

**Coal Mining Risk Assessment
For NYP Architectural Services
Land at Edward Road
Highgate,
Goldthorpe
S63 9AZ**

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- Proposed development layout
- Appendix B** Coal Authority mining report

Executive Summary

Proposal	4no. detached two storey dwellings.
Current land use	Vacant parcel of land at approximately 33m AOD.
Mining related site history	Former shallow workings and opencast mining within 550m of the site. Numerous recorded mine entries and several collieries present locally.
Geology	Directly underlain by undifferentiated strata of the Middle Coal Measures. The Shafton coal seam outcrops along the site's southern boundary and underlies the site at shallow depth.
Mining history and context	5 seams of worked coal are recorded as potentially influencing the site at depths of between 250 and 740m, last worked in 1986. The site lies within an area of probable past shallow coal mining and is within a Development High Risk Area as defined by the Coal Authority. The Shafton seam has been historically extensively exploited in the locality.
Mining related risks	There is a potential for shallow mining beneath the site potentially leading to surface instability – High. Unrecorded former mine entries may be present on the site – Moderate. Mine gases may be present on the site – Moderate.
Mitigation of risks	Proof drilling is recommended to confirm the status and depth of the underlying Shafton coal seam. If shallow mining is confirmed, drill and grout or removal by excavation may be required or possibly the incorporation of a raft foundation, subject to local authority building control approval. Vigilance during site enabling works to check for former unrecorded mine entries. Protection from mine gases may be required within new development, subject the results of ground gas monitoring and the advice of regulators.

1. Introduction

1.1 Design IT were appointed by NYP Architectural Services to undertake a Coal Mining Risk Assessment (CMRA) for a site referred to as Land at Edward Road, Highgate, Goldthorpe S63 9AZ, which is proposed for development with 4no. detached 2 storey dwellings. A planning application is to be submitted to Barnsley Metropolitan Borough Council (BMBC) and the site is identified as lying within a Coal Authority (CA) Coal Mining Development Referral Area, thus necessitating the requirement for a CMRA in order to provide BMBC with information on historic coal mining and an assessment of its potential impact on land stability.

1.2 The purpose of this CMRA is to:

- Present a desk-based review of all available information on the coal mining issues which are relevant to the application site
- Use that information to identify and assess the risks to the proposed development from coal mining legacy, including the cumulative impact of issues
- Set out appropriate mitigation measures to address the coal mining legacy issues affecting the site, including any necessary remedial works and/or demonstrate how coal mining issues have influenced the proposed development, and
- Demonstrate to the Local Planning Authority that the application site is, or can be made, safe and stable to meet the requirements of national planning policy with regard to development on unstable land

1.3 To this end the study has included an inspection of published historical maps, published geological data, publicly available planning information and a review of a CA mining report, together with other sources as indicated within the report.

1.4 This report presents the factual information available during this appraisal, interpretation of the data obtained and recommendations relevant to the scope of works outlined above.

1.5 The comments and opinions presented in this report are based on the findings of the available desk study assessment carried out by Design IT. Responsibility cannot be accepted for

any conditions not revealed by this desk study and which have not been taken into account by this assessment.

1.6 This report has been prepared for the sole use of NYP Architectural Services and their client. No other third party may rely upon or reproduce the contents of this report without written approval of Design IT. If any unauthorised third party comes into possession of this report, they rely on it entirely at their own risk and we do not owe them any Duty of Care or Skill.

2. Site location and description

2.1 The site is centred on National Grid Reference 445350mE 403900mN and located immediately south of Edward Road and west of the junction of Edward Road with Highgate Lane within the southwestern part of Goldthorpe. The site is located on the edge of a residential area with an industrial estate close to the southwest. A site location plan is included as **Appendix A**.

2.2 An inspection of recent aerial imagery indicates the site to be an undeveloped parcel of land under grass and coarse vegetation. It is relatively level lying at approximately 33m AOD with levels falling gently to the south across the site. Trees are present along the southern boundary with fences forming the remaining site boundaries.

