

**Environmental
Geotechnical
Specialists**



PHASE 1 ENVIRONMENTAL DESK STUDY

job number C66/19/E/127 - Rev 1	date 06/12/2019
site address Cockley Woodland Weddings, Lyley Lane, Grange Moor, Wakefield, WF4 4EN	
written by M.Cook	checked by R. Palmer
issued by M.Cook	

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Report on a Phase One Desk Study

Location: Cockley Woodland Weddings,
Liley Lane, Grange Moor, Huddersfield, WF4 4EN.

For: Mr.Smith

Report No. C66/19/E/127 – Rev 1

Report date: December 2019

For and on behalf of **Rogers Geotechnical Services Ltd**

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Mike Cook BSc PhD
Graduate Engineer

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1. Introduction

The site comprises an area of woodland located off Liley Lane, Grange Moor, Huddersfield, WF4 4EN. The development area is approximately 0.75 hectares in size and its National Grid reference is centred around 421320 416682.

It is understood that the development proposals currently comprise further development of a woodland wedding facility within the northeastern area of the site. In order to assist with this decision making process, and any planning and construction aspects of the development, a phase one environmental desk study has been commissioned and is the subject of this report.

In accordance with issued guidance, a site walkover was conducted on the 16th September 2019 and the following observations were made:

General site description/current site use

The site comprises a wooded area of land with a single dirt track which leads off Liley Lane and along the southern side of the development area. A number of semi-permanent open-sided tent structures, currently used as a wedding and celebration venue, are present in the sites northeastern corner.

Site boundaries/access

The site is accessible via a dirt track which leads off Liley Lane.

Topography

The site is predominantly flat. However, the ground is slightly uneven underfoot.

Surface cover of site

Grass, shrubs and trees cover the majority of the site, with the exception of the dirt track and wedding venue area, which are covered by gravel and wood chippings respectively.

**Visible evidence of contamination/ contaminative sources**

Loose asphalt waste is present, in a limited number of locations, across the sites surface. However, there were no other visible signs of contamination present during the time of the walkover.

Presence of vegetation and wildlife

Various trees and dense shrubbery are present across the site. Potential restrictions posed by this vegetation will need to be considered in regards to any further site investigation works. Vegetation seems to be healthy with no evidence of degradation. There were no obvious signs of invasive flora, fauna, nesting birds, burrowing animals or edible plants observed during the time of the site walkover.

Services

The status of underground services is unknown. There were no overhead services present within the site at the time of the walkover.

Site neighbours

The site is located within a predominantly agricultural area. Farms are present to the north, east and south. An operational quart is present to the west.

In order to ensure that the site is fully characterised and to comply with the Environment Act 1995¹, a Phase One Desk Study has been commissioned by Mr. Smith. The desk study is intended to assess the environmental impact of historical, current and future factors on the development. This report will present the data obtained and provide a conceptual ground model and preliminary risk assessment as well as discussing the scope of any intrusive investigation that may be required. This report does not consider ecological impacts (e.g. bats) or botanical risks (e.g. Japanese Knotweed).

2. Review and Summary of Published Data

As a part of this desk study the following data has been considered.

- | | |
|----------------------|--------------|
| ▪ Groundsure Reports | - Appendix 1 |
| ▪ Historical maps | - Appendix 2 |
| ▪ Site Plan | - Appendix 3 |
| ▪ Photographs | - Appendix 4 |
| ▪ Coal Report | - Appendix 5 |

The data obtained from the above mentioned sources has been summarised below².

¹S57 of the Environment Act 1995 inserted the contaminated land regime into the Environmental Protection Act 1990 (Part 2A). The regime 'provides a risk based approach to the identification and remediation of land where contamination poses an unacceptable risk to human health or the environment' See <http://www.environment-agency.gov.uk/research/planning/40405.aspx>. This places a duty on local authorities to inspect their areas for contaminated land and require its remediation using the 'suitable for use' approach. Much of this duty is discharged via the planning regime under the Town and Country Planning Act 1990 as historical land contamination is a 'material planning consideration.' The local authorities are required to secure the removal of unacceptable risks via remediation of the land, to therefore ensure the site is suitable for its new use. This is fulfilled via completion of a Phase One Environmental Desk Study, Phase Two Intrusive Investigation, Phase Three Remediation Strategy and Phase Four Validation Report. Therefore, as a minimum, once a site has been developed it should not be capable of being designated as 'contaminated land' under Part 2A of the Environmental Protection Act 1990, as inserted by the Environment Act 1995 (see also PPS 23 Planning and Pollution Control Section 8)

² This report is a summary only and reference must be made in full to the information provided in the Groundsure Report.



2.1 Historical Land Use

Table 1: Historical Land Use³

HISTORICAL MAPPING SUMMARY		
Map Dates	On site	Within 250m
1893 – 1956	The site appears to be an area of woodland.	The surrounding area is predominantly agricultural. Tramway – 80m S. Disused Coal Drift – 90m S.
1960 – 1982	An unspecified heap now occupies the centre of the development area. The rest of the site remains woodland.	The surrounding area remains largely unchanged.
1990 – 2019	The unspecified heap no longer appears to be present on site.	The surrounding area remains largely unchanged.

NB. All distances given are approximate only.

2.2 Published Geology and Geological Hazards

Table 2: Geological Data for the Site

BGS MAPPING DATA			
Strata Type	Strata Name ⁴	Previous Name ⁴	Description ⁵
Made Ground/Fill	N/A	N/A	Not indicated on site although previous site use may have resulted in the presence of made ground.
Superficial Geology	N/A	N/A	Not indicated to underlie the site.
Solid Geology	Pennine Lower Coal Measures Formation	-	Interbedded grey mudstone, siltstone and pale grey sandstone, commonly with mudstones containing marine fossils in the lower part, and more numerous and thicker coal seams in the upper part.
	Lepton Edge Rock	-	On the Huddersfield Sheet the Lepton Edge Rock is fine- to very fine-grained, thinly bedded to flaggy sandstone
GEOLOGICAL FEATURES			
Type	Location	Features	Comments
Mining Activity	On site	Coal mining.	The study site is located within the specified search distance of an identified mining area.
		Non-coal Mining.	Not indicated to be present on site.
Linear Features	On Site	Fault	Normal fault, inferred.
	On Site	Coal Seam	Inferred.
	34m NW	Coal Seam	Inferred.
	70m W	Coal Seam	Observed.
	83m S	Coal Seam	Inferred.
	101m S	Coal Seam	Inferred.

³ See Appendix 2

⁴ Sources: British Geological Survey (NERC) Map Sheets 77; Huddersfield; Solid and Drift Edition, and Geology of Britain Viewer [online resource from www.bgs.ac.uk]

⁵ Sources: British Geological Survey (NERC) Lexicon of Named Rock Units [online resource from www.bgs.ac.uk]



	138m NE	Coal Seam	Observed.
	176m SE	Coal Seam	Observed.
	190m N	Coal Seam	Inferred.
	229m E	Coal Seam	Observed.
	244m E	Coal Seam	Inferred.
Landslip Deposits	No data	No data	No data
BGS BOREHOLE DATA			
Reference⁶	Location	Strata Description	Depth
None recorded within 250m or the same fault block.			
NATURAL GROUND SUBSIDENCE & HAZARDS⁷			
Type		Risk Rating	
Potential for collapsible ground stability hazards		Very low.	
Potential for compressible ground stability		Negligible.	
Potential for ground dissolution stability		Negligible	
Potential for landslide ground stability		Moderate – Significant potential for slope instability with relatively small changes in ground conditions. Avoid large amounts of water entering the ground through pipe leakage or soak-aways. Do not undercut or place large amounts of material on slopes without technical advice. For new build - consider the potential and consequences of ground movement during excavations, or consequence of changes to loading or drainage.	
Potential for running sand ground stability		Negligible.	
Potential for shrinking or swelling clay ground stability		Very Low.	
Radon		The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level. BR211 states that no radon protective measures are necessary.	

2.3 Construction Issues

2.3.1 Foundation Construction

Assuming that all coal mining issues on site are satisfactorily resolved and assuming that there are no areas of significantly filled ground, it is anticipated that shallow strip or spread foundations could be utilised at this site.

Notwithstanding the above, it is possible that undifferentiated strata within the Pennie Lower Coal Measures Formation may include very fine grained rocks which are likely to have weathered to cohesive soils at or near the surface. Such soils could be sensitive to soil moisture variations and thus be susceptible to desiccation as a result of tree root action. In light of this, it is possible that

⁶ <http://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html>

⁷ See Groundsure report



footings within the zone of influence of trees (existing or previously removed), may need to be founded at extended depths in excess of 1m.

It should be appreciated that an intrusive investigation will be required to validate the above opinions.

2.3.2 Site Won Materials

Where sandstone outcrops it is possible that the resulting soil may provide a suitable bulk granular fill and may prove suitable for re-compaction.

2.3.3 Disposal of Site Materials

If made ground is present then contamination/WAC testing will be required to establish the nature of the underlying soil before disposal to a licensed landfill site. However, it is anticipated that the naturally occurring soils would not be significantly contaminated, thus would probably be accepted by a waste disposal site catering for inert material.

2.4. Mining and Natural Cavities

2.4.1 Coal Mining

The Groundsure Report states that the site is within an area that may be affected by coal mining. A Consultant's Coal Mining Report has therefore been obtained that is included in appendix 5 of this report and may be summarised as follows:

Table 3: Summary of the Consultant's Coal Mining Report

Has the report highlighted evidence or potential of:			
Ref	Mining Feature	Yes/No	Comments
1	Underground Coal Mining	Yes	The property is in a surface area that could be affected by underground mining in 5 seams of coal between 12m and 192m depth and last worked between 1889 and 1963.
2	Probable Unrecorded Shallow Workings	Yes	The Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).
3	Spine Roadways at Shallow Depth	Yes	The Coal Authority believes there to be 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.
4	Mine Entries	Yes	Five mine adits are located within or within 100m of the enquiry boundary.
5	Abandoned mine plans	Yes	Plans of abandoned mine workings below the site are suggested to be available by the coal authority.
6	Outcrops	Yes	The Middleton Little Coal is noted to outcrop within the enquiry boundary.
7	Geological Faults	Yes	One fault is indicated to outcrop on site.
8	Opencast Mines	Yes	A number of opencast mines are indicated to be present within 500m of the site.
9	Coal Authority Managed Tips	No	None recorded within 500 metres of the enquiry boundary.
10	Site Investigations	No	None recorded within 50 metres of the enquiry boundary.
11	Remediated Sites	No	None recorded within 50 metres of the enquiry boundary.
12	Coal Mining Subsidence	No	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 31 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.
13	Mine Gas	No	None recorded within 500 metres of the enquiry boundary.
14	Mine Water Treatment Schemes	No	None recorded within 500 metres of the enquiry boundary.
15	Future underground mining	No	None recorded.
16	Coal mining licensing	No	None recorded within 200 metres of the enquiry boundary.
17	Court orders	No	None recorded.
18	Section 46 notices	No	No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.
19	Withdrawal of support notices	Yes	The property is in an area where notices to withdraw support were given in 1948 and 1957. 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.
20	Payments to owners of former copyhold land	No	The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

2.4.2 Non-Coal Mining

Not indicated to be present on site.

2.5 Waste Management and Gas Monitoring

Table 4: Landfill Data and Artificial Ground, Recorded and Anticipated

ENVIRONMENT AGENCY, LOCAL AUTHORITY, BGS & HISTORIC LANDFILLS			
Waste Type	Location	Comments	Monitoring Requirement
Landfills	-	None recorded within 250m.	N
Other waste sites	-	None recorded within 250m.	N
Environment Agency/Natural Resources Wales licensed waste sites	247m W	Type: Treatment of waste to produce soil. (mixed MRS's) Size: < 25000 tonnes	N
MADE GROUND & INFILLED GROUNDWORKINGS			
Description	Location	Comments	Monitoring Requirement
Records of Potentially Infilled Features	On Site	Unspecified Heap	Y
	On Site	Coal Drift	Y
	67-71m W	Pond	Y
	76-105m S/SE	Disused/Coal Drift	N
	140-144m SE	Unspecified Heap	N
	154m NW	Disused/Coal Drift	N
	162-193m N	Colliery	Y
	199m W	Unspecified Pit	Y
	204m N	Unspecified Disused Mine	Y
	209-212m NW	Coal Drift	N



2.6 Hydrogeology, Hydrology

Table 5: Ground/Controlled Water Sensitivity and Flooding

ENVIRONMENT AGENCY AQUIFER DESIGNATION ⁸			
Strata	Designation	Description	
Solid Geology 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.	
GROUNDWATER SENSITIVITY ⁹			
Description	Location	Details	
Source Protection Zone	-	None recorded within 250m.	
Abstraction Licences	-	None recorded within 250m.	
Records of Part A(2) and Part B Activities and Enforcements	-	None recorded within 250m.	
Records of Licensed Discharge Consents	-	None recorded within 250m.	
Major Aquifer/High Soil Leaching Potential	On Site	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.	
CONTROLLED WATERS ¹⁰			
Description	Location	Details	
River Network Entries	170 -191 NW	Unspecified River.	
Surface Water Features	Within 250m	1 surface water records present within 250m. Unknown type.	
POLLUTION INCIDENTS ¹¹			
Pollutant	Receptor	Location	Date
None recorded within 250m.			
ENVIRONMENT AGENCY FLOOD RISK ¹²			
Description	Location	Details	
Zone 2	-	The site is not situated within a zone 2 flood plain.	
Zone 3	-	The site is not situated within a zone 3 flood plain.	
Flood Defences	-	None recorded within 250m.	
Groundwater Flooding Area	-	Limited potential for groundwater flooding to occur.	

⁸ See Appendix 1⁹ See Appendix 1¹⁰ See Appendix 1¹¹ See Appendix 1¹² See Appendix 1



2.7 Sensitive Land Use

Table 6: Sensitive Land Uses within 250m

REGISTERED SENSITIVE LAND USES ¹³		
Description	Location	Details
Nitrate Vulnerable Zone	On site	Liverpool, Manchester and West Yorkshire Greenbelt

2.8 Industrial Land Use and Potential Sources of Contamination

In order for a conceptual site model and preliminary risk assessment to be completed the historical maps and Groundsure data requires analysis to identify any past or present activities on the site and in the area that may have the potential to cause contamination on the site. Guidance has been issued by the Environment Agency, NHBC and Chartered Institute of Environmental Health.¹⁴ Within this document, annex 3 provides examples of important contaminants that are associated with individual uses of land. This data assists in the formulation of any chemical testing regime.

Those that we consider potentially contaminative according to the guidance are given below:

Table 7: Potentially Contaminative Sources

HISTORICAL		
Land Use	Location	Classification
Historical construction	On site	Artificial/made ground.
Unspecified Heap	On Site 140-144m SE	Unspecified works/factories/features.
Disused/Coal Drift	On Site 76-105m S/SE 154-212m NW	
Railway Sidings	39m SE 235-238m NW	
Colliery	162-193m NE	
Unspecified Pit	199m W	
Unspecified Disused Mine	204m NW	
CURRENT		
Land Use	Location	Classification
None recorded within 250m.		

3. Preliminary Qualitative Risk Assessment

The potential of contamination hazards on the land has been identified and the risks associated with them are assessed in the following preliminary risk assessment in accordance with industry practice and the 'suitable for use' approach. This has been conducted using the source-pathway-receptor approach. This method dictates that there must be a risk contaminant produced at a 'source' in

¹³ See Appendix 1

¹⁴ Guidance for the Safe Development of Housing on Land Affected by Contamination, R&D Publication 66: 2008 Volume 1 and 2.



sufficient concentration to cause harm and there must be a 'pathway' for the contaminant to reach an identifiable 'receptor' for the linkage to be proved and a contamination hazard to be considered present. Not all substances are contaminants and not all contaminants are considered to be a risk. Indeed DEFRA and The Environment Agency state that **'a contaminant is a substance which has the potential to cause harm, while a risk itself is considered to exist if such a substance is present in sufficient concentration to cause harm and a pathway exists for a receptor to be exposed to the substance.'**

R&D Publication 66: 2008 states that the groups at risk of harm (receptors) can be identified by the following categorisation:

1. Humans: site personnel, end users, visitors and adjacent land users.
2. The water environment – receptors: groundwater, surface water, coastal waters and artificial drainage.
3. Ecosystems: plants and animals.
4. Construction/building materials/services

In order to complete a conceptual site model and therefore a preliminary risk assessment, an appraisal of the sources of contamination, potential and actual, on and in the area of the site has therefore been completed with reference to this pollution linkage.¹⁵

3.1 Conceptual Ground Model & Preliminary Qualitative Risk Assessment

It is understood that the development proposals currently comprise further development of a woodland wedding facility within the northeastern area of the site. In view of the sensitivity of the end users it is considered that the soil screening values (SSVs) for a commercial end use should be employed.

The preliminary risk assessment has been evaluated with reference to the following ratings and definitions:

N/A -	A source-pathway-receptor linkage is not considered to exist and therefore a risk assessment is not required.
Low -	A pollution linkage is unlikely and/or the likelihood of harm occurring is low and of minor consequence.
Moderate -	The linkage exists but further field or laboratory data is required to confirm that the contaminant has reached the receptor and the levels of contaminant are harmful.
High -	The linkage exists and the available data indicates that significant harm may be caused and remedial action could be necessary.

¹⁵ This assessment has been based on the information as to the proposed development that has been provided by the client. If the plans should change, the assessment should be re-evaluated.

**Table 8: Conceptual Site Model and Preliminary Qualitative Risk Assessment**

CONCEPTUAL SITE MODEL			PRELIMINARY RISK ASSESSMENT	
Pathways	Receptor	Linkage Present?	Risk Rating	Notes
Direct contact/dermal absorption/soil ingestion	Operative	Yes – operatives are likely to come in contact with the soil.	Moderate	There are potential on and off site sources of contamination that may have caused contamination of the site.
	End User	Yes – end users are likely to come in contact with the soil.	Moderate	Further testing required to reach a firm conclusion.
	Neighbours	No – no neighbouring properties directly adjoin the site.	N/A	
Inhalation of Dust/Vapours	Operative	Yes – contact with soil likely during works and vapours may accumulate in enclosed spaces.	Moderate	There are potential on and off site sources of contamination that may have caused contamination of the site.
	End User	No – the buildings are to comprise open-sided tents and thus are considered to be well ventilated. Thus, no pathway for vapour exists. Furthermore, no significant dust is likely to be created during use a wedding and celebration venue.	N/A	Should design plans be revised to include non-ventilated structures, the risk assessment may require reconsideration to take into account any higher potential risks.
	Neighbours	No – no neighbouring properties directly adjoin the site.	N/A	
Ingestion of fruit/vegetables and/or waters	Operative	No – no edible plants or contained water sources in the area of the proposed new works.	N/A	
	End User	Yes – soft landscaping may comprise part of the new development.	Moderate	There are potential on and off site sources of contamination that may have caused contamination of the site.
	Neighbours	No – no neighbouring properties are present within 250m.	N/A	Further testing required to reach a firm conclusion.
Migration of hazardous gases via permeable strata	Operative	No – the buildings are to comprise open-sided tents and thus are considered to be well ventilated. Thus, no pathway for ground gasses exists.	N/A	Should design plans be revised to include non-ventilated structures, the risk assessment may require reconsideration to take into account any higher potential risks.
	End User		N/A	
	Neighbours	No – no neighbouring properties directly adjoin the site.	N/A	



Spillage/loss/run off direct to receiving water	Controlled Waters	Yes – possible source on site and controlled waters within 250m.	Moderate	There are potential on and off site sources of contamination that may have caused contamination of the site.
Migration via permeable unsaturated strata	Controlled Waters	Yes – possible source on site and Secondary A aquifer beneath the site.	Moderate	Controlled waters within 250m.
Run off via drainage/sewers etc	Controlled Waters	Yes – possible source on site, however drainage and sewers are not considered likely to be present on site based upon historical site use.	Low	Secondary A aquifer underlies the site. Permeability of underlying geology should be assessed. Further testing required to reach a firm conclusion.
Direct contact with contaminated soils	Plants	Yes – some soft landscaping areas may be present as part of the proposed development.	Moderate	There are potential on and off site sources of contamination that may have caused contamination of the site. Further testing required to reach a firm conclusion.
Uptake via root system			Moderate	Further testing required to reach a firm conclusion.
Direct contact with contaminated soils	Building Materials	Yes – possible source on and off site and foundation and service installation materials may be affected by the site soil.	Moderate	There are potential on and off site sources of contamination that may have caused contamination of the site. Further testing required to reach a firm conclusion.
Direct contact with contaminated groundwater				
Migration of mine gas via permeable strata	Operative End User	No – in an area affected by coal mining activity and where shallow worked seams may be present. However, the buildings are to comprise open-sided tents and thus are considered to be well ventilated. Thus, no pathway for ground gasses exists	N/A	Should design plans be revised to include non-ventilated structures, the risk assessment may require reconsideration to take into account any higher potential risks.
Exposure to Radon	Operative End User	No – not in a radon affected area.	N/A	The publication BR211 states that no protection measures are necessary.
Mining Instability	End User	Yes – The property is in an area where underground mining in 5 seams of coal between 12m and 192m depth and last worked between 1889 and 1963 has occurred. The Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface. The Coal Authority believes believe there to be connecting roadways at or close to the surface. Five mine adits are located within or close to the enquiry boundary.	Moderate	Further investigation required to reach a firm conclusion. It is recommended that the Coal Authority are contacted and any further relevant data for the site is obtained.



Notes:

1. The above data and table is a qualitative assessment of the probable risks identified at this site, based on the information made available to us from the client, third party professional data and walkover survey.
2. Should any additional or new data come to light, the risk assessment should be revisited and any necessary changes made to any recommendations resulting from this study.
3. Where further testing is recommended as part of the risk assessment, this is in order to provide a quantitative assessment of any contamination issues. It should at all times be considered that uncertainties may remain, and therefore any testing regime and ground investigation philosophy should be ready to accommodate any necessary alterations should any data come to light or it become evident that it has not been previously considered.



4. Intrusive Investigation

4.1 Site Investigation Philosophy

The information from the Phase 1 Desk Study shows there are potential sources of contamination on the site and in the surrounding area. In view of the above, any intrusive investigation should be undertaken in accordance with the sampling strategies given in BS10175: 2011 +A2:2017 and CLR4:1994. These two sampling strategies may be classified as:

- Non Targeted – using a defined sampling pattern (BS10175)
- Targeted – based on prior knowledge and professional judgement (CLR4)

These sampling strategies are considered in more detail below. However, it is emphasised that they can be used individually or in combination depending on the depth of site knowledge.

Non Targeted Sampling

If no obvious 'hot spots' of contamination have been identified on a site, it would be recommended that a stratified random pattern of sampling points be considered. This work should be undertaken with reference to BS10175: 2011 +A2: 2017 *Investigation of potentially contaminated sites – Code of practice: 7.6*, and BS5930, *Code of practice for site investigations, as amended in 2010*.

Targeted Sampling

If a possible 'hot spot' of contamination has been identified on a site, it is recommended that a herringbone pattern of sampling points be considered in the immediate vicinity. If strong evidence of contamination has then been identified, it is recommended that sampling be highly focused to reflect that evidence and the investigator's experience. This work should be undertaken with reference to CLR4, *Sampling Strategies for Contaminated Land, 1994*.

The density of sampling required is defined in BS10175: 2011: +A2: 2017: 7.7.2.2.3, which indicates that an *exploratory* investigation usually requires a lower density sample spacing than does a *main* investigation. The BS goes on to state that *the actual density should depend upon the confidence and robustness required of decisions that will be based on the information obtained. Thus the area and depth of interest will be related to the contaminants present, the pathways and the receptors. Typical densities of sampling grids can vary from 25m to 50m centres for exploratory investigations, and 10m to 25m centres for main investigations.*

4.2 Site Specific Investigation

In view of the information provided above it is considered that an investigation of the site should include the following main elements.



4.2.1 Contamination Assessment

It may be appreciated that BS 10175 clause 7.7.2.2.3 suggests that the number of sampling points at the site should be based on a minimum of three testing locations or the size of the site with respect to the appropriate grid spacing, whichever the greater. On the basis of the site area being 0.75ha, the number of sampling points at the site should be considered with respect to the table below.

Table 9: Summary of Sampling Strategy				
NUMBER OF SAMPLING POINTS				
	Soil	Water	Asbestos	Standpipes
Exploratory Investigation 50m x 50m grid	3	-	3	-*
Target Areas	The data above indicates that made ground may be present towards the centre of the site where a heap was historically present; therefore, this area should be targeted.			

* Should design plans be revised to include non-ventilated structures, the risk assessment may require reconsideration to take into account any higher potential risks.

Chemical testing should be undertaken on the above grid spacing and the following standard testing regime should be undertaken

- **Metals** – Cd, Cr, Cu, Hg, Ni, Pb, Zn, V.
- **Semi Metals and Non Metals** – As, Se, Free Cyanide and Phenols.
- **Hydrocarbons** – Polycyclic aromatic hydrocarbons (PAH EPA16), Total petroleum hydrocarbons (TPH CWG).
- **Others** – pH, Organic Content.
- **Asbestos**

Sampling Method

If required, investigation could include the installation of three gas monitoring standpipes for subsequent monitoring. In any event, soils should be obtained for chemical sampling. The sampling strategy should employ the non-targeted strategy given above in the first instance, i.e. at least three sampling points, if it is anticipated that made ground is significant across the site. However, if the made ground at the site is thought to be localised to specific areas, then the targeted strategy should be used.

It should be possible to carry out the above work with a windowless sampling drilling rig, however, it may be more pragmatic to employ hand-held digging tools for a targeted strategy.



Gas Monitoring

In the event that the structures are revised, such that they become ground bearing, then a final gas monitoring regime would be required in accordance with Table 4.2 of CIRIA C665: 2007: *Assessing risks posed by hazardous ground gasses to buildings*. In that document guidance for the frequency of monitoring is provided on tables 5.5a and 5.5b *Typical/idealised frequency and period of monitoring* on page 60. For convenience, these tables have been combined and reproduced below.

Table 10: Typical/idealised Frequency and Period of Monitoring.

Sensitivity of development	Generation potential of source				
	Very low	Low	Moderate	High	Very High
Low (commercial)	4/1	6/2	6/3	12/6	12/12
Moderate (flats)	6/2	6/3	9/6	12/12	24/24
High (residential + gardens)	6/3	9/6	12/6	24/12	24/24

Notes:

- The first number is the minimum number of readings and the second number is the minimum period in months, for example 4/1 – Four sets of readings over 1 month.
- At least two sets of readings must be at low and falling atmospheric pressure (but not restricted to periods below 1000mb) known as worst case conditions.
- The frequency and period stated are considered to represent typical minimum requirements. Depending on specific circumstances fewer or additional readings may be required (e.g. any such variation subject to site specific justification). The NHBC guidance is also recommending these periods/frequencies of monitoring.
- Historical data can be used as part of the data set.
- Not all sites will require gas monitoring. However this would need to be confirmed with demonstrable evidence.
- Placing high sensitivity end use on a high hazard site is not normally acceptable unless the source is removed or treated to reduce its gassing potential. Under such circumstances long-term monitoring may not be appropriate or required.
- This guidance should be read in conjunction with BS 8576:2013 figure 6 which may justify fewer readings in the first instance, where the generation potential is considered to be very low to low. However, this should be undertaken pragmatically, and further readings obtained according to the above table, where a potentially significant source is identified and initial readings suggest that remedial measures are not necessary.



4.2.2 Geotechnical Assessment

In addition to the above contamination assessment which is likely to be required by planning authorities and insurance providers, the following investigation strategy could be considered:

Sampling Method

It is anticipated that a windowless sampling drilling rig will be able to gain sufficient data in regard to the near surface soils. Moreover, such equipment should be able to undertake Standard Penetration Testing (SPT) and/or Dynamic Probing, if required.

Soakaway Design

Should soakaway data be required for drainage design, trial pits could be excavated and infiltration tests conducted. Alternatively, these tests could be undertaken within boreholes.

Geotechnical Testing

An allowance for geotechnical testing of the soils should be included in any ground investigation.

4.2.3 Coal Investigation

The property is in an area where the Coal Authority believe there is coal at or close to the surface. This coal may have been worked at some time in the past. Based on the above further investigation of this site is recommended and a Coal Risk Assessment is likely to be required in order to assess the potential of illicit mining activity and to assess the thickness and depth of known seams.

The position of known adits have been identified on and close to the site and there is potential for spine roadways at shallow depths. Intrusive work may be necessary in order to assess the adits and other mine workings on any planned development. However, the appropriate mine entry records should be obtained prior to this, where possible.

4.2.4 Reporting

The above data will need to be formulated into a formal assessment that should include the following:

- Geotechnical recommendations, if required.
- Contamination assessment.
- Contamination remediation strategy, if required.
- Any recommendations for further work, if required and including validation reports where site remediation is necessary.

As soon as is practicable, and prior to the above, this Phase 1 report should be forwarded to the relevant authorities, in order to ensure they have sufficient time to review and discuss any issues.



5. References

- British Standards Institution (2015), BS5930: *Code of practice for site investigations*, B.S.I., London.
- British Standards Institution (2007), Amendment No 1 to BS5930: *Code of practice for site investigations*, B.S.I., London.
- British Standards Institution (2011) +A2:2017, BS 10175: *Investigation of potentially contaminated sites – Code of Practice*, British Standards Institute.
- British Standards Institution (2013), BS 8576 Guidance on Investigations for Ground Gas – Permanent Gases and Volatile Organic Compounds.
- Department for Environment, Food and Rural Affairs and the Environment Agency, DEFRA R&D Publications, Environment Agency, Bristol.
- CLR 2, 1994, *Guidance on preliminary site inspection of contaminated land*, Volume 1.
- CLR 4, 1994, *Sampling Strategies for contaminated land*.
- R&D Publication 66: 2008 Guidance for the Safe Development of Housing on Land Affected by Contamination.
- CIRIA Report C665 (2007), Assessing risks posed by ground gasses in buildings.
- The Environment Agency: Groundwater source protection.



Appendix 1

Groundsure Reports



Rogers Geotechnical Services
Barncliffe Mills, NEAR BANK,
HUDDERSFIELD, HD8 8LU

Groundsure Reference: GS-6312406
Your Reference: C66_19_E_127_PO-0339

Report Date 16 Sep 2019

Report Delivery Method: Email - pdf

Enviro Insight

Address: NINEVEH FARM, LILEY LANE, GRANGE MOOR, HUDDERSFIELD, WF14 8EG

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,

REDACTED

Managing Director
Groundsure Limited

Enc.
Groundsure Enviroinsight

Address: NINEVEH FARM, LILEY LANE, GRANGE MOOR, HUDDERSFIELD, WF14 8EG
Date: 16 Sep 2019
Reference: GS-6312406
Client: Rogers Geotechnical Services



Aerial Photograph Capture date: 26-Mar-2012
Grid Reference: 421320,416682
Site Size: 0.7558ha

Report Reference: GS-6312406
Client Reference: C66_19_E_127_PO-0339

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Overview of Findings

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

Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	3	1	23	55
1.2 Additional Information – Historical Tank Database	0	0	0	3
1.3 Additional Information – Historical Energy Features Database	0	0	0	0
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	0	0
1.6 Historical military sites	0	0	0	0
1.7 Potentially Infilled Land	3	0	26	57
Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	0
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	0	0
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	0	0	0
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHHS sites	0	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	0	0
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

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

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

Section 5: Geology	
5.1 Records of Artificial Ground and Made Ground present beneath the study site	None identified
5.2 Records of Superficial Ground and Drift Geology present beneath the study site	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 Records of Strata Classification in the Superficial Geology within 500m of the study site	None identified					
6.2 Records of Strata Classification in the Bedrock Geology within 500m of the study site	Identified					
	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	5
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	2	0	0	2	Not searched	Not searched

Section 6: Hydrogeology and Hydrology

0-500m

	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site	No	No	No	No	No	No
6.10 Ordnance Survey MasterMap Water Network entries within 500m of the site	0	0	6	18	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 Environment Agency Zone 2 floodplains within 250m of the study site	None identified					
7.2 Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	None identified					
7.3 Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site	Very Low					
7.4 Flood Defences within 250m of the study site	None identified					
7.5 Areas benefiting from Flood Defences within 250m of the study site	None identified					
7.6 Areas used for Flood Storage within 250m of the study site	None identified					
7.7 Maximum BGS Groundwater Flooding susceptibility within 50m of the study site	Limited potential					
7.8 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	0	0	6
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0

Section 8: Designated Environmentally Sensitive Sites	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	0	0	0	0	0	2
8.14 Records of Green Belt land	1	0	0	0	0	2

Section 9: Natural Hazards	
9.1 Maximum risk of natural ground subsidence	Very Low
9.1.1 Maximum Shrink-Swell hazard rating identified on the study site	Very Low
9.1.2 Maximum Landslides hazard rating identified on the study site	Moderate
9.1.3 Maximum Soluble Rocks hazard rating identified on the study site	Negligible
9.1.4 Maximum Compressible Ground hazard rating identified on the study site	Negligible
9.1.5 Maximum Collapsible Rocks hazard rating identified on the study site	Very Low
9.1.6 Maximum Running Sand hazard rating identified on the study site	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 in a Radon Affected Area, as between 1 and 3% of properties are above the Action Level.
9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary.

Section 10: Mining	
10.1 Coal mining areas within 75m of the study site	Identified
10.2 Non-Coal Mining areas within 50m of the study site boundary	None identified
10.3 Brine affected areas within 75m of the study site	None identified

Using this report

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

1. Historical Industrial Sites

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

2. Environmental Permits, Incidents and Registers

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

3. Landfills and Other Waste Sites

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

4. Current Land Uses

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

5. Geology

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

6. Hydrogeology and Hydrology

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

7. Flooding

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

8. Designated Environmentally Sensitive Sites

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

9. Natural Hazards

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

10. Mining

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

11. Contacts

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

Note: Maps

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

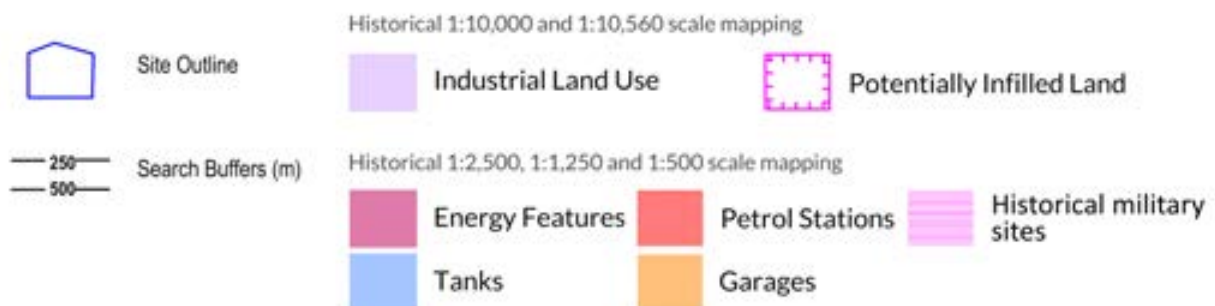
Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as "Not Shown".

