

Coal Mining Risk Assessment

## **44 BALL ROAD, SHEFFIELD**

Project Ref: GUK-0324-04

**For: Mr F. Whelan**



**GROUNDSMITHS**  
GEOTECHNICAL ENGINEERS



CLIENT:

**Mr F. Whelan**

PROJECT:

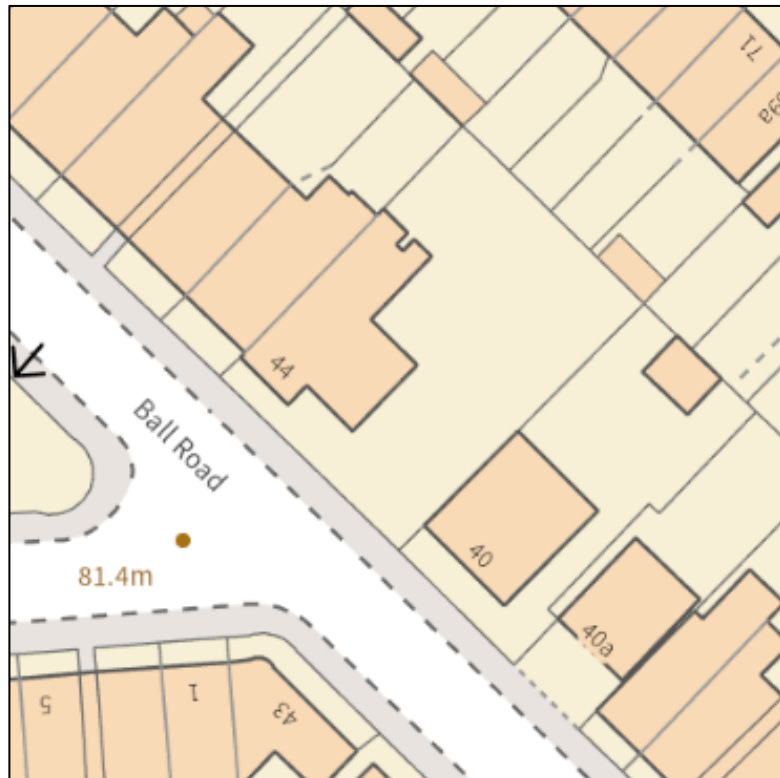
**Residential Development**

SITE REFERENCE:

**44 Ball Road  
Sheffield**

REPORT REFERENCE:

**GUK-0324-04/Rp-001**



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CONTENTS

**1 INTRODUCTION ..... 4**  
1.1 Appointment.....4  
1.2 Development Proposals.....4  
1.3 DHR or DLR?.....4  
1.4 Objectives .....6  
1.5 Scope of Works .....6  
1.6 Previous Ground Investigation Reports .....6  
1.7 Limitations of Study .....6

**2 SITE SETTING ..... 7**  
2.1 Details & Description .....7  
2.2 Anticipated Geological Conditions .....7

**3 IDENTIFICATION AND ASSESSMENT OF SITE SPECIFIC COAL MINING & OTHER MINERAL WORKING RISKS.....10**  
3.1 Coal Authority Consultants Coal Mining Report..... 10  
3.2 Seams of Interest..... 11  
3.3 Other Mineral Workings ..... 11  
3.4 Summary of Mining Legacy..... 11  
3.5 Risk Assessment..... 12

**4 MITIGATION .....14**

**5 REGULATORY APPROVAL .....16**

**6 INFORMATION SOURCES.....17**

**7 REPORTING LIMITS .....18**

TABLES

Table 2.1 - General Site Details .....7  
Table 2.2 - General Geological Conditions .....7  
Table 3.1 - Summary of Mining Legacy Beneath the Site..... 12  
Table 3.2 - Qualitative Mining Risk Evaluation ..... 13

APPENDICES

APPENDIX A GEOINSIGHT REPORT  
APPENDIX B: COAL AUTHORITY CONSULTANTS COAL MINING REPORT



## 1 INTRODUCTION

### 1.1 Appointment

Groundsmiths (UK) Ltd ('Groundsmiths') were appointed by Mr F. Whelan (the 'Client') % Mr S. Grayson to compile a Coal Mining Risk Assessment ('CMRA') with respect to the proposed residential redevelopment of land located at 44 Ball Road, Sheffield (herein referred to as the 'Site').

Groundsmiths have prepared this CMRA for the sole use of the Client that commissioned it in accordance with the agreement under which our services are performed. No other warranty, expressed or implied, is made as to the professional advice or commentary included in this document. Any unauthorised third parties using the information presented do so entirely at their own risk and are duly excluded from any warranty, duty of care or skill.

No part of this CMRA shall be reproduced or redistributed without the prior written consent of Groundsmiths. However, it may be issued by the Client or their Agent to the Local Planning Authority (the 'LPA') to support the discharge of any pre-commencement or other such pre-occupancy condition as may be imposed under the Town and Country Planning Act 1990.

### 1.2 Development Proposals

The aim of this report is to present a preliminary assessment of the coal mining legacy to the Site given the Client's intentions to redevelop it with a pair of semi-detached dwellings following the demolition of an existing structure. The assessment given herein therefore follows, and is based upon, a review of currently available published geological records, third party data, and information obtained from the Coal Authority.

### 1.3 DHR or DLR?

The Coal Authority <sup>[1]</sup> is a statutory consultee on planning applications for development within defined coal mining areas in England, Scotland, and Wales. They have specific statutory responsibilities associated with, for example, the licensing of coal mining operations, the handling of subsidence claims, providing information on coal mining and in managing the environmental legacy of coal mining activities. The risk-based approach to development management adopted by the Coal Authority <sup>[2]</sup>, with respect to planning applications, is centred around two spatial areas. These are referred to as 'Development High Risk' and 'Development Low Risk' and are defined in the following way:

- **Development High Risk** areas cover approximately 15% of the coalfield and refer to those areas where specific recorded coal mining legacy is present or suspected which poses a risk to public safety and/or ground stability (e.g. mine entries, shallow recorded or probable workings, coal opencast sites etc), and
- **Development Low Risk** areas cover approximately 85% of the coalfield and refer to those areas where historic coal mining activity has taken place at sufficient depth that it poses only a low risk to new development.



Where a development lies within a low risk area, guidance indicates that there is no requirement to submit a coal mining-related assessment to the Coal Authority<sup>1</sup> as part of any planning submission. However, where development lies within a high risk area, new development proposals (notwithstanding any exemptions that may apply) are required to assess potential coal mining legacy issues. In these instances, assessment is prepared in accordance with the general requirements of preliminary risk assessment as defined by the Coal Authority in order to:

- Determine the possible ground related hazards and risks associated with historic coal mining legacy and other mineral workings, and
- Demonstrate to the Local Planning Authority that the application Site is, or can be made, safe to meet the requirements of the National Planning Policy Framework ('NPPF')<sup>[3]</sup>, notably Paragraphs 183 and 184, which refer to the provision of adequate investigation information, prepared by competent persons, and the responsibility that is placed on the developer and/or landowner should a site be found to be affected by instability.

Based upon available information, Groundsmiths indicate that the Site appears to lie within a Coal Authority-defined area of Development High Risk. This is because it is located where there are either records associated with known mining legacy features or where the Coal Authority believe there to be mining legacy features which could potentially have a negative impact upon ground stability. This determination is based upon Coal Authority records, such as that presented on the Coal Authority's interactive database, following review of the Local Planning Authority District Development Risk, Specific Risk and Surface Coal Resource plans, and other information sources.

**INITIAL RISK LEVEL DETERMINATION: DEVELOPMENT HIGH RISK**



<sup>1</sup> Irrespective of the requirement of the Coal Authority, a mining risk assessment should be undertaken as part of a general due diligence exercise for any development when deciding to build in an area that may be affected by mining legacy. Other interested parties (e.g. the Local Authority, Building Control, a third party Warranty provider...) may also request one.



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## 1.4 Objectives

Notwithstanding the above risk determination and the potential for mining legacy to affect the proposed development, the objectives of this CMRA were also to:

- Provide information about the general nature of the superficial and bedrock soils likely to be encountered beneath the Site;
- Provide recommendations for any investigative works that may be required, and
- Provide preliminary recommendations for any remedial works they could be required.

## 1.5 Scope of Works

The assessment undertaken within the context of this CMRA comprised a review of the following sources of information:

- British Geological Survey ('BGS') 1:50,000 scale series (solid & drift edition) geological mapsheets <sup>[4]</sup>
- GeoInsight Report (Appendix A) <sup>[5]</sup>
- BGS Onshore GeoIndex records database <sup>[6]</sup>
- Coal Authority Consultants Coal Mining Report (Appendix B) <sup>[7]</sup>
- Coal Authority interactive (planning) database <sup>[8]</sup>

## 1.6 Previous Ground Investigation Reports

Groundsmen are not aware of any historically issued ground investigation data that relates to the proposed development Site or the immediate area surrounding it.

## 1.7 Limitations of Study

The assessment presented herein has been undertaken subject to the limitations detailed in Section 7 and any other limitations stated separately in the CMRA.

No intrusive ground investigation works have been undertaken as part of this assessment.



## 2 SITE SETTING

### 2.1 Details & Description

A general summary of the Site’s setting is given in Table 2.1, below.

**Table 2.1 - General Site Details**

National Grid Reference	The National Grid Reference (NGR) for the Site is indicated to be 432770mE 389560mN.
Area of Development	The area of development is indicated to be 0.03ha.
General Boundary Development	The Site lies within an established residential area. Existing dwellings with garden curtilage lie to the north-west, north-east and south-east, whilst to the south-west is Ball Road.
Ground Elevations	General topographic data for the area indicates that the Site lies broadly at 81m AOD.

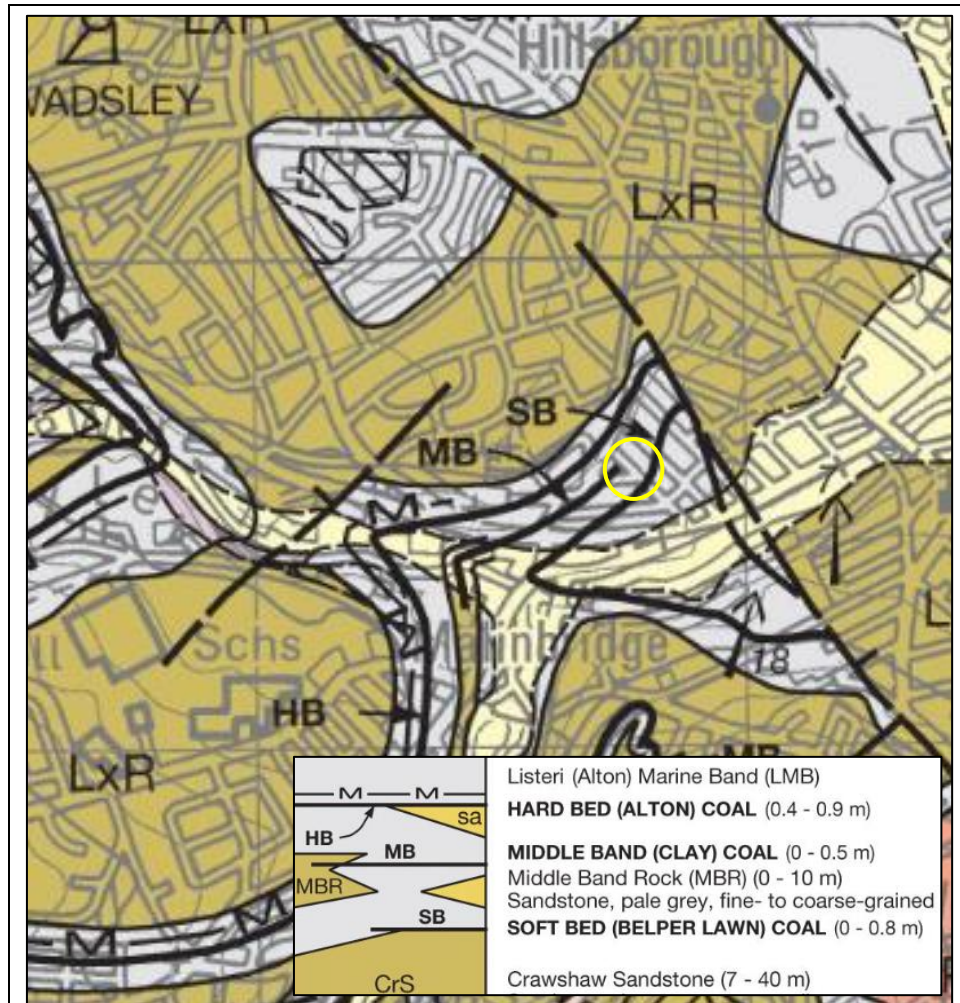
### 2.2 Anticipated Geological Conditions

A summary of salient geological data for the Site is given in Table 2.2, below and overleaf.

**Table 2.2 - General Geological Conditions**

Linear Features & Bedrock Faults	The nearest recorded fault is indicated from a distance of 140m to the east, whilst the nearest linear feature is associated with the inferred position of a coal seam from a distance of 23m to the west.
Nearby BGS Boreholes	There are no nearby BGS borehole records that may be accurately referred to within the remit of this assessment.
Artificial Deposits	Records at the 1:10,000 scale indicate the presence of worked ground from a distance of 194m to the west, with this being associated with a void. There are no areas of artificial deposit indicated at the 1:50,000 scale.
Superficial Geology	There are no superficial deposits recorded as being present on-Site.
Bedrock Geology	The solid geology underlying the Site is indicated to comprise Pennine Lower Coal Measures ('PLCM') deposits. These consist of a cyclic sequence of deposition of interbedded and undifferentiated horizons of mudstone and siltstone with various sandstone bands, coal seams, their seatearths, and some ironstone.  Available BGS data suggests that there is no significant dip on the bedrock within the local area, although some variation should be anticipated.

Table Contd./



Source: BGS Map Sheet 100. Sheffield (1:50,000 scale, 2011). Superficial and Bedrock

An upper horizon of firm to stiff gravelly clay of variable consistency is anticipated to be present, with the underlying solid strata likely being encountered as weathered brown, yellow, and grey sandy mudstones of varying strength with darker interbedded horizons of grey-black shales and coal. Furthermore, given the presence of significant sandstone beds within the area, such deposits could also be expected to be encountered.

Natural Cavities

Risk associated with natural cavities within 500m is not expected.

Mining Cavities

There are no records of any mining cavities (e.g. crown holes) within at least 1km.

Non-coal Mining

There are no records within at least 347m. The potential for difficult ground conditions are indicated to be unlikely, or at a depth where they need not be considered.

Historical Mineral Planning Areas

There are no records within at least 500m.

Table Contd./





Radon	Less than 1% of properties are estimated to exceed the Radon Action Level. No radon protective measures would be required in construction (although this should be confirmed with Building Control as they may have different requirements).
Natural Ground Subsidence Hazards (within 50m)	There is a 'Low' reported risk rating for landslides hazards, but a 'Very Low' risk rating for shrink swell clay soils and collapsible deposits. For compressible deposits, the ground dissolution of soluble rocks hazards and running sands, the risk is 'Negligible'.
Bedrock Permeability	Bedrock permeability is indicated to be low to moderate. Any groundwater movement would be via secondary porosity through fissures and other defined fractures.
Landslip	<p>In providing a preliminary assessment of risk associated with potential landslip, consultation was made with the data presented by GroundSure at the 1:10,000 and 1:50,000 scales.</p> <p>GeoInsight data indicates that there are no records of landslip associated with mass movement deposits within 500m of the Site, and also no records of landslip permeability (i.e. the estimated rate of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposit) within 50m. It should be noted, however, that the hazard rating for slope instability (landslide potential) is indicated to be low, and that slope instability problems could exist. Due consideration to potential problems should be made as required.</p>
Brine	The Site does not lie within a brine pumping area. No risk would be expected.