Proposed development

2.3 It is proposed to construct 4no. detached 2 storey dwellings with parking provision and gardens. Details of the proposal are included as **Appendix A**.

Site history

2.4 Historical maps for the site and its surroundings, available from internet based sources, have been reviewed and a summary of this information, specifically relating to mining related features, is provided below.

Date	On site features	Off site features (coal mining related)
1855 – 1931	Open fields	Quarry approximately 750m northwest Brickworks and clay pit approximately 500m west Brickworks and clay pit approximately 700m southeast Hickleton Main colliery approximately 2km northeast
1931 – 2006	3no. pairs of semi-detached residential properties	Highgate colliery approximately 1km northeast
2006 - present	Vacant land (properties may have been demolished between 1988 and 2006 due to absence of mapping)	None

3. Geological setting and historical mining context

3.1 Information obtained from various sources pertaining to the site's geology and historical mining perspective is summarised in the table below with information sources identified as appropriate.

Information sources	British Geological Survey (BGS) 1:10 000 scale, sheet SE40SE and BGS 1:50 000 scale, sheet 87 Solid & Drift. BGS online Borehole Database. BGS Internal Report IR/06/135 'The Pennine Lower and Middle Coal Measures formations of the Barnsley district', 2006. Geological Survey Memoir, Sheet 87 'Geology of the Country Around Barnsley', 1948. 'Sections of Strata of the Coal Measures of Yorkshire', W H Wilcockson, 1950 3rd Edition. BMBC online Planning Applications Search. CA online Interactive Viewer. CA mining report, Ref. 51002682452001, 10 November 2021 (included as Appendix B).
Made ground	None shown on site, however, some is anticipated due to historical development.
Drift	None present.
Solid	Undifferentiated strata (mudstones, siltstones, sandstones and coal seams) of the Carboniferous Middle Coal Measures.
Dip of strata	3° to the north.
Faults	There are no faults indicated on or within close proximity to the site.
Coal seams	The Shafton coal seam is shown as outcropping along the southern site boundary and is considered to underlie the site at shallow depth. No other named coal seams are considered to underlie the site at shallow depth. Regional thicknesses for the Shafton coal seam are between 0.2 to 2.3m. Locally, BGS recorded stratigraphic section thicknesses for the Shafton coal seam are between 1.0 and 1.9m.
Shafts and collieries	BGS mapping and the CA Interactive Viewer record numerous former shafts to the west, north and east, none are indicated as being close or on the site itself. Shaft records for the former Hickleton Main colliery located to the northeast record the Shafton coal seam to be approximately 1.5m thick.

Nearby intrusive information	Former exploratory investigation boreholes put down as part of the feasibility of the Cresacre drift mine approximately 2.5km southeast, proved the Shafon seam at thicknesses of between approximately 1.7 and 1.85m.
Coal Authority mining report	5 seams of worked coal are recorded as potentially influencing the site at the surface at depth of between 250 and 740m, last worked in 1986. Any associated ground movement should have ceased by now. The CA believes the site lies in an area where there is coal at or close to the surface, which may have been worked in the past. There are no former mine entries recorded on or within 20m of the site. However, unrecorded mine entries may be present. The site does not lie within the boundary of any former, current or future opencast sites. There are 2 former coal mining subsidence claims registered for properties located within 50m northeast of the site. There are no records of any mine gas emissions requiring action within the site boundary.
Shallow mining	The CA Interactive Viewer indicates the site as lying within a Development High Risk Area (DHRA) and within an area of probable historic shallow coal mining. BGS mapping indicates the presence of past shallow mine workings within the Shafon seam at the location of later opencast workings approximately 550 to 750m west of the site.
Surface mining	BGS mapping and the CA Interactive Viewer record former opencast mining approximately 400m north and 550m west of the site.

4. Risk assessment

4.1 The potential risks to the redevelopment of the site associated with the coal mining legacy of the locality are summarised in the following table.

