

**Coal Mining Risk Assessment**

**For**

**Mr Peter Thompson**

**c/o Mr T Murrell**

**Land Adjacent to**

**32, Barnsley Road**

**Brierley**

**S72 9LD**

Client:-  
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### Appendices

**Appendix A** Site location plan  
Proposed development layout

**Appendix B** Coal Authority mining report

## 1. Introduction

1.1 Design IT were appointed by Peter Thompson on behalf of Mr T Murrell to undertake a Coal Mining Risk Assessment (CMRA) for a site adjacent to 32, Barnsley Road, Brierley near Barnsley which is proposed for development with a detached 3 storey dwelling incorporating an integral garage. It is understood that a planning application has recently been submitted to Barnsley Metropolitan Borough Council (BMBC). 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 Peter Thompson and this client Mr T Murrell. 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 440635mE 411250mN and located on the northern side of Barnsley Road (A628), within the town of Brierley approximately 7.5km northeast of Barnsley town centre. The site is located within a residential area. A site location plan is included as **Appendix A**.

2.2 An inspection of recent aerial imagery indicates the site to comprise an existing driveway and gardens associated with the property of 32 Barnsley Road, itself located immediately southwest of the site. A detached brick built garage occupies the northwestern part of the site with further gardens beyond containing bushes and semi-mature and mature trees. The site lies at approximately 95.0m AOD falling steadily to the northwest. Locally, levels fall steadily towards the southwest.

### *Proposed development*

2.3 It is proposed to construct a detached 3 storey dwelling incorporating an integral garage to the front and associated driveway. The proposed dwelling is to be located in the approximate central southeastern part of the site, in line with the adjoining existing properties. The existing garage within the northwestern part is to be demolished. 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.

<b>Date</b>	<b>On site features</b>	<b>Off site features (coal mining related)</b>
1854 – 1919	Open fields/agricultural land.	Sandstone quarry approximately 325m southwest. Shafton colliery approximately 850m southwest.
1919 – 1933	Land associated with no. 32 Barnsley Road including outbuilding(s) within northwestern part.	Shafton colliery abandoned.

1933 – 1962	No change.	Brierley (Hodroyd) colliery approximately 600m southeast.
1962 – present	No change.	Brierley colliery disused.

### 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.

<b>Information sources</b>	<p>British Geological Survey (BGS) 1:50 000 scale, sheet 87 Barnsley Solid and Drift Edition.</p> <p>BGS online Borehole Database.</p> <p>Geological Survey Memoir, Sheet 87 'Geology of the Country Around Barnsley', 1947.</p> <p>W H Wilcockson 'Sections of Strata of the Coal Measures of Yorkshire', 1950.</p> <p>CA online Interactive Viewer.</p> <p>CA mining report, Ref. 51001408194001, April 2017 (included as <b>Appendix B</b>).</p>
<b>Made ground</b>	None shown on site, however given the historical development of the site some is expected.
<b>Drift</b>	None present.
<b>Solid</b>	Undifferentiated strata (mudstones, siltstones, sandstones and coal seams) of the Carboniferous Upper Coal Measures. The Brierley Rock sandstone is present immediately southeast of the site.
<b>Dip of strata</b>	2 to 3° to the northeast.
<b>Faults</b>	A fault is indicated to the southwest trending west to east with another fault present to the northwest trending northeast to southwest and downthrowing to the northwest. However, none are indicated to cross the site itself.
<b>Coal seams</b>	<p>The Brierley coal seam is indicated as outcropping just to the west of the site and is considered to underlie the site at shallow depth. No other significant or named coal seams are indicated that may potentially underlie the site at shallow depth.</p> <p>Regional BGS recorded thicknesses for the Brierley coal seam is 0 to 1.3m. The memoir states that locally within the district of Brierley, the Brierley coal seam is approximately 1.2m thick and noted as an inferior coal seam. An exposure in a railway cutting at Frickley Bridge approximately 650m north records the Brierley coal seam to be some 0.7m thick underlain by a thick bed of fireclay.</p>
<b>Shafts and collieries</b>	Records for the nearby Hodroyd colliery to the southeast show the Brierley coal seam to be approximately 1.3m thick with a mudstone separation and the lower leaf comprising of coal and dirt. An unnamed

	<p>coal seam (some 0.55m thick and present as 2 leaves) is recorded approximately 4m above the Brierley coal seam. Depth to rock is approximately 3m.</p> <p>The CA Interactive Viewer indicates a former mine entry (shaft) within 50m southeast of the site.</p>
<b>Nearby intrusive information</b>	Nearby BGS archive intrusive information for a site approximately 550m southeast proved siltstone and sandstone rock at approximately 1.5m depth.
<b>Coal Authority mining report</b>	<p>The CA believes the site to be within the influence at the surface from past underground mining within 4 seams of coal at depths of between 170 and 870m last worked in 1954, any associated ground movement having ceased by now. However, the site is in an area where coal is understood to be at or close to the surface, which may have been worked in the past with the potential for shallow workings to be present.</p> <p>There is no present or future underground mining that may potentially affect the surface stability of the site.</p> <p>There are no recorded former mine entries on, or within 20m, of the site.</p> <p>The site itself is unaffected by any past, present or future opencast coal mining.</p> <p>There are no records of any mine gas emissions requiring action within the site boundary.</p> <p>There are no coal mining subsidence claims registered at the site, or within 50m of the site.</p>
<b>Shallow mining</b>	<p>The CA Interactive Viewer indicates the site to lie within an area of probable shallow coal mining and is considered to be associated with the working of the Brierley coal seam. The site is located within a CA designated Development High Risk Area (DHRA).</p> <p>The Brierley coal seam is recorded as outcropping just beyond the western site boundary.</p>
<b>Surface mining</b>	BGS mapping together with CA information record both unlicensed opencast coal mining approximately 75m to the northwest and 125m southwest of the site. However, none are present within the site itself.

## 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)	-	<b>No</b>	A former mine entry (shaft) is recorded by the CA less than 50m southeast of the site. The Brierley coal seam is recorded as outcropping in close proximity to the west of the site. Past shallow coal mineworkings are <i>not</i> recorded beneath the site by the CA, although shallow coal seams <i>are</i> present beneath the site – <b>Low</b>
Underground coal mining (probable at shallow depths)	<b>Yes</b>	-	The Brierley coal seam is recorded as outcropping in close proximity to the west of the site, and is present beneath the site at shallow depth. The site lies within an area of probable shallow coal mineworkings and within a Development High Risk Area. Evidence of widespread historic coal mining in the locality would suggest potential unrecorded shallow mining of the Brierley coal seam – <b>High</b>
Mine entries (shafts and adits)	<b>Yes</b>	-	A former mine entry (shaft) is recorded close to the southeast of the site. The recorded nearby outcrop of the Brierley coal seam would suggest the possibility for exploitation via adits or shafts and the presence of unrecorded mine entries either on or within influencing distance of the site cannot be discounted – <b>Moderate to High</b>
Coal mining geology (fissures)	-	<b>No</b>	CA information and published geology does not indicate any geological weaknesses on site as a consequence of mining related activities – <b>Low</b>
Record of past mine gas emissions	<b>Yes</b>	-	CA information states no mine gas related issues in the locality. However, potential for mine gas as shallow mining is probable beneath the site – <b>Moderate to High</b>
Recorded coal mining surface hazard	-	<b>No</b>	CA information does not record the presence of any mining surface hazards on

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			site which have undergone remedial works – <b>Low</b>
Surface mining (opencast workings)	-	<b>No</b>	CA information states the site to be unaffected by any past, current or future opencast coal workings. However, unlicensed past opencast coal mining is recorded within the vicinity of the site – <b>Low</b>

## 5. Discussion

5.1 The risk assessment above highlights several potential mining related 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 mineworkings*

5.2 The Brierley coal seam is recorded as outcropping close to the western site boundary, underlying the site at shallow depth. It is estimated that the Brierley seam is likely to be present beneath the site at approximately 5 to 10m below the surface. Beneath the site, depth to rockhead is likely to be within 2m of the surface. Published geological information and local colliery records indicate the Brierley seam as having a total thickness (including dirt partings) of between 1.2 and 1.3m. There is considered to be *insufficient* competent rock cover above the Brierley coal seam to maintain surface stability in the event of the seam having been worked beneath the site. This assumption is based upon having a minimum of 10 times intact total seam thicknesses (coal and mudstone partings, if present) of competent rock strata present above the seam. However, the surface stability at the site can only be comprehensively determined through undertaking intrusive works. Such intrusive investigations will determine whether mineworkings are present within the Brierley seam and to what extent, as well as confirming the depth to the seam and its thickness beneath the site.

### *Mine entries*

5.3 A former mine entry (shaft) is recorded close by and to the southeast of the site, assumed to be associated with the nearby outcropping of the Brierley coal seam. As a consequence of the recorded nearby outcrop of the Brierley coal seam, the presence of other on-site or adjacent unrecorded former mine entries associated with the exploitation of this seam and potentially deeper coal seams cannot be discounted. Pre 1849, 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. A zone of influence would be associated with any such mine entry whereby any proposed development within this zone would be affected by potential surface instability. Intrusive investigations would be required to locate potential past mine entries beneath the site.

*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 and existing occupants of adjacent dwellings.

## **6. Proposed mitigation strategy**

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

### *Shallow mineworkings*

6.2 Geological, historical and CA mapping information all demonstrate there to be a plausible risk presented by shallow mineworkings within the Brierley 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 30m below existing ground levels with appropriate permission and licences obtained from the Coal Authority prior to commencing any such works. If shallow mining of the Brierley seam is proved as presenting a risk to the surface stability of the site then drilling and grouting works may be required to consolidate the workings. Such intrusive works would be more effective on a cleared and demolished site.

### *Mine entries*

6.3 The presence of potential unrecorded mine entries (adits and shafts) associated with the recorded nearby outcrop of the Brierley coal seam, 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. During such works vigilance should be taken with respect to any anomalous findings. If mine entries are identified on the site, then these may require treatment by grouting and capping at the surface and the siting of any new development footprint over these features or within influencing distance should be avoided.

*Mine gas*

6.4 The incorporation of robust gas protection measures during construction are considered likely within the new development. However, such measures are inherently incorporated within the construction of new buildings by way of use of a suspended floor slab (as appropriate) offering a passively vented underfloor void, a well-constructed ground bearing floor slab, incorporation of a radon protection membrane (if warranted) and a damp proof membrane together with the sealing of service entries. The requirement for a gas monitoring programme is not considered warranted, subject to the results of an intrusive investigation. It is recommended that advice and approval is sought from regulators at an early stage.

## **7. Conclusions**

7.1 There is a potential risk posed to the redevelopment of the site from shallow mineworkings that may be present in the underlying Brierley coal seam. Such risks comprise surface instability from collapse of past shallow mineworkings 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 both recorded and 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**



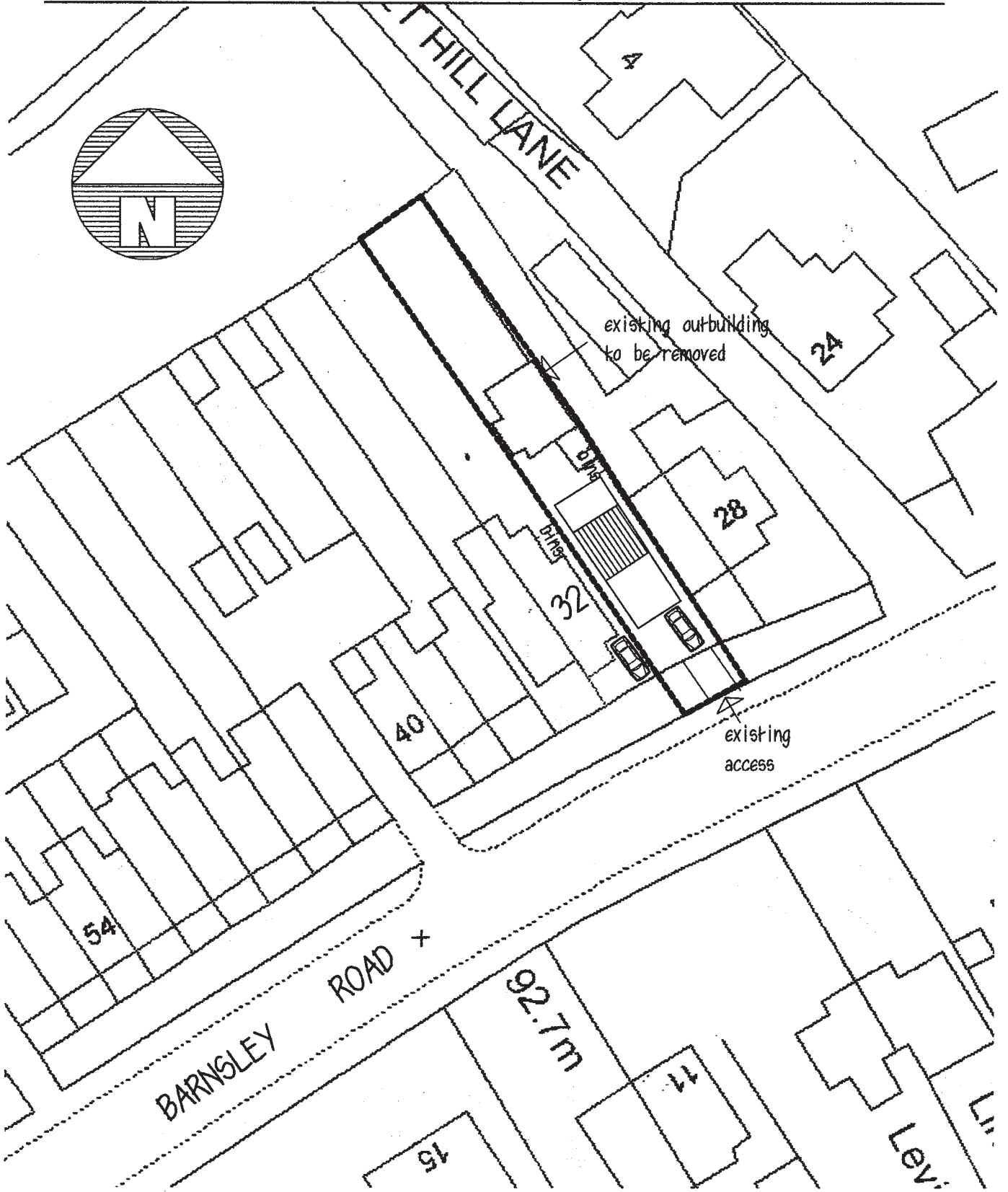
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PROPOSED DWELLING  
ADJ. 32 BARNSELEY RD  
BRIERLEY  
SITE PLAN Rev A 1:500@A4

Linwood  
Barnsley Road  
Dodworth  
Barnsley S75 3JR



**Appendix B**  
**Coal Authority mining report**

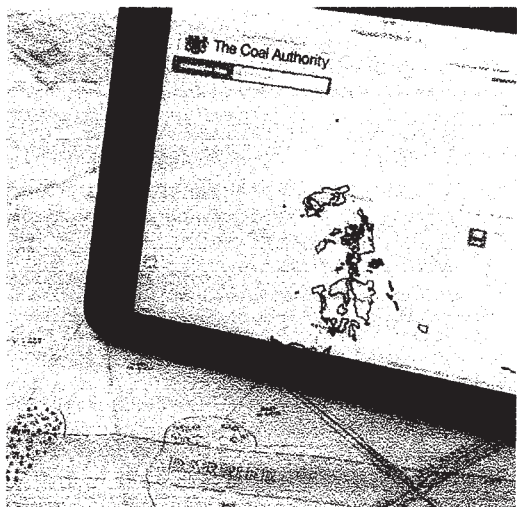


The Coal  
Authority

Resolving the impacts of mining

# CON29M Residential Mining Report

32 BARNSLEY ROAD  
BRIERLEY  
BARNSLEY  
BARNSLEY  
S72 9LD



Date of enquiry: 14 April 2017  
Date enquiry received: 14 April 2017  
Issue date: 14 April 2017

Our reference: 51001408194001  
Your reference: Dit/16/184



# Summary

<b>Has the search report highlighted evidence or potential of</b>		
1	Past underground coal mining	Yes
2	Present underground coal mining	No
3	Future underground coal mining	Yes
4	Mine entries	No
5	Coal mining geology	No
6	Past opencast coal mining	No
7	Present opencast coal mining	No
8	Future opencast coal mining	No
9	Coal mining subsidence	No
10	Mine gas	No
11	Hazards related to coal mining	No
12	Information from the Cheshire Brine Subsidence Compensation Board	No

**For detailed findings, please go to page 4.**

# Detailed findings

## **1. Past underground coal mining**

The property is in a surface area that could be affected by underground mining in 4 seams of coal at 170m to 870m depth, and last worked in 1954.

Any movement in the ground due to coal mining activity should have stopped.

In addition the property is in an area where the Coal Authority believe there is coal at or close to the surface. This coal may have been worked at some time in the past. The potential presence of coal workings at or close to the surface should be considered prior to any site works or future development activity. Your attention is drawn to the Comments on the Coal Authority information section 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 plans to grant a licence to remove coal using 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.

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 known coal mine entries within, or within 20 metres of, the boundary of the property.

#### **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**

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

#### **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 Authority, under its Emergency Surface Hazard Call Out procedures.

#### **12. Information from the Cheshire Brine Subsidence Compensation Board**

The property lies outside the Cheshire Brine Compensation District.

# Comments on the Coal Authority information

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In view of the mining circumstances a prudent developer would seek appropriate technical advice before any works are undertaken.

Therefore 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 good engineering practice developed for mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or mines of coal without the permission of the Coal Authority. Developers should be aware that the investigation of coal seams/former mines of coal may have the potential to generate and/or displace underground gases and these risks both under and adjacent to the development should be fully considered in developing any proposals. The need for effective measures to prevent gases entering into public properties either during investigation or after development also needs to be assessed and properly addressed. This is necessary due to the public safety implications of any development in these circumstances.

## Additional remarks

Information provided by the Coal Authority in this report is compiled in response to the Law Society's Con29M Coal Mining and Brine Subsidence Claim enquiries. The said enquiries are protected by copyright owned by the Law Society of 113 Chancery Lane, London WC2A 1PL. Please note that Brine Subsidence Claim enquiries are only relevant for England and Wales. This report is prepared in accordance with the Law Society's Guidance Notes 2006, the User Guide 2006 and the Coal Authority and Cheshire Brine Board's Terms and Conditions applicable at the time the report was produced.

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