### **3 IDENTIFICATION AND ASSESSMENT OF SITE SPECIFIC COAL MINING & OTHER MINERAL WORKING RISKS**

A review of the geological memoir for the district indicates that within the Coal Measures sequence there are between eighty and one hundred coal seams that have been proven. Many of these were found to be uneconomic, but about thirty were worked in some form or other to produce coal for Sheffield's past industrial activities.

With respect to the subject Site, consideration has been given to historic mining legacy that relates to the proposed development and that of the immediate surrounding area. Potential coal mining risks which could have a negative impact on development have been assessed, utilising third party and other published information where available.

#### **3.1 Coal Authority Consultants Coal Mining Report**

Salient information obtained from the Coal Authority, as indicated in the appended report, may be summarised as follows:

- No past underground coal mine workings have been identified beneath the Site. As such, there are also no abandoned mine plan catalogue entries.
- No probable unrecorded shallow workings are identified.
- No shallow-depth spine roads are identified.
- There are no recorded mine entries within 100m of the Site.
- The Halifax Soft (or Soft Bed) coal is indicated to crop to the east of the Site from a distance of about 20m.
- There are no recorded on-Site geological faults, fissures, or breaklines.
- There are no records in relation to coal mining subsidence claims within 50m of the Site.
- There are no records in relation to opencast coal mine workings within 500m of the Site.
- There are no records of mine gas within 500m of the Site, although this does not mean that other gases can't be present within the boundary to the Site.
- There are no records of mine water treatment schemes within 500m of the Site, and
- There are no records relating to any remediation works having been carried out within 50m.



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### 3.2 Seams of Interest

The shallowest coal to underlie the Site, on the basis of geological succession, would be the Soft Bed (reported by the Coal Authority to be the Halifax Soft, or in the geological memoir <sup>[9]</sup>, the Coking Coal). The crop of this seam is indicated to lie c.20m to the east, although its position is conjectured only.

Other coals, in the direction of younging (i.e. those that lie above the Soft Bed) and given the relative lack of bedrock dip across the anticline that forms the north-western part of Sheffield, are the Middle Band coal, and the overlying Hard Bed (or Alton) coal with its associated Listeri marine marker bed. The Middle Band appears to be present at a level consistent with Site, but it is discontinuous across its field (recorded as being only about 4 inches in thickness) and is mapped as stopping some way short of Site; on this basis, its presence would not therefore be expected. The Hard Bed lies above Site, stratigraphically, and would not therefore be an issue, even if it had been worked.

Having reviewed the geological memoir it is evident that there is no direct evidence of recorded working in the Soft Bed within the immediate vicinity to the Site or indeed beneath it; there are also no entries in the memoir with respect to the Halifax Soft. As indicated herein, the Coal Authority also have no records of working, and no assumption that there are unrecorded coal workings that exist at or close to the surface (i.e. within 30m depth) beneath the Site.

### 3.3 Other Mineral Workings

There are no records relating to gypsum, tin, and/or clay mining in the area of development. Risk associated with such mining is not expected.

Synonymous with the north-western part of Sheffield and the aforementioned coals are the fireclays and ganister that were worked in places. There are recorded entries in the memoir for working of these, although nothing that directly relates to the Site or its immediate locale. GroundSure data indicates that the nearest recorded area of ganister working is located 541m to the west, according to records available to them, whilst the Coal Authority has no records of non-coal mining within at least 500m of the Site. Furthermore, available first edition Ordnance Survey plans dating back to 1888 (Ref. Yorkshire CCXCIV.3, scale 1:2,500) show the Site and its surrounding area to be under residential development, with no mapped evidence of surficial working.

### 3.4 Summary of Mining Legacy

Mining legacy which could potentially impact upon the proposed development have been assessed. These are summarised in Table 3.1, overleaf.



**Table 3.1 - Summary of Mining Legacy Beneath the Site**

Coal Mining Feature	Yes	No	Unknown	Comment
On-site coal crop		x		None recorded.
Recorded underground coal mine workings <30m bgl		x		There are no past recorded workings, shallow or otherwise.
Probable unrecorded underground coal mine workings at <30m bgl		x		The Coal Authority do not indicate the presence of potential unrecorded shallow workings.
Recorded underground ore mining at <30m bgl		x		None recorded.
Probable unrecorded underground ore mining at <30m bgl		x		None expected.
Mine entries (shafts and adits) on, or within 100m of the Site		x		None recorded.
Recorded Coal Authority mining surface (opencast) workings hazards		x		None recorded.
Records of coal mining related subsidence		x		None recorded.
Spontaneous combustion ('sponcom') of coal seams		x		None recorded.
Records of mine gas emissions requiring action by the Coal Authority		x		None recorded.
Geological weakness		x		None recorded or anticipated.
Remediation work to sites or mine entries		x		None recorded.

### 3.5 Risk Assessment

Mining legacy features which could potentially impact upon the proposed development works have been assessed. These are summarised in Table 3.2, overleaf, and are based on information provided by the Coal Authority and that obtained from other geological sources.



**Table 3.2 - Qualitative Mining Risk Evaluation**

<b>Coal Mining Feature</b>	<b>Risk Level</b>	<b>Comment</b>
On-site coal crop	Negligible	Coal at normal founding depth is not anticipated, although a watching brief during excavation should be made. If encountered, coal should be blinded to prevent its exposure.
Recorded underground coal mine workings	Negligible	There are no recorded coal workings at any depth.
Probable unrecorded underground coal mine workings at <30m bgl	Negligible	The potential for unrecorded working beneath the Site is not anticipated, although as indicated above, a watching brief during excavation should be made. This is because there are coal seams present locally, which may contain localised evidence of ancient (unrecorded) prospecting.
Recorded or probable underground ore mining at <30m bgl	Negligible	The potential for difficult ground conditions is not expected on the basis of available information. A watching brief during excavation should be made.
Recorded Coal Authority mining surface hazards (opencast workings)	Negligible	The potential for difficult ground conditions associated with former opencast sites is not expected.
Coal mining related subsidence	Negligible	No subsidence claims within at least 50m are indicated to have been made.
Mine entries (shafts and adits) on, or within 100m of the Site	Negligible	There are no recorded coal mine entries within at least 100m. It's considered reasonable to assume at this time that there are no mine entries beneath the Site on the basis of available information.
Spontaneous combustion ('sponcom') of coal seams	Very Low to Negligible	There are no apparent records of sponcom associated with the coal seams of the area. All usual precautions in development would need to be adhered to if shallow coal was ever encountered in excavation.
Records of mine gas emissions requiring action by the Coal Authority	Negligible	Risk associated with mine gases is not expected.
Geological weakness	Very Low	No particular weakness is anticipated, although ground conditions should be confirmed through standard investigation methods to facilitate foundation design. Slope instability should be considered as required.



## 4 MITIGATION

### Coal & Other Mineral Working

The Site is noted to lie within an area where there are conjectured coal seams (hence the identification of Development High Risk areas by the Coal Authority) and there have been instances of underground coal mine working and non-coal extraction within the wider area. It should be noted, however, that there are no records of shallow mining legacy beneath the Site, or indeed beneath the adjacent properties.

The development proposals are such that part of an existing building is to be demolished, with this freeing-up space within the curtilage to the plot for the construction of two semi-detached dwellings. It is considered that the level of risk posed to these would be no greater than that which has existed for the existing structure since it was built, and indeed the other buildings that are located adjacent and nearby. On this basis, and in relation to the available information obtained from the Coal Authority, the BGS, and other sources, it is considered that the completion of perhaps '*disproportionately expensive investigative works*' is not needed in this instance. If shallow mine workings had been identified within the local area and the potential for problems with the Soft Bed coal and any other mineral working was perceived to be higher, Groundsmen would likely be mindful to request the completion of a limited phase of further works to quantify the level of risk. On balance, however, it is considered better to ensure that a suitable and robust foundation solution is provided for the proposed dwellings so that this mitigates any potential mining-related issue that could potentially arise. A watching brief is also recommended to be instigated during demolition, the grubbing-out of existing foundations (if this is to occur?), and construction for anything that may resemble ancient prospecting (which would be undocumented) and may need to be remedied.

It is considered that no further works with respect to the potential for ground instability associated with mining legacy should be needed, unless other pertinent information to the contrary comes to light. Foundation design for the proposed scheme will need to be in accordance with that routinely adopted for where development is undertaken in areas with a mining legacy, with appropriate reinforcement being provided to the satisfaction of Building Control and/or a third party Warranty Provider. Notwithstanding an overall very low to negligible risk from mining legacy, where this is allowed for in construction it would be considered that the Site would be safe and therefore meet the requirements of the National Planning Policy Framework.

It's usual for foundations to be kept shallow in former mining areas so consultation should be made with a structural engineer in this regard. Ground conditions across the founding depth(s) should be confirmed as necessary to facilitate foundation design. Any specific requirements of Building Control and/or a Warranty Provider would need to be accommodated accordingly, also giving due respect to any general slope stability issues that may exist.

### Shafts and Adits

Although the potential for mine entries to be present on Site cannot be wholly discounted, it is considered reasonable to assume that such mining legacy is unlikely to be present.



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For information only at this time, building over or within the influencing distance of a mine entry (i.e. shaft or adit) can be dangerous and has the potential for significant risks to both the development and Site end users if not undertaken appropriately. Should such features be encountered, investigation and treatment would be required, which may impact on the layout of the proposed development. Consultation with the Coal Authority would need to be made at all times as they own the majority of the coal mine entries. Additional information about the treatment of mine entries is given in the Abandoned Mine Workings Manual <sup>[10]</sup>.

#### Radon & Other Ground Gas

The need for radon precautions in construction are not considered necessary on the basis of available information, although this should be confirmed with Building Control as they may have different requirements.

The assessment of biogenic ground gas lies outside the remit of this study. All necessary assessments should therefore be completed in accordance with current guidance <sup>[11]</sup> as required (or as requested by others if ground gas issues are suspected). Specific remediation proposals and verification methodology for any gas protection measures that were found to be required in construction would need to be submitted to the LPA in the form of an LCRM Stage 3 Remedial Strategy <sup>[12]</sup>, taking account of the requirements of YALPAG <sup>[13]</sup>. Associated validation documentation would need to be compiled during and post installation, with all details being issued to the LPA once the works had been completed.



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## 5 REGULATORY APPROVAL

This report has been compiled in accordance with good practice guidance for the investigation, assessment and management of land that may be affected by ground stability hazards.

The recommendations presented are considered reasonable on the basis of available information and the assessment of the site as carried out by Groundsmiths. However, it remains the responsibility of the Client to ensure that the Site poses no significant risk to any sensitive receptor(s) and that it remains aligned with the proposed end-use and assessment framework adopted in this report.

If at any time in the future, additional information comes to light that puts into doubt the accuracy of the professional opinion or third party information presented herein, then it would be necessary to revisit the assessment presented herein.

Works undertaken cannot be guaranteed to gain approval by the Regulatory Authorities and / or your Warranty provider, so copies of this report should be made available to the relevant organisations for comment and approval, prior to undertaking any irrecoverable works associated with the Site.





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## 6 INFORMATION SOURCES

The following references have been cited in the production of this report:

- 1 The Coal Authority (2024). <https://www2.groundstability.com>.
- 2 The Coal Authority (2023). <https://www.gov.uk/guidance/planning-applications-coal-mining-risk-assessments>.
- 3 Ministry of Housing, Communities & Local Government (2021). National Planning Policy Framework.
- 4 British Geological Survey (2011). Sheffield, England and Wales Sheet 100. Bedrock Geology. 1:50,000 (Keyworth, Nottingham: British Geological Survey).
- 5 Groundsure (2024). Geo Insight Report. 44 Ball Road, Sheffield. Ref No. EMS-931202\_1185733, dated 13<sup>th</sup> March.
- 6 UKRI (2024). <http://www.bgs.ac.uk/map-viewers/geoindex-onshore>.
- 7 The Coal Authority (2024). Consultants Coal Mining Report. 44 Ball Road, Sheffield, South Yorkshire. Ref. 51003411157001, dated 13<sup>th</sup> March.
- 8 The Coal Authority (2024). <https://mapapps2.bgs.ac.uk/coalauthority/home.html>.
- 9 Eden, R.A., Stevenson, I.P. and Edwards, W. (1957). Memoirs of the Geological Survey of Great Britain. Geology of the Country around Sheffield. Explanation of one-inch geological mapsheet 100, New Series. HMSO.
- 10 Parry, D. and Chiverrell, C. (eds) (2019). Abandoned Mine Workings Manual. C758D. CIRIA, London, UK (ISBN: 978-0-86017-765-4).
- 11 BS8485 (2015+A1:2019) Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings.
- 12 Environment Agency (2021). Land Contamination: Risk Management. LCRM: Stage 3 remediation and verification - GOV.UK ([www.gov.uk](http://www.gov.uk)).
- 13 Yorkshire and Lincolnshire Pollution Advisory Group (2016). Verification Requirements for Gas Protection Systems. Technical Guidance for Developers, Landowners and Consultants. Version 1.1.



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## 7 REPORTING LIMITS

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The opinions provided in this document are given in good faith and are subject to the limitations and constraints imposed by the methods and information sources described. Factual information, where stated, has been obtained from a variety of sources. Groundsmiths assumes that third party data is reliable but cannot independently confirm this as the validity and accuracy of this information is outside our control. No guarantee can therefore be given as to the completeness of the information gathered during the study and no responsibility is accepted for errors or omissions in the third party information used. Groundsmiths' professional judgement and experience is however used to ensure that uncertainties are reduced to a level appropriate to the Site, the purpose of the assessment and the resources devoted to it by the Client.

Whilst every effort has been made to carry out an assessment that enables a realistic preliminary characterisation of the Site, the possibility of significant variation in actual ground conditions existing cannot be discounted. The findings and opinions presented in this report are relevant to the time this assessment was undertaken but should not necessarily be relied upon to represent conditions at a substantially later date. Further information, ground investigation, construction activities or the passage of time may reveal conditions that were not indicated in the presented data and therefore could not have been considered in the preparation of this report. Where such information might impact upon stated opinions, Groundsmiths reserve the right to modify the opinions expressed in this report.

Where opinions expressed in this report are based on current available guidelines and legislation, no liability can be accepted for the effects of any future changes to such guidelines and legislation. New information or improved practices and changes in legislation may require reinterpretation of the report as a whole, or in part.

The conclusions and recommendations presented in this report are based on the site-specific assessment but utilising third party documentary information as appropriate. They are, however, limited to those that could be reasonably made at the time the assessment was undertaken. Where assessments of Site areas affected in particular ways are given, these are approximate.

This report does not constitute an archaeological, contamination, ecological or arboriculturalist / invasive plant species survey. Any comment given in relation to these is for information only. Further assessments to assess these may be required as part of any planning condition and should therefore be undertaken by suitably qualified experts as required.

Groundsmiths reserve the right to edit and / or retract any conclusion or recommendation made in this report should any further information, with respect to the Site, become available.

Groundsmiths disclaim any obligation to update the report for events taking place after the time during which the assessment was carried out.

Groundsmiths do not provide or purport to provide legal advice. Should the Clients require such advice then that of lawyers should be sought.

Groundsmiths accept no responsibility if any findings given in this report are not implemented by the Client or their agents.

Groundsmiths accept no responsibility if any further works, as requested by either the Local Planning Authority and/or The Coal Authority in the discharge of their duty of care, are not implemented by the Client or their agents.

This report could be reassigned to a third party if they require warranty in the event that the Site is sold at any time in the future. A fee would be applicable in this instance and should be discussed with Groundsmiths.