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

1. Historical Land Use



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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: 82

ID	Distance [m]	Direction	Use	Date
1A	0	On Site	Unspecified Heap	1966
2A	0	On Site	Unspecified Heap	1982
3T	0	On Site	Old Coal Drift	1948
4V	39	SE	Railway Sidings	1938
5B	76	SE	Disused Drift	1966
6B	76	SE	Disused Drift	1982
7C	101	S	Unspecified Disused Drift	1993
8C	105	S	Old Coal Drift	1938
9C	105	S	Old Coal Drift	1938
10D	140	SE	Unspecified Heap	1904
11D	140	SE	Unspecified Heap	1948
12D	141	SE	Unspecified Heap	1938
13D	141	SE	Unspecified Heap	1938
14D	144	SE	Unspecified Heap	1951
15G	154	NW	Coal Drift	1948
16I	162	N	Colliery	1888
17E	192	N	Colliery	1938
18E	192	N	Colliery	1938
19E	193	N	Disused Colliery	1951
20F	199	W	Unspecified Pit	1938
21F	199	W	Unspecified Pit	1938
22E	204	N	Unspecified Disused Mine	1966
23H	209	NW	Coal Drift	1951
24G	212	NW	Coal Drift	1938
25G	212	NW	Coal Drift	1938
26X	235	NW	Railway Sidings	1948
27H	238	NW	Railway Sidings	1938
28I	259	N	Refuse Heap	1966
29J	266	NW	Colliery	1904
30J	266	NW	Colliery	1948
31Y	275	E	Unspecified Pit	1993
32K	307	NW	Refuse Heap	1951
33K	308	NW	Refuse Heap	1938
34K	308	NW	Refuse Heap	1938

35L	334	N	Refuse Heap	1966
36Z	336	NW	Refuse Heap	1888
37L	341	N	Refuse Heap	1948
38L	341	N	Refuse Heap	1951
39L	343	N	Refuse Heap	1938
40L	343	N	Refuse Heap	1938
41W	343	N	Refuse Heap	1904
42AA	355	N	Unspecified Old Shaft	1951
43AB	389	W	Unspecified Quarry	1904
44M	404	N	Unspecified Pit	1982
45M	404	N	Unspecified Pit	1993
46N	410	NE	Refuse Heap	1904
47N	416	NE	Unspecified Heap	1966
48N	416	NE	Unspecified Heap	1982
49N	427	NE	Unspecified Disused Shafts	1982
50N	427	NE	Unspecified Disused Shafts	1966
51N	427	NE	Unspecified Disused Shafts	1993
52O	432	N	Unspecified Disused Shaft	1966
53O	434	N	Unspecified Old Shaft	1948
54O	437	N	Unspecified Old Shaft	1938
55O	437	N	Unspecified Old Shaft	1938
56AC	437	SE	Colliery	1948
57P	462	NE	Unspecified Shafts	1904
58P	462	NE	Unspecified Old Shafts	1948
59P	463	NE	Unspecified Old Shafts	1951
60P	464	NE	Unspecified Old Shafts	1938
61P	464	NE	Unspecified Old Shafts	1938
62Q	474	NE	Unspecified Old Shaft	1951
63P	475	NE	Unspecified Old Shafts	1948
64P	475	NE	Unspecified Shafts	1904
65Q	475	NE	Unspecified Disused Shaft	1993
66Q	475	NE	Unspecified Disused Shaft	1966
67Q	475	NE	Unspecified Disused Shaft	1982
68P	475	NE	Unspecified Old Shafts	1951
69Q	476	NE	Unspecified Shaft	1904
70Q	476	NE	Unspecified Old Shaft	1948
71Q	476	NE	Unspecified Old Shaft	1938
72Q	476	NE	Unspecified Old Shaft	1938
73P	476	NE	Unspecified Old Shafts	1938
74P	476	NE	Unspecified Old Shafts	1938
75P	478	NE	Unspecified Disused Shafts	1966
76P	478	NE	Unspecified Disused Shafts	1993

77P	478	NE	Unspecified Disused Shafts	1982
78R	483	E	Drift	1966
79R	483	E	Drift	1966
80R	483	E	Railway Sidings	1966
81S	488	NW	Unspecified Pit	1966
82S	488	NW	Unspecified Pit	1982

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
83J	303	NW	Unspecified Tank	1960
84J	303	NW	Unspecified Tank	1960
85J	303	NW	Unspecified Tank	1961

1.3 Additional Information – Historical Energy Features Database

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

Records of historical energy features within 500m of the search boundary: 0

Database searched and no data found.

1.4 Additional Information – Historical Petrol and Fuel Site Database

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

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

Database searched and no data found.

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

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

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 0

Database searched and no data found.

1.6 Historical military sites

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

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

Database searched and no data found.

1.7 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 86

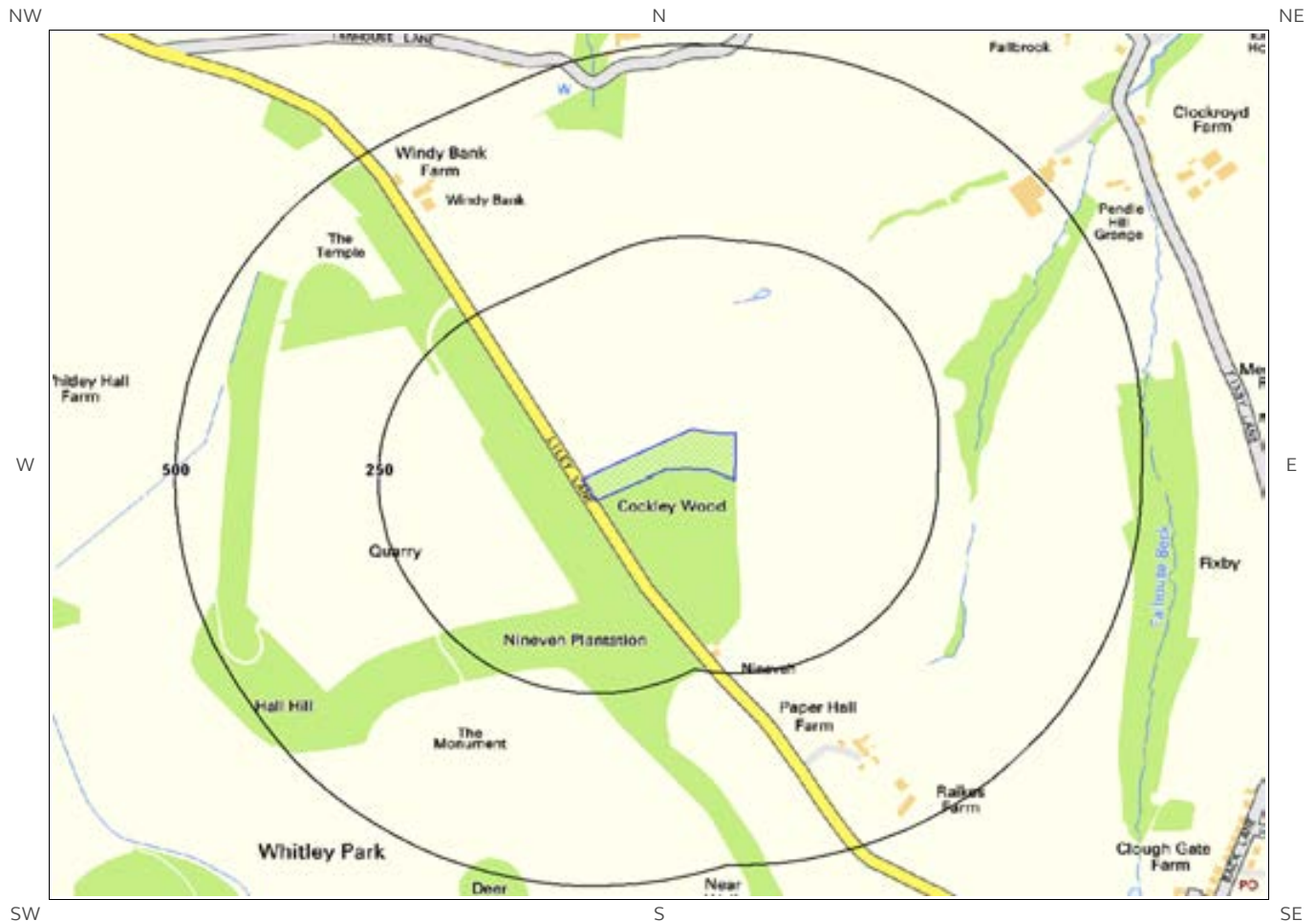
The following Historical Potentially Infilled Features derived from the Historical Mapping information is provided by Groundsure:

ID	Distance(m)	Direction	Use	Date
86A	0	On Site	Unspecified Heap	1966
87A	0	On Site	Unspecified Heap	1982
88T	0	On Site	Old Coal Drift	1948
89U	67	W	Pond	1951
90U	68	W	Pond	1938
91U	71	W	Pond	1948
92U	71	W	Pond	1888
93U	71	W	Pond	1904
94V	76	SE	Disused Drift	1982
95B	76	SE	Disused Drift	1966
96C	101	S	Unspecified Disused Drift	1993
97C	105	S	Old Coal Drift	1938
98C	105	S	Old Coal Drift	1938
99D	140	SE	Unspecified Heap	1948
100D	140	SE	Unspecified Heap	1904
101D	141	SE	Unspecified Heap	1938
102D	141	SE	Unspecified Heap	1938
103D	144	SE	Unspecified Heap	1951
104G	154	NW	Coal Drift	1948
105I	162	N	Colliery	1888
106W	192	N	Colliery	1938
107W	192	N	Colliery	1938
108W	193	N	Disused Colliery	1951

109F	199	W	Unspecified Pit	1938
110F	199	W	Unspecified Pit	1938
111E	204	N	Unspecified Disused Mine	1966
112X	209	NW	Coal Drift	1951
113G	212	NW	Coal Drift	1938
114G	212	NW	Coal Drift	1938
115I	259	N	Refuse Heap	1966
116J	266	NW	Colliery	1904
117J	266	NW	Colliery	1948
118Y	275	E	Unspecified Pit	1993
119I	296	NW	Air Shaft	1948
120I	298	NW	Air Shaft	1938
121I	298	NW	Air Shaft	1951
122J	307	NW	Refuse Heap	1951
123J	308	NW	Refuse Heap	1938
124J	308	NW	Refuse Heap	1938
125L	334	N	Refuse Heap	1966
126Z	336	NW	Refuse Heap	1888
127W	341	N	Refuse Heap	1948
128W	341	N	Refuse Heap	1951
129L	343	N	Refuse Heap	1938
130L	343	N	Refuse Heap	1938
131W	343	N	Refuse Heap	1904
132AA	355	N	Unspecified Old Shaft	1951
133AB	389	W	Unspecified Quarry	1904
134M	404	N	Unspecified Pit	1982
135M	404	N	Unspecified Pit	1993
136N	410	NE	Refuse Heap	1904
137N	416	NE	Unspecified Heap	1966
138N	416	NE	Unspecified Heap	1982
139N	427	NE	Unspecified Disused Shafts	1966
140N	427	NE	Unspecified Disused Shafts	1993
141N	427	NE	Unspecified Disused Shafts	1982
142M	432	N	Unspecified Disused Shaft	1966
143M	434	N	Unspecified Old Shaft	1948
144M	437	N	Unspecified Old Shaft	1938
145M	437	N	Unspecified Old Shaft	1938
146AC	437	SE	Colliery	1948
147P	462	NE	Unspecified Old Shafts	1948
148P	462	NE	Unspecified Shafts	1904
149P	463	NE	Unspecified Old Shafts	1951
150P	464	NE	Unspecified Old Shafts	1938
151P	464	NE	Unspecified Old Shafts	1938
152Q	474	NE	Unspecified Old Shaft	1951

153P	475	NE	Unspecified Old Shafts	1948
154P	475	NE	Unspecified Shafts	1904
155Q	475	NE	Unspecified Disused Shaft	1993
156Q	475	NE	Unspecified Disused Shaft	1982
157Q	475	NE	Unspecified Disused Shaft	1966
158P	475	NE	Unspecified Old Shafts	1951
159Q	476	NE	Unspecified Old Shaft	1948
160Q	476	NE	Unspecified Shaft	1904
161Q	476	NE	Unspecified Old Shaft	1938
162Q	476	NE	Unspecified Old Shaft	1938
163P	476	NE	Unspecified Old Shafts	1938
164P	476	NE	Unspecified Old Shafts	1938
165P	478	NE	Unspecified Disused Shafts	1982
166P	478	NE	Unspecified Disused Shafts	1966
167P	478	NE	Unspecified Disused Shafts	1993
168R	483	E	Drift	1966
169R	483	E	Drift	1966
170S	488	NW	Unspecified Pit	1982
171S	488	NW	Unspecified Pit	1966

2. Environmental Permits, Incidents and Registers Map



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2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency/Natural Resources Wales and Local Authorities reveal the following information:

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

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

0

Database searched and no data found.

2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

Records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site

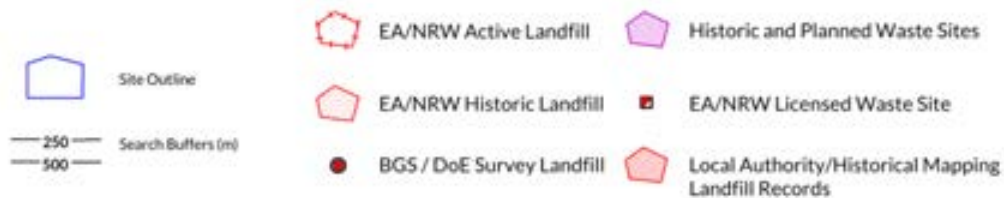
0

Database searched and no data found.

3. Landfill and Other Waste Sites Map



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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:

2

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
Not shown	1234	W	Site Address: Healey Green Lane, Houses Hill, Houses Hill, Kirkheaton Waste Licence: Yes Site Reference: 4700/0945 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: 06-Jun-1991 Licence Surrendered: 11-Jul-1994 Licence Holder Address: Bunkers Hill Farm, 67 Westfield Lane, Emley Moor, Huddersfield Operator: - Licence Holder: Steven Burt First Recorded: 30-Jun-1991 Last Recorded: 11-Jul-1994
Not shown	1252	W	Site Address: Healey Green Tip, Houses Hill, Kirkheaton, Huddersfield, West Yorkshire Waste Licence: - Site Reference: - Waste Type: Commercial, Household, Liquid sludge Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: Kirkheaton Urban District Council Licence Holder: - First Recorded: 14-Jan-1952 Last Recorded: 31-Dec-1972

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

1

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

ID	Distance (m)	Direction	NGR	Details
Not shown	1316	NW	420000.0 417200.0	Address: Healey Tip, Kirkburton, Huddersfield BGS Number: 798.0 Risk: No risk to aquifer Waste Type: N/A

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

1

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

ID	Distance (m)	Direction	NGR	Site Address	Source	Data Type
Not shown	1345	NW	419966 417207	Refuse Tip	1969 mapping	Polygon

3.2 Other Waste Sites

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

1

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
2	315	NW	420925 416856	Type of Site: Waste Transfer Station Site Address: Temple Quarry, Liley Lane, Holgate Aggregates Ltd, Grange Moor, WAKEFIELD, West Yorkshire, WF4 4EN Planning Application Reference: 2008/62/92155/E0 Date: - Further Details: Scheme comprises use of land to form recycling and waste transfer station. An application (ref: 2008/62/92155/E0) for detailed planning permission was granted by Kirklees B.C. Planning decision obtained Data Source: Historic Planning Application Data Type: Point

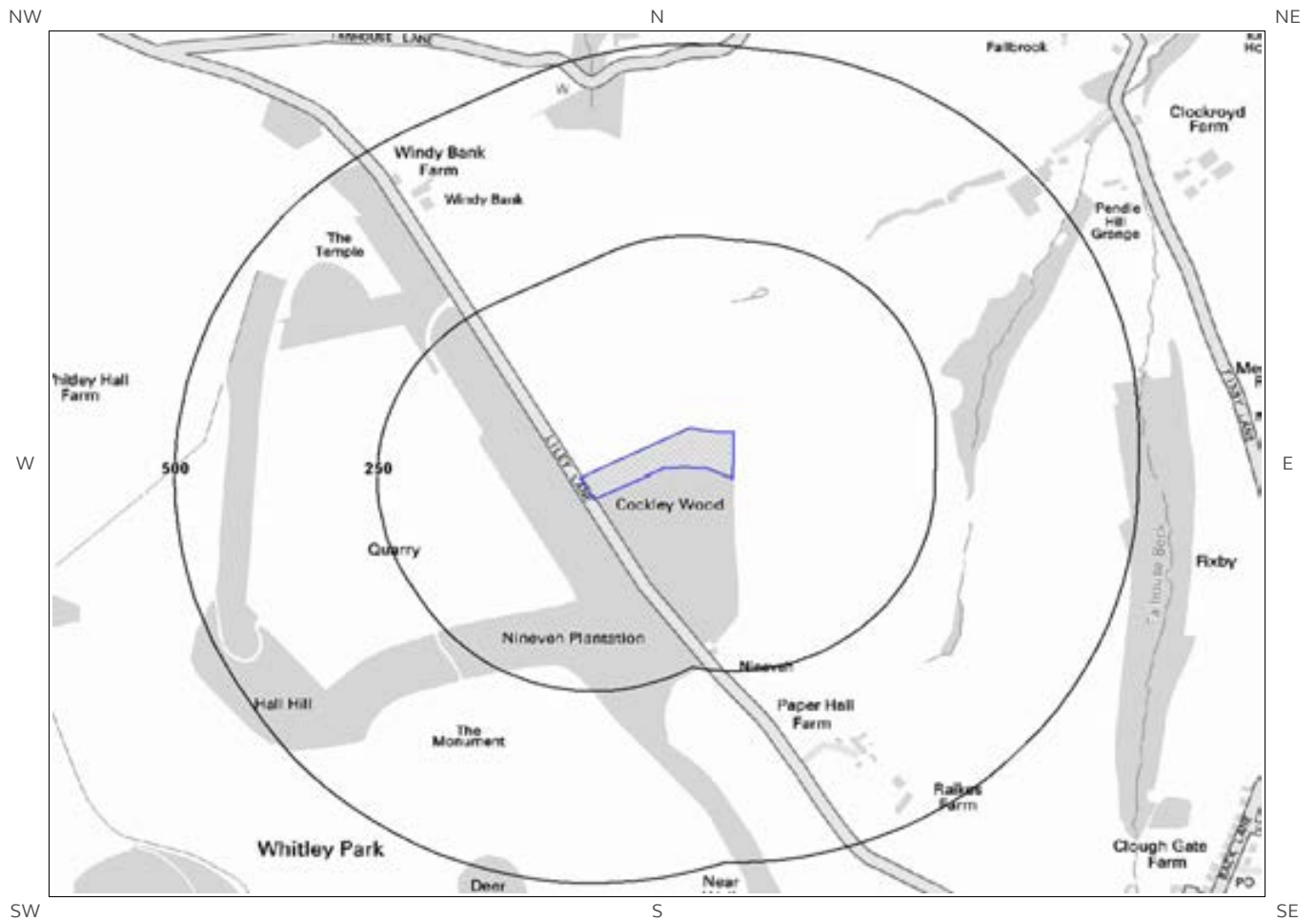
3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site:

1

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
5	247	W	420947 416655	Site Address: Temple Quarry, Liley Lane, Grange Moor, Wakefield, West Yorkshire, WF4 4EN Type: Treatment of waste to produce soil <75,000 tpy Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: HOL124 EPR reference: EA/EPR/ZP3990VX/A001 Operator: Holgate Excavations Limited Waste Management licence No: 102947 Annual Tonnage: 74999.0 Issue Date: 30/07/2012 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Temple Quarry Correspondence Address: -

4. Current Land Use Map



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4. Current Land Uses

4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: 0

Database searched and no data found.

4.2 Petrol and Fuel Sites

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

Database searched and no data found.

4.3 National Grid High Voltage Underground Electricity Transmission Cables

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

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

Database searched and no data found.

4.4 National Grid High Pressure Gas Transmission Pipelines

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

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

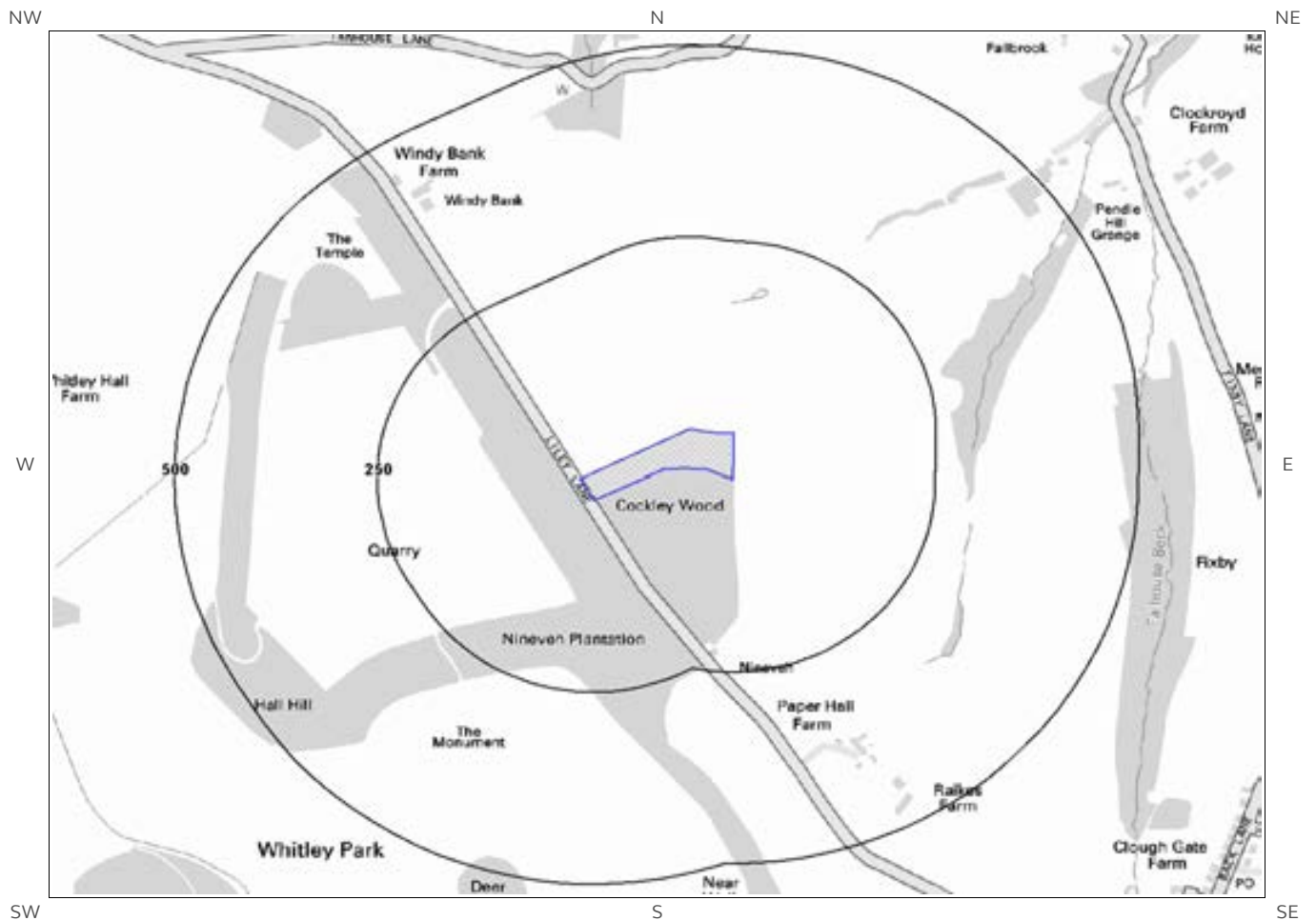
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION	MUDSTONE, SILTSTONE AND SANDSTONE
PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION	MUDSTONE, SILTSTONE AND SANDSTONE
LPE-SDST	LEPTON EDGE ROCK	SANDSTONE
LPE-SDST	LEPTON EDGE ROCK	SANDSTONE

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

6 Hydrogeology and Hydrology

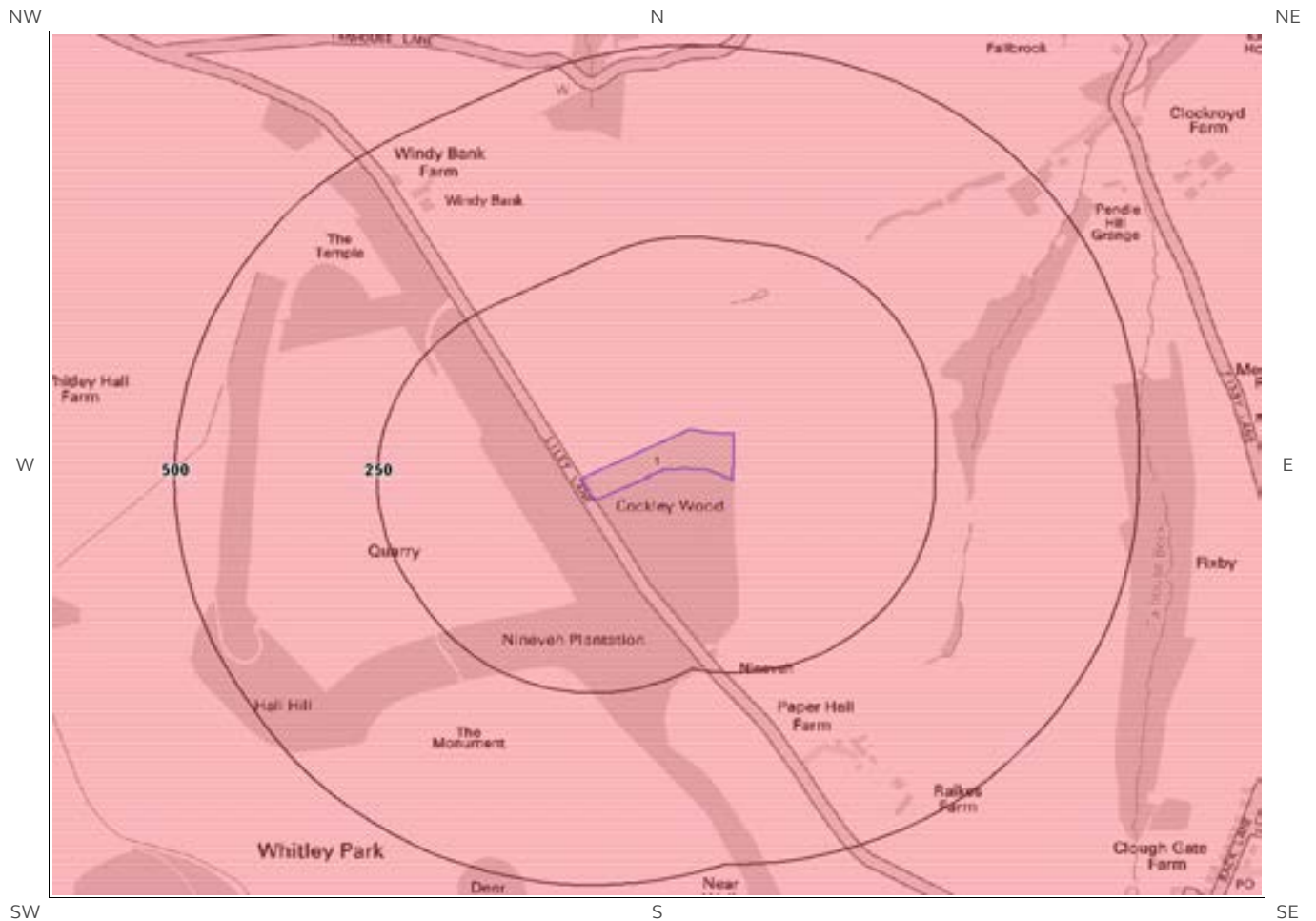
6a. Aquifer Within Superficial Geology



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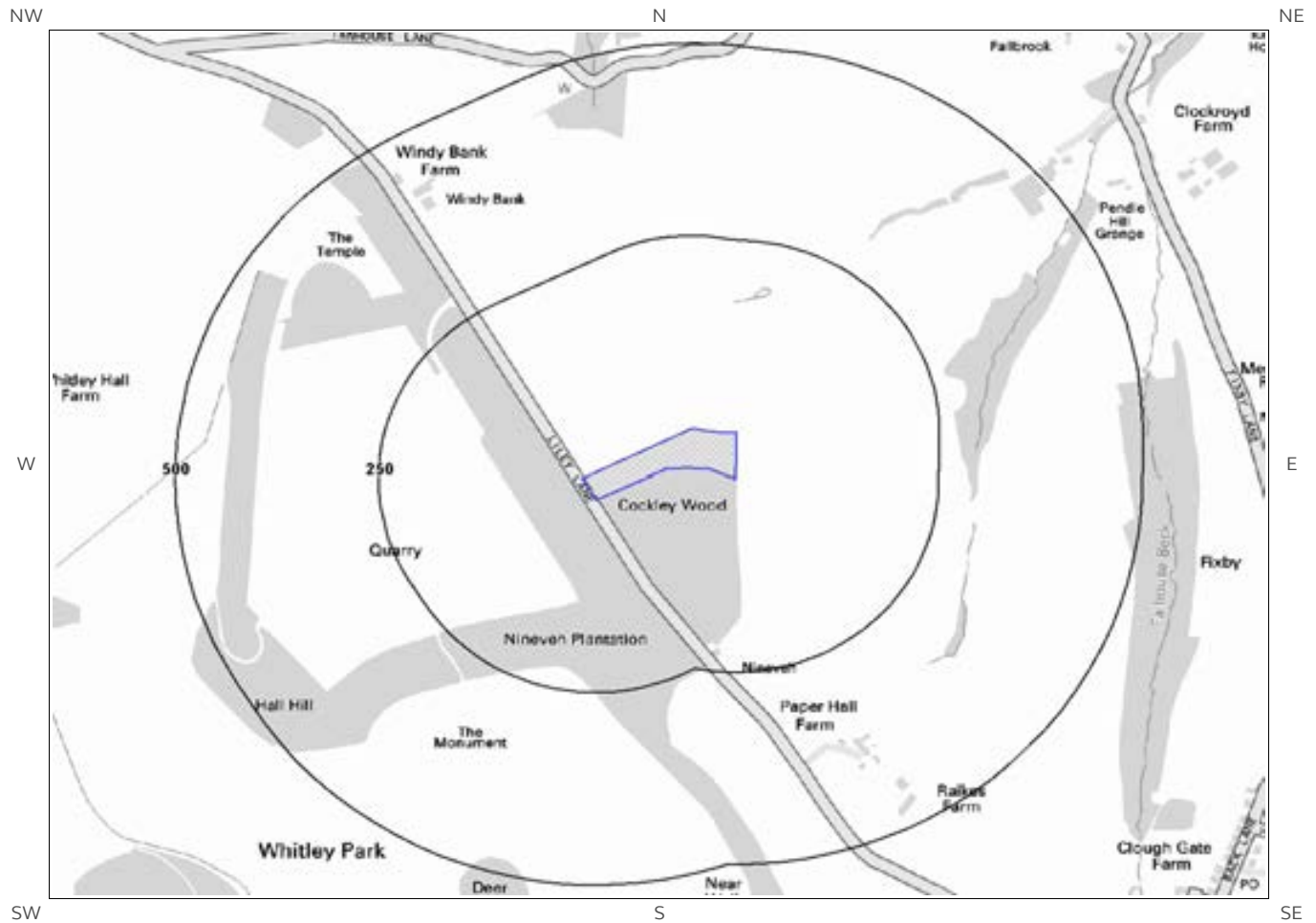
6b. Aquifer Within Bedrock Geology and Abstraction Licences



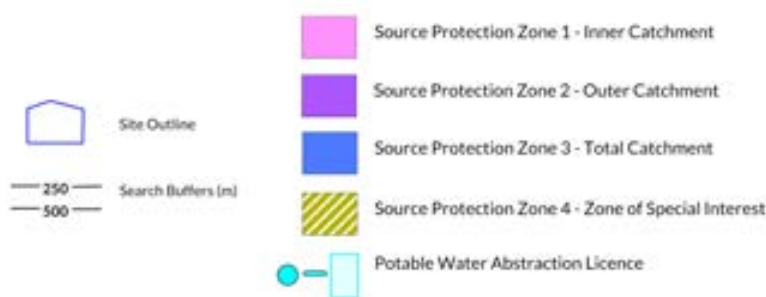
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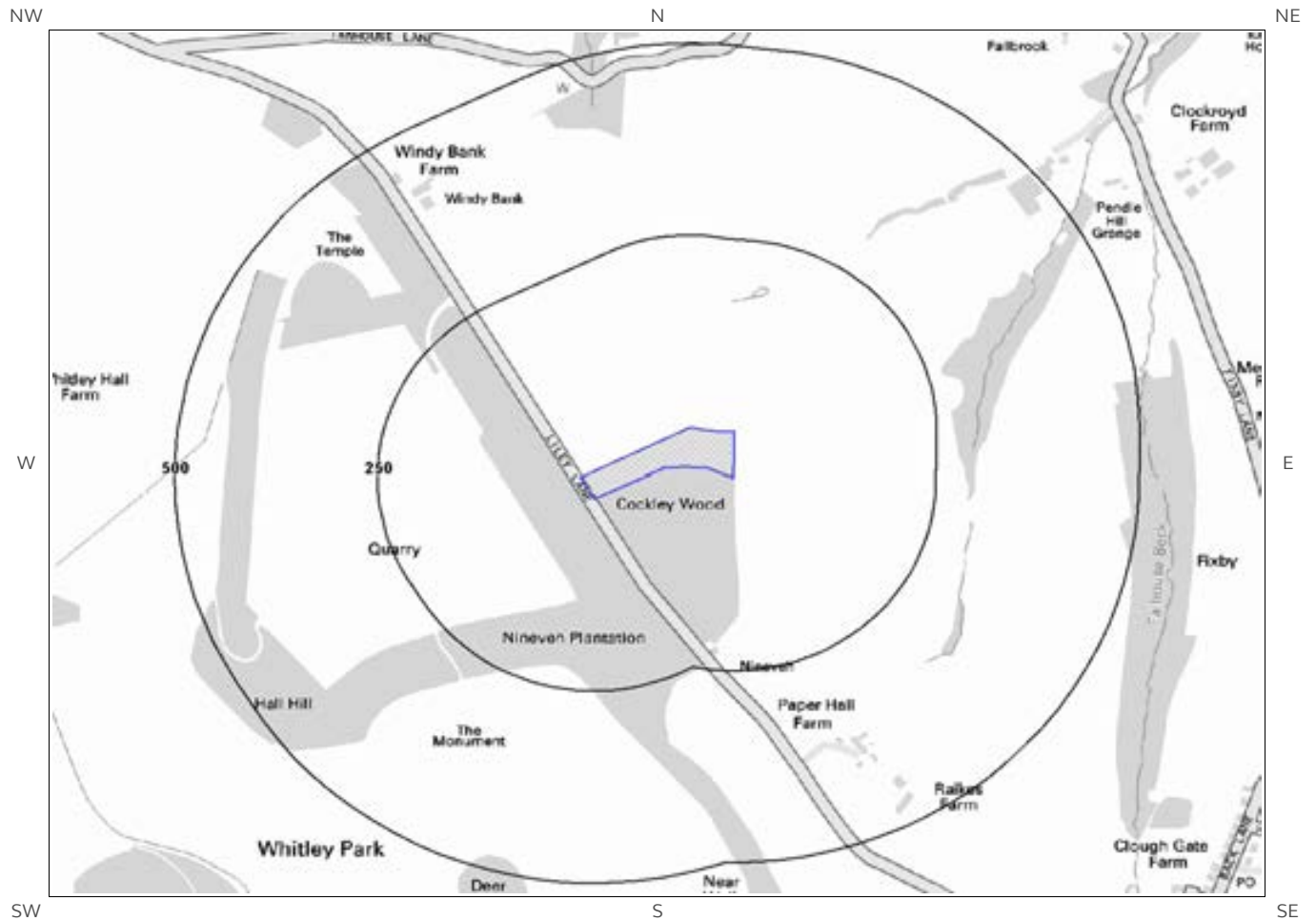
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licences



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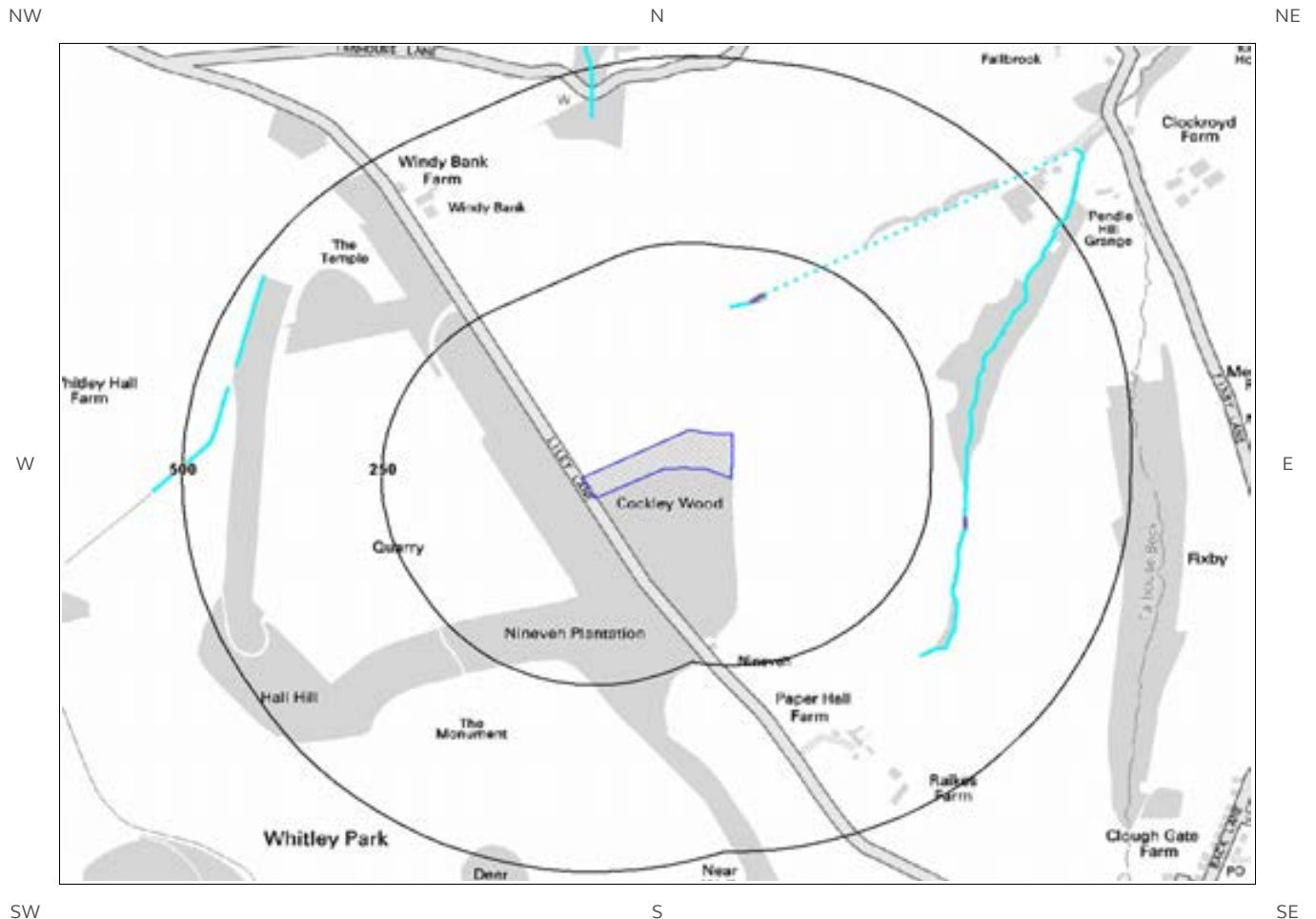
6d. Hydrogeology – Source Protection Zones within confined aquifer



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6e. Hydrology – Watercourse Network and River Quality



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6. Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

Records of strata classification within the superficial geology at or in proximity to the property No

Database searched and no data found.