Coal mining issue	Risk		Risk assessment (Risk rating)
	Yes	No	
Underground coal mining (recorded at shallow depths)	-	No	CA information does not record past shallow coal mining beneath the site, however, within 50m of the site there are 2 former coal mining subsidence claims. In addition, the outcrop of the Shafton seam is indicated along the site's southern boundary, which has been extensively historically mined locally, especially near its outcrop to the west – Low
Underground coal mining (probable at shallow depths)	Yes	-	Shallow depth to the Shafton seam and that the site lies within an area of probable past shallow workings and is also within a Development High Risk Area. Evidence of widespread historical mining to the west would suggest potential shallow mining of the Shafton seam beneath the site - High
Mine entries (shafts and adits)	Yes	-	Numerous recorded former mine entries are recorded within the locality associated with the outcropping of the Shafton seam. Unrecorded mine entries are a possibility, including adits exploiting the Shafton seam at outcrop along the site's southern boundary – Moderate
Coal mining geology (fissures)	-	No	CA information and published geology does not indicate any geological weaknesses on site as a consequence of mining related activities – Low
Record of past mine gas emissions	Yes	-	CA information states no mine gas related issues in the locality. However, potential for mine gas as probable past shallow mining and recorded deep mining are present beneath the site - Moderate
Recorded coal mining surface hazard	-	No	CA information does not record the presence of any mining surface hazards on site - Low
Surface mining (opencast)	-	No	CA information states the site to be unaffected by any past, current or future

workings)			opencast workings. However, past opencast mining has occurred within 400m north of the site - Low
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5. Discussion

5.1 The risk assessment above highlights several potential risks posed to the site during redevelopment, namely potential for shallow coal workings, potential for unrecorded mine entries and associated mine gas emissions, cumulatively assessed as **moderate to high**. These risks are discussed in turn more fully below.

Shallow mine workings

5.2 The Shafton coal seam is recorded as outcropping along the southern site boundary, underlying the site at shallow depth, and is recorded as having been historically worked extensively locally to the site. It is estimated that the Shafton coal seam is likely to be present beneath the site at less than 5m below the surface with depth to rockhead likely to be shallow due the absence of superficial soils. Local intrusive information and former colliery records indicate a thickness of between 1.5 and 1.85m for the Shafton seam. There is considered to be *insufficient* competent rock cover above the Barnsley seam to maintain surface stability in the event of this seam having been worked beneath the site. This assumption is based upon having a minimum of 10 times (10t) intact coal seam thickness of competent rock strata as present above the coal seam. The surface stability at the site cannot be guaranteed in the absence of intrusive works. Such intrusive investigations will determine whether mine workings are present within the Shafton seam and to what extent and confirm the depth of the coal seam, its thickness and the nature and competence of the overlying strata.

Mine entries

5.3 Due to the proximity of the outcrop of the Shafton coal seam along the site's southern boundary and recorded former shallow workings along the outcrop of the coal seam to the west of the site, the presence of on-site unrecorded former mine entries associated with the exploitation of this seam cannot be discounted. Pre 1872, it was not a statutory requirement to record mine entries and mining plans. Such features are considered as presenting a potential risk to development by way of instability and potential collapse.

Mine gas

5.4 The potential for upward migration of mine gases beneath the site cannot be discounted. Such gases are particularly prevalent in former pillar and stall workings that remain open and allow them to build up over time. Mine gases pose a potential significant human health risk to the future occupants of dwellings.

6. Proposed mitigation strategy

6.1 A review of geological and historical mining information at the site has shown that there is a potential risk to surface stability from shallow mine workings that may be present within the Shafton coal seam and possible unrecorded mine entries, together with a potential risk posed by upward migration of mine gases.

Shallow mine workings

6.2 CA records and BGS mapping demonstrate there to be a definite risk presented by shallow mine workings within the Shafton coal seam present beneath the site. It would be prudent, therefore, to undertake proof drilling across the site to confirm the depth to rockhead and depth to/nature of the underlying coal seam. Boreholes should be put down to a maximum depth of 30m below existing ground levels with appropriate permission and licences obtained from the Coal Authority prior to commencing any such works. If shallow mining is proved as presenting a risk to the surface stability of the site, then drilling and grouting works would be required to consolidate the workings or possibly removal by excavation, subject to findings. Alternatively, subject to loadings and the nature of any proved mine workings, a raft foundation may be feasible to spread imposed loadings of the new building, subject to local authority building control approval.