## **APPENDIX A**

### **GeolInsight Report**

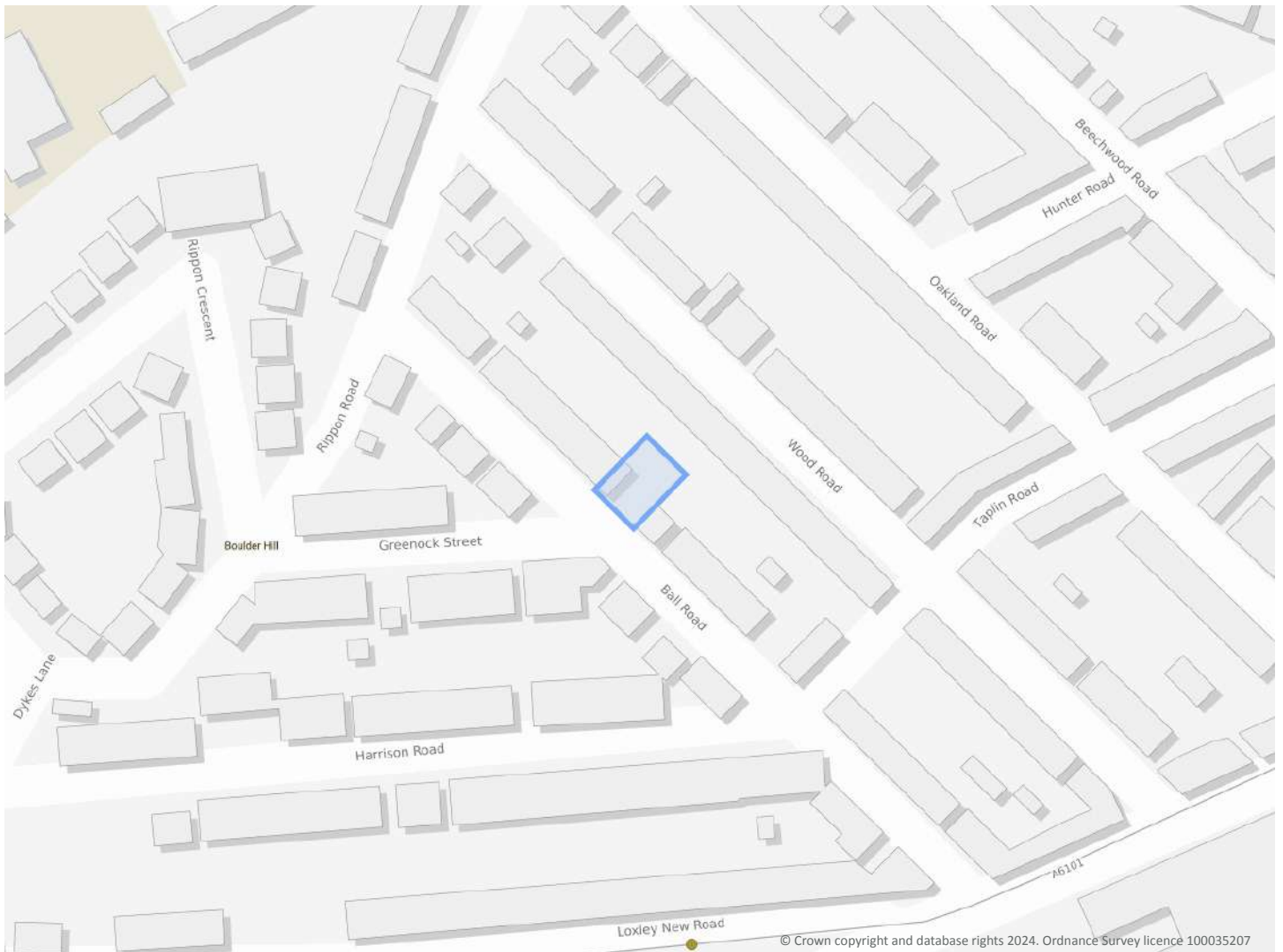
## 44 Ball Road, Sheffield

### Order Details

**Date:** 13/03/2024  
**Your ref:** EMS\_931202\_1155337  
**Our Ref:** EMS-931202\_1185733

### Site Details

**Location:** 432770 389560  
**Area:** 0.03 ha  
**Authority:** [Sheffield City Council](#) ↗



[Summary of findings](#)

[p. 2 >](#)

[Aerial image](#)

[p. 5 >](#)

[OS MasterMap site plan](#)

[p.10 >](#)

[groundsure.com/insightuserguide](https://groundsure.com/insightuserguide) ↗

Contact us with any questions at:

[info@groundsure.com](mailto:info@groundsure.com) ↗

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Certified



Corporation

## Summary of findings

Page	Section	<a href="#">Geology 1:10,000 scale &gt;</a>	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">11 &gt;</a>	<a href="#">1.1 &gt;</a>	<a href="#">10k Availability &gt;</a>	Identified (within 500m)				
<a href="#">12 &gt;</a>	<a href="#">1.2 &gt;</a>	<a href="#">Artificial and made ground (10k) &gt;</a>	0	0	2	8	-
<a href="#">14 &gt;</a>	<a href="#">1.3 &gt;</a>	<a href="#">Superficial geology (10k) &gt;</a>	0	0	1	0	-
15	1.4	Landslip (10k)	0	0	0	0	-
<a href="#">16 &gt;</a>	<a href="#">1.5 &gt;</a>	<a href="#">Bedrock geology (10k) &gt;</a>	1	0	2	4	-
<a href="#">17 &gt;</a>	<a href="#">1.6 &gt;</a>	<a href="#">Bedrock faults and other linear features (10k) &gt;</a>	0	2	8	3	-
Page	Section	<a href="#">Geology 1:50,000 scale &gt;</a>	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">18 &gt;</a>	<a href="#">2.1 &gt;</a>	<a href="#">50k Availability &gt;</a>	Identified (within 500m)				
19	2.2	Artificial and made ground (50k)	0	0	0	0	-
19	2.3	Artificial ground permeability (50k)	0	0	-	-	-
<a href="#">20 &gt;</a>	<a href="#">2.4 &gt;</a>	<a href="#">Superficial geology (50k) &gt;</a>	0	0	1	0	-
21	2.5	Superficial permeability (50k)	None (within 50m)				
21	2.6	Landslip (50k)	0	0	0	0	-
21	2.7	Landslip permeability (50k)	None (within 50m)				
<a href="#">22 &gt;</a>	<a href="#">2.8 &gt;</a>	<a href="#">Bedrock geology (50k) &gt;</a>	1	0	2	3	-
<a href="#">23 &gt;</a>	<a href="#">2.9 &gt;</a>	<a href="#">Bedrock permeability (50k) &gt;</a>	Identified (within 50m)				
<a href="#">23 &gt;</a>	<a href="#">2.10 &gt;</a>	<a href="#">Bedrock faults and other linear features (50k) &gt;</a>	0	2	5	3	-
Page	Section	<a href="#">Boreholes &gt;</a>	On site	0-50m	50-250m	250-500m	500-2000m
<a href="#">25 &gt;</a>	<a href="#">3.1 &gt;</a>	<a href="#">BGS Boreholes &gt;</a>	0	0	1	-	-
Page	Section	<a href="#">Natural ground subsidence &gt;</a>					
<a href="#">26 &gt;</a>	<a href="#">4.1 &gt;</a>	<a href="#">Shrink swell clays &gt;</a>	Very low (within 50m)				
<a href="#">27 &gt;</a>	<a href="#">4.2 &gt;</a>	<a href="#">Running sands &gt;</a>	Negligible (within 50m)				
<a href="#">28 &gt;</a>	<a href="#">4.3 &gt;</a>	<a href="#">Compressible deposits &gt;</a>	Negligible (within 50m)				
<a href="#">29 &gt;</a>	<a href="#">4.4 &gt;</a>	<a href="#">Collapsible deposits &gt;</a>	Very low (within 50m)				
<a href="#">30 &gt;</a>	<a href="#">4.5 &gt;</a>	<a href="#">Landslides &gt;</a>	Low (within 50m)				
<a href="#">31 &gt;</a>	<a href="#">4.6 &gt;</a>	<a href="#">Ground dissolution of soluble rocks &gt;</a>	Negligible (within 50m)				



Page	Section	<a href="#">Mining and ground workings</a> >	On site	0-50m	50-250m	250-500m	500-2000m	
<a href="#">33</a> >	<a href="#">5.1</a> >	<a href="#">BritPits</a> >	0	0	0	5	-	
<a href="#">34</a> >	<a href="#">5.2</a> >	<a href="#">Surface ground workings</a> >	0	0	2	-	-	
<a href="#">35</a> >	<a href="#">5.3</a> >	<a href="#">Underground workings</a> >	0	0	0	0	4	
35	5.4	Underground mining extents	0	0	0	0	-	
35	5.5	Historical Mineral Planning Areas	0	0	0	0	-	
<a href="#">36</a> >	<a href="#">5.6</a> >	<a href="#">Non-coal mining</a> >	0	0	0	2	4	
37	5.7	JPB mining areas	None (within 0m)					
37	5.8	The Coal Authority non-coal mining	0	0	0	0	-	
<a href="#">37</a> >	<a href="#">5.9</a> >	<a href="#">Researched mining</a> >	0	0	0	1	-	
37	5.10	Mining record office plans	0	0	0	0	-	
38	5.11	BGS mine plans	0	0	0	0	-	
<a href="#">38</a> >	<a href="#">5.12</a> >	<a href="#">Coal mining</a> >	Identified (within 0m)					
38	5.13	Brine areas	None (within 0m)					
38	5.14	Gypsum areas	None (within 0m)					
38	5.15	Tin mining	None (within 0m)					
39	5.16	Clay mining	None (within 0m)					
Page	Section	<a href="#">Ground cavities and sinkholes</a>	On site	0-50m	50-250m	250-500m	500-2000m	
40	6.1	Natural cavities	0	0	0	0	-	
40	6.2	Mining cavities	0	0	0	0	0	
40	6.3	Reported recent incidents	0	0	0	0	-	
40	6.4	Historical incidents	0	0	0	0	-	
41	6.5	National karst database	0	0	0	0	-	
Page	Section	<a href="#">Radon</a> >						
<a href="#">42</a> >	<a href="#">7.1</a> >	<a href="#">Radon</a> >	Less than 1% (within 0m)					
Page	Section	<a href="#">Soil chemistry</a> >	On site	0-50m	50-250m	250-500m	500-2000m	
<a href="#">44</a> >	<a href="#">8.1</a> >	<a href="#">BGS Estimated Background Soil Chemistry</a> >	1	3	-	-	-	
<a href="#">44</a> >	<a href="#">8.2</a> >	<a href="#">BGS Estimated Urban Soil Chemistry</a> >	1	4	-	-	-	
45	8.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-	



Page	Section	<a href="#">Railway infrastructure and projects &gt;</a>	On site	0-50m	50-250m	250-500m	500-2000m
46	9.1	Underground railways (London)	0	0	0	-	-
46	9.2	Underground railways (Non-London)	0	0	0	-	-
47	9.3	Railway tunnels	0	0	0	-	-
<a href="#">47 &gt;</a>	<a href="#">9.4 &gt;</a>	<a href="#">Historical railway and tunnel features &gt;</a>	0	0	1	-	-
47	9.5	Royal Mail tunnels	0	0	0	-	-
47	9.6	Historical railways	0	0	0	-	-
<a href="#">48 &gt;</a>	<a href="#">9.7 &gt;</a>	<a href="#">Railways &gt;</a>	0	0	8	-	-
48	9.8	Crossrail 1	0	0	0	0	-
48	9.9	Crossrail 2	0	0	0	0	-
49	9.10	HS2	0	0	0	0	-

