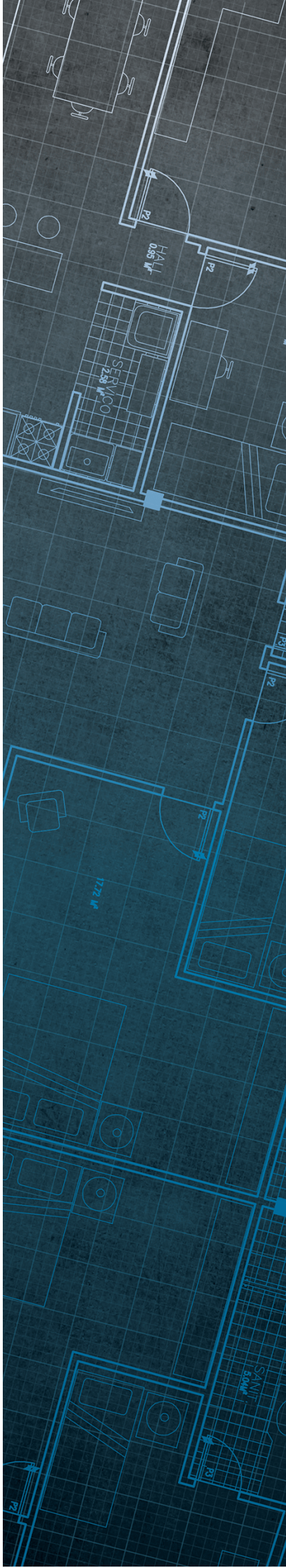
The Coal Authority

Consultants

Coal Mining Report

Roughbirchworth Cottage
Roughbirchworth Lane
Oxspring
Barnsley
S36 8YZ

Date of enquiry:	**18 May 2018**
Date enquiry received:	**18 May 2018**
Issue date:	**18 May 2018**
Our reference:	**51001850457001**
Your reference:	**S10565 - PO - SHEF310**



Consultants

Coal Mining Report

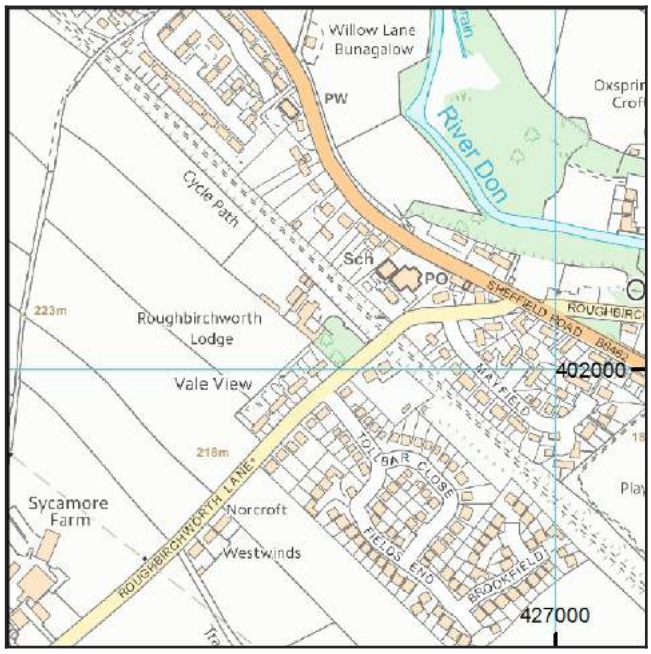
This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

J N P

Enquiry address

Roughbirchworth Cottage
Roughbirchworth Lane
Oxspring
Barnsley
S36 8YZ



Approximate position of property

How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

@coalauthority
/company/the-coal-authority
/thecoalauthority
/thecoalauthority

Section 1 – Mining activity and geology

Past underground mining
No past mining recorded.

Probable unrecorded shallow workings
None.

Spine roadways at shallow depth
No spine roadway recorded at shallow depth.

Mine entries
None recorded within 100 metres of the enquiry boundary.

Abandoned mine plan catalogue numbers
None available.

Outcrops
No outcrops recorded.

Geological faults, fissures and breaklines
No faults, fissures or breaklines recorded.

Opencast mines
None recorded within 500 metres of the enquiry boundary.

Coal Authority managed tips
None recorded within 500 metres of the enquiry boundary.

Section 2 – Investigative or remedial activity

Please refer to the 'Summary of findings' map (on separate sheet) for details of any activity within the area of the site boundary.

Site investigations
None recorded within 50 metres of the enquiry boundary.

Remediated sites
None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence
The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31st October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas
None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes
None recorded within 500 metres of the enquiry boundary.

Section 3 – Licensing and future mining activity

Future underground mining
None recorded.

Coal mining licensing
None recorded within 200 metres of the enquiry boundary.