Mine entries

6.3 The presence of unrecorded mine entries should be confirmed. During site enabling works and a site strip the exposed sub soils should be checked for the presence of disturbed and potentially unstable ground associated with backfilling of such features. If mine entries are identified on the site, then these will require treatment by grouting and capping at the surface and the siting of new development over these features should be avoided.

Mine gas

6.4 Incorporation of robust gas protection measures during construction should be adopted. However, such measures are inherently incorporated within the construction of new buildings by way of use of a suspended floor slab offering a passively vented underfloor void, incorporation of a

radon protection membrane (if appropriate) and a damp proof membrane together with the sealing of service entries. A gas monitoring programme is considered warranted with subsequent completion of a ground gas risk assessment. It is recommended that advice and approval is sought from regulators.

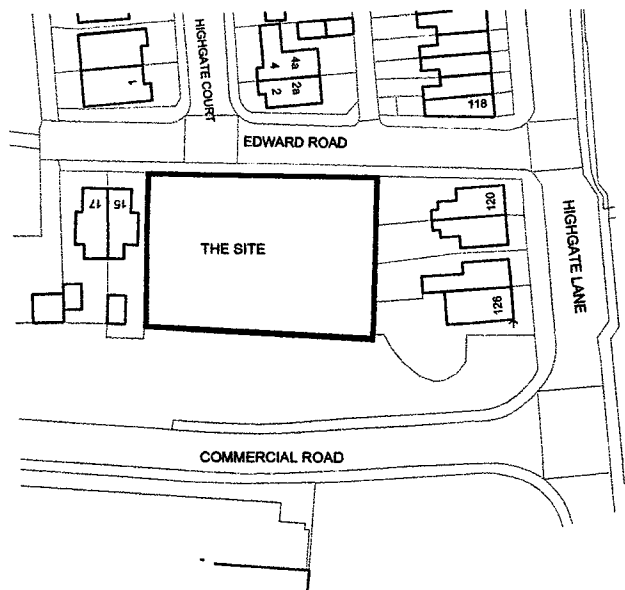
7. Conclusions

7.1 There is a potential risk posed to the redevelopment of the site from shallow mine workings that may be present in the underlying Shafton coal seam. Such risks comprise surface instability from collapse of past workings and former mine entries. Proof drilling is recommended to better understand these risks.

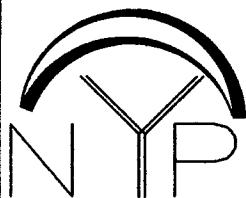
7.2 In addition, as there can never be total certainty with regard to unrecorded mine entries, the developer should be made aware of this possibility during site stripping and excavation for foundations. Any evidence of the suspected presence of former mine entries should be investigated further.

7.3 Advice should be sought from regulators as to adoption of appropriate measures to protect against ground (mine) gases within the new development.

Appendix A
Site location plan and proposed development



1:1250 METRES 0 10 20 30 40 50



SHEET SIZE A4

NYP ARCHITECTURAL SERVICES

BARNLEY BIC, INNOVATION WAY, BARNLEY S75 1JL. Tel: 01226 200989.
E-mail : scott@nypas.co.uk / stephen@nypas.co.uk

Project. **EDWARD ROAD
HIGHGATE
GOLDTHORPE S63 9AZ**

Client.

Drawing Title.

LOCATION PLAN

Date.

AUGUST 2021

Scale.

1:1250 @ A4

Ref.

102-106

Dwg. No.

LOC-01

Rev.

A



Appendix B
Coal Authority mining report



The Coal
Authority

CON29M

coal mining report

LAND AT EDWARD ROAD, GOLDTHORPE, BARNSELEY, S63 9AZ



Known or potential coal mining risks

Past underground coal mining
Future underground coal mining
Mine entries
Coal mining subsidence
Withdrawal of support

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Page 6



Further action

These additional reports can give further detail on the risks identified:

- Subsidence claims 50m buffer report

For more information please see our Further action reports on page 9



Professional opinion

According to the official mining information records held by the Coal Authority at the time of this search, evidence of, or the potential for, coal mining related features have been identified. In view of the coal mining circumstances we would recommend that any planned or future development should follow detailed technical advice before beginning work on site. Please see **page 3** for further details on Future development.