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.

6.2 Aquifer within Bedrock Deposits

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

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

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

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	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

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	1886	N	421160 418590	Status: Historical Licence No: 2/27/13/219 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: GROUNDWATERS Point: BOREHOLE-COAL MEASURES-MIRFIELD Data Type: Point Name: HOPTON MILLS LTD Annual Volume (m³): 100,000 Max Daily Volume (m³): 400 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 02/06/2009 Version End Date:

ID	Distance (m)	Direction	NGR	Details
Not shown	1886	N	421160 418590	Status: Historical Licence No: 2/27/13/219 Details: Non-Evaporative Cooling Direct Source: GROUNDWATERS Point: BOREHOLE-COAL MEASURES-MIRFIELD Data Type: Point Name: YCPD (Wheatley Park) Ltd Annual Volume (m³): 15,100 Max Daily Volume (m³): 145 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 24/03/2013 Version End Date:
Not shown	1886	N	421160 418590	Status: Active Licence No: 2/27/13/219/R01 Details: Non-Evaporative Cooling Direct Source: GROUNDWATERS Point: BOREHOLE-COAL MEASURES-MIRFIELD Data Type: Point Name: Wheatley Park Management Ltd Annual Volume (m³): 15,100 Max Daily Volume (m³): 145 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 03/05/2019 Version End Date:
Not shown	1888	N	421300 418600	Status: Historical Licence No: 2/27/13/182 Details: General use relating to Secondary Category (Medium Loss) Direct Source: GROUNDWATERS Point: BOREHOLE - COAL MEASURES - MIRFIELD Data Type: Point Name: INTERFACE FABRICS LTD Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 14/09/1999 Version End Date:
Not shown	1888	N	421300 418600	Status: Historical Licence No: 2/27/13/182 Details: General use relating to Secondary Category (Medium Loss) Direct Source: GROUNDWATERS Point: BOREHOLE Data Type: Point Name: INTERFACE FABRICS LIMITED Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 14/09/1999 Version End Date:

6.4 Surface Water Abstraction Licences

Surface Water Abstraction Licences within 2000m of the study site

None identified

Database searched and no data found.

6.5 Potable Water Abstraction Licences

Potable Water Abstraction Licences within 2000m of the study site

None identified

Database searched and no data found.

6.6 Source Protection Zones

Source Protection Zones within 500m of the study site

None identified

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

Source Protection Zones within the Confined Aquifer within 500m of the study site

None identified

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

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

Environment Agency/Natural Resources Wales information on groundwater vulnerability and soil leaching potential within 500m of the study site

Identified

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
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.
428	W	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.
494	NE	Minor Aquifer/Intermediate Leaching Potential	I1	Soils which can possibly transmit a wide range of pollutants.

6.9 River Quality

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

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

Database searched and no data found.

6.10 Ordnance Survey MasterMap Water Network

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

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

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

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
1	170 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
1	170 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
2	178 N	-	Lake, loch or reservoir.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 5.5
2	178 N	-	Lake, loch or reservoir.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 5.5
3	191 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				conditions) Average Width in Watercourse Section (m): Not Provided
3	191 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
4	294 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
5	294 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
4	294 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
5	294 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
6	297 E	-	Lake, loch or reservoir.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 5.6
6	297 E	-	Lake, loch or reservoir.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 5.6
7	299 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
7	299 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
8	435 N	Liley Beck	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	435 N	Liley Beck	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
9	458 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
Not shown	458 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
10	459 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
11	459 N	Liley Beck	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	459 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	459 N	Liley Beck	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
12	472 N	Liley Beck	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	472 N	Liley Beck	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

6.11 Surface Water Features

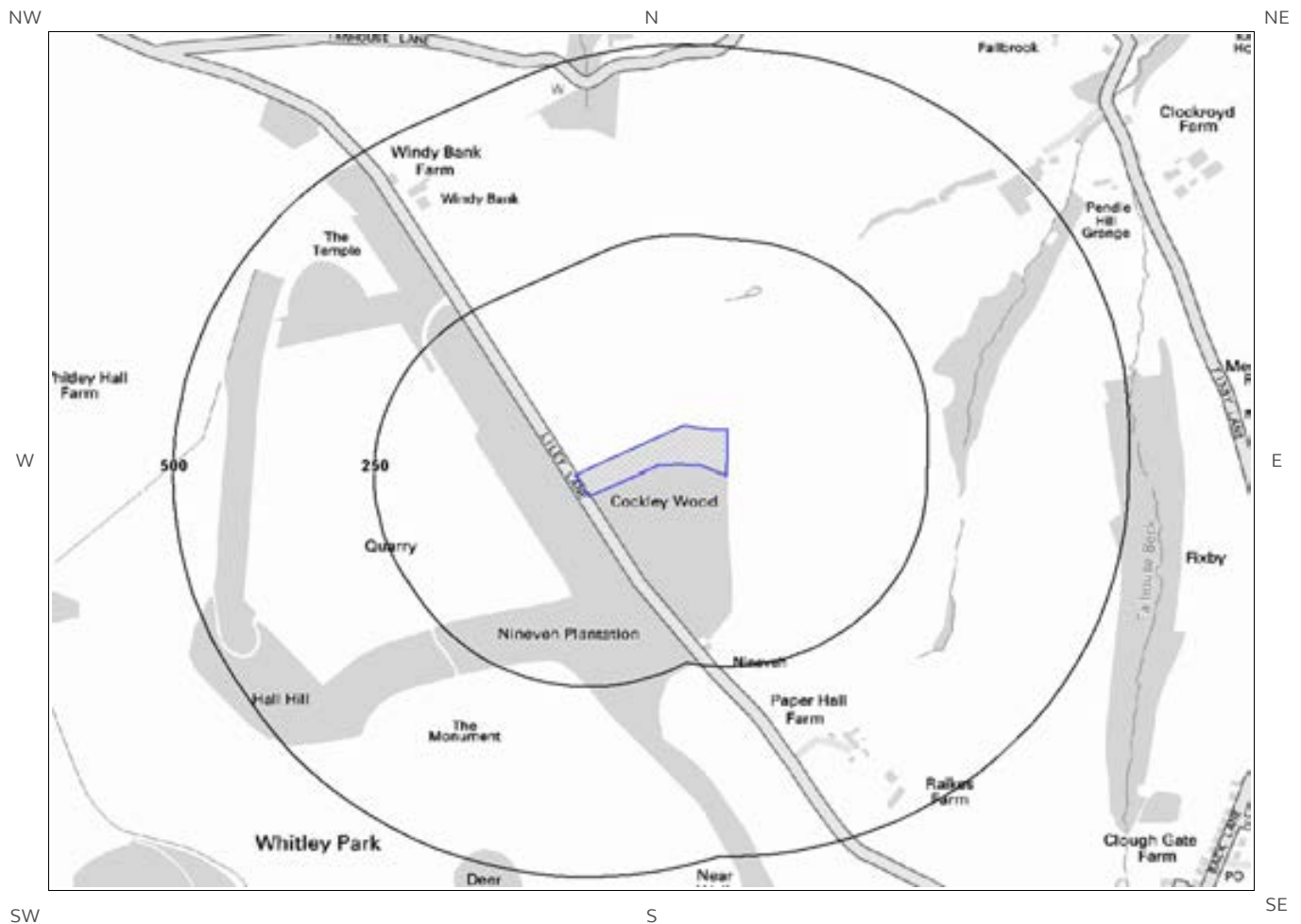
Surface water features within 250m of the study site

Identified

The following surface water records are not represented on mapping:

Distance (m)	Direction
170	N

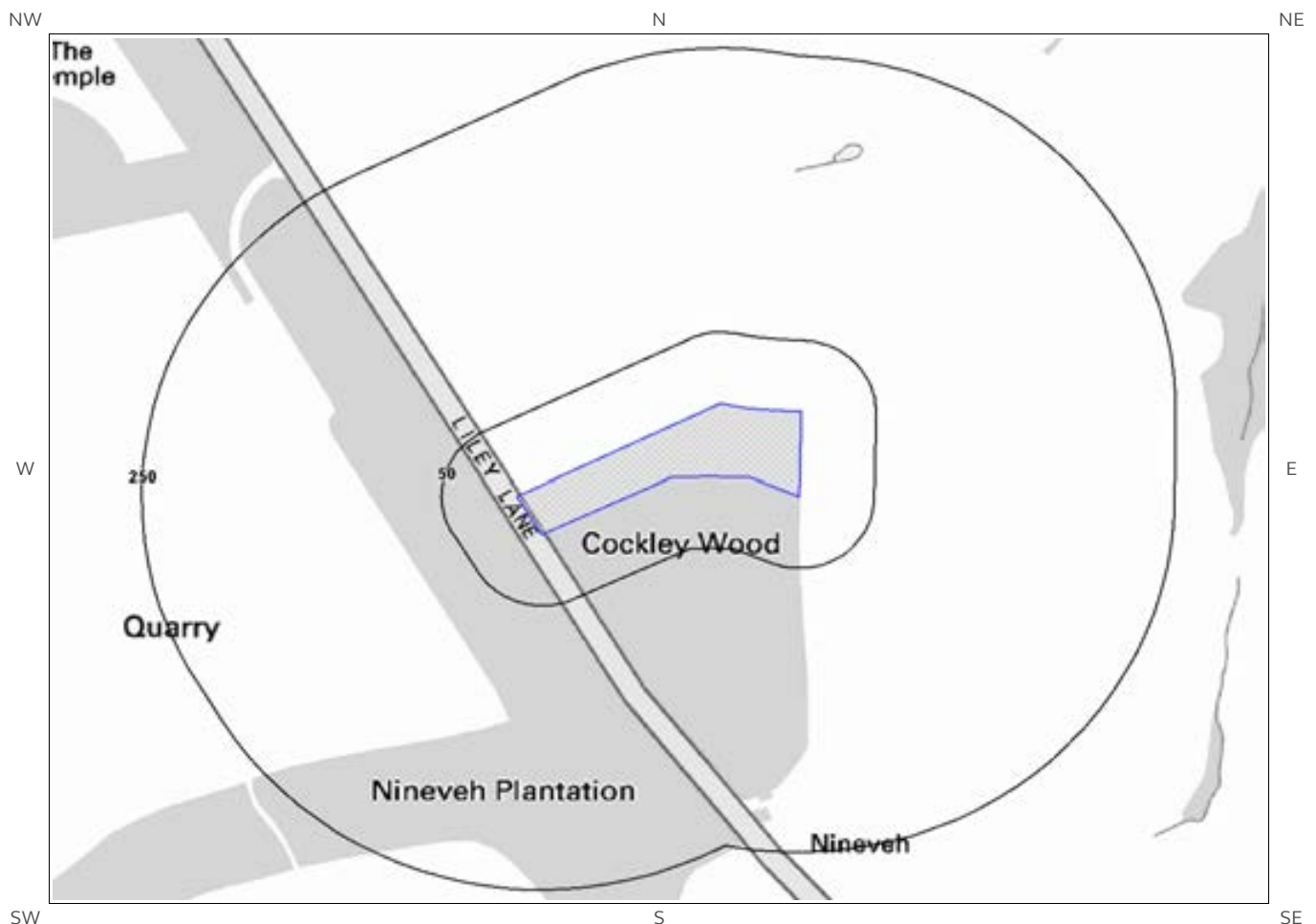
7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



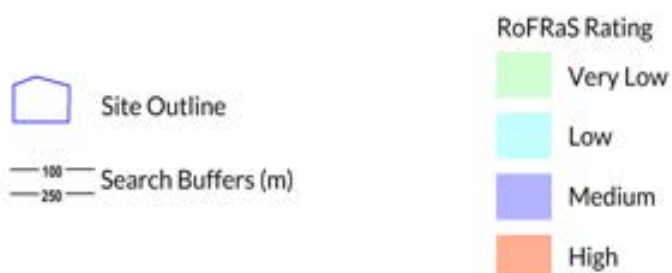
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7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



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7 Flooding

7.1 River and Coastal Zone 2 Flooding

Environment Agency/Natural Resources Wales Zone 2 floodplain within 250m None 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:

Database searched and no data found.

7.2 River and Coastal Zone 3 Flooding

Environment Agency/Natural Resources Wales Zone 3 floodplain within 250m None 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.

Database searched and no data found.

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

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

Flood Defences within 250m of the study site None identified
Database searched and no data found.

7.5 Areas benefiting from Flood Defences

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

7.6 Areas benefiting from Flood Storage

Areas used for Flood Storage within 250m of the study site

None identified

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site

Identified

Clearwater Flooding or Superficial Deposits Flooding

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 Highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions

Limited potential

Where limited potential for groundwater flooding to occur is indicated, this means that although given the geological conditions there may be a groundwater flooding hazard, unless other relevant information, e.g. records of previous flooding, suggests groundwater flooding has occurred before in this area, you need take no further action in relation to groundwater flooding hazard.

7.8 Groundwater Flooding Confidence Areas

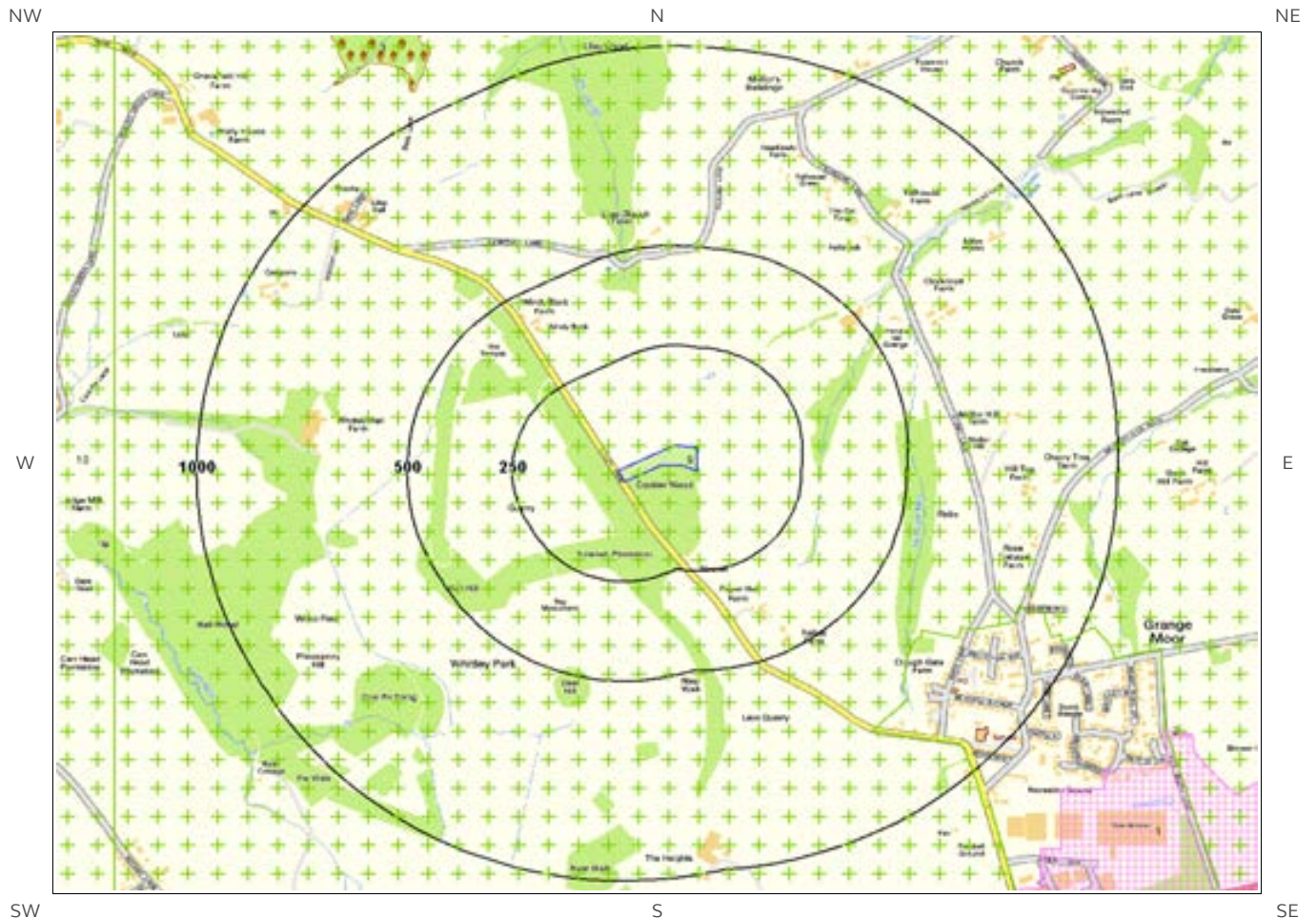
British Geological Survey confidence rating in this result

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



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8. Designated Environmentally Sensitive Sites

Designated Environmentally Sensitive Sites within 2000m of the study site	Identified
---	------------

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

6

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
3	1066	NW	GREGORY SPRING	Ancient Replanted Woodland
Not shown	1171	N	WHITLEY WOOD/HAGG WOOD	Ancient Replanted Woodland
Not shown	1621	NW	HUTCHIN WOOD	Ancient and Semi-Natural Woodland
Not shown	1728	NW	HEPWORTH WOOD	Ancient Replanted Woodland
Not shown	1965	NW	HEPWORTH WOOD	Ancient and Semi-Natural Woodland
Not shown	1999	NW	BRIERY BANK	Ancient Replanted 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:

2

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	1178	SE	Existing	DEFRA
2	1286	SE	Existing	DEFRA

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

3

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ID	Distance	Direction	Green Belt Name	Local Authority Name
9	0	On Site	Liverpool, Manchester and West Yorks Greenbelt	Kirklees District (B)
10	1194	W	Liverpool, Manchester and West Yorks Greenbelt	Kirklees District (B)
Not shown	1984	SW	Liverpool, Manchester and West Yorks Greenbelt	Kirklees 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

Maximum Shrink-Swell** 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
Ground conditions predominantly low plasticity. 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 due to potential problems with shrink-swell clays.

9.1.2 Landslides

Maximum Landslide* hazard rating identified on the study site Moderate

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

Hazard
Significant potential for slope instability with relatively small changes in ground conditions. Avoid large amounts of water entering the ground through pipe leakage or soak-aways. Do not undercut or place large amounts of material on slopes without technical advice. For new build consider the potential and consequences of ground movement during excavations, or consequence of changes to loading or drainage. For existing property probable increase in insurance risk is likely due to potential natural slope instability after changes to ground conditions such as a very long, excessively wet winter.

9.1.3 Soluble Rocks

Maximum Soluble Rocks* hazard rating identified on the study site Negligible

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

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

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

9.1.4 Compressible Ground

Maximum Compressible Ground* hazard rating identified on the study site

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

Maximum Collapsible Rocks* hazard rating identified on the study site

Very Low

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

Hazard
Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

9.1.6 Running Sand

Maximum Running Sand** hazard rating identified on the study site

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 in a Radon Affected Area, as between 1 and 3% of properties are above the Action Level.

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

9.2.2 Radon Protection

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

10. Mining

10.1 Coal Mining

Coal mining areas within 75m of the study site

Identified

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

Distance (m)	Direction	Details
0	On Site	The site lies in or in proximity to the coal mining reporting area as defined by the Coal Authority

10.2 Non-Coal Mining

Non-Coal Mining areas within 50m of the study site boundary

None identified

Database searched and no data found.

10.3 Brine Affected Areas

Brine affected areas within 75m of the study site

None identified

Guidance: No Guidance Required.

Contact Details

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

British Geological Survey Enquiries

Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email:

Web: www.bgs.ac.uk

BGS Geological Hazards Reports and general geological enquiries:
enquiries@bgs.ac.uk

Environment Agency

National Customer Contact Centre, PO Box 544
Rotherham, S60 1BY
Tel: 03708 506 506

Web: www.environment-agency.gov.uk

Email: enquiries@environment-agency.gov.uk

Public Health England

Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG
www.gov.uk/phe

Email: enquiries@phe.gov.uk
Main switchboard: 020 7654 8000

The Coal Authority

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

Ordnance Survey

Adanac Drive, Southampton
SO16 0AS
Tel: 08456 050505

Local Authority

Authority: Kirklees Council
Phone: 01484 221 000
Web: <http://www.kirklees.gov.uk/>
Address: Civic Centre 3, Market Street, Huddersfield, HD1 2EY

Gemapping PLC

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



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



Rogers Geotechnical Services
Barncliffe Mills, NEAR BANK,
HUDDERSFIELD, HD8 8LU

Groundsure Reference: GS-6312407
Your Reference: C66_19_E_127_PO-0339

Report Date 16 Sep 2019

Report Delivery Method: Email - pdf

Geo Insight

Address: NINEVEH FARM, LILEY LANE, GRANGE MOOR, HUDDERSFIELD, WF14 8EG

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,

REDACTED

Managing Director
Groundsure Limited

Enc.
Groundsure Geo Insight

Address: NINEVEH FARM, LILEY LANE, GRANGE MOOR, HUDDERSFIELD, WF14 8EG

Date: 16 Sep 2019

Reference: GS-6312407

Client: Rogers Geotechnical Services

NW N NE



SW S SE

Aerial Photograph Capture date: 26-Mar-2012
Grid Reference: 421320,416682
Site Size: 0.7558ha

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Overview of Findings

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

The report is based on the BGS 1:50,000 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 landslide 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 landslide 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

3.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?

The property is in a Radon Affected Area, as between 1 and 3% of properties are above the Action Level.

3.2 Radon Protection

No radon protective measures are necessary.

Section 4: Ground Workings

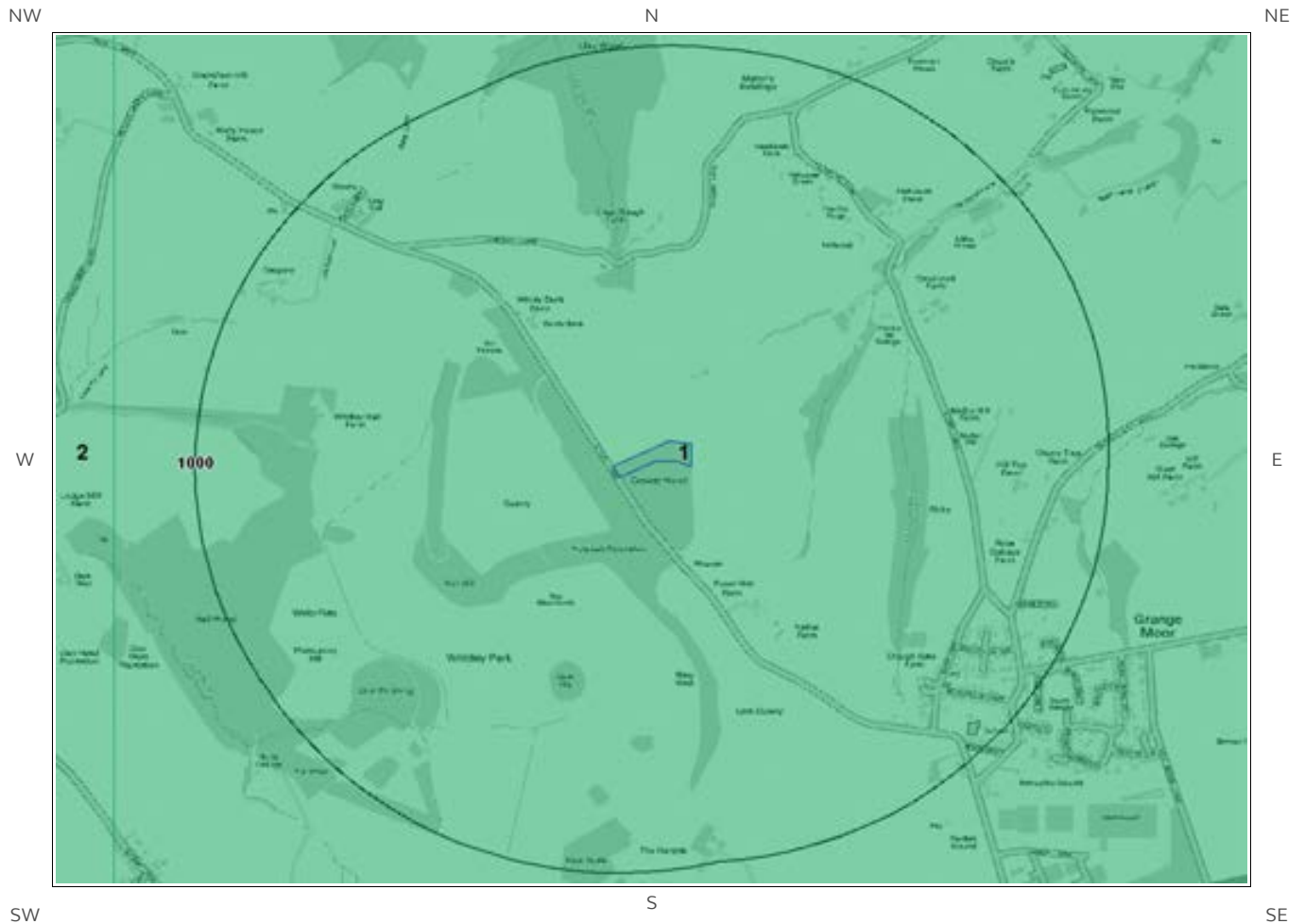
	On-site	0-50m	51-250	251-500	501-1000
4.1 Historical Surface Ground Working Features from Small Scale Mapping	3	0	25	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	0	0	5	27	24
4.3 Current Ground Workings	0	0	3	3	7

Section 5: Mining, Extraction & Natural Cavities

	On-site	0-50m	51-250	251-500	501-1000
5.1 Historical Mining	0	0	5	27	24
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	1	0
5.5 Natural Cavities	0	0	0	0	0

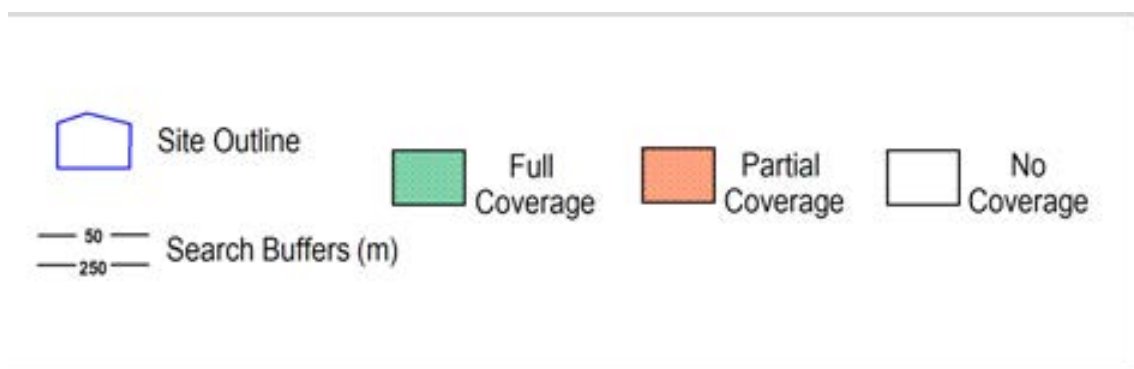
Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Cornwall and Devon Metalliferous Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0
Section 6: Natural Ground Subsidence	On-site				
6.1 Shrink-Swell Clay	Very Low				
6.2 Landslides	Moderate				
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	0	0		
Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250		
8 Records of Background Soil Chemistry	4	1	0		
Section 9: Railways and Tunnels	On-site	0-50m	51-250	250-500	
9.1 Tunnels	0	0	0	Not Searched	
9.2 Historical Railway and Tunnel Features	0	1	2	Not Searched	
9.3 Historical Railways	0	0	0	Not Searched	
9.4 Active Railways	0	0	0	Not Searched	
9.5 Railway Projects	0	0	0	0	

1:10,000 Scale Availability



1_10,000 Availability Legend

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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
2	1194.0	Some deposits are mapped	Full	Full	Some deposits are mapped
N3	1620.0	Some deposits are mapped	Full	Full	Some deposits are mapped

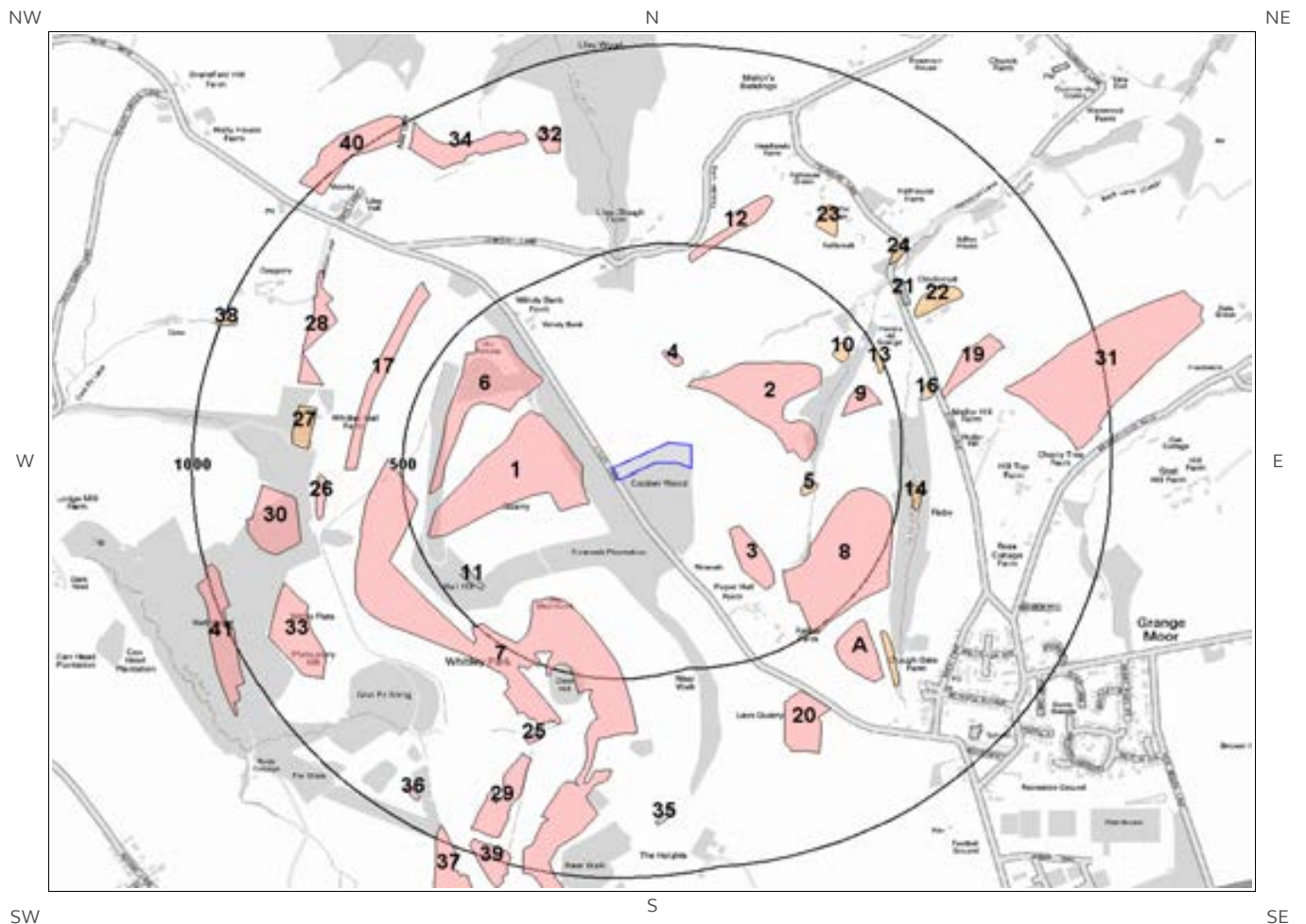
Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not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

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1. Geology 1:10,000 scale

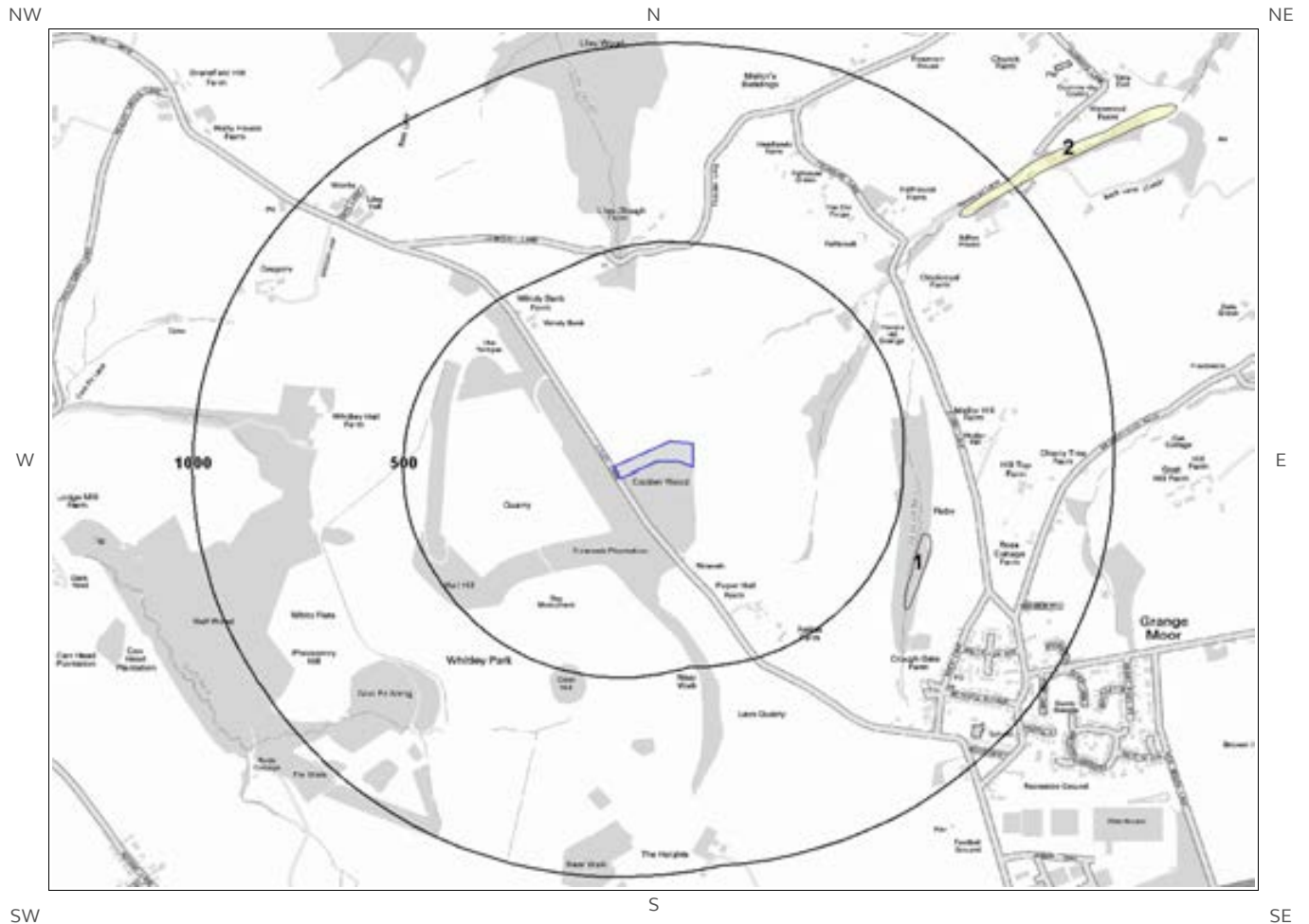
1.1 Artificial Ground

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	70.0	W	WMGR-ARTDP	Infilled Ground	Artificial Deposit
2	138.0	NE	WMGR-ARTDP	Infilled Ground	Artificial Deposit
3	176.0	SE	WMGR-ARTDP	Infilled Ground	Artificial Deposit
4	193.0	N	WMGR-ARTDP	Infilled Ground	Artificial Deposit
5	267.0	E	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
6	272.0	NW	WMGR-ARTDP	Infilled Ground	Artificial Deposit
7	331.0	SW	WMGR-ARTDP	Infilled Ground	Artificial Deposit
8	333.0	SE	WMGR-ARTDP	Infilled Ground	Artificial Deposit
9	365.0	E	WMGR-ARTDP	Infilled Ground	Artificial Deposit
10	405.0	NE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
11	416.0	SW	WGR-VOID	Worked Ground (Undivided)	Void
12	456.0	N	WMGR-ARTDP	Infilled Ground	Artificial Deposit
13	483.0	E	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

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



Artificial Ground Legend

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1.2 Superficial Deposits and Landslips

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

1.2.1 Superficial Deposits/ Drift Geology

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

Database searched and no data found.