Court orders
None recorded.

Section 46 notices
No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

Withdrawal of support notices
The property is not in an area where a notice to withdraw support has been given.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

Payments to owners of former copyhold land
The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Section 4 – Further information

Based on the responses in this report, no further information has been highlighted.

Section 5 – Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **call us on 0345 762 6848** or **email us at groundstability@coal.gov.uk.**

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

Opencast mines
Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips
Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations
Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites
Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority's Emergency Surface Hazard Call Out procedures.

Coal mining subsidence
Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current 'Stop Notice' deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas
Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission.

Mine water treatment schemes
Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial – mitigating the impact of existing pollution or Preventative – preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining
Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing
Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders
Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices
Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

Withdrawal of support notices
Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

Payment to owners of former copyhold land
Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

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VAT receipt

Issued by	The Coal Authority 200 Lichfield Lane Mansfield Nottinghamshire NG18 4RG
Tax point date	18 May 2018
Issued to	J N P MEADOWHALL RIVERSIDE MEADOWHALL ROAD SHEFFIELD S9 1BW
Property search for	ROUGHBIRCHWORTH COTTAGE ROUGHBIRCHWORTH LANE OXSPRING BARNSLEY S36 8YZ
Reference number	51001850457001
Date of issue	18 May 2018
Cost	£106.79
VAT @ 20%	£21.36
Total received	£128.15
VAT registration	598 5850 68

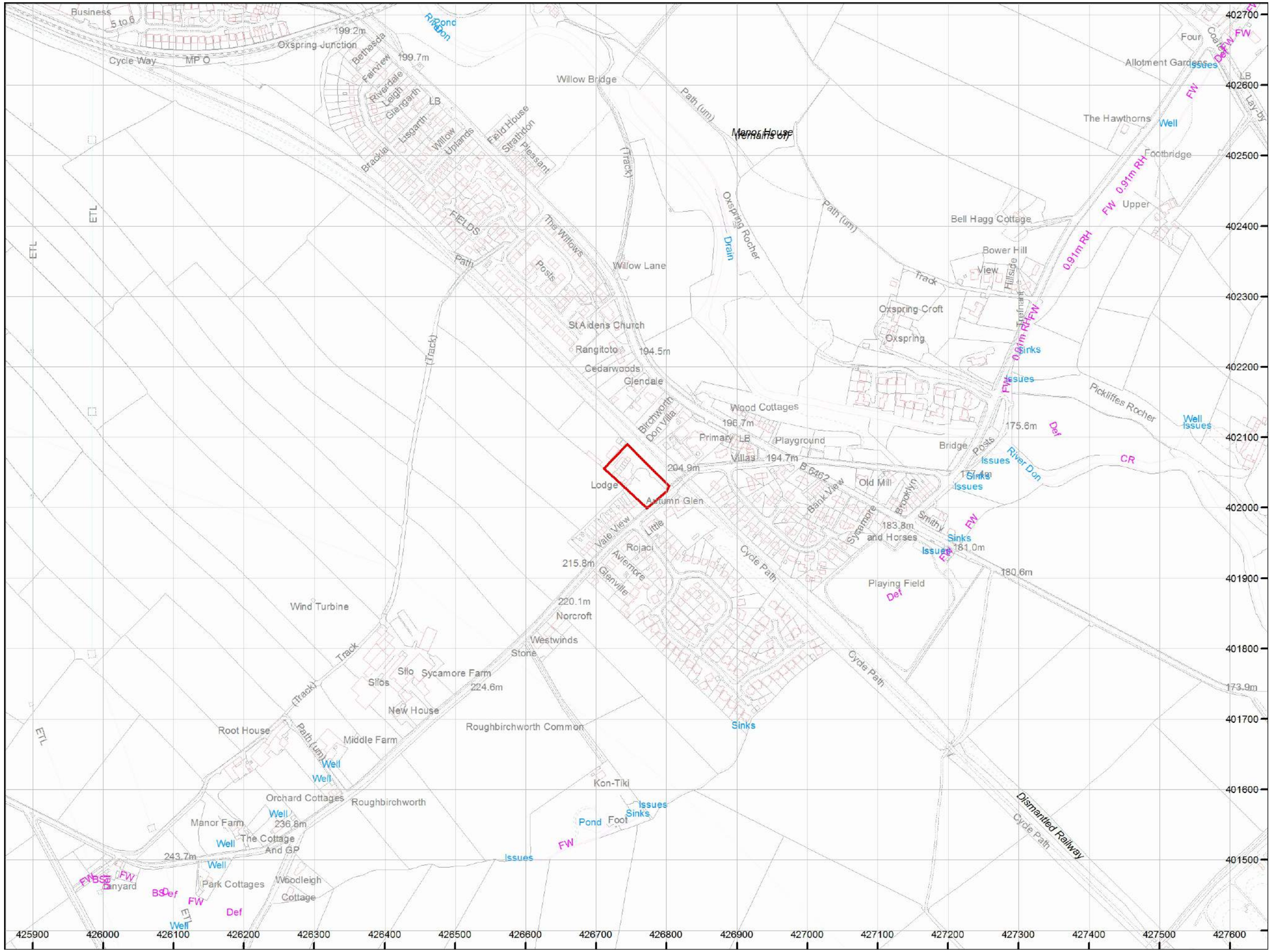
The Coal Authority

Summary of findings

The map highlights any specific surface or subsurface features within or near to the boundary of the site.

