Environmental
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GEOTECHNICAL
ENVIRONMENTAL

PHASE 1 ENVIRONMENTAL
DESK STUDY

job number	date
C406/19/E/611.rev1	29/02/2021

site address
Pentlands,
New Mill Road,
Holmfirth,
HD9 7LN

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Environmental Geotechnical Specialists

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Report on a Phase One Desk Study

Location:	Pentlands, New Mill Road, Holmfirth, HD9 7LN		
For:	Priestroyd Construction Limited		
Report No.	C406/19/E/611.rev1	Report date:	July 2020 (Original date March 2020)

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

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Environmental Engineer

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1. Introduction

The site comprises an area of brownfield land located off New Mill Road, Holmfirth, Huddersfield, HD9 7LN. The site is approximately 0.52 hectares in size and its National Grid reference is centred around 414787 409161.

It is understood that the development proposals currently comprise the construction of seventeen new residential properties with associated garden areas and access roads. 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 10th January 2020 and the following observations were made:

General site description/current site use
The southeastern corner side of the site comprises a single residential property with associated outbuildings. The north and southwest side of the site comprise a disused field. The site is not currently in use.

Site boundaries/access
Access is via a large gateway leading from New Mill Road, near the sites southeast corner. The site boundaries comprise stone walls to the north, east and west and shrubbery to the south.

Topography
The site slopes downwards from its eastern boundary to the west. However, the area around the property in the southeast corner appears to be have been re-profiled to more amiable levels for the dwelling. It is anticipated that some made ground may be present in this area.

Surface cover of site
The area around the property, in the southeast corner, comprises hardstanding. The remaining areas are covered grass and light vegetation.

Visible evidence of contamination/ contaminative sources
Evidence of a historical fire-pit and a waste oil drum were observed to the west of the property. However, there were no other visible signs of contamination present during the time of the walkover.

Presence of vegetation and wildlife
Light shrubs and a number of trees were present on site. 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; however, a number of drain covers were observed within the vicinity of the dwelling. There were no overhead services present within the site at the time of the walkover.

Site neighbours
The site is located within a predominantly residential area, bordered by residential properties to the north, south and west.

In order to ensure that the site is fully characterised and to comply with the Environment Act 1995[1], a Phase One Desk Study has been commissioned by Priestroyd Construction Limited. 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
- Geology Plan - Appendix 6

The data obtained from the above mentioned sources has been summarised below[2].

[1]S57 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 Use[3]		
HISTORICAL MAPPING SUMMARY		
Map Dates	**On site**	**Within 250m**
1854 – 1893	The site appears to comprise a number of agricultural fields.	The surrounding area appears to comprise agricultural fields. Railway and associated cuttings/embankments– 90m W. Canal – 150m W.
1904 – 1949	The site itself appears to be largely unchanged.	A number of residential properties now appear to adjoin the site to the north, east and south. Old quarry – 15m N, 150m S. Tank – 75m NE.
1966 – 2010	A single property, matching the footprint of the properly currently on site appears to have been constructed in the southeast corner of the site.	A garage has now been constructed to the northeast of the site and a refuse tip is present to the northwest. Garage – Adjoining site NE. Refuse tip – 20m NW. Depot – 150m NE. Textile mill – 240m NW.

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	Made Ground (Undivided)	N/A	Made ground is an area where the pre-existing (natural or artificial) land surface is raised by artificial deposits. The purpose of the made ground is unspecified. Variable composition.
Superficial Geology	N/A	N/A	Not indicated to underlie the site.
Solid Geology	Huddersfield White Rock (West and centre of site)	-	The Huddersfield White Rock is a medium- to coarse-grained, massive to flaggy, cross-bedded, micaceous sandstone.
	Marsden Formation (East of site)	-	Fine- to very coarse-grained and pebbly feldspathic sandstone, interbedded with grey siltstone and mudstone, and subordinate marine black shales, thin coals and seatearths.
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. Reference should be made to the Coal Risk Assessment produced by ARC Engineers (ref: 14-409.01L).
		Vein Minerals	Sporadic underground vein mineral mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered.
Linear Features	21m E	Marine Band	Inferred.
	93m S	Fault	Inferred.

[3] See Appendix 2
[4] Sources: British Geological Survey (NERC) Map Sheets 86; Glossop; 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*]

	117m S	Fault	Inferred.
	118m S	Fault	Inferred.
	149m SE	Marine Band	Inferred.
	162m SE	Fault	Inferred.
	234m SE	Fault	Inferred.
Landslip Deposits	No data	No data	No data

BGS BOREHOLE DATA

Reference[6]	Location	Strata Description	Depth
SE10NW55	124m N	MADE GROUND Firm shaley CLAY Shaly MUDSTONE	2.8m 3.7m 7.0m
SE10NW54	125m N	MADE GROUND Soft silty CLAY Stiff shaly CLAY Shaly MUDSTONE	3.5m 3.9m 6.2m 8.0m
SE10NE46 – SE10NW53	225m W	TOPSOIL CLAY Weathered SANDSTONE Hard SANDSTONE	0.3 – 0.5m 0.8 – 2.1m 1.0 – 3.0m 2.7 – 3.0m

NATURAL GROUND SUBSIDENCE & HAZARDS[7]

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	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.
Potential for running sand ground stability	Negligible.
Potential for shrinking or swelling clay ground stability	Very Low.
Radon	The property is in a Radon Affected Area, as between 1 and 3% of properties are above the Action Level. BR211 states that no radon protective measures are necessary

[6] http://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html
[7] See Groundsure report

2.3 Construction Issues

2.3.1 Foundation Construction

On the basis of the prevailing geology 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. Moreover, it is possible that undifferentiated strata within the Huddersfield White Rock and Marsden Formations 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 result of tree root action. In light of this, it is possible that footings within the zone of influence of trees (existing or previously removed), may need to founded at extended depths in excess of 1m.

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

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	No	No past mining recorded.
2	Probable Unrecorded Shallow Workings	Yes	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).
3	Spine Roadways at Shallow Depth	No	No spine roadway recorded at shallow depth.
4	Mine Entries	No	None recorded within 100 metres of the site boundary.
5	Abandoned mine plans	No	None available.
6	Outcrops	Yes	The Upper Meltham coal is indicated to outcrop on site.
7	Geological Faults	Yes	A fault is indicated to cross the site.
8	Opencast Mines	No	None recorded within 500 meters of the enquiry boundary.

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	No	The property is not in an area where a notice to withdraw support has been given. The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.
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

The Groundsure report states that sporadic underground vein mineral mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered.

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	13m N	Waste Type: Unknown Size: Unknown	Y
Other waste sites	-	None recorded within 250m.	-
Environment Agency/Natural Resources Wales licensed waste sites	-	None recorded within 250m.	-

MADE GROUND & INFILLED GROUNDWORKINGS			
Description	**Location**	**Comments**	**Monitoring Requirement**
Records of Potentially Infilled Features	22-32m N	Unspecified Ground Workings	Y
	32-34m N	Unspecified Heap	N
	33m NW	Unspecified Quarry	Y
	66m N	Unspecified Pit	Y
	72-80m N	Refuse Heap	N
	85 – 195m N	Unspecified Heap	N
	98m N	Unspecified Ground Workings	Y

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	122m N	Process: petrol vapour recovery. Status: historical permit
Records of Licensed Discharge Consents	217m N	Process: sewage discharges. Status: current permit.
	246m N	Process: sewage discharges. Status: current permit.
CONTROLLED WATERS[10]		
Description	**Location**	**Details**
River Network Entries	85-112m S-SW	Unnamed River.
	137-168m W	River Holme.
	182-222m N	Unnamed River.
Surface Water Features	Within 250m	5 surface water records present within 250m. Unknown type.

[8] See Appendix 1
[9] See Appendix 1
[10] See Appendix 1

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.

2.7 Sensitive Land Use

Table 6: Sensitive Land Uses within 250m		
REGISTERED SENSITIVE LAND USES [13]		
Description	**Location**	**Details**
None recorded within 250m.		

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.

[11] See Appendix 1
[12] See Appendix 1
[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.

Unspecified Ground Workings/Heap/Tip	22-32m N 32m N 85-131m N 191-195m N	Unspecified works/factories/features.
Unspecified Quarry/Tip	33m NW	
Unspecified Pit	66m N	
Refuse Heap	72-80m N	
Unspecified Tank	76-82m N	
Unspecified Foundry	128m SW	
Railway Sidings	132-158m SW	
Unspecified Works/Depot	135-180m NE 180m W	
Unspecified Mill	204m NW	
Electricity Substation	91-93m E 219-220m E 235-237m W 245-246m E	Electrical Substation.
Garage	0m N – 25m N-NE 232-248m NW	Road vehicle fuelling, service and repair: transport and haulage centres.
CURRENT		
Land Use	**Location**	**Classification**
Fire Pit Waste Oil Drum	On site	Note: Identified on site during the walkover.
Electricity Sub-station	90m E 229m NE 231m W	Electrical Features.
JPA Motor Co Ltd Holmfirth Garage/Murco	248m W 248m W	Road vehicle fuelling, service and repair: garages and filling stations.

3. Coal Mining Risk Assessment

3.1 Geological Appraisal

With reference to the Geology of Britain Viewer[15] and BGS Map Sheet 86; Glossop (2012), it is apparent that the site is underlain by strata associated with the Marsden Formation, a named formation within the upper Millstone Grit Group. The Huddersfield White Rock (sandstone member) is present underneath the western section of the site, whereas undifferentiated strata (mudstone and siltstone) of the Marsden Formation are present beneath the eastern section. Uphill from the site, and approximately 30m east of the site boundary on the geological map, the Cancelloceras cancellatum Marine Band is present, which forms the boundary between the Marsden and Rossendale Formation. A plan is included within Appendix 6, for reference to the above.

The generalised vertical section on the published geological BGS map suggests that the Upper Meltham Coal seam is impersistently present towards the top of the Huddersfield White Rock. This seam is indicated to have a thickness of between 0m and 0.6m, thereby suggesting this coal seam has not fully formed in certain areas. Indeed, the above is reflected on the geological map, as outcrops of the Upper Meltham Coal are present in isolated pockets throughout the local region. It

should be noted that no such outcrops are present upon the site or within the immediate surrounding areas. Therefore, this suggests that the seam is not present on or below the site.

3.2 Previous Studies

It should be appreciated that a Shallow Coal Mining Risk Assessment was previously compiled in 2014 by ARC Environmental (ref: 14-409.01L). The findings of this assessment can be summarised as follows:

- *'The site is split by 2 strata types, with Huddersfield White Rock over the majority of the site and Marsden Formation mudstone and siltstone to the east. Between these two formations is the Upper Meltham outcrops.'*
- *'The Coal Authority note that the east of the site lies within a high-risk setting.' The Upper Meltham seam may be present underneath the east of the site at shallow depths. However, this seam is considered to be of limited thickness such that it is unlikely to have been worked.*
- *'The west of the site, which overlies the Huddersfield White Rock sandstone, lies stratigraphically below the Upper Meltham coal should not be at risk of shallow coal workings. However, it is recommended that the presence of Huddersfield White Rock sandstone should be confirmed'.*

3.3 Comments

The information presented in the above mentioned Coal Mining Risk Assessment (CMRA) varies slightly to the data abstracted from the BGS Geology Map Sheet within this study. Whilst there are similarities, in that the CMRA suggests that the site is underlain by both the Huddersfield White Rock and Marsden Formation, the CMRA suggests that the Upper Meltham coal seam could be present beneath the site, thereby suggesting a risk of instability, albeit low, beneath the site surface. This conclusion was drawn as it was deemed that there was insufficient published data to provide a firm risk. However, this study considers that there is sufficient information, given the data presented on the published geological map and associated generalised vertical section.

As such, the risk to the stability of the proposed development has been evaluated with respect to the above and with reference to the following ratings and definitions:

Low - The possibility of instability is unlikely therefore no further action is necessary.

Moderate - The possibility of instability is likely and further investigation or remedial action may be required.

High - The possibility of instability is highly likely and further investigation or remedial action will be necessary.

[15]Geology of Britain Viewer [online resource from www.bgs.ac.uk]

[16]British Geological Survey (NERC) Map Sheets 86; Glossop; Solid and Drift Edition

Table 8: Development Specific Coal Mining Risk Assessment			
Item	**Risk of Instability**	**Coal Seam(s) Considered**	**Risk Rating**
1	Shallow coal seams	Upper Meltham Coal	Low
2	Coal workings at depth	-	N/A

In view of the above, it is considered that no further assessment or intrusive investigation is necessary with regards to instability associated with illicit mining.

4. 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 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]

4.1 Conceptual Ground Model & Preliminary Qualitative Risk Assessment

It is understood that the development proposals currently comprise the construction of seventeen new residential properties with associated garden areas and access roads. In view of the sensitivity of the end users it is considered that the soil screening values (SSVs) for a residential with plant uptake end use should be employed.

[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.

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.

Table 9: 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. Any on site sources of contamination could migrate to neighbouring properties. Further testing required to reach a firm conclusion.
	End User	Yes – end users are likely to come in contact with the soil.	Moderate	
	Neighbours	Yes – possible source on site and immediate neighbours are present.	Moderate	
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. Any on site sources of contamination could migrate to neighbouring properties. Construction activities may create dust on and off site, which, if contaminated, could adversely affect operatives, end users and neighbours. In the event that harmful vapours are present they may accumulate in enclosed spaces, affecting operatives, end users and neighbours Further testing required to reach a firm conclusion.
	End User	Yes – vapours may accumulate in enclosed spaces.	Moderate	
	Neighbours	Yes – neighbouring properties present and possible inhalation of dust during the works.	Moderate	
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	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.
	End User	Yes – soft landscaping proposed as part of the new development.	Moderate	
	Neighbours	Yes – residential dwellings present within 250m of the proposed development.	Moderate	

Migration of hazardous gases via permeable strata	Operative	Yes – possible off site sources and potential source on site associated with historical construction.	Moderate	Possible source on site and within 250m. A programme of monitoring is recommended but is suggested to be limited to 4 readings over one month in the first instance. If significant made ground considered capable of producing harmful gases is revealed during the investigation works, the monitoring regime may require reconsideration to take into account a higher potential risk.
	End User		Moderate	
	Neighbours	Yes – possible source on site due to historical construction.	Low to Moderate	It is not considered likely that any made ground that has been brought onto site for the construction of the current dwelling will produce high levels of gas, thus presenting a significant risk of harm to this receptor. This should be re-assessed during any intrusive works should this be proven to the contrary.
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. Controlled waters within 250m. Secondary A aquifer underlies the site. Permeability of underlying geology should be assessed. Further testing required to reach a firm conclusion.
Migration via permeable unsaturated strata	Controlled Waters	Yes – possible source on site and Secondary A aquifer beneath the site.	Moderate	
Run off via drainage/sewers etc	Controlled Waters	Yes – possible source on site.	Moderate	
Direct contact with contaminated soils	Plants	Yes – some soft landscaping areas are proposed as part of the development.	Moderate	There are potential on and off site sources of contamination that may have caused contamination of the site. Any on site sources of contamination could migrate to neighbouring properties. Further testing required to reach a firm conclusion.
Uptake via root system			Moderate	
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 – low risk of coal workings. Moreover, no recordings of mine gas have been recorded within the Consultant's report.	N/A	
Exposure to Radon	Operative End User	Yes – the site is in a lower risk radon affected area.	Low	The publication BR211 states that no protection measures are necessary.
Mining Instability	End User	No – coal seams not anticipated to be present within 30m.	N/A	
Unexploded Ordinance (UXO) Risk	Operative	Yes – a preliminary search indicates a low indicative UXO risk.	Low	No further action required.

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 0.52ha, the number of sampling points at the site should be considered with respect to the table below.

Table 10: Summary of Sampling Strategy

NUMBER OF SAMPLING POINTS					
	Soil	**Water**	**Asbestos**	**Standpipes**	**Standpipe Readings**
Exploratory Investigation 50m x 50m grid	3	-	3	3	A minimum of 4 readings over 1 month would be required as per risk assessment, however any regime must take into account the guidance detailed below.
Target Areas	Made ground may be localised around the residential property in the sites southeast corner and a historical firepit and oil tank was noted on site. These areas should be targeted.				

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

Investigation should include the installation of three gas monitoring standpipes for subsequent monitoring. Furthermore, soils should be obtained for chemical sampling. The sampling strategy should employ the strategy given above in the first instance, i.e. at least three sampling points. It should be possible to carry out the above work with a windowless sampling drilling rig.

Gas Monitoring

The final gas monitoring regime should be undertaken 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:

a) 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.

b) 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.

c) 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.

d) Historical data can be used as part of the data set.

e) Not all sites will require gas monitoring. However this would need to be confirmed with demonstrable evidence.

f) 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.

g) 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.

Soakaway Design

Should soakaway data be required for drainage design, trialpits 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 Reporting

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

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

As soon is as 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-6541667
Your Reference:	C406_19_E_611_PO-0519
Report Date	8 Jan 2020
Report Delivery Method:	Email - pdf

Enviro Insight

Address: NEW MILL ROAD, HOLMFIRTH, HUDDERSFIELD, HD9 7LN

Dear Sir/ Madam,

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

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

Yours faithfully,

Managing Director
Groundsure Limited

Enc.
Groundsure Enviroinsight

Enviro Insight

Address:	**NEW MILL ROAD, HOLMFIRTH, HUDDERSFIELD, HD9 7LN**
Date:	**8 Jan 2020**
Reference:	**GS-6541667**
Client:	**Rogers Geotechnical Services**

NW N NE

W E

SW S SE

Aerial Photograph Capture date:	29-Jun-2018
Grid Reference:	414787,409161
Site Size:	0.5222ha

Report Reference: GS-6541667
Client Reference: C406_19_E_611_PO-0519

Contents Page

Overview of Findings

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

Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	0	9	31	69
1.2 Additional Information – Historical Tank Database	0	0	0	2
1.3 Additional Information – Historical Energy Features Database	0	0	24	4
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	1	8	9	20
1.6 Historical military sites	0	0	0	0
1.7 Potentially Infilled Land	0	8	11	33

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	1	2
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	0	4	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	1	0	0	1	4
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	0	3
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	0	0	0

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	0	0	5	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	1	2
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	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	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	2	15
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	4
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)	1	0	0	1	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	Yes
6.10 Ordnance Survey MasterMap Water Network entries within 500m of the site	0	0	22	10	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 Enviroment Agency Zone 2 floodplains within 250m of the study site	Identified
7.2 Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	Identified
7.3 Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site	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	2	12
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	0	0	0	0	0	0
8.14 Records of Green Belt land	0	0	0	2	3	4

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	Low
9.1.3 Maximum Soluble Rocks hazard rating identified on the study site	Negligible
9.1.4 Maximum Compressible Ground hazard rating identified on the study site	Very Low
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	Very Low
9.2 Radon	
9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The site is 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	Identified
10.3 Brine affected areas within 75m of the study site	None identified

Using this report

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

1. Historical Industrial Sites

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

2. Environmental Permits, Incidents and Registers

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

3. Landfills and Other Waste Sites

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

4. Current Land Uses

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

5. Geology

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

6. Hydrogeology and Hydrology

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

7. Flooding

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

8. Designated Environmentally Sensitive Sites

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

9. Natural Hazards

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

10. Mining

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

11. Contacts

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

Note: Maps

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

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

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

1. Historical Land Use

Site Outline

250
500
Search Buffers (m)

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

Industrial Land Use

Potentially Infilled Land

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

Energy Features

Petrol Stations

Historical military sites

Tanks

Garages

1. Historical Industrial Sites

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

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

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 109

ID	Distance [m]	Direction	Use	Date
1A	22	N	Unspecified Ground Workings	1949
2A	25	N	Unspecified Ground Workings	1938
3A	25	N	Unspecified Ground Workings	1938
4A	30	N	Unspecified Ground Workings	1955
5C	32	N	Unspecified Heap	1980
6A	32	N	Unspecified Heap	1965
7B	33	NW	Unspecified Quarry	1949
8B	33	NW	Unspecified Quarry	1904
9C	34	N	Unspecified Heap	1970
10D	66	N	Unspecified Pit	1970
11D	66	N	Unspecified Pit	1980
12AO	72	N	Refuse Heap	1980
13E	75	N	Unspecified Tank	1938
14E	76	N	Unspecified Tank	1949
15E	79	N	Unspecified Tank	1955
16AP	80	N	Refuse Heap	1970
17E	82	N	Unspecified Tank	1965
18F	85	N	Unspecified Heap	1938
19F	85	N	Unspecified Heap	1938
20F	85	N	Unspecified Heap	1949
21F	89	N	Unspecified Ground Workings	1955
22AQ	98	N	Unspecified Ground Workings	1970
23G	128	SW	Unspecified Foundry	1970
24G	128	SW	Unspecified Foundry	1980
25AR	131	N	Unspecified Heaps	1970
26I	132	SW	Railway Sidings	1965
27H	135	NE	Unspecified Works	1970
28H	135	NE	Unspecified Depot	1980
29I	147	SW	Railway Sidings	1955
30I	151	SW	Railway Sidings	1933

31J	158	SW	Railway Sidings	1948
32J	158	SW	Railway Sidings	1904
33K	180	W	Unspecified Works	1970
34K	180	W	Unspecified Works	1980
35AS	191	N	Unspecified Heap	1965
36L	194	N	Unspecified Ground Workings	1955
37L	195	N	Unspecified Heap	1965
38M	204	NW	Unspecified Mill	1970
39M	204	NW	Unspecified Mill	1980
40	205	W	Police Station	1980
41O	254	N	Cuttings	1888
42N	256	N	Cuttings	1949
43N	259	N	Cuttings	1904
44AL	260	W	Garage	1970
45N	261	N	Cuttings	1938
46O	263	N	Cuttings	1965
47P	287	N	Unspecified Quarry	1949
48P	287	N	Unspecified Quarry	1904
49Q	294	N	Cuttings	1888
50Q	295	N	Cuttings	1965
51R	297	E	Nursery	1955
52R	298	E	Nursery	1949
53R	298	E	Nursery	1938
54S	301	SE	Unspecified Quarry	1933
55AT	302	SE	Unspecified Quarry	1980
56S	303	SE	Unspecified Quarry	1948
57R	304	E	Nurseries	1970
58T	332	W	Hospital	1970
59T	332	W	Hospital	1980
60T	335	W	Hospital	1955
61T	336	W	Hospital	1965
62T	340	W	Hospital	1948
63	342	W	Hospital	1933
64AU	352	W	Nurseries	1980
65U	361	SW	Unspecified Heap	1970
66U	361	SW	Unspecified Heap	1980
67	382	N	Railway Sidings	1938
68	384	N	Railway Sidings	1955
69	393	SW	Railway Sidings	1888
70V	404	SW	Unspecified Works	1970
71V	404	SW	Unspecified Works	1980
72W	406	N	Unspecified Mills	1970
73W	406	N	Unspecified Mills	1980
74W	411	N	Unspecified Mills	1965
75W	419	N	Unspecified Mills	1938

76V	421	SW	Unspecified Mills	1888
77V	421	SW	Unspecified Mills	1948
78V	421	SW	Unspecified Mills	1904
79Z	430	SW	Unidentified Mills	1955
80AW	432	S	Unspecified Quarry	1965
81	434	SW	Woollen Mill	1854
82X	436	S	Unspecified Quarry	1933
83X	441	S	Unspecified Quarry	1970
84X	441	S	Unspecified Quarry	1980
85Y	443	E	Unspecified Tank	1955
86Y	445	E	Unspecified Tank	1938
87Y	445	E	Unspecified Tank	1949
88AA	446	N	Unspecified Mills	1955
89	446	SW	Unspecified Mills	1965
90	448	S	Unspecified Pump	1854
91Z	451	SW	Unspecified Mills	1933
92AB	453	N	Railway Sidings	1949
93AA	460	N	Unspecified Mills	1949
94AA	460	N	Unspecified Mills	1888
95AA	460	N	Unspecified Mills	1904
96AB	471	N	Railway Sidings	1955
97	477	SW	Unspecified Mills	1980
98AC	482	N	Unspecified Works	1949
99AC	484	N	Unspecified Mill	1938
100AB	487	N	Railway Sidings	1888
101AB	487	N	Railway Sidings	1904
102AC	488	N	Unspecified Mill	1970
103AC	488	N	Unspecified Mill	1980
104AC	488	N	Unspecified Mill	1965
105	488	N	Unspecified Works	1904
106AC	489	N	Unspecified Mill	1955
107AD	492	SW	Mill Pond	1970
108AD	492	SW	Mill Pond	1980
109	494	SW	Unspecified Mills	1970

1.2 Additional Information – Historical Tank Database

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

Records of historical tanks within 500m of the search boundary: 2

ID	Distance (m)	Direction	Use	Date
110Y	449	E	Unspecified Tank	1966

111Y	449	E	Unspecified Tank	1973

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: 28

ID	Distance (m)	Direction	Use	Date
112AE	91	E	Electricity Substation	1973
113AE	92	E	Electricity Substation	1985
114AE	93	E	Electricity Substation	1995
115AE	93	E	Electricity Substation	1996
116AE	93	E	Electricity Substation	1994
117AE	93	E	Electricity Substation	1987
118AE	93	E	Electricity Substation	1981
119AE	93	E	Electricity Substation	1958
120AF	219	E	Electricity Substation	1995
121AF	219	E	Electricity Substation	1978
122AF	220	E	Electricity Substation	1985
123AF	220	E	Electricity Substation	1973
124AG	235	W	Electricity Substation	1985
125AG	235	W	Electricity Substation	1973
126AG	236	W	Electricity Substation	1987
127AG	236	W	Electricity Substation	1981
128AG	236	W	Electricity Substation	1958
129AG	237	W	Electricity Substation	1994
130AG	237	W	Electricity Substation	1995
131AG	238	W	Electricity Substation	1996
132AH	245	E	Electricity Substation	1978
133AH	246	E	Electricity Substation	1973
134AH	246	E	Electricity Substation	1985
135AH	246	E	Electricity Substation	1995
136AI	376	W	Electricity Substation	1995
137AI	376	W	Electricity Substation	1996
138AI	376	W	Electricity Substation	1994
139AI	379	W	Electricity Substation	1987

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: 38

ID	Distance (m)	Direction	Use	Date
140A	0	N	Garage	1994
141A	3	N	Garage	1987
142A	4	N	Garage	1981
143A	4	N	Garage	1985
144A	4	N	Garage	1958
145A	4	N	Garage	1973
146A	5	N	Garage	1996
147A	5	N	Garage	1995
148A	25	NE	Garage	1966
149AJ	232	NW	Garage	1996
150AJ	232	NW	Garage	1995
151AK	248	NW	Garage	1966
152AK	248	NW	Garage	1985
153AK	248	NW	Garage	1973
154AK	248	NW	Garage	1994
155AK	250	NW	Garage	1987
156AK	250	NW	Garage	1958
157AK	250	NW	Garage	1981
158AJ	252	NW	Garage	1966
159AJ	253	NW	Garage	1973
160AJ	253	NW	Garage	1981
161AJ	253	NW	Garage	1958
162AL	261	W	Garage	1973
163AL	261	W	Garage	1966
164AL	261	W	Garage	1985
165AL	266	W	Garage	1994
166AL	267	W	Garage	1958
167AL	267	W	Garage	1987
168AL	267	W	Garage	1981
169AL	275	W	Garage	1996
170AL	275	W	Garage	1995

171AM	410	SW	Garage	1995
172AM	410	SW	Garage	1996
173AN	416	NE	Garage	1995
174AN	416	NE	Garage	1978
175AN	416	NE	Garage	1973
176AN	416	NE	Garage	1985
177AN	416	NE	Garage	1966

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: 52

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

ID	Distance(m)	Direction	Use	Date
178A	22	N	Unspecified Ground Workings	1949
179A	25	N	Unspecified Ground Workings	1938
180A	25	N	Unspecified Ground Workings	1938
181C	32	N	Unspecified Heap	1980
182A	32	N	Unspecified Heap	1965
183B	33	NW	Unspecified Quarry	1949
184B	33	NW	Unspecified Quarry	1904
185C	34	N	Unspecified Heap	1970
186D	66	N	Unspecified Pit	1980
187D	66	N	Unspecified Pit	1970
188AO	72	N	Refuse Heap	1980
189AP	80	N	Refuse Heap	1970
190F	85	N	Unspecified Heap	1938
191F	85	N	Unspecified Heap	1938
192F	85	N	Unspecified Heap	1949
193AQ	98	N	Unspecified Ground Workings	1970
194AR	131	N	Unspecified Heaps	1970

195AS	191	N	Unspecified Heap	1965
196L	195	N	Unspecified Heap	1965
197O	254	N	Cuttings	1888
198N	256	N	Cuttings	1949
199N	259	N	Cuttings	1904
200N	261	N	Cuttings	1938
201N	263	N	Cuttings	1965
202P	287	N	Unspecified Quarry	1904
203P	287	N	Unspecified Quarry	1949
204Q	294	N	Cuttings	1888
205Q	295	N	Cuttings	1965
206S	301	SE	Unspecified Quarry	1933
207AT	302	SE	Unspecified Quarry	1980
208S	303	SE	Unspecified Quarry	1948
209U	361	SW	Unspecified Heap	1980
210U	361	SW	Unspecified Heap	1970
211AU	371	W	Fish Pond	1938
212AU	373	W	Fish Pond	1965
213AU	374	W	Fish Pond	1904
214AU	374	W	Fish Pond	1949
215AV	406	N	Pond	1888
216AV	406	N	Pond	1949
217AV	406	N	Pond	1904
218AV	411	N	Water Body	1965
219AV	411	N	Water Body	1980
220AV	411	N	Water Body	1970
221AV	419	N	Water Body	1938
222AW	432	S	Unspecified Quarry	1965
223X	436	S	Unspecified Quarry	1933
224X	441	S	Unspecified Quarry	1980
225X	441	S	Unspecified Quarry	1970
226	486	SE	Pond	1888
227AD	492	SW	Mill Pond	1980
228AD	492	SW	Mill Pond	1970
229AD	497	SW	Pond	1888

2. Environmental Permits, Incidents and Registers Map

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:

3

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

ID	Distance (m)	Direction	NGR	Details	
5	122	N	414903 409296	Address: Midlothian Garage (Yorkshire) Ltd, New Mill Rd, Holmfirth, Huddersfield, HD7 1XW Process: Petrol Vapour Recovery Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
6	262	NW	414561 409369	Address: Walter Green Ltd, Fearnought Garage, Thongsbridge, Huddersfield, HD9 3JL Process: Petrol Vapour Recovery Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
7	295	NW	414588 409435	Address: Batfa Ltd T/A, Holmfirth Garage, 236 Hudderfield Road, Thongsbridge, Holmfirth, HD9 3TT Process: Unloading of Petrol into Storage at Service Stations Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

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

4

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

ID	Distance (m)	Direction	NGR	Details	
1A	217	N	414900 409400	Address: FORMER MIDLOTHION GARAGE, (NOW GLENVIEW), NEW MILL ROAD, HOLMFIRTH, WEST YORKSHIRE Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: C4173 Permit Version: 1	Receiving Water: LAND ADJ TO MIDLOTHIAN GARAGE Status: TRANSFERRED FROM COPA 1974 Issue date: 12/03/1986 Effective Date: 12-Mar-1986 Revocation Date: 26/05/2004
2A	217	N	414900 409400	Address: FORMER MIDLOTHION GARAGE, (NOW GLENVIEW), NEW MILL ROAD, HOLMFIRTH, WEST YORKSHIRE Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER	Receiving Water: LAND ADJ TO MIDLOTHIAN GARAGE Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 26/07/2012

ID	Distance (m)	Direction	NGR	Details	
				COMPANY Permit Number: C4173 Permit Version: 3	Effective Date: 26-Jul-2012 Revocation Date: -
3A	217	N	414900 409400	Address: FORMER MIDLOTHION GARAGE, (NOW GLENVIEW), NEW MILL ROAD, HOLMFIRTH, WEST YORKSHIRE Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: C4173 Permit Version: 2	Receiving Water: LAND ADJ TO MIDLOTHIAN GARAGE Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 27/05/2004 Effective Date: 27-May-2004 Revocation Date: 25/07/2012
4	246	N	414690 409430	Address: PICKWICK MILL CSO, HUDDERSFIELD ROAD OFF (R/O CLUB), HOLMFIRTH, HUDDERSFIELD, WEST YORKSHIRE Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: WRA8445 Permit Version: 1	Receiving Water: RIVER HOLME Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 18/03/2005 Effective Date: 18-Mar-2005 Revocation Date: -

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

0

Database searched and no data found.

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

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

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

Database searched and no data found.

2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

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

Database searched and no data found.

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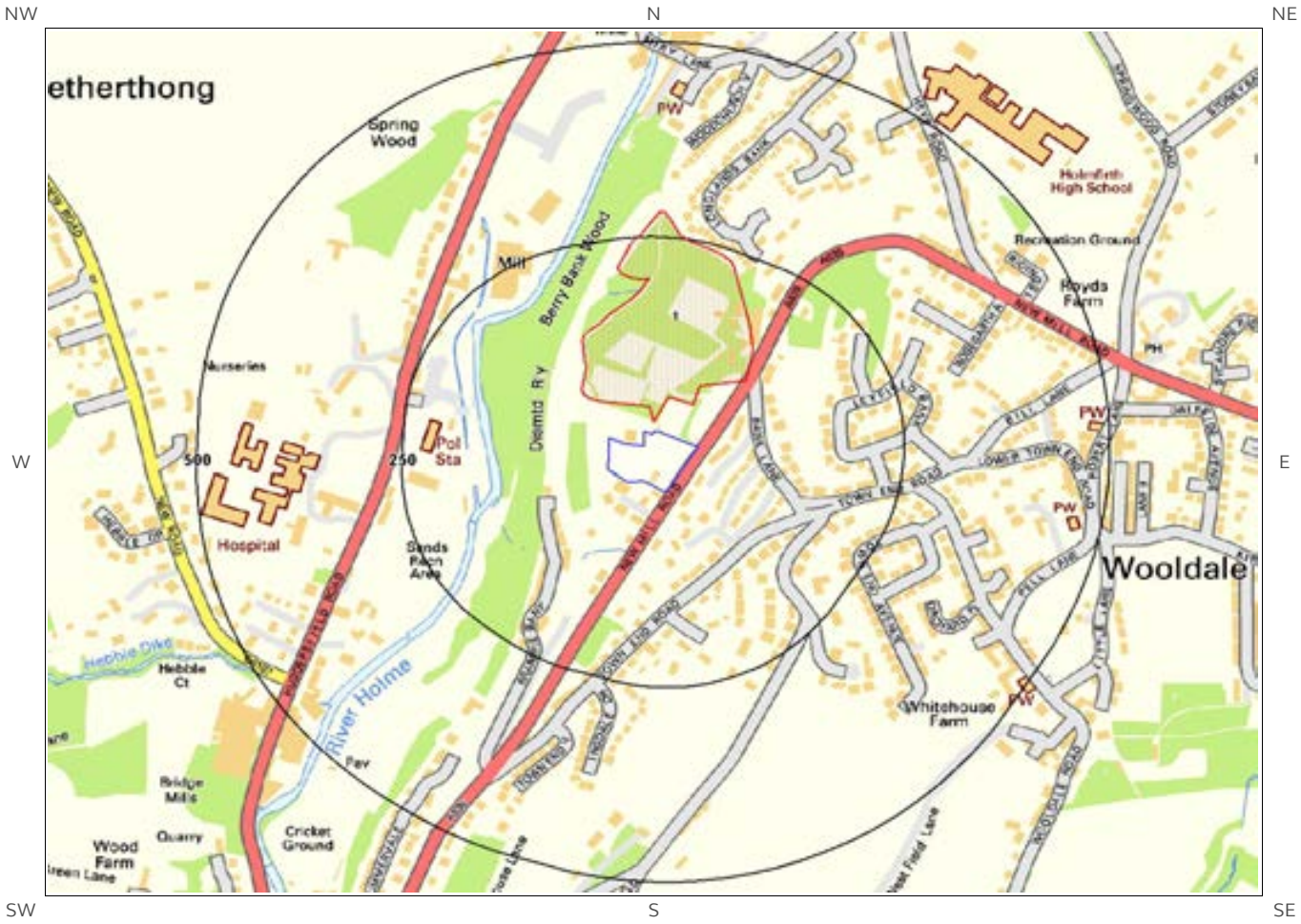
3. Landfill and Other Waste Sites Map



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:

6

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

ID	Distance (m)	Direction	NGR	Details	
1	13	N		Site Address: Berry Bank Wood, New Mill Road, Holmfirth, Kirklees Waste Licence: - Site Reference: - Waste Type: Industrial, Commercial, Household Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: West Yorkshire Metropolitan County Council Licence Holder: - First Recorded: - Last Recorded: -
Not shown	792	SW		Site Address: Holmfirth Holder Station, Huddersfield Road, Holmfirth Waste Licence: Yes Site Reference: 4700/0057 Waste Type: Inert, Commercial Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: 22-Jun-1977 Licence Surrendered: 30-Apr-1994 Licence Holder Address: New York Road, Leeds Operator: - Licence Holder: North East Gas First Recorded: 30-Jun-1977 Last Recorded: 31-Dec-1980
Not shown	1104	S		Site Address: New Gate, Cinderhills, Holmfirth Waste Licence: - Site Reference: - Waste Type: Inert, Commercial, Household Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -
Not shown	1241	N		Site Address: Lower Mytholmbridge Mills, Thongsbridge, Huddersfield Waste Licence: Yes Site Reference: 4700/0523 Waste Type: Inert, Commercial Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: 21-Aug-1985 Licence Surrendered: 04-Jul-1988 Licence Holder Address: Mytholmbridge House, Thongsbridge Operator: - Licence Holder: P M and H M Peaker First Recorded: 31-Aug-1985

ID	Distance (m)	Direction	NGR	Details	
					Last Recorded: 30-Jun-1988
Not shown	1343	NE		Site Address: Disused Railway Cutting, Off Oakes Lane, Brockholes, Holmfirth Waste Licence: Yes Site Reference: 4700/0173, 545 Waste Type: Inert, Commercial Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: 02-Jan-1986 Licence Surrendered: 31-Dec-1992 Licence Holder Address: Bankside Farm, Thurstonland, Huddersfield Operator: - Licence Holder: D Parker (Builders) Limited First Recorded: 31-Jan-1986 Last Recorded: 31-Dec-1992
Not shown	1441	SE		Site Address: Greenhill Bank, Greenhill Bank Road, New Mill Waste Licence: - Site Reference: - Waste Type: Inert, Commercial Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: 01-Jan-1989 Last Recorded: 31-Dec-1990

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

0

Database searched and no data found.