## Recent aerial photograph



Capture Date: 12/04/2021

Site Area: 0.03ha





## Recent site history - 2018 aerial photograph



Capture Date: 27/06/2018

Site Area: 0.03ha



## Recent site history - 2012 aerial photograph



Capture Date: 28/05/2012

Site Area: 0.03ha



## Recent site history - 2009 aerial photograph



Capture Date: 11/09/2009

Site Area: 0.03ha



## Recent site history - 1999 aerial photograph

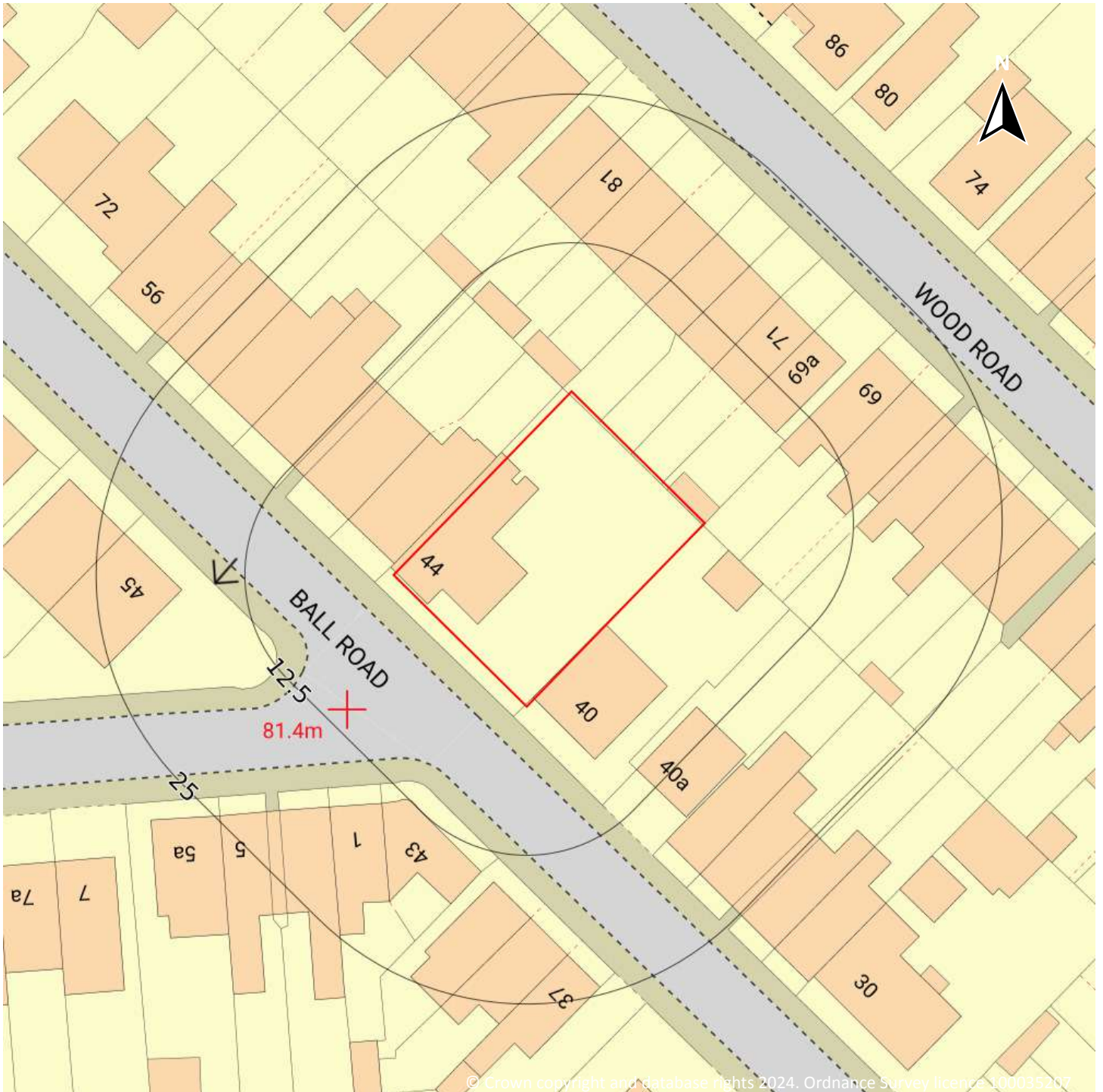


Capture Date: 17/11/1999

Site Area: 0.03ha



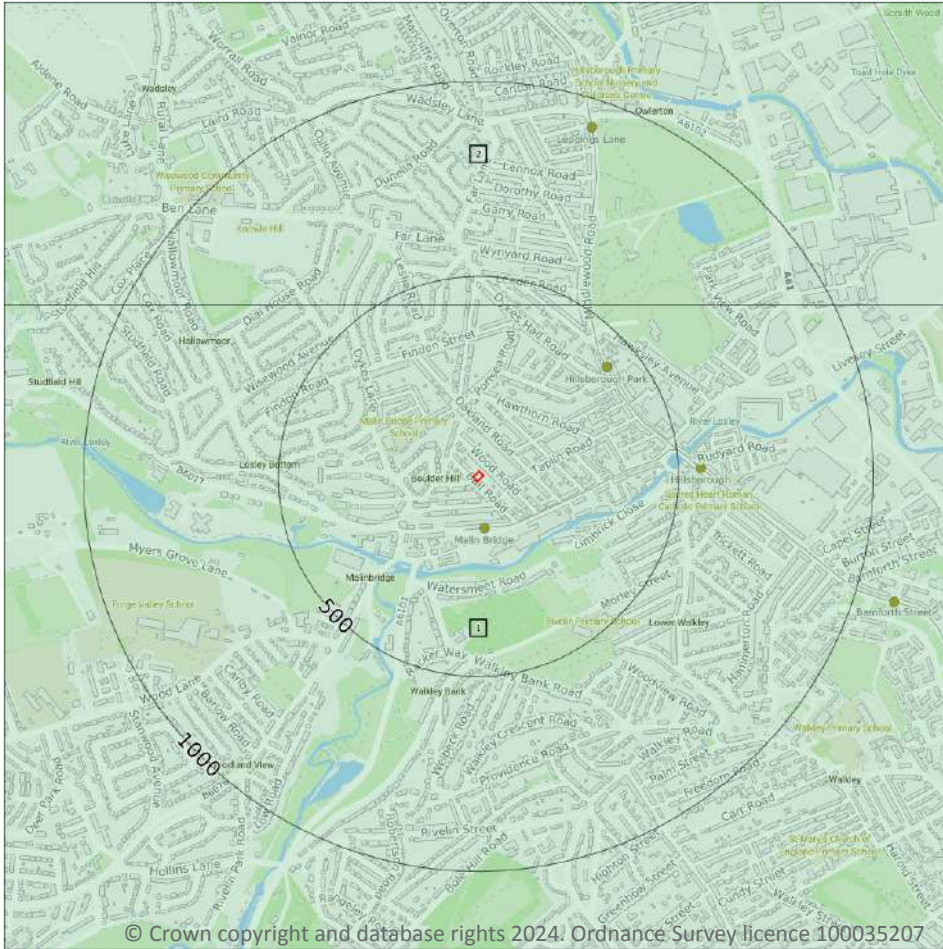
## OS MasterMap site plan



Site Area: 0.03ha



# 1 Geology 1:10,000 scale - Availability



**Site Outline**

Search buffers in metres (m)

- Full coverage
- Partial coverage
- No coverage

## 1.1 10k Availability

**Records within 500m**

**2**

An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

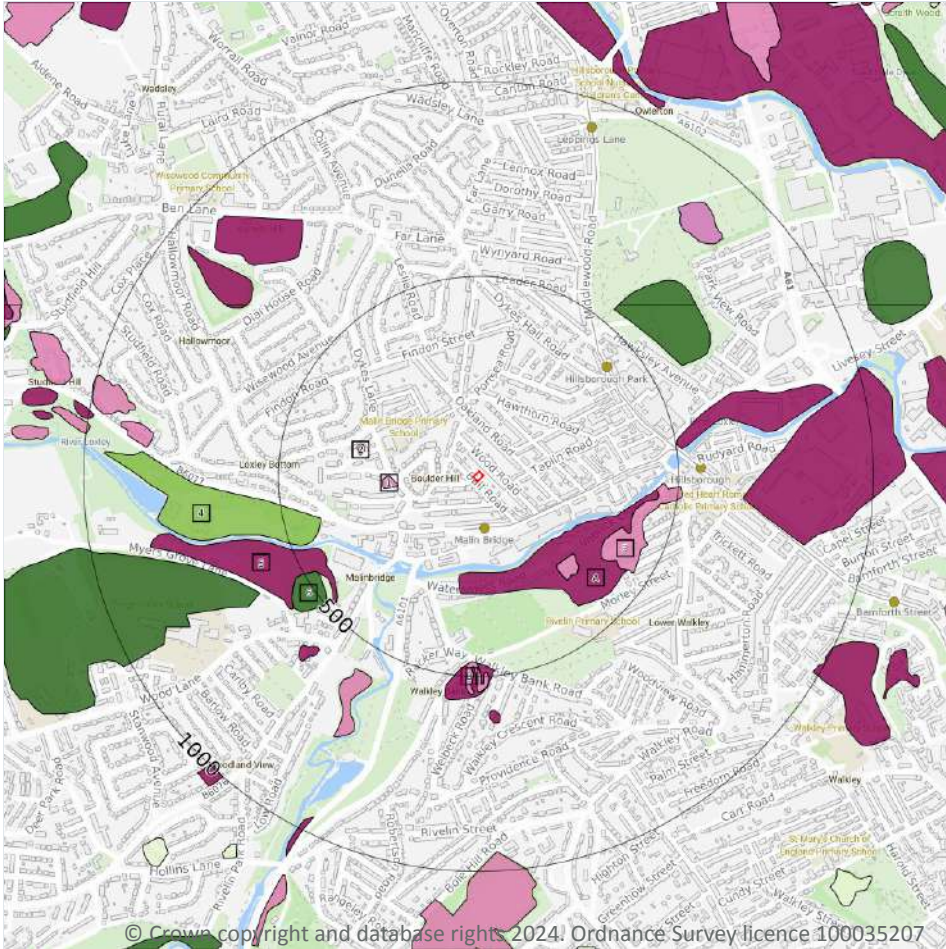
Features are displayed on the Geology 1:10,000 scale - Availability map on [page 11](#) >

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	SK38NW
2	426m N	Full	Full	Full	Full	SK39SW

*This data is sourced from the British Geological Survey.*



## Geology 1:10,000 scale - Artificial and made ground



— Site Outline

Search buffers in metres (m)

- Reclaimed ground
- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

### 1.2 Artificial and made ground (10k)

**Records within 500m** **10**

Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on [page 12](#) >

ID	Location	LEX Code	Description	Rock description
1	194m W	WGR-VOID	Worked Ground (Undivided)	Void
A	233m S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
2	288m W	WGR-VOID	Worked Ground (Undivided)	Void
A	295m SE	WGR-VOID	Worked Ground (Undivided)	Void



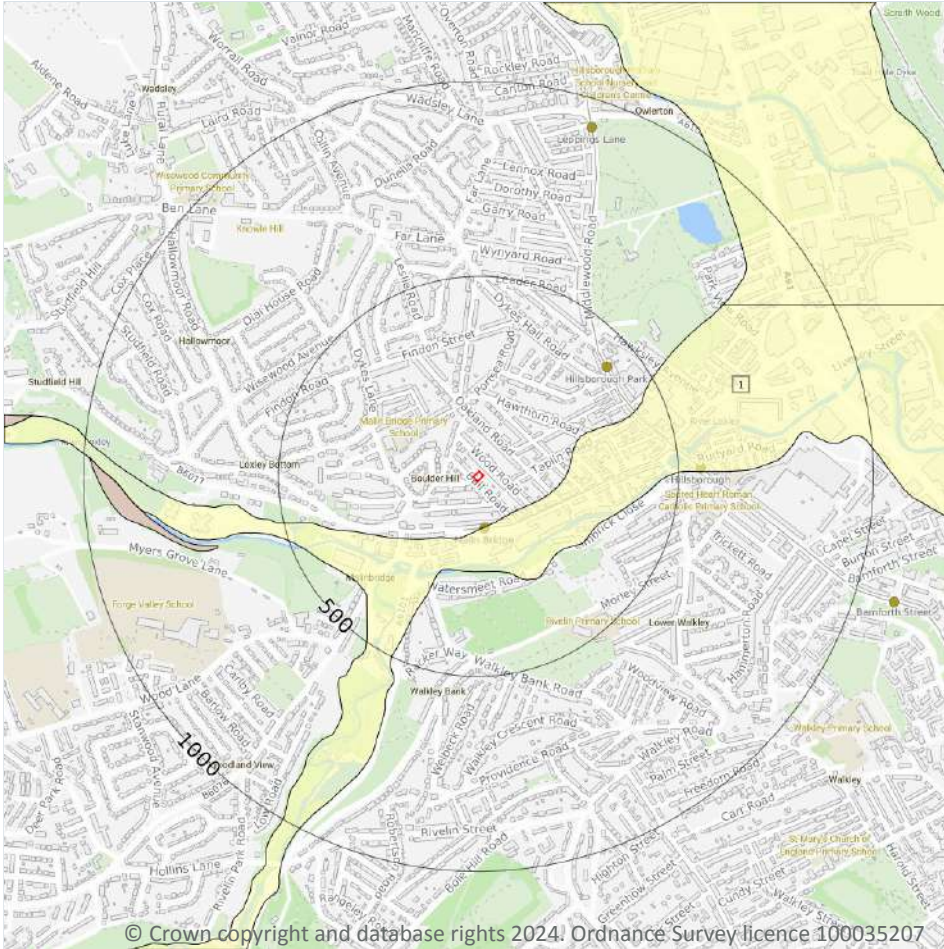
ID	Location	LEX Code	Description	Rock description
3	351m SE	WGR-VOID	Worked Ground (Undivided)	Void
4	406m W	DDGR-UKNOWN	Disturbed Ground (Undivided)	Unknown/unclassified Entry
5	429m SW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
B	461m S	WGR-VOID	Worked Ground (Undivided)	Void
B	465m S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
6	466m SW	LSGR-UKNOWN	Landscaped Ground (Undivided)	Unknown/unclassified Entry

*This data is sourced from the British Geological Survey.*





## Geology 1:10,000 scale - Superficial



**— Site Outline**

Search buffers in metres (m)

**▨ Landslip (10k)**

**Superficial geology (10k)**  
Please see table for more details.

### 1.3 Superficial geology (10k)

Records within 500m

1

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:10,000 scale - Superficial map on [page 14](#) >

ID	Location	LEX Code	Description	Rock description
1	113m SE	ALV-XVSZC	Alluvium - Gravel, Sand, Silt And Clay	Gravel, Sand, Silt And Clay

This data is sourced from the British Geological Survey.

## 1.4 Landslip (10k)

Records within 500m

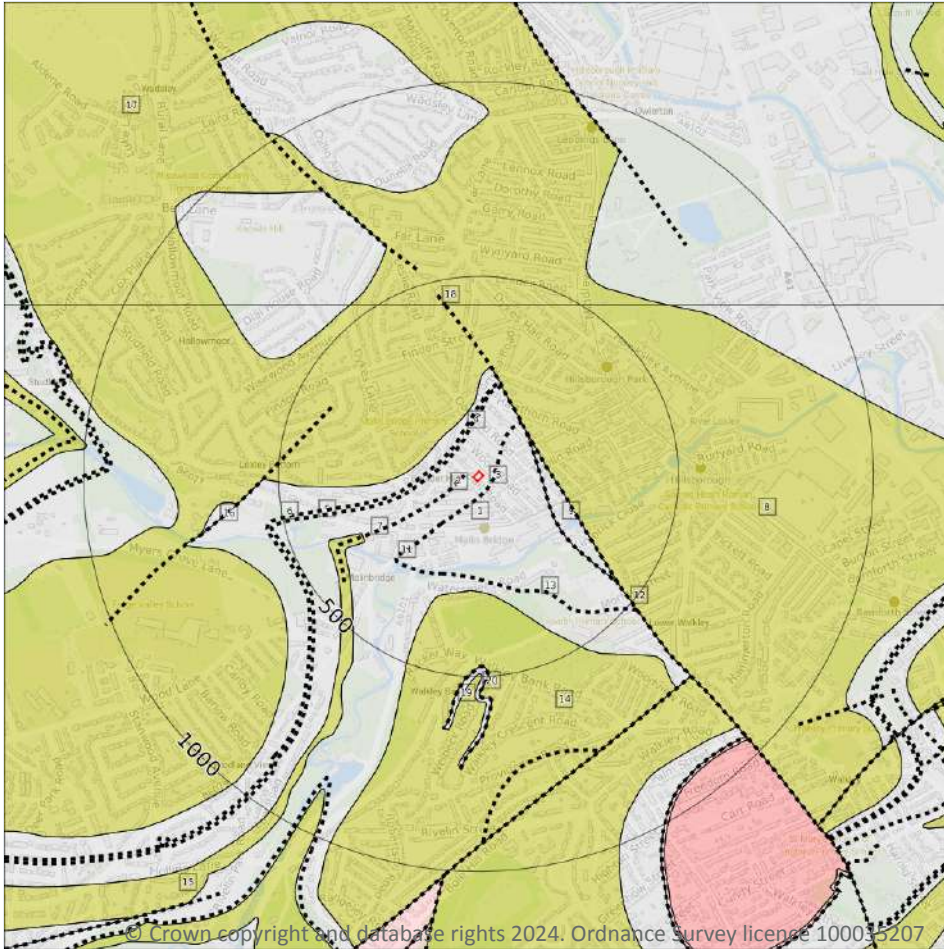
0

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

*This data is sourced from the British Geological Survey.*



## Geology 1:10,000 scale - Bedrock



- Site Outline
- Search buffers in metres (m)
- Bedrock faults and other linear features (10k)
- Bedrock geology (10k)  
Please see table for more details.

### 1.5 Bedrock geology (10k)

Records within 500m

7

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on [page 16](#) >

ID	Location	LEX Code	Description	Rock age
1	On site	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
8	128m NW	LER-SDST	Loxley Edge Rock - Sandstone	Langsettian Sub-age
9	140m E	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age



ID	Location	LEX Code	Description	Rock age
14	280m S	MBR-SDST	Middle Band Rock - Sandstone	Langsettian Sub-age
15	321m SW	MBR-SDST	Middle Band Rock - Sandstone	Langsettian Sub-age
17	426m N	LER-SDST	Loxley Edge Rock - Sandstone	Langsettian Sub-age
19	474m S	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age

This data is sourced from the British Geological Survey.