1.2.2 Landslip

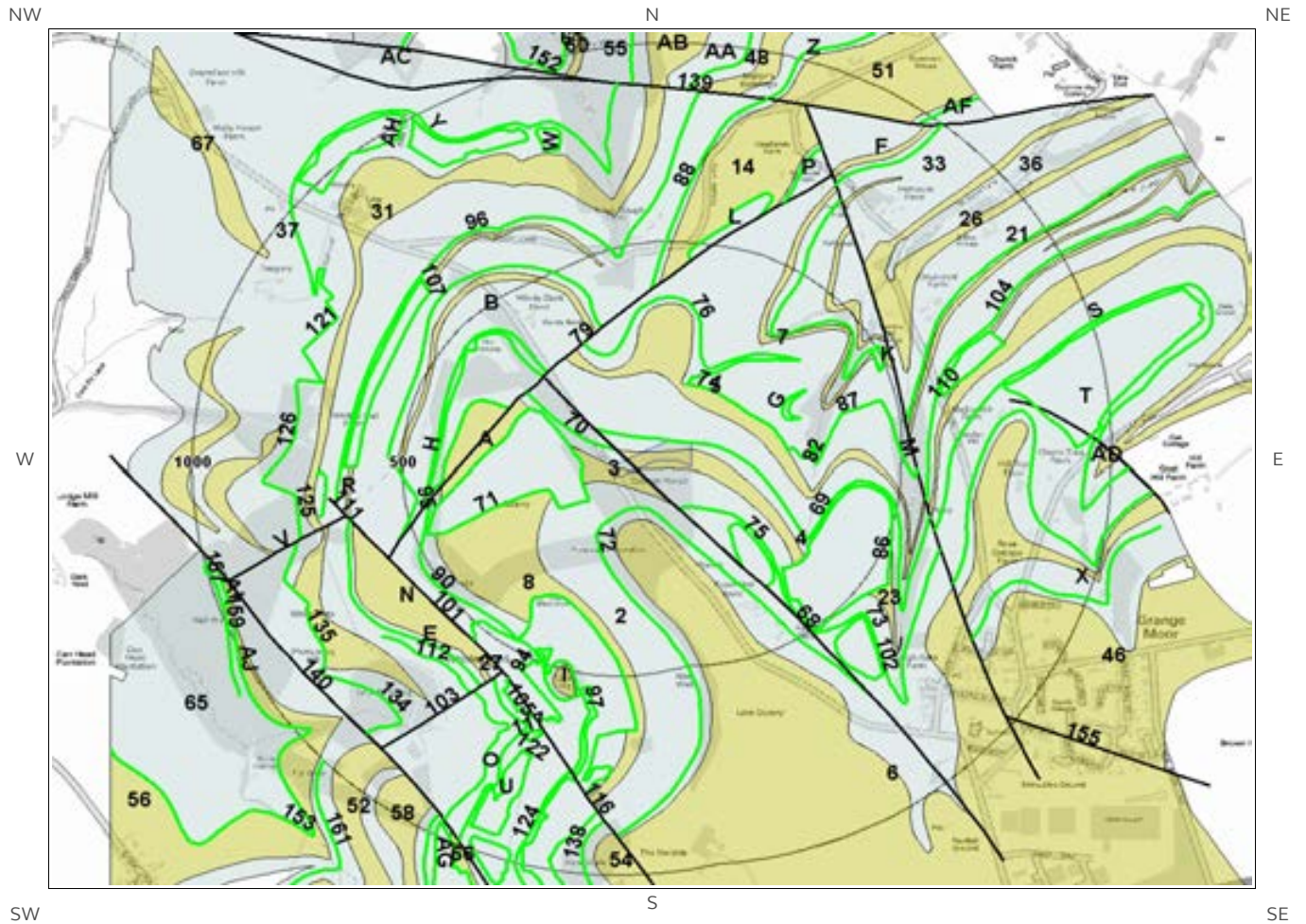
Are there any records of Landslip within 500m of the study site boundary at 1:10,000 scale? No

Database searched and no data found.

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

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

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



Bedrock and linear features Legend

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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	LPE-SDST	Lepton Edge Rock - Sandstone	Langsettian Sub-age
2	0.0	On Site	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
3	0.0	On Site	LPE-SDST	Lepton Edge Rock - Sandstone	Langsettian Sub-age
4	0.0	On Site	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
5	91.0	NE	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
6	112.0	S	BRSR-SDST	Birstall Rock - Sandstone	Langsettian Sub-age
7	138.0	NE	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
8	157.0	SW	LPE-SDST	Lepton Edge Rock - Sandstone	Langsettian Sub-age
9A	245.0	NW	LPE-SDST	Lepton Edge Rock - Sandstone	Langsettian Sub-age
10B	272.0	NW	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
11A	283.0	NW	LPE-SDST	Lepton Edge Rock - Sandstone	Langsettian Sub-age
12J	298.0	NE	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
13B	317.0	NW	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
14	392.0	N	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
15L	456.0	N	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
16C	460.0	NE	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
17	468.0	N	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
18C	480.0	NE	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
19I	486.0	S	LPE-SDST	Lepton Edge Rock - 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

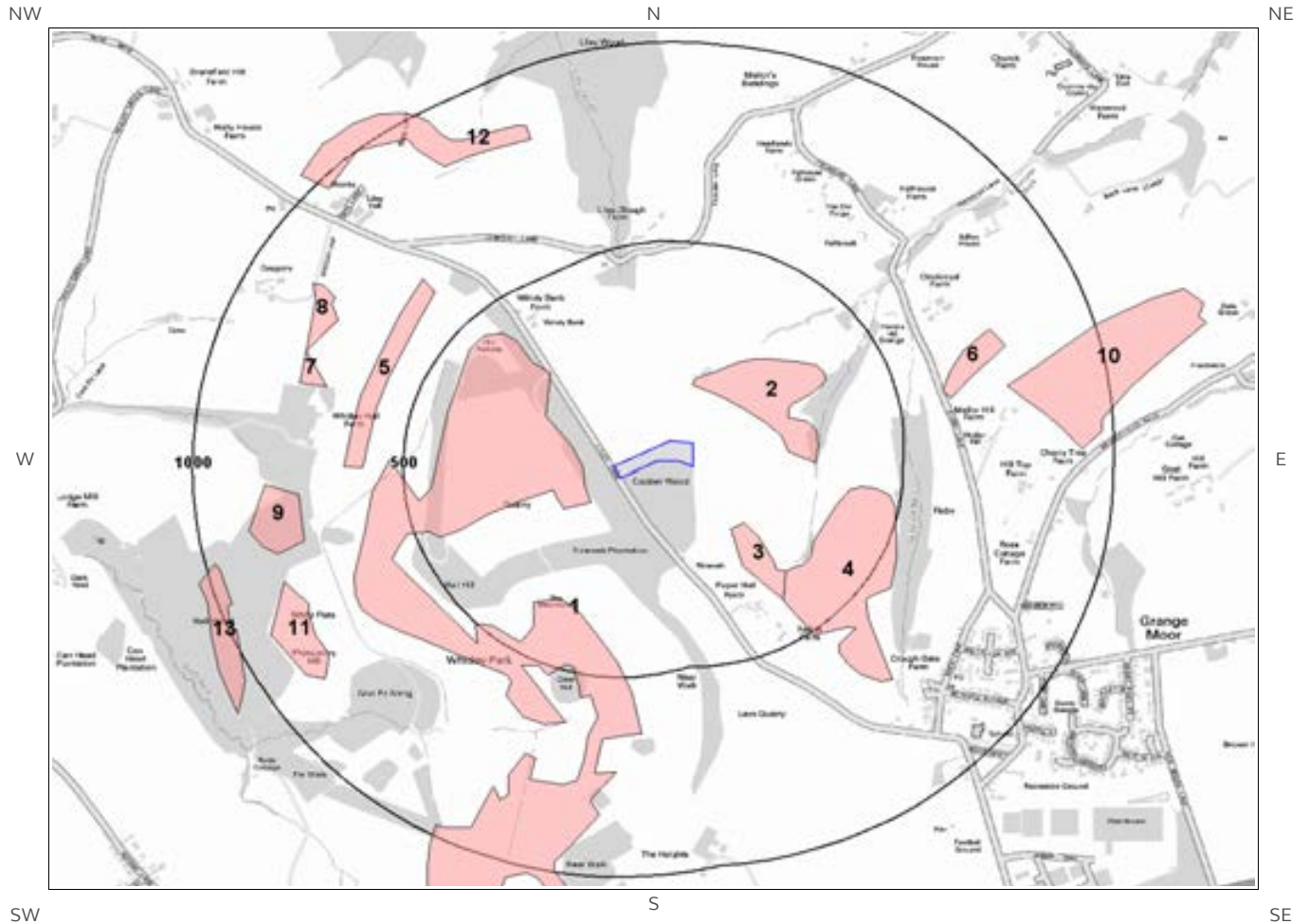
ID	Distance (m)	Direction	Category Description	Feature Description
68	0.0	On Site	FAULT	Normal fault, inferred; crossmarks on downthrow side
69	0.0	N	ROCK	Coal seam, inferred
70	34.0	NW	ROCK	Coal seam, inferred
71	70.0	W	ROCK	Coal seam, observed
72	83.0	S	ROCK	Coal seam, inferred
73	101.0	S	ROCK	Coal seam, inferred
74	138.0	NE	ROCK	Coal seam, observed
75	176.0	SE	ROCK	Coal seam, observed
76	190.0	N	ROCK	Coal seam, inferred
77G	229.0	E	ROCK	Coal seam, observed
78G	244.0	E	ROCK	Coal seam, inferred
79	272.0	NW	FAULT	Normal fault, inferred; crossmarks on downthrow side
80H	278.0	NW	ROCK	Coal seam, observed
81H	281.0	NW	ROCK	Coal seam, inferred
82	295.0	E	ROCK	Coal seam, inferred
83B	325.0	NW	ROCK	Coal seam, inferred
84I	331.0	SW	ROCK	Coal seam, observed
85J	332.0	NE	ROCK	Coal seam, inferred
86	333.0	SE	ROCK	Coal seam, observed
87	365.0	E	ROCK	Coal seam, observed
88	382.0	N	ROCK	Coal seam, inferred
89K	437.0	NE	ROCK	Coal seam, observed
90	440.0	W	ROCK	Coal seam, inferred
91L	456.0	N	ROCK	Coal seam, observed
92I	460.0	S	ROCK	Coal seam, observed
93M	469.0	E	ROCK	Coal seam, inferred
94	472.0	SW	ROCK	Coal seam, observed
95	472.0	W	ROCK	Coal seam, observed
96	477.0	N	ROCK	Coal seam, inferred
97	480.0	S	ROCK	Coal seam, inferred
98K	497.0	NE	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



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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: 077

2.1.1 Artificial/ Made Ground

Are there any records of Artificial/ Made Ground within 500m of the study site boundary? Yes

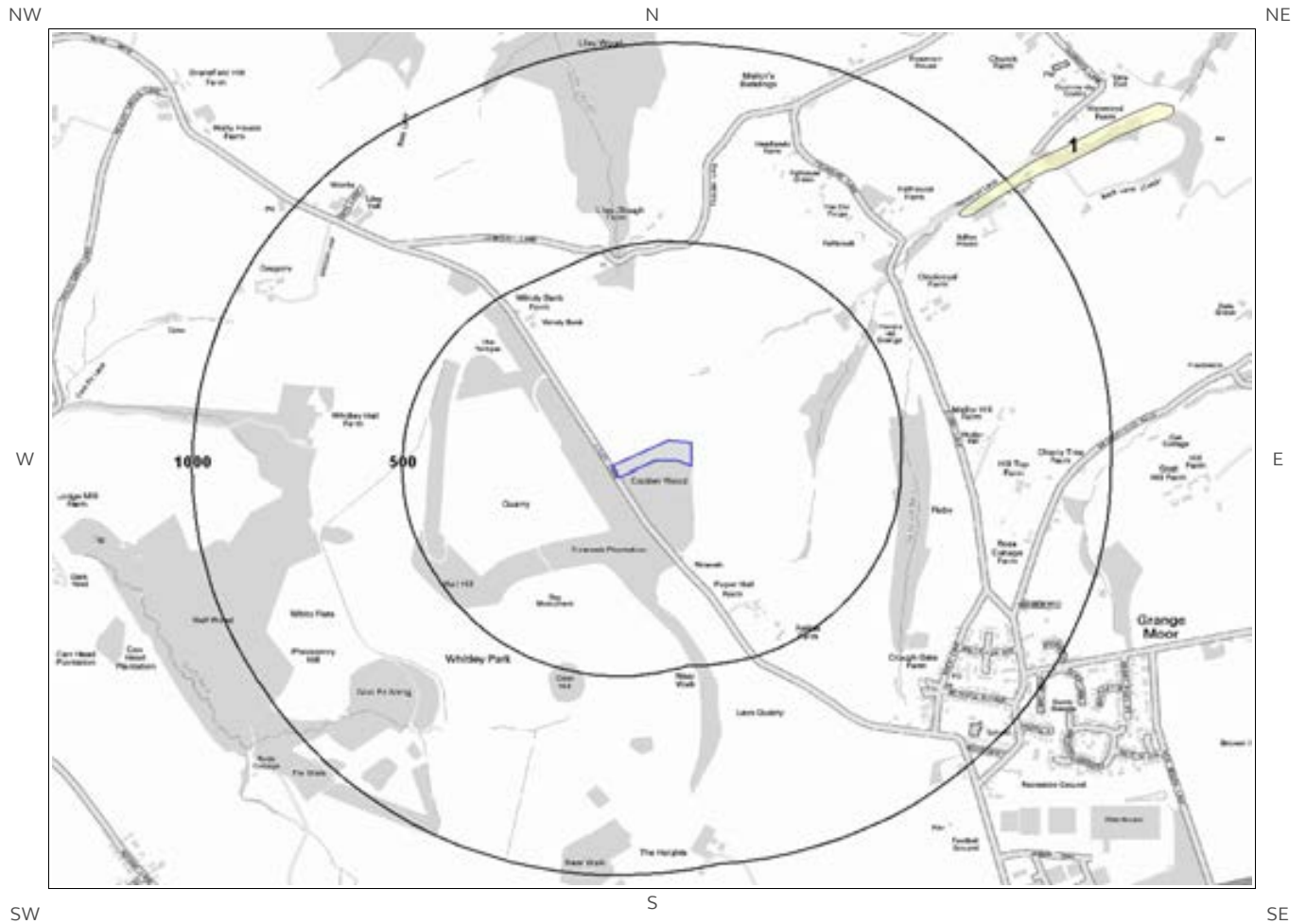
ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	71.0	W	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT
2	134.0	N	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT
3	178.0	SE	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT
4	340.0	SE	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT

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)



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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? No

Database searched and no data found.

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.

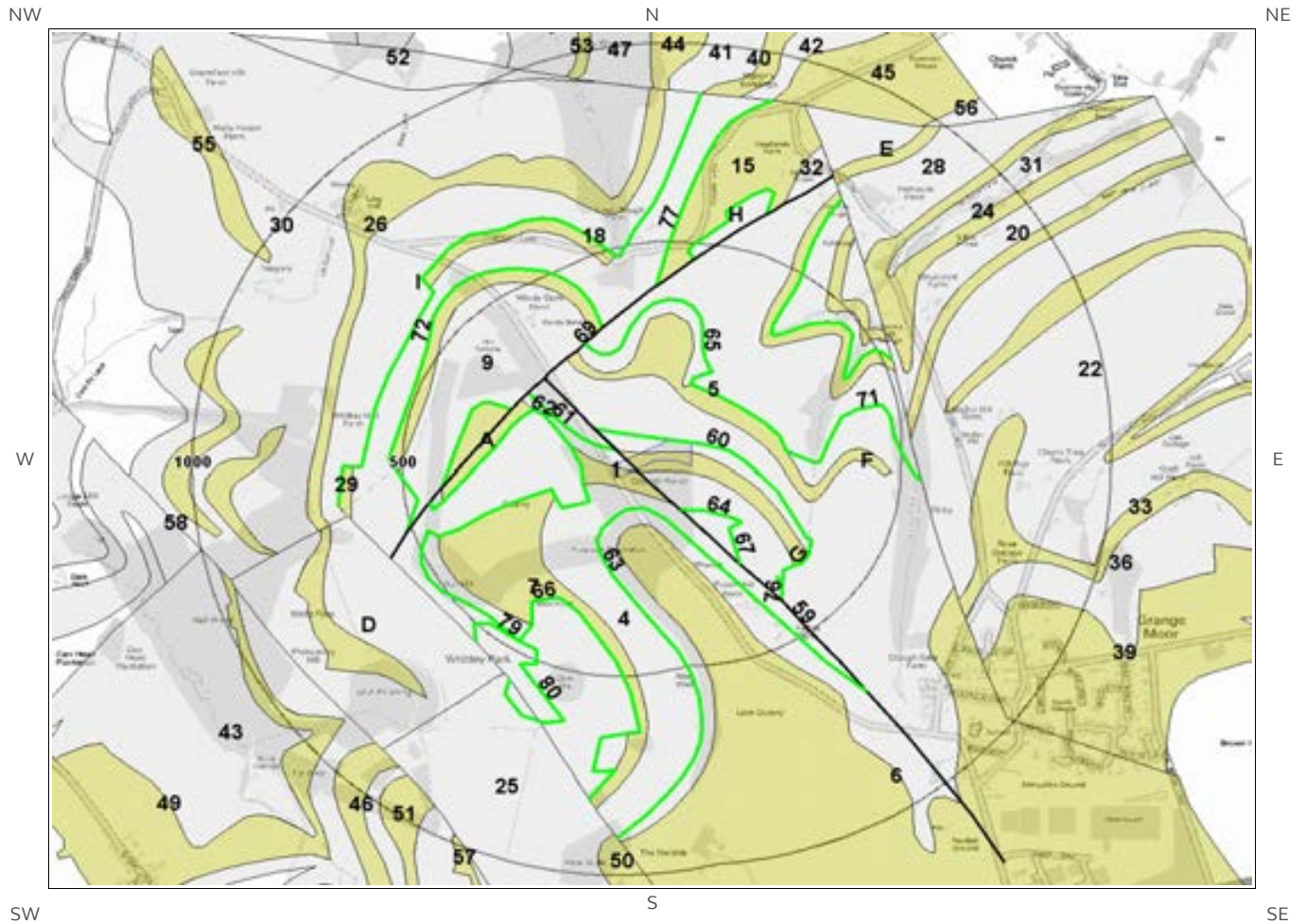
This Geology shows the main components as discrete layers, there are: Artificial/ Made Ground, Superficial/ Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

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)



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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: 077

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	LPE-SDST	LEPTON EDGE ROCK - SANDSTONE	WESTPHALIAN
2	0.0	On Site	LPE-SDST	LEPTON EDGE ROCK - SANDSTONE	WESTPHALIAN
3F	0.0	On Site	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
4	0.0	On Site	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
5	83.0	NE	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
6	126.0	S	BRSR-SDST	BIRSTALL ROCK - SANDSTONE	WESTPHALIAN
7	154.0	SW	LPE-SDST	LEPTON EDGE ROCK - SANDSTONE	WESTPHALIAN
8A	233.0	NW	LPE-SDST	LEPTON EDGE ROCK - SANDSTONE	WESTPHALIAN
9	271.0	NW	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
10A	279.0	NW	LPE-SDST	LEPTON EDGE ROCK - SANDSTONE	WESTPHALIAN
11B	297.0	NE	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
12	315.0	NW	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
13I	324.0	NW	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
14B	332.0	NE	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
15	388.0	N	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
16H	459.0	N	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
17C	465.0	NE	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
18	466.0	N	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - 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	Low
0.0	On Site	Fracture	High	Moderate
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
59	0.0	On Site	FAULT	Fault, inferred
60	1.0	N	ROCK	Coal seam, inferred
61	32.0	NW	ROCK	Coal seam, inferred
62	71.0	W	ROCK	Coal seam, inferred
63	82.0	S	ROCK	Coal seam, inferred
64	108.0	S	ROCK	Coal seam, inferred
65	134.0	N	ROCK	Coal seam, inferred
66	154.0	SW	ROCK	Coal seam, inferred
67	178.0	SE	ROCK	Coal seam, inferred
68F	227.0	E	ROCK	Coal seam, inferred
69	271.0	NW	FAULT	Fault, inferred
70A	279.0	NW	ROCK	Coal seam, inferred
71	290.0	E	ROCK	Coal seam, inferred
72	324.0	NW	ROCK	Coal seam, inferred
73B	332.0	NE	ROCK	Coal seam, inferred
74G	340.0	SE	ROCK	Coal seam, inferred
75G	341.0	SE	ROCK	Coal seam, inferred
76	366.0	SE	ROCK	Coal seam, inferred
77	388.0	N	ROCK	Coal seam, inferred
78H	459.0	N	ROCK	Coal seam, inferred
79	474.0	SW	ROCK	Coal seam, inferred
80	474.0	SW	ROCK	Coal seam, inferred
81I	480.0	N	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

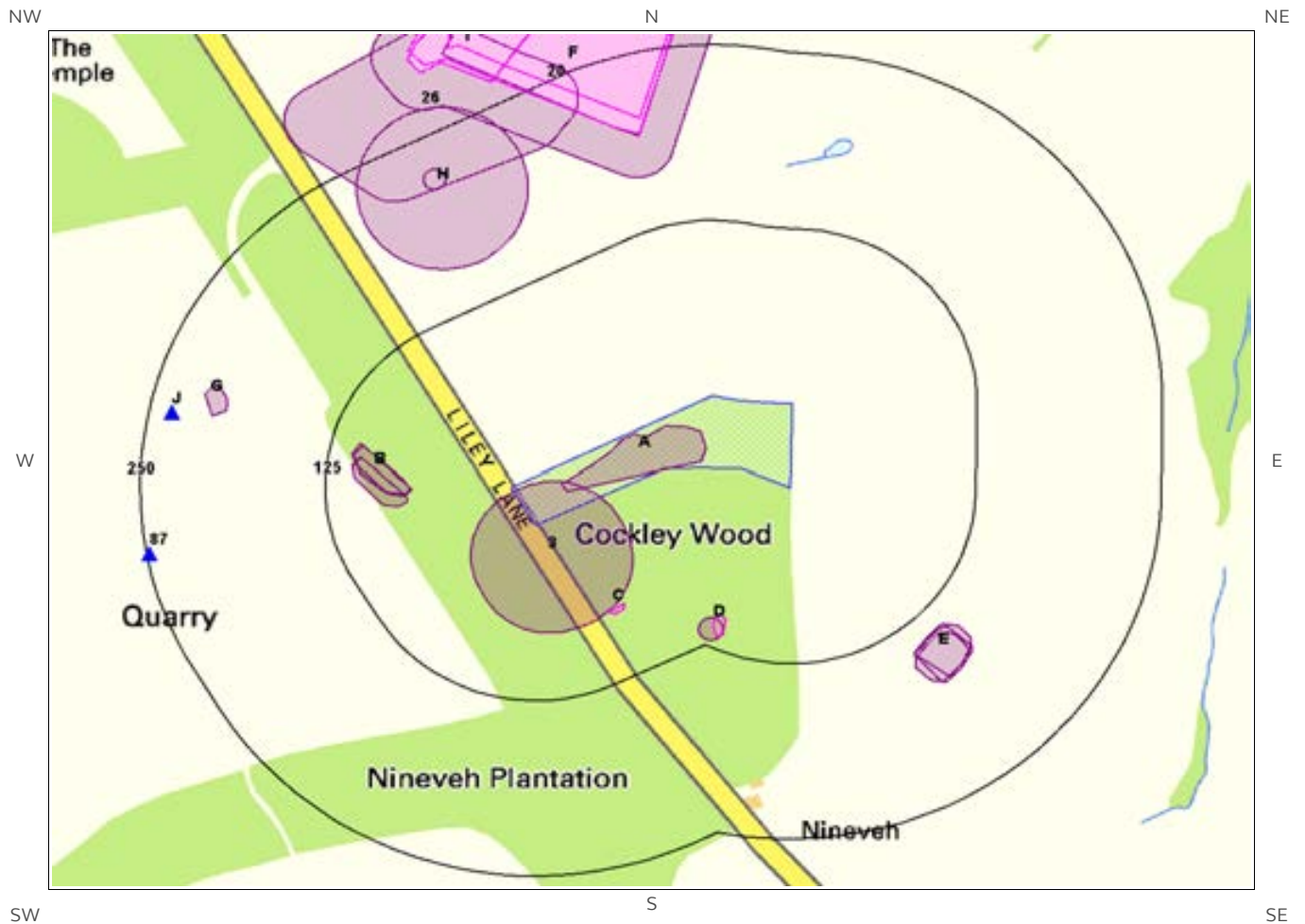
Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is in a Radon Affected Area, as between 1 and 3% of properties are above the Action Level.

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

3.2 Radon Protection

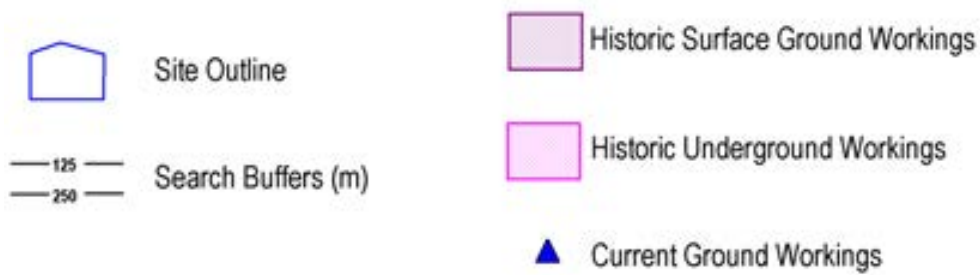
Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

4 Ground Workings map



Ground Workings Legend

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4 Ground Workings

4.1 Historical Surface Ground Working Features derived from Historical Mapping

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

Are there any Historical Surface Ground Working Features within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Use	Date
1A	0.0	On Site	421277 416668	Unspecified Heap	1966
2A	0.0	On Site	421277 416668	Unspecified Heap	1982
3	0.0	On Site	421222 416598	Old Coal Drift	1948
4B	67.0	W	421108 416658	Pond	1951
5B	68.0	W	421106 416660	Pond	1938
6B	71.0	W	421106 416651	Pond	1904
7B	71.0	W	421106 416651	Pond	1888
8B	71.0	W	421106 416651	Pond	1948
9C	76.0	SE	421265 416561	Disused Drift	1966
10C	76.0	SE	421265 416561	Disused Drift	1982
11D	101.0	S	421335 416549	Unspecified Disused Drift	1993
12D	105.0	S	421329 416546	Old Coal Drift	1938
13D	105.0	S	421329 416546	Old Coal Drift	1938
14E	140.0	SE	421486 416529	Unspecified Heap	1904
15E	140.0	SE	421486 416529	Unspecified Heap	1948
16E	141.0	SE	421485 416529	Unspecified Heap	1938
17E	141.0	SE	421485 416529	Unspecified Heap	1938
18E	144.0	SE	421485 416528	Unspecified Heap	1951
19H	154.0	NW	421148 416860	Coal Drift	1948
20	162.0	N	421217 416973	Colliery	1888
21F	192.0	N	421215 417048	Colliery	1938

ID	Distance (m)	Direction	NGR	Use	Date
22F	192.0	N	421215 417048	Colliery	1938
23F	193.0	N	421214 417048	Disused Colliery	1951
24G	199.0	W	420995 416709	Unspecified Pit	1938
25G	199.0	W	420995 416709	Unspecified Pit	1938
26	209.0	NW	421140 416914	Coal Drift	1951
27H	212.0	NW	421143 416866	Coal Drift	1938
28H	212.0	NW	421143 416866	Coal Drift	1938

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
29C	76.0	SE	421265 416561	Disused Drift	1982
30C	76.0	SE	421265 416561	Disused Drift	1966
31D	101.0	S	421335 416549	Unspecified Disused Drift	1993
32F	193.0	N	421214 417048	Disused Colliery	1951
33F	204.0	N	421220 417053	Unspecified Disused Mine	1966
34I	266.0	NW	421179 416986	Colliery	1948
35I	266.0	NW	421179 416986	Colliery	1904
Not shown	296.0	NW	421195 416979	Air Shaft	1948
Not shown	298.0	NW	421194 416980	Air Shaft	1951
Not shown	427.0	NE	421741 416950	Unspecified Disused Shafts	1966
Not shown	427.0	NE	421741 416950	Unspecified Disused Shafts	1982
Not shown	427.0	NE	421741 416950	Unspecified Disused Shafts	1993
Not shown	432.0	N	421229 417137	Unspecified Disused Shaft	1966

ID	Distance (m)	Direction	NGR	Use	Date
Not shown	434.0	N	421221 417136	Unspecified Old Shaft	1948
Not shown	437.0	SE	421668 416170	Colliery	1948
Not shown	462.0	NE	421777 416956	Unspecified Shafts	1904
Not shown	462.0	NE	421777 416956	Unspecified Old Shafts	1948
Not shown	463.0	NE	421776 416956	Unspecified Old Shafts	1951
Not shown	474.0	NE	421714 417050	Unspecified Old Shaft	1951
Not shown	475.0	NE	421786 416964	Unspecified Old Shafts	1948
Not shown	475.0	NE	421786 416964	Unspecified Shafts	1904
Not shown	475.0	NE	421722 417047	Unspecified Disused Shaft	1993
Not shown	475.0	NE	421722 417047	Unspecified Disused Shaft	1966
Not shown	475.0	NE	421722 417047	Unspecified Disused Shaft	1982
Not shown	475.0	NE	421786 416965	Unspecified Old Shafts	1951
Not shown	476.0	NE	421716 417051	Unspecified Shaft	1904
Not shown	476.0	NE	421716 417051	Unspecified Old Shaft	1948
Not shown	478.0	NE	421793 416963	Unspecified Disused Shafts	1982
Not shown	478.0	NE	421793 416963	Unspecified Disused Shafts	1993
Not shown	478.0	NE	421793 416963	Unspecified Disused Shafts	1966
Not shown	483.0	E	421889 416722	Drift	1966
Not shown	483.0	E	421889 416722	Drift	1966
Not shown	503.0	NW	420952 417125	Drift	1966
Not shown	550.0	E	421936 416621	Unspecified Old Shaft	1948
Not shown	557.0	E	421945 416630	Unspecified Disused Shaft	1982
Not shown	557.0	E	421945 416630	Unspecified Disused Shaft	1966
Not shown	560.0	E	421946 416626	Unspecified Disused Shaft	1993
Not shown	595.0	NE	421834 417102	Unspecified Disused Shaft	1966
Not shown	595.0	NE	421834 417102	Unspecified Disused Shaft	1993
Not shown	595.0	NE	421834 417102	Unspecified Disused Shaft	1982
Not shown	595.0	NE	421976 416914	Coal Drift	1951
Not shown	598.0	SE	421655 416111	Unspecified Old Shaft	1948

ID	Distance (m)	Direction	NGR	Use	Date
Not shown	598.0	SE	421655 416111	Unspecified Shaft	1904
Not shown	600.0	NE	421983 416937	Unspecified Mine	1966
Not shown	608.0	NE	421841 417111	Unspecified Old Shafts	1951
Not shown	608.0	NE	421841 417110	Unspecified Old Shafts	1948
Not shown	744.0	NE	421925 417222	Unspecified Disused Level	1982
Not shown	751.0	NE	421934 417226	Unspecified Disused Level	1966
Not shown	790.0	SW	420721 415994	Unspecified Old Shaft	1951
Not shown	790.0	SW	420720 415996	Unspecified Old Shaft	1948
Not shown	790.0	SW	420720 415996	Unspecified Shaft	1904
Not shown	799.0	SE	421880 416015	Unspecified Shaft	1982
Not shown	799.0	SE	421880 416015	Unspecified Shaft	1966
Not shown	972.0	SE	422309 416200	Colliery	1888
Not shown	973.0	SE	421985 415831	Colliery	1948
Not shown	992.0	S	421165 415437	Unspecified Mine	1966

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.