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

3

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	1333	N	415274 410471	Refuse Tip	1994 mapping	Polygon
Not shown	1333	N	415274 410471	Refuse Tip	1996 mapping	Polygon
Not shown	1333	N	415274 410471	Refuse Tip	1996 mapping	Polygon

3.2 Other Waste Sites

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

0

Database searched and no data found.

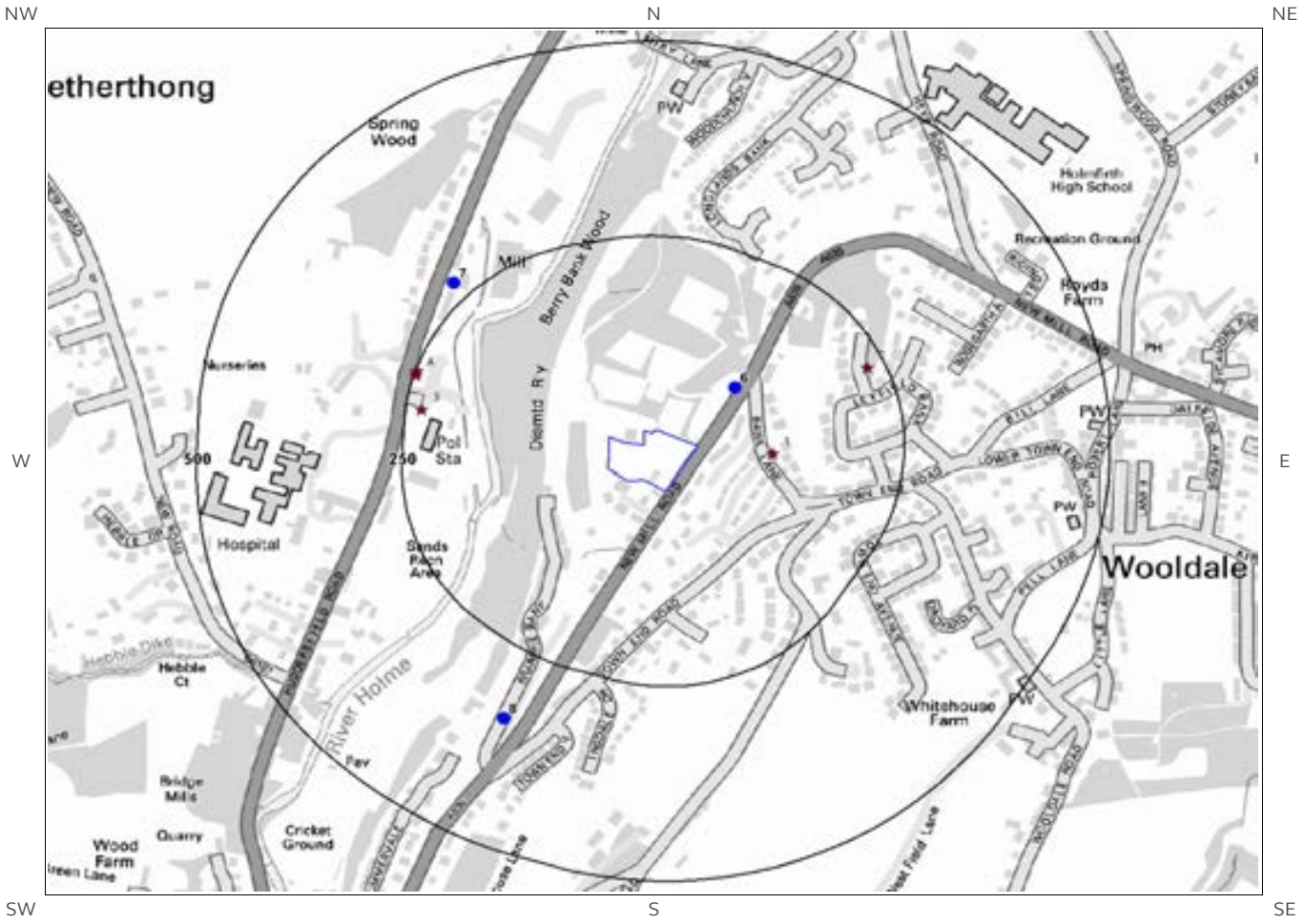
3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site:

0

Database searched and no data found.

---

4. Current Land Use Map



4. Current Land Uses

4.1 Current Industrial Data

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

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

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	90	E	Electricity Sub Station	414953 409171	West Yorkshire, HD9	Electrical Features	Infrastructure and Facilities
2	229	NE	Electricity Sub Station	415069 409281	West Yorkshire, HD9	Electrical Features	Infrastructure and Facilities
3	231	W	Electricity Sub Station	414527 409227	West Yorkshire, HD9	Electrical Features	Infrastructure and Facilities
4A	248	W	J P A Motor Co Ltd	414520 409272	234, Huddersfield Road, Thongsbridge, Holmfirth, West Yorkshire, HD9 3TT	Secondhand Vehicles	Motoring
5A	248	W	Holmfirth Garage Ltd	414521 409276	236, Huddersfield Road, Thongsbridge, Holmfirth, West Yorkshire, HD9 3TT	Vehicle Repair, Testing and Servicing	Repair and Servicing

4.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: 3

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

ID	Distance (m)	Direction	NGR	Company	Address	LPG	Status
6	87	NE	414908 409255	OBSOLETE	New Mill Road, Holmfirth, Huddersfield, West Yorkshire, HD9 7AB	Not Applicable	Obsolete
7	274	NW	414566 409390	MURCO	236, Huddersfield Road, Holmfirth, Huddersfield, West Yorkshire, HD9 3TT	No	Open
8	340	SW	414627 408832	OBSOLETE	Huddersfield Road, Holmfirth, Huddersfield, West Yorkshire, HD9 3JL	Not Applicable	Obsolete

4.3 National Grid High Voltage Underground Electricity Transmission Cables

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

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

Database searched and no data found.

4.4 National Grid High Pressure Gas Transmission Pipelines

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

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

Database searched and no data found.

---

5. Geology

5.1 Artificial Ground and Made Ground

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

Lex Code	Description	Rock Type
MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

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.

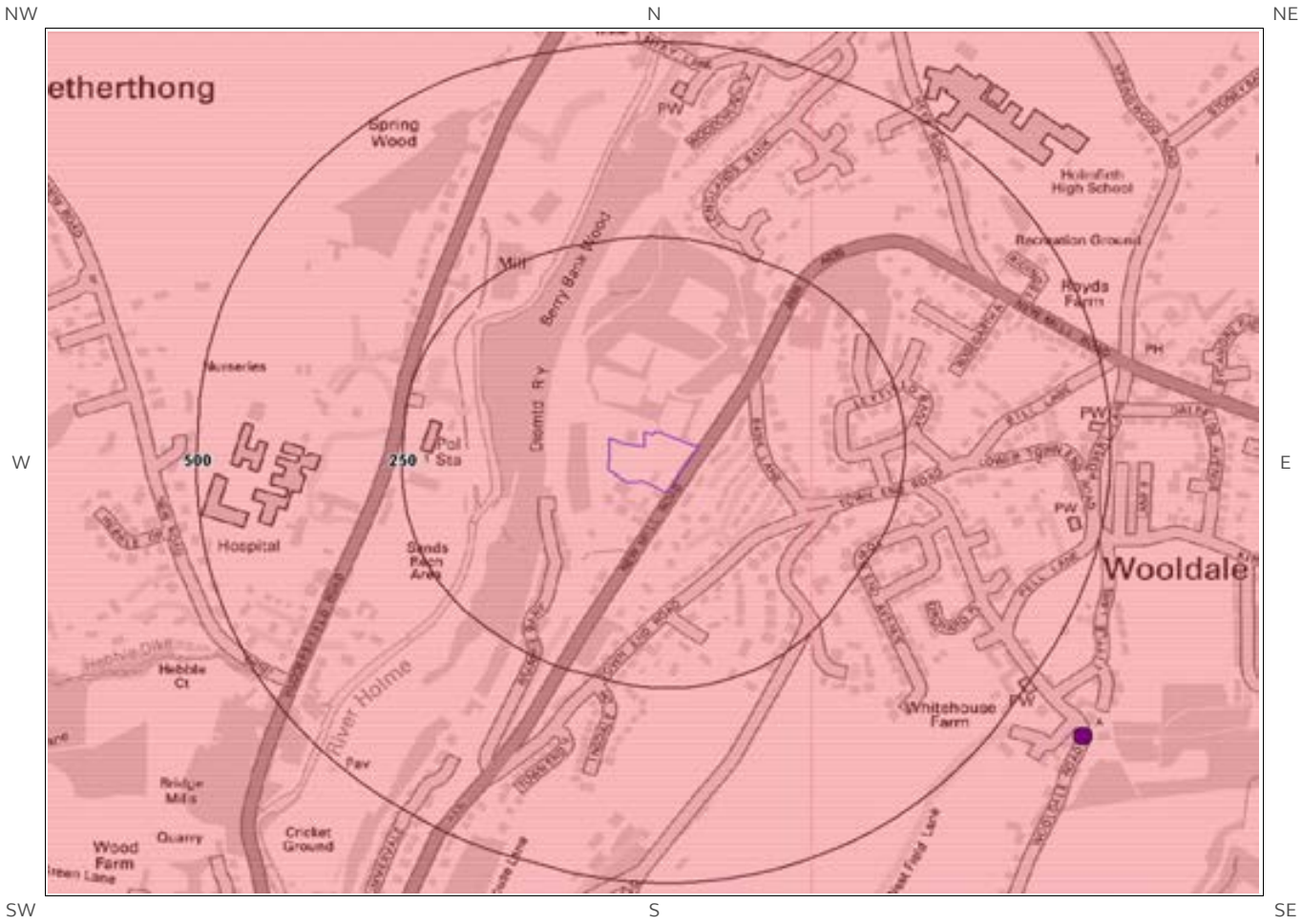
Lex Code	Description	Rock Type
HDW-SDST	HUDDERSFIELD WHITE ROCK	SANDSTONE
MARSD-MDSI	MARSDEN FORMATION	MUDSTONE AND SILTSTONE
ROSSE-MDSI	ROSSENDALE FORMATION	MUDSTONE AND SILTSTONE

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

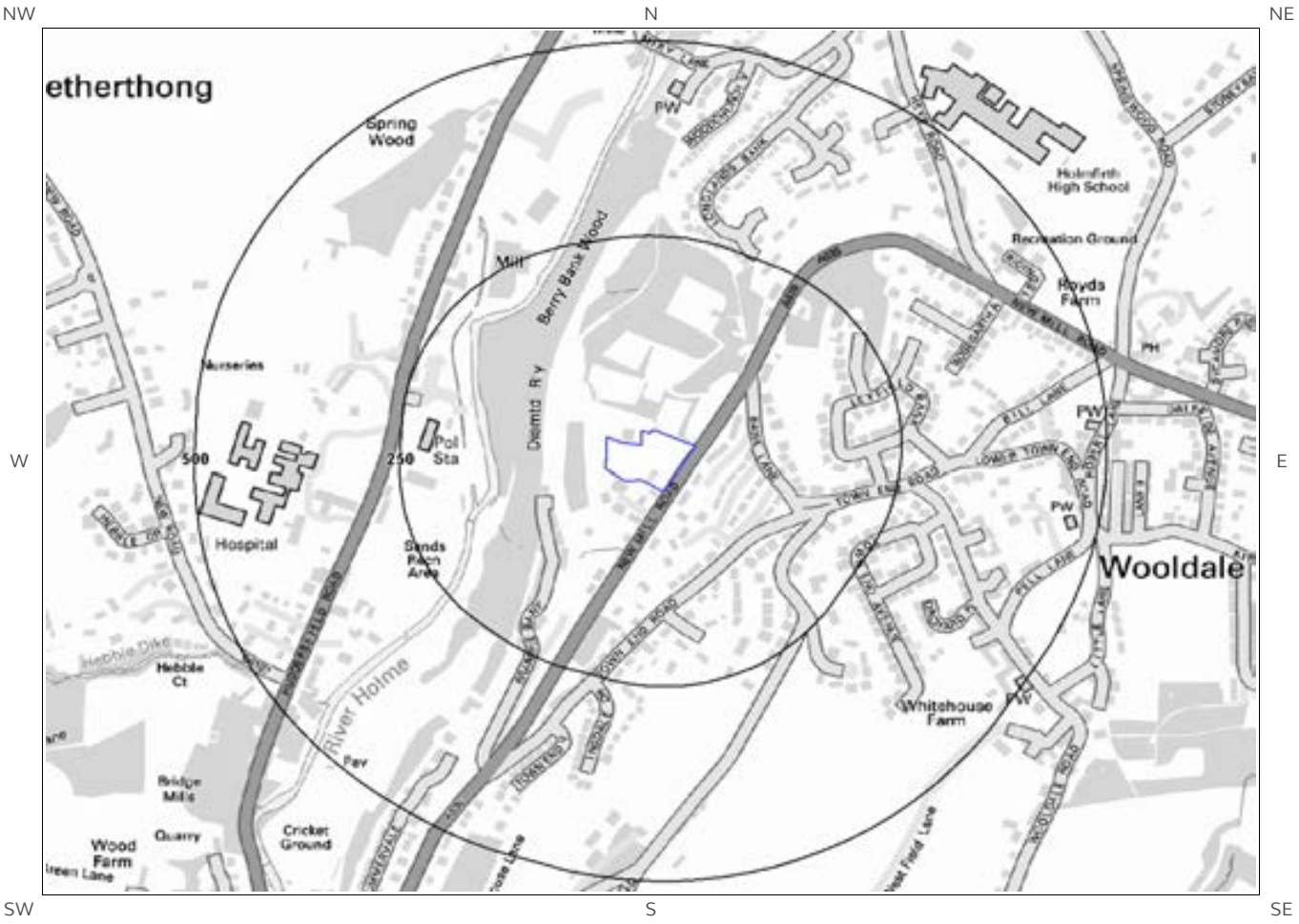
6 Hydrogeology and Hydrology

6a. Aquifer Within Superficial Geology

6b. Aquifer Within Bedrock Geology and Abstraction Licences



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



Site Outline

250 Search Buffers (m)
500

Source Protection Zone 1 - Inner Catchment

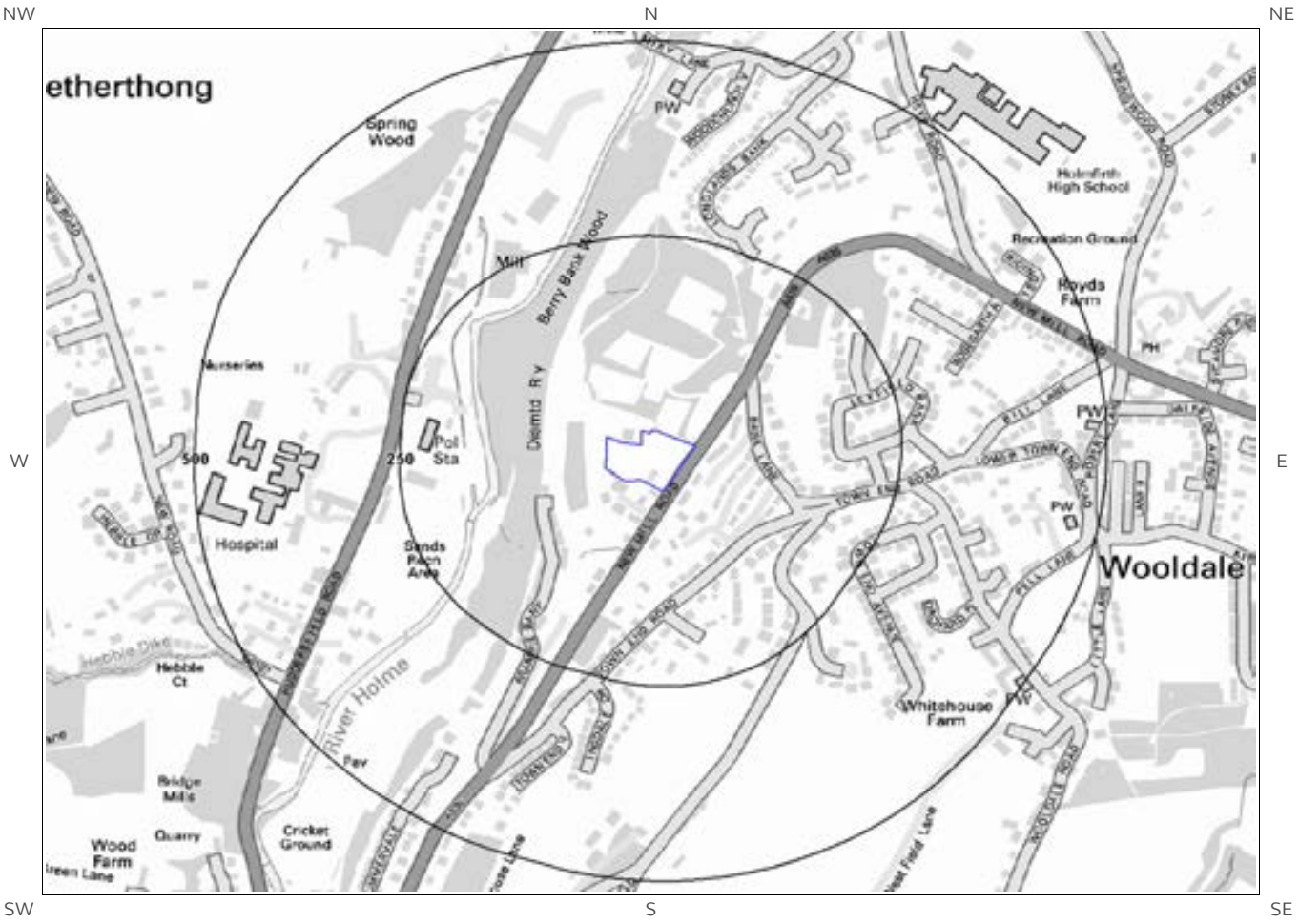
Source Protection Zone 2 - Outer Catchment

Source Protection Zone 3 - Total Catchment

Source Protection Zone 4 - Zone of Special Interest

Potable Water Abstraction Licence

6d. Hydrogeology – Source Protection Zones within confined aquifer

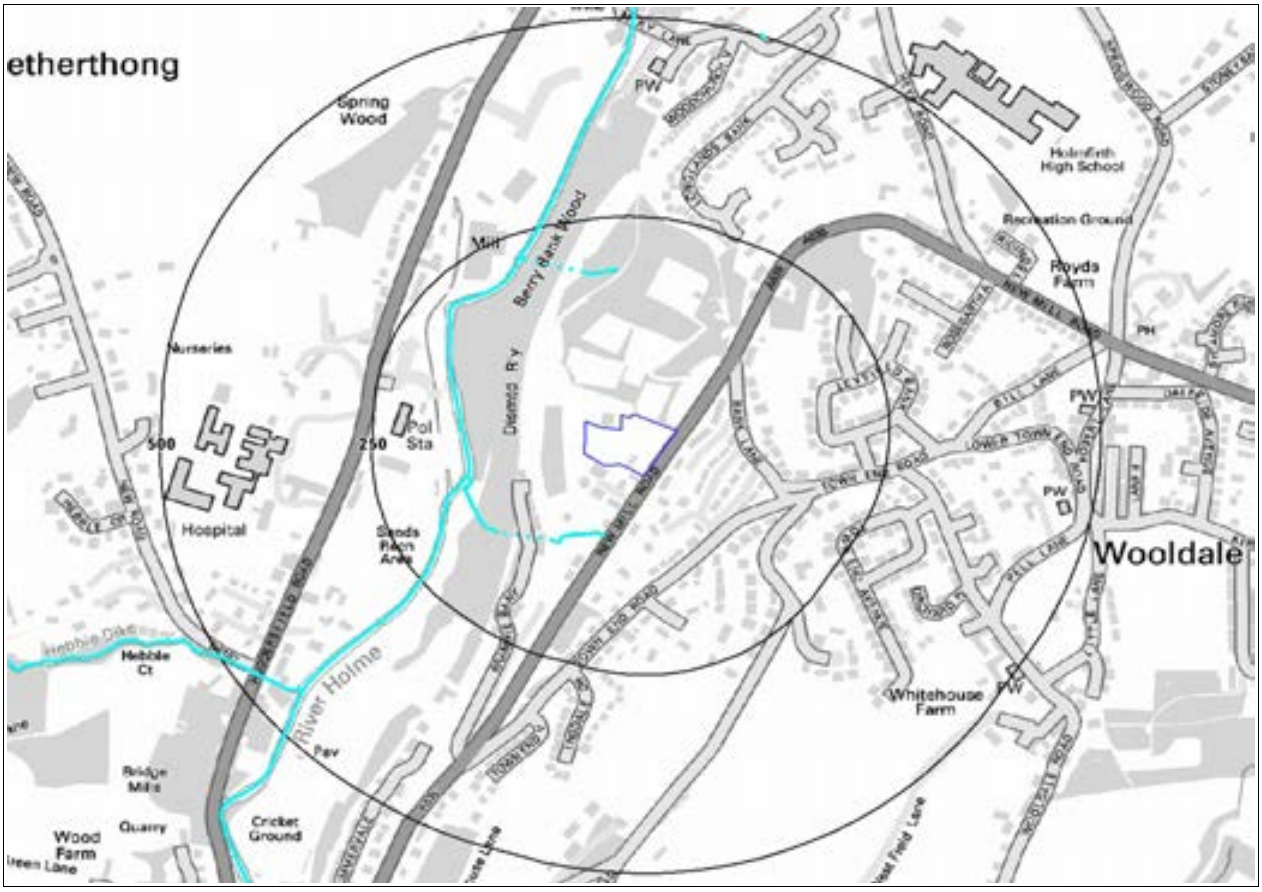


6e. Hydrology – Watercourse Network and River Quality

NW N NE

W E

SW S SE



Site Outline

250 Search Buffers (m)
500

Watercourse type

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

Watercourse level

- On ground surface
- Underground or Elevated
- Level unknown

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

6.Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

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

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

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

ID	Distance (m)	Direction	Designation	Description
1	103	W	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

6.2 Aquifer within Bedrock Deposits

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
2	136	E	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	
5A	594	SE	415330 408810	Status: Historical Licence No: 2/27/10/102 Details: General Farming & Domestic Direct Source: GROUNDWATERS Point: WELL Data Type: Point Name: BROADHEAD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 26/05/1966 Expiry Date: - Issue No: 100 Version Start Date: 26/05/1966 Version End Date:
6A	594	SE	415330 408810	Status: Historical Licence No: 2/27/10/102 Details: General Farming & Domestic Direct Source: GROUNDWATERS Point: WELL - MILLSTONE GRIT - HOLMFIRTH Data Type: Point Name: BROADHEAD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 26/05/1966 Expiry Date: - Issue No: 100 Version Start Date: 26/05/1966 Version End Date:
Not shown	1293	S	414400 407900	Status: Active Licence No: 2/27/10/083 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: GROUNDWATERS Point: BOREHOLE - MILLSTONE GRIT - RIBBLEDEN DYEWORKS Data Type: Point Name: HOLMFIRTH DYERS LTD	Annual Volume (m^3): 90,920 Max Daily Volume (m^3): 364 Original Application No: - Original Start Date: 28/04/1966 Expiry Date: - Issue No: 101 Version Start Date: 13/03/2000 Version End Date:
Not shown	1389	E	416200 408800	Status: Historical Licence No: 2/27/10/004 Details: General use relating to Secondary Category (Medium Loss) Direct Source: GROUNDWATERS Point: BOREHOLE Data Type: Point Name: MOORHOUSE & BROOK LTD	Annual Volume (m^3): 34,095 Max Daily Volume (m^3): - Original Application No: - Original Start Date: 01/12/1965 Expiry Date: - Issue No: 100 Version Start Date: 01/12/1965 Version End Date:
Not shown	1389	E	416200 408800	Status: Historical Licence No: 2/27/10/004 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: GROUNDWATERS Point: BOREHOLE - MILLSTONE GRIT - NEW MILL Data Type: Point Name: MOORHOUSE & BROOK LTD	Annual Volume (m^3): 34,095 Max Daily Volume (m^3): - Original Application No: - Original Start Date: 01/12/1965 Expiry Date: - Issue No: 100 Version Start Date: 01/12/1965 Version End Date:
Not shown	1549	E	416300 408600	Status: Historical Licence No: 2/27/10/056 Details: General use relating to Secondary Category (Medium Loss) Direct Source: GROUNDWATERS Point: BOREHOLE Data Type: Point Name: BOWER ROEBUCK & CO LTD	Annual Volume (m^3): 19,321 Max Daily Volume (m^3): - Original Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 20/01/1966 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1549	E	416300 408600	Status: Historical Licence No: 2/27/10/056 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: GROUNDWATERS Point: BOREHOLE - MILLSTONE GRIT - NEW MILL Data Type: Point Name: BOWER ROEBUCK & CO LTD	Annual Volume (m^3): 19,321 Max Daily Volume (m^3): - Original Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2008 Version End Date:
Not shown	1642	E	416400 408600	Status: Historical Licence No: 2/27/10/057 Details: Boiler Feed Direct Source: GROUNDWATERS Point: SPRINGS Data Type: Point Name: BOWER ROEBUCK & CO LTD	Annual Volume (m^3): 3,683 Max Daily Volume (m^3): - Original Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 20/01/1966 Version End Date:
Not shown	1642	E	416400 408600	Status: Historical Licence No: 2/27/10/057 Details: Boiler Feed Direct Source: GROUNDWATERS Point: SPRINGS - GLENDALE MILLS Data Type: Point Name: BOWER ROEBUCK & CO LTD	Annual Volume (m^3): 3,683 Max Daily Volume (m^3): - Original Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 20/01/1966 Version End Date:
Not shown	1776	SE	416200 408000	Status: Historical Licence No: 2/27/10/051 Details: General use relating to Secondary Category (Medium Loss) Direct Source: GROUNDWATERS Point: SPRING Data Type: Point Name: COPLEY MARSHALL & CO LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 20/01/1966 Version End Date:
Not shown	1776	SE	416200 408000	Status: Historical Licence No: 2/27/10/051 Details: General use relating to Secondary Category (Medium Loss) Direct Source: GROUNDWATERS Point: SPRING - NEW MILL Data Type: Point Name: COPLEY MARSHALL & CO LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 20/01/1966 Version End Date:
Not shown	1811	SW	414000 407500	Status: Historical Licence No: 2/27/10/037 Details: General Farming & Domestic Direct Source: GROUNDWATERS Point: WELL X3 Data Type: Point Name: MAZUREK	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 13/12/1966 Version End Date:
Not shown	1811	SW	414000 407500	Status: Historical Licence No: 2/27/10/037 Details: General Farming & Domestic Direct Source: GROUNDWATERS Point: WELL X3 - MILLSTONE GRIT - HOLMFIRTH Data Type: Point Name: MAZUREK	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 13/12/1966 Version End Date:
Not shown	1840	SE	416200 407900	Status: Historical Licence No: 2/27/10/051 Details: General use relating to Secondary Category (Medium Loss) Direct Source: GROUNDWATERS Point: SPRING Data Type: Point Name: COPLEY MARSHALL & CO LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 20/01/1966 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not show n	1840	SE	416200 407900	Status: Historical Licence No: 2/27/10/051 Details: General use relating to Secondary Category (Medium Loss) Direct Source: GROUNDWATERS Point: SPRING - NEW MILL Data Type: Point Name: COPLEY MARSHALL & CO LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 20/01/1966 Version End Date:
Not show n	1994	SE	416400 407900	Status: Historical Licence No: 2/27/10/099 Details: General Farming & Domestic Direct Source: GROUNDWATERS Point: SPRING - NEW MILL Data Type: Line Name: SHAW	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 28/04/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/04/1966 Version End Date:
Not show n	1994	SE	416400 407900	Status: Historical Licence No: 2/27/10/099 Details: General Farming & Domestic Direct Source: GROUNDWATERS Point: SPRING Data Type: Line Name: SHAW	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 28/04/1966 Expiry Date: - Issue No: 100 Version Start Date: 28/04/1966 Version End Date:

6.4 Surface Water Abstraction Licences

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

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

ID	Distance (m)	Direction	NGR	Details	
Not shown	1459	S	414500 407700	Status: Historical Licence No: 2/27/10/082 Details: Process water Direct Source: SURFACE WATER Point: RIVER RIBBLE - TRIBUTARY OF RIVER HOLME- RIBBLEDEN Data Type: Point Name: HOLMFIRTH DYERS LTD	Annual Volume (m^3): 85,000 Max Daily Volume (m^3): 355 Application No: - Original Start Date: 28/04/1966 Expiry Date: - Issue No: 102 Version Start Date: 17/04/2002 Version End Date:
Not shown	1459	S	414500 407700	Status: Active Licence No: 2/27/10/082 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: SURFACE WATER Point: RIVER RIBBLE - TRIBUTARY OF RIVER HOLME- RIBBLEDEN Data Type: Point Name: HOLMFIRTH DYERS LTD	Annual Volume (m^3): 85,000 Max Daily Volume (m^3): 355 Application No: - Original Start Date: 28/04/1966 Expiry Date: - Issue No: 103 Version Start Date: 07/01/2015 Version End Date:
Not shown	1916	SE	416300 407900	Status: Historical Licence No: 2/27/10/049 Details: General use relating to Secondary Category (Medium Loss) Direct Source: SURFACE WATER Point: JACKSON BRIDGE DYKE Data Type: Point Name: COPLEY MARSHALL & CO LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 20/01/1966 Version End Date:
Not	1916	SE	416300	Status: Historical	Annual Volume (m^3): -

ID	Distance (m)	Direction	NGR	Details	
shown			407900	Licence No: 2/27/10/049 Details: General use relating to Secondary Category (Medium Loss) Direct Source: SURFACE WATER Point: JACKSON BRIDGE DYKE Data Type: Point Name: COPLEY MARSHALL & CO LTD	Max Daily Volume (m^3): - Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 20/01/1966 Version End Date:

6.5 Potable Water Abstraction Licences

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

Database searched and no data found.

6.6 Source Protection Zones

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

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

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

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

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

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

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Minor Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.
346	SE	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.

6.9 River Quality

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

6.9.1 Biological Quality:

Biological Quality data describes water quality in terms of 83 groups of macroinvertebrates, some of which are pollution sensitive. The results are graded from A ('Very Good') to F ('Bad').

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

ID	Distance (m)	Direction	NGR	River Quality Grade	Biological Quality Grade				
					2005	2006	2007	2008	2009
Not shown	1109	NE	415300 410200	River Name: Holme Reach: New Mill Dike Brook Motors End/Start of Stretch: Start of Stretch NGR	D	D	D	D	D

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	85 S	- Alternative Name: -	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	85 S	- Alternative Name: -	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	112 SW	- Alternative Name: -	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
7	112 SW	- Alternative Name: -	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
3	137 W	- Alternative Name: -	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	137 W	- Alternative Name: -	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): 2.3
5	137 W	River Holme Alternative Name: -	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): 9.4
8	137 W	- Alternative Name: -	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	137 W	- Alternative Name: -	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): 2.3

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
10	137 W	River Holme Alternative Name: -	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): 9.4
6	141 W	River Holme Alternative Name: -	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): 8.7
11	141 W	River Holme Alternative Name: -	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): 8.7
11	168 W	River Holme Alternative Name: -	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): 9.4
16	168 W	River Holme Alternative Name: -	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): 9.4
12	182 N	- Alternative Name: -	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
17	182 N	- Alternative Name: -	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
13	186 N	- Alternative Name: -	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
18	186 N	- Alternative Name: -	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
14	214 N	- Alternative Name: -	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
19	214 N	- Alternative Name: -	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
15	222 N	River Holme Alternative Name: -	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): 8.1
20	222	River Holme Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	N			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 8.1
7	445 SW	River Holme Alternative Name: -	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): 8.4
8	445 SW	Hebble Dike Alternative Name: -	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): 9.0
Not shown	445 SW	River Holme Alternative Name: -	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): 8.4
Not shown	445 SW	Hebble Dike Alternative Name: -	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): 9.0
9	459 SW	Hebble Dike Alternative Name: -	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 SW	Hebble Dike Alternative Name: -	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	494 SW	Hebble Dike Alternative Name: -	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): 2.5
Not shown	494 SW	Hebble Dike Alternative Name: -	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): 2.5
16	498 N	- Alternative Name: -	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	498 N	- Alternative Name: -	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

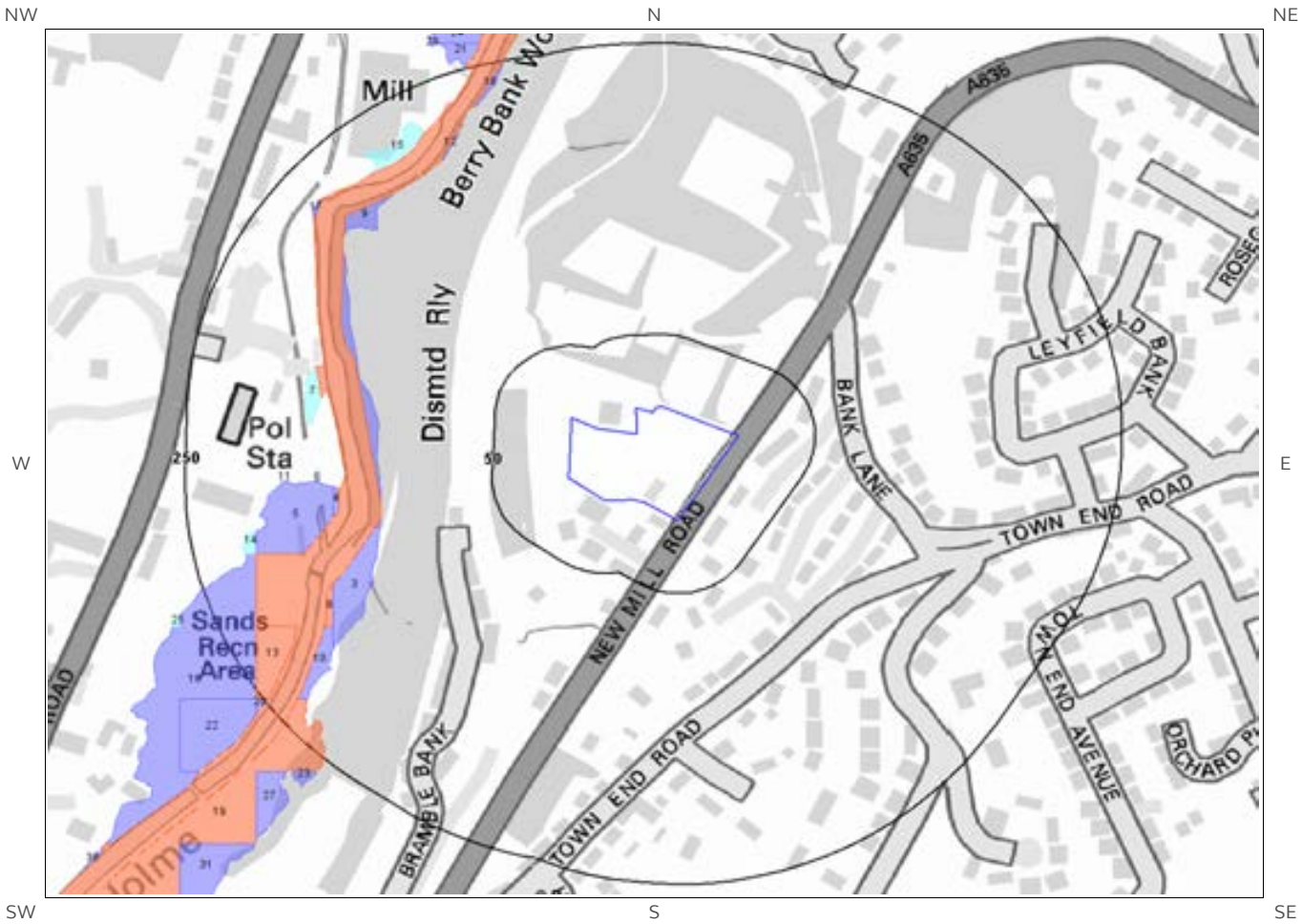
Surface water features within 250m of the study site | Identified

The following surface water records are not represented on mapping:

Distance (m)	Direction
88	SW
130	W
137	W
147	SW
183	N

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

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



Site Outline

100 250 Search Buffers (m)

RoFRaS Rating

- Very Low
- Low
- Medium
- High

7 Flooding

7.1 River and Coastal Zone 2 Flooding

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

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

ID	Distance (m)	Direction	Update	Type
1	123	W	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)

7.2 River and Coastal Zone 3 Flooding

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

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

ID	Distance (m)	Direction	Update	Type
1	123	W	19-Nov-2019	Zone 3 - (Fluvial Models)

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.