## 1.6 Bedrock faults and other linear features (10k)

<b>Records within 500m</b>	<b>13</b>
----------------------------	-----------

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

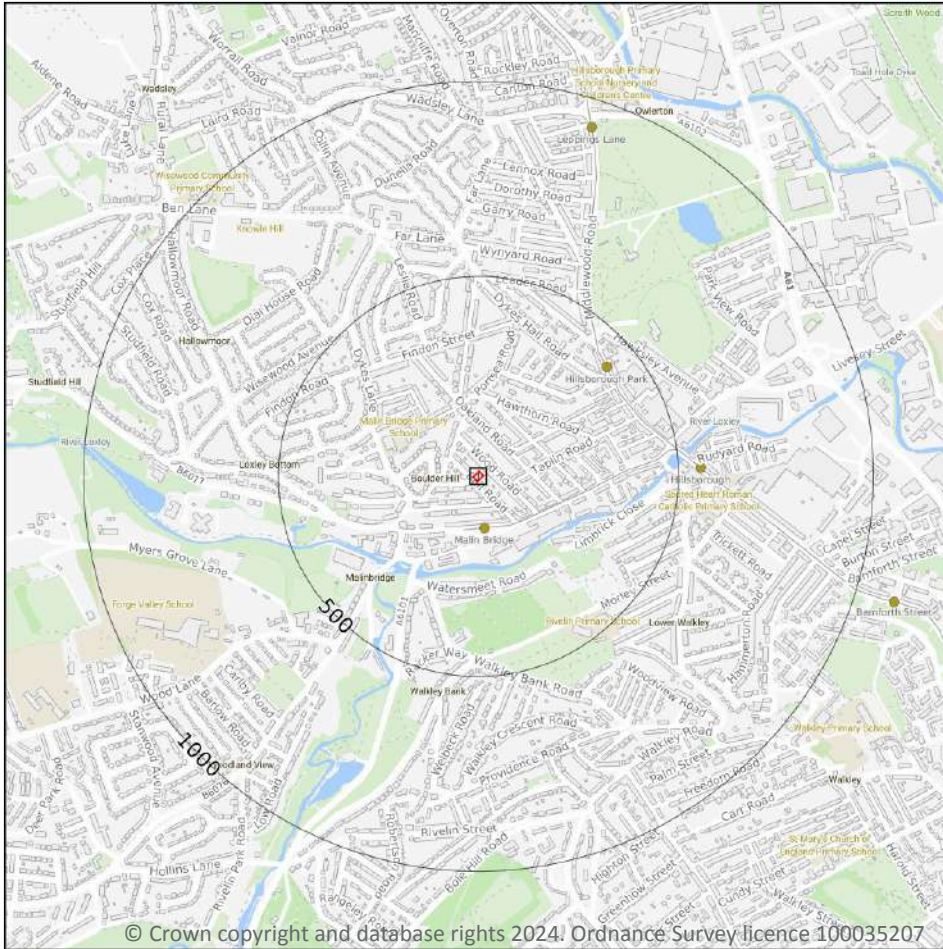
Features are displayed on the Geology 1:10,000 scale - Bedrock map on [page 16 >](#)

ID	Location	Category	Description
2	23m W	ROCK	Coal seam, inferred
3	26m E	ROCK	Coal seam, inferred
4	79m NW	ROCK	Coal seam, inferred
5	87m W	ROCK	Coal seam, inferred
6	90m NW	FOSSIL_HORIZON	Fossil horizon, marine band
7	99m SW	ROCK	Coal seam, inferred
10	140m E	FAULT	Normal fault, inferred
11	143m SW	ROCK	Coal seam, inferred
12	151m NE	FAULT	Normal fault, inferred
13	245m S	ROCK	Coal seam, inferred
16	406m NW	FAULT	Normal fault, inferred
18	435m N	FAULT	Normal fault, inferred
20	474m S	ROCK	Coal seam, inferred coincident with bedrock geology boundary

This data is sourced from the British Geological Survey.



## 2 Geology 1:50,000 scale - Availability



— Site Outline  
Search buffers in metres (m)

□ Geological map tile

### 2.1 50k Availability

Records within 500m

1

An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on [page 18](#) >

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	No coverage	Full	Full	Full	EW100_sheffield_v4

This data is sourced from the British Geological Survey.



## Geology 1:50,000 scale - Artificial and made ground

### 2.2 Artificial and made ground (50k)

Records within 500m

0

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

*This data is sourced from the British Geological Survey.*

### 2.3 Artificial ground permeability (50k)

Records within 50m

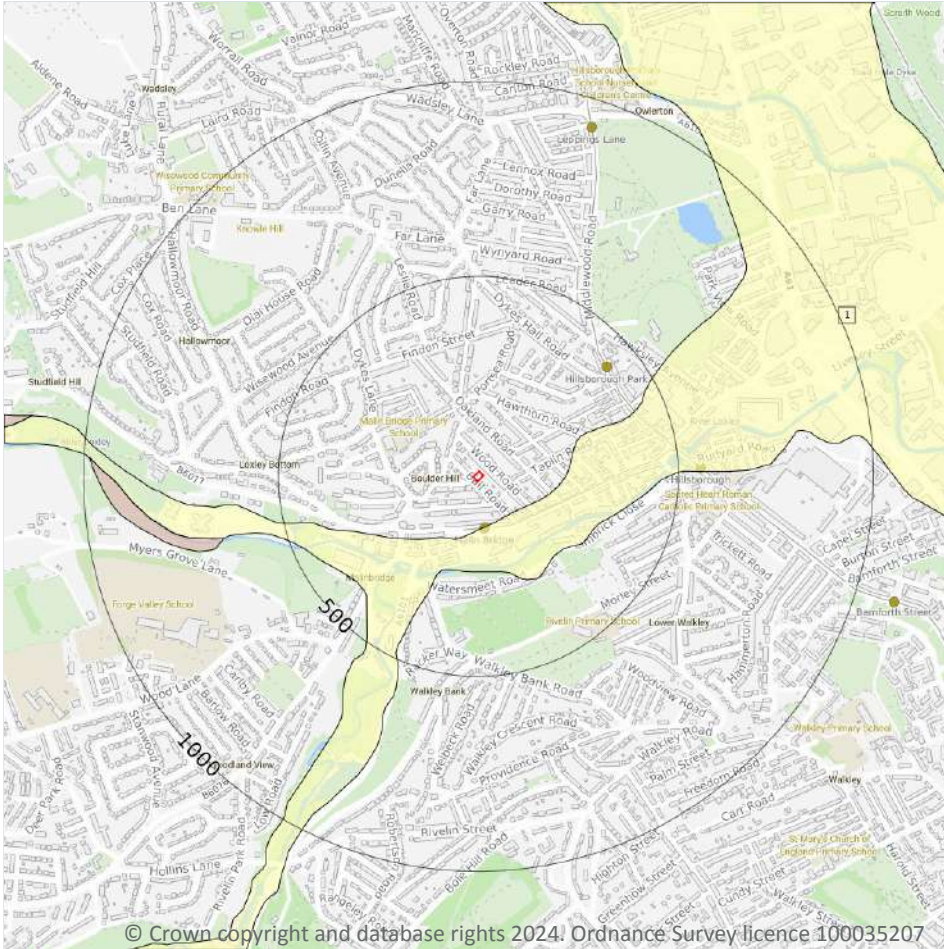
0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

*This data is sourced from the British Geological Survey.*



## Geology 1:50,000 scale - Superficial



- Site Outline
- Search buffers in metres (m)
- Landslip (50k)
- Superficial geology (50k)  
Please see table for more details.

### 2.4 Superficial geology (50k)

#### Records within 500m

1

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on [page 20](#) >

ID	Location	LEX Code	Description	Rock description
1	113m SE	ALV-XVSZC	ALLUVIUM	GRAVEL, SAND, SILT AND CLAY

*This data is sourced from the British Geological Survey.*



## 2.5 Superficial permeability (50k)

Records within 50m

0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

*This data is sourced from the British Geological Survey.*

## 2.6 Landslip (50k)

Records within 500m

0

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

*This data is sourced from the British Geological Survey.*

## 2.7 Landslip permeability (50k)

Records within 50m

0

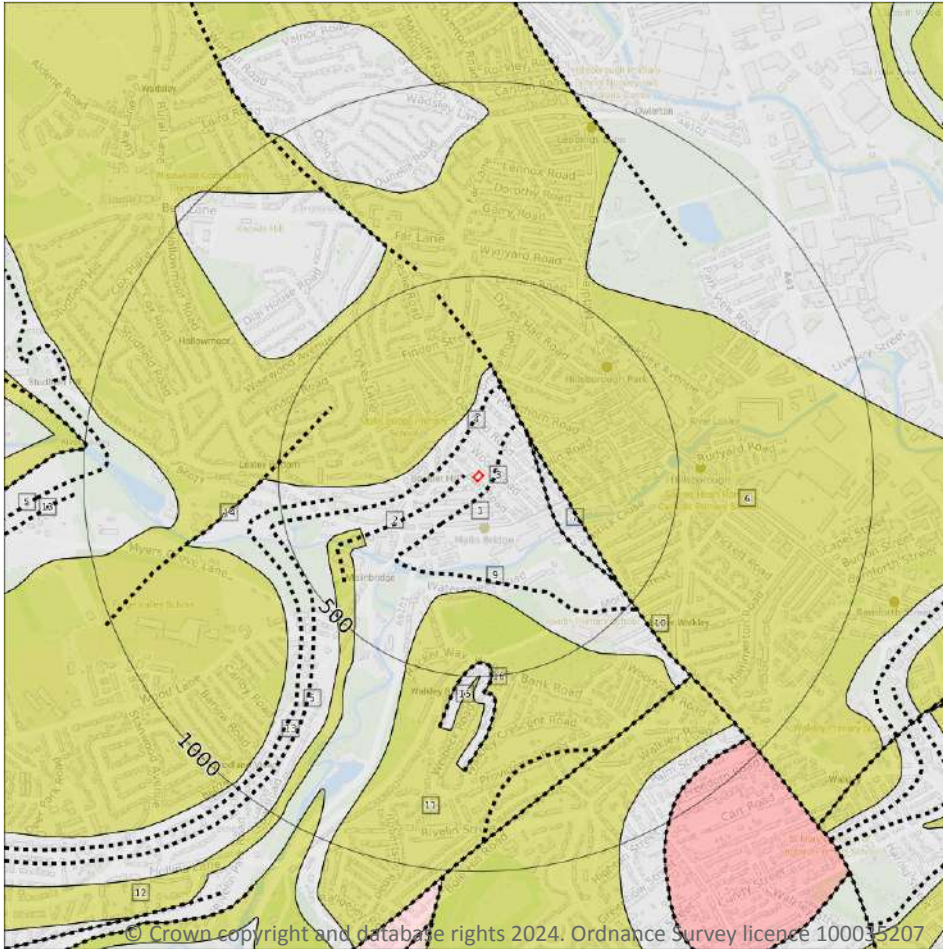
A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

*This data is sourced from the British Geological Survey.*





## Geology 1:50,000 scale - Bedrock



- Site Outline
- Search buffers in metres (m)
- ..... Bedrock faults and other linear features (50k)
- Bedrock geology (50k)  
Please see table for more details.

### 2.8 Bedrock geology (50k)

Records within 500m

6

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on [page 22](#) >

ID	Location	LEX Code	Description	Rock age
1	On site	PLCM-MDSI	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE AND SILTSTONE	WESTPHALIAN
6	128m NW	LER-SDST	LOXLEY EDGE ROCK - SANDSTONE	WESTPHALIAN
7	140m E	PLCM-MDSI	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE AND SILTSTONE	WESTPHALIAN

ID	Location	LEX Code	Description	Rock age
11	279m S	MBR-SDST	MIDDLE BAND ROCK - SANDSTONE	WESTPHALIAN
12	318m SW	MBR-SDST	MIDDLE BAND ROCK - SANDSTONE	WESTPHALIAN
15	464m S	PLCM-MDSI	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE AND SILTSTONE	WESTPHALIAN

This data is sourced from the British Geological Survey.

## 2.9 Bedrock permeability (50k)

Records within 50m

1

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	Fracture	Moderate	Low

This data is sourced from the British Geological Survey.

## 2.10 Bedrock faults and other linear features (50k)

Records within 500m

10

Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on [page 22](#) >

ID	Location	Category	Description
2	23m W	ROCK	Coal seam, inferred
3	26m E	ROCK	Coal seam, inferred
4	79m NW	ROCK	Coal seam, inferred
5	87m W	ROCK	Coal seam, inferred
8	140m E	FAULT	Fault, inferred, displacement unknown
9	144m SW	ROCK	Coal seam, inferred
10	151m NE	FAULT	Fault, inferred
13	364m W	FOSSIL_HORIZON	Marine band



ID	Location	Category	Description
14	406m NW	FAULT	Fault, inferred
16	464m S	ROCK	Coal seam, inferred

*This data is sourced from the British Geological Survey.*



### 3 Boreholes



**Site Outline**

Search buffers in metres (m)

- Confidential
- 0 - 10m
- 10 - 30m
- 30m+
- Unknown

#### 3.1 BGS Boreholes

##### Records within 250m

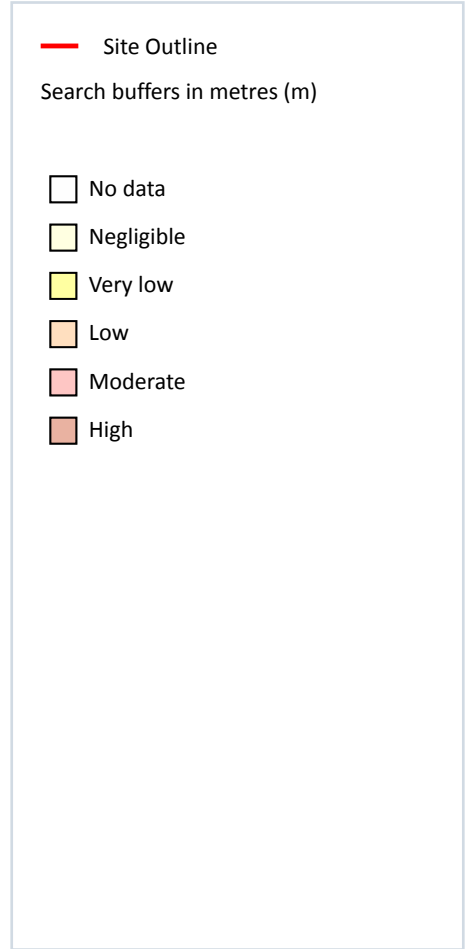
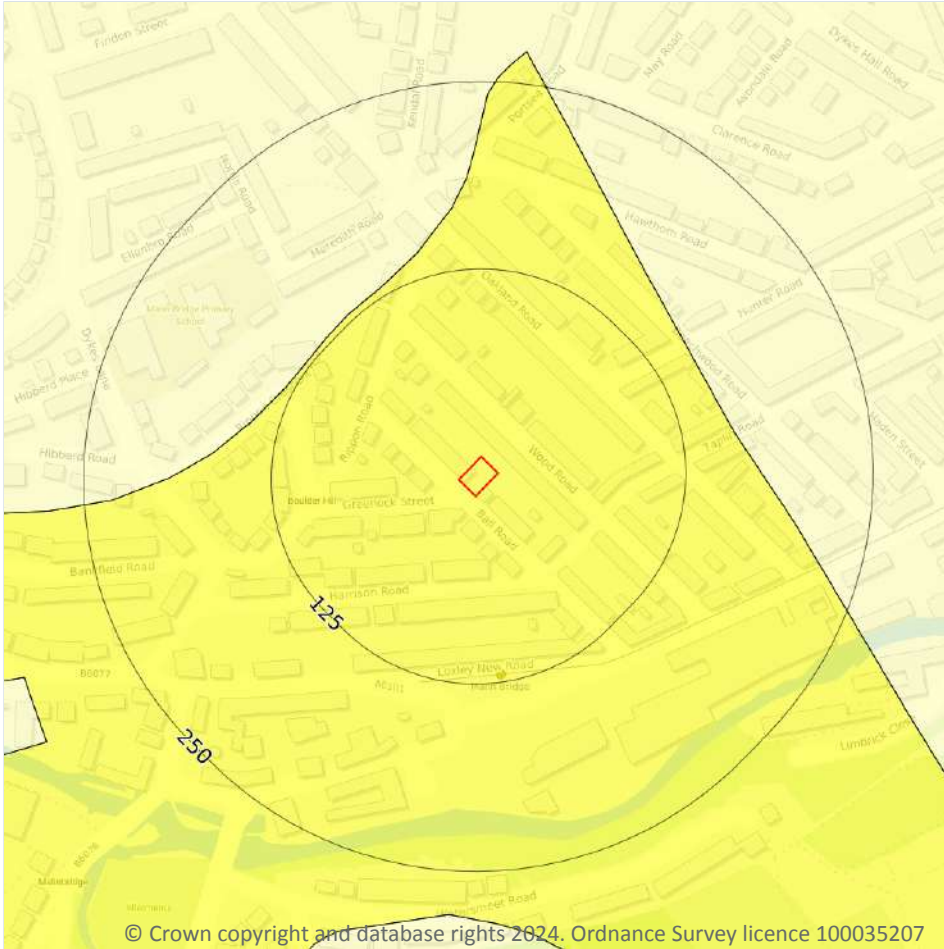
1

The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep. Features are displayed on the Boreholes map on [page 25 >](#)

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	232m SE	432908 389362	WATERSMEET RD DEVELOPMENT	2.65	N	<a href="#">214769 ↗</a>

This data is sourced from the British Geological Survey.