Key

Approximate position of the enquiry boundary shown



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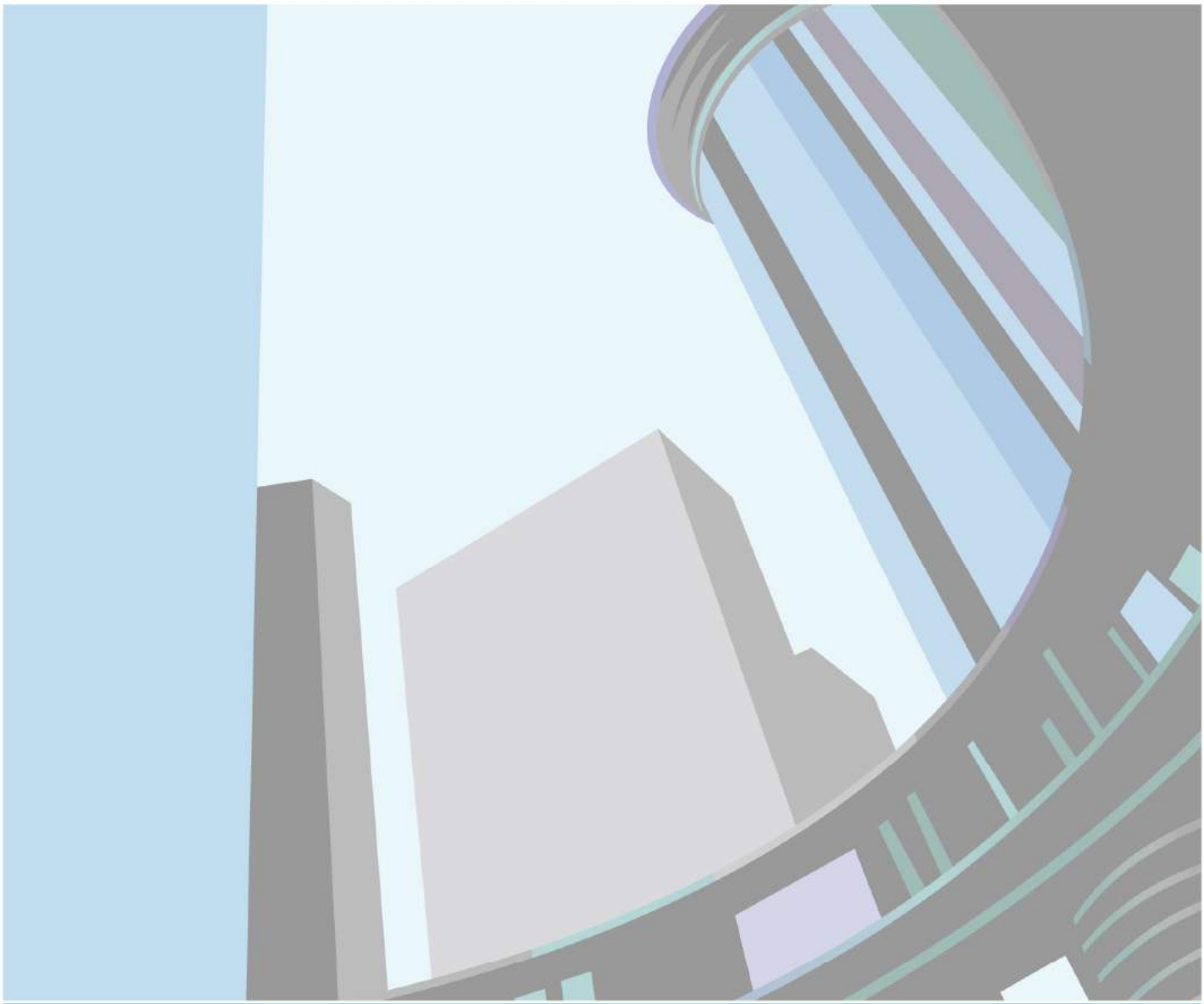
+44 (0)1623 637 000 (International)
www.groundstability.com



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jnpgroup
Consulting Engineers

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Brighouse
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HD6 4AB

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01484 400691

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