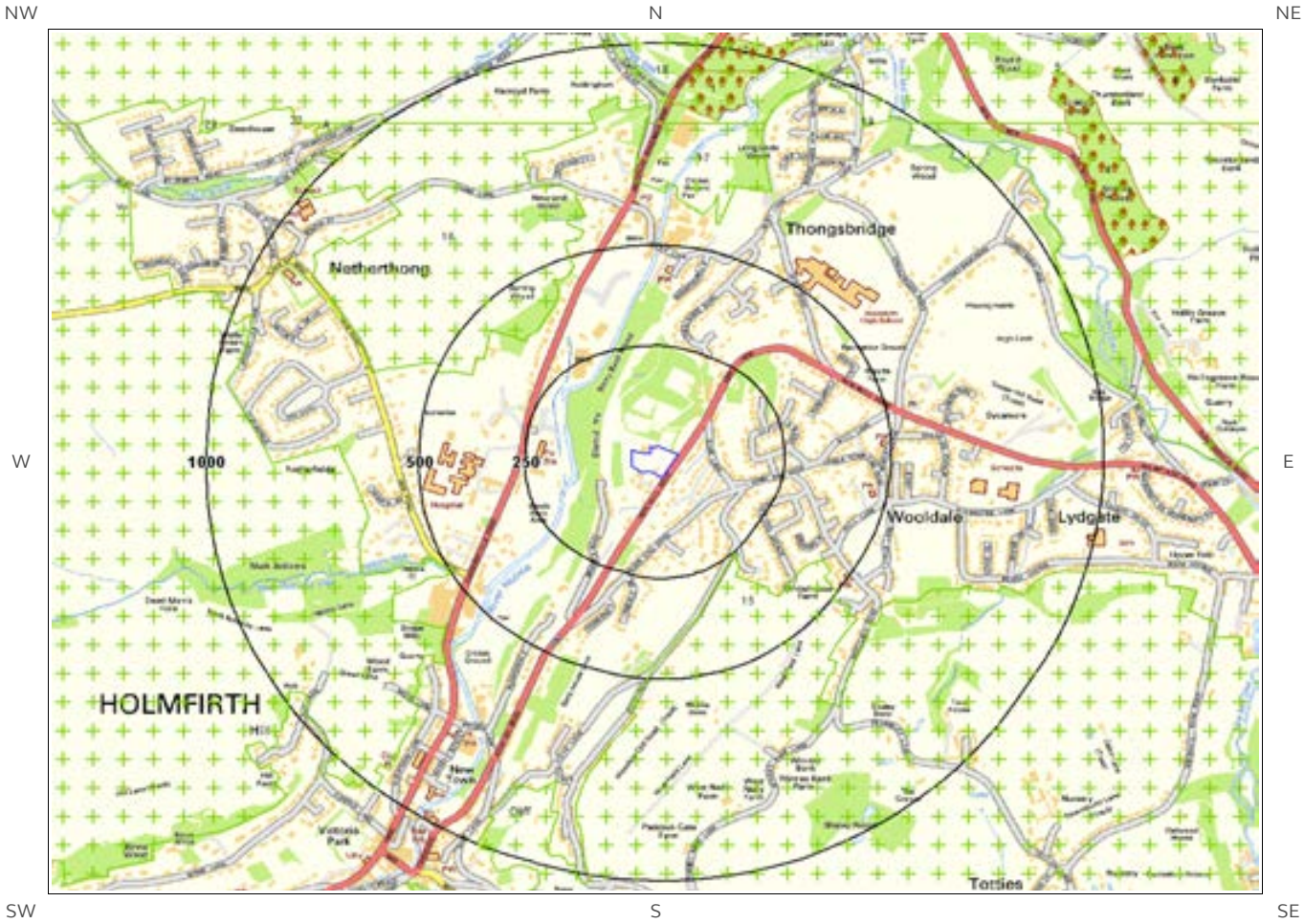
7.8 Groundwater Flooding Confidence Areas

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



Site Outline
100
250
Search Buffers (m)

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

8. Designated Environmentally Sensitive Sites

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

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

14

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
1	820	N	HAGG WOOD	Ancient Replanted Woodland
2	934	N	HAGG WOOD	Ancient Replanted Woodland
3	1030	N	HAGG WOOD	Ancient Replanted Woodland
4	1142	NE	SINKING WOOD	Ancient Replanted Woodland
5	1301	NE	SINKING WOOD	Ancient Replanted Woodland
6	1457	NE	Unknown	Ancient Replanted Woodland
7	1464	NE	Unknown	Ancient Replanted Woodland
Not shown	1534	NE	Unknown	Ancient Replanted Woodland
Not shown	1595	N	HAGG WOOD	Ancient Replanted Woodland
Not shown	1650	W	HOLMROYD WOOD	Ancient & Semi-Natural Woodland
Not shown	1652	N	HAGG WOOD	Ancient Replanted Woodland
Not shown	1725	NE	ROUND WOOD	Ancient & Semi-Natural Woodland
Not shown	1905	NE	BLACK GUTTERS WOOD	Ancient Replanted Woodland
Not shown	1956	NE	GREAT PLAIN WOOD	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:

0

Database searched and no data found.

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

9

ID	Distance	Direction	Green Belt Name	Local Authority Name
15	254	SE	Liverpool, Manchester and West Yorks Greenbelt	Kirklees District (B)
16	366	NW	Liverpool, Manchester and West Yorks Greenbelt	Kirklees District (B)
17	569	N	Liverpool, Manchester and West Yorks Greenbelt	Kirklees District (B)
18	800	N	Liverpool, Manchester and West Yorks Greenbelt	Kirklees District (B)

19	920	NE	Liverpool, Manchester and West Yorks Greenbelt	Kirklees District (B)
20A	1051	NW	Liverpool, Manchester and West Yorks Greenbelt	Kirklees District (B)
21A	1097	NW	Liverpool, Manchester and West Yorks Greenbelt	Kirklees District (B)
22	1126	NW	Liverpool, Manchester and West Yorks Greenbelt	Kirklees District (B)
23	1245	NW	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 — Low

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

Hazard
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.

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 — Very Low

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

Hazard
Very low potential for compressible deposits to be present. 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 — Very Low

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

Hazard
Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

* 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 — Identified

The following non-coal mining information is provided by the BGS:

Distance (m)	Direction	Name	Commodity	Assessment of likelihood
0.0	On Site	Not available	Vein Mineral	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered

Past underground mine workings are uncommon, localised and of limited area. The rock types present in this area are such that minor mineral veins may be present within them on which it is possible that there have been attempts to work these by underground methods and/or it is possible that small scale underground extraction of other materials may have occurred. All such occurrences are likely to be restricted in size and infrequent. It should be noted, however, that there is always the possibility of the existence of other sub-surface excavations, such as wells, cess pits, follies, air raid shelters/bunkers and other military structures etc. that could affect surface ground stability but which are outside the scope of this dataset. However, if in a coalfield area you should still consider a Coal Authority mining search for the area of interest.

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

Standard Terms and Conditions

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

https://www.groundsure.com/terms-and-conditions-jan-2020/

Groundsure
LOCATION INTELLIGENCE

Rogers Geotechnical Services

Barncliffe Mills, NEAR BANK,
HUDDERSFIELD, HD8 8LU

Groundsure Reference:	GS-6541668
Your Reference:	C406_19_E_611_PO-0519
Report Date	8 Jan 2020
Report Delivery Method:	Email - pdf

Geo Insight

Address: NEW MILL ROAD, HOLMFIRTH, HUDDERSFIELD, HD9 7LN

Dear Sir/ Madam,

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

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

Yours faithfully,

Managing Director
Groundsure Limited

Enc.
Groundsure Geo Insight

Geo Insight

Address:	**NEW MILL ROAD, HOLMFIRTH, HUDDERSFIELD, HD9 7LN**
Date:	**8 Jan 2020**
Reference:	**GS-6541668**
Client:	**Rogers Geotechnical Services**

NW N NE

W E

SW S SE

Aerial Photograph Capture date:	29-Jun-2018
Grid Reference:	414787,409161
Site Size:	0.5222ha

Contents Page

Overview of Findings

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

The report is based on the BGS 1:50,000 and 1:10,000 Digital Geological Map of Great Britain, BGS Geosure data; BRITPITS database; Non-coal mining data and Borehole Records, Coal Authority data including brine extraction areas, PBA non-coal mining and natural cavities database, Johnson Poole and Bloomer mining data and Groundsure's unique database including historical surface ground and underground workings.

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

Section 1: Geology 1:10,000 Scale		
1.1 Artificial Ground	1.1 Is there any Artificial Ground/ Made Ground present beneath the study site at 1:10,000 scale?	Yes
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site at 1:10,000 scale?*	No
	1.2.2 Are there any records of landslip within 500m of the study site boundary at 1:10,000 scale?	Yes
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?	Yes
	2.1.2 Are there any records relating to permeability of artificial ground within the study site*boundary?	Yes
2.2 Superficial Geology and Landslips	2.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?*	No
	2.2.2 Are there any records of permeability of superficial ground within 500m of the study site?	No
	2.2.3 Are there any records of landslip within 500m of the study site boundary?	Yes
	2.2.4 Are there any records relating to permeability of landslips within the study site* boundary?	No

Section 2: Geology 1:50,000 Scale

2.3 Bedrock, Solid Geology and linear features	2.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	2.3.2 Are there any records relating to permeability of bedrock ground within the study site boundary?	Yes
	2.3.3 Are there any records of linear features within 500m of the study site boundary?	Yes

Section 3: Radon

3. Radon	3.1Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is in a Radon Affected Area, as between 1 and 3% of properties are above the Action Level.
	3.2Radon Protection	No radon protective measures are necessary.

Section 4: Ground Workings	On-site	0-50m	51-250	251-500	501-1000
4.1 Historical Surface Ground Working Features from Small Scale Mapping	0	9	13	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	0	0	0	0	0
4.3 Current Ground Workings	0	0	2	3	5

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.1 Historical Mining	0	0	0	0	0
5.2 Coal Mining	1	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
5.4 Non-Coal Mining*	1	0	1	0	4
5.5 Non–Coal Mining Cavities	0	0	0	0	0
5.5 Natural Cavities	0	0	0	0	0

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

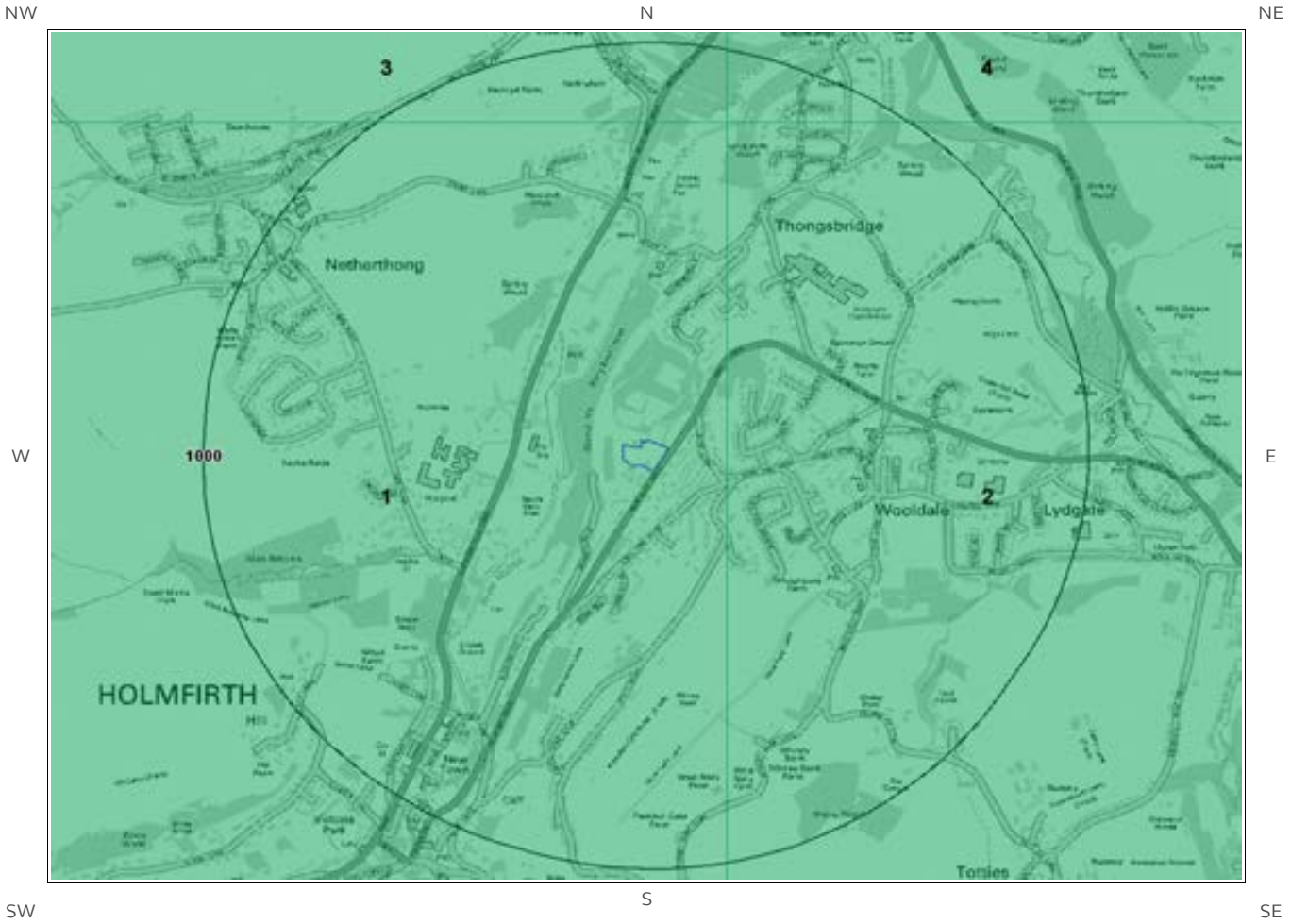
Section 6: Natural Ground Subsidence	On-site
6.1 Shrink-Swell Clay	Very Low
6.2 Landslides	Low
6.3 Ground Dissolution of Soluble Rocks	Negligible
6.4 Compressible Deposits	Very Low
6.5 Collapsible Deposits	Very Low
6.5 Running Sand	Very Low

Section 7: Borehole Records	On-site	0-50m	51-250
7 BGS Recorded Boreholes	0	0	10

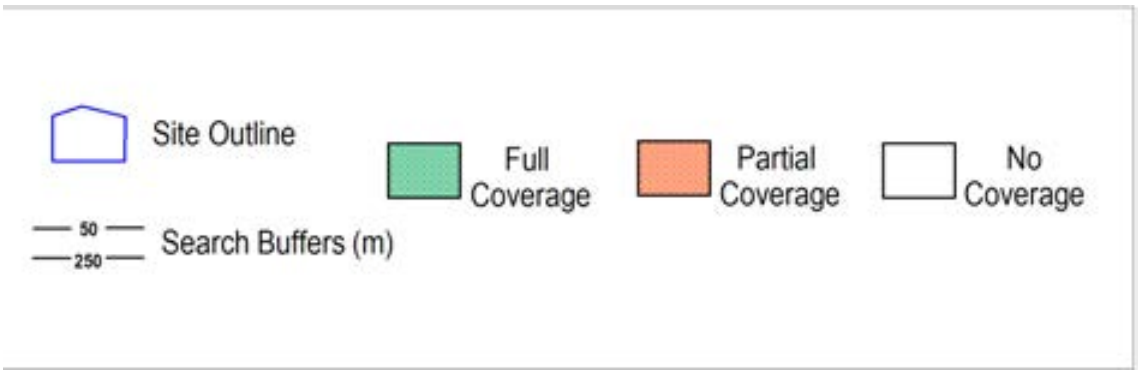
Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250
8 Records of Background Soil Chemistry	3	1	0

Section 9: Railways and Tunnels	On-site	0-50m	51-250	250-500
9.1 Tunnels	0	0	0	Not Searched
9.2 Historical Railway and Tunnel Features	0	0	7	Not Searched
9.3 Historical Railways	0	0	2	Not Searched
9.4 Active Railways	0	0	0	Not Searched
9.5 Railway Projects	0	0	0	0

1:10,000 Scale Availability



1_10,000 Availability Legend



Availability of 1:10,000 Scale Geology Mapping

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

ID	Distance	Artificial Coverage	Superficial Coverage	Bedrock Coverage	Mass Movement Coverage
1	0.0	Some deposits are mapped	Full	Full	Some deposits are mapped
2	136.0	Some deposits are mapped	Full	Full	Some deposits are mapped
3	800.0	Some deposits are mapped	Full	Full	Some deposits are mapped
4	821.0	Some deposits are mapped	Full	Full	Some deposits are mapped

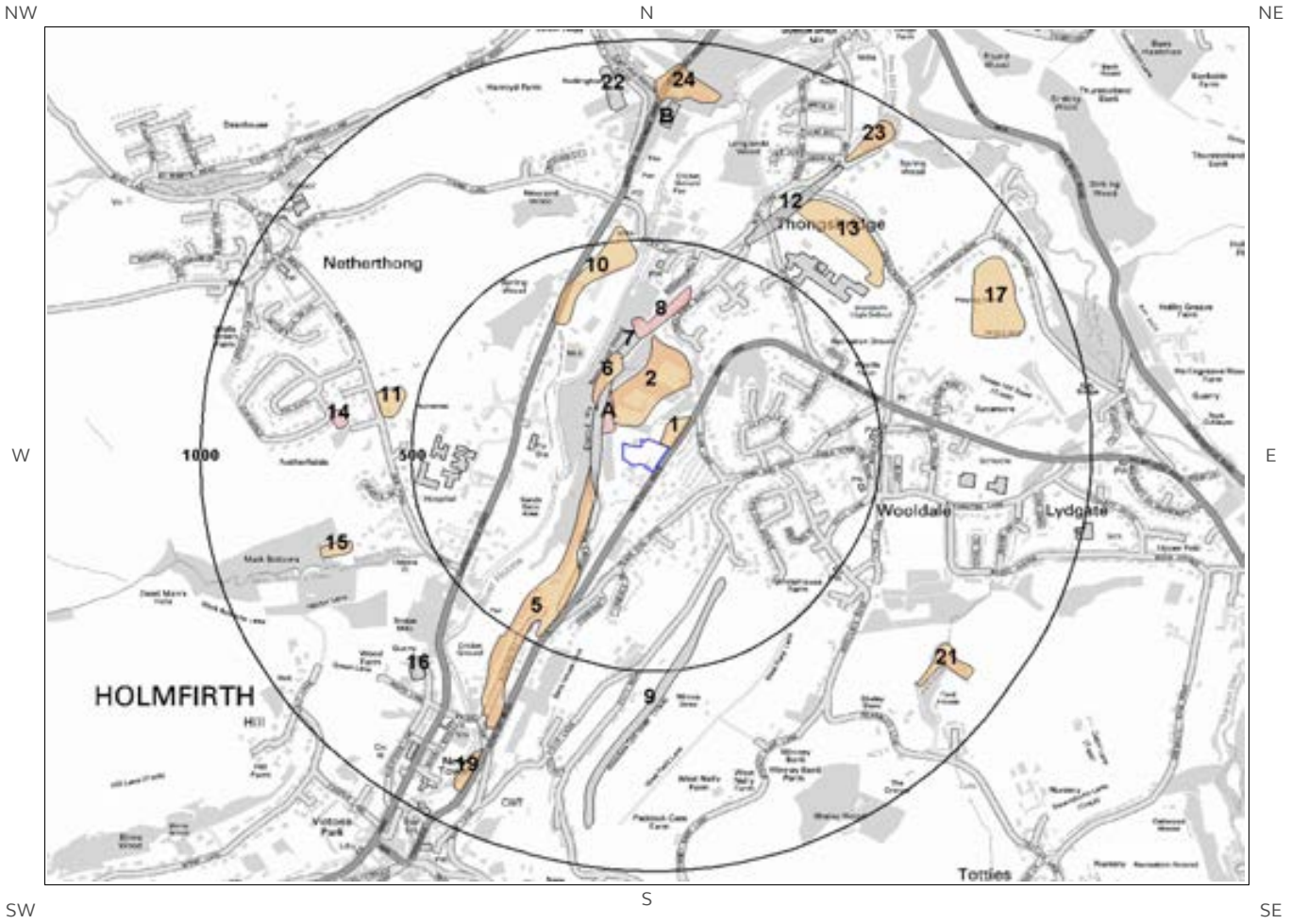
Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not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

The definitions of coverage are as follows:

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

1 Geology (1:10,000 scale).

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



Artificial Ground Legend

Site Outline

500
1000
Search Buffers (m)

Made Ground (undivided)

Disturbed Ground (undivided)

Worked Ground (undivided)

Landscaped Ground (undivided)

Infilled Ground

Reclaimed Ground

1. Geology 1:10,000 scale

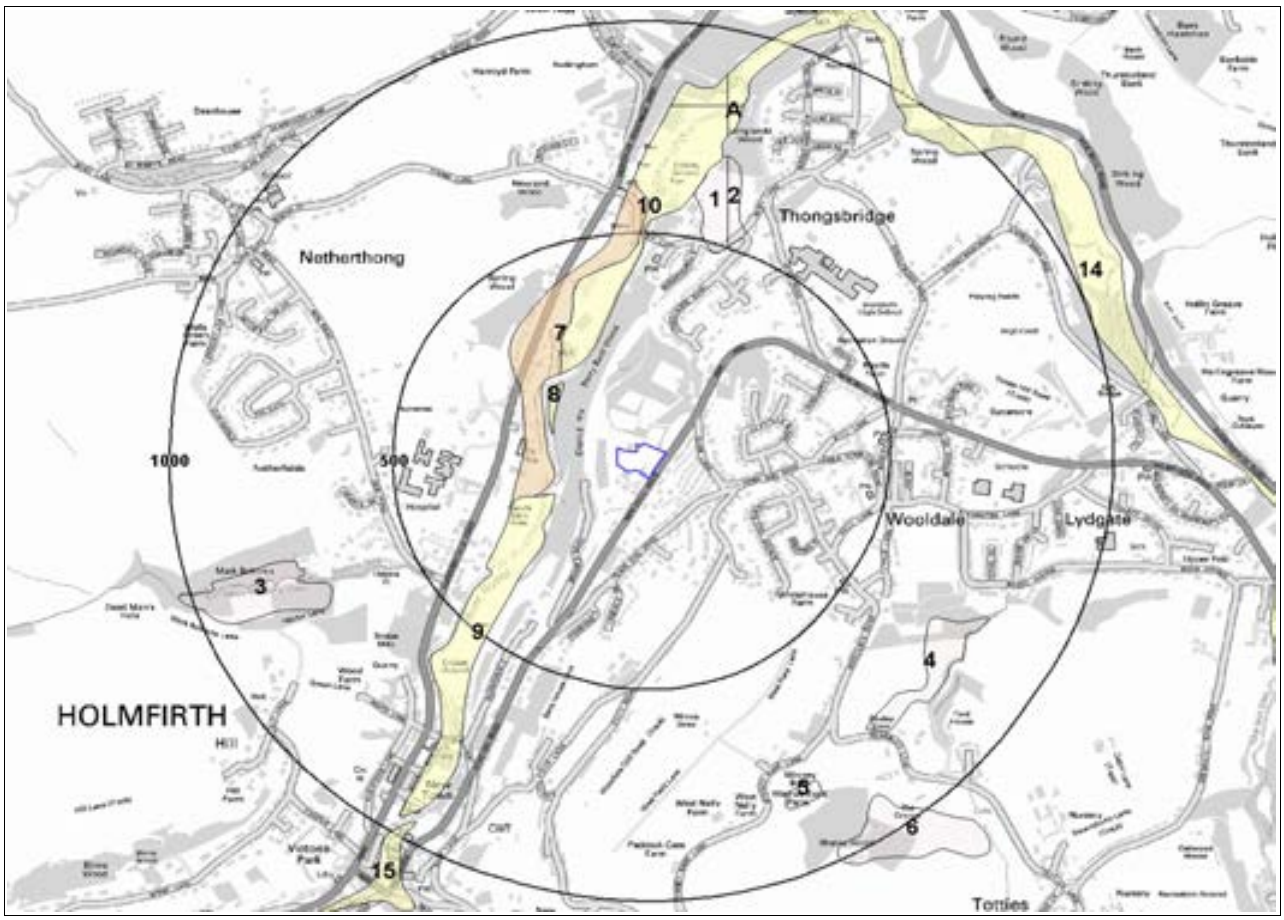
1.1 Artificial Ground

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

Are there any records of Artificial/ Made Ground within 500m of the study site boundary at 1:10,000 scale? Yes

ID	Distance	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
2	36.0	N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
3A	38.0	NW	WMGR-ARTDP	Infilled Ground	Artificial Deposit
4A	52.0	W	WGR-VOID	Worked Ground (Undivided)	Void
5	79.0	W	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
6	104.0	NW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
7	206.0	N	WGR-VOID	Worked Ground (Undivided)	Void
8	254.0	N	WMGR-ARTDP	Infilled Ground	Artificial Deposit
9	309.0	SE	WGR-VOID	Worked Ground (Undivided)	Void
10	327.0	NW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

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



Artificial Ground Legend

Site Outline

500
1000
Search Buffers (m)

1.2 Superficial Deposits and Landslips

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

1.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary at 1:10,000 scale? Yes

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
7	141.0	W	RTD1-XSV	River Terrace Deposits, 1 - Sand And Gravel	Sand And Gravel
8	150.0	W	ALV-CZ	Alluvium - Silty Clay	Clay, Silty
9	155.0	SW	ALV-CZ	Alluvium - Silty Clay	Clay, Silty
10	213.0	NW	ALV-CZ	Alluvium - Silty Clay	Clay, Silty

1.2.2 Landslip

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

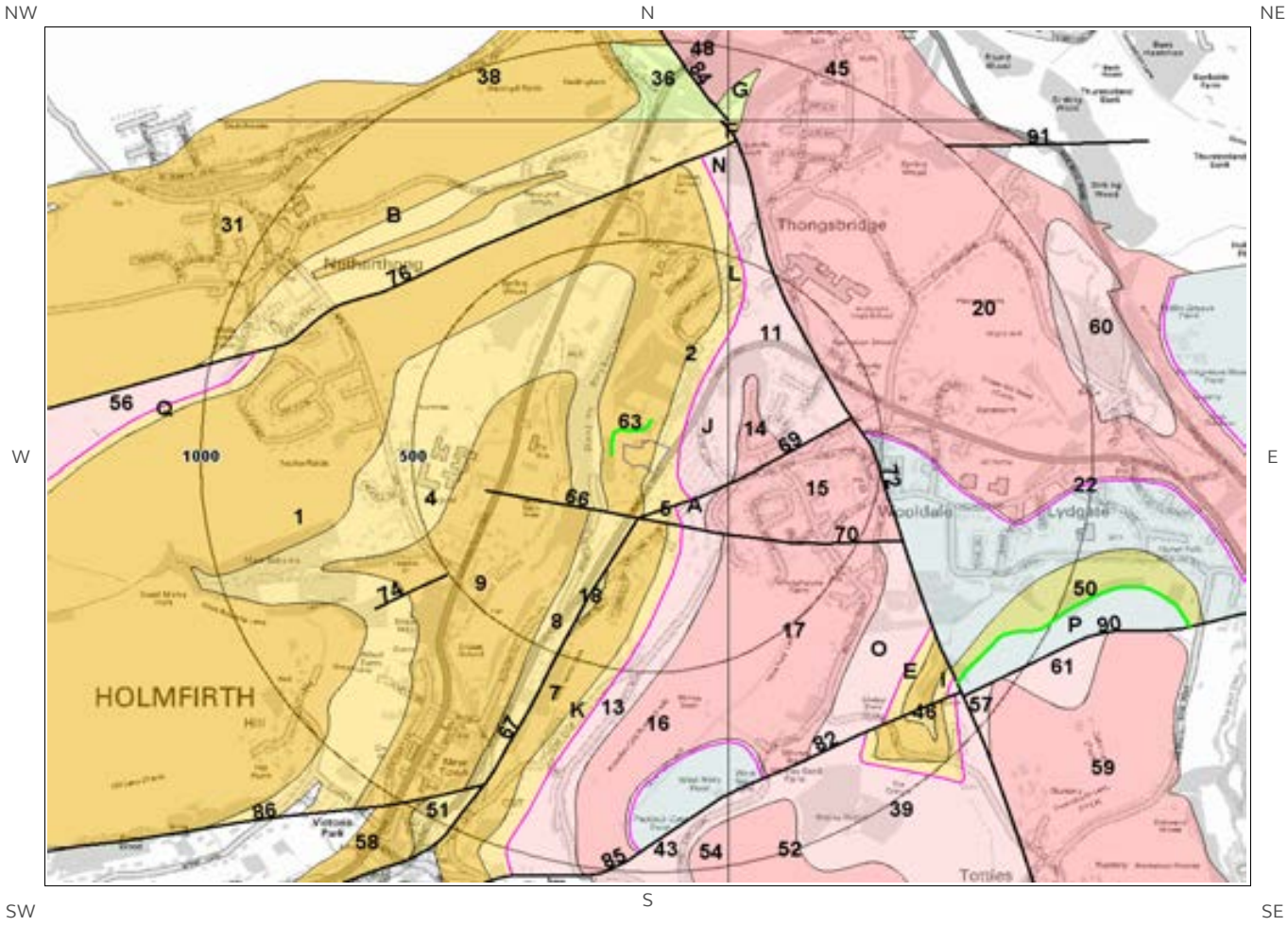
Yes

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	480.0	N	SLIP-UKNOWN	Landslide Deposits	Unknown/unclassified Entry

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

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

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



Bedrock and linear features Legend

Site Outline

500
1000
Search Buffers (m)

1.3 Bedrock and linear features

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

1.3.1 Bedrock/ Solid Geology

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

ID	Distance (m)	Direction	LEX Code	Description	Rock Age
1	0.0	On Site	HDW-SDST	Huddersfield White Rock - Sandstone	Marsdenian Sub-age
2	0.0	On Site	MARSD-MDSI	Marsden Formation - Mudstone And Siltstone	Marsdenian Sub-age
3J	21.0	E	ROSSE-MDSI	Rossendale Formation - Mudstone And Siltstone	Yeadonian Sub-age
4	52.0	W	MARSD-MDSI	Marsden Formation - Mudstone And Siltstone	Marsdenian Sub-age
5	93.0	S	MARSD-MDSI	Marsden Formation - Mudstone And Siltstone	Marsdenian Sub-age
6A	95.0	SE	ROSSE-MDSI	Rossendale Formation - Mudstone And Siltstone	Yeadonian Sub-age
7	117.0	S	HDW-SDST	Huddersfield White Rock - Sandstone	Marsdenian Sub-age
8	118.0	S	MARSD-MDSI	Marsden Formation - Mudstone And Siltstone	Marsdenian Sub-age
9	128.0	W	GSYG-SDST	Guiseley Grit - Sandstone	Marsdenian Sub-age
10K	129.0	S	MARSD-MDSI	Marsden Formation - Mudstone And Siltstone	Marsdenian Sub-age
11	136.0	E	ROSSE-MDSI	Rossendale Formation - Mudstone And Siltstone	Yeadonian Sub-age
12A	149.0	SE	RR-SDST	Rough Rock - Sandstone	Yeadonian Sub-age
13	149.0	SE	ROSSE-MDSI	Rossendale Formation - Mudstone And Siltstone	Yeadonian Sub-age
14	158.0	E	RR-SDST	Rough Rock - Sandstone	Yeadonian Sub-age
15	162.0	SE	RR-SDST	Rough Rock - Sandstone	Yeadonian Sub-age
16	223.0	SE	RR-SDST	Rough Rock - Sandstone	Yeadonian Sub-age
17	234.0	SE	RR-SDST	Rough Rock - Sandstone	Yeadonian Sub-age
18	260.0	S	MARSD-MDSI	Marsden Formation - Mudstone And Siltstone	Marsdenian Sub-age
19L	313.0	NE	MARSD-MDSI	Marsden Formation - Mudstone And Siltstone	Marsdenian Sub-age
20	411.0	NE	RR-SDST	Rough Rock - Sandstone	Yeadonian Sub-age
21M	452.0	E	ROSSE-MDSI	Rossendale Formation - Mudstone And Siltstone	Yeadonian Sub-age
22	457.0	E	PLCM-MDSI	Pennine Lower Coal Measures Formation - Mudstone And Siltstone	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