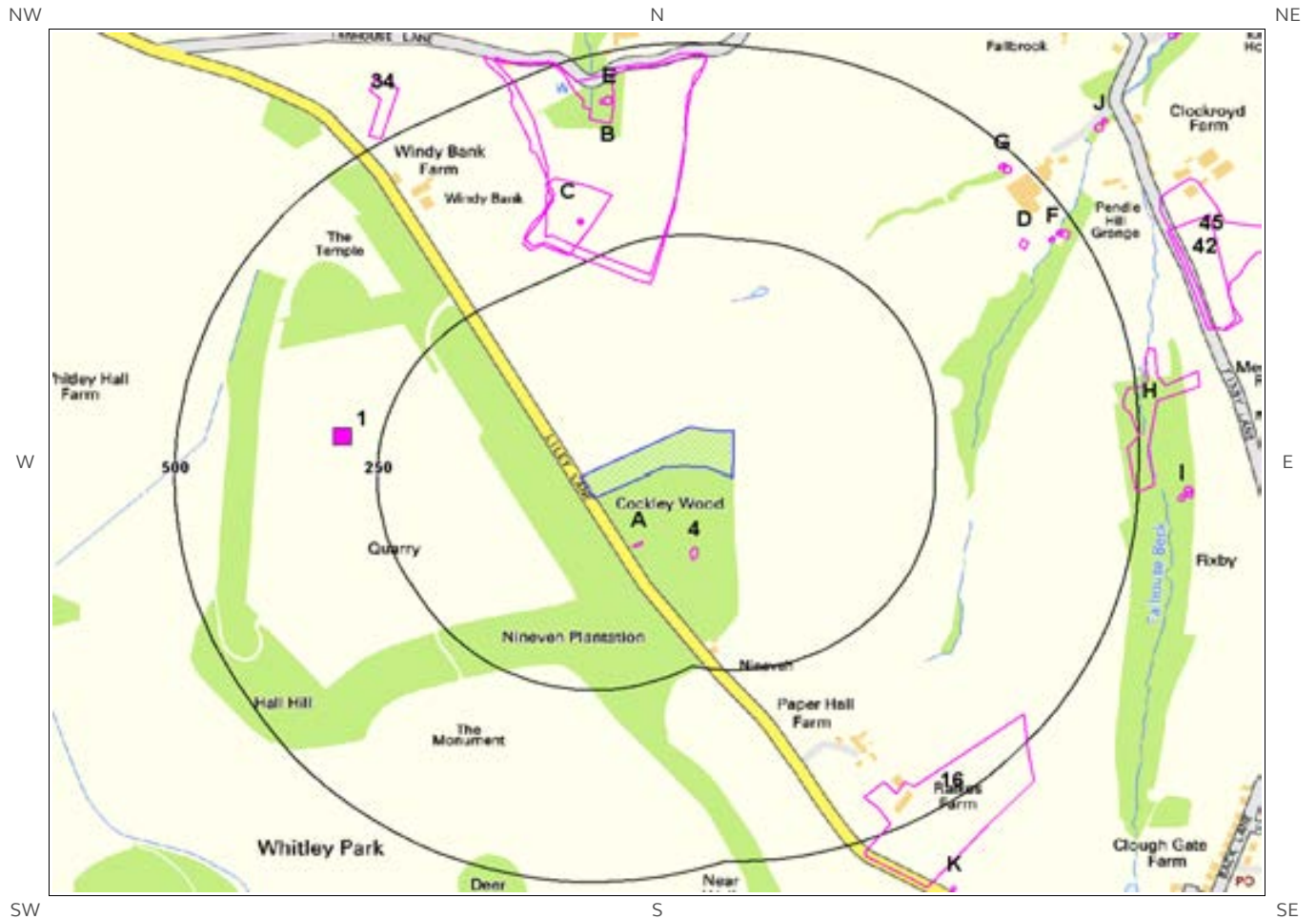
Are there any BGS Current Ground Workings within 1000m of the study site boundary? Yes

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
85J	235.0	W	420965 416700	Sandstone	Temple Quarry	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Active
86J	235.0	W	420965 416700	Clay & Shale	Temple Quarry	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Active
87	248.0	W	420950 416600	Coal, Surface Mined	Temple Quarry Coal Workings	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	320.0	NW	421180 416995	Fireclay	Whitley Clough Colliery	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)	Ceased

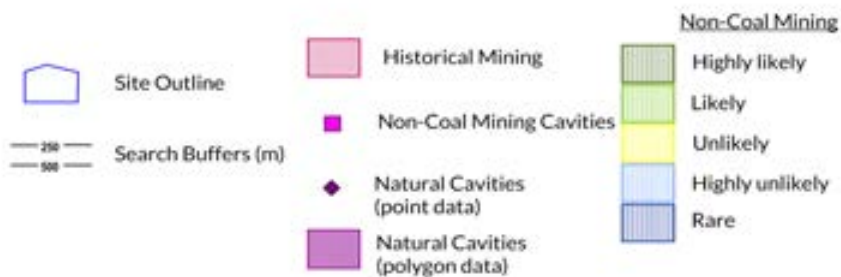
ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
Not shown	320.0	NW	421180 416995	Coal, Deep	Whitley Clough Colliery	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)	Ceased
Not shown	406.0	W	420805 416765	Sandstone	Whitley Beaumont	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	564.0	SE	421650 416150	Coal, Deep	Leys Pit	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)	Ceased
Not shown	671.0	NE	421815 417220	Sandstone	Falhouse	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	707.0	S	421630 415985	Sandstone	Leys	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	915.0	SE	422205 416245	Sandstone	Tile Houses	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	928.0	N	421636 417599	Sandstone	Beebow	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	957.0	SW	420712 415804	Sandstone	Rods Mill	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	992.0	SE	422280 416225	Sandstone	Tile Houses	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

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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? Yes

The following Historical Mining information is provided by Groundsure:

ID	Distance (m)	Direction	NGR	Details	Date
2A	76.0	SE	421265 416561	Disused Drift	1982
3A	76.0	SE	421265 416561	Disused Drift	1966
4	101.0	S	421335 416549	Unspecified Disused Drift	1993
5B	193.0	N	421214 417048	Disused Colliery	1951
6B	204.0	N	421220 417053	Unspecified Disused Mine	1966
7C	266.0	NW	421179 416986	Colliery	1948
8C	266.0	NW	421179 416986	Colliery	1904
9C	296.0	NW	421195 416979	Air Shaft	1948
10C	298.0	NW	421194 416980	Air Shaft	1951
11D	427.0	NE	421741 416950	Unspecified Disused Shafts	1993
12D	427.0	NE	421741 416950	Unspecified Disused Shafts	1966
13D	427.0	NE	421741 416950	Unspecified Disused Shafts	1982
14E	432.0	N	421229 417137	Unspecified Disused Shaft	1966
15E	434.0	N	421221 417136	Unspecified Old Shaft	1948
16	437.0	SE	421668 416170	Colliery	1948
17F	462.0	NE	421777 416956	Unspecified Old Shafts	1948
18F	462.0	NE	421777 416956	Unspecified Shafts	1904
19F	463.0	NE	421776 416956	Unspecified Old Shafts	1951
20G	474.0	NE	421714 417050	Unspecified Old Shaft	1951
21F	475.0	NE	421786 416964	Unspecified Old Shafts	1948

ID	Distance (m)	Direction	NGR	Details	Date
22F	475.0	NE	421786 416964	Unspecified Shafts	1904
23G	475.0	NE	421722 417047	Unspecified Disused Shaft	1993
24G	475.0	NE	421722 417047	Unspecified Disused Shaft	1966
25G	475.0	NE	421722 417047	Unspecified Disused Shaft	1982
26F	475.0	NE	421786 416965	Unspecified Old Shafts	1951
27G	476.0	NE	421716 417051	Unspecified Old Shaft	1948
28G	476.0	NE	421716 417051	Unspecified Shaft	1904
29F	478.0	NE	421793 416963	Unspecified Disused Shafts	1993
30F	478.0	NE	421793 416963	Unspecified Disused Shafts	1982
31F	478.0	NE	421793 416963	Unspecified Disused Shafts	1966
32H	483.0	E	421889 416722	Drift	1966
33H	483.0	E	421889 416722	Drift	1966
34	503.0	NW	420952 417125	Drift	1966
35I	550.0	E	421936 416621	Unspecified Old Shaft	1948
36I	557.0	E	421945 416630	Unspecified Disused Shaft	1966
37I	557.0	E	421945 416630	Unspecified Disused Shaft	1982
38I	560.0	E	421946 416626	Unspecified Disused Shaft	1993
39J	595.0	NE	421834 417102	Unspecified Disused Shaft	1982
40J	595.0	NE	421834 417102	Unspecified Disused Shaft	1966
41J	595.0	NE	421834 417102	Unspecified Disused Shaft	1993
42	595.0	NE	421976 416914	Coal Drift	1951
43K	598.0	SE	421655 416111	Unspecified Old Shaft	1948
44K	598.0	SE	421655 416111	Unspecified Shaft	1904
45	600.0	NE	421983 416937	Unspecified Mine	1966
46J	608.0	NE	421841 417111	Unspecified Old Shafts	1951
47J	608.0	NE	421841 417110	Unspecified Old Shafts	1948
48L	744.0	NE	421925 417222	Unspecified Disused Level	1982
49L	751.0	NE	421934 417226	Unspecified Disused Level	1966
Not shown	790.0	SW	420721 415994	Unspecified Old Shaft	1951

ID	Distance (m)	Direction	NGR	Details	Date
Not shown	790.0	SW	420720 415996	Unspecified Old Shaft	1948
Not shown	790.0	SW	420720 415996	Unspecified Shaft	1904
Not shown	799.0	SE	421880 416015	Unspecified Shaft	1966
Not shown	799.0	SE	421880 416015	Unspecified Shaft	1982
Not shown	972.0	SE	422309 416200	Colliery	1888
Not shown	973.0	SE	421985 415831	Colliery	1948
Not shown	992.0	S	421165 415437	Unspecified Mine	1966

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 site lies in or in proximity to the coal mining reporting area as defined by the Coal Authority

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? Yes

The following Non-Coal Mining Cavities information provided by Peter Brett Associates:

ID	Distance (m)	Direction	NGR	Address	Superficial Deposits	Bedrock Deposits	Extracted Mineral
1	299.0	W	420900 416700	WHITLEY, West Yorkshire	-	-	Fireclay

5.6 Natural Cavities

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

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

Database searched and no data found.

5.7 Brine Extraction

This data provides information from the Cheshire Brine Subsidence Compensation Board.

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

Database searched and no data found.

5.8 Gypsum Extraction

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

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

Database searched and no data found.

5.9 Cornwall and Devon Metalliferous Mining

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

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

Database searched and no data found.

5.10 Clay Mining

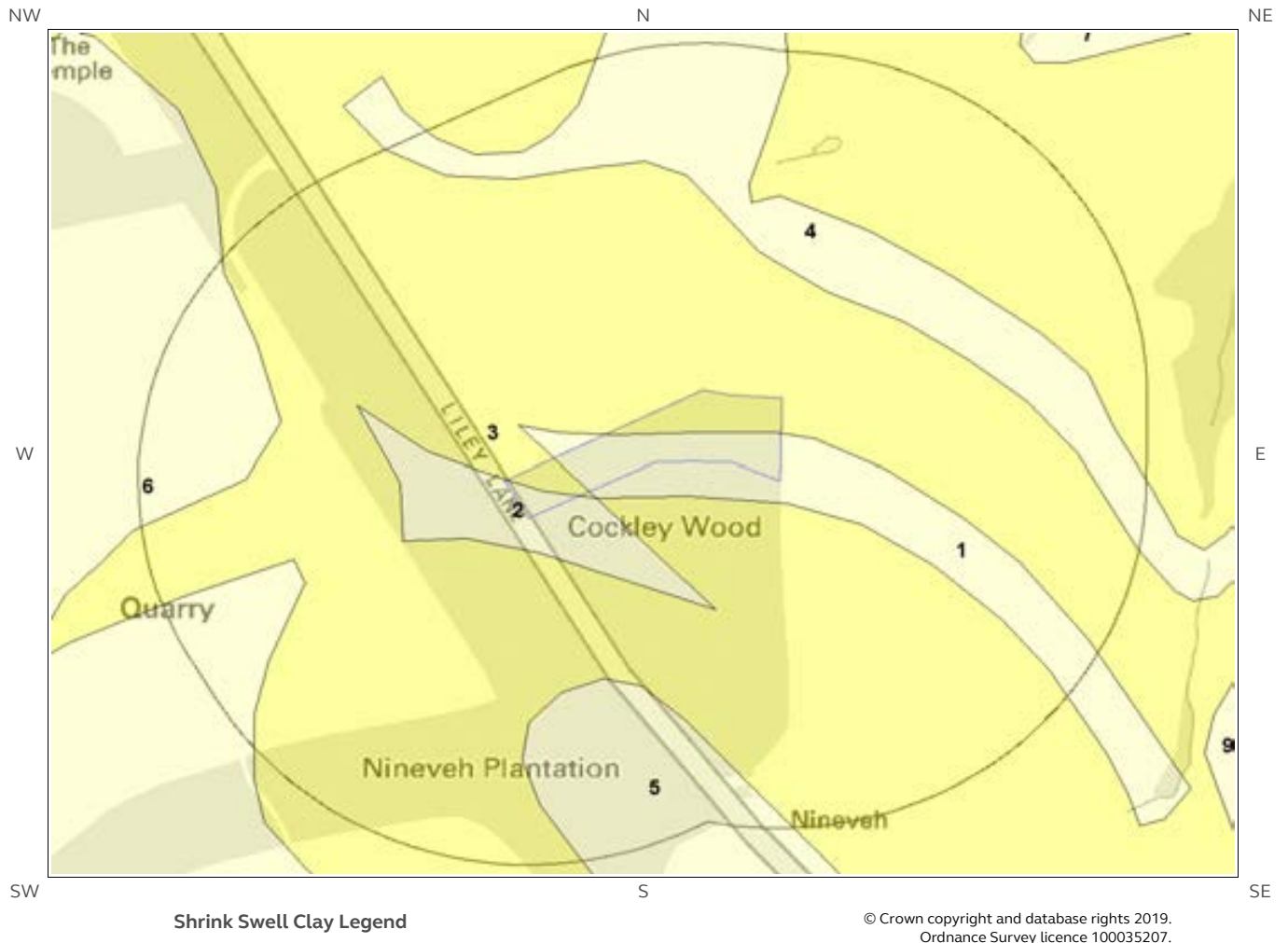
This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

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

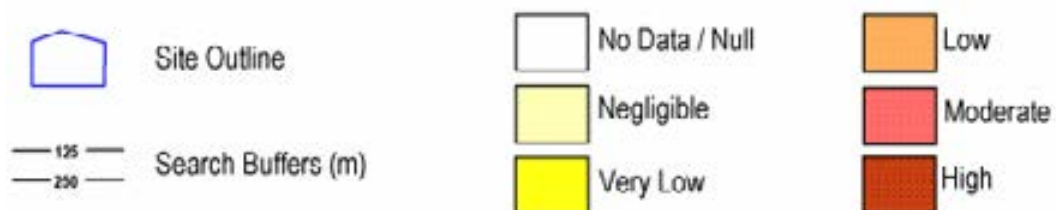
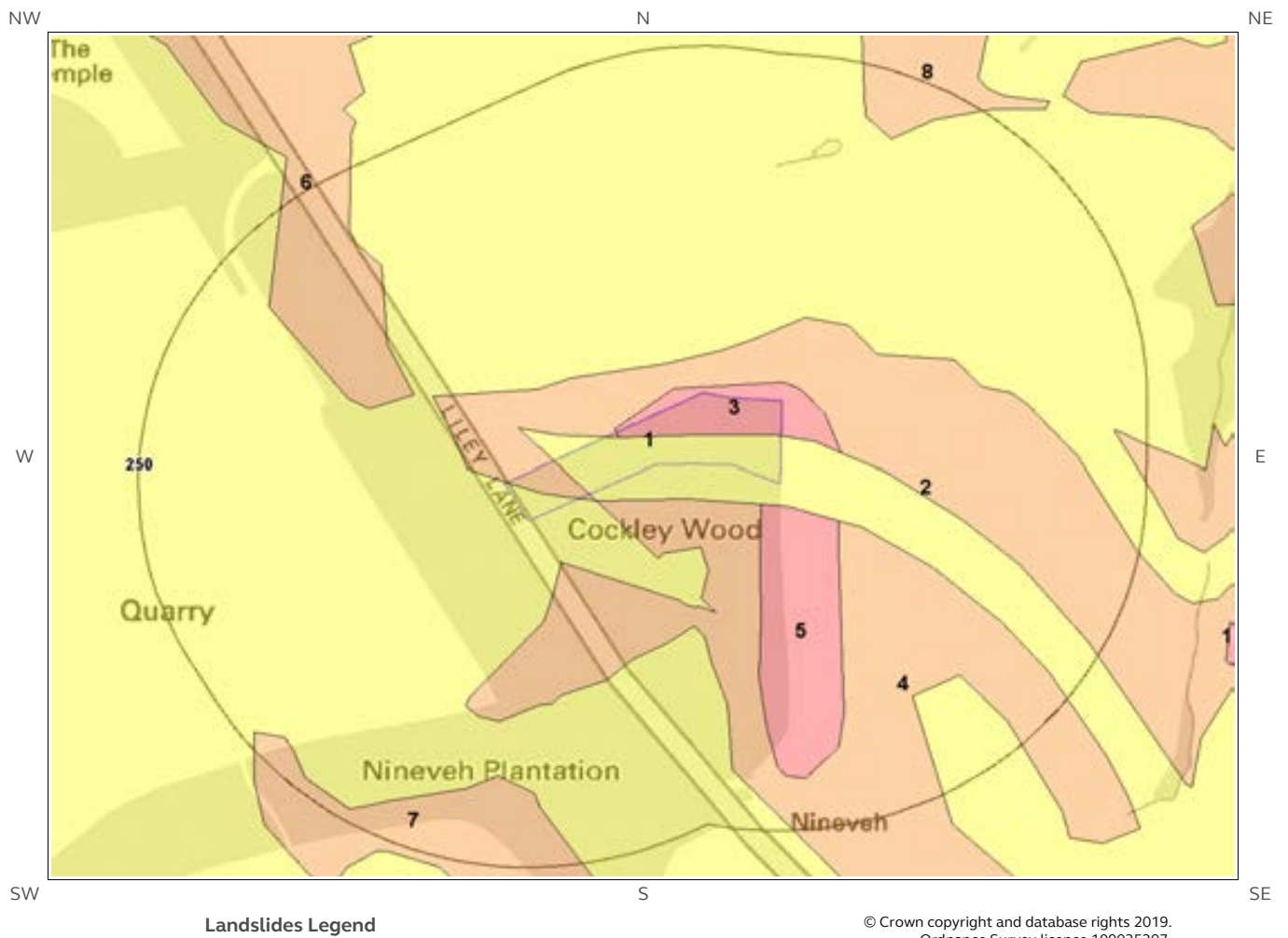
Database searched and no data found.

6 Natural Ground Subsidence

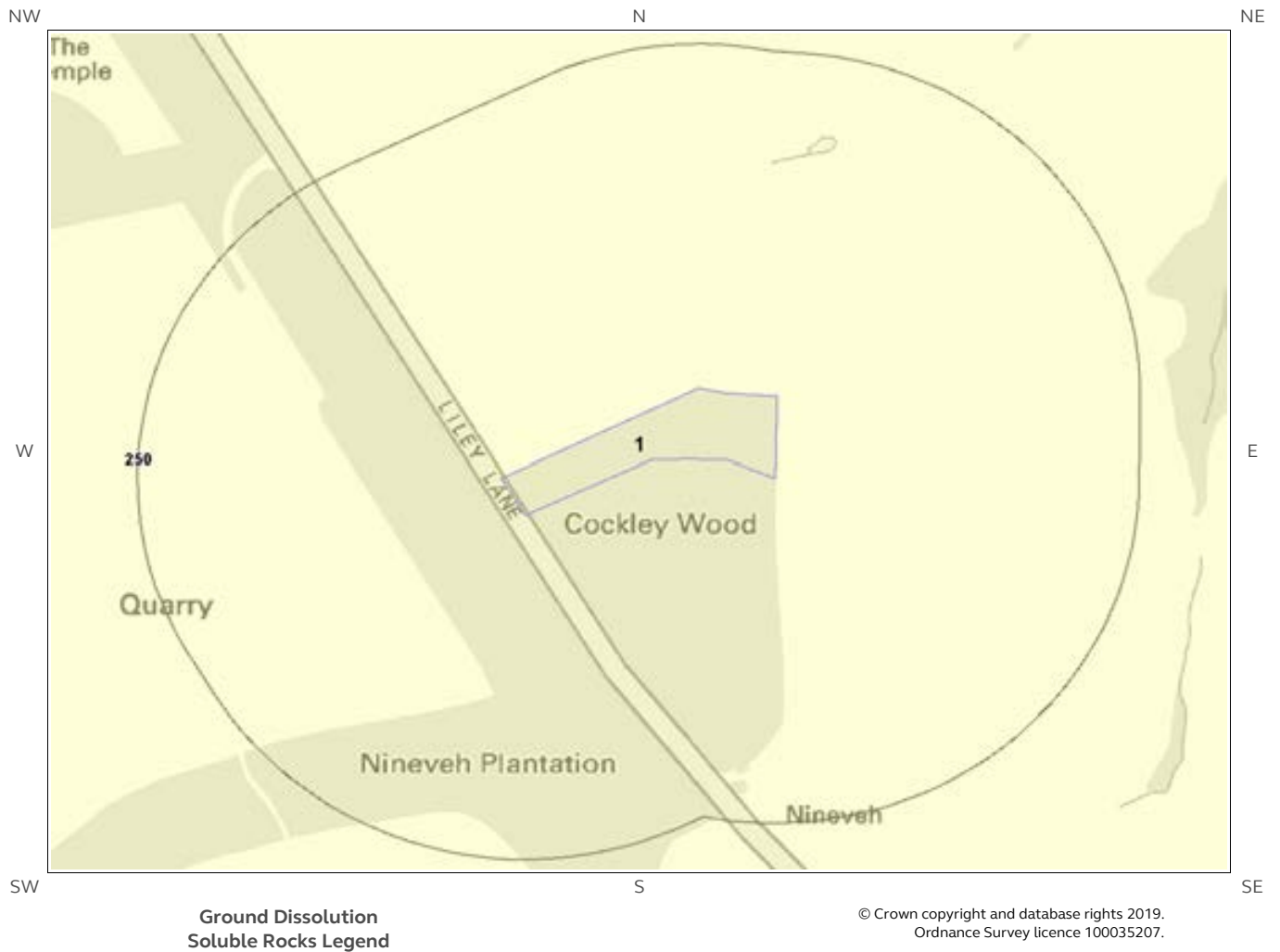
6.1 Shrink-Swell Clay map



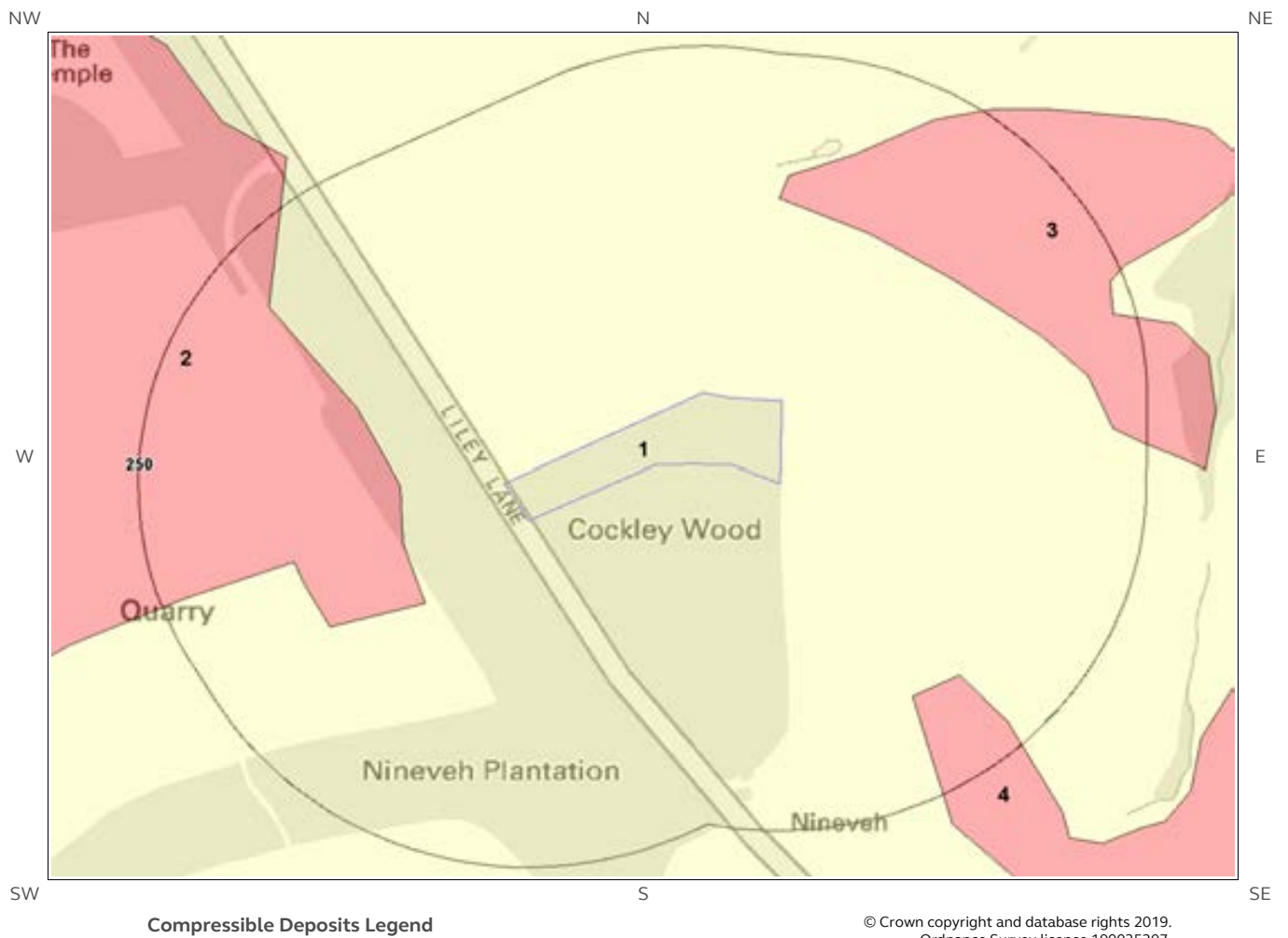
6.2 Landslides map



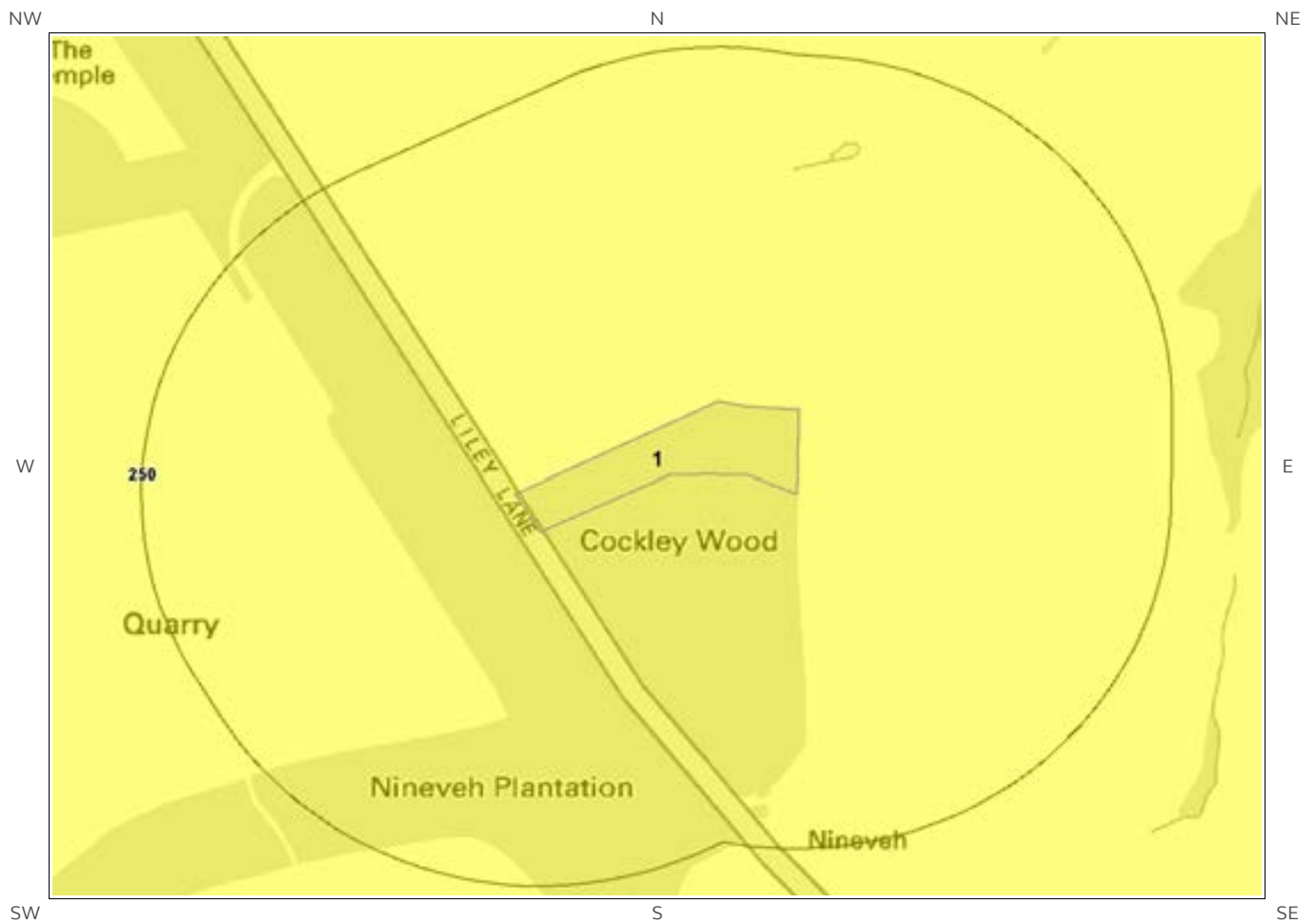
6.3 Ground Dissolution of Soluble Rocks map



6.4 Compressible Deposits map



6.5 Collapsible Deposits map

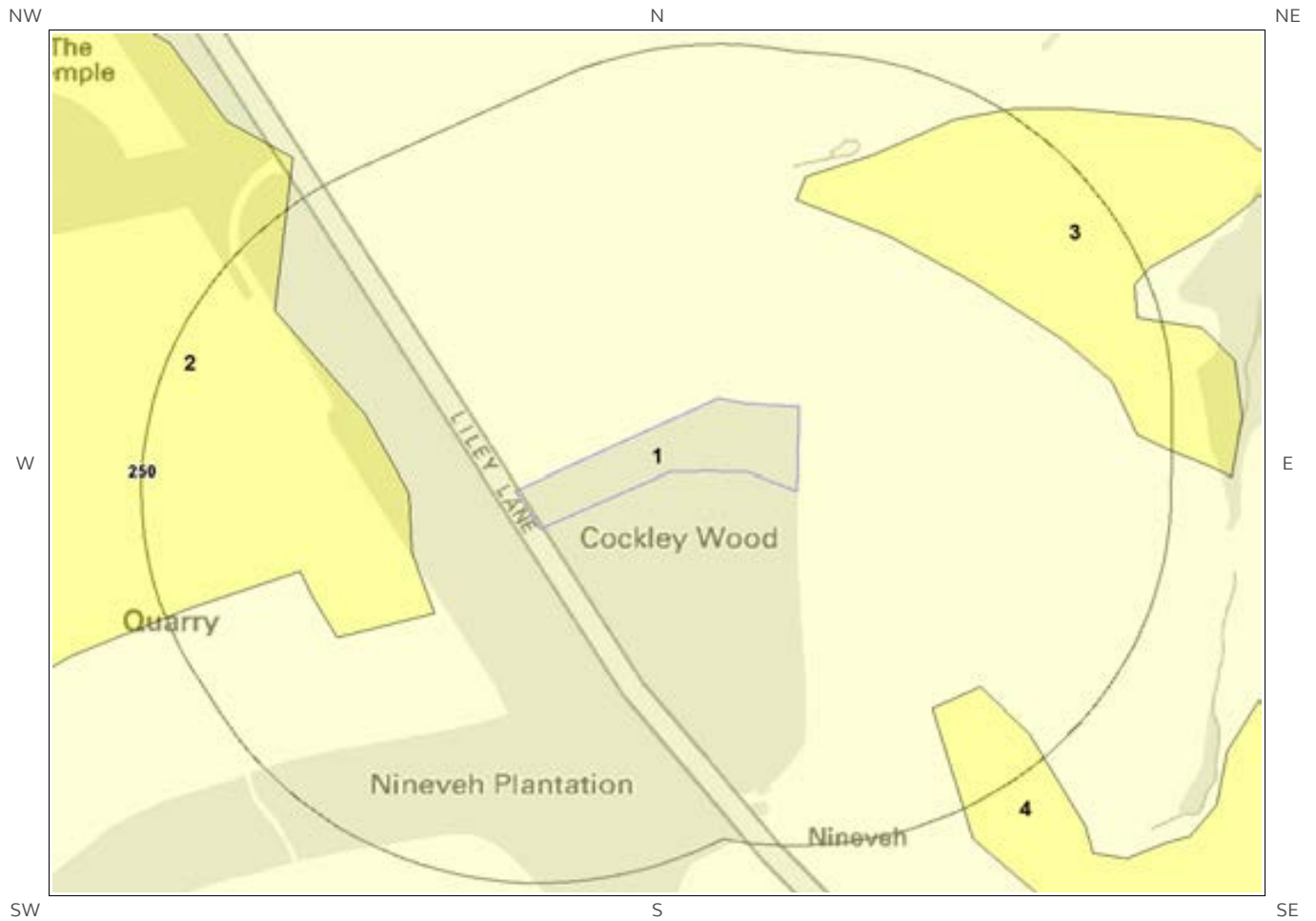


Collapsible Deposits Legend

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6.6 Running Sand map



Running Sand Legend

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6 Natural Ground Subsidence

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

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

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

6.1 Shrink-Swell Clays

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

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	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.
2	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.
3	0.0	On Site	Very Low	Ground conditions predominantly low plasticity. 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 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.

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

ID	Distance (m)	Direction	Hazard Rating	Details
2	0.0	On Site	Low	Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property - no significant increase in insurance risk due to natural slope instability problems.
3	0.0	On Site	Moderate	Significant potential for slope instability with relatively small changes in ground conditions. Avoid large amounts of water entering the ground through pipe leakage or soak-aways. Do not undercut or place large amounts of material on slopes without technical advice. For new build - consider the potential and consequences of ground movement during excavations, or consequence of changes to loading or drainage. For existing property - probable increase in insurance risk is likely due to potential natural slope instability after changes to ground conditions such as a very long, excessively wet winter.
4	6.0	SE	Low	Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property - no significant increase in insurance risk due to natural slope instability problems.
5	16.0	S	Moderate	Significant potential for slope instability with relatively small changes in ground conditions. Avoid large amounts of water entering the ground through pipe leakage or soak-aways. Do not undercut or place large amounts of material on slopes without technical advice. For new build - consider the potential and consequences of ground movement during excavations, or consequence of changes to loading or drainage. For existing property - probable increase in insurance risk is likely due to potential natural slope instability after changes to ground conditions such as a very long, excessively wet winter.