Your reference: **dlc 21101**
Our reference: **51002682452001**
Date: **10 November 2021**

Client name:
Ian Thorpe

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0345 762 6848
groundstability@coal.gov.uk



The Law
Society

Enquiry boundary

Key

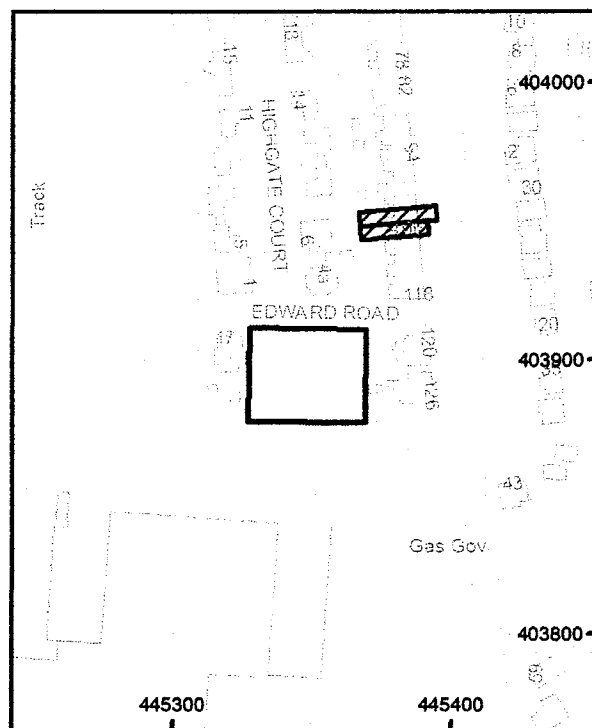
Approximate position of enquiry boundary shown



Coal claims



We can confirm that the location is
on the coalfield



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This report is prepared in accordance with the latest Law Society's Guidance Notes 2018, the User Guide 2018 and the Coal Authority's Terms and Conditions applicable at the time the report was produced.



Accessibility

If you would like this information in an alternative format, please contact our communications team on 0345 762 6848 or email communications@coal.gov.uk.

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Professional opinion



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. 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.

If you are looking to develop, or undertake works, within a coal mining development high risk area your Local Authority planning department may require a Coal Mining Risk Assessment to be undertaken by a qualified mining geologist or engineer. Should you require any additional information then please contact the Coal Authority on 0345 762 6848 or email cmra@coal.gov.uk.

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Detailed findings

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1 Past underground coal mining

The property is in a surface area that could be affected by underground mining in 5 seams of coal at 250m to 740m depth, and last worked in 1986.

Any movement in the ground due to coal mining activity associated with these workings should have stopped by now.

In addition the property is in an area where the Coal Authority believes there is coal at or close to the surface. This coal may have been worked at some time in the past. The potential presence of coal workings at or close to the surface should be considered, particularly prior to any site works or future development activity, as ground movement could still be a risk. Your attention is drawn to the Professional opinion sections of the report.

2 Present underground coal mining

The property is not within a surface area that could be affected by present underground mining.

3 Future underground coal mining

The property is not in an area where the Coal Authority has received an application for, and is currently considering whether to grant a licence to remove or work coal by underground methods.

The property is not in an area where a licence has been granted to remove or otherwise work coal using underground methods.

The property is not in an area likely to be affected from any planned future underground coal mining.

However, reserves of coal exist in the local area which could be worked at some time in the future.

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

4 Mine entries

There are no recorded coal mine entries known to the Coal Authority within, or within 20 metres, of the boundary of the property.

This information is based on the information that the Coal Authority has at the time of this enquiry.

Based on the Coal Authority's knowledge of the mining circumstances at the time of this enquiry, there may be unrecorded mine entries in the local area that do not appear on Coal Authority records.

5 Coal mining geology

The Coal Authority is not aware of any damage due to geological faults or other lines of weakness that have been affected by coal mining.

6 Past opencast coal mining

The property is not within the boundary of an opencast site from which coal has been removed by opencast methods.

7 Present opencast coal mining

The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.

8 Future opencast coal mining

There are no licence requests outstanding to remove coal by opencast methods within 800 metres of the boundary.

The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

9 Coal mining subsidence

There are 2 claims within 50 metres of the property boundary that do not match the property address. These are shown on the enquiry boundary plot.

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.

If further subsidence damage claims information is required, please visit www.groundstability.com.

10 Mine gas

The Coal Authority has no record of a mine gas emission requiring action.

11 Hazards related to coal mining

The property has not been subject to remedial works, by or on behalf of the Coal Authority, under its Emergency Surface Hazard Call Out procedures.

12 Withdrawal of support

The property is in an area where notices to withdraw support were given in 1946 and 1983.

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.

13 Working facilities order

The property is not in an area where an order has been made, under the provisions of the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

14 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.

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Statutory cover



Coal mining subsidence

In the unlikely event of any coal mining related subsidence damage, the Coal Authority or the mine operator has a duty to take remedial action in respect of subsidence caused by the withdrawal of support from land or property in connection with lawful coal mining operations.

When the works are the responsibility of the Coal Authority, our dedicated public safety and subsidence team will manage the claim. The house or land owner ("the owner") is covered for these works under the terms of the Coal Mining Subsidence Act 1991 (as amended by the Coal Industry Act 1994). Please note, this Act does not apply where coal was worked or gotten by virtue of the grant of a gale in the Forest of Dean, or any other part of the Hundred of St. Briavels in the county of Gloucester.

If you believe your land or property is suffering from coal mining subsidence damage and you need more information on what to do next, please use the following link to our website which sets out what your rights are and what you need to consider before making a claim.

www.gov.uk/government/publications/coal-mining-subsidence-damage-notice-form



Coal mining hazards

Our public safety and subsidence team provide a 24 hour a day, 7 days a week hazard reporting service, to help protect the public from hazards caused by past coal workings, such as a mine shaft or shallow working collapse. To report any hazards please call **01623 646 333**. Further information can be found on our website: www.gov.uk/coalauthority.

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Glossary



Key terms

adit - horizontal or sloped entrance to a mine

coal mining subsidence - ground movement caused by the removal of coal by underground mining

Coal Mining Subsidence Act 1991 - the Act setting out the duties of the Coal Authority to repair damage caused by coal mining subsidence

coal mining subsidence damage - damage to land, buildings or structures caused by the removal of coal by underground mining

coal seams - bed of coal of varying thickness

future opencast coal mining - a licence granted, or licence application received, by the Coal Authority to excavate coal from the surface

future underground coal mining - a licence granted, or licence application received, by the Coal Authority to excavate coal underground. Although it is unlikely, remaining coal reserves could create a possibility for future mining, which would be licensed by the Coal Authority

mine entries - collective name for shafts and adits

payments to owners of former copyhold land - historically, copyhold land gave rights to coal to the copyholder. Legislation was set up to allow others to work this coal, but they had to issue a notice and pay compensation if a copyholder came forward

shaft - vertical entry into a mine

site investigation - investigations of coal mining risks carried out with the Coal Authority's permission

stop notice - a delay to repairs because further coal mining subsidence damage may occur and it would be unwise to carry out permanent repairs

subsidence claim - a formal notice of subsidence damage to the Coal Authority since it was established on 31 October 1994

withdrawal of support - a historic notice informing landowners that the coal beneath their property was going to be worked

working facilities orders - a court order which gave permission, restricted or prevented coal mine workings

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Further action reports

Subsidence claims 50m buffer report - gives information on coal mining subsidence claims within 50 metres of the property boundary. To order this report, use the same boundary as the CON29M mining report.

For more information and to order this report please visit:

<https://www2.groundstability.com/subsidence-50m-buffer>

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