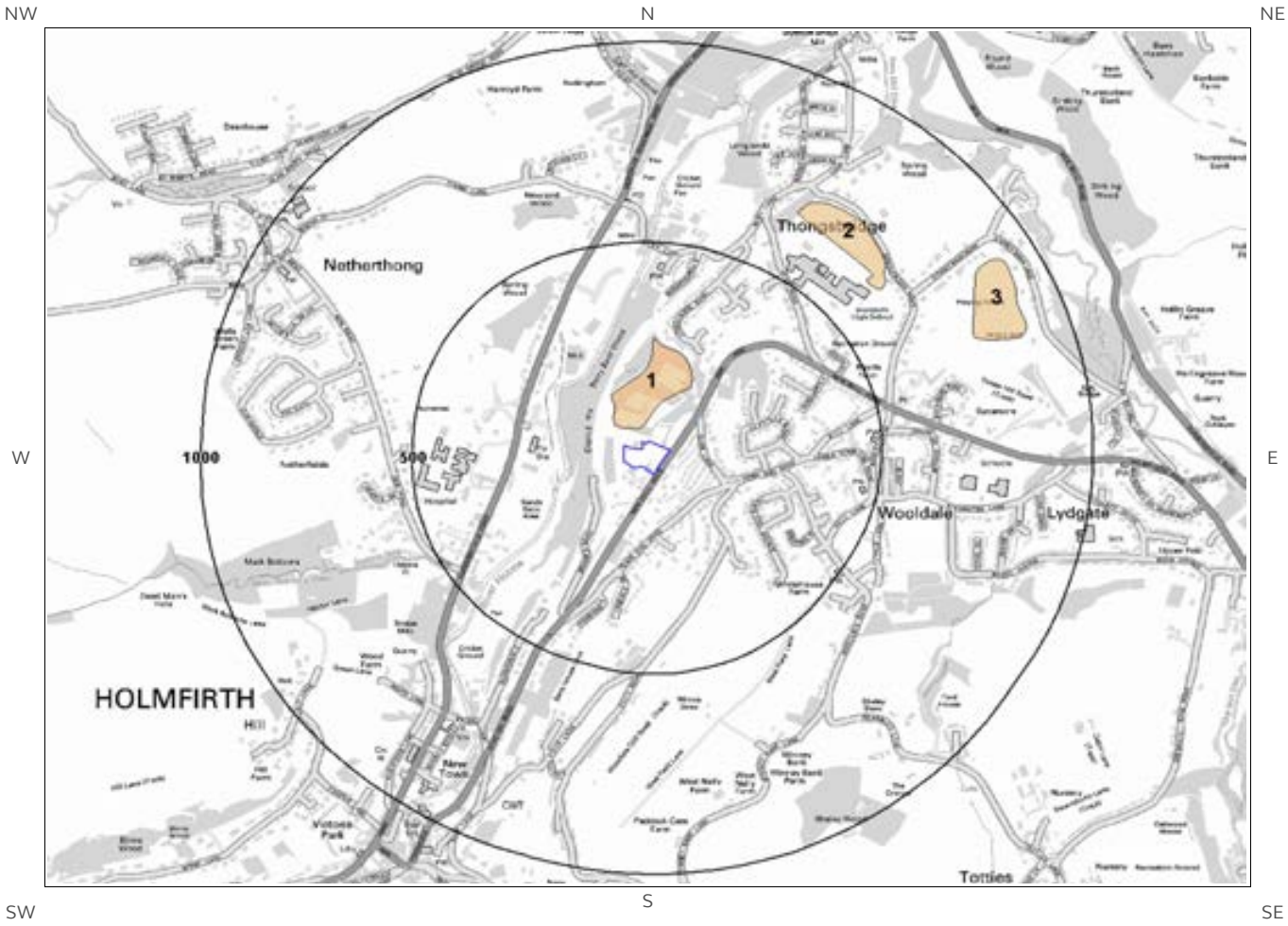
ID	Distance (m)	Direction	Category Description	Feature Description
62J	21.0	E	FOSSIL_HORIZON	Fossil horizon, marine band ()
63	27.0	N	ROCK	Coal seam, inferred ()
64A	93.0	S	FAULT	Normal fault, inferred; crossmarks on downthrow side
65A	95.0	SE	FOSSIL_HORIZON	Fossil horizon, marine band ()
66	117.0	S	FAULT	Normal fault, inferred; crossmarks on downthrow side
67	118.0	S	FAULT	Normal fault, inferred; crossmarks on downthrow side
68K	149.0	SE	FOSSIL_HORIZON	Fossil horizon, marine band ()
69	162.0	SE	FAULT	Normal fault, inferred; crossmarks on downthrow side
70	234.0	SE	FAULT	Normal fault, inferred; crossmarks on downthrow side
71L	313.0	NE	FOSSIL_HORIZON	Fossil horizon, marine band ()
72	411.0	NE	FAULT	Normal fault, inferred; crossmarks on downthrow side
73M	457.0	E	FOSSIL_HORIZON	Fossil horizon, marine band ()

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

This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2 Geology 1:50,000 Scale

2.1 Artificial Ground map



Site Outline

500
1000
Search Buffers (m)

Made Ground (undivided)

Disturbed Ground (undivided)

Worked Ground (undivided)

Landscaped Ground (undivided)

Infilled Ground

Reclaimed Ground

2. Geology 1:50,000 scale

2.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 086

2.1.1 Artificial/ Made Ground

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

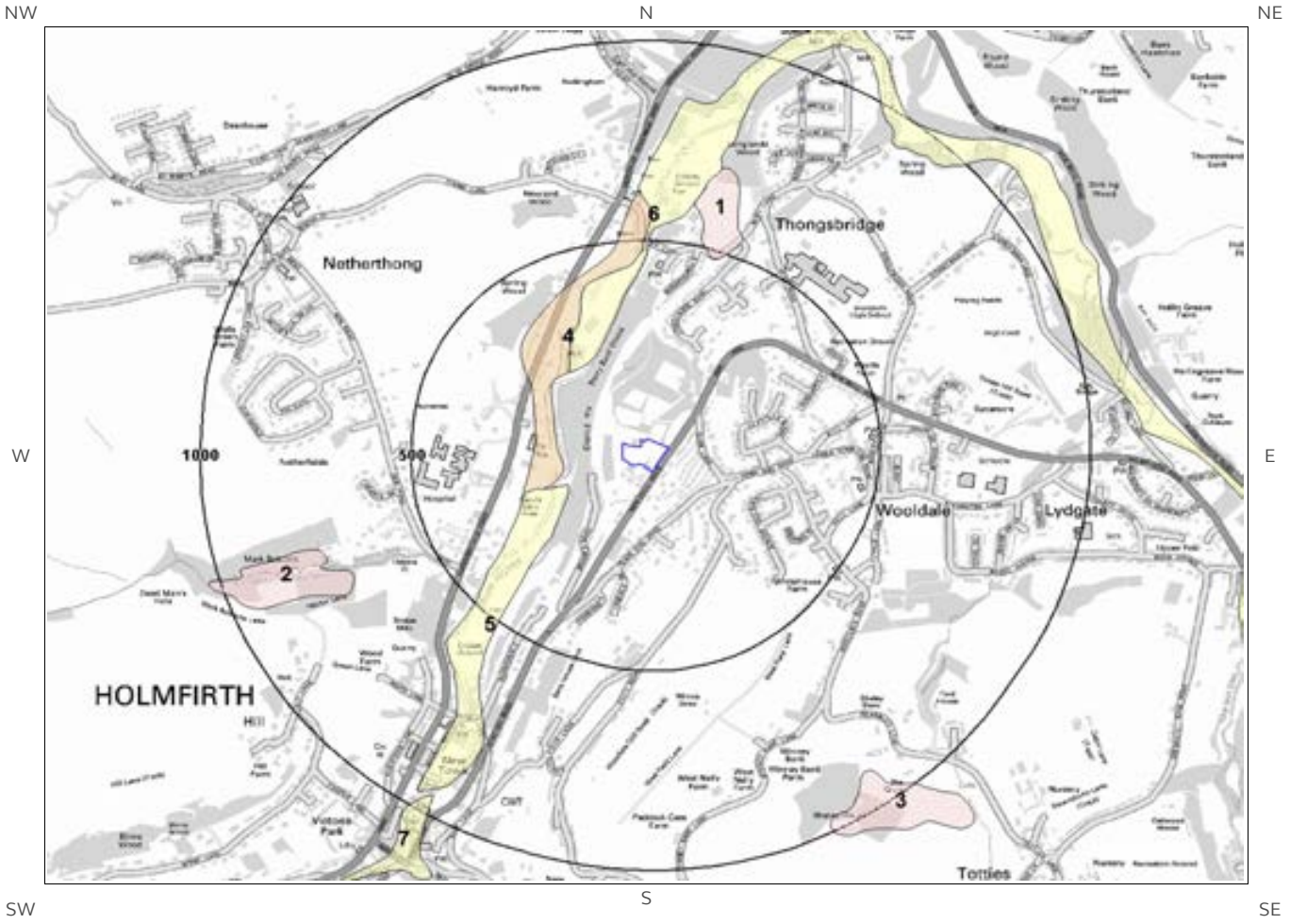
ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	36.0	N	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

2.1.2 Permeability of Artificial Ground

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

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
36.0	N	Mixed	Very High	Low

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



Site Outline

500
1000
Search Buffers (m)

2.2 Superficial Deposits and Landslips

2.2.1 Superficial Deposits/ Drift Geology

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

ID	Distance	Direction	LEX Code	Description	Rock Description
4	141.0	W	RTD1-XSV	RIVER TERRACE DEPOSITS, 1	SAND AND GRAVEL
5	143.0	SW	ALV-XCZ	ALLUVIUM	CLAY AND SILT
6	213.0	NW	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

2.2.2 Permeability of Superficial Ground

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

Database searched and no data found.

2.2.3 Landslip

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

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	479.0	N	SLIP-UKNOWN	LANDSLIDE DEPOSITS	UNKNOWN/UNCLASSIFIED ENTRY

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

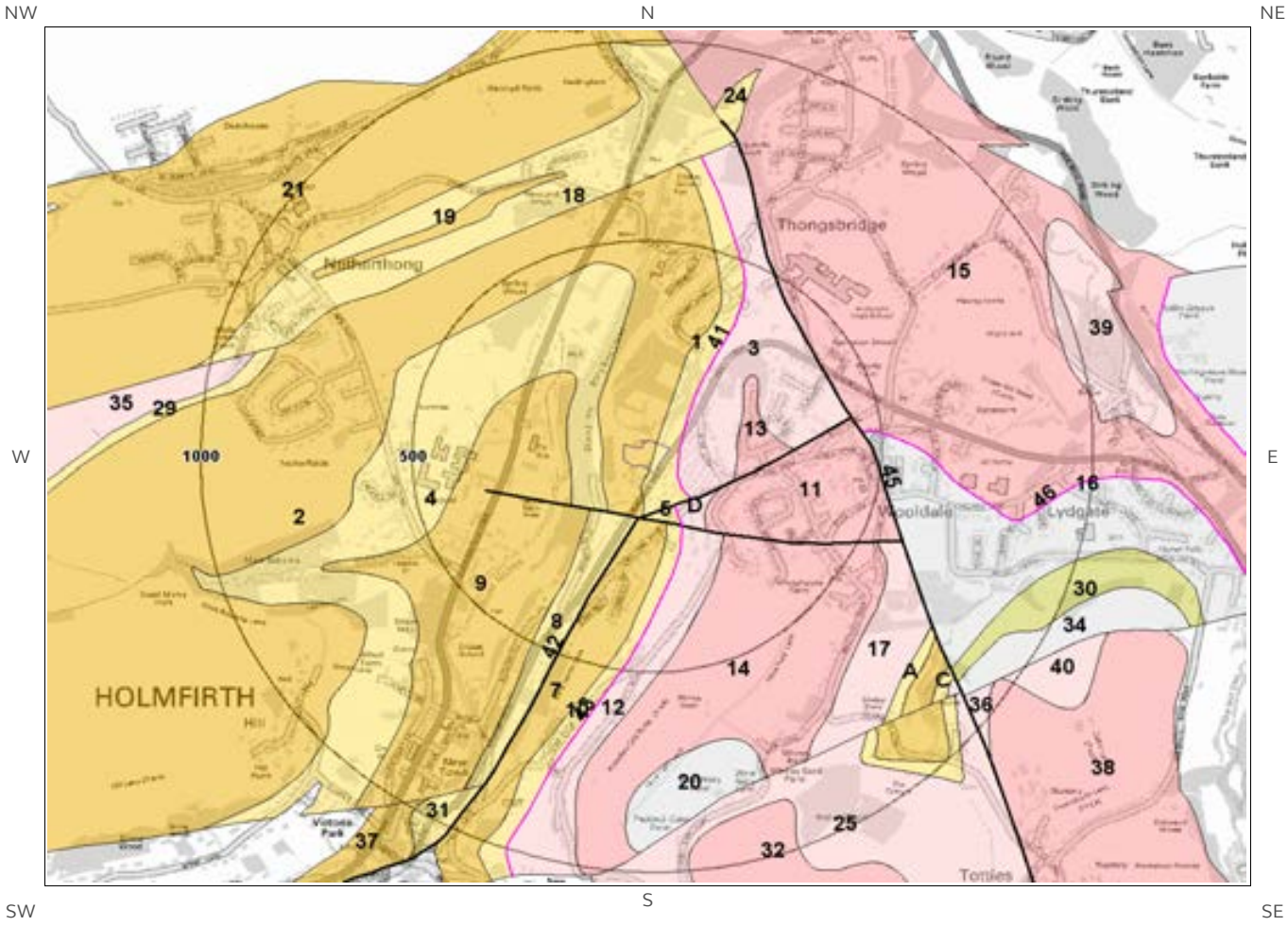
This Geology shows the main components as discrete layers, there are: Artificial/ Made Ground, Superficial/ Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2.2.4 Landslip Permeability

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

Database searched and no data found.

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



Site Outline

500
1000
Search Buffers (m)

2.3 Bedrock, Solid Geology & linear features

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 086

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	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN
2	0.0	On Site	HDW-SDST	HUDDERSFIELD WHITE ROCK - SANDSTONE	NAMURIAN
3	21.0	E	ROSSE-MDSI	ROSSENDALE FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN
4	51.0	W	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN
5	93.0	S	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN
6D	95.0	SE	ROSSE-MDSI	ROSSENDALE FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN
7	118.0	S	HDW-SDST	HUDDERSFIELD WHITE ROCK - SANDSTONE	NAMURIAN
8	118.0	S	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN
9	128.0	W	GSYG-SDST	GUISELEY GRIT - SANDSTONE	NAMURIAN
10	129.0	S	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN
11	149.0	SE	RR-SDST	ROUGH ROCK - SANDSTONE	NAMURIAN
12	150.0	SE	ROSSE-MDSI	ROSSENDALE FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN
13	157.0	E	RR-SDST	ROUGH ROCK - SANDSTONE	NAMURIAN
14	223.0	SE	RR-SDST	ROUGH ROCK - SANDSTONE	NAMURIAN
15	411.0	NE	RR-SDST	ROUGH ROCK - SANDSTONE	NAMURIAN
16	452.0	E	PLCM-MDSI	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE AND SILTSTONE	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	Low	Low
0.0	On Site	Fracture	High	Moderate
21.0	E	Fracture	Low	Low

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
41	21.0	E	FOSSIL_HORIZON	Marine band
42	93.0	S	FAULT	Fault, inferred
43	95.0	SE	FOSSIL_HORIZON	Marine band
44D	117.0	S	FAULT	Fault, inferred
45	411.0	NE	FAULT	Fault, inferred
46	452.0	E	FOSSIL_HORIZON	Marine band

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.

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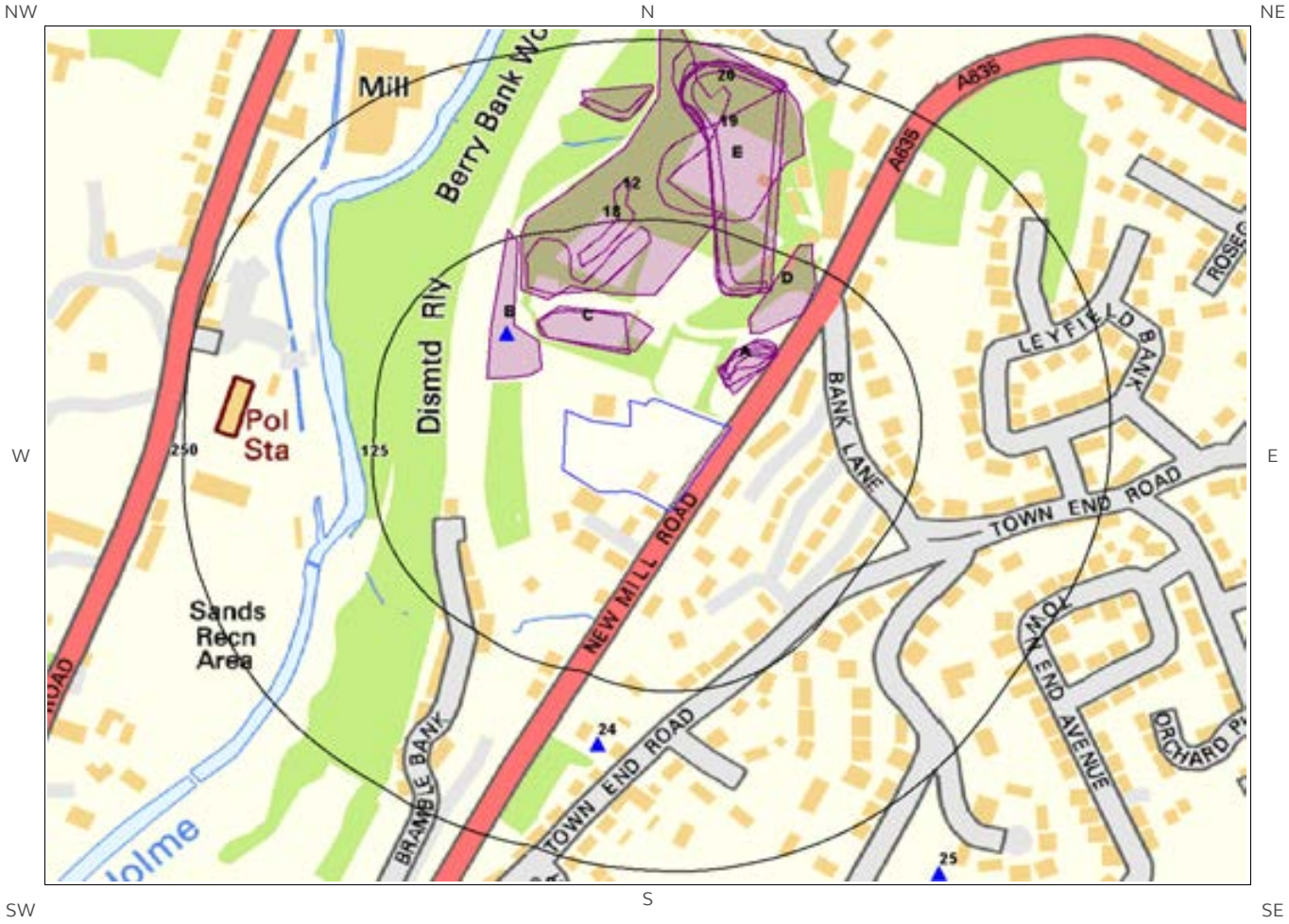
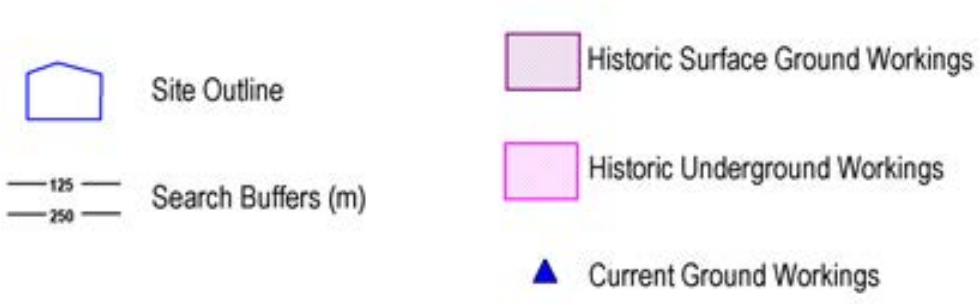
4 Ground Workings map



Ground Workings Legend



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	22.0	N	414875 409220	Unspecified Ground Workings	1949
2A	25.0	N	414873 409221	Unspecified Ground Workings	1938
3A	25.0	N	414873 409221	Unspecified Ground Workings	1938
4A	30.0	N	414866 409226	Unspecified Ground Workings	1955
5C	32.0	N	414766 409246	Unspecified Heap	1980
6A	32.0	N	414877 409229	Unspecified Heap	1965
7B	33.0	NW	414715 409266	Unspecified Quarry	1949
8B	33.0	NW	414715 409266	Unspecified Quarry	1904
9C	34.0	N	414774 409249	Unspecified Heap	1970
10D	66.0	N	414898 409277	Unspecified Pit	1970
11D	66.0	N	414898 409277	Unspecified Pit	1980
12	72.0	N	414794 409369	Refuse Heap	1980
13	80.0	N	414744 409297	Refuse Heap	1970
14E	85.0	N	414864 409352	Unspecified Heap	1938
15E	85.0	N	414864 409352	Unspecified Heap	1938
16E	85.0	N	414865 409353	Unspecified Heap	1949
17E	89.0	N	414854 409355	Unspecified Ground Workings	1955
18	98.0	N	414792 409323	Unspecified Ground Workings	1970
19	131.0	N	414864 409386	Unspecified Heaps	1970
20	191.0	N	414866 409412	Unspecified Heap	1965
21F	194.0	N	414774 409404	Unspecified Ground Workings	1955

ID	Distance (m)	Direction	NGR	Use	Date
22F	195.0	N	414789 409407	Unspecified Heap	1965

4.2 Historical Underground Working Features derived from Historical Mapping

This data is derived from the Groundsure unique Historical Land Use Database. It contains data derived from 1:10,000 and 1:10,560 historical Ordnance Survey Mapping and includes some natural topographical features (Shake Holes for example) as well as manmade features that may have implications for ground stability. Underground and mining features have been identified from surface features such as shafts. The distance that these extend underground is not shown.

Are there any Historical Underground Working Features within 1000m of the study site boundary? No

Database searched and no data found.

4.3 Current Ground Workings

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

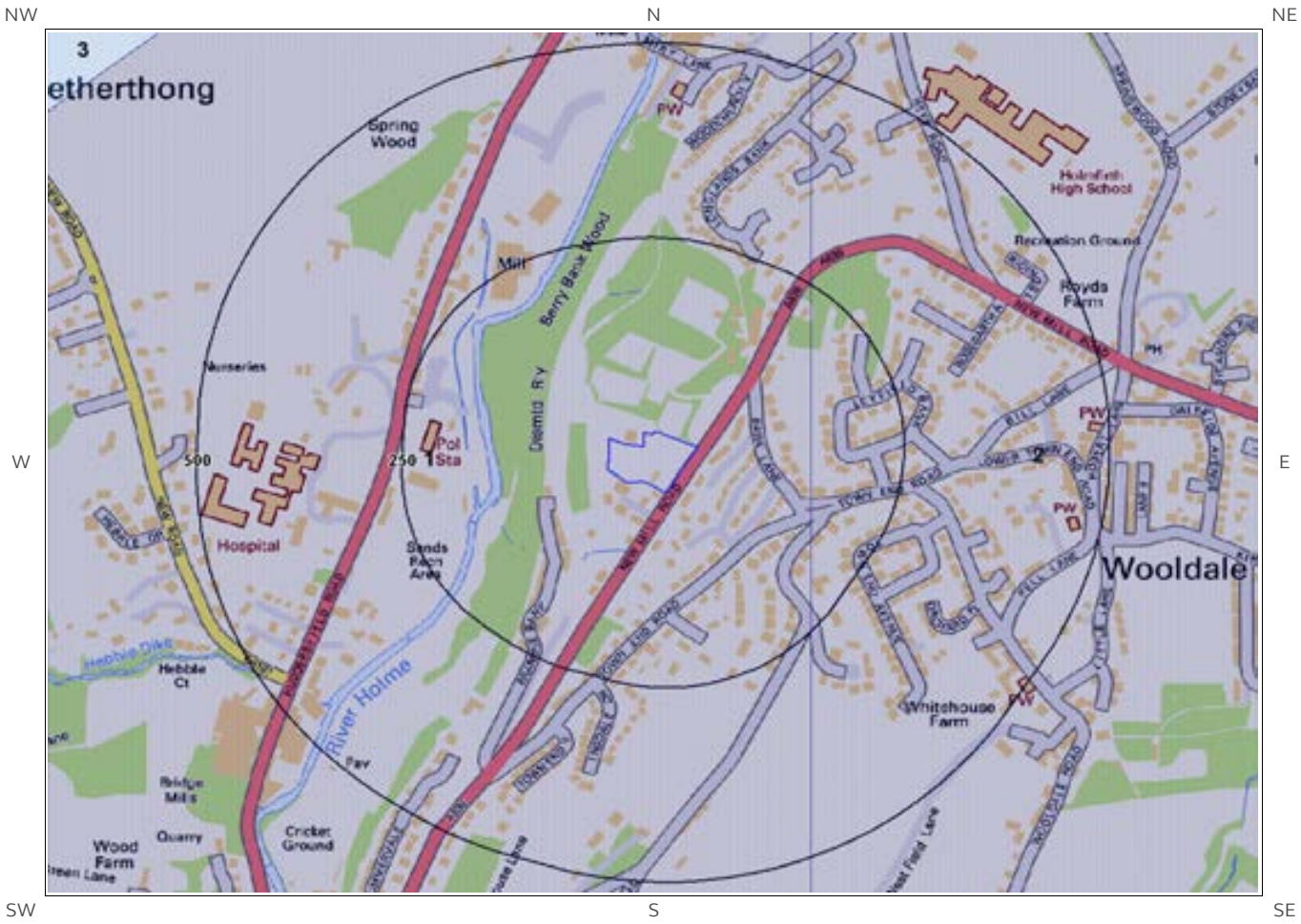
Are there any BGS Current Ground Workings within 1000m of the study site boundary? Yes

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

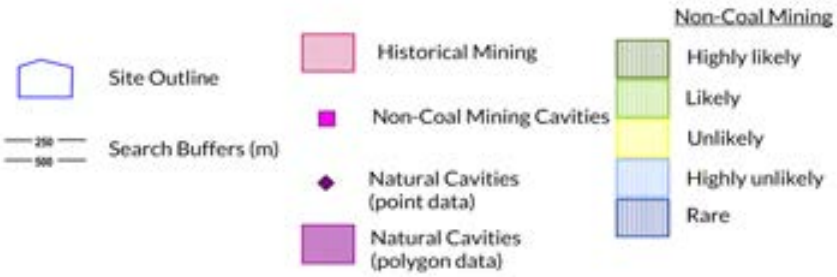
ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
23B	66.0	NW	414716 409246	Sandstone	Glen View	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
24	169.0	S	414776 408961	Sandstone	Clifton Villa	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
25	307.0	SE	415000 408871	Sandstone	Wooldale Hill Quarry	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	413.0	N	414807 409613	Sandstone	Thongs Bridge	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	466.0	N	414627 409640	Sandstone	Spring Bottom	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	715.0	SW	414266 408629	Sandstone	Wood	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	840.0	SW	413989 408803	Sandstone	Mark Bottoms	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	864.0	E	415708 409366	Sandstone	Tenter Hill	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	882.0	E	415746 409176	Sandstone	New Mill Road	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
Not shown	886.0	N	414737 410083	Sandstone	Lower Hagg	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



5 Mining, Extraction & Natural Cavities

5.1 Historical Mining

This dataset is derived from Groundsure unique Historical Land-use Database that are indicative of mining or extraction activities.

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

Database searched and no data found.

5.2 Coal Mining

This dataset provides information as to whether the study site lies within a known coal mining affected area as defined by the coal authority.

Are there any Coal Mining areas within 1000m of the study site boundary? Yes

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

Distance (m)	Direction	Details
0.0	On Site	The 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? Yes

The following non-coal mining information is provided by the BGS:

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
1	0.0	On Site	Not available	Vein Mineral	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered
2	136.0	E	Not available	Vein Mineral	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered
3	744.0	NW	Not available	Vein Mineral	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
Not shown	800.0	N	Not available	Vein Mineral	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered
Not shown	804.0	N	Not available	Vein Mineral	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
Not shown	821.0	N	Not available	Vein Mineral	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered

5.5 Non-Coal Mining Cavities

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

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

Database searched and no data found.

5.6 Natural Cavities

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

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

Database searched and no data found.

5.7 Brine Extraction

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

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

Database searched and no data found.

5.8 Gypsum Extraction

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

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

Database searched and no data found.

5.9 Cornwall and Devon Metalliferous Mining

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

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

Database searched and no data found.

5.10 Clay Mining

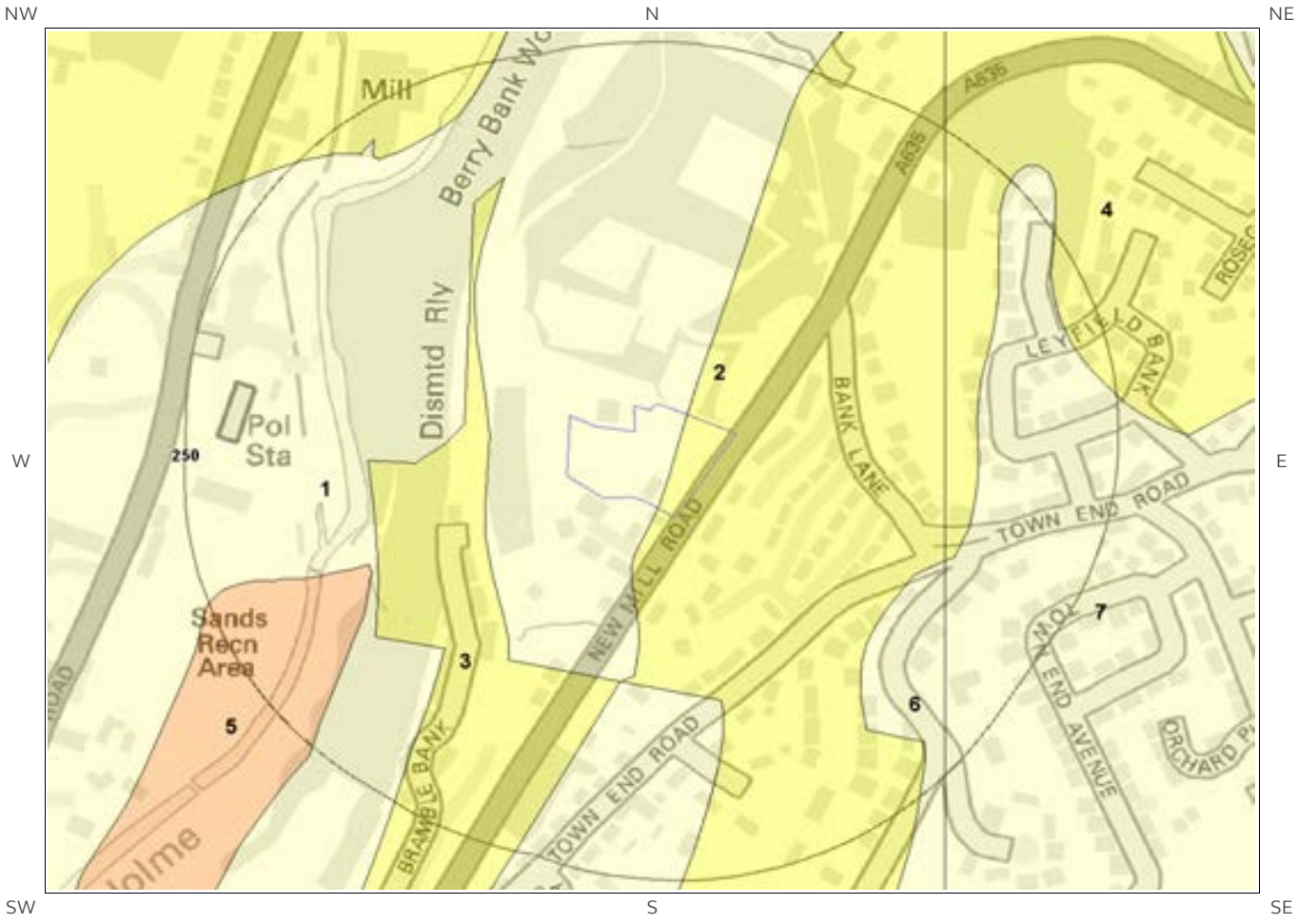
This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

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

Database searched and no data found.

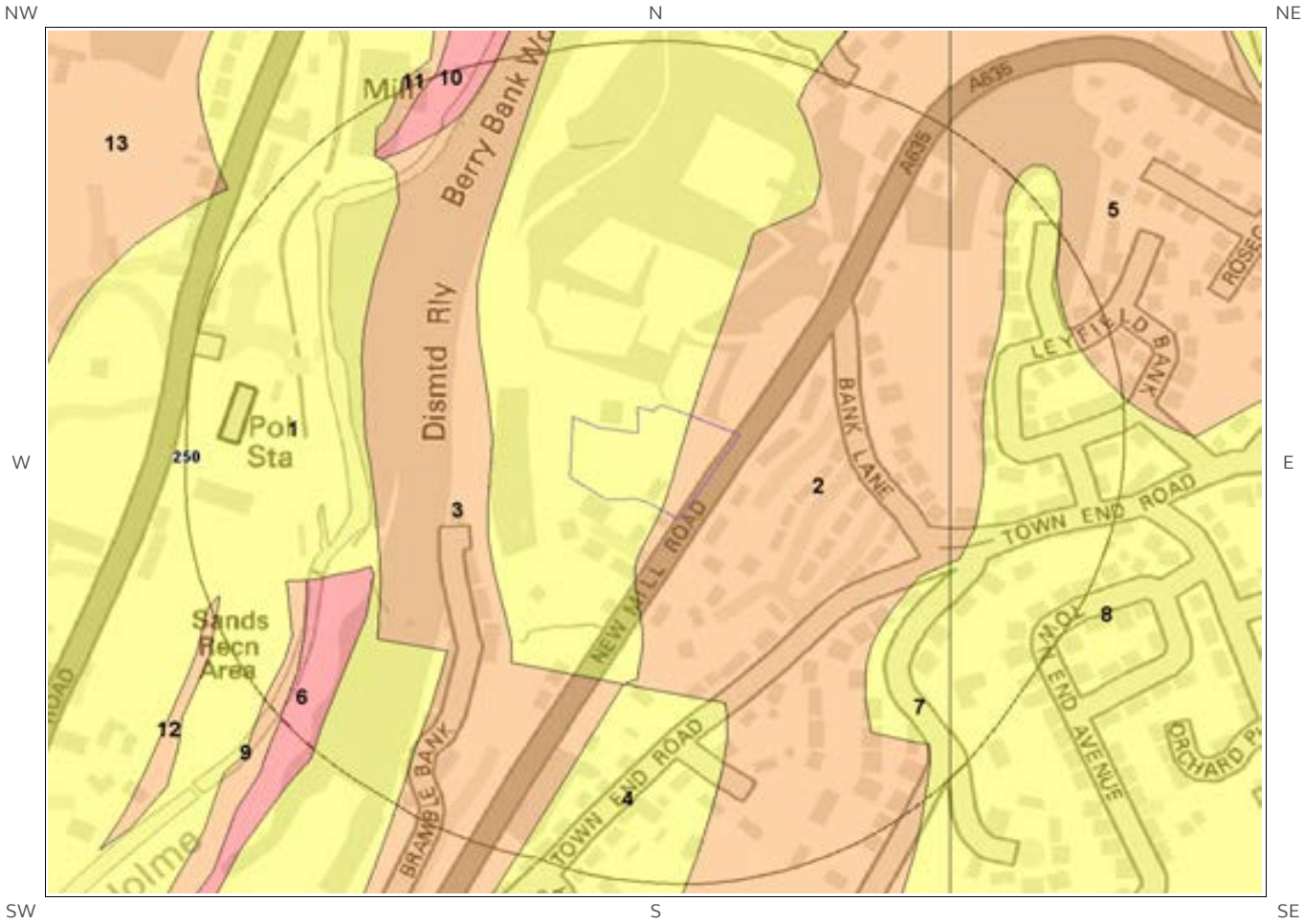
6 Natural Ground Subsidence

6.1 Shrink-Swell Clay map



Shrink Swell Clay Legend

6.2 Landslides map



Landslides Legend

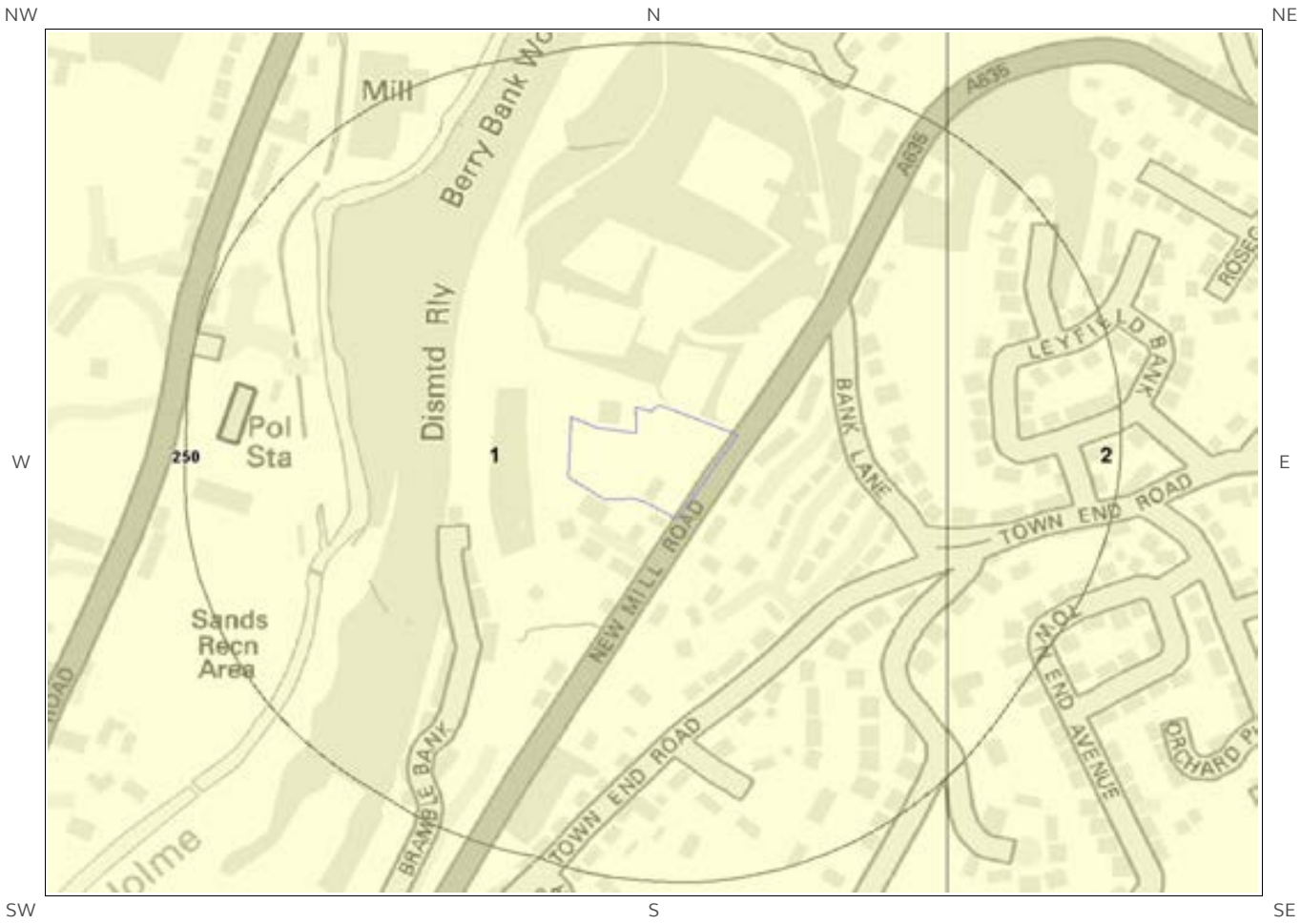
Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