6.3 Ground Dissolution of Soluble Rocks

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

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

6.4 Compressible Deposits

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

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

6.5 Collapsible Deposits

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

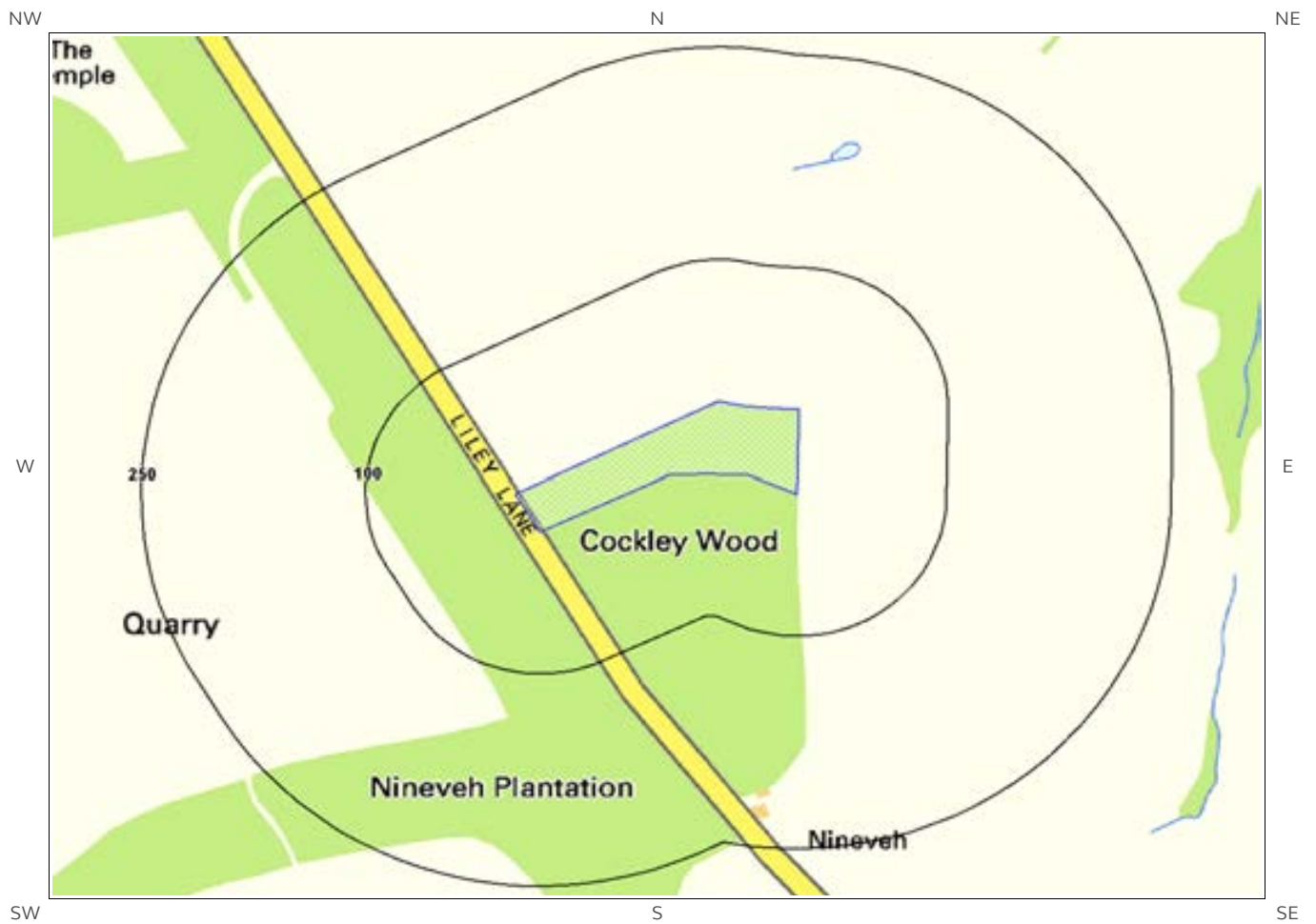
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible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

6.6 Running Sands

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

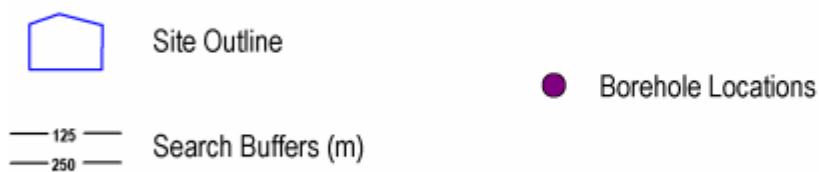
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due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

7 Borehole Records map



Borehole Records Legend

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7 Borehole Records

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

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

0

Database searched and no data found.

8 Estimated Background Soil Chemistry

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

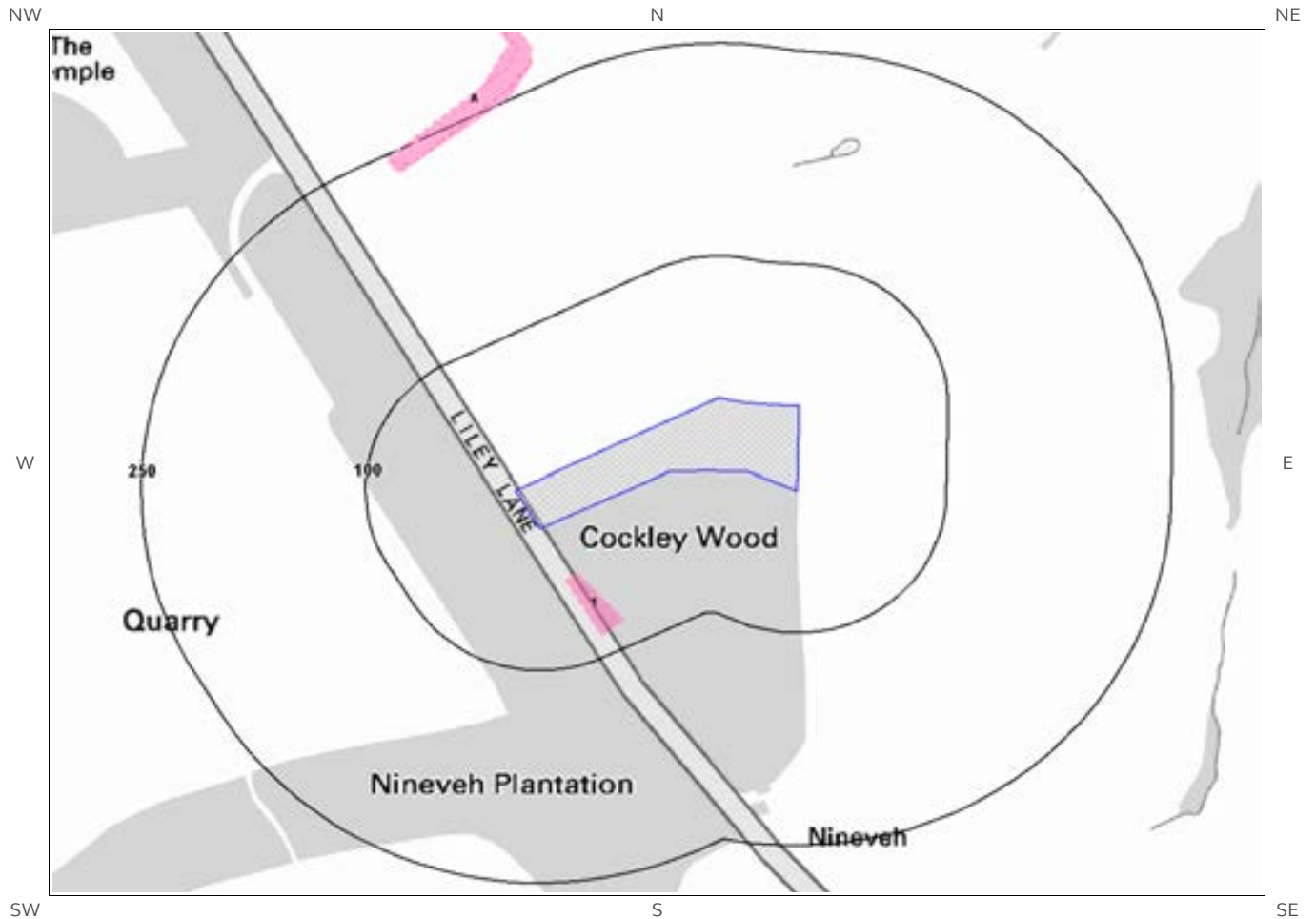
5

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

Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	<15 mg/kg	<100 mg/kg
0.0	On Site	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	<15 mg/kg	<100 mg/kg
0.0	On Site	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
6.0	SE	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg

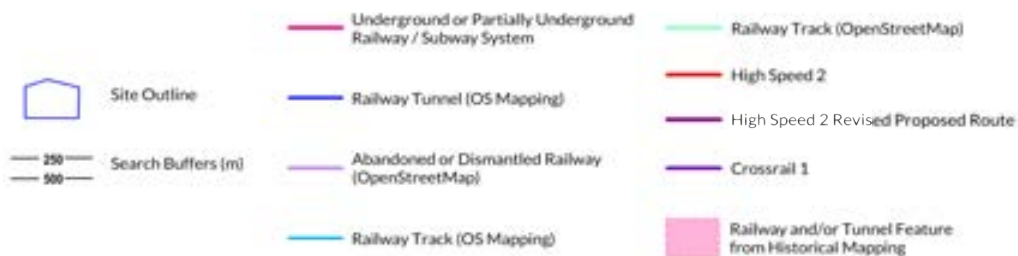
*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.

9 Railways and Tunnels map



Railways and Tunnels Legend

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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? Yes

ID	Distance (m)	Direction	NGR	Details	Date
1	39	SE	421247 416567	Railway Sidings	1938
2A	235	NW	421181 416928	Railway Sidings	1948
3A	238	NW	421184 416934	Railway Sidings	1938

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

9.3 Historical Railways

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

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

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

Database searched and no data found.

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

9.4 Active Railways

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

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

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

Database searched and no data found.

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

9.5 Railway Projects

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

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

Is the study site within 500m of the route of the Crossrail 1 rail project? No

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

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

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

Contact Details

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



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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
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LE12 6HX



The Coal Authority

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



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Website: <http://www.peterbrett.com/home>



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Standard Terms and Conditions

Groundsure's Terms and Conditions can be viewed online at this link:
<https://www.groundsure.com/terms-and-conditions-feb11-2019>



Appendix 2

Historical Maps

Site Details:

NINEVEH FARM, LILEY LANE,
GRANGE MOOR,
HUDDERSFIELD, WF14 8EG

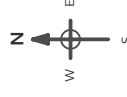
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Report Ref: GS-6312408
Grid Ref: 421289, 416666

Map Name: County Series

Map date: 1893

Scale: 1:2,500

Printed at: 1:2.500



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



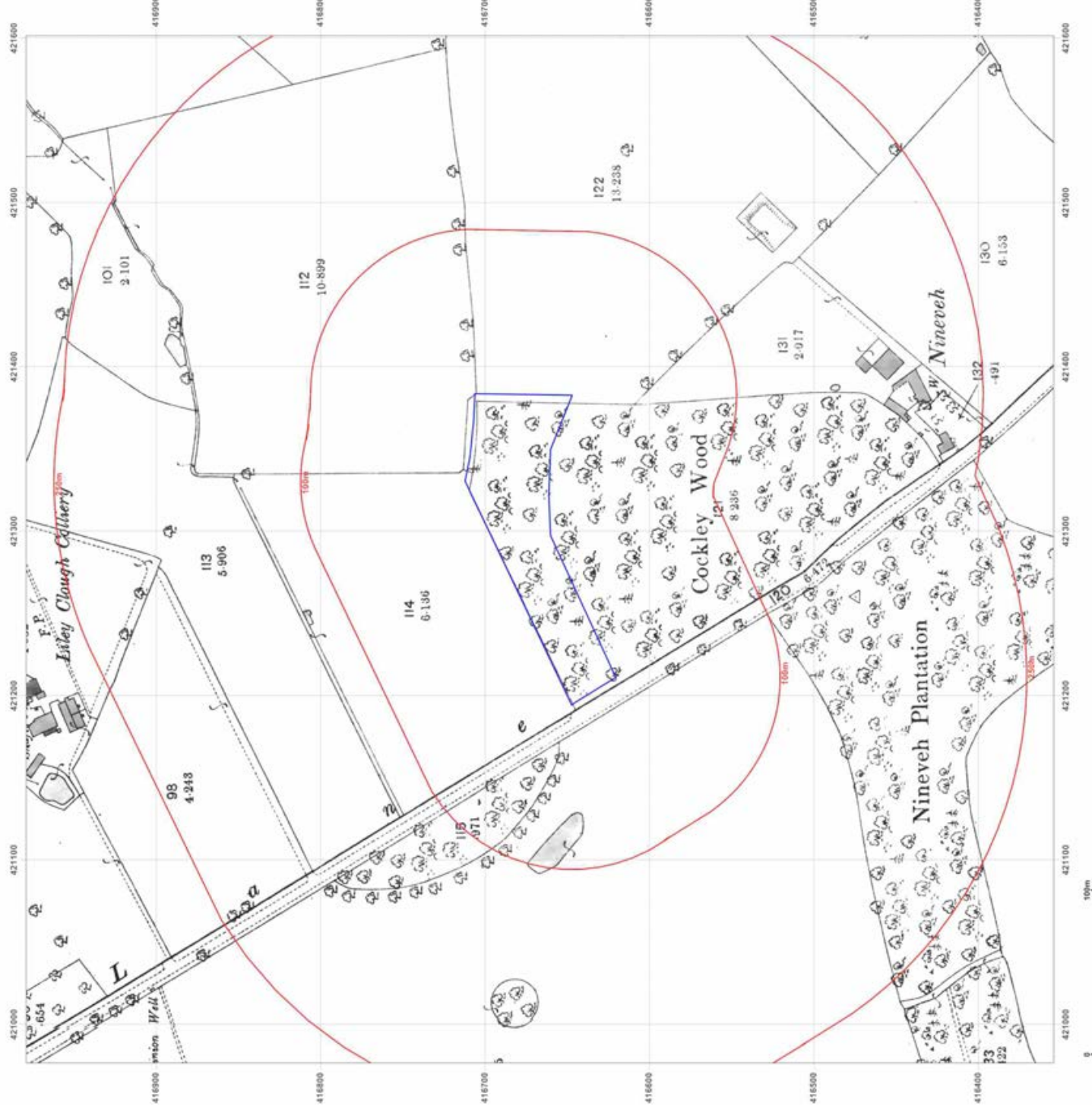
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Site Details:

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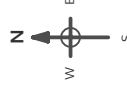
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Report Ref: GS-6312408
Grid Ref: 421289, 416666

Map Name: County Series

Map date: 1907

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A



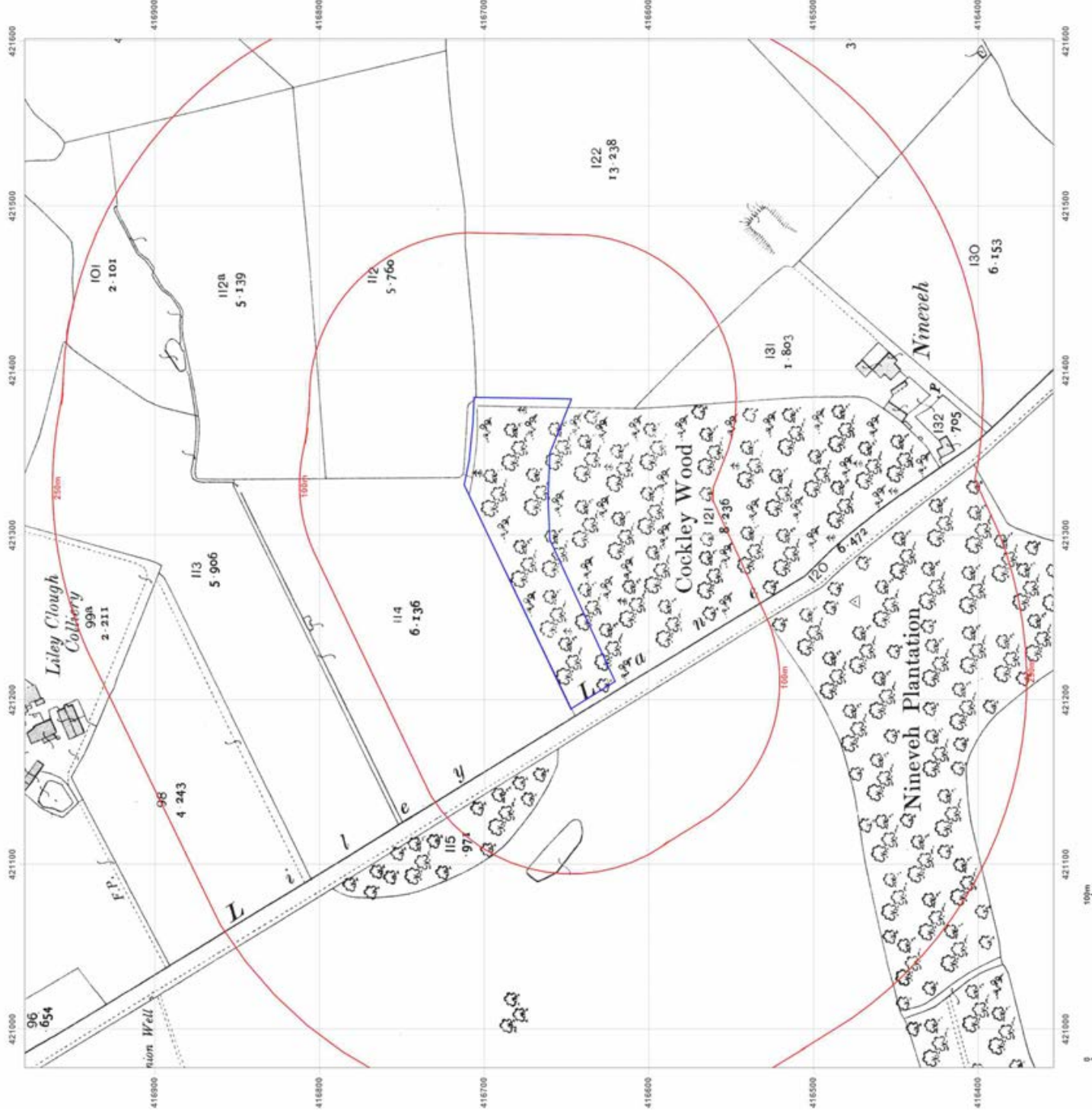
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Site Details:

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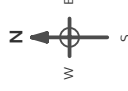
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Report Ref: GS-6312408
Grid Ref: 421289, 416666

Map Name: County Series

Map date: 1919

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1919
Revised 1919
Edition N/A
Copyright N/A
Levelled N/A



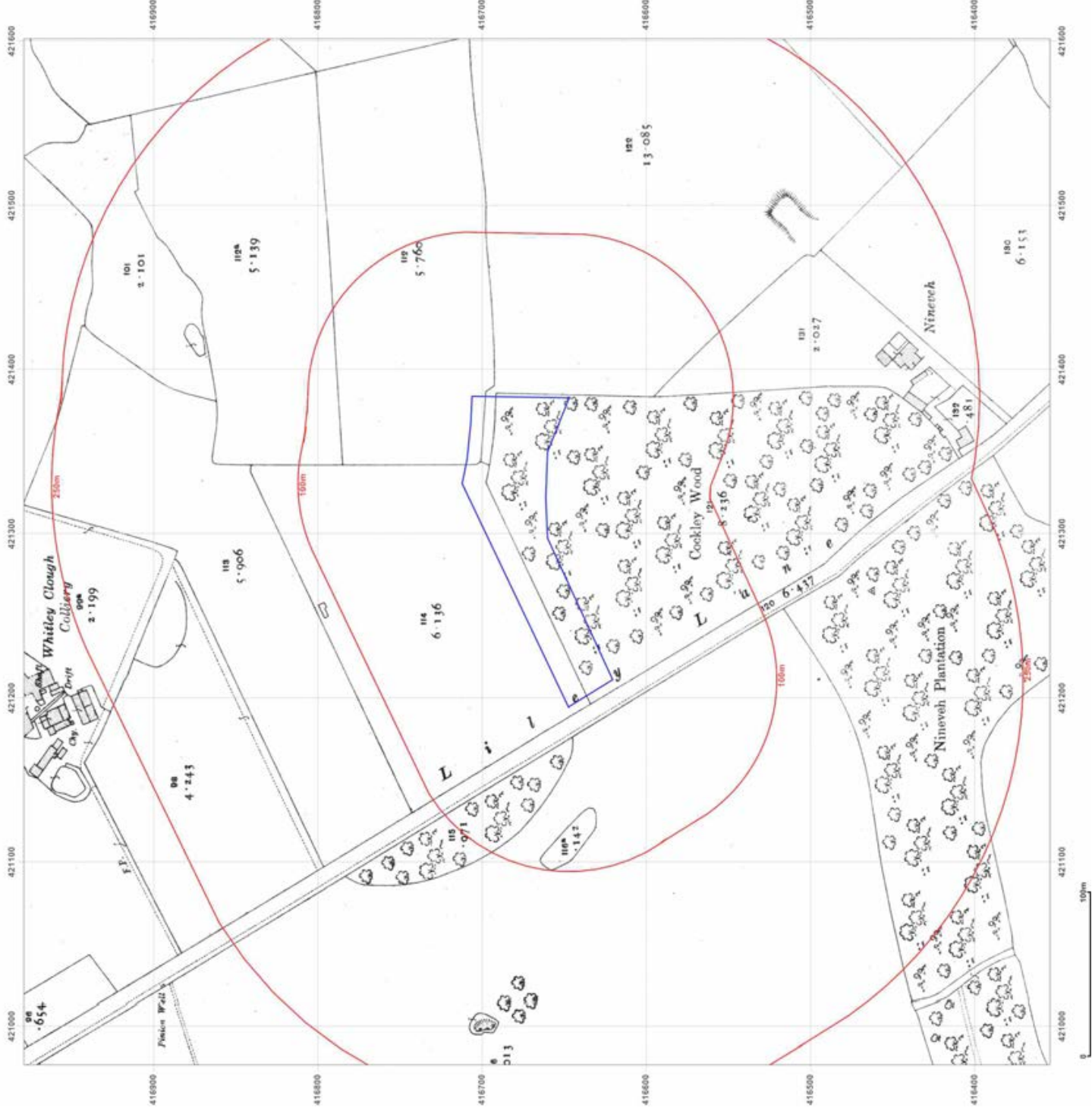
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Site Details:

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HUDDERSFIELD, WF14 8EG

Client Ref: C66_19_E_127_PO-0339
Report Ref: GS-6312408
Grid Ref: 421289, 416666

Map Name: County Series

Map date: 1932

Scale: 1:2,500

Printed at: 1:2,500



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



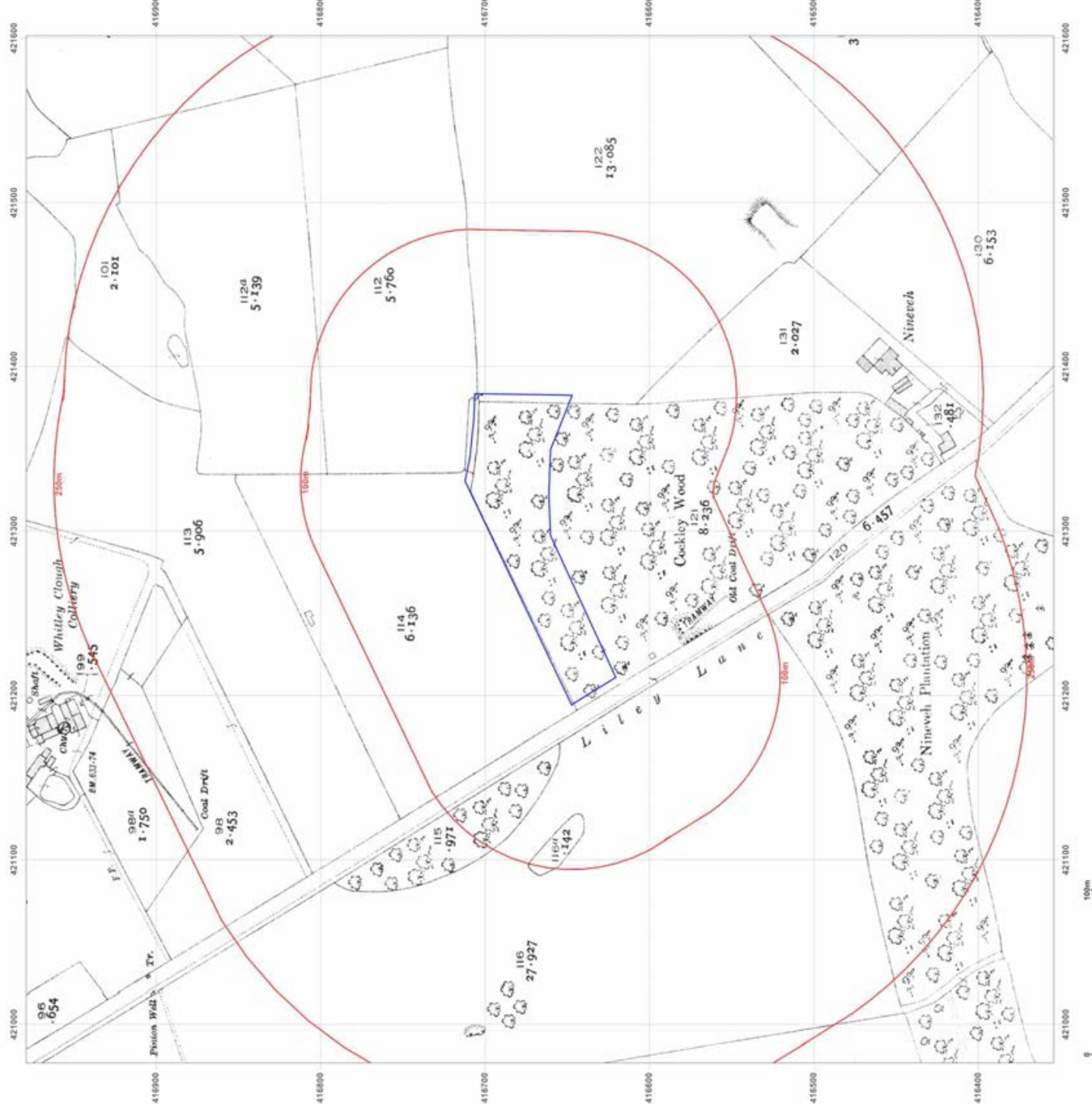
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Site Details:

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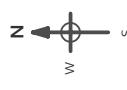
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Report Ref: GS-6312408
Grid Ref: 421289, 416666

Map Name: National Grid

Map date: 1960

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1980
Revised 1980
Edition N/A
Copyright 1981
Levelled 1959



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Production date: 16 September 2019

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Site Details:

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HUDDERSFIELD, WF14 8EG

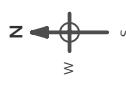
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Report Ref: GS-6312408
Grid Ref: 421289, 416666

Map Name: National Grid

Map date: 1960

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1980
Revised 1980
Cullion N/A
Copyright 1981
Levelled 1959



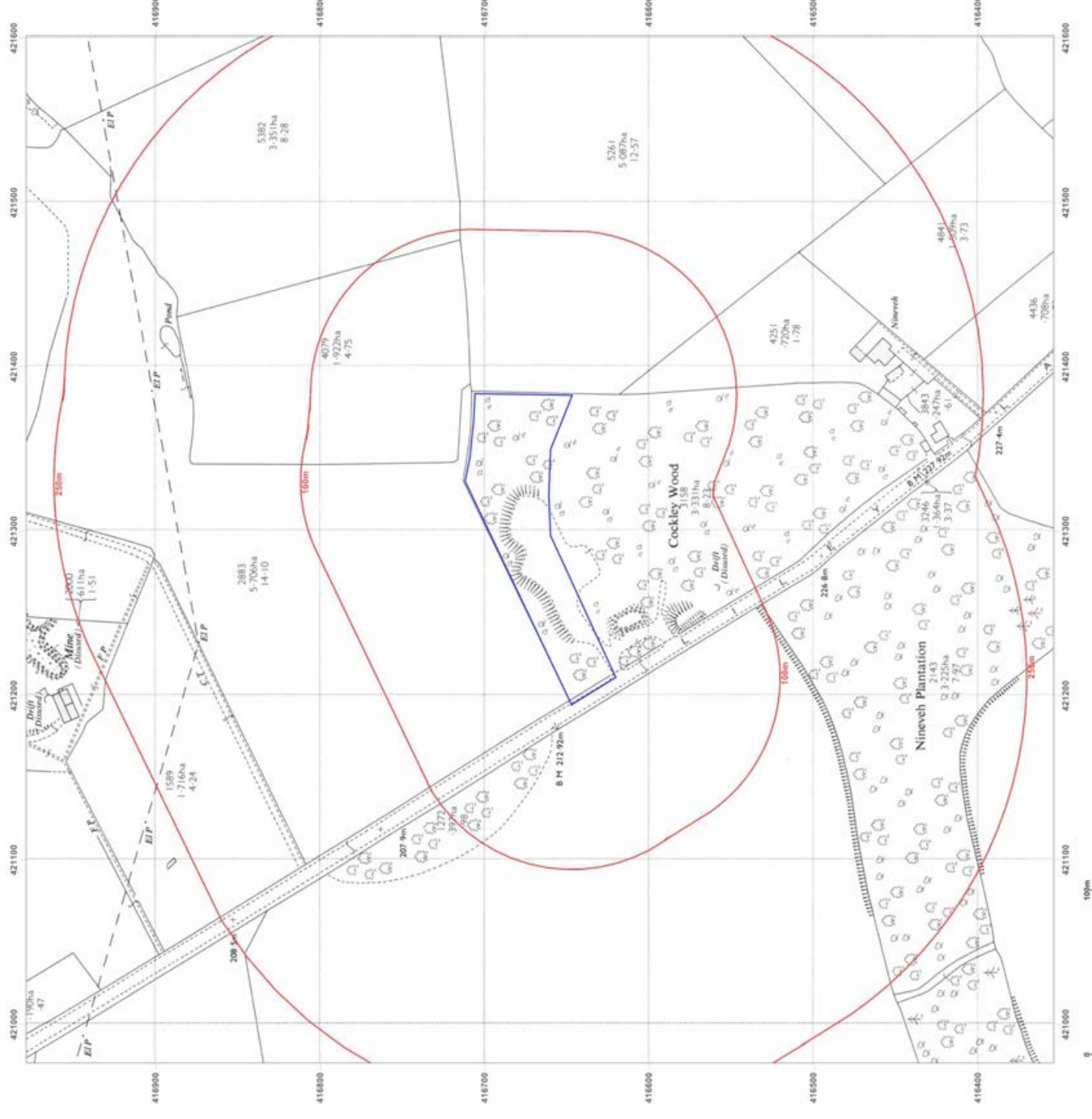
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Site Details:

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HUDDERSFIELD, WF14 8EG

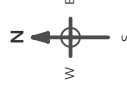
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Report Ref: GS-6312408
Grid Ref: 421289, 416666

Map Name: National Grid

Map date: 1961

Scale: 1:2,500

Printed at: 1:2,500



Surveyed N/A
Revised N/A
Editor N/A
Copyright N/A
Levelled N/A



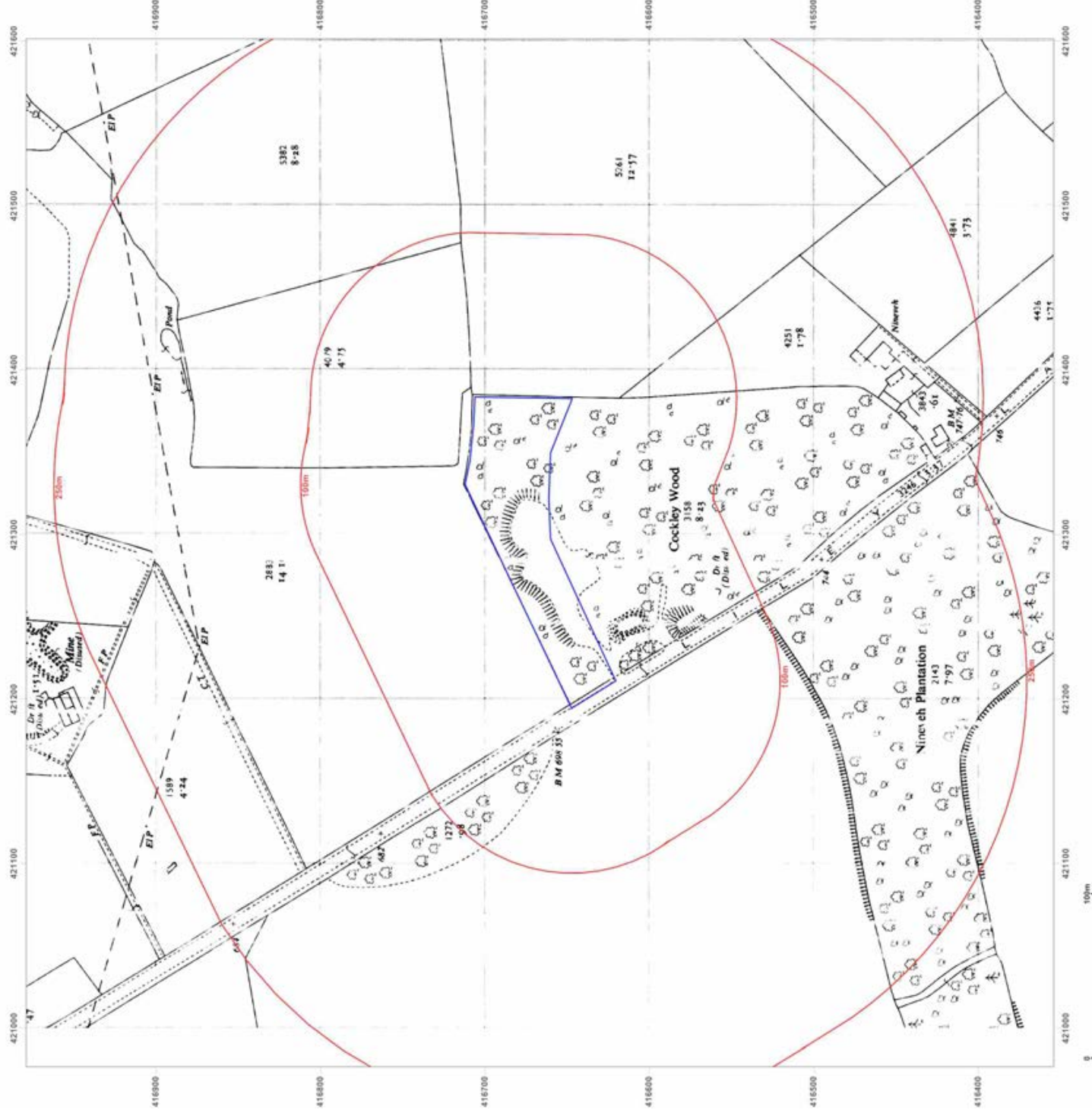
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Site Details:

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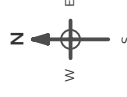
Client Ref: C66_19_E_127_PO-0339
Report Ref: GS-6312408
Grid Ref: 421289, 416666