## 4 Natural ground subsidence - Shrink swell clays



### 4.1 Shrink swell clays

Records within 50m

1

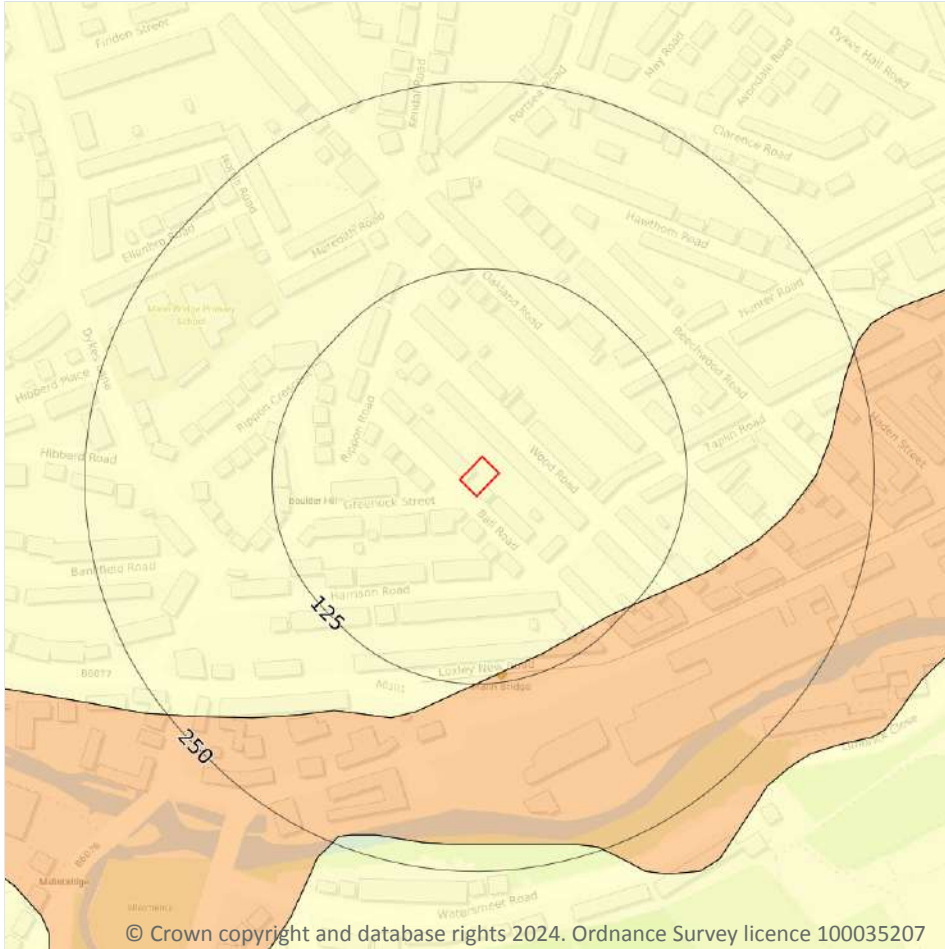
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

Features are displayed on the Natural ground subsidence - Shrink swell clays map on [page 26 >](#)

Location	Hazard rating	Details
On site	Very low	Ground conditions predominantly low plasticity.

This data is sourced from the British Geological Survey.

## Natural ground subsidence - Running sands



— Site Outline  
Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

### 4.2 Running sands

Records within 50m

1

The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

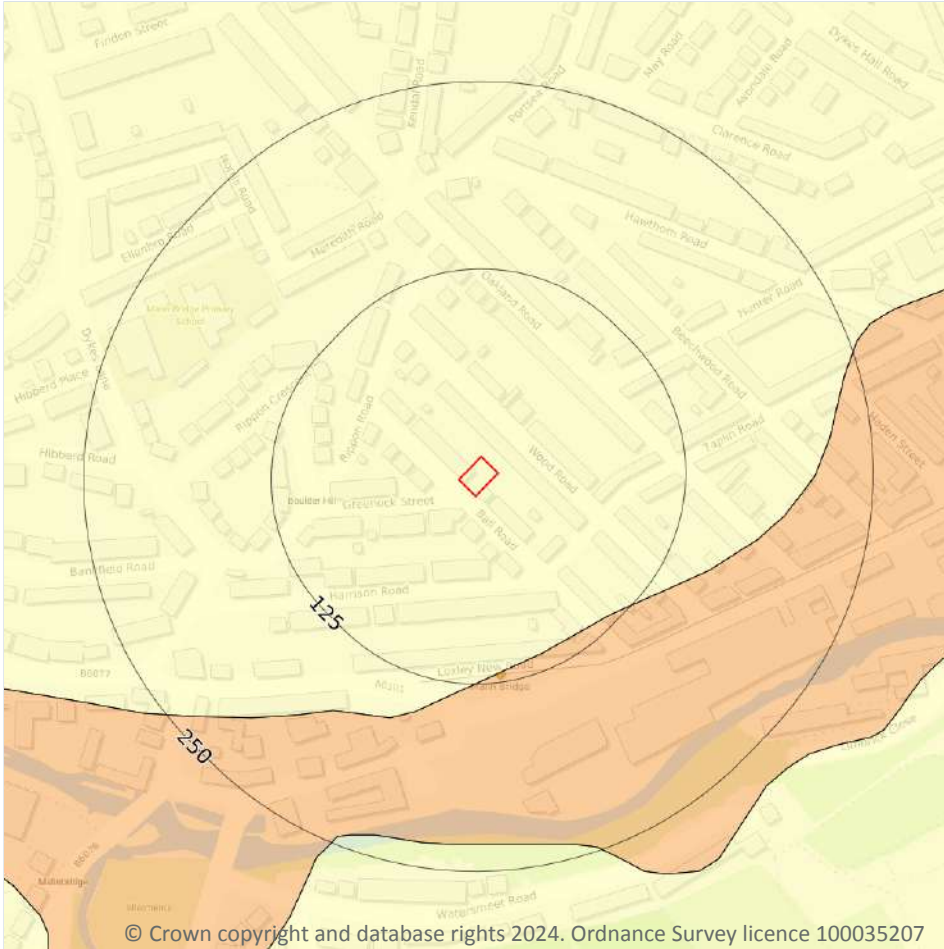
Features are displayed on the Natural ground subsidence - Running sands map on [page 27 >](#)

Location	Hazard rating	Details
On site	Negligible	Running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions.

*This data is sourced from the British Geological Survey.*



## Natural ground subsidence - Compressible deposits



— Site Outline  
Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

### 4.3 Compressible deposits

Records within 50m

1

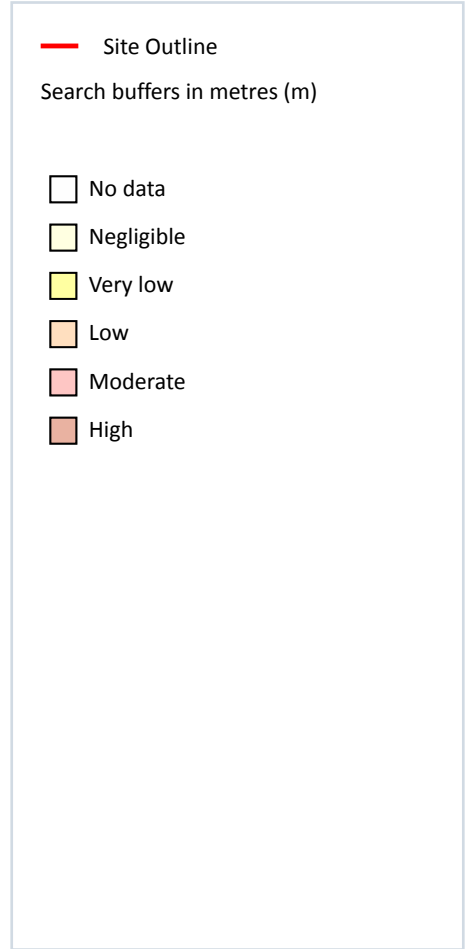
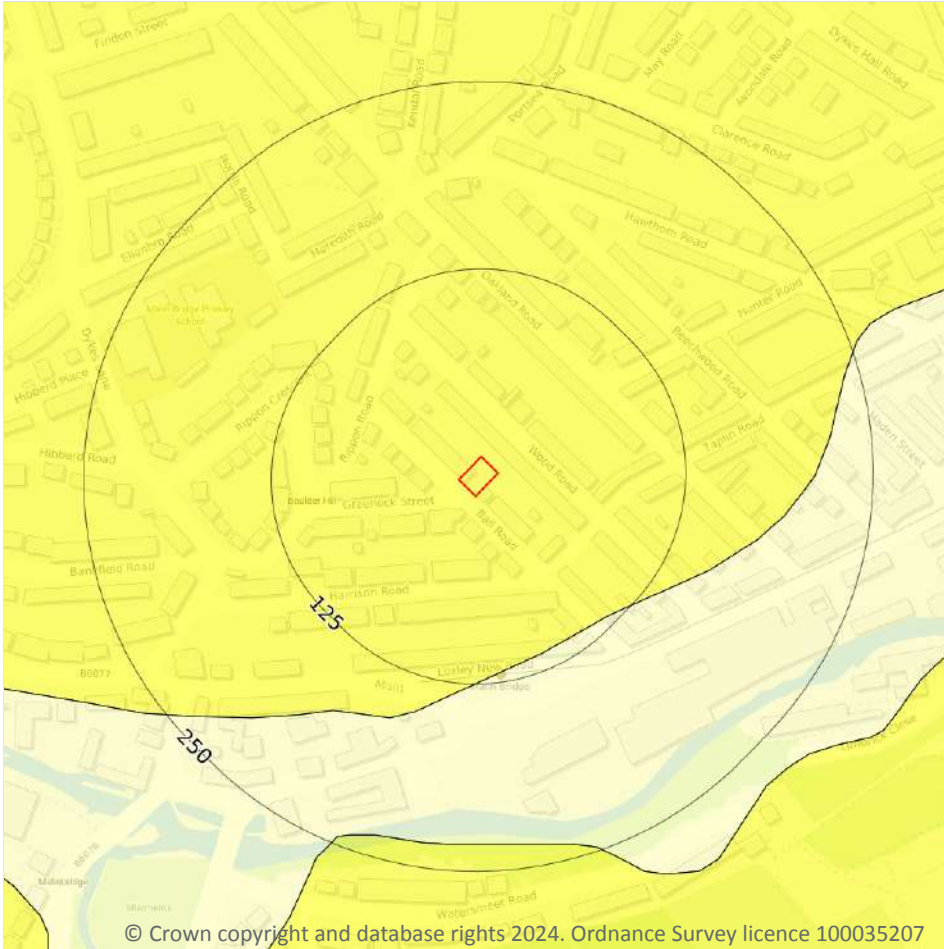
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on [page 28](#) >

Location	Hazard rating	Details
On site	Negligible	Compressible strata are not thought to occur.

*This data is sourced from the British Geological Survey.*

## Natural ground subsidence - Collapsible deposits



### 4.4 Collapsible deposits

Records within 50m

1

The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

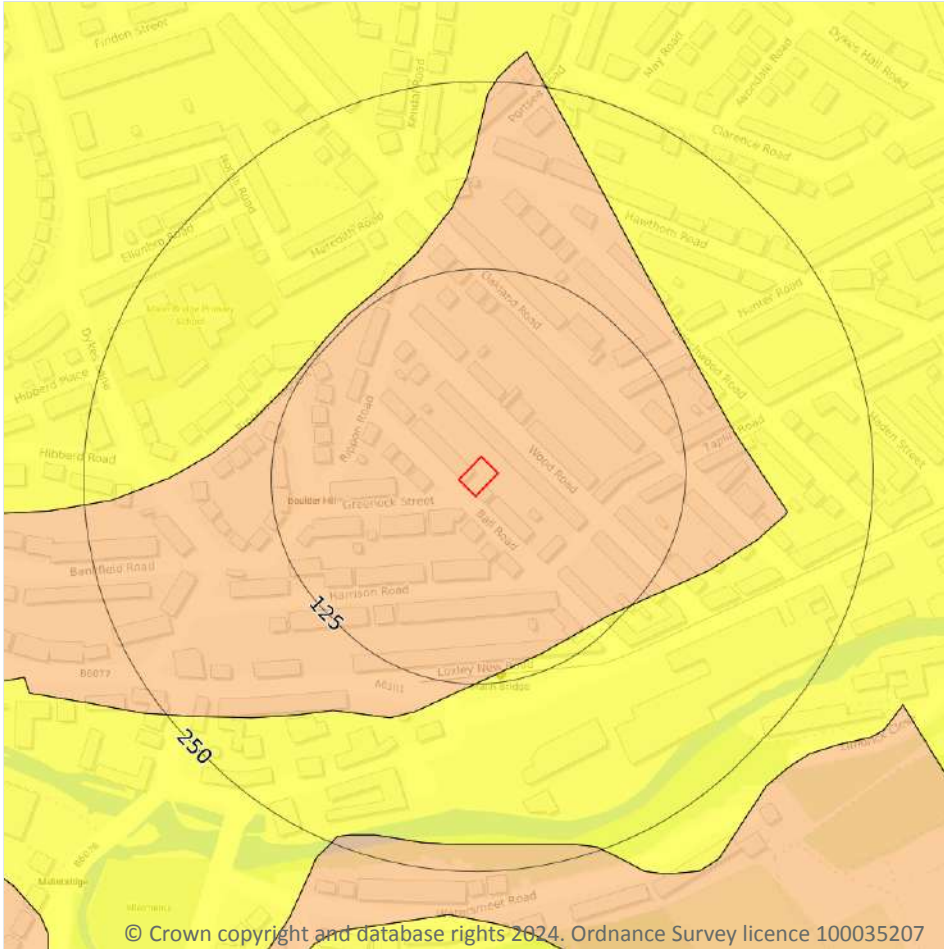
Features are displayed on the Natural ground subsidence - Collapsible deposits map on [page 29 >](#)

Location	Hazard rating	Details
On site	Very low	Deposits with potential to collapse when loaded and saturated are unlikely to be present.

*This data is sourced from the British Geological Survey.*



## Natural ground subsidence - Landslides



— Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

### 4.5 Landslides

Records within 50m

1

The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on [page 30 >](#)

Location	Hazard rating	Details
On site	Low	Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.