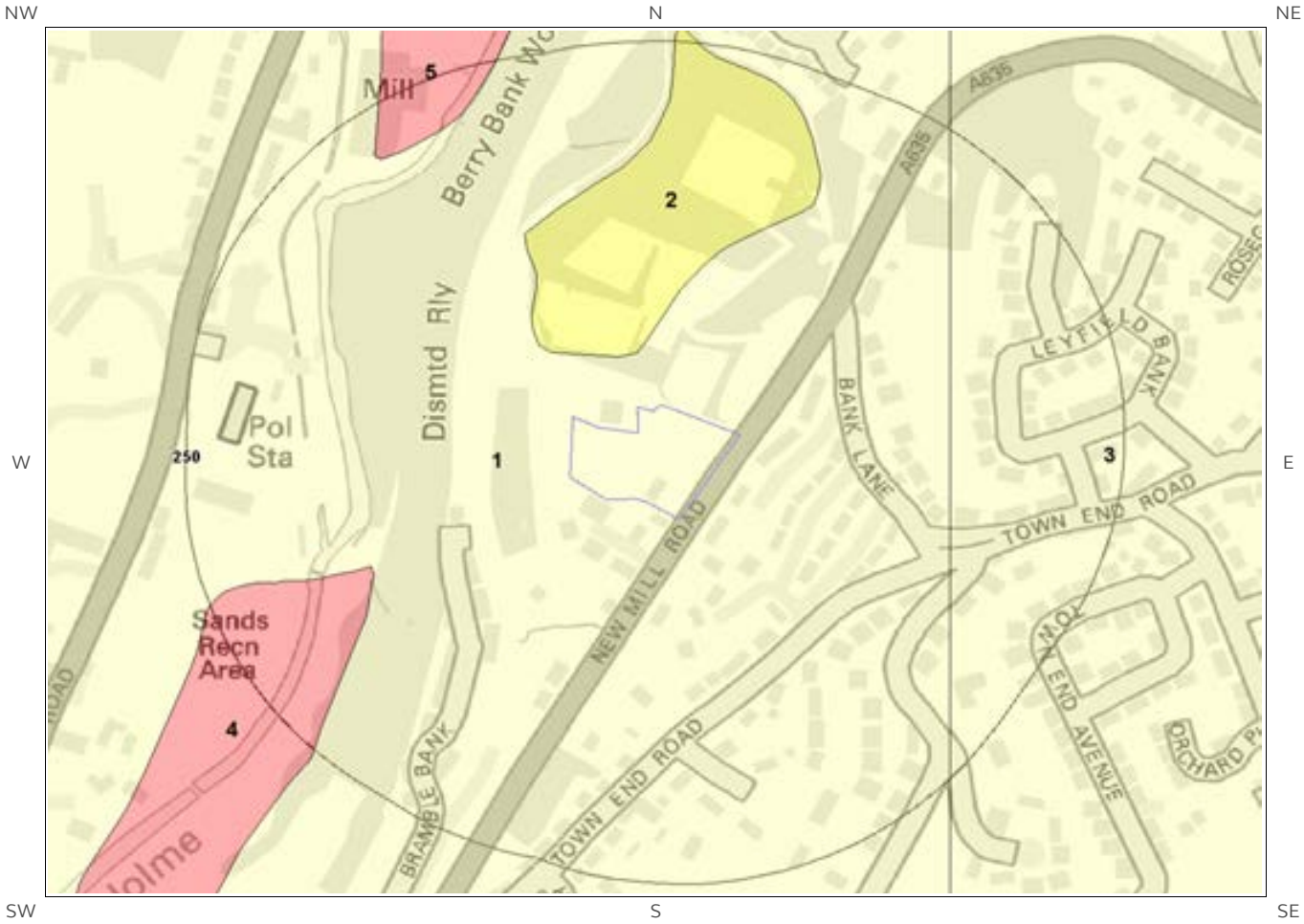
Low
Moderate
High

6.3 Ground Dissolution of Soluble Rocks map



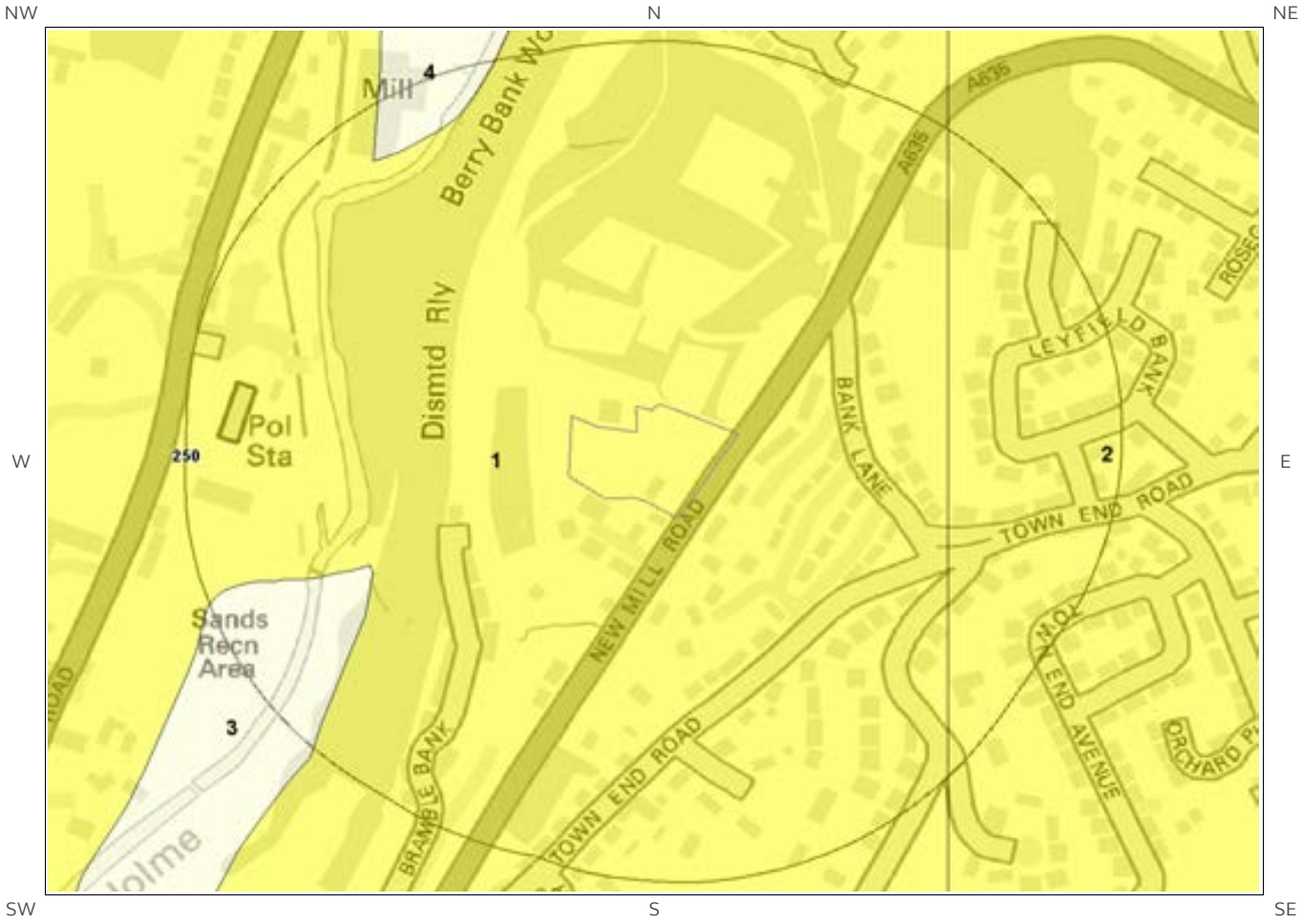
Ground Dissolution Soluble Rocks Legend

6.4 Compressible Deposits map



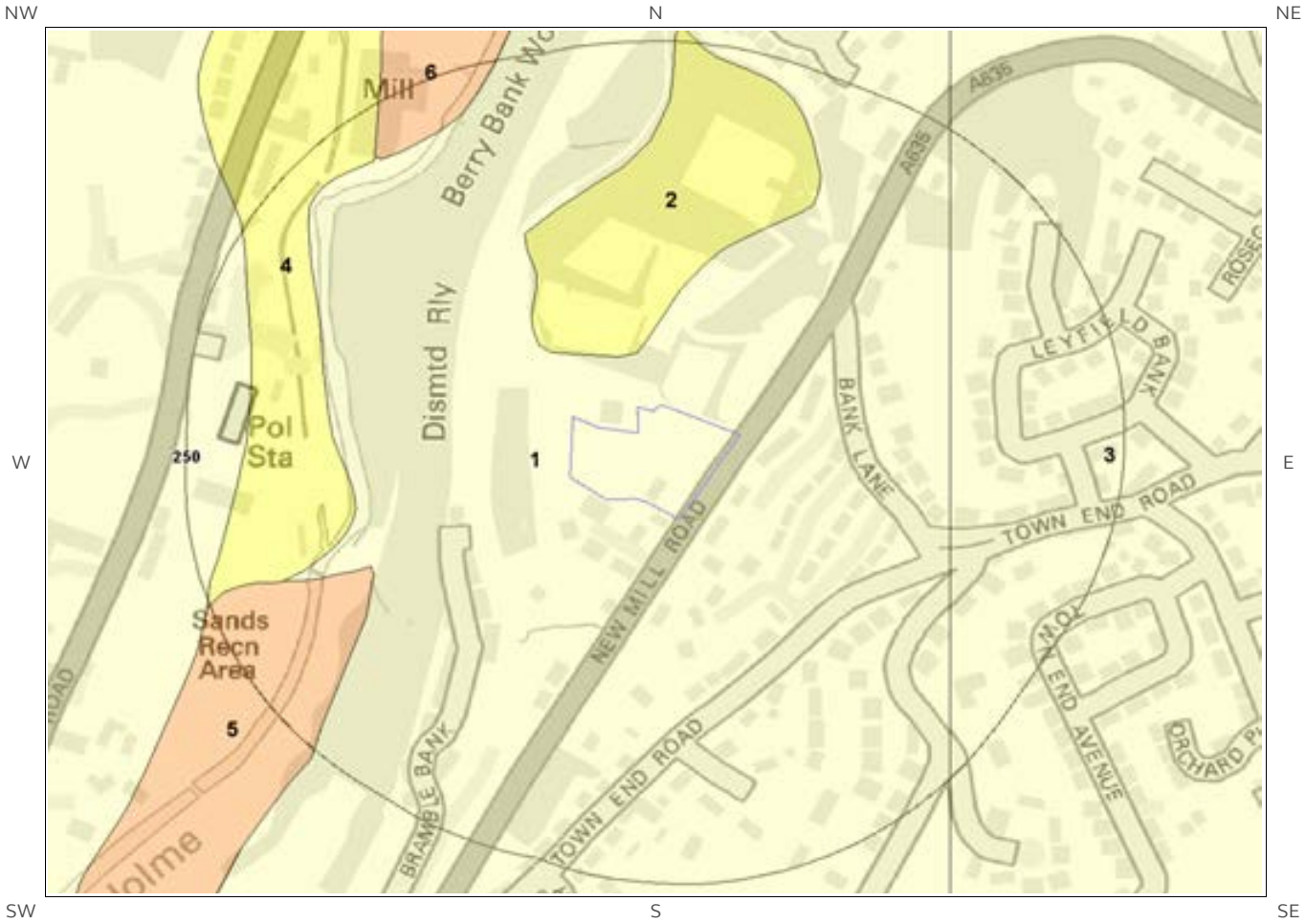
Compressible Deposits Legend

6.5 Collapsible Deposits map



Collapsible Deposits Legend

6.6 Running Sand map



Running Sand Legend

6 Natural Ground Subsidence

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

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

What is the maximum hazard rating of natural subsidence within the study site*[*] boundary? Low

6.1 Shrink-Swell Clays

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

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.
2	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.
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.

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

6.3 Ground Dissolution of Soluble Rocks

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

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

6.4 Compressible Deposits

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

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.
2	36.0	N	Very Low	Very low potential for compressible deposits to be present. 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.

ID	Distance (m)	Direction	Hazard Rating	Details
2	36.0	N	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

7 Borehole Records map

Borehole Records Legend

Site Outline

Borehole Locations

125
250
Search Buffers (m)

7 Borehole Records

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

Records of boreholes within 250m of the study site boundary: 10

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1A	124.0	N	414900 409300	SE10NW55	7	BERRY BANK AMENITY BLOCK HOLMFIRTH 2
2A	134.0	N	414900 409310	SE10NW54	8	BERRY BANK AMENITY BLOCK HOLMFIRTH 1
3B	225.0	W	414530 409190	SE10NW48	3.04	HOLMFIRTH POLICE STATION 3
4B	225.0	W	414530 409190	SE10NW49	3.04	HOLMFIRTH POLICE STATION 4
5B	225.0	W	414530 409190	SE10NW52	3.04	HOLMFIRTH POLICE STATION 7
6B	225.0	W	414530 409190	SE10NW51	3.04	HOLMFIRTH POLICE STATION 6
7B	225.0	W	414530 409190	SE10NW47	3.04	HOLMFIRTH POLICE STATION 2
8B	225.0	W	414530 409190	SE10NW50	3.04	HOLMFIRTH POLICE STATION 5
9B	225.0	W	414530 409190	SE10NW53	3.04	HOLMFIRTH POLICE STATION 8
10B	225.0	W	414530 409190	SE10NW46	3.04	HOLMFIRTH POLICE STATION 1

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

#1A: scans.bgs.ac.uk/sobi_scans/boreholes/40689
#2A: scans.bgs.ac.uk/sobi_scans/boreholes/40688
#3B: scans.bgs.ac.uk/sobi_scans/boreholes/40682
#4B: scans.bgs.ac.uk/sobi_scans/boreholes/40683
#5B: scans.bgs.ac.uk/sobi_scans/boreholes/40686
#6B: scans.bgs.ac.uk/sobi_scans/boreholes/40685
#7B: scans.bgs.ac.uk/sobi_scans/boreholes/40681
#8B: scans.bgs.ac.uk/sobi_scans/boreholes/40684
#9B: scans.bgs.ac.uk/sobi_scans/boreholes/40687
#10B: scans.bgs.ac.uk/sobi_scans/boreholes/40680

8 Estimated Background Soil Chemistry

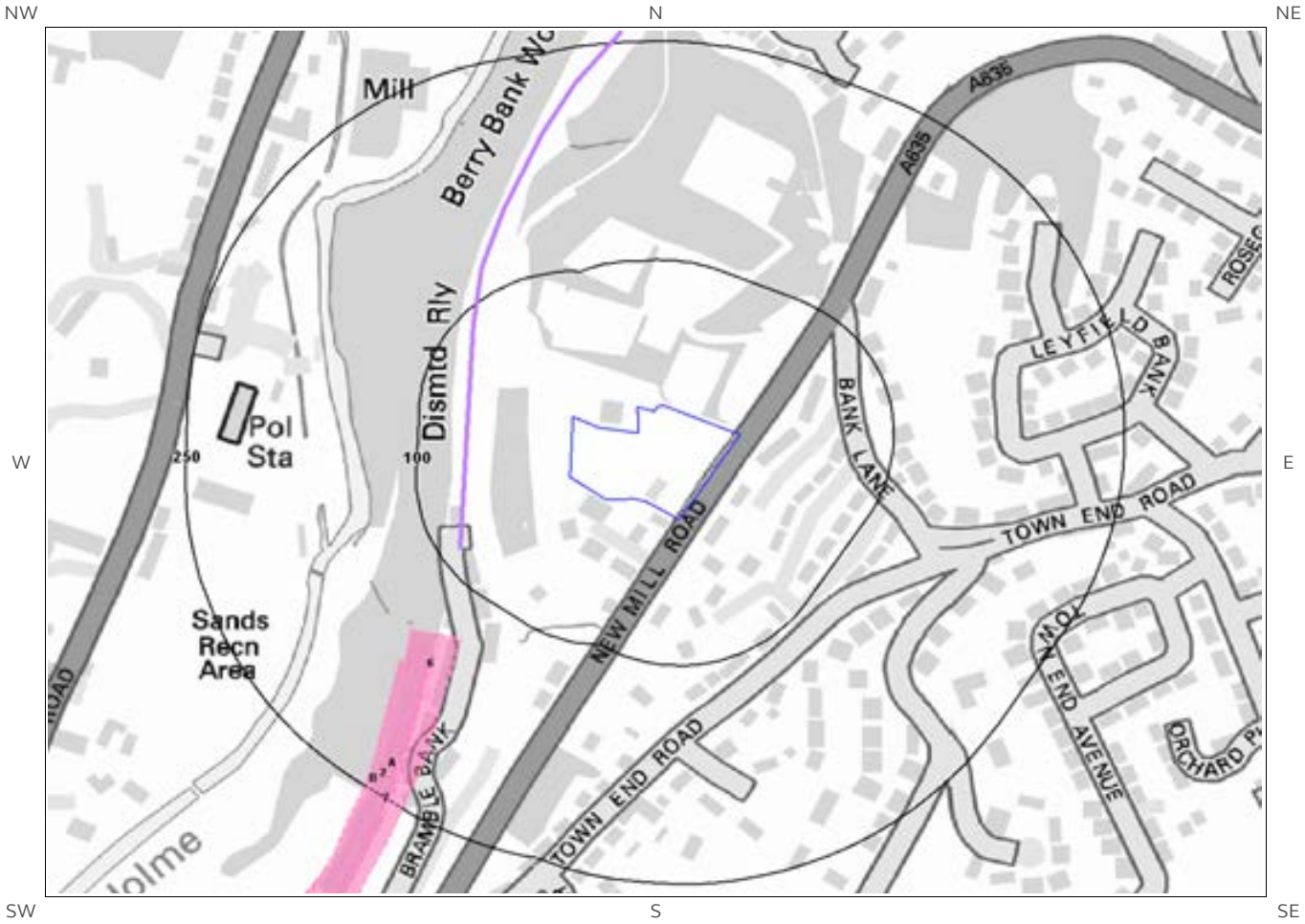
Records of background estimated soil chemistry within 250m of the study site boundary: 4

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

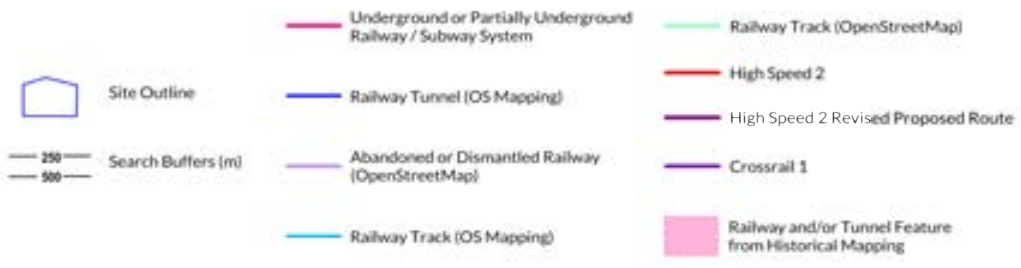
Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	40 - 60 mg/kg	<15 mg/kg	<100 mg/kg
0.0	On Site	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
17.0	NE	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



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
1A	132	SW	414550 408766	Railway Sidings	1965
6	136	SW	414663 409022	Railway Sidings	1966
2	147	SW	414531 408764	Railway Sidings	1955
3A	151	SW	414545 408758	Railway Sidings	1933
4B	158	SW	414536 408765	Railway Sidings	1904
5B	158	SW	414536 408765	Railway Sidings	1948

ID	Distance (m)	Direction	NGR	Details	Date
7	176	SW	414514 408744	Railway Sidings	1966

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

9.3 Historical Railways

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

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

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

Distance (m)	Direction	Status
68	W	Razed
68	W	Abandoned

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

9.4 Active Railways

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

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

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

Database searched and no data found.

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

9.5 Railway Projects

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

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

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

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

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

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

Contact Details

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info@groundsure.com

British Geological Survey Enquiries

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

British Gypsum

British Gypsum Ltd
East Leake
Loughborough
Leicestershire
LE12 6HX

The Coal Authority

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

Public Health England

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

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DY5 3LH
Tel: +44 (0) 1384 262 000
Email:**enquiries.gs@jpb.co.uk**
Website: **www.jpb.co.uk**

Ordnance Survey

Adanac Drive, Southampton
SO16 0AS

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

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Hampshire RG27 8NW
Tel: 01252 845444
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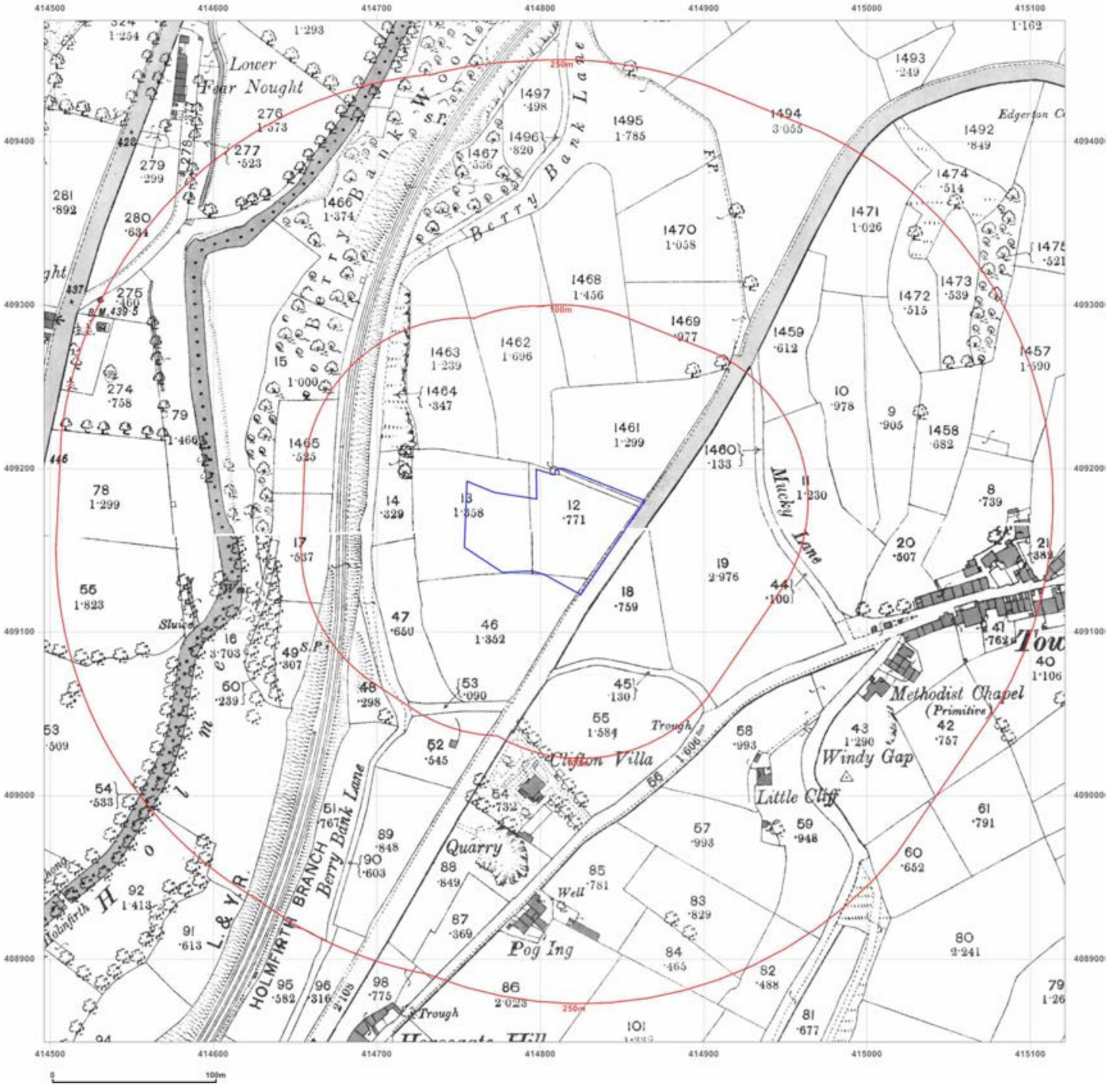
Appendix 2

Historical Maps



Groundsure INSIGHTS

Site Details:

NEW MILL ROAD, HOLMFIRTH, HUDDERSFIELD, HD9 7LN

Client Ref: C406_19_E_611_PO-0519
Report Ref: GS-6541669
Grid Ref: 414809, 409161

Map Name: County Series

Map date: **1893**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1888
Revised N/A
Edition 1893
Copyright N/A
Levelled N/A

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

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Production date: 08 January 2020

Map legend available at:
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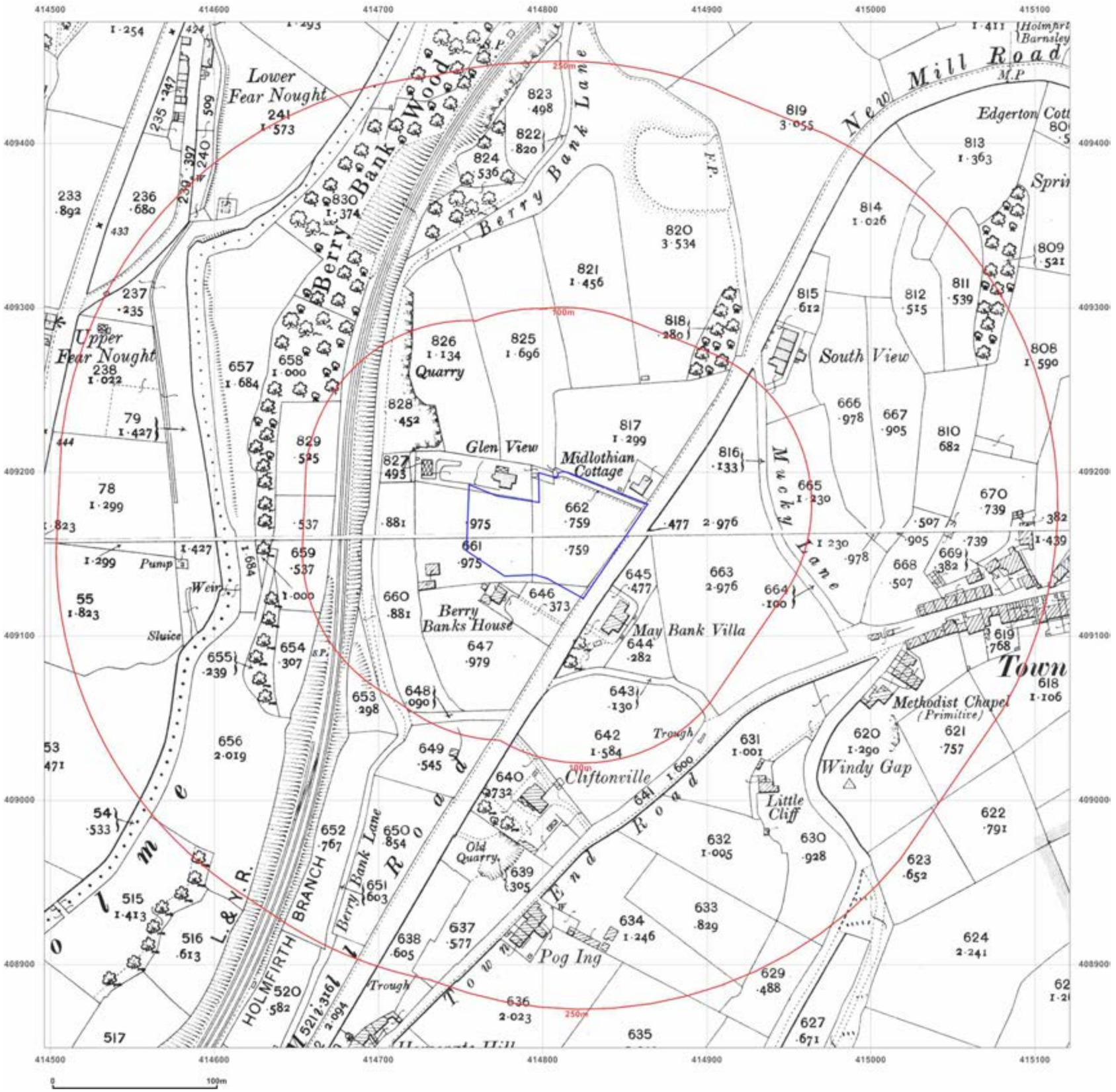

Groundsure INSIGHTS

Site Details:

NEW MILL ROAD, HOLMFIRTH, HUDDERSFIELD, HD9 7LN

Client Ref: C406_19_E_611_PO-0519
Report Ref: GS-6541669
Grid Ref: 414809, 409161

Map Name: County Series

Map date: **1906**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1888
Revised 1904
Edition 1908
Copyright N/A
Levelled N/A

Surveyed 1908
Revised 1908
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 08 January 2020

Map legend available at:
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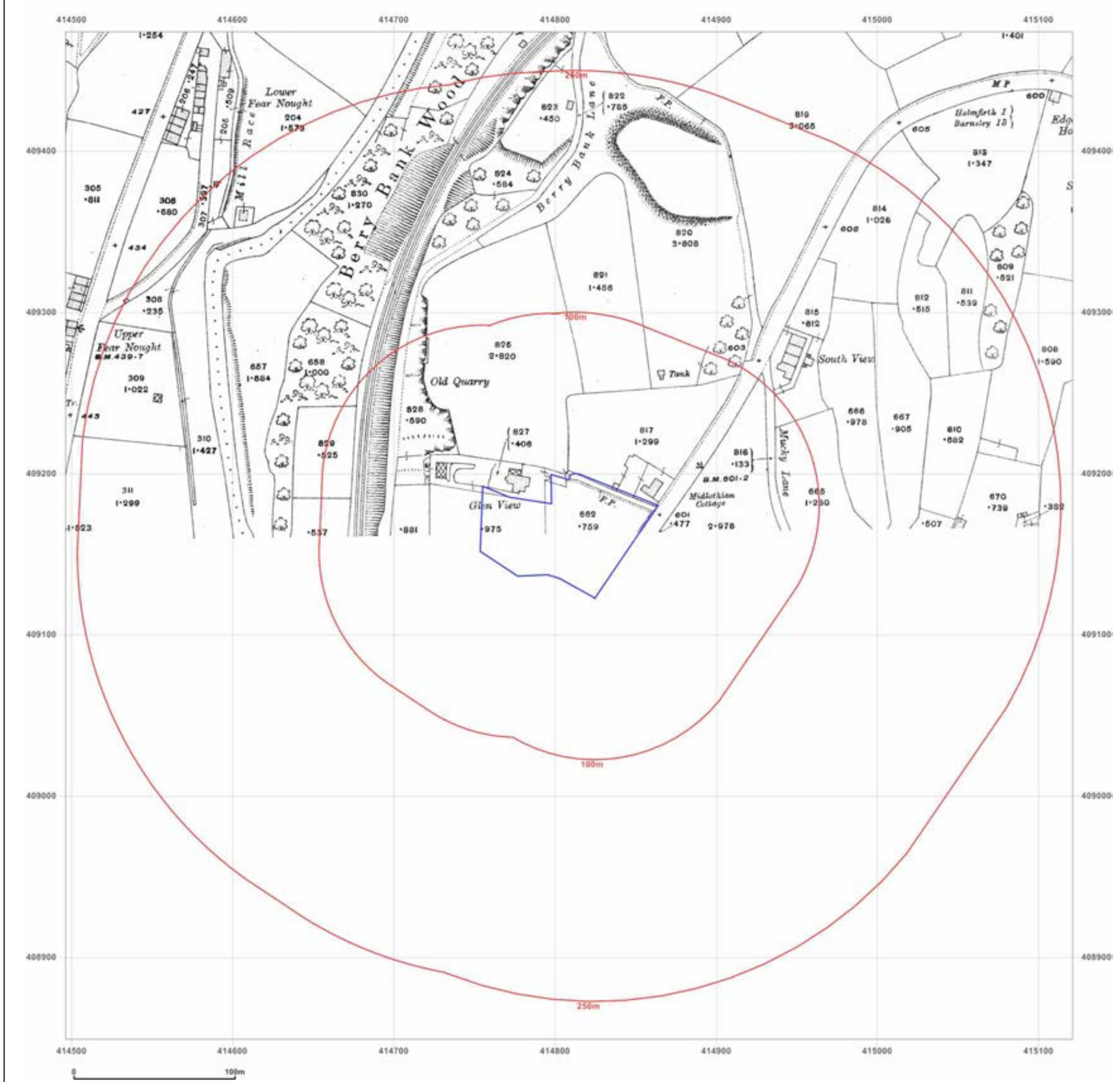

Groundsure INSIGHTS

Site Details:

NEW MILL ROAD, HOLMFIRTH, HUDDERSFIELD, HD9 7LN

Client Ref: C406_19_E_611_PO-0519
Report Ref: GS-6541669
Grid Ref: 414809, 409161

Map Name: County Series

Map date: **1918**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1888
Revised 1913
Edition 1918
Copyright N/A
Levelled 1914

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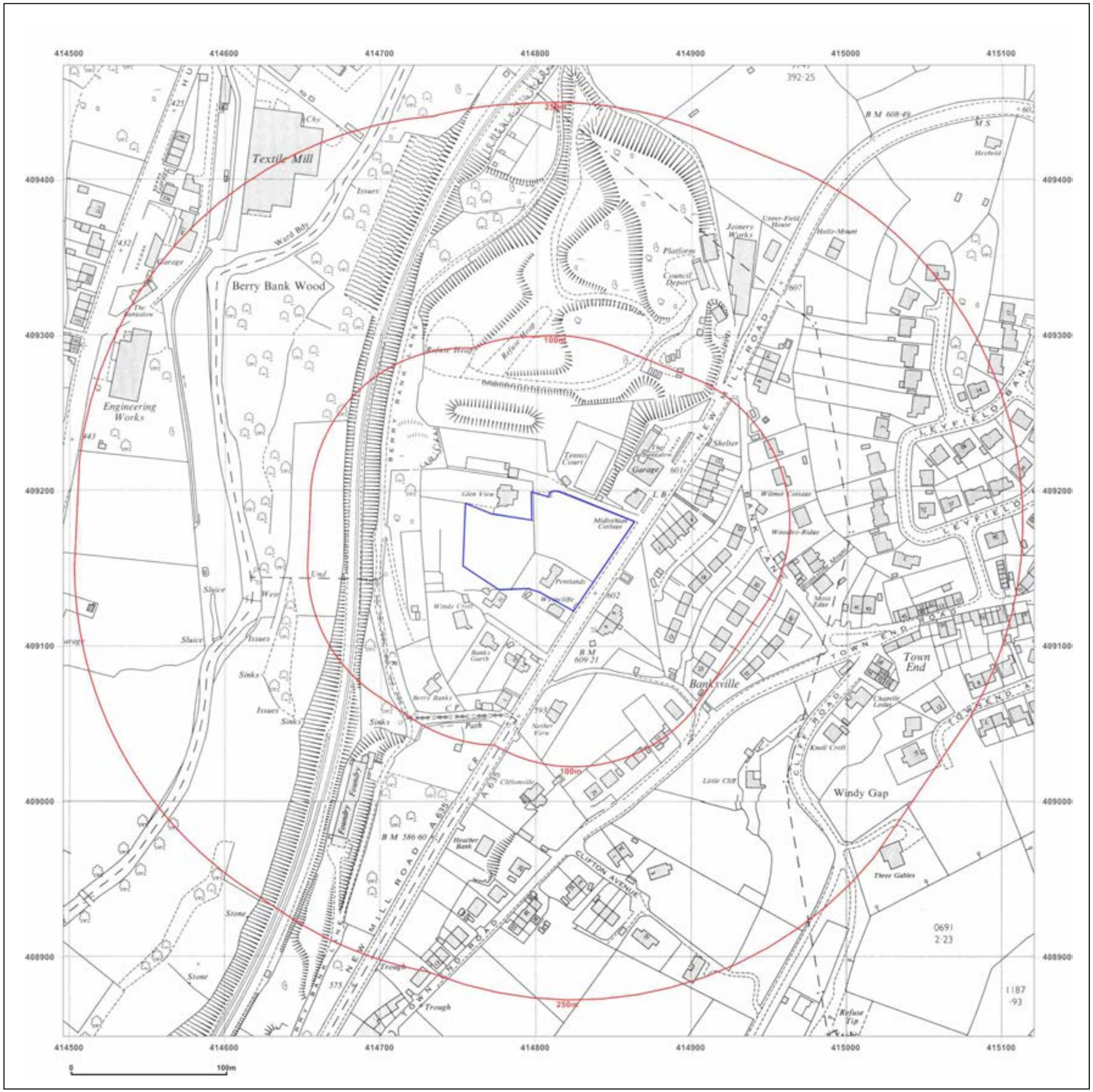