Map Name: National Grid

Map date: 1961

Scale: 1:2,500

Printed at: 1:2.500



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



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Site Details:

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HUDDERSFIELD, WF14 8EG

Client Ref: C66_19_E_127_PO-0339
Report Ref: GS-6312408
Grid Ref: 421289, 416666

Map Name: National Grid

Map date: 1990-1993

Scale: 1:2,500

Printed at: 1:2,500



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

Surveyed 1983
Revised 1990
Edition N/A
Copyright 1990
Levelled 1993



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Site Details:

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HUDDERSFIELD, WF14 8EG

Client Ref: C66_19_E_127_PO-0339
Report Ref: GS-6312408
Grid Ref: 421289, 416666

Map Name: National Grid

Map date: 1989-1993

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1883
Revised 1883
Edition N/A
Copyright 1983
Levelled 1883

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



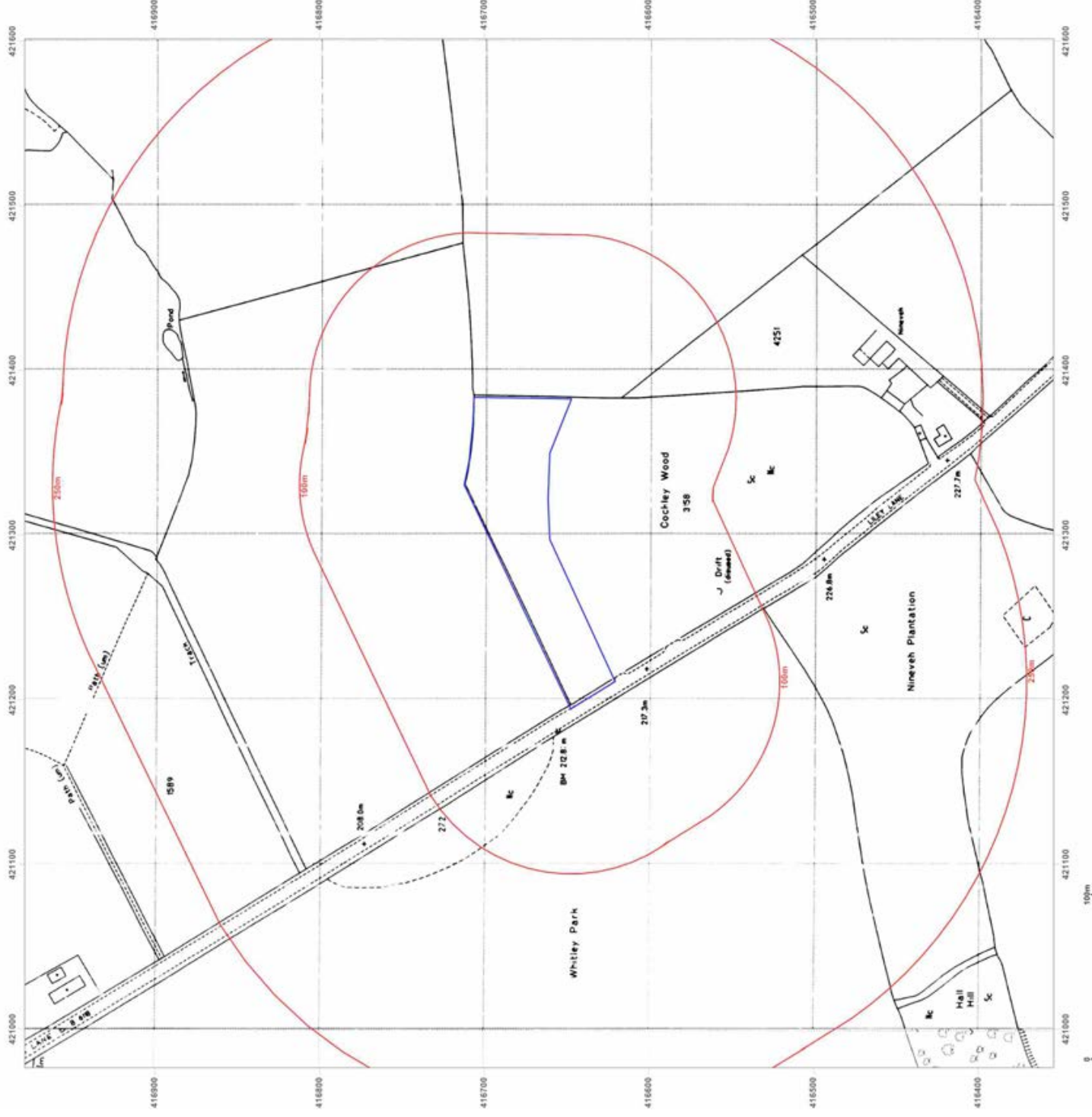
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GRANGE MOOR,
HUDDERSFIELD, WF14 8EG

Client Ref: C66_19_E_127_PO-0339
Report Ref: GS-6312408
Grid Ref: 421289, 416666

Map Name: LandLine

Map date: 2003

Scale: 1:1,250

Printed at: 1:1,250



2003



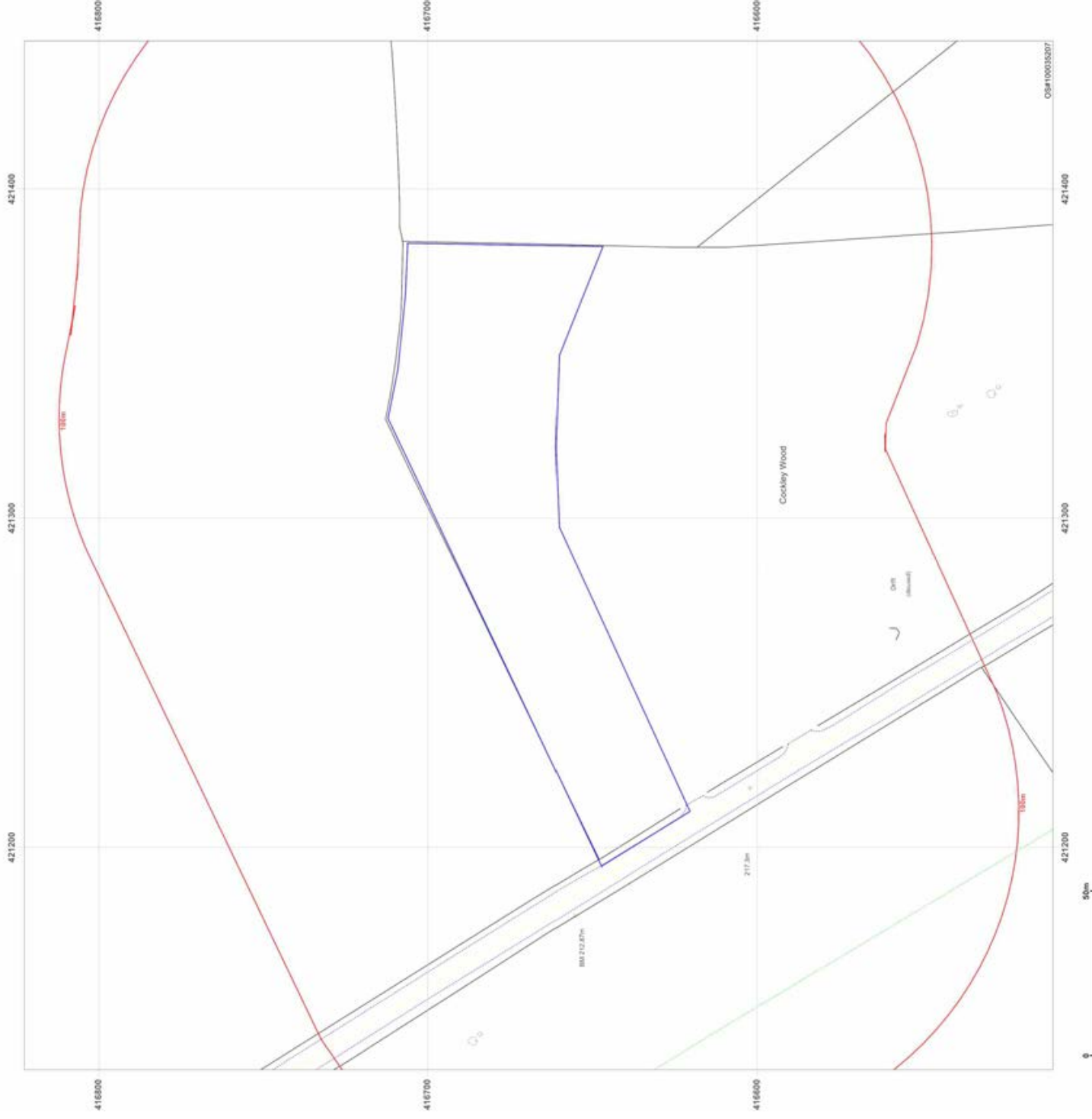
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Site Details:

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HUDDERSFIELD, WF14 8EG

Client Ref: C66_19_E_127_PO-0339
Report Ref: GS-6312408
Grid Ref: 421289, 416666

Map Name: County Series

Map date: 1854-1855

Scale: 1:10,560

Printed at: 1:10,560



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

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



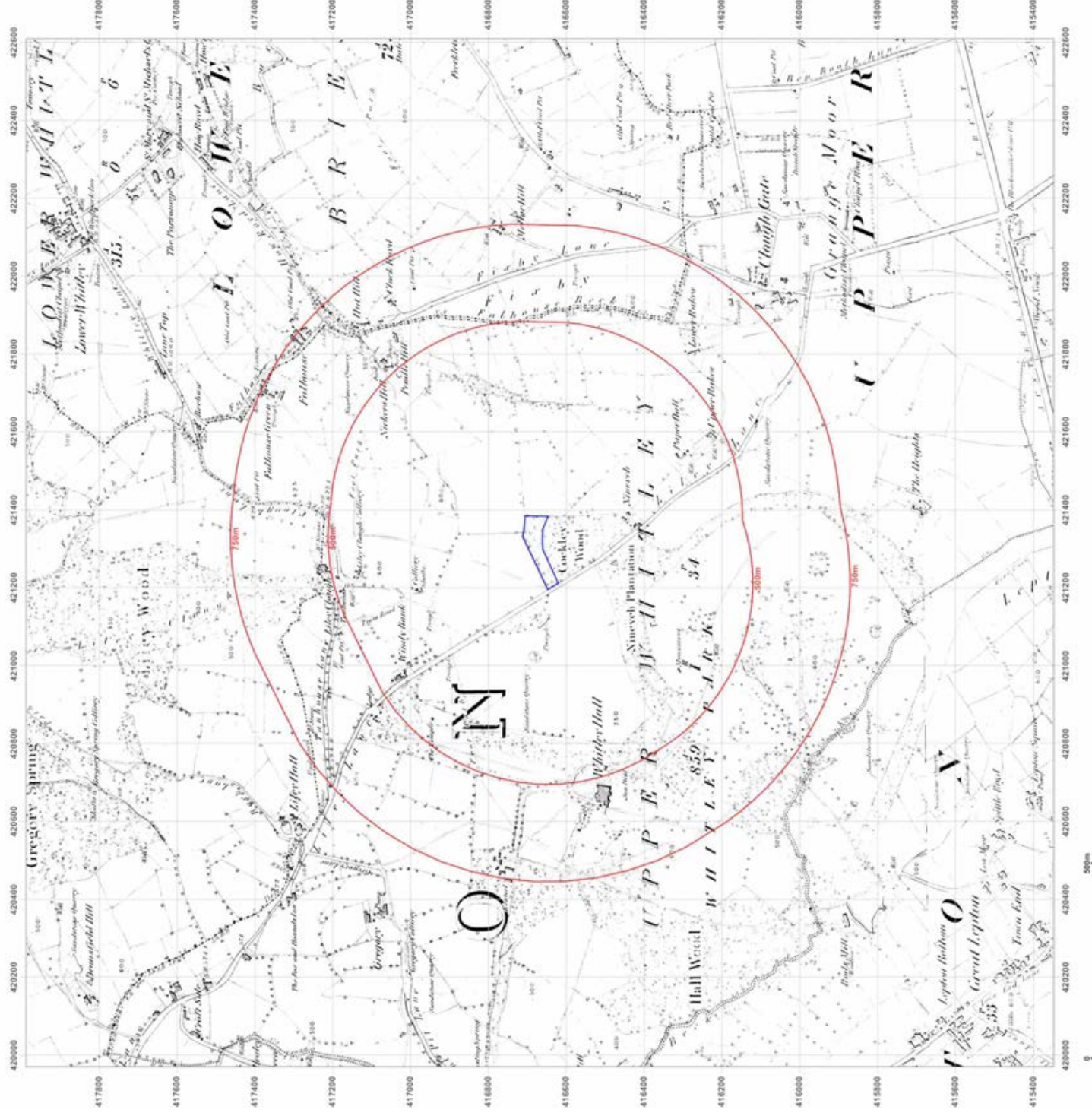
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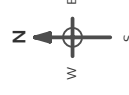
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Report Ref: GS-6312408
Grid Ref: 421289, 416666

Map Name: County Series

Map date: 1888-1892

Scale: 1:10,560

Printed at: 1:10,560



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

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



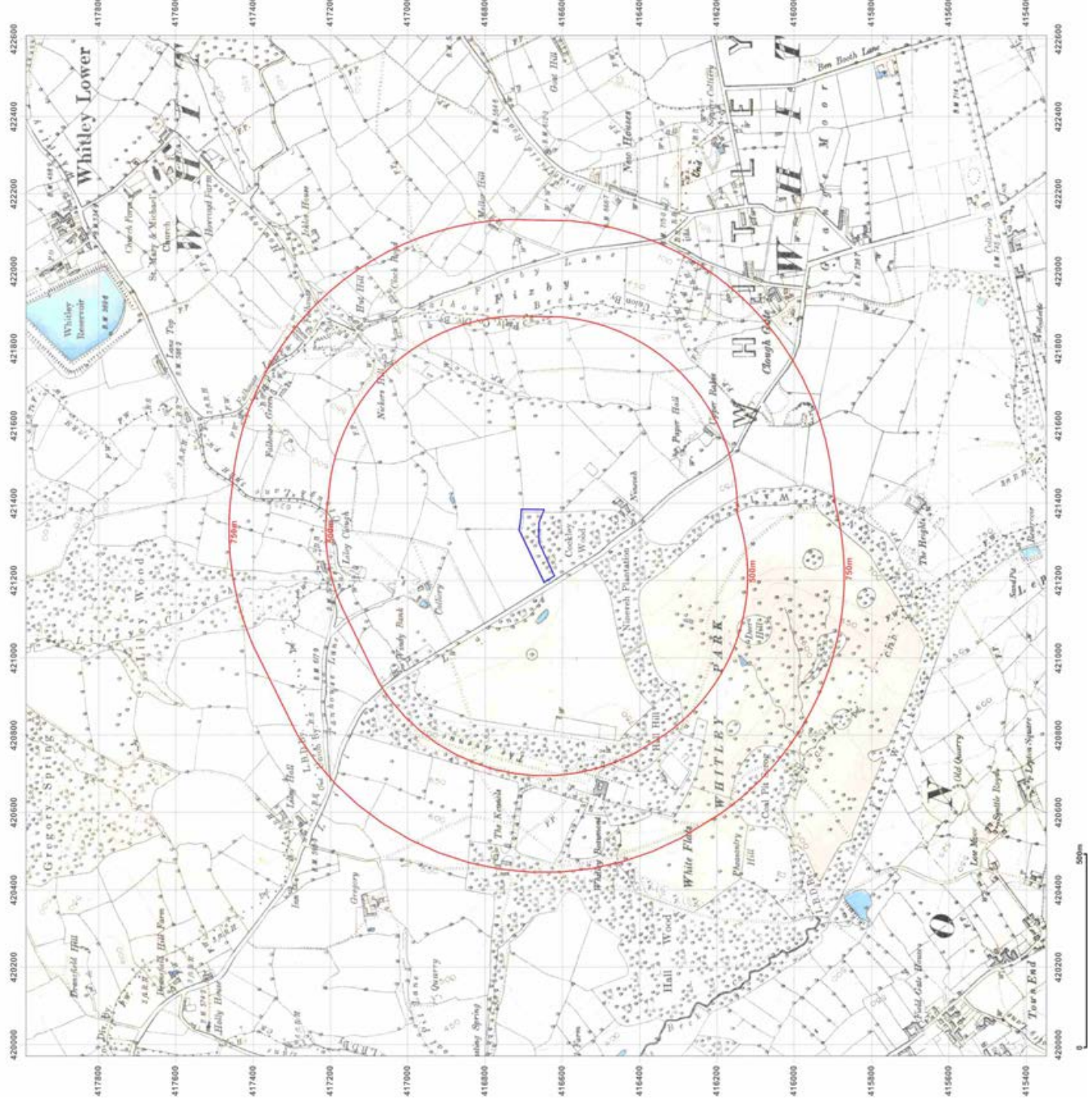
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Client Ref: C66_19_E_127_PO-0339
Report Ref: GS-6312408
Grid Ref: 421289, 416666

Map Name: County Series

Map date: 1904

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1886
Revised 1904
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1892
Revised 1904
Edition N/A
Copyright N/A
Levelled N/A



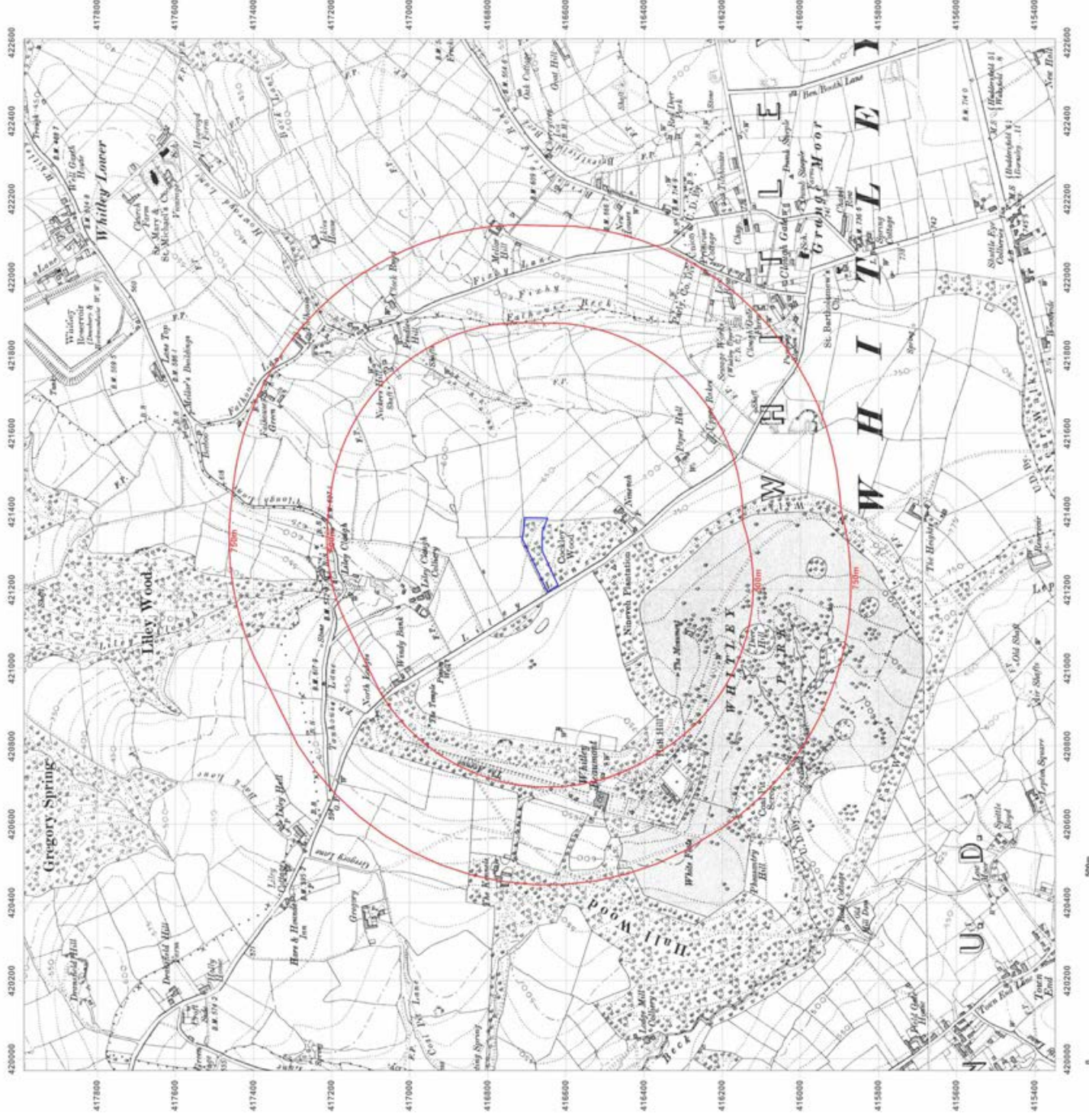
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Client Ref: C66_19_E_127_PO-0339
Report Ref: GS-6312408
Grid Ref: 421289, 416666

Map Name: County Series

Map date: 1930

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1951
Revised 1930
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1951
Revised 1930
Edition N/A
Copyright N/A
Levelled N/A



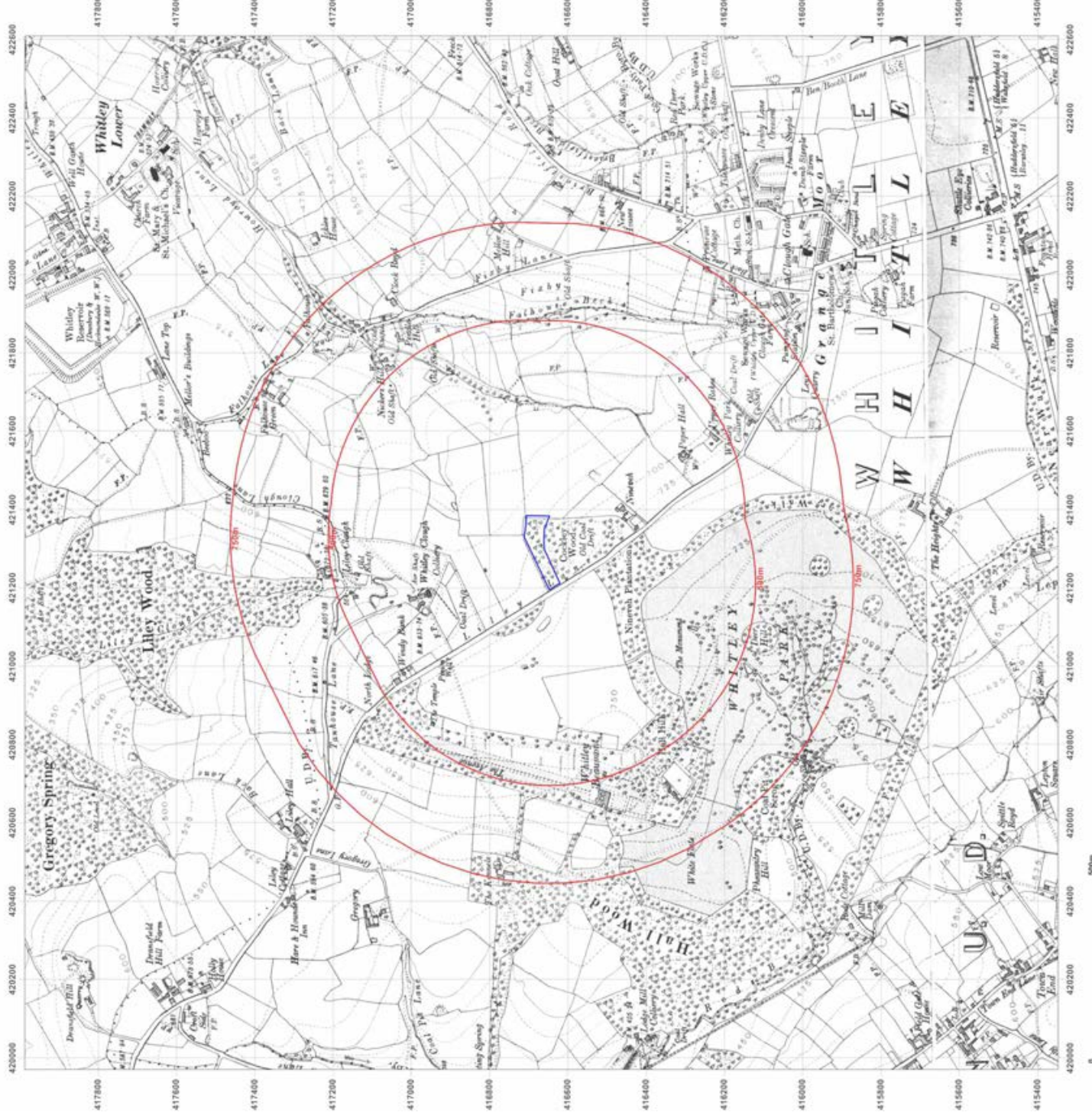
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Client Ref: C66_19_E_127_PO-0339
Report Ref: GS-6312408
Grid Ref: 421289, 416666

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



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

Surveyed 1851
Revised 1838
Edition N/A
Copyright N/A
Levelled N/A



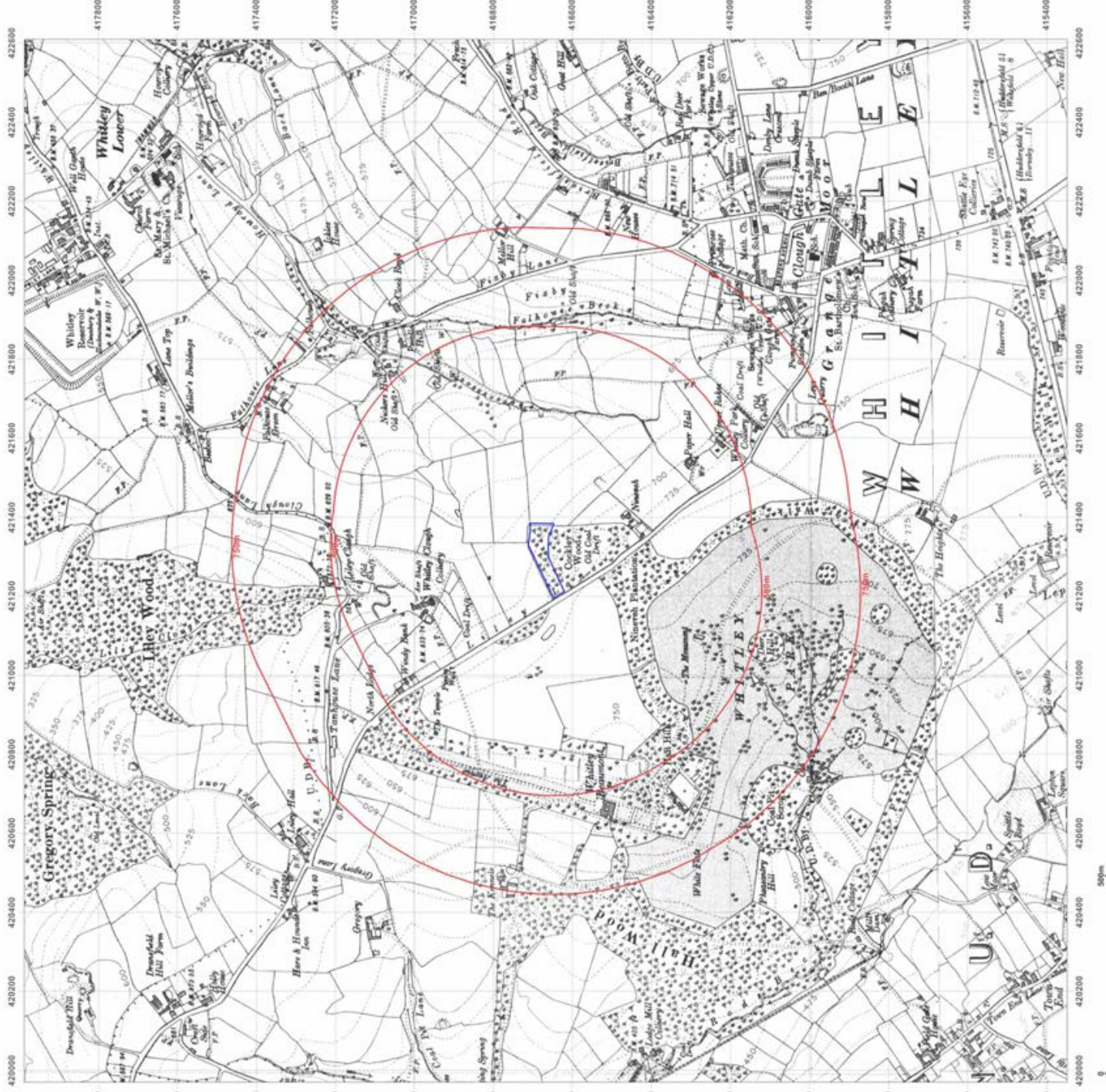
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GRANGE MOOR,
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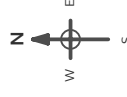
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Report Ref: GS-6312408
Grid Ref: 421289, 416666

Map Name: County Series

Map date: 1948

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1850
Revised 1948
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1851
Revised 1948
Edition 1848
Copyright N/A
Levelled N/A



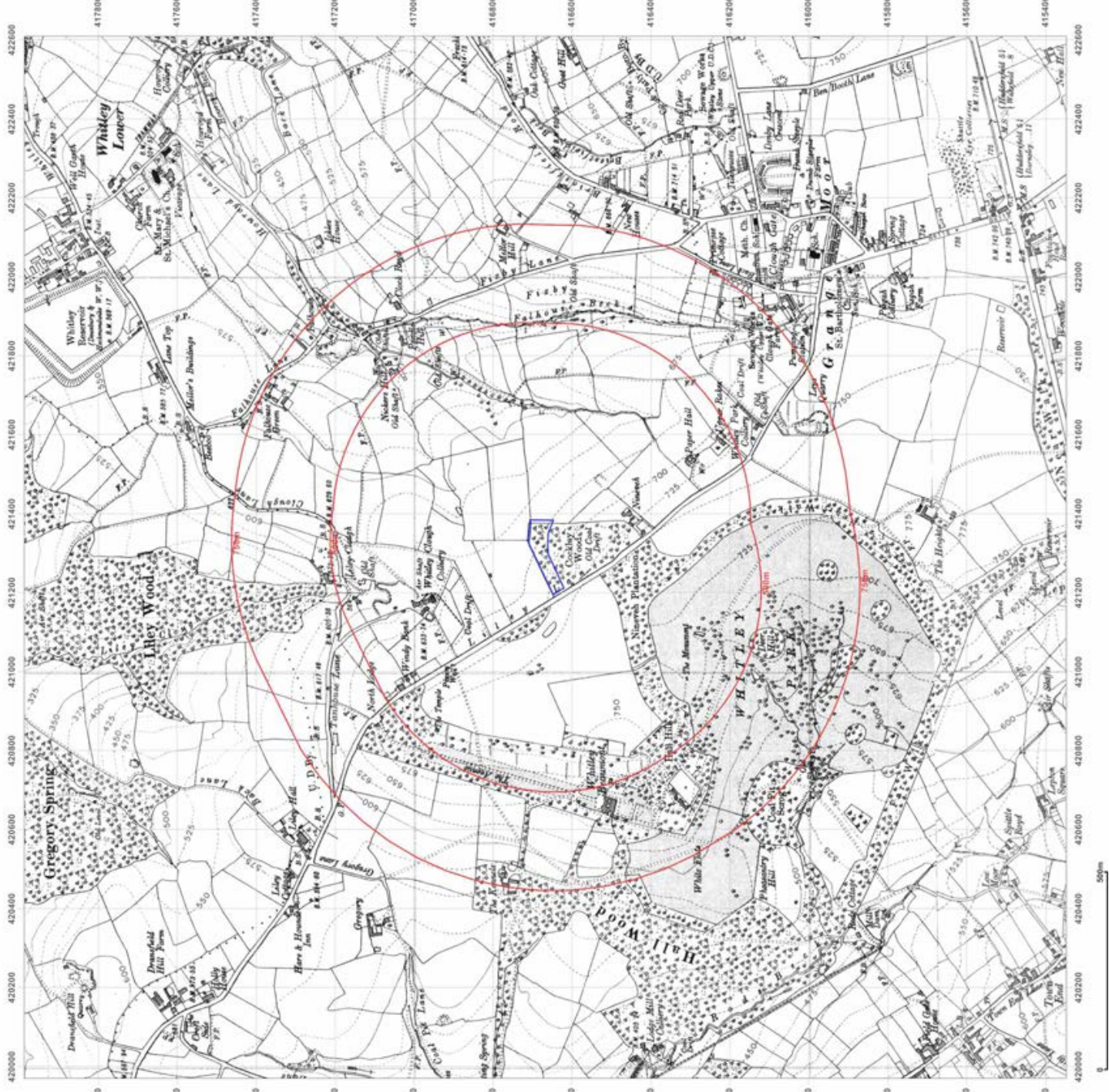
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Site Details:

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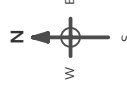
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Report Ref: GS-6312408
Grid Ref: 421289, 416666

Map Name: County Series

Map date: 1948

Scale: 1:10,560

Printed at: 1:10,560



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



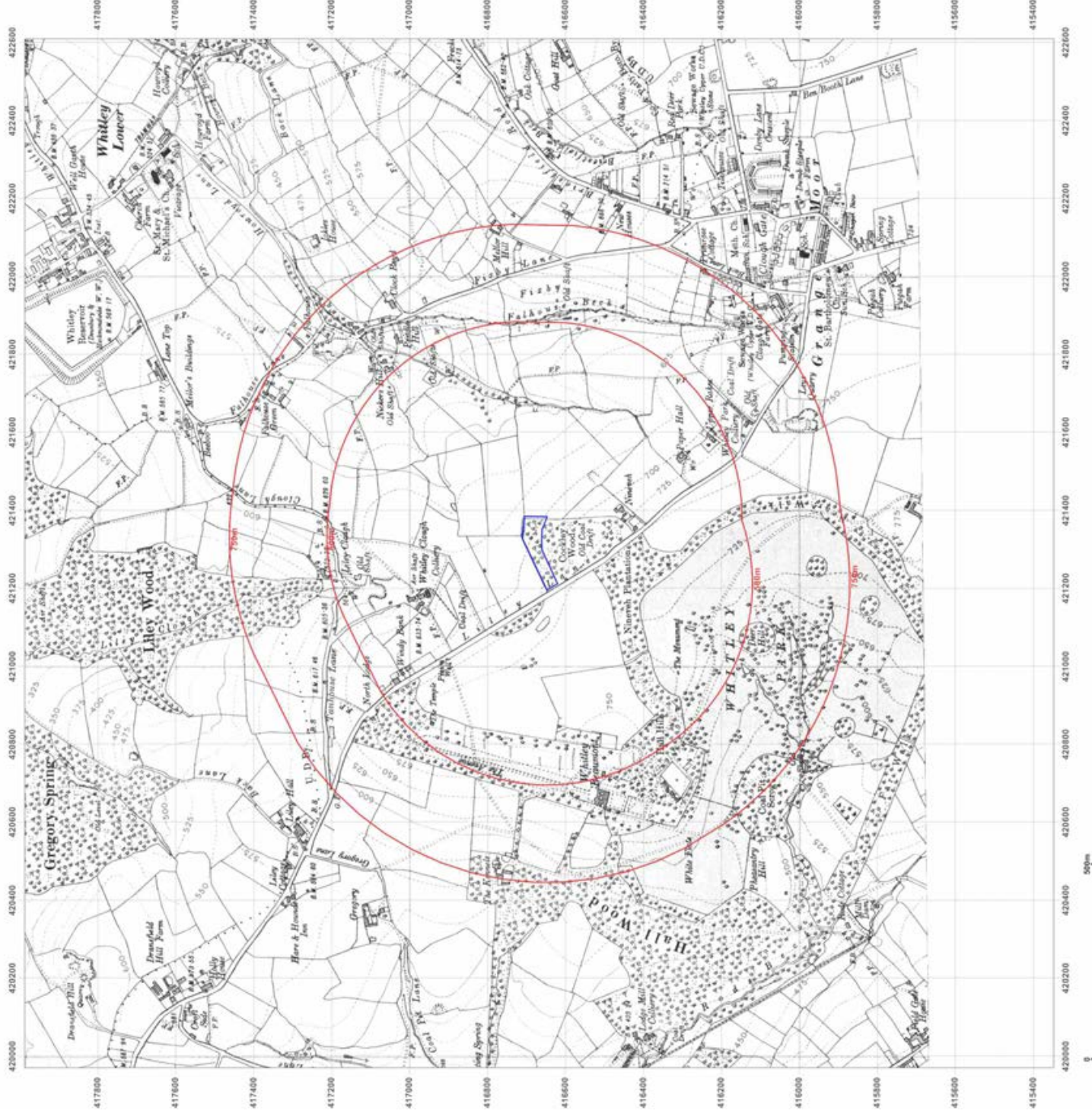
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Site Details:

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Client Ref: C66_19_E_127_PO-0339
Report Ref: GS-6312408
Grid Ref: 421289, 416666

Map Name: Provisional

Map date: 1951-1956

Scale: 1:10,560

Printed at: 1:10,560



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

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



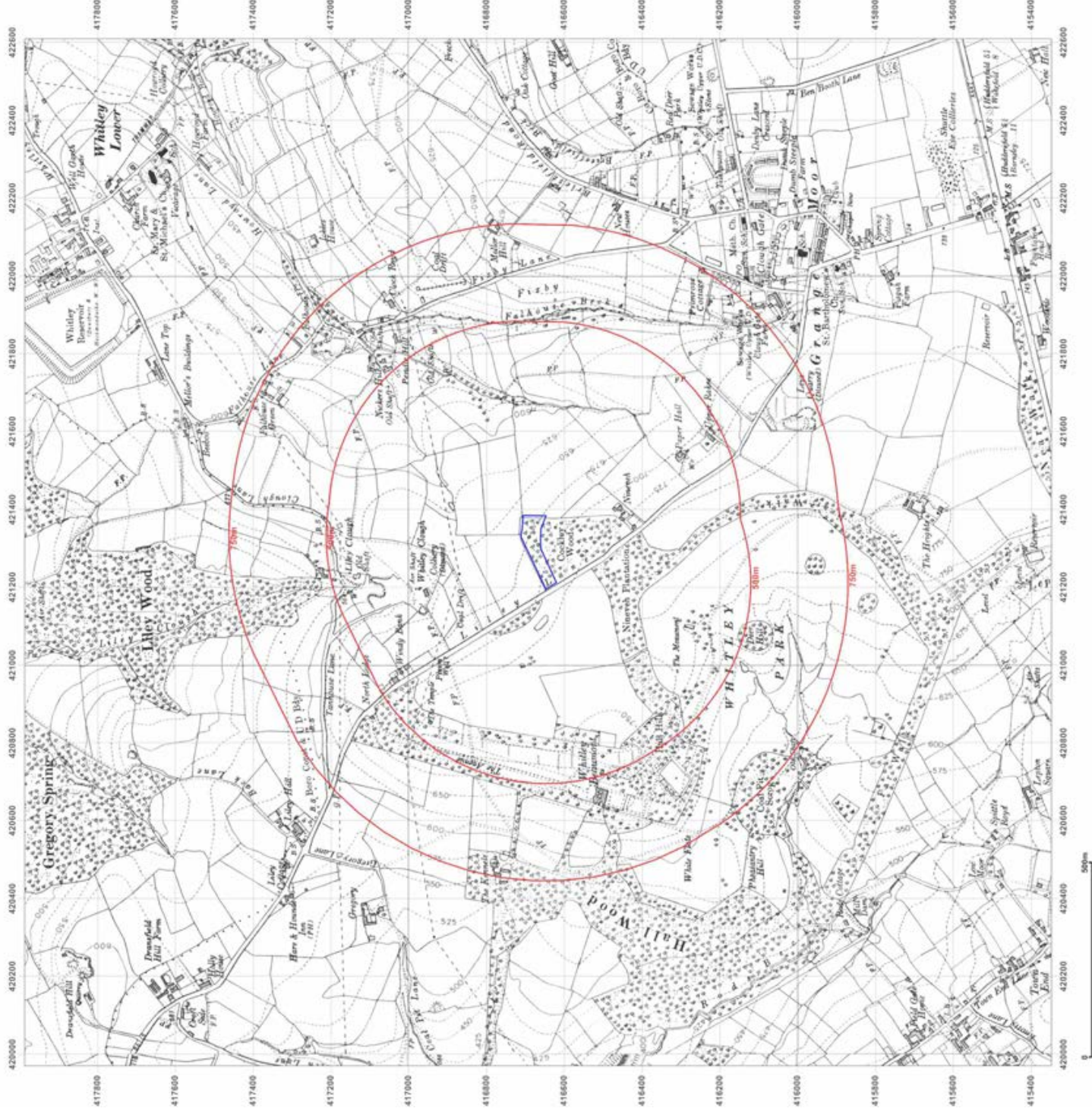
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Production date: 16 September 2019

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Site Details:

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HUDDERSFIELD, WF14 8EG

Client Ref: C66_19_E_127_PO-0339
Report Ref: GS-6312408
Grid Ref: 421289, 416666

Map Name: Provisional

Map date: 1965-1966

Scale: 1:10,560

Printed at: 1:10,560



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

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



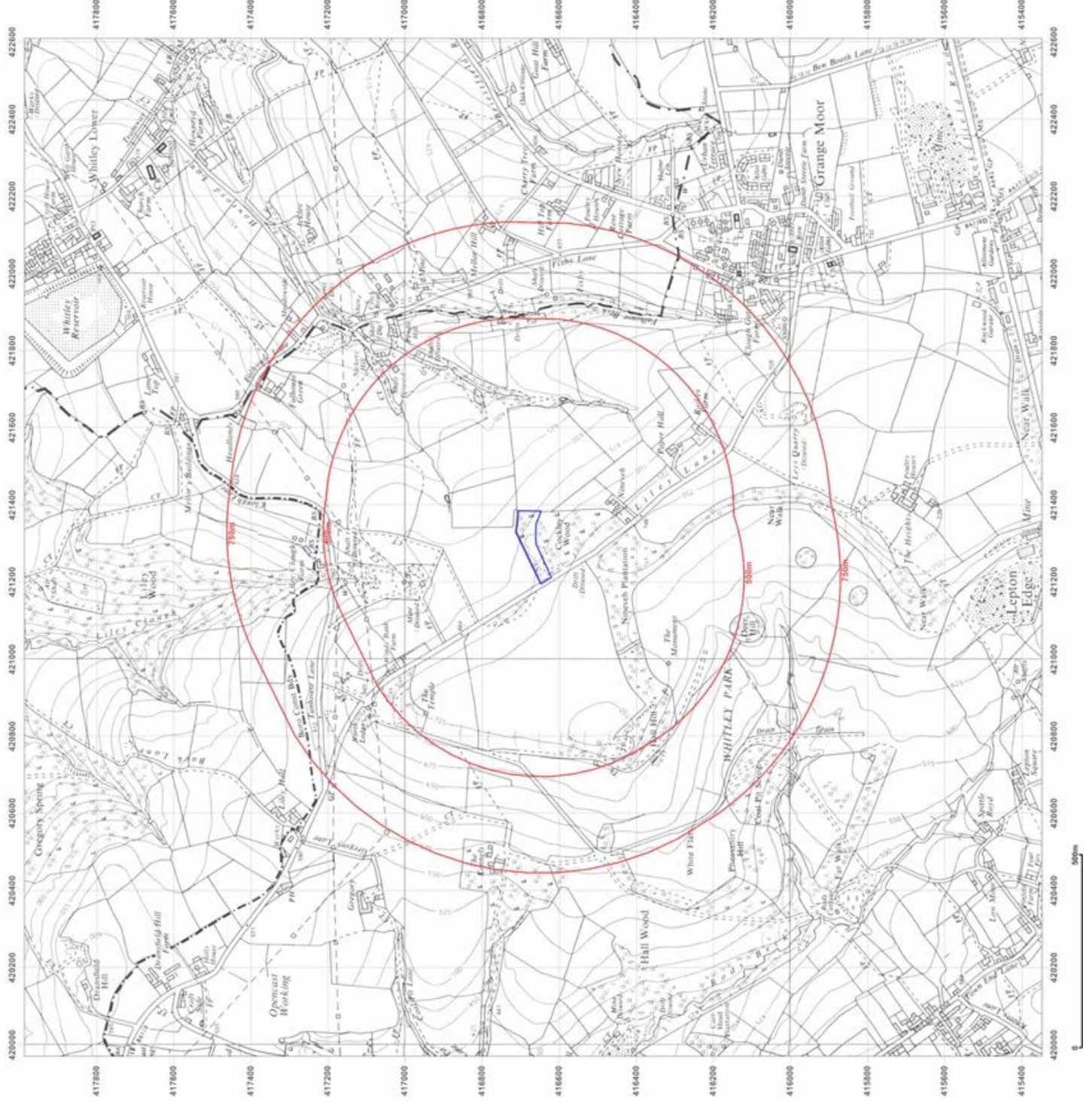
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Site Details:

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HUDDERSFIELD, WF14 8EG

Client Ref: C66_19_E_127_PO-0339
Report Ref: GS-6312408
Grid Ref: 421289, 416666

Map Name: National Grid

Map date: 1982

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1977
Revised 1982
Collon N/A
Copyright N/A
Levelled N/A



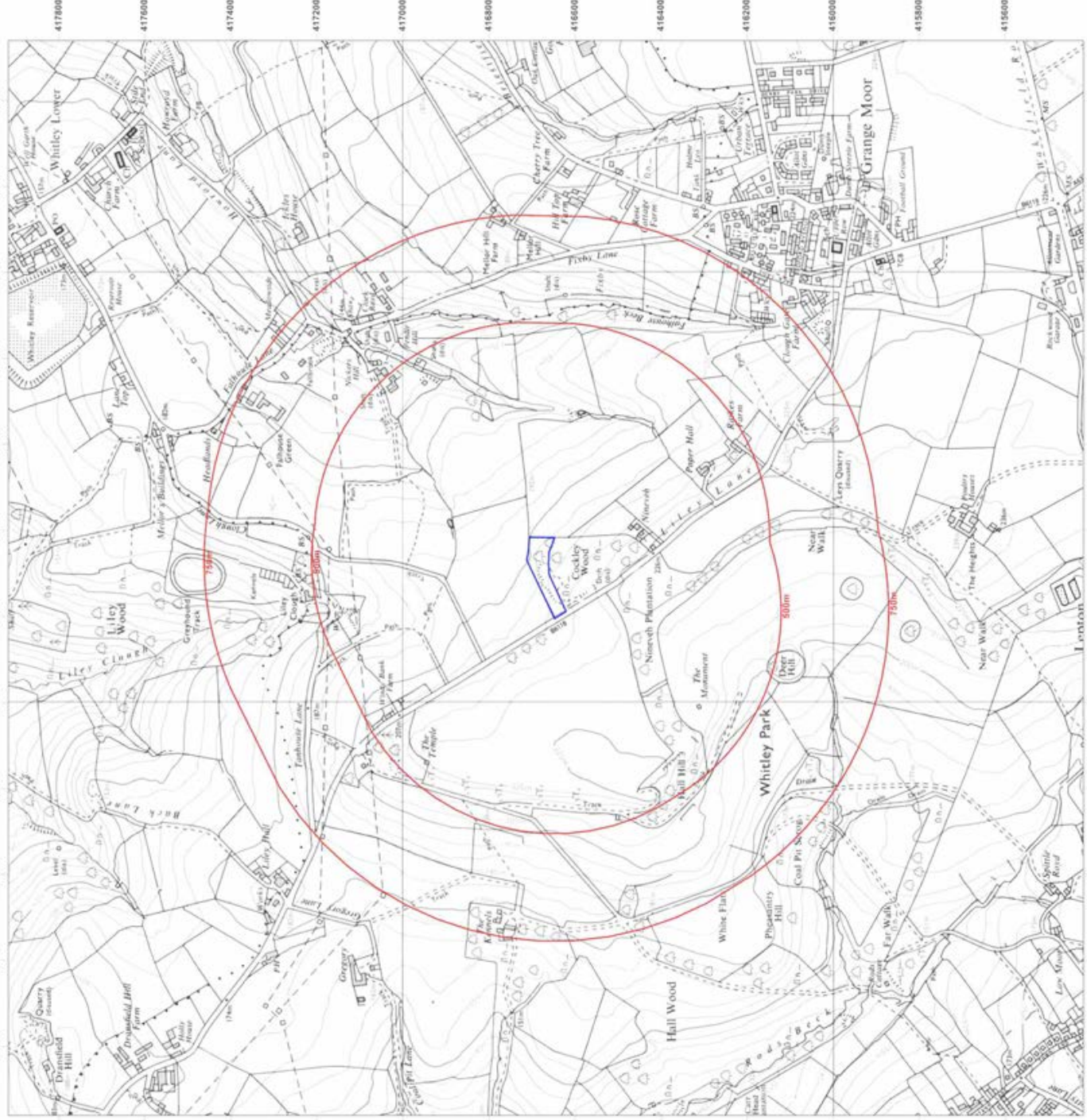
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Production date: 16 September 2019

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0 500m

Site Details:

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HUDDERSFIELD, WF14 8EG

Client Ref: C66_19_E_127_PO-0339
Report Ref: GS-6312408
Grid Ref: 421289, 416666

Map Name: National Grid

Map date: 1993

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1991
Revised 1995
Collon N/A
Copyright N/A
Levelled N/A



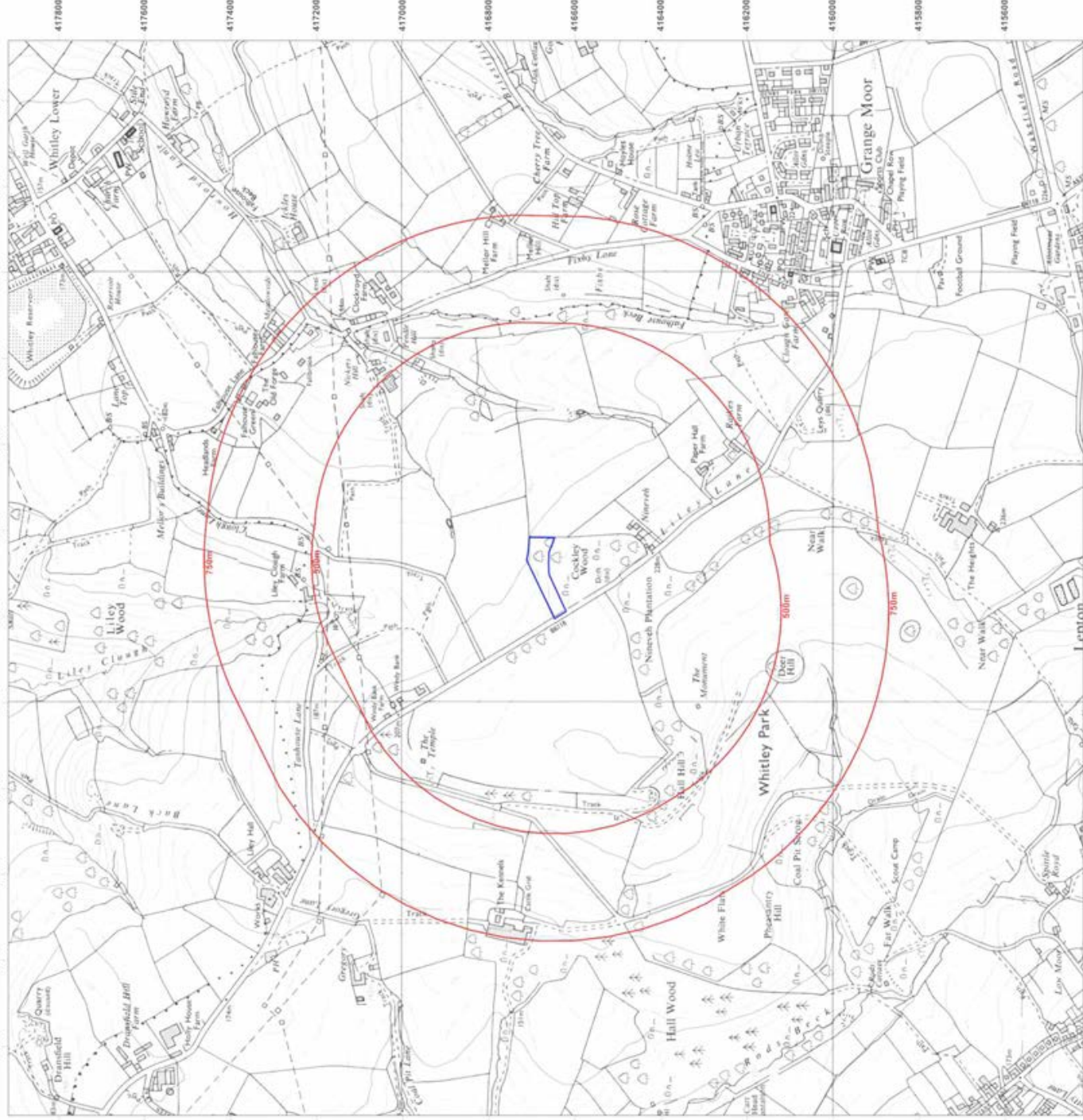
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Production date: 16 September 2019

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Site Details:

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GRANGE MOOR,
HUDDERSFIELD, WF14 8EG

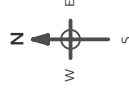
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Report Ref: GS-6312408
Grid Ref: 421289, 416666

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000



2001



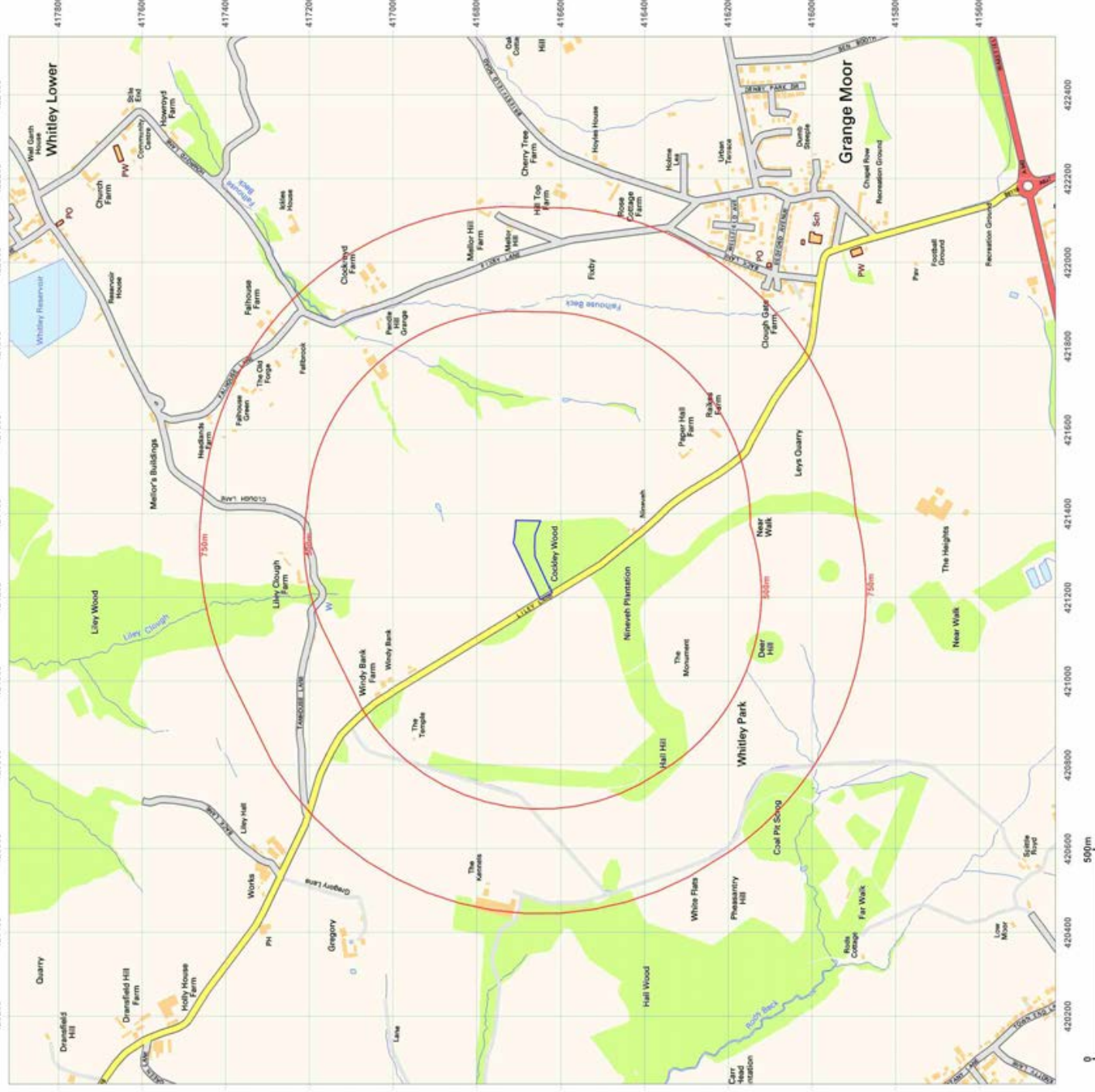
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Production date: 16 September 2019

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Site Details:

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GRANGE MOOR,
HUDDERSFIELD, WF14 8EG

Client Ref: C66_19_E_127_PO-0339
Report Ref: GS-6312408
Grid Ref: 421289, 416666

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



2010



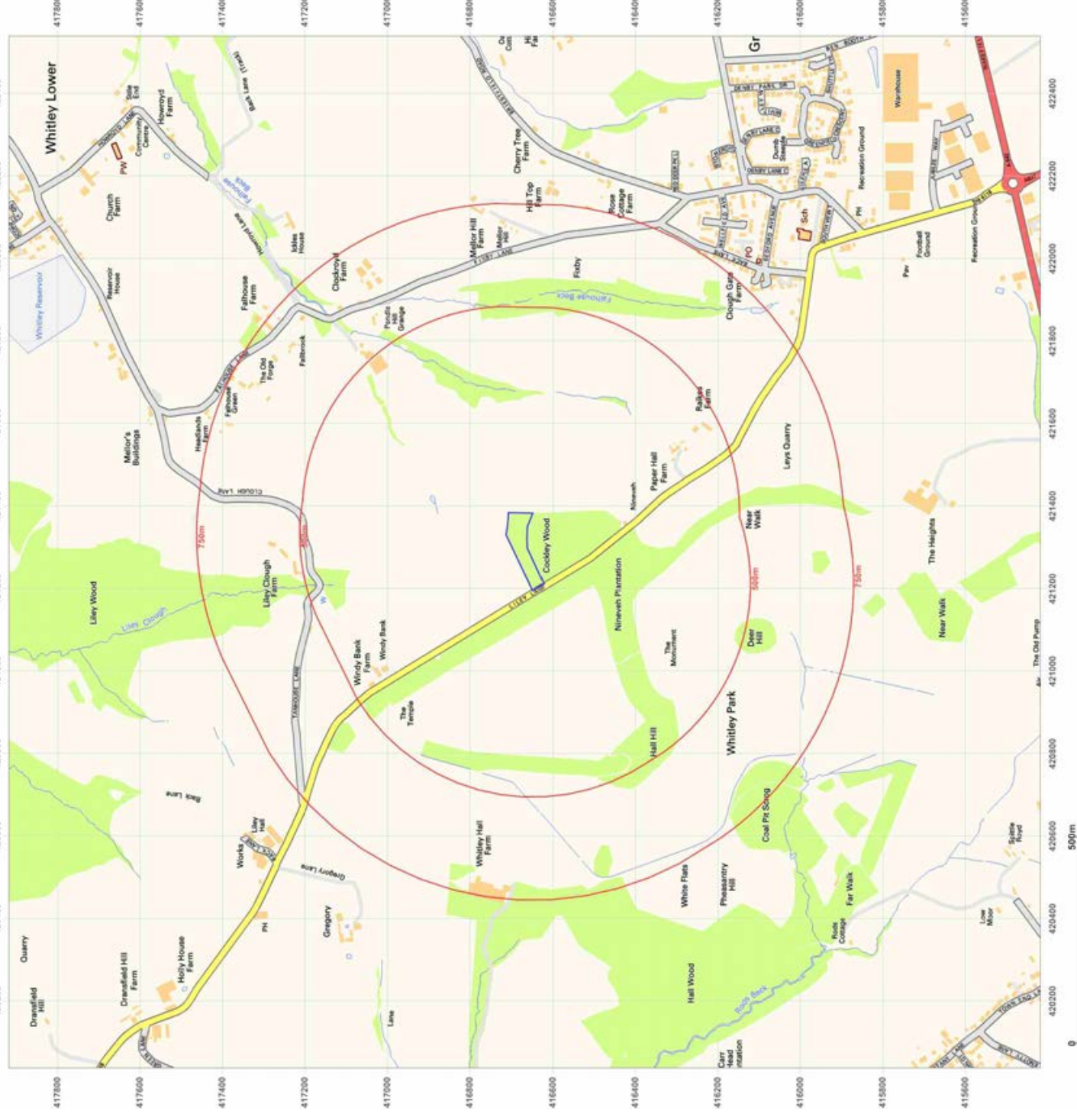
Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

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Production date: 16 September 2019

Map legend available at:

www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

NINEVEH FARM, LILEY LANE,
GRANGE MOOR, HUDDERSFIELD, WF14 8EG

Client Ref: C66_19_E_127_PO-0339
Report Ref: GS-6312408
Grid Ref: 421289, 416666

Map Name: National Grid

Map date: 2019

Scale: 1:10,000

Printed at: 1:10,000



2019



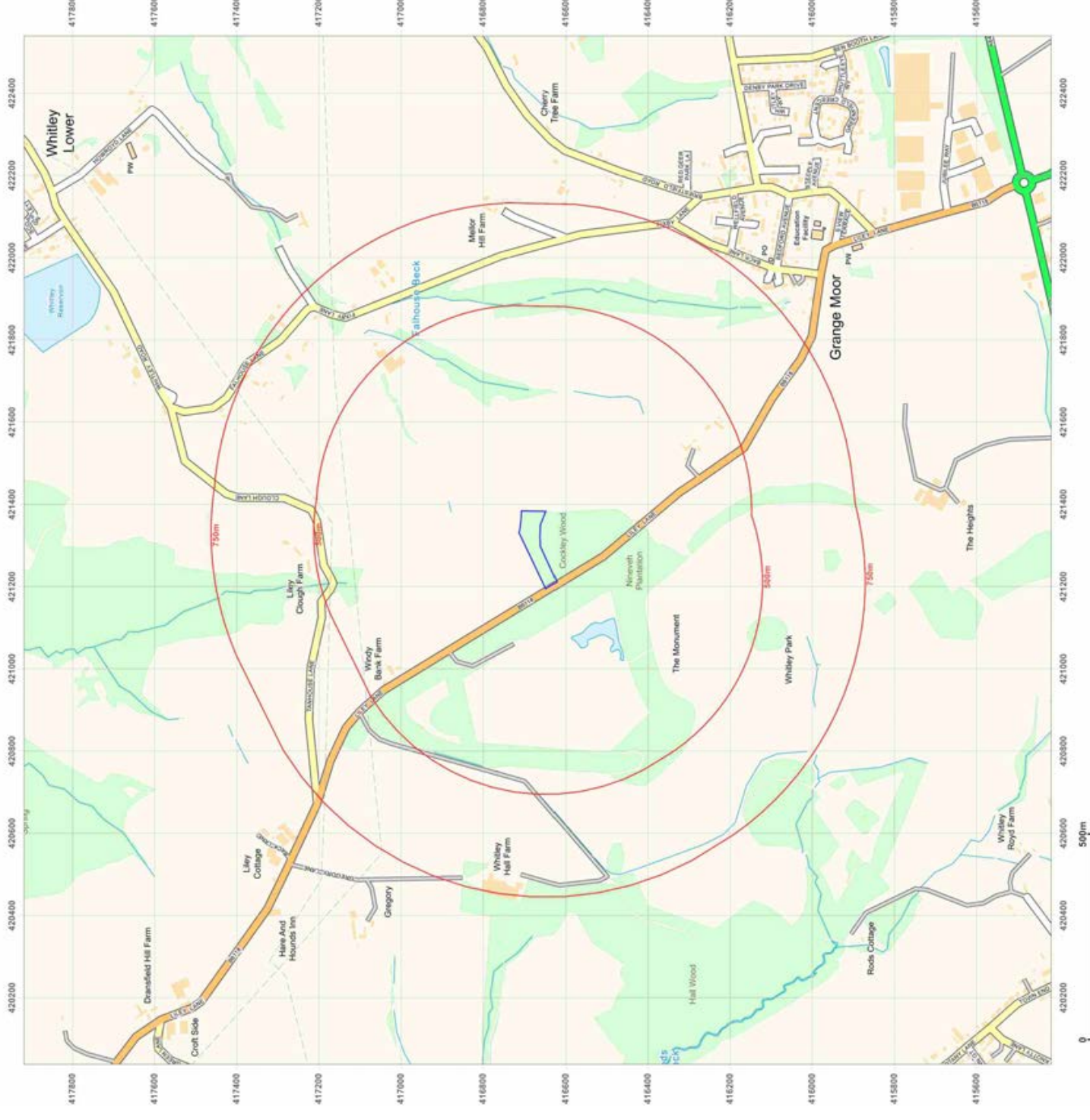
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Map legend available at:

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Appendix 3

Site Plans

Cockley Woodland Weddings

Liley Lane, Grange Moor, Huddersfield, WF4 4EN.

- Legend**
- Cockley Woodland
 - Site Area
 - Dirt Track
 - Development Area

W 1°40'52.32"

B6118

Liley Ln

N53°38'36.96"

W 1°40'26.4"

200 m





Appendix 4

Photographs



Car Park



Dirt Track (1)



Rogers
Geotechnical
Services Ltd

Project Name:

**Cockley Woodland Weddings, Liley
Lane, Grange Moor, WF4 4EN.**

Project Number:

C66/19/E/127



Dirt track (2)



Ceremony Area



Rogers
Geotechnical
Services Ltd

Project Name:

**Cockley Woodland Weddings, Liley
Lane, Grange Moor, WF4 4EN.**

Project Number:

C66/19/E/127



Woodland Area (1)



Woodland Area (2)



Rogers
Geotechnical
Services Ltd

Project Name:

**Cockley Woodland Weddings, Liley
Lane, Grange Moor, WF4 4EN.**

Project Number:

C66/19/E/127



Development Area (1)



Development Area (2)



Rogers
Geotechnical
Services Ltd

Project Name:

**Cockley Woodland Weddings, Liley
Lane, Grange Moor, WF4 4EN.**

Project Number:

C66/19/E/127



Appendix 5

Coal Authority Report



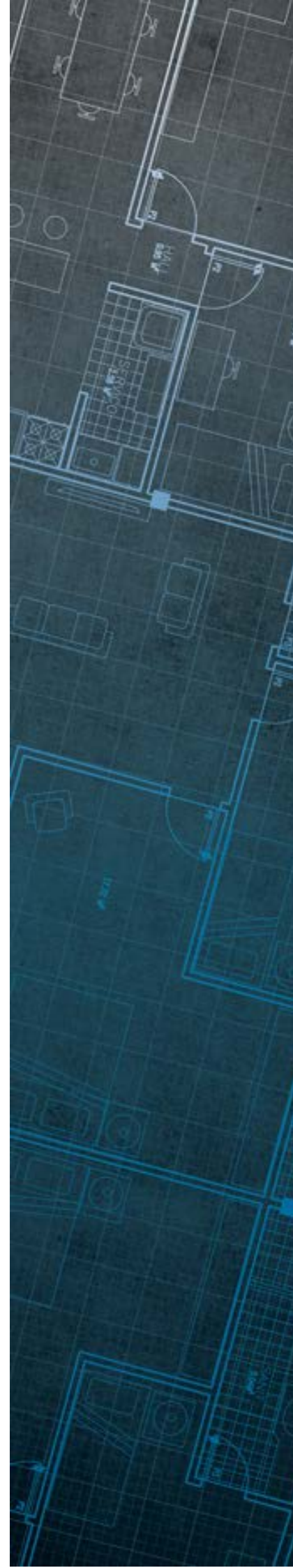
The Coal
Authority

Consultants Coal Mining Report

Ninevah Farm
Liley Lane
Grange Moor
Huddersfield
Kirklees
WF14 8EG

Date of enquiry:	16 September 2019
Date enquiry received:	16 September 2019
Issue date:	16 September 2019

Our reference:	51002170296001
Your reference:	C66/19/E/127



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

ROGERS GEOTECHNICAL SERVICES LTD

Enquiry address

Ninevah Farm
Liley Lane
Grange Moor
Huddersfield
Kirklees
WF14 8EG

How to contact us

0345 762 6848 (UK)
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Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

 @coalauthority

 /company/the-coal-authority

 /thecoalauthority

 /thecoalauthority



Approximate position of property



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Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	MIDDLETON LITTLE	Coal	6ZIR	12	Beneath Property	4.1	South-East	61	1927
unnamed	MIDDLETON MAIN	Coal	4VKZ	16	Beneath Property	1.7	South-East	51	1929
unnamed	WHEATLEY LIME	Coal	6ZJB	29	Beneath Property	1.6	South-East	92	1889
unnamed	SILKSTONE	Coal	6ZJI	61	Beneath Property	1.9	East	69	1909
unnamed	TOP BEESTON	Coal	6ZJO	111	Beneath Property	2.3	East	86	1949
unnamed	BLACK BED	Coal	6ZJS	192	Beneath Property	3.6	East	58	1963

Probable unrecorded shallow workings

Yes.

Spine roadways at shallow depth

Distance to spine roadway (m)	Direction to spine roadway
Within	N/A
5.9	South-West

Mine entries

Entry type	Reference	Grid reference	Treatment description	Mineral	Conveyancing details
Adit	421416-026	421264 416557		Coal	
Adit	421416-036	421238 416638	has been filled to an unknown specification	Coal	
Adit	421416-037	421346 416653	has been filled to an unknown specification	Coal	
Adit	421416-038	421378 416644		Coal	
Adit	421416-053	421370 416637		Coal	

Abandoned mine plan catalogue numbers

The following abandoned mine plan catalogue numbers intersect with some, or all, of the enquiry boundary:

NE504	12066	NE455
NE243	18293	M721
10063	FGB562	NE777

Our records show we have more plans than those shown above which could affect the enquiry boundary.

Please contact us on 0345 762 6848 to determine the exact abandoned mine plans you require based on your needs.

Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
MIDDLETON LITTLE	Coal	Yes	Within	N/A	266
MIDDLETON LITTLE	Coal	Yes	Within	N/A	270

Geological faults, fissures and breaklines

Please refer to the 'Summary of findings' map (on separate sheet) for details of any geological faults, fissures or breaklines either within or intersecting the enquiry boundary.

Fault under or close to the property recorded.

Opencast mines

Please refer to the "Summary of findings" map (on separate sheet) for details of any opencast areas 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 31 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 in an area where notices to withdraw support were given in 1948 and 1957.

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

The following potential risks have been identified and as part of your risk assessment should be investigated further.

Development advice

The site is within an area of historical coal mining activity. Should you require advice and/or support on understanding the mining legacy, its risks to your development or what next steps you need to take, please contact us.

For further information on specific site or ground investigations in relation to any issues raised in Section 4, please call us on 0345 762 6848 or email us at groundstability@coal.gov.uk.

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