*This data is sourced from the British Geological Survey.*



## Natural ground subsidence - Ground dissolution of soluble rocks



### 4.6 Ground dissolution of soluble rocks

#### Records within 50m

1

The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

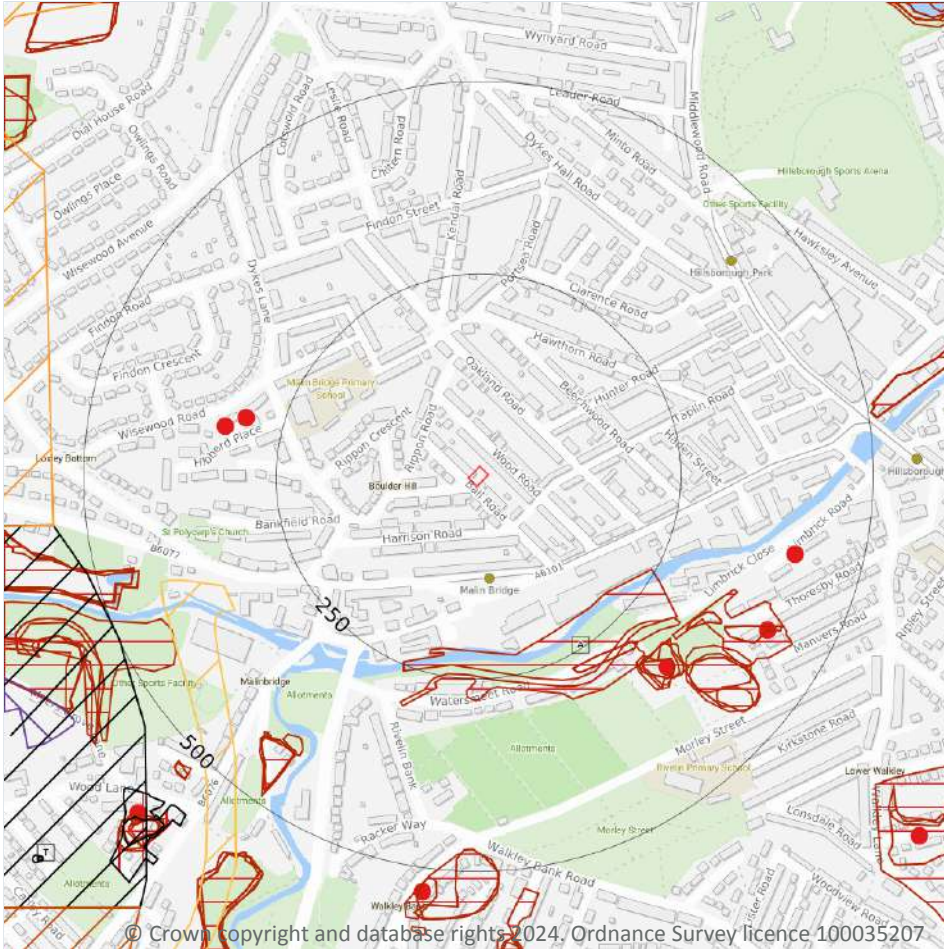
Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on [page 31](#) >

Location	Hazard rating	Details
On site	Negligible	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.

*This data is sourced from the British Geological Survey.*



## 5 Mining and ground workings



- Site Outline
- Search buffers in metres (m)
- BritPits
- Surface ground workings
- Underground workings
- Underground mining extents
- Historical mineral planning areas
- TCA non-coal mining
- Non Coal Mining
- Sporadic underground mining of restricted extent possible
- Localised small scale underground mining possible
- Small scale mining possible
- Underground mining known or likely within or in close proximity
- Underground mining known within or in very close proximity

### 5.1 BritPits

Records within 500m

5

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

Features are displayed on the Mining and ground workings map on [page 33](#) >

ID	Location	Details	Description
C	299m W	Name: Loxley Bottom Address: Loxley Bottom, SHEFFIELD, South Yorkshire Commodity: Sandstone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
C	322m W	Name: Loxley Bottom Address: Loxley Bottom, SHEFFIELD, South Yorkshire Commodity: Sandstone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
D	340m SE	Name: Lower Walkley Address: Lower Walkley, SHEFFIELD, South Yorkshire Commodity: Sandstone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
2	411m E	Name: Bowers Address: Lower Walkley, SHEFFIELD, South Yorkshire Commodity: Sandstone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
E	414m SE	Name: Bowers Address: Lower Walkley, SHEFFIELD, South Yorkshire Commodity: Sandstone Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

*This data is sourced from the British Geological Survey.*

## 5.2 Surface ground workings

**Records within 250m**

**2**

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining and ground workings map on [page 33](#) >



ID	Location	Land Use	Year of mapping	Mapping scale
A	212m SE	Water Body	1903	1:10560
A	245m S	Unspecified Ground Workings	1903	1:10560

*This is data is sourced from Ordnance Survey/Groundsure.*

### 5.3 Underground workings

**Records within 1000m**

**4**

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

Features are displayed on the Mining and ground workings map on [page 33 >](#)

ID	Location	Land Use	Year of mapping	Mapping scale
P	570m SW	Unspecified Mine	1924	1:10560
P	598m SW	Unspecified Mine	1920	1:10560
T	741m SW	Air Shaft	1951	1:10560
T	744m SW	Air Shaft	1967	1:10560

*This is data is sourced from Ordnance Survey/Groundsure.*

### 5.4 Underground mining extents

**Records within 500m**

**0**

This data identifies underground mine workings that could present a potential risk, including adits and seam workings. These features have been identified from BGS Geological mapping and mine plans sourced from the BGS and various collections and sources.

*This data is sourced from Groundsure.*

### 5.5 Historical Mineral Planning Areas

**Records within 500m**

**0**

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

*This data is sourced from the British Geological Survey.*



## 5.6 Non-coal mining

Records within 1000m

6

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

Features are displayed on the Mining and ground workings map on [page 33 >](#)

ID	Location	Name	Commodity	Class	Likelihood
1	347m SW	Not available	Vein Mineral	B	Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.
3	500m SW	Wood End	Clay	E	Underground mining is known or considered likely within or very close to the area. The location, extent and nature of mining should be considered in any site investigation. Potential for difficult ground conditions should be considered.
4	541m W	Not available	Ganister	C	Underground mine workings may have occurred in the past, or current mines may be operating to modern engineering standards. Potential for difficult ground conditions should be considered.
6	701m SW	Not available	Clay	D	Underground mining is considered likely to have occurred within or close to the area. The location, extent and nature of mining should be considered in any site investigation. Potential for difficult ground conditions should be considered.
7	741m NW	Not available	Ganister	C	Underground mine workings may have occurred in the past, or current mines may be operating to modern engineering standards. Potential for difficult ground conditions should be considered.
-	924m SE	Not available	Vein Mineral	A	Underground mine workings are uncommon, although the geology is similar to that worked elsewhere. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.

*This data is sourced from the British Geological Survey.*



## 5.7 JPB mining areas

Records on site

0

Areas which could be affected by former coal and other mining. This data includes some mine plans unavailable to the Coal Authority.

*This data is sourced from Johnson Poole and Bloomer.*

## 5.8 The Coal Authority non-coal mining

Records within 500m

0

This data provides an indication of the potential zone of influence of recorded underground non-coal mining workings. Any and all analysis and interpretation of Coal Authority Data in this report is made by Groundsure, and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the Coal Authority and permission should be sought from Groundsure prior to any re-use.

*This data is sourced from The Coal Authority.*

## 5.9 Researched mining

Records within 500m

1

This data indicates areas of potential mining identified from alternative or archival sources, including; BGS Geological paper maps, Lidar data, aerial photographs (from World War II onwards), archaeological data services, websites, Tithe maps, and various text/plans from collected books and reports. Some of this data is approximate and Groundsure have interpreted the resultant risk area and, where possible, specific areas of risk have been captured.

Location	Mineral type
288m W	Stone

*This data is sourced from Groundsure.*

## 5.10 Mining record office plans

Records within 500m

0

This dataset is representative of Mining Record Office and/or plan extents held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

*This data is sourced from Groundsure.*





## 5.11 BGS mine plans

Records within 500m

0

This dataset is representative of BGS mine plans held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

*This data is sourced from Groundsure.*

## 5.12 Coal mining

Records on site

1

Areas which could be affected by past, current or future coal mining.

Location	Details
On site	The site is located within a coal mining area as defined by the Coal Authority. A Consultants Coal Mining Report is recommended to further assess coal mining issues at the site. This can be ordered directly through Groundsure or your preferred search provider.

*This data is sourced from the Coal Authority.*

## 5.13 Brine areas

Records on site

0

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

*This data is sourced from the Cheshire Brine Subsidence Compensation Board.*

## 5.14 Gypsum areas

Records on site

0

Generalised areas that may be affected by gypsum extraction.

*This data is sourced from British Gypsum.*

## 5.15 Tin mining

Records on site

0

Generalised areas that may be affected by historical tin mining.

*This data is sourced from Groundsure.*



## 5.16 Clay mining

Records on site

0

Generalised areas that may be affected by kaolin and ball clay extraction.

*This data is sourced from the Kaolin and Ball Clay Association (UK).*



## 6 Ground cavities and sinkholes

### 6.1 Natural cavities

Records within 500m

0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

*This data is sourced from Stantec UK Ltd.*

### 6.2 Mining cavities

Records within 1000m

0

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

*This data is sourced from Stantec UK Ltd.*

### 6.3 Reported recent incidents

Records within 500m

0

This data identifies sinkhole information gathered from media reports and Groundsure's own records. This data goes back to 2014 and includes relative accuracy ratings for each event and links to the original data sources. The data is updated on a regular basis and should not be considered a comprehensive catalogue of all sinkhole events. The absence of data in this database does not mean a sinkhole definitely has not occurred during this time.

*This data is sourced from Groundsure.*

### 6.4 Historical incidents

Records within 500m

0

This dataset comprises an extract of 1:10,560, 1:10,000, 1:2,500 and 1:1,250 scale historical Ordnance Survey maps held by Groundsure, dating back to the 1840s. It shows shakeholes, deneholes and other 'holes' as noted on these maps. Dene holes are medieval chalk extraction pits, usually comprising a narrow shaft with a number of chambers at the base of the shaft. Shakeholes are an alternative name for suffusion sinkholes, most commonly found in the limestone landscapes of North Yorkshire but also extensively noted around the Brecon Beacons National Park.

Not all 'holes' noted on Ordnance Survey mapping will necessarily be present within this dataset.



*This data is sourced from Groundsure.*

## 6.5 National karst database

**Records within 500m**

**0**

This is a comprehensive database of national karst information gathered from a wide range of sources. BGS have collected data on five main types of karst feature: Sinkholes, stream links, caves, springs, and incidences of associated damage to buildings, roads, bridges and other engineered works.

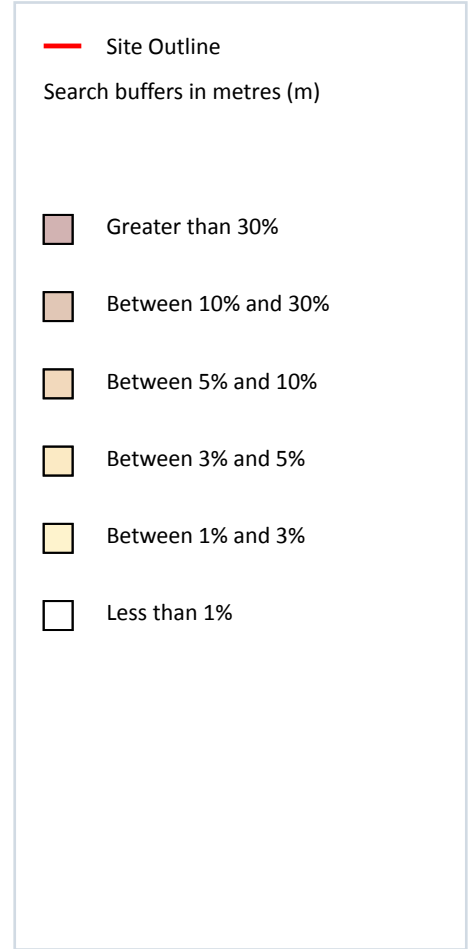
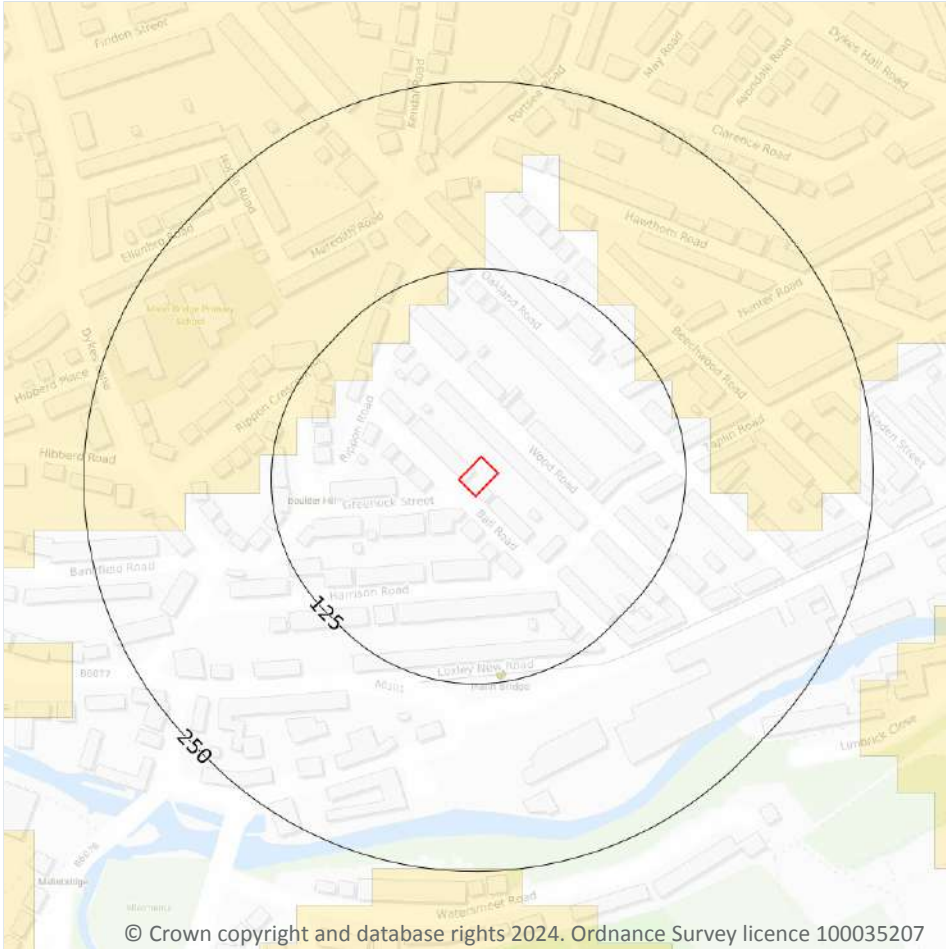
Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over 800 caves, 1300 stream sinks, 5600 springs, 10,000 sinkholes.

The database is not yet complete, and not all records have been verified. The absence of data does not mean that karst features are not present at a site. A reliability rating is included with each record.

*This data is sourced from the British Geological Survey.*



## 7 Radon



### 7.1 Radon

#### Records on site

1

The Radon Potential data classifies areas based on their likelihood of a property having a radon level at or above the Action Level in Great Britain. The dataset is intended for use at 1:50,000 scale and was derived from both geological assessments and indoor radon measurements (more than 560,000 records). A minimum 50m buffer should be considered when searching the maps, as the smallest detectable feature at this scale is 50m. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain (1:100,000 scale).

Features are displayed on the Radon map on [page 42 >](#)

Location	Estimated properties affected	Radon Protection Measures required
On site	Less than 1%	None



*This data is sourced from the British Geological Survey and UK Health Security Agency.*



## 8 Soil chemistry

### 8.1 BGS Estimated Background Soil Chemistry

Records within 50m

4

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km<sup>2</sup>. In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km<sup>2</sup>; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
<b>On site</b>	<b>15 - 25 mg/kg</b>	<b>No data</b>	<b>300 - 600 mg/kg</b>	<b>240 - 360 mg/kg</b>	<b>1.8 mg/kg</b>	<b>60 - 90 mg/kg</b>	<b>15 - 30 mg/kg</b>
19m E	15 - 25 mg/kg	No data	300 - 600 mg/kg	240 - 360 mg/kg	1.8 mg/kg	120 - 180 mg/kg	15 - 30 mg/kg
48m S	15 - 25 mg/kg	No data	300 - 600 mg/kg	240 - 360 mg/kg	1.8 mg/kg	120 - 180 mg/kg	15 - 30 mg/kg
49m S	15 - 25 mg/kg	No data	300 - 600 mg/kg	240 - 360 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

*This data is sourced from the British Geological Survey.*

### 8.2 BGS Estimated Urban Soil Chemistry

Records within 50m

5

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km<sup>2</sup>).