Groundsure INSIGHTS

Site Details:

NEW MILL ROAD, HOLMFIRTH,
HUDDERSFIELD, HD9 7LN

Client Ref: C406_19_E_611_PO-0519
Report Ref: GS-6541669
Grid Ref: 414809, 409161

Map Name: National Grid

Map date: **1966**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1966
Revised 1966
Edition N/A
Copyright 1967
Levelled 1959

Surveyed 1966
Revised 1966
Edition N/A
Copyright 1967
Levelled 1959

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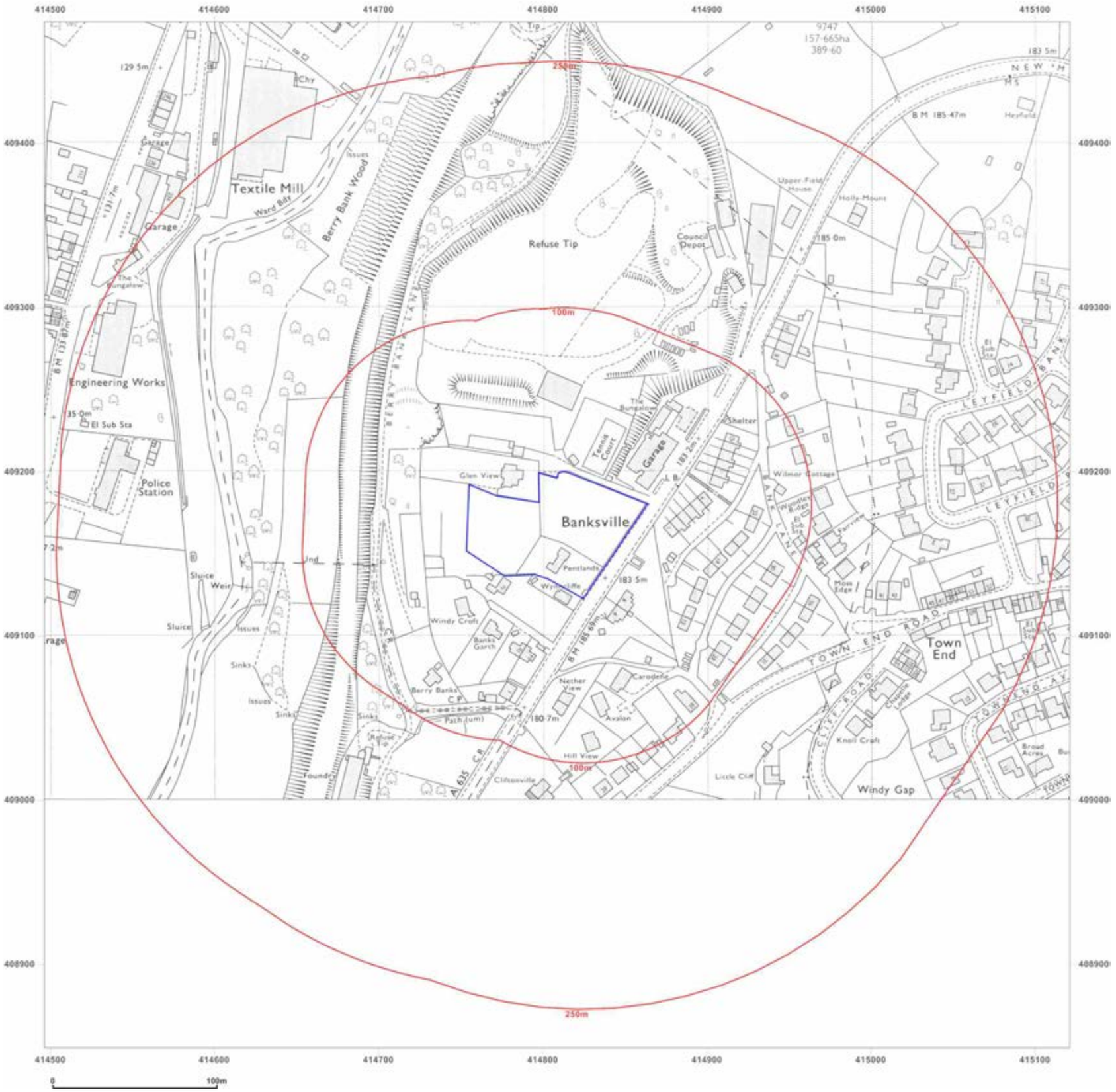

Groundsure INSIGHTS

Site Details:

NEW MILL ROAD, HOLMFIRTH, HUDDERSFIELD, HD9 7LN

Client Ref: C406_19_E_611_PO-0519
Report Ref: GS-6541669
Grid Ref: 414809, 409161

Map Name: National Grid

Map date: **1973**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1973
Revised 1973
Edition N/A
Copyright 1974
Levelled 1959

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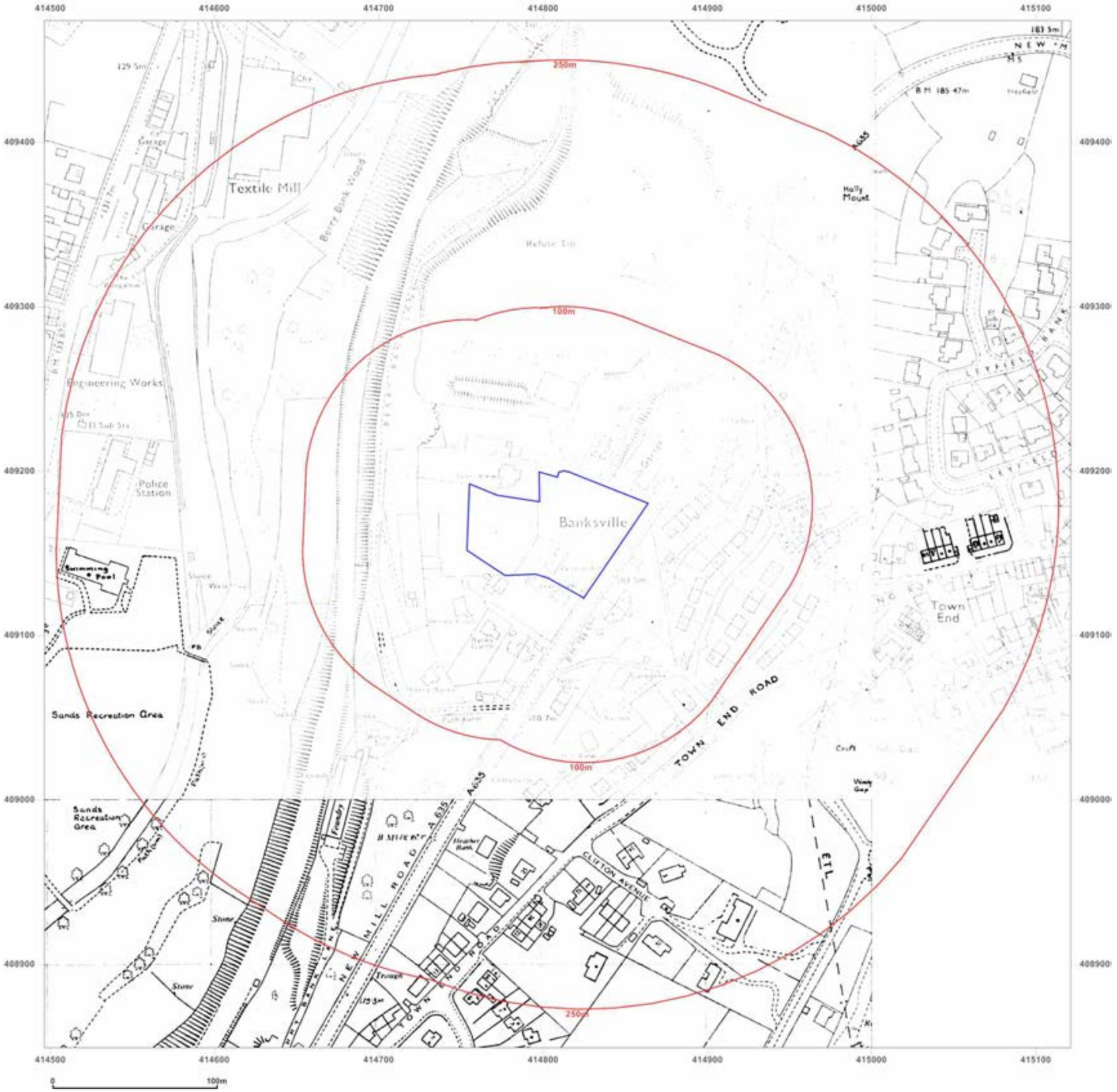

Groundsure INSIGHTS

Site Details:

NEW MILL ROAD, HOLMFIRTH, HUDDERSFIELD, HD9 7LN

Client Ref: C406_19_E_611_PO-0519
Report Ref: GS-6541669
Grid Ref: 414809, 409161

Map Name: National Grid

Map date: **1979-1984**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1981
Levelled 1958

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

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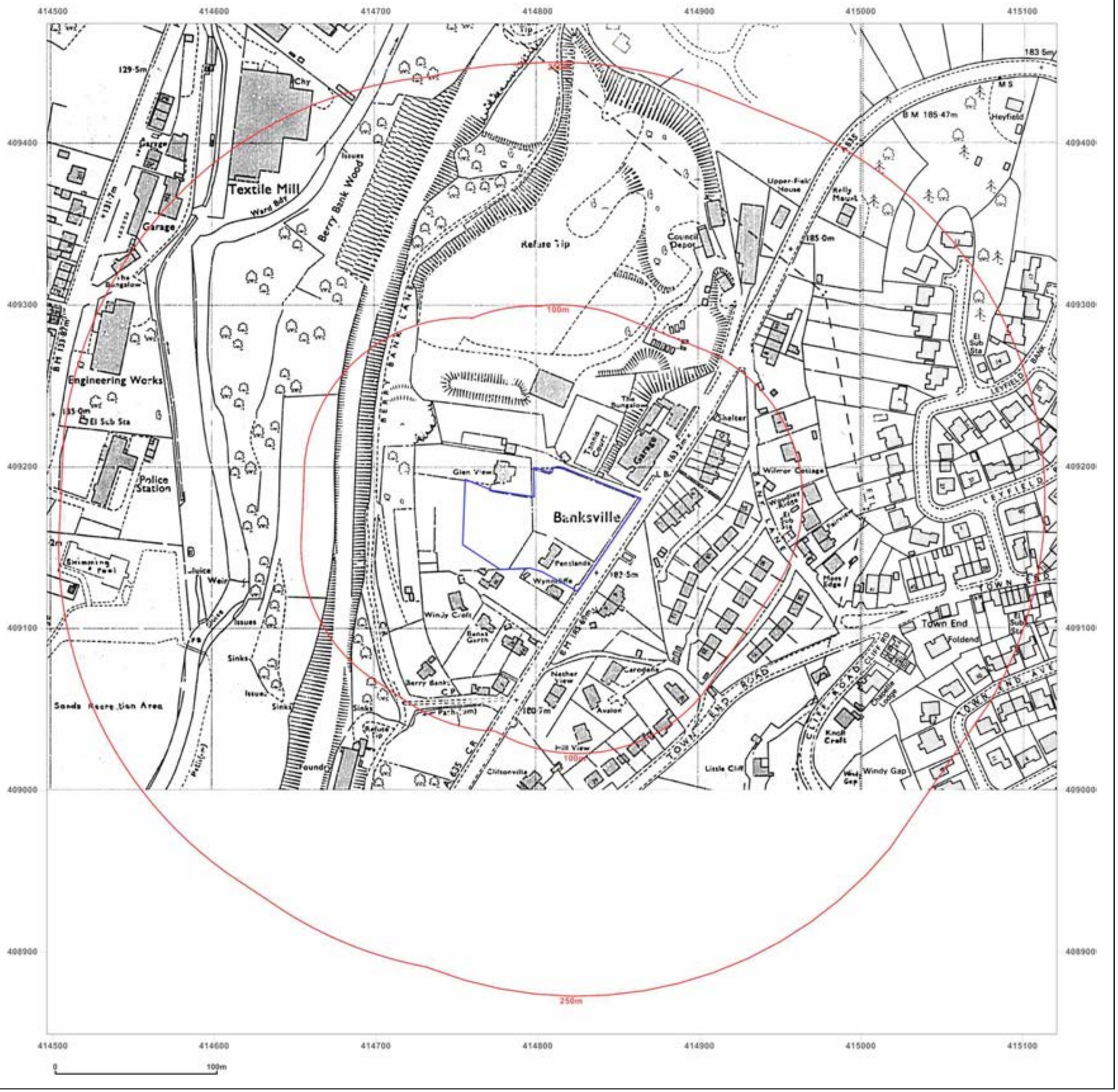

Groundsure INSIGHTS

Site Details:

NEW MILL ROAD, HOLMFIRTH, HUDDERSFIELD, HD9 7LN

Client Ref: C406_19_E_611_PO-0519
Report Ref: GS-6541669
Grid Ref: 414809, 409161

Map Name: National Grid

Map date: **1982-1987**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed N/A
Revised N/A
Edition 1982
Copyright N/A
Levelled 1958

Surveyed N/A
Revised 1982
Edition N/A
Copyright 1987
Levelled 1959

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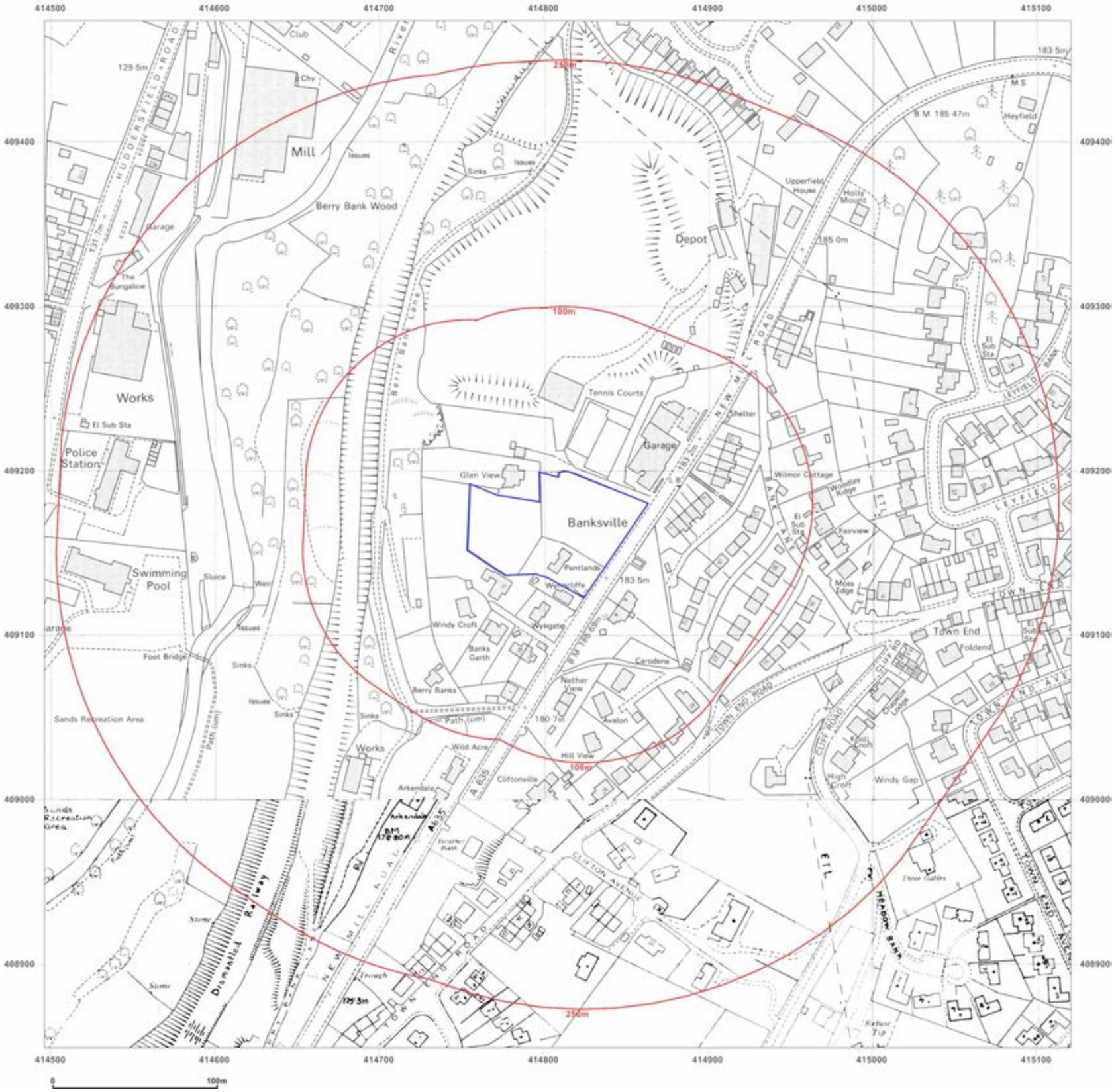

Groundsure INSIGHTS

Site Details:

NEW MILL ROAD, HOLMFIRTH,
HUDDERSFIELD, HD9 7LN

Client Ref: C406_19_E_611_PO-0519
Report Ref: GS-6541669
Grid Ref: 414809, 409161

Map Name: National Grid

Map date: **1985-1990**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1985
Revised 1985
Edition N/A
Copyright 1987
Levelled 1959

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1988
Levelled 1959

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

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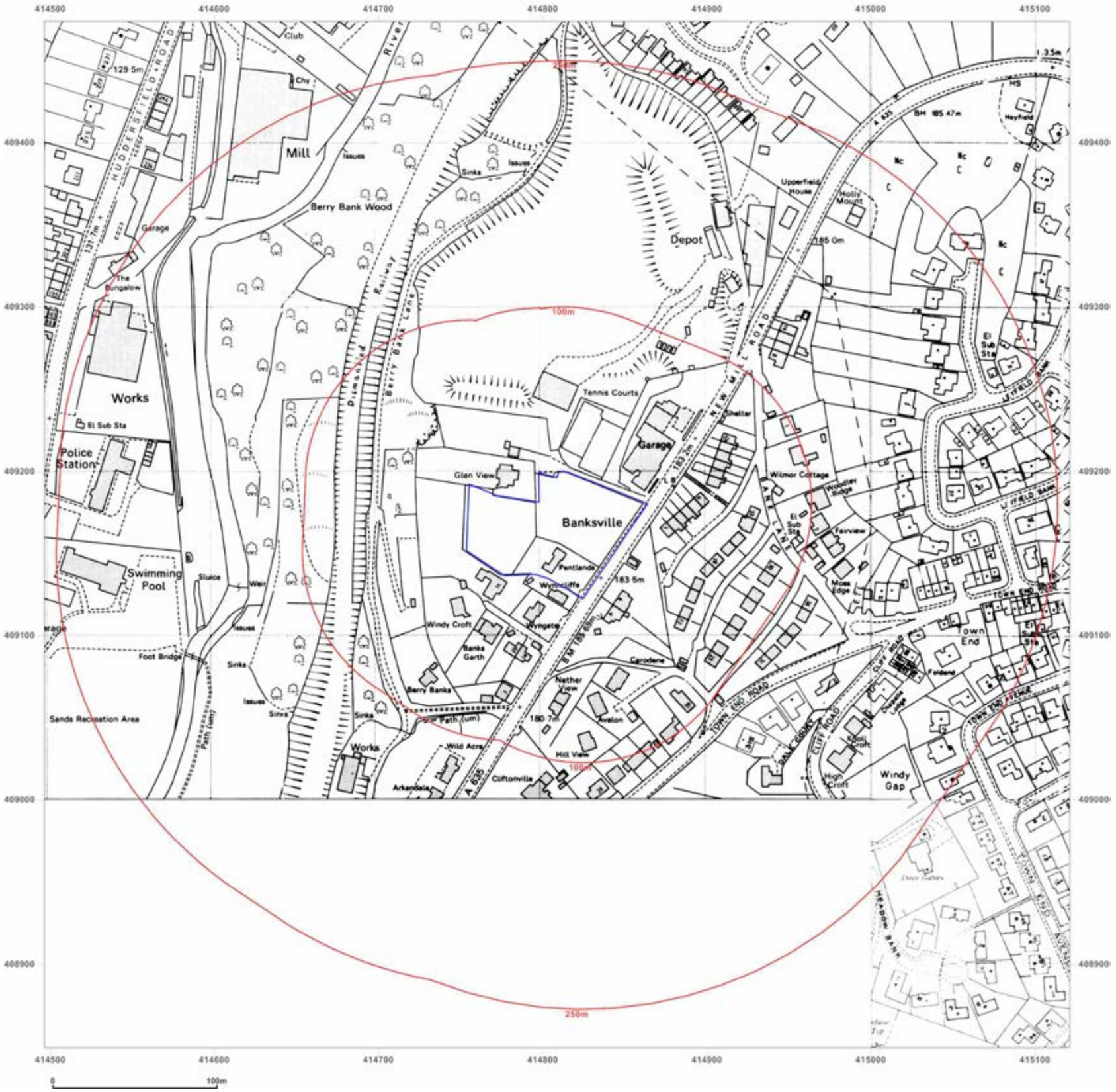

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Site Details:

NEW MILL ROAD, HOLMFIRTH,
HUDDERSFIELD, HD9 7LN

Client Ref: C406_19_E_611_PO-0519
Report Ref: GS-6541669
Grid Ref: 414809, 409161

Map Name: National Grid

Map date: **1987-1992**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1959
Revised 1985
Edition N/A
Copyright 1987
Levelled 1959

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

Surveyed 1990
Revised 1990
Edition N/A
Copyright 1990
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Client Ref: C406_19_E_611_PO-0519
Report Ref: GS-6541669
Grid Ref: 414809, 409161

Map Name: National Grid

Map date: **1992-1995**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1994
Levelled N/A

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

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

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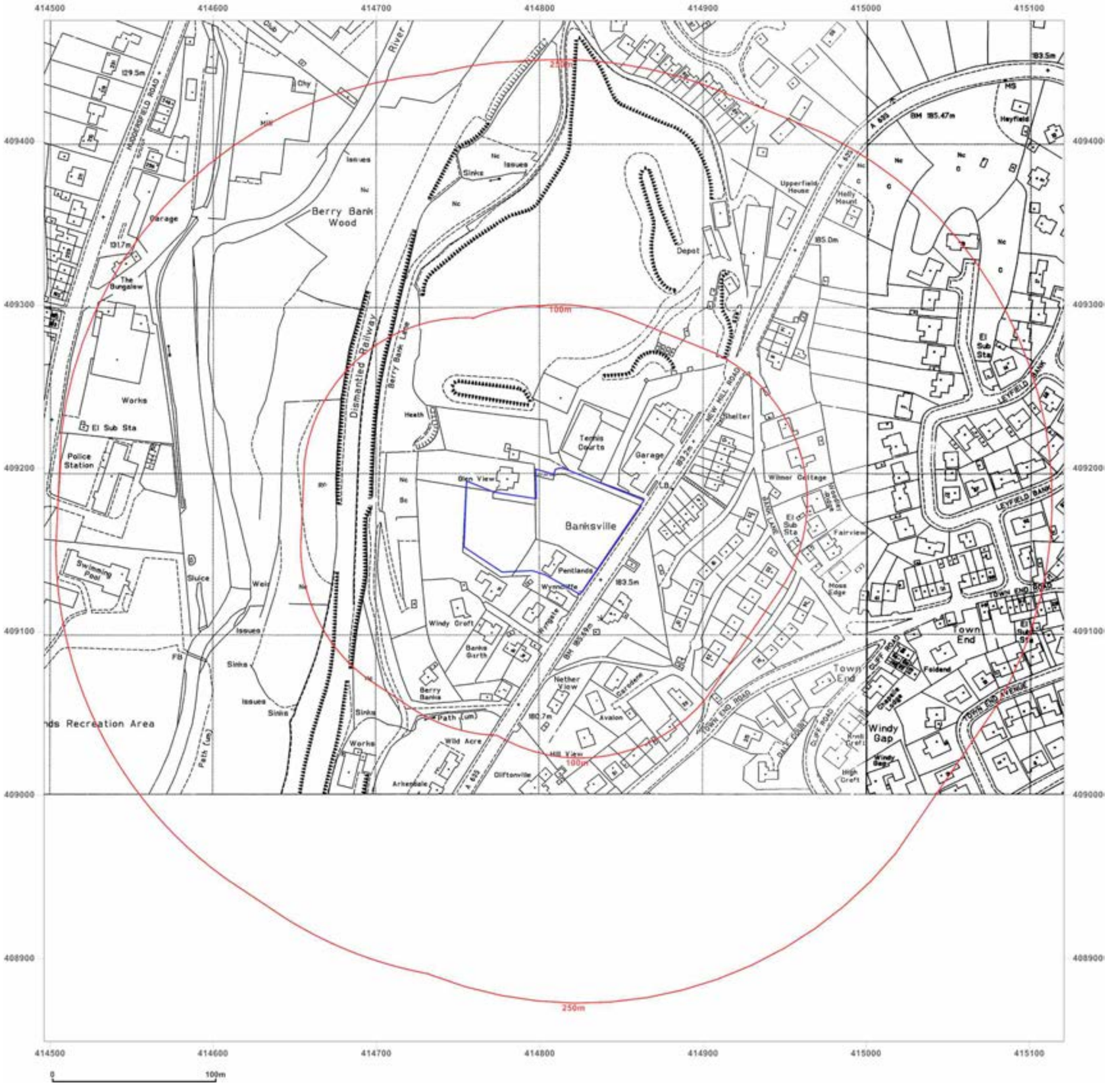

Groundsure INSIGHTS

Site Details:

NEW MILL ROAD, HOLMFIRTH,
HUDDERSFIELD, HD9 7LN

Client Ref: C406_19_E_611_PO-0519
Report Ref: GS-6541669
Grid Ref: 414809, 409161

Map Name: National Grid

Map date: **1994-1995**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed N/A
Revised 1982
Edition N/A
Copyright 1984
Levelled N/A

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

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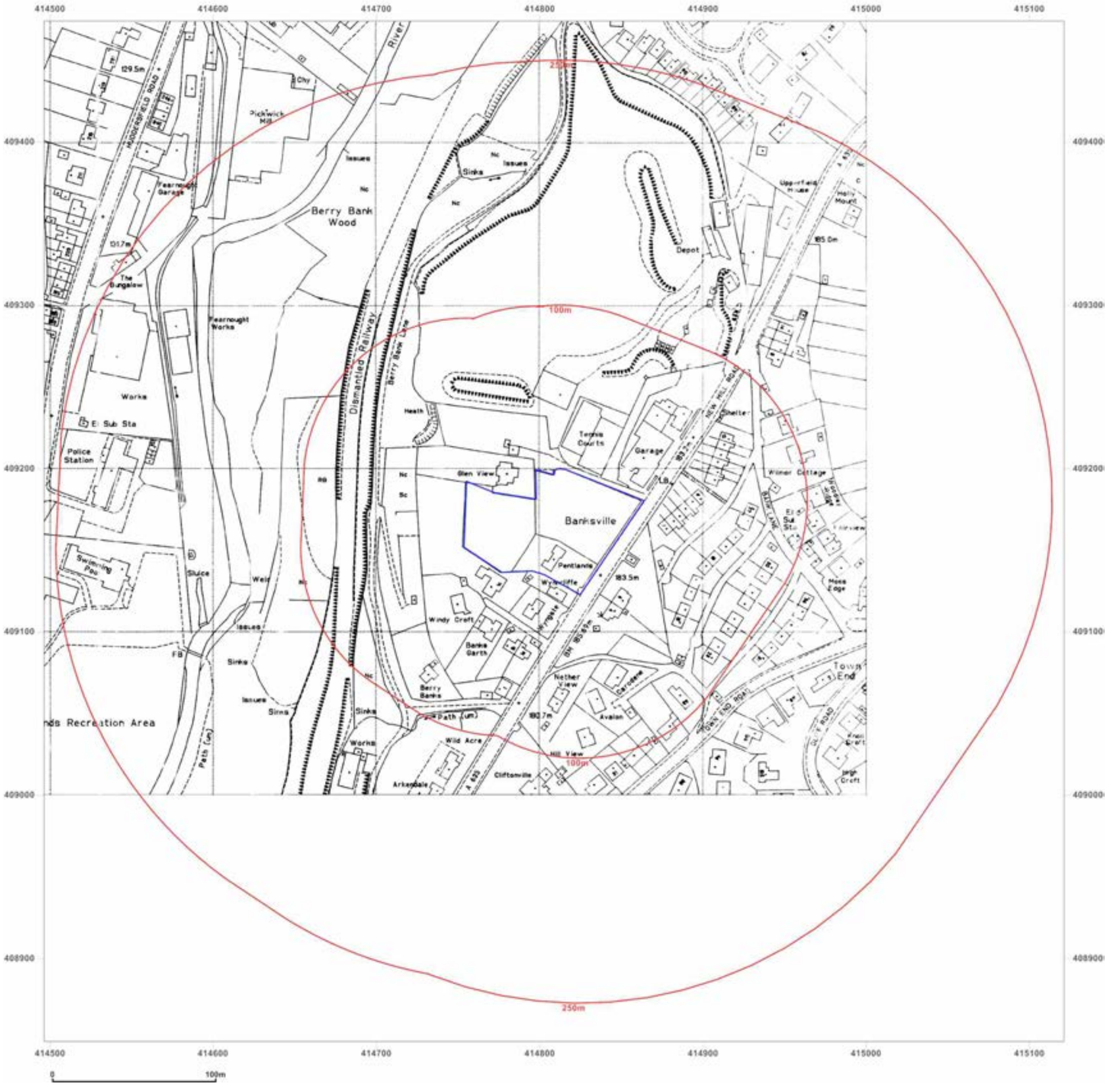

Groundsure INSIGHTS

Site Details:

NEW MILL ROAD, HOLMFIRTH, HUDDERSFIELD, HD9 7LN

Client Ref: C406_19_E_611_PO-0519
Report Ref: GS-6541669
Grid Ref: 414809, 409161

Map Name: National Grid

Map date: **1995**

Scale: 1:2,500

Printed at: 1:2,500

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

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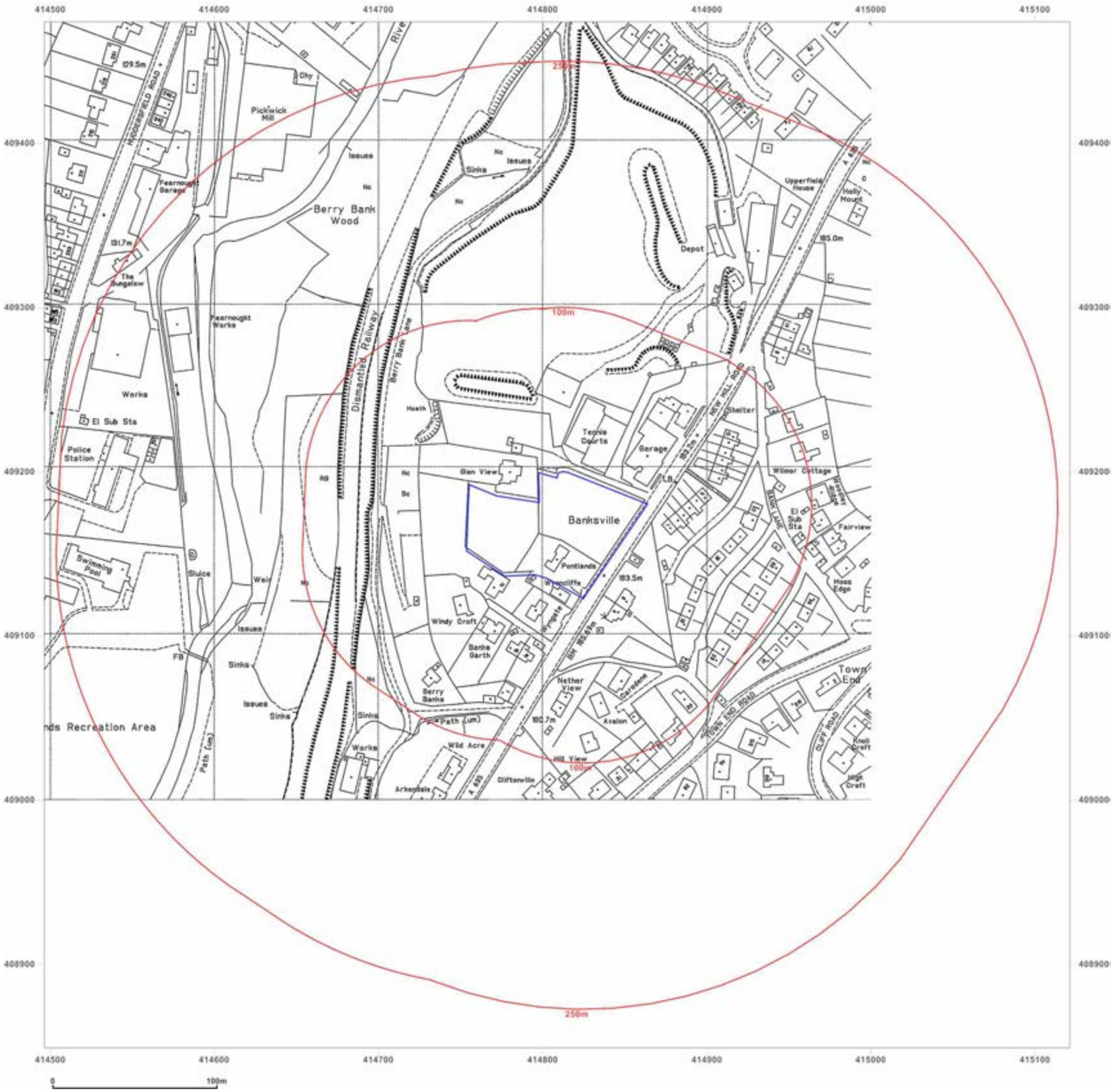

Groundsure INSIGHTS

Site Details:

NEW MILL ROAD, HOLMFIRTH, HUDDERSFIELD, HD9 7LN

Client Ref: C406_19_E_611_PO-0519
Report Ref: GS-6541669
Grid Ref: 414809, 409161

Map Name: National Grid

Map date: **1995**

Scale: 1:2,500

Printed at: 1:2,500

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

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Production date: 08 January 2020

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Site Details:

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HUDDERSFIELD, HD9 7LN

Client Ref: C406_19_E_611_PO-0519
Report Ref: GS-6541669
Grid Ref: 414809, 409161

Map Name: LandLine

Map date: **2003**

Scale: 1:1,250

Printed at: 1:1,250

N
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2003

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Production date: 08 January 2020

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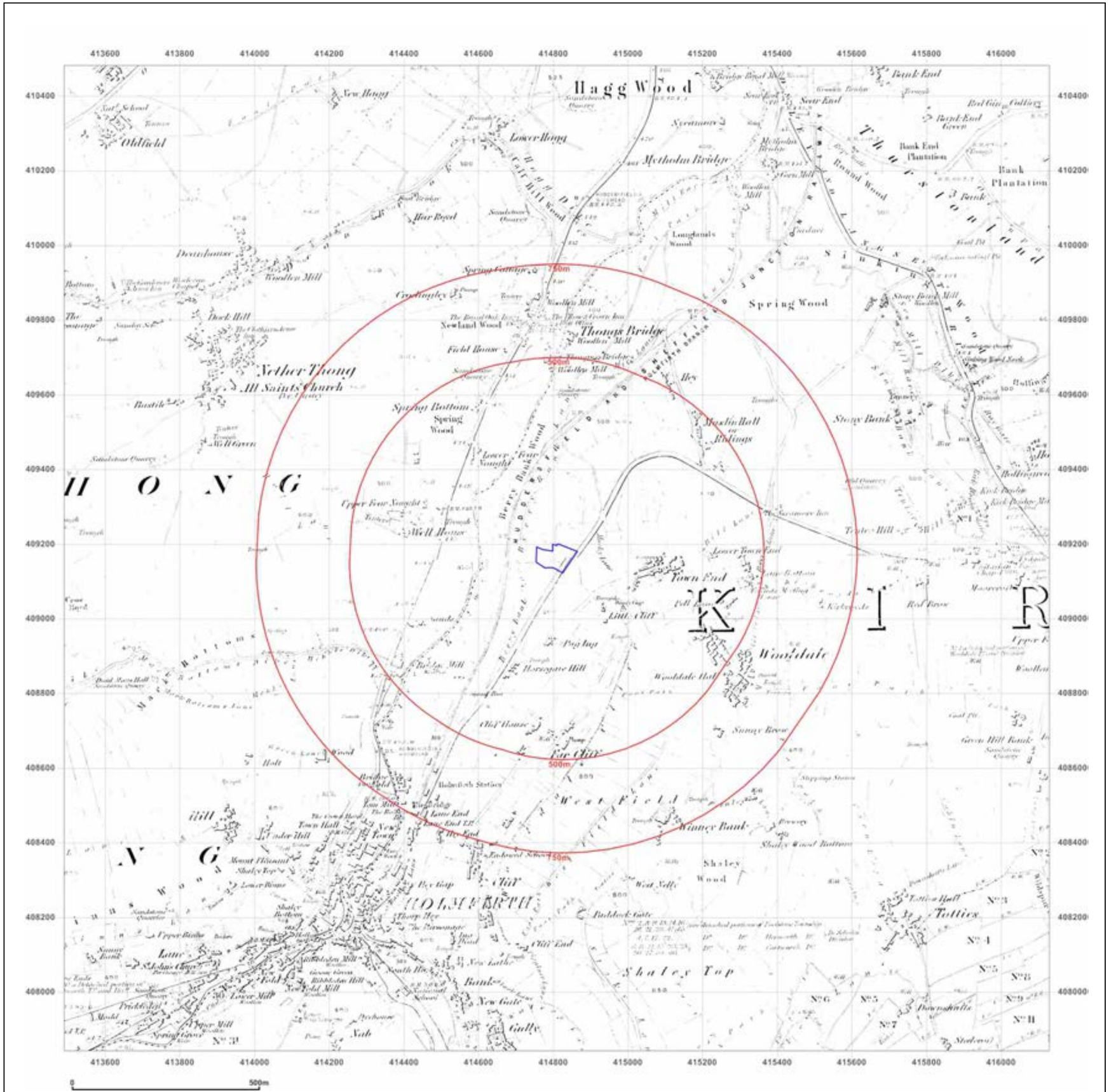

Groundsure INSIGHTS

Site Details:

NEW MILL ROAD, HOLMFIRTH, HUDDERSFIELD, HD9 7LN

Client Ref: C406_19_E_611_PO-0519
Report Ref: GS-6541669
Grid Ref: 414809, 409161

Map Name: County Series

Map date: **1854**

Scale: 1:10,560

Printed at: 1:10,560

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

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

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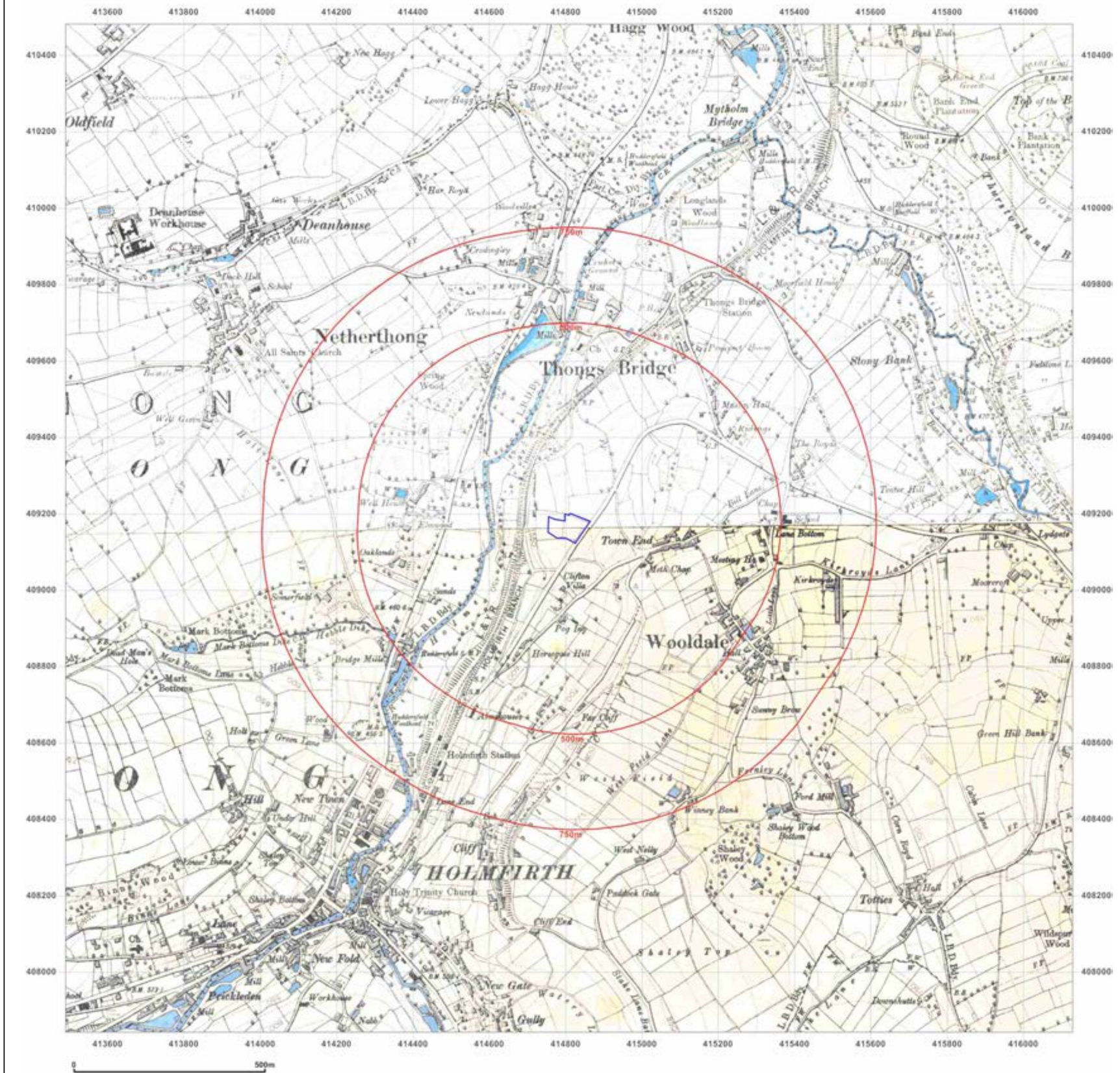

Groundsure INSIGHTS

Site Details:

NEW MILL ROAD, HOLMFIRTH, HUDDERSFIELD, HD9 7LN

Client Ref: C406_19_E_611_PO-0519
Report Ref: GS-6541669
Grid Ref: 414809, 409161

Map Name: County Series

Map date: **1888**

Scale: 1:10,560

Printed at: 1:10,560

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

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

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Production date: 08 January 2020

Map legend available at:
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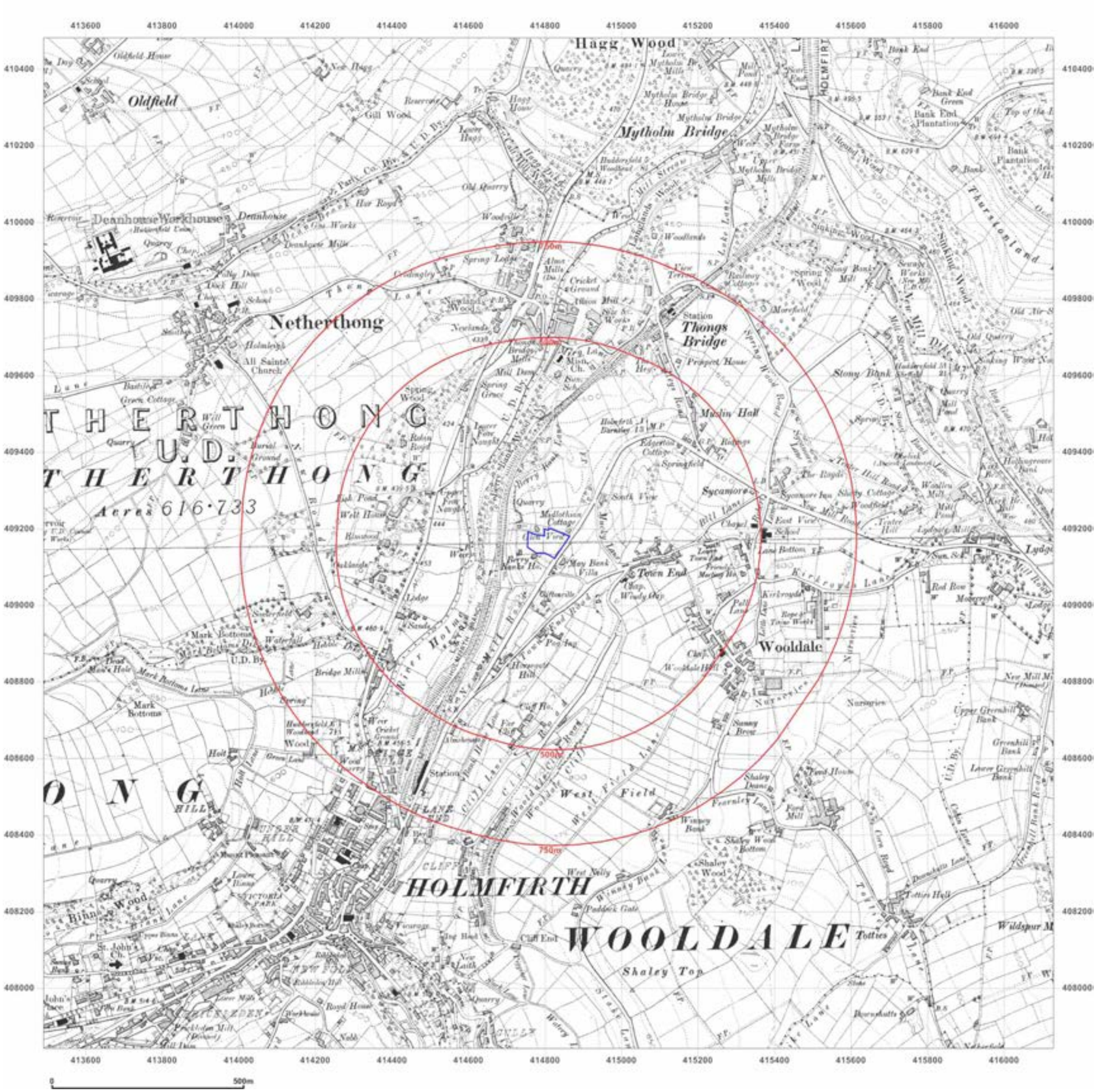

Groundsure INSIGHTS

Site Details:

NEW MILL ROAD, HOLMFIRTH,
HUDDERSFIELD, HD9 7LN

Client Ref: C406_19_E_611_PO-0519
Report Ref: GS-6541669
Grid Ref: 414809, 409161

Map Name: County Series

Map date: **1904**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1888
Revised 1904
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1888
Revised 1904
Edition N/A
Copyright N/A
Levelled N/A

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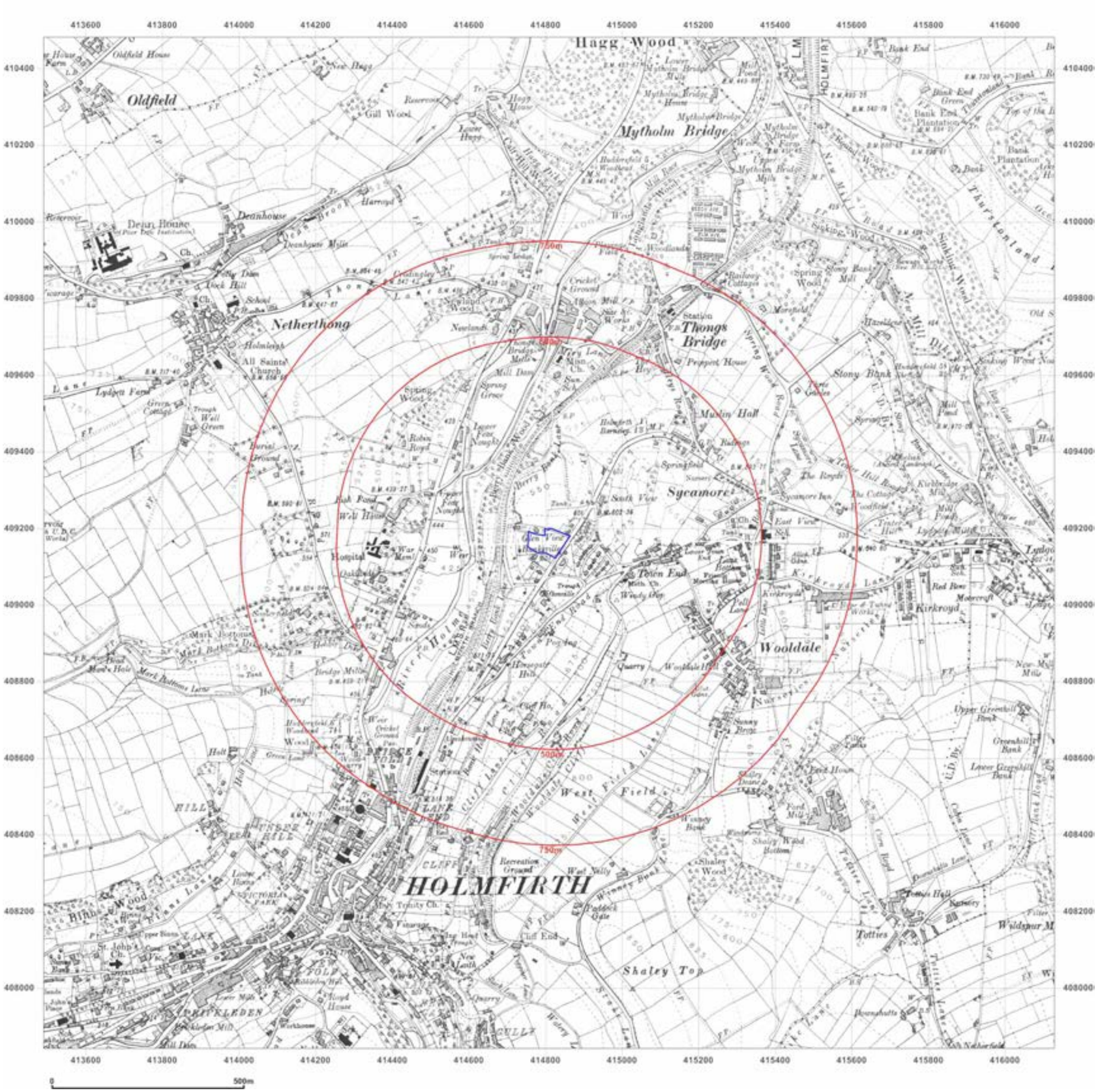

Groundsure INSIGHTS

Site Details:

NEW MILL ROAD, HOLMFIRTH, HUDDERSFIELD, HD9 7LN

Client Ref: C406_19_E_611_PO-0519
Report Ref: GS-6541669
Grid Ref: 414809, 409161

Map Name: County Series

Map date: **1929-1933**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1851
Revised 1928
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1851
Revised 1933
Edition 1933
Copyright N/A
Levelled N/A

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Production date: 08 January 2020

Map legend available at:
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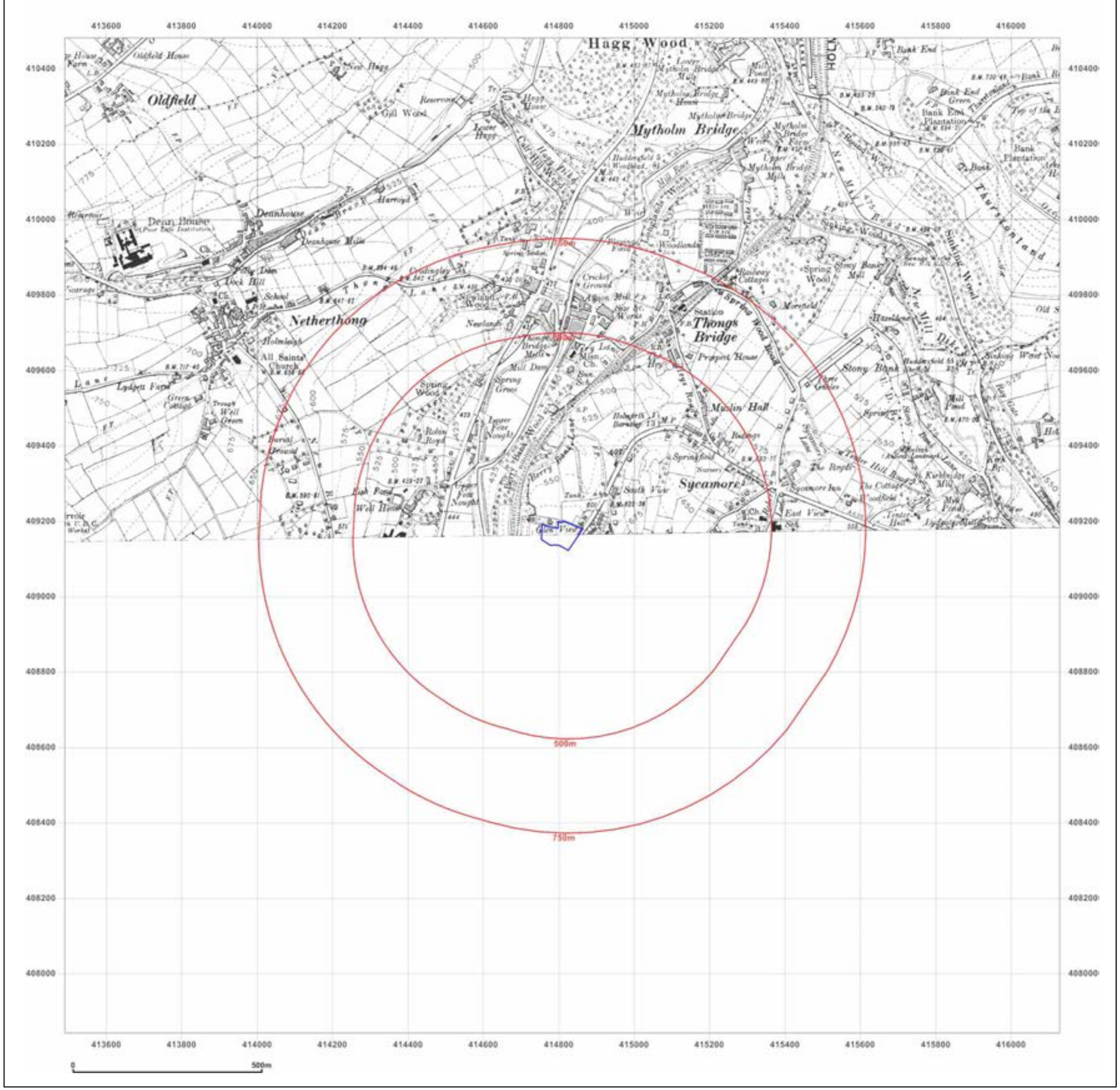

Groundsure INSIGHTS

Site Details:

NEW MILL ROAD, HOLMFIRTH, HUDDERSFIELD, HD9 7LN

Client Ref: C406_19_E_611_PO-0519
Report Ref: GS-6541669
Grid Ref: 414809, 409161

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

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

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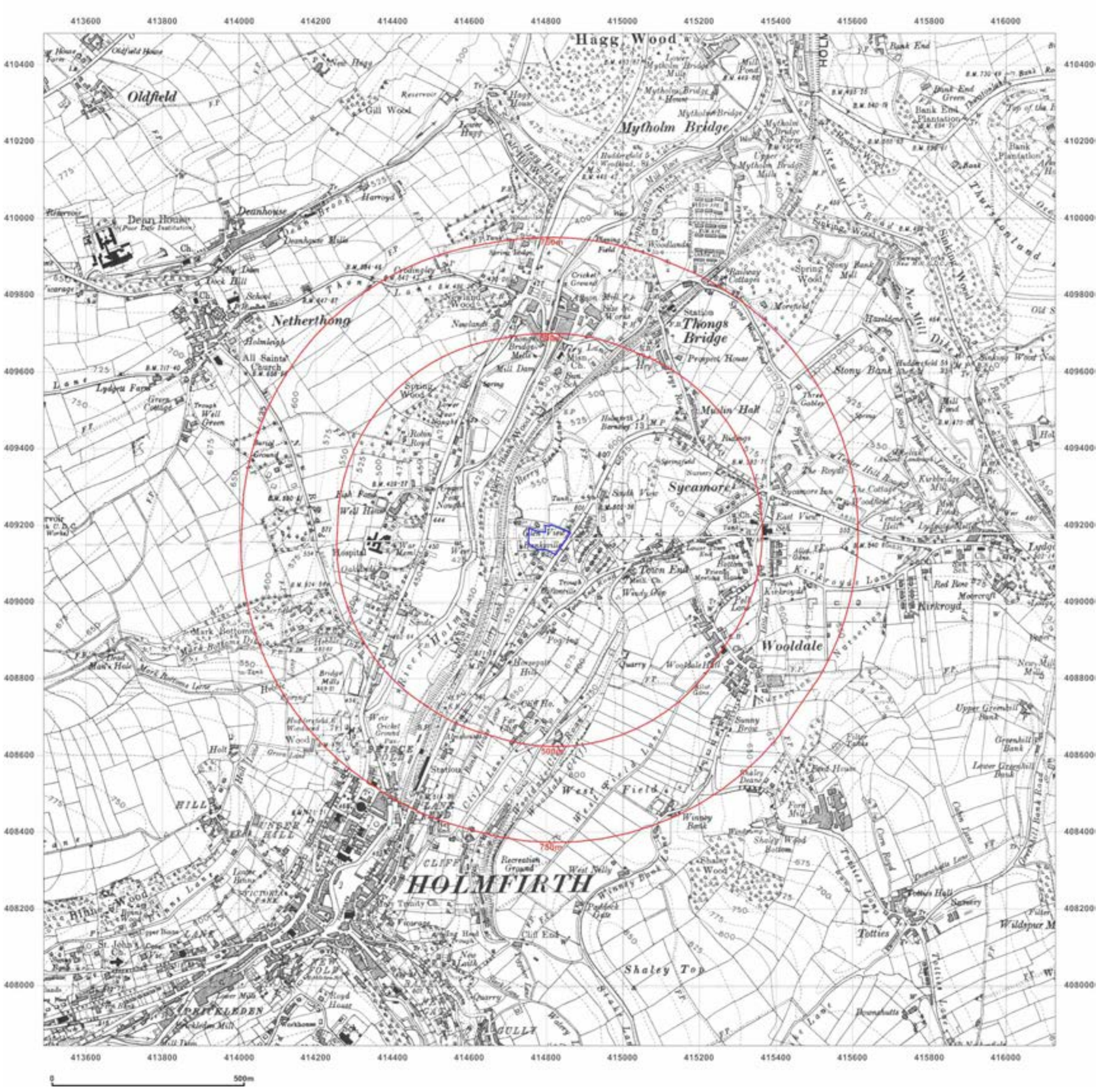
Production date: 08 January 2020

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



Groundsure INSIGHTS

Site Details:

NEW MILL ROAD, HOLMFIRTH, HUDDERSFIELD, HD9 7LN

Client Ref: C406_19_E_611_PO-0519
Report Ref: GS-6541669
Grid Ref: 414809, 409161

Map Name: County Series

Map date: **1948-1949**

Scale: 1:10,560

Printed at: 1:10,560

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

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

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Map legend available at:
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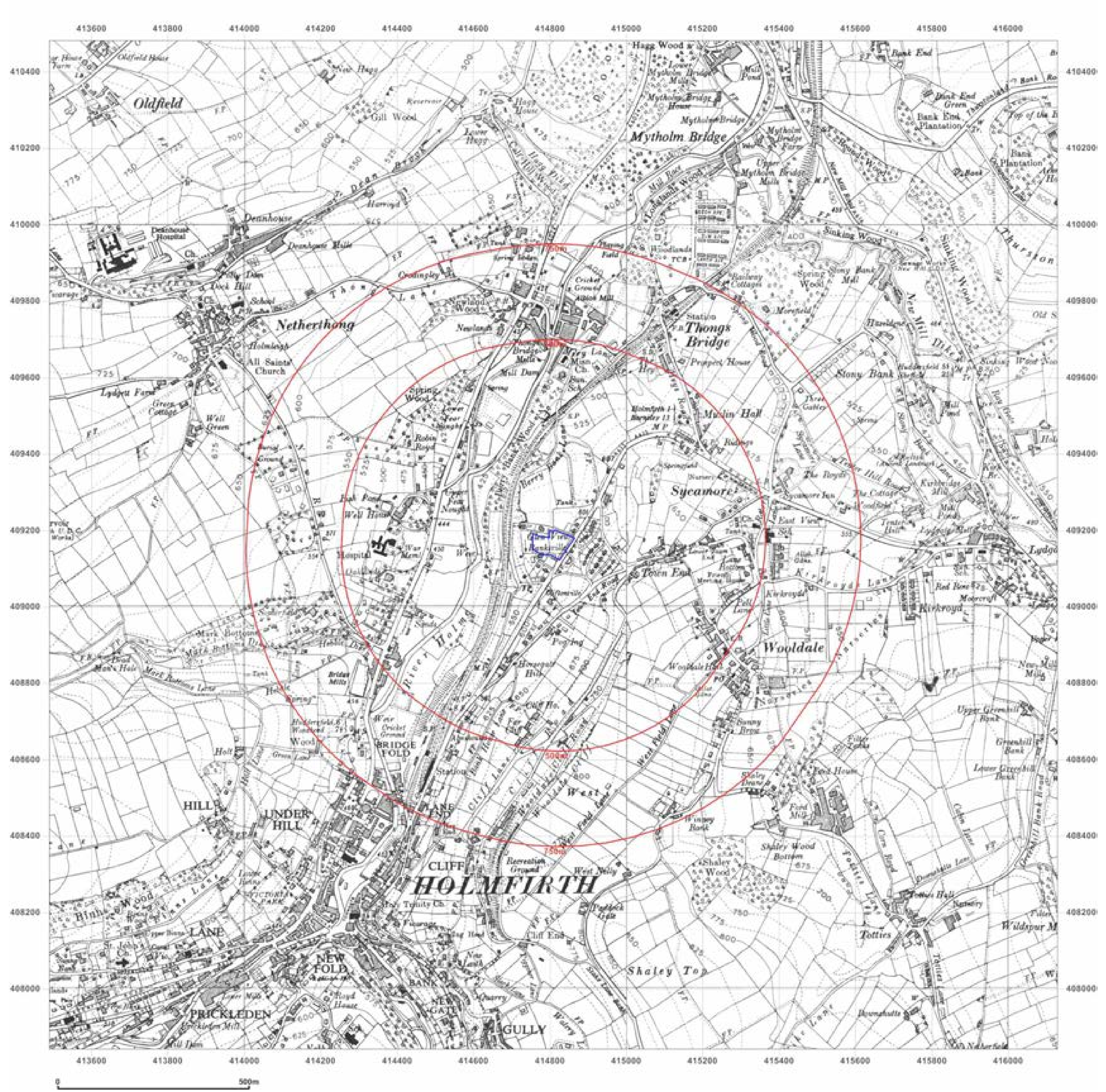

Site Details:

NEW MILL ROAD, HOLMFIRTH,
HUDDERSFIELD, HD9 7LN

Client Ref: C406_19_E_611_PO-0519
Report Ref: GS-6541669
Grid Ref: 414809, 409161

Map Name: Provisional

Map date: **1955-1956**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed N/A
Revised 1955
Edition 1956
Copyright N/A
Levelled N/A

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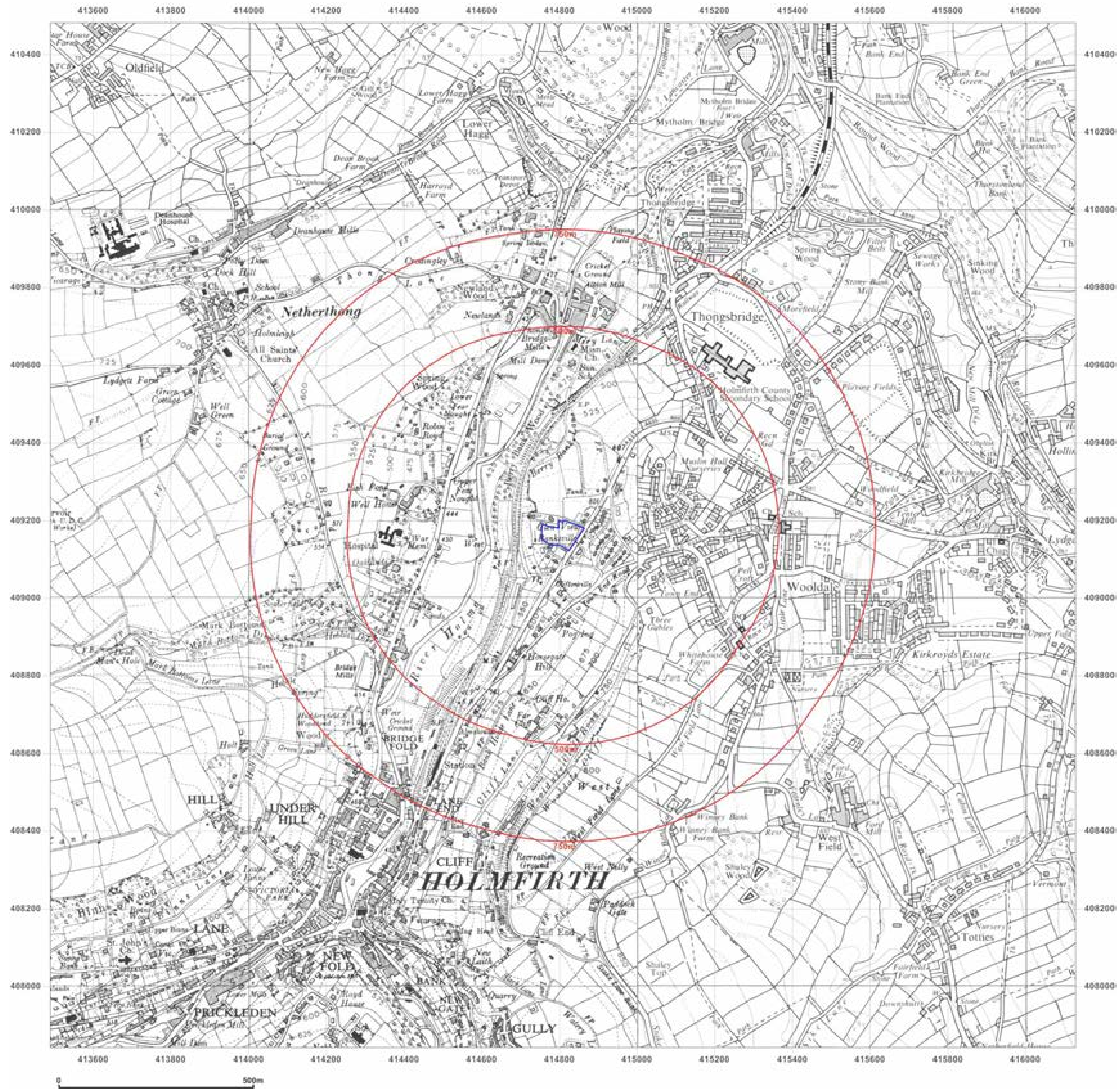

Groundsure INSIGHTS

Site Details:

NEW MILL ROAD, HOLMFIRTH,
HUDDERSFIELD, HD9 7LN

Client Ref: C406_19_E_611_PO-0519
Report Ref: GS-6541669
Grid Ref: 414809, 409161

Map Name: Provisional

Map date: **1965-1970**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1968 Revised 1968 Edition N/A Copyright N/A Levelled N/A	Surveyed 1968 Revised 1968 Edition N/A Copyright N/A Levelled N/A
Surveyed N/A Revised 1965 Edition N/A Copyright N/A Levelled N/A	Surveyed 1968 Revised 1970 Edition N/A Copyright N/A Levelled N/A

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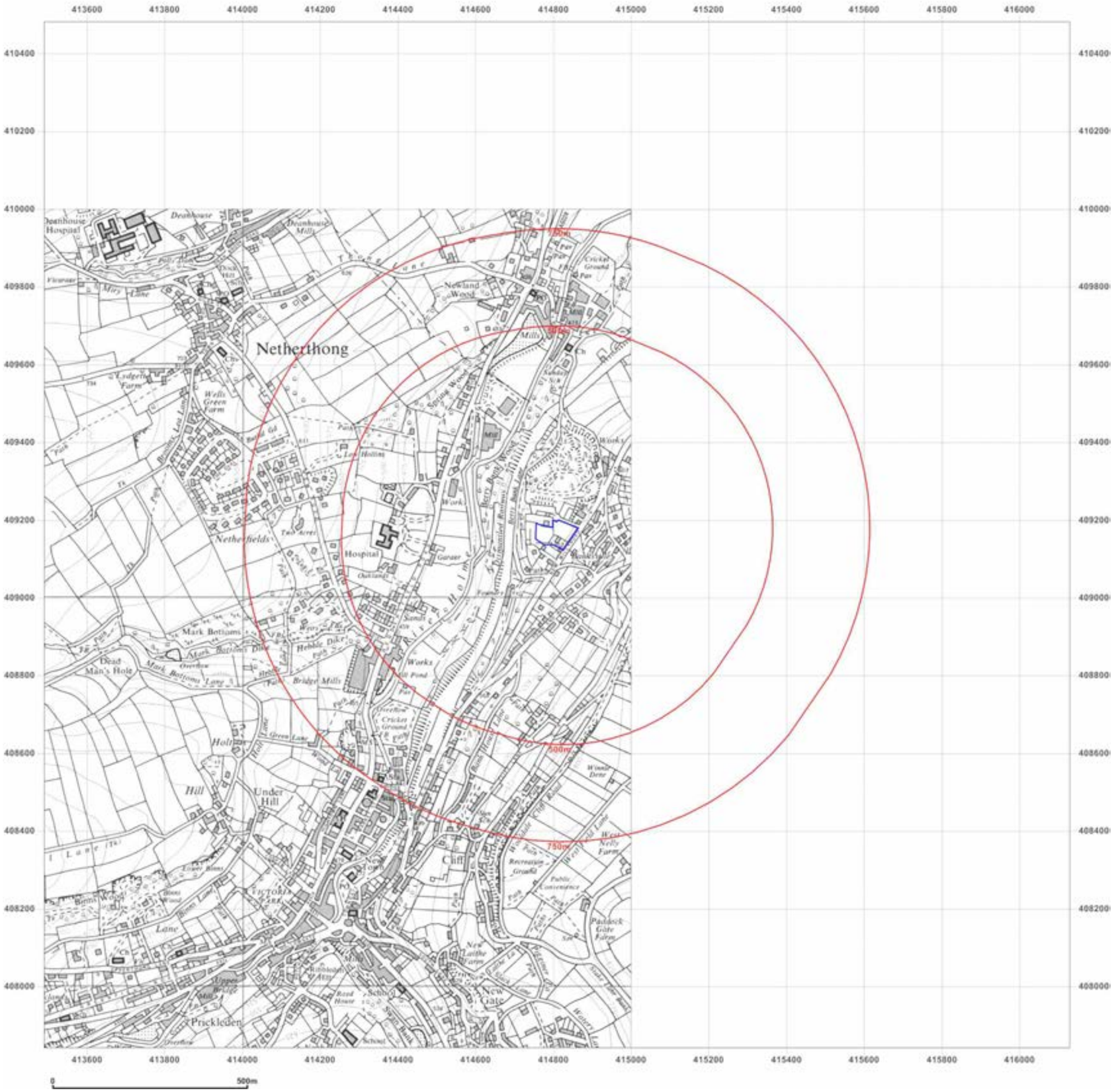

Groundsure INSIGHTS

Site Details:

NEW MILL ROAD, HOLMFIRTH, HUDDERSFIELD, HD9 7LN

Client Ref: C406_19_E_611_PO-0519
Report Ref: GS-6541669
Grid Ref: 414809, 409161

Map Name: Provisional

Map date: **1970**

Scale: 1:10,560

Printed at: 1:10,560

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Map legend available at:
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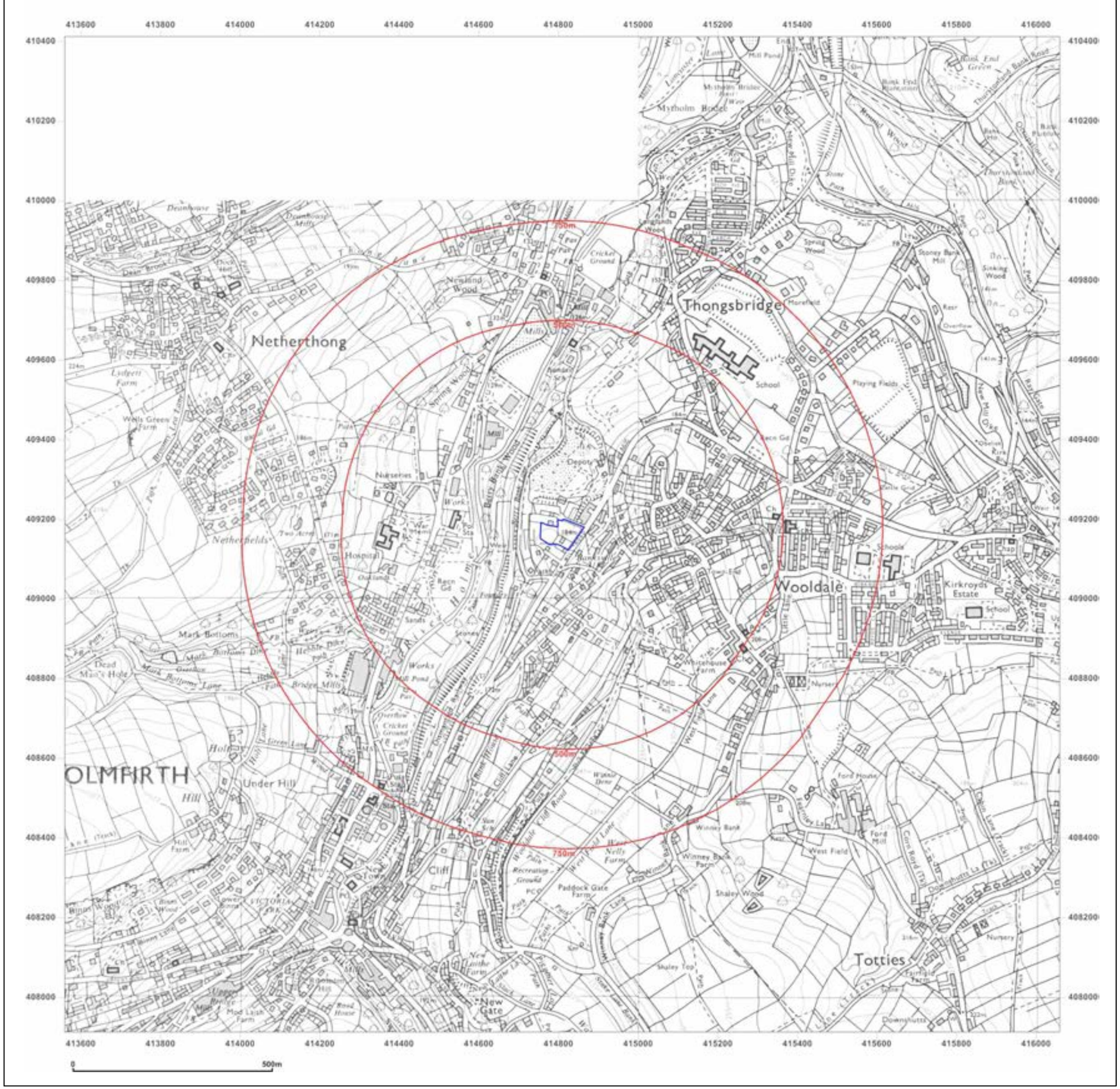

Groundsure INSIGHTS

Site Details:

NEW MILL ROAD, HOLMFIRTH, HUDDERSFIELD, HD9 7LN

Client Ref: C406_19_E_611_PO-0519
Report Ref: GS-6541669
Grid Ref: 414809, 409161

Map Name: National Grid

Map date: **1977-1980**

Scale: 1:10,000

Printed at: 1:10,000

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Revised 1977
Edition N/A
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Surveyed 1978
Revised 1980
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1978
Revised 1980
Edition N/A
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Levelled N/A

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Map legend available at:
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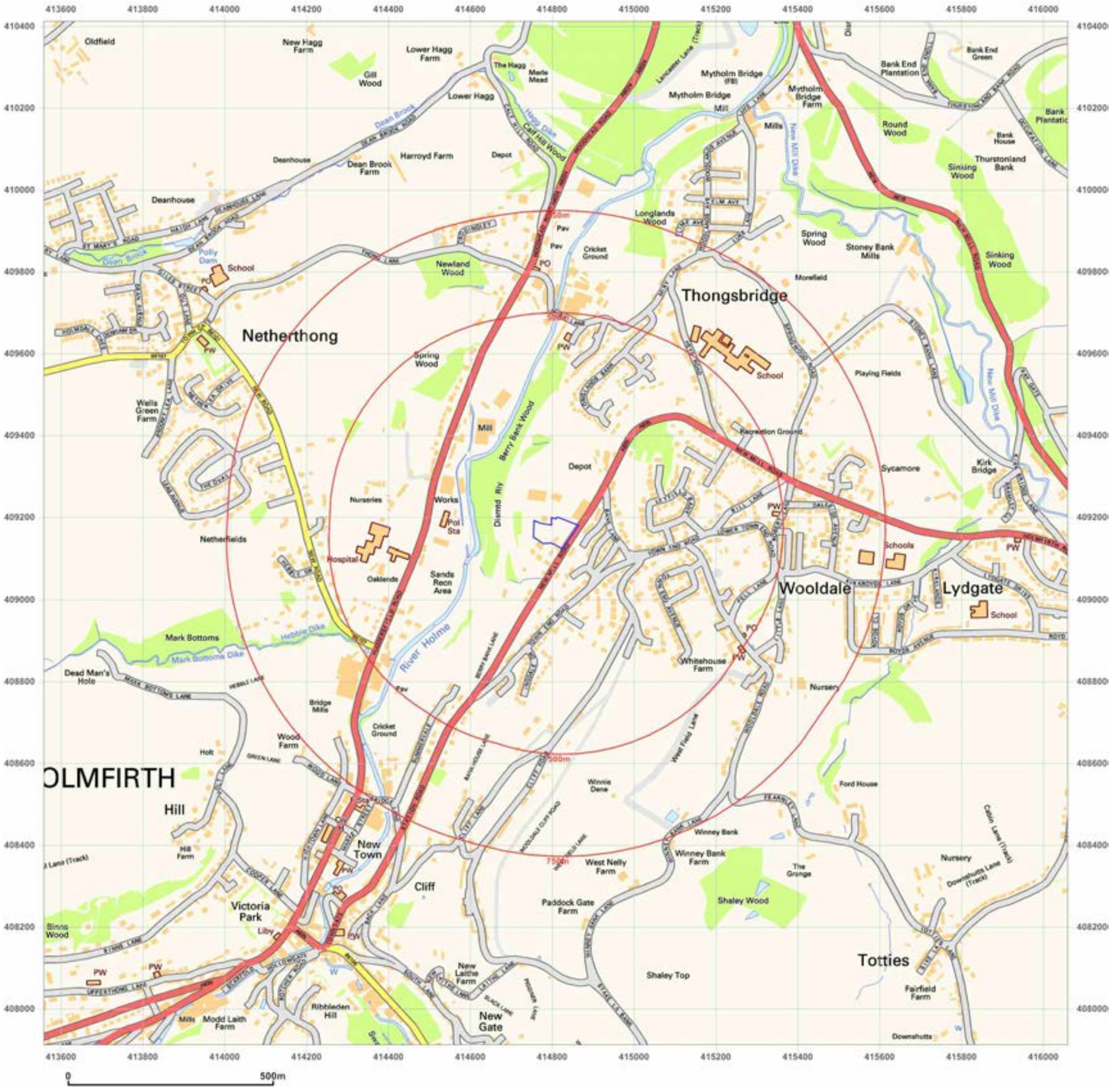

Groundsure INSIGHTS

Site Details:

NEW MILL ROAD, HOLMFIRTH, HUDDERSFIELD, HD9 7LN

Client Ref: C406_19_E_611_PO-0519
Report Ref: GS-6541669
Grid Ref: 414809, 409161

Map Name: National Grid
Map date: **2001**
Scale: 1:10,000
Printed at: 1:10,000

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2001

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Map legend available at:
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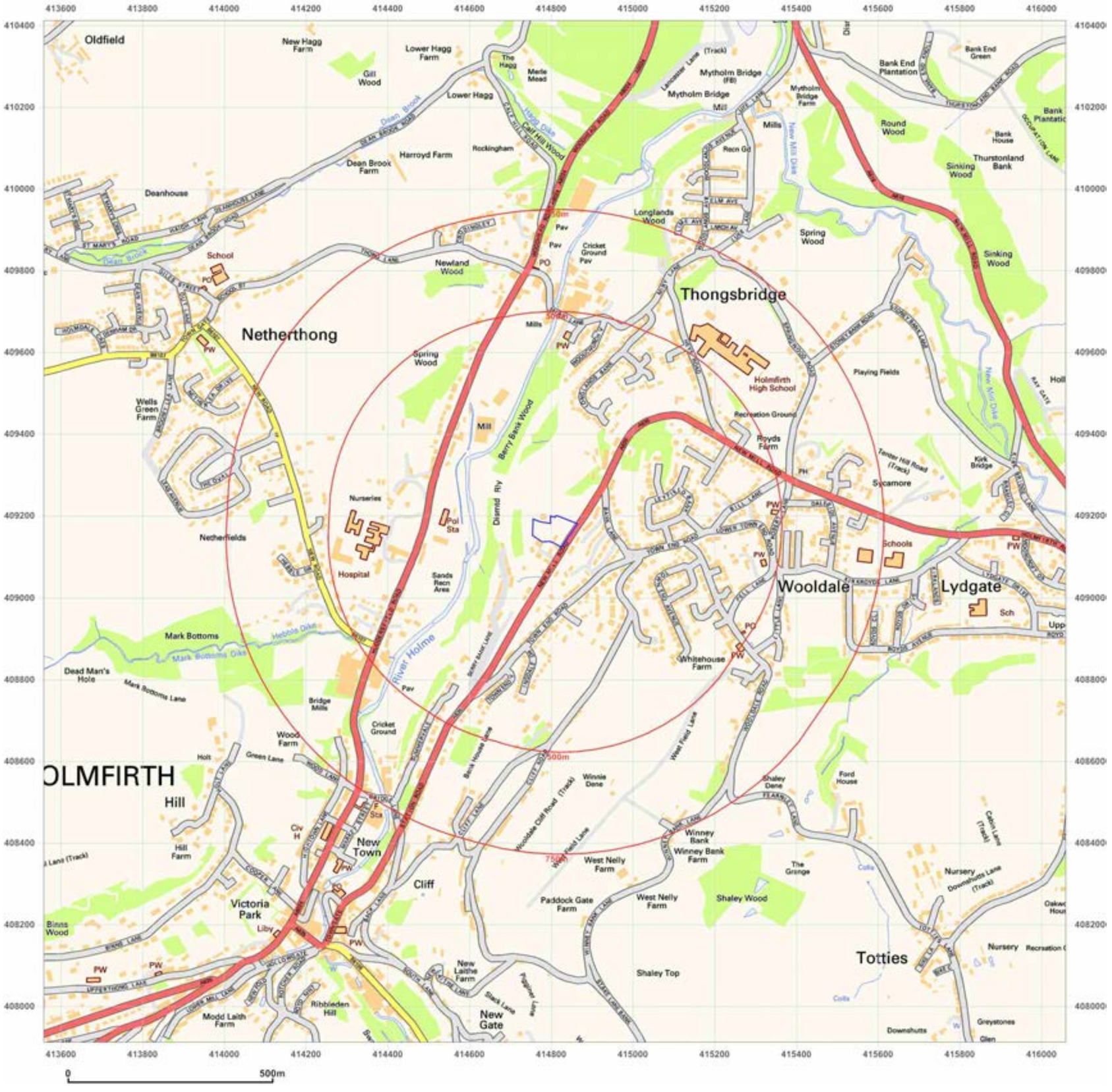

2010

Site Details:

NEW MILL ROAD, HOLMFIRTH, HUDDERSFIELD, HD9 7LN

Client Ref: C406_19_E_611_PO-0519
Report Ref: GS-6541669
Grid Ref: 414809, 409161

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

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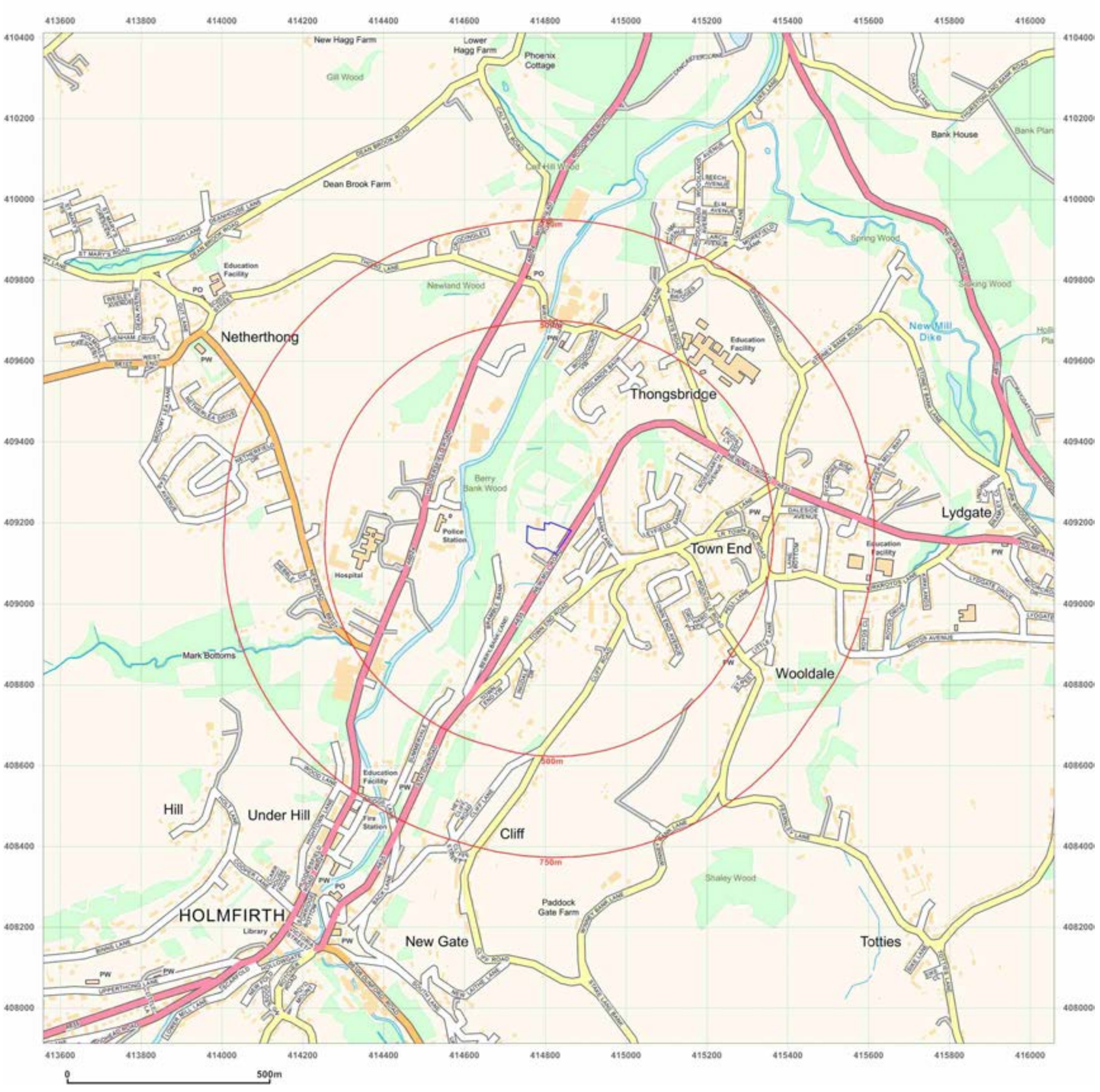
Production date: 08 January 2020

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



Site Details:

NEW MILL ROAD, HOLMFIRTH, HUDDERSFIELD, HD9 7LN

Client Ref: C406_19_E_611_PO-0519
Report Ref: GS-6541669
Grid Ref: 414809, 409161

Map Name: National Grid

Map date: **2020**

Scale: 1:10,000

Printed at: 1:10,000

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2020

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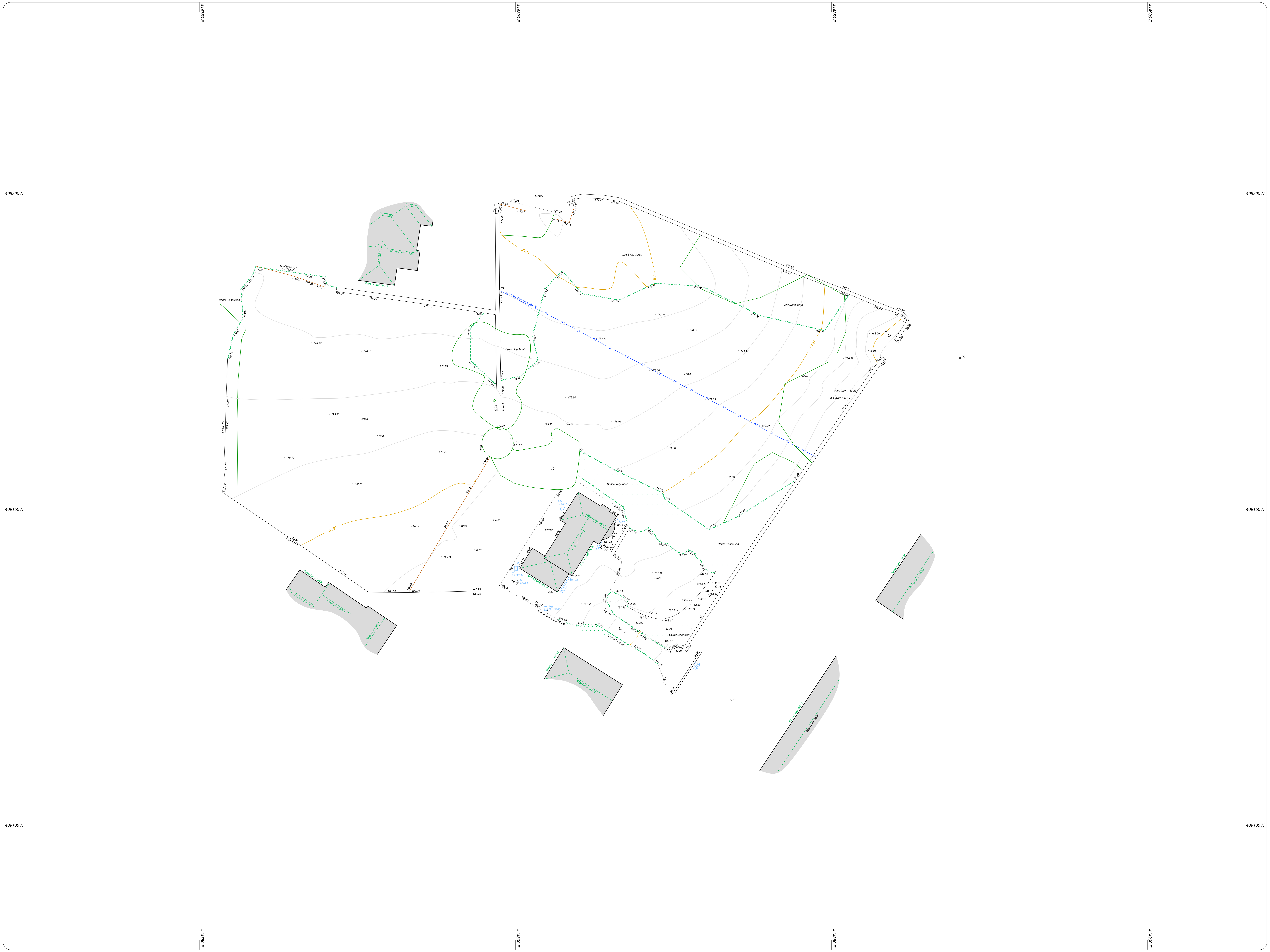
W: www.groundsure.com

Production date: 08 January 2020

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

Appendix 3

Site Plans

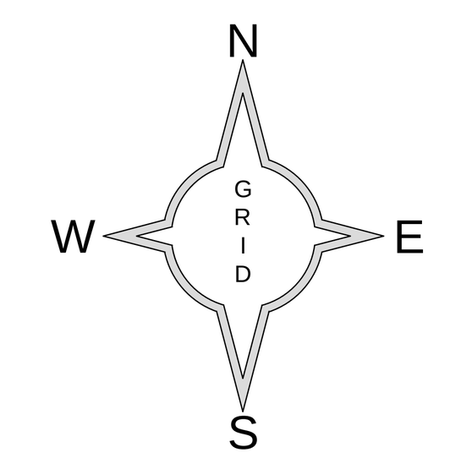


Notes:

1. Surveyed *Decmber 2019*
2. Survey related to Ordnance Survey "OS Net" at control point *V1*, using realtime correction received via Leica Geosystems "Smart Net" service. Survey plotted to flat plane metric grid with no local scale factor applied, i.e. LSF 1.00.
3. Levels related to GPS Orthometric height, converted to MSL (Newlyn) by OSGB36.

Control:

STN	East	North	Level	Type
V1	414833.974	409120.237	183.299	Nail
V2	414870.338	409174.405	183.329	Nail



Topographical Survey

General

- Every effort is made to identify all visible above ground features. However, it should be borne in mind that at the time of survey, some surface features may have been obscured.
- Visible features in the vicinity of the site extents, as detailed on this survey, may not represent the legally conveyed ownership boundaries.

Legend

- Top / Bottom of Bank
- Building / Overhead Canopy
- Wall
- Solid Surface Feature / Road Edge
- Hard / Soft Surface Change
- Kerb / Dropped Kerb
- Combined Kerb & Drainage System
- Drainage Channel
- Fence Line -

BW	Barbed Wire	HR	Hand Rail	PR	Post & Rail
CB	Close Boarded	IR	Iron Railings	SB	Safety Barrier
ChNut	Chestnut	Mtl PR	Metal Post & Rail	SF	Security Fence
CL	Chain Link	OB	Open Boarded	TF	Temporary Fence
CP	Concrete Panel	PA	Paling Fence	WM	Wire Mesh
(D)	Dilapidated	PC	Post & Chain		

- Hedge Line
- Tree / Scrub Canopy Line — Bush
- Line / Group Tree trunks — Tree
- Rock Face
- Pipe Line (Above Ground)
- OE Overhead Electric Cable
- OT Overhead Telephone Cable
- T.PIT 22.5 Trial Pit (with level); Survey Station; Gate; Electric Pylon
- BH 26.5 Borehole (with level); 10.1 Spot Level; Woodland Area (Deciduous); Level Datum; Woodland Area (Coniferous); Marsh Land

Feature Abbreviations

ACU	Air Conditioning Unit	FH	Fire Hydrant	NP	Name Plate	SVP	Soil Vent Pipe
BB	Belisha Beacon	FP	Fence Post	PB	Post Box	TAP	Stand Pipe
BO	Bollard	FL	Flood Light	PM	Parking Meter	TCB	Telephone Box
BO(L)	Bollard (Lit)	G	Gully	RBB	REent Bait Box	TEL	Telecom's Cover
BP	Boundary Post	GP	Gate Post	RE	REding Eye	TL	Traffic Light
BS	Bus Stop	GAS	Gas Cover	RS	Road Sign	TP	Telephone Pole
CATV	Cable TV Cover	KO	Kerb Offlet	RS(L)	Road Sign (Lit)	VP	Vent Pipe
CCTV	Close Curcuit TV	LB	Lighting Beacon	RWP	Rain Water Pipe	WM	Water Meter
COL	Column	LBIN	Litter Bin	SNR	Sensor	WO	Wash Out
CP	Concrete Post	LP	Lamp Post	SP	Sign Post	WV	Water Valve
DWB	Dog Waste Bin	ME	Meter	SP(L)	Sign Post (Lit)	UC?	Unknown Cover
EL	Electric Cover	MH	MH	SPDC	Speed Camara	UTL	Unable to Lift
EP	Electricity Pole	MP	Marker Post	STAY	Cable Stay	Ø	Diameter
ER	Earth RE	MEP	Metal Post	SV	Stop Valve		

Level Prefix

AL	Arch Level	RL	Roof / Ridge Level	ToS	Top of Steel Level
CL	Cover Level	SL	Soffit Level	ToW	Top of Wall Level
DPC	Damp Proof Course	SprL	Springing Level	ToT	Top of Tree Level
EL	Eaves Level	TL	Threshold Level	SILL	Sill Level
IL	Invert Level	ToC	Top of Concrete Level	WL	Water Level (inc.date & Time)
PL	Parapet Level	ToP	Top of Pipe Level		

Digital File: **ODS_30.dwg**
Original Size: **A0**

No.	Description	Date	Signed

Revisions

Surveyed:	BT	Date:	07.01.20	Scale:	1:200
Drawn:	BT	Sheet:	1 of 1	Approved:	

Title: **Topographical Survey**

Client: **Orange Design Studio**

Site: **Pentlands, New Mill Road**

visiongeomatics
Digital Media Centre,
County Way,
Barnsley,
South Yorkshire,
S70 2JW
Web: www.visiongeomatics.com
Email: ben@visiongeomatics.com
Tel: 01226 720771 Mob: 07896662242

Drawing No. **ODS_30_SP** Rev.

Appendix 4

Photographs

Site entrance at the southeastern corner (Facing wes)

Fount of the property (Facing west)

	Rogers Geotechnical Services Ltd	Project Name: **Pentlands, New Mill Road, Holmfirth, HD9 7LN**	Project Number: **C406/19/E/611**

Rear of the property (Facing east)

Rear of the property (Facing west)

	Rogers Geotechnical Services Ltd	Project Name: **Pentlands, New Mill Road, Holmfirth, HD9 7LN**	Project Number: **C406/19/E/611**

Fire pit and waste oil drum

The northeast of the site (Facing south)

	Rogers Geotechnical Services Ltd	Project Name: **Pentlands, New Mill Road, Holmfirth, HD9 7LN**	Project Number: **C406/19/E/611**

The northeast of the site (Facing north)

Southwest of the site (Facing east)

	Rogers Geotechnical Services Ltd	Project Name: **Pentlands, New Mill Road, Holmfirth, HD9 7LN**	Project Number: **C406/19/E/611**

Appendix 5

Coal Authority Report

The Coal Authority

Consultants

Coal Mining Report

New Mill Road
Holmfirth
Kirklees
HD9 7LN

Date of enquiry:	**8 January 2020**
Date enquiry received:	**8 January 2020**
Issue date:	**8 January 2020**
Our reference:	**51002223557001**
Your reference:	**C406/19/E/611**

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

New Mill Road
Holmfirth
Kirklees
HD9 7LN

Approximate position of property

How to contact us

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

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

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

Section 1 – Mining activity and geology

Past underground mining
No past mining recorded.

Probable unrecorded shallow workings
Yes.

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

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

Abandoned mine plan catalogue numbers
None available.

Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
UPPER MELTHAM	Coal	Yes	Within	N/A	175

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
None recorded within 500 metres of the enquiry boundary.

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

Section 2 – Investigative or remedial activity

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

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

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

Coal mining subsidence
The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 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 not in an area where a notice to withdraw support has been given.

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

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

Section 4 – Further information

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

Section 5 – Data definitions

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

Past underground coal mining

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

Probable unrecorded shallow workings

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

Spine roadways at shallow depth

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

Mine entries

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

Abandoned mine plan catalogue numbers

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

Outcrops

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

Geological faults, fissures and breaklines

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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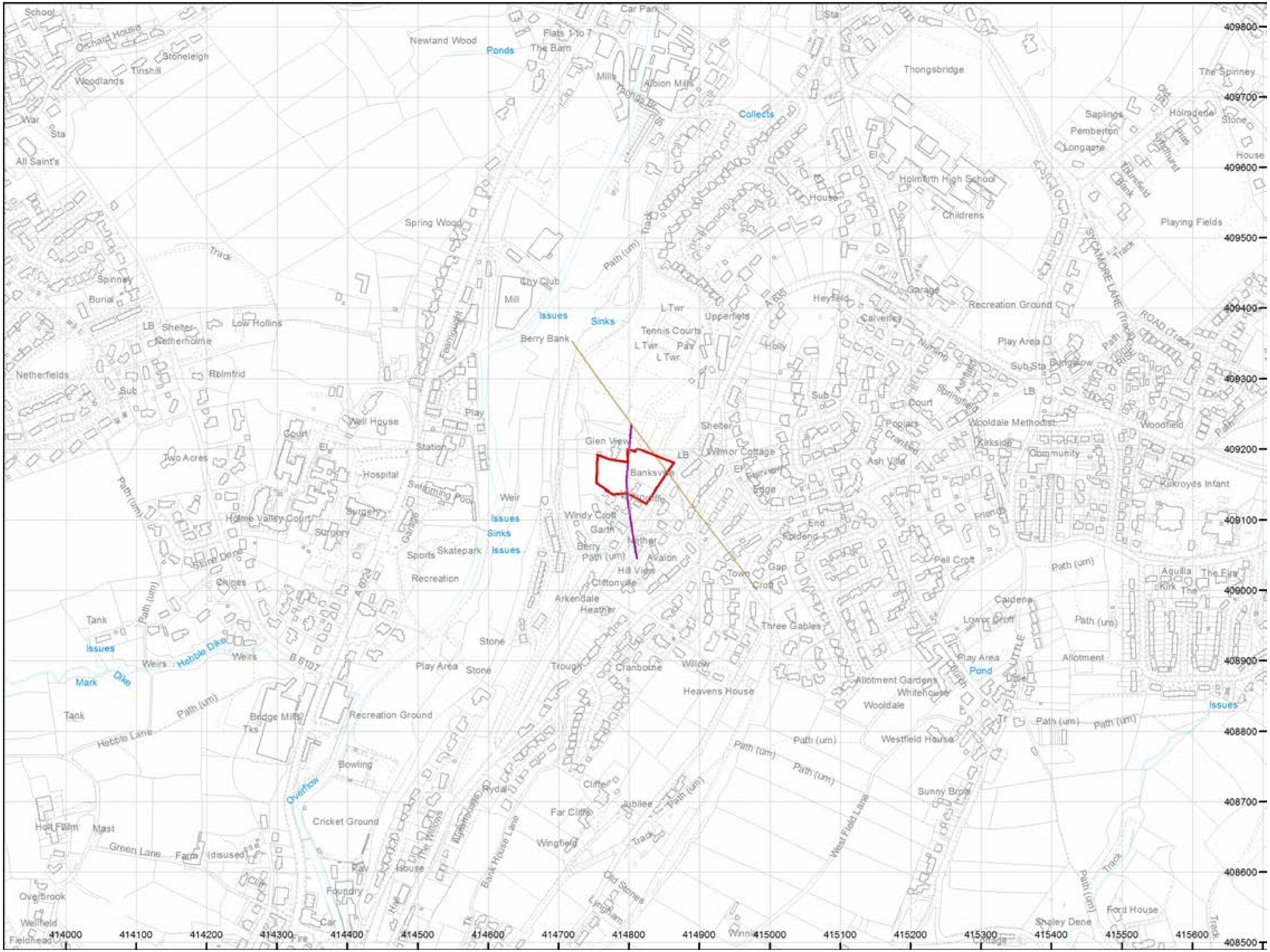
The Coal Authority

Summary of findings

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

Key

- Approximate position of the enquiry boundary shown
- Outcrop (Proven)
- Geological faults

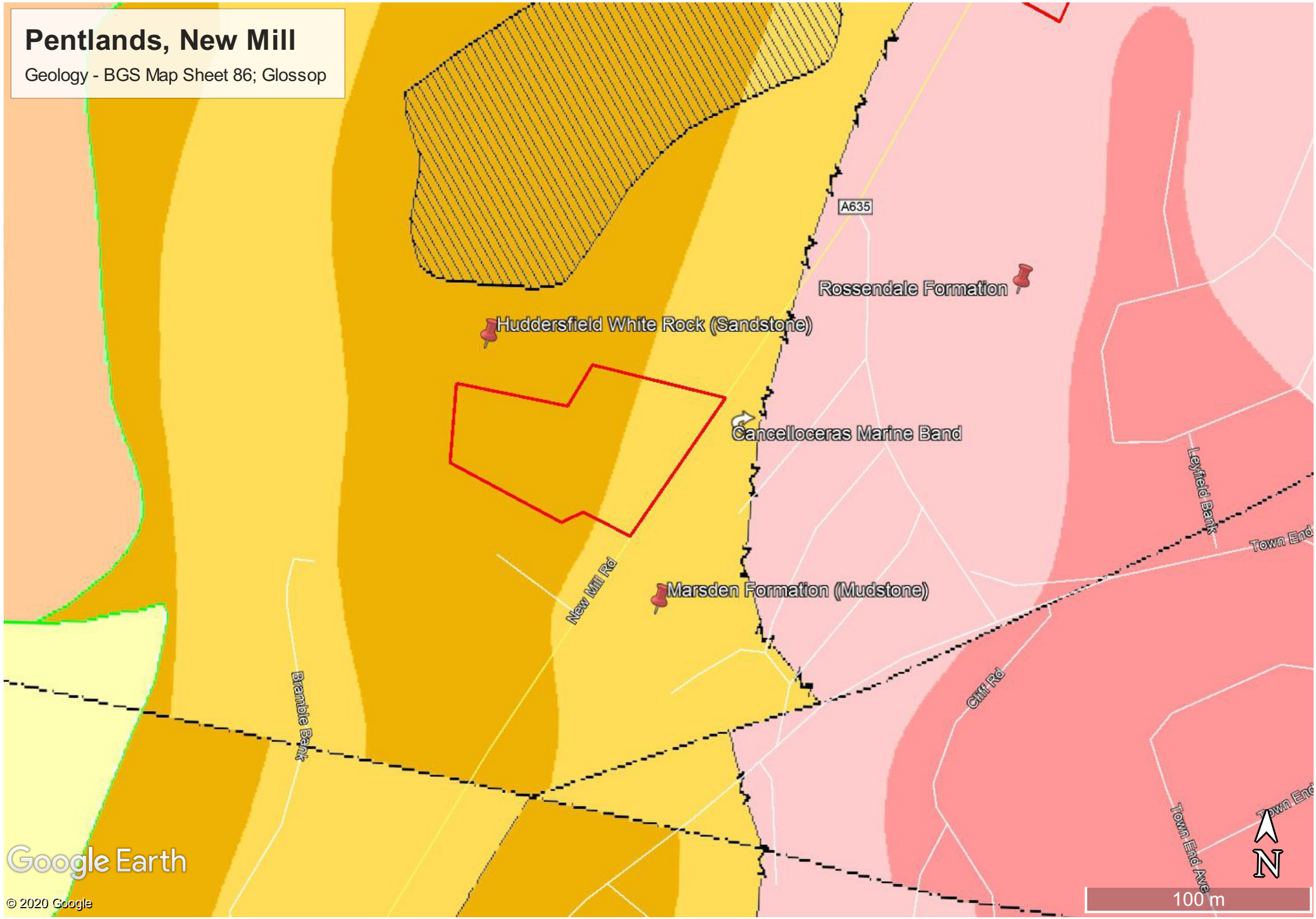


How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)
www.groundstability.com

Appendix 6

Geology Plan


Pentlands, New Mill
Geology - BGS Map Sheet 86; Glossop
A635
Rossendale Formation
Huddersfield White Rock (Sandstone)
Cancelloceras Marine Band
Marsden Formation (Mudstone)
New Mill Rd
Bramble Bank
Cliff Rd
Leyfield Bank
Town End
Town End Ave
N
100 m
Google Earth
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