Location	Arsenic (mg/kg)	Bioaccessible Arsenic (mg/kg)	Lead (mg/kg)	Bioaccessible Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Nickel (mg/kg)	Tin (mg/kg)
<b>On site</b>	<b>23</b>	<b>4</b>	<b>227</b>	<b>156</b>	<b>0.5</b>	<b>174</b>	<b>73</b>	<b>44</b>	<b>16</b>
16m E	25	4.4	237	163	0.5	143	78	42	16



Location	Arsenic (mg/kg)	Bioaccessible Arsenic (mg/kg)	Lead (mg/kg)	Bioaccessible Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Nickel (mg/kg)	Tin (mg/kg)
26m N	23	4	176	121	0.5	184	68	46	13
38m NE	23	4	191	131	0.5	171	73	45	14
48m S	25	4.4	320	220	0.5	140	75	40	20

*This data is sourced from the British Geological Survey.*

### 8.3 BGS Measured Urban Soil Chemistry

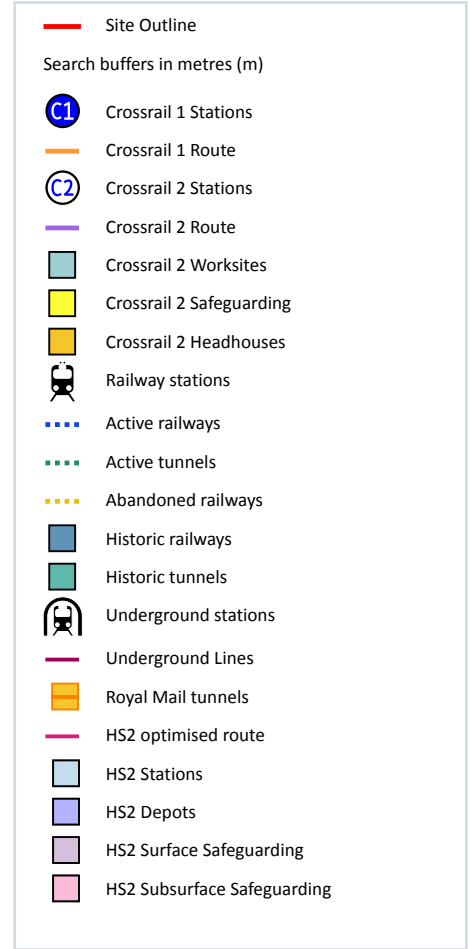
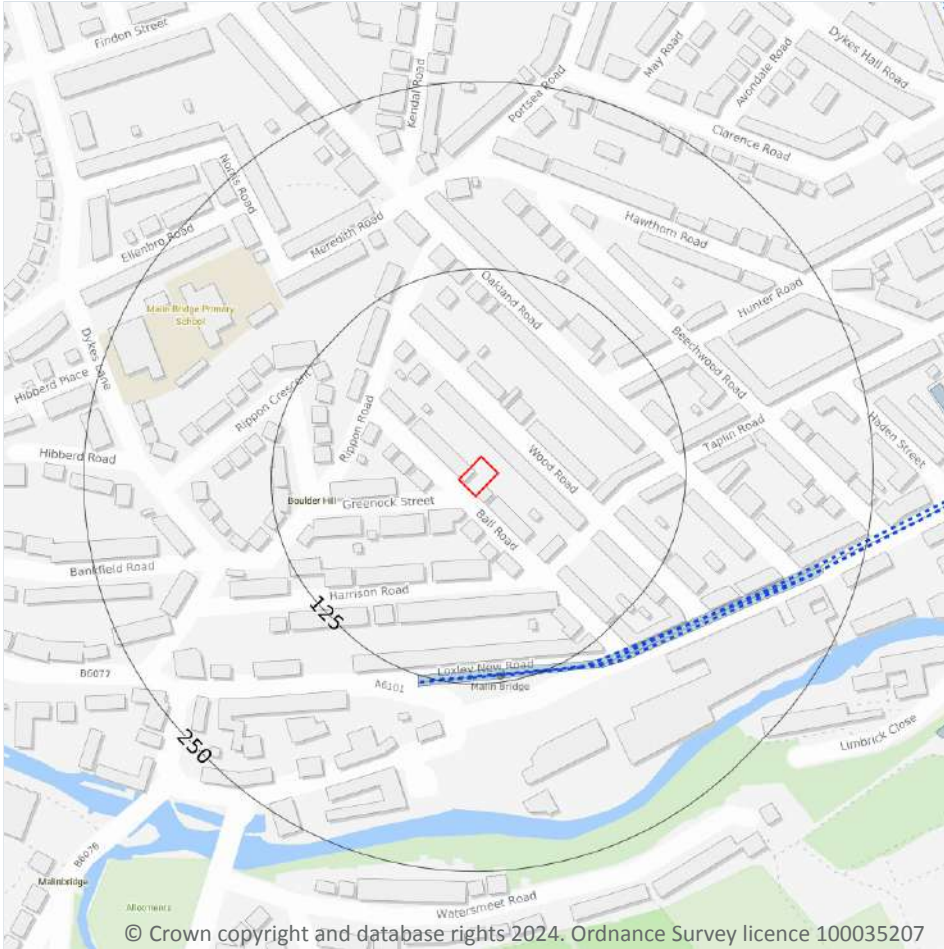
<b>Records within 50m</b>	<b>0</b>
---------------------------	----------

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km<sup>2</sup>.

*This data is sourced from the British Geological Survey.*



## 9 Railway infrastructure and projects



### 9.1 Underground railways (London)

Records within 250m

0

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

*This data is sourced from publicly available information by Groundsure.*

### 9.2 Underground railways (Non-London)

Records within 250m

0

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.



*This data is sourced from publicly available information by Groundsure.*

### 9.3 Railway tunnels

Records within 250m

0

Railway tunnels taken from contemporary Ordnance Survey mapping.

*This data is sourced from the Ordnance Survey.*

### 9.4 Historical railway and tunnel features

Records within 250m

1

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

Features are displayed on the Railway infrastructure and projects map on [page 46 >](#)

Location	Land Use	Year of mapping	Mapping scale
116m S	Railway Sidings	1996	1250

*This data is sourced from Ordnance Survey/Groundsure.*

### 9.5 Royal Mail tunnels

Records within 250m

0

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.

*This data is sourced from Groundsure/the Postal Museum.*

### 9.6 Historical railways

Records within 250m

0

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

*This data is sourced from OpenStreetMap.*



## 9.7 Railways

Records within 250m

8

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways. Features are displayed on the Railway infrastructure and projects map on [page 46 >](#)

Location	Name	Type
120m S		tram
120m S	Not given	Single Track
121m S		tram
121m S	Not given	Single Track
128m S	Not given	Single Track
131m SE		tram
131m SE		tram
134m SE	Not given	Multi Track

*This data is sourced from Ordnance Survey and OpenStreetMap.*

## 9.8 Crossrail 1

Records within 500m

0

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

*This data is sourced from publicly available information by Groundsure.*

## 9.9 Crossrail 2

Records within 500m

0

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

*This data is sourced from publicly available information by Groundsure.*



## 9.10 HS2

Records within 500m

0

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

*This data is sourced from HS2 ltd.*



## Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see <https://www.groundsure.com/sources-reference> ↗.

## Terms and conditions

Groundsure's Terms and Conditions can be accessed at this link: [www.groundsure.com/terms-and-conditions-april-2023/](http://www.groundsure.com/terms-and-conditions-april-2023/) ↗.





**APPENDIX B**  
**Coal Authority Consultants Coal Mining Report**



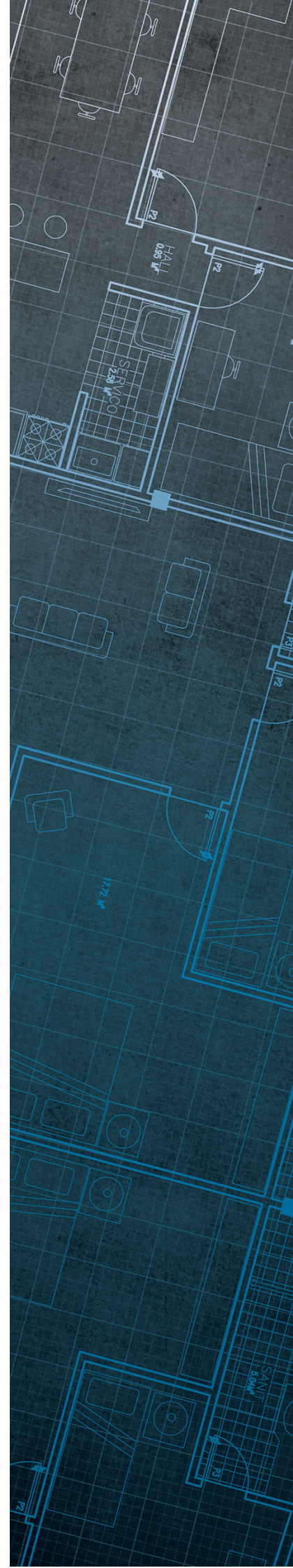
The Coal  
Authority

# Consultants Coal Mining Report

44 Ball Road, Sheffield  
South Yorkshire

Date of enquiry: 13 March 2024  
Date enquiry received: 13 March 2024  
Issue date: 13 March 2024

Our reference: 51003411157001  
Your reference: GUK-0324-04



# 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

Groundsmiths (UK) Ltd

## Enquiry address

44 Ball Road, Sheffield  
South Yorkshire

## How to contact us

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Nottinghamshire  
NG18 4RG

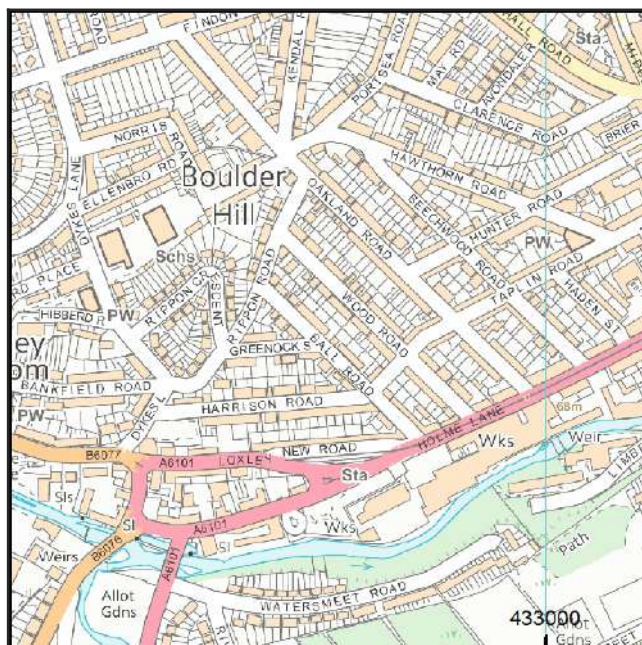
[www.groundstability.com](http://www.groundstability.com)

 @coalauthority

 /company/the-coal-authority

 /thecoalauthority

 /thecoalauthority



Approximate position of property



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# Section 1 – Mining activity and geology

## Past underground mining

No past mining recorded.

## Probable unrecorded shallow workings

None.

## Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

## Mine entries

None recorded within 100 metres of the enquiry boundary.

## Abandoned mine plan catalogue numbers

None available.

## Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
HALIFAX SOFT	Coal	Yes	19.9	East	200

## Geological faults, fissures and breaklines

No faults, fissures or breaklines recorded.

## Opencast mines

None recorded within 500 metres of the enquiry boundary.

## Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

## Section 2 – Investigative or remedial activity

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

### Site investigations

None recorded within 50 metres of the enquiry boundary.

### Remediated sites

None recorded within 50 metres of the enquiry boundary.

### Coal mining subsidence

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

### Future development

If development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority.

**MINE GAS:** Please note, if there are no recorded instances of mine gas within 500m of the enquiry boundary, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed. In these instances, the Coal Authority recommends that a more detailed Gas Risk Assessment is undertaken by a competent assessor.

## 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](mailto: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. Please note, if there are no recorded instances of mine gas reported, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded.

### **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**

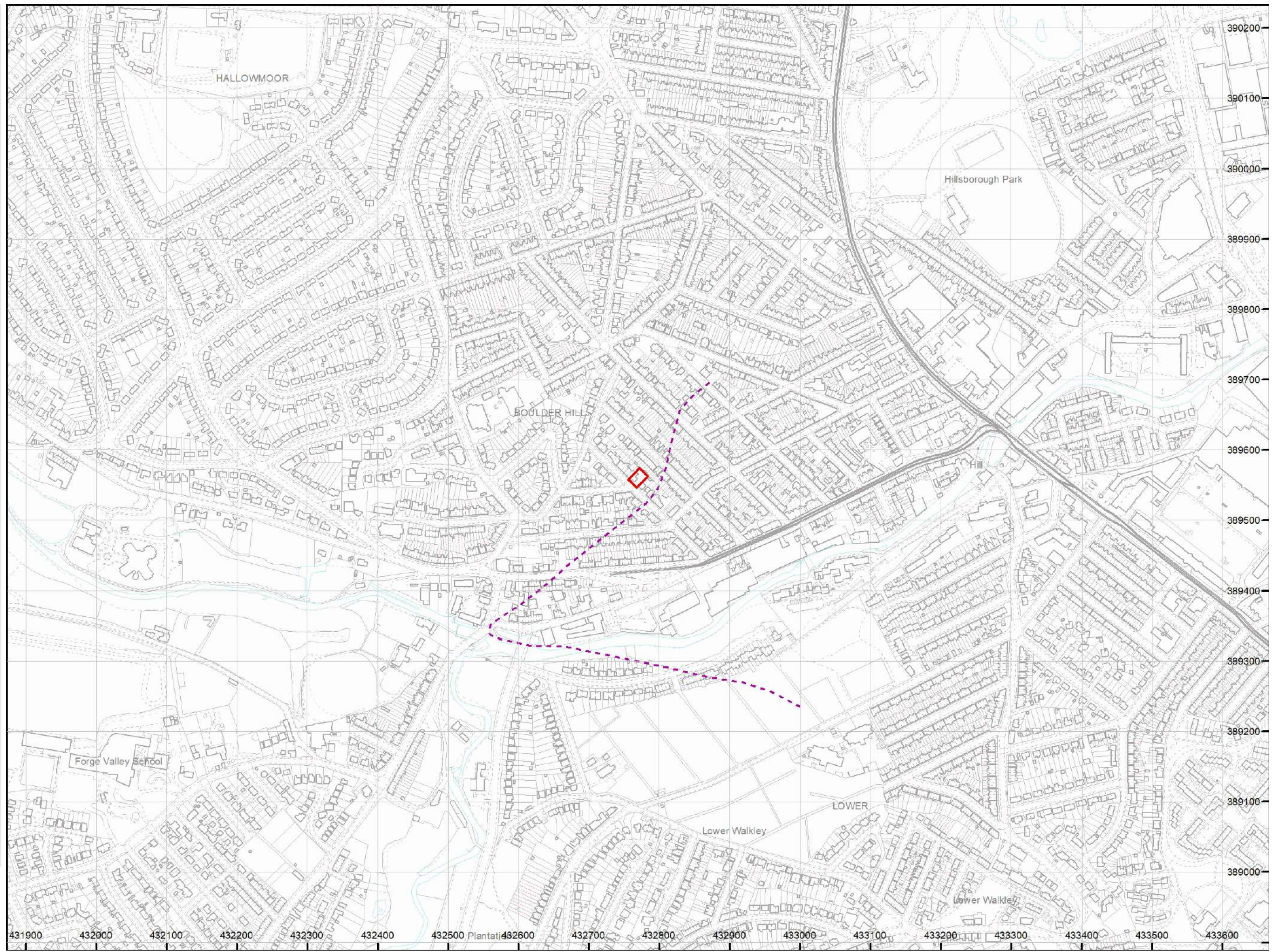
Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

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 (Conjectured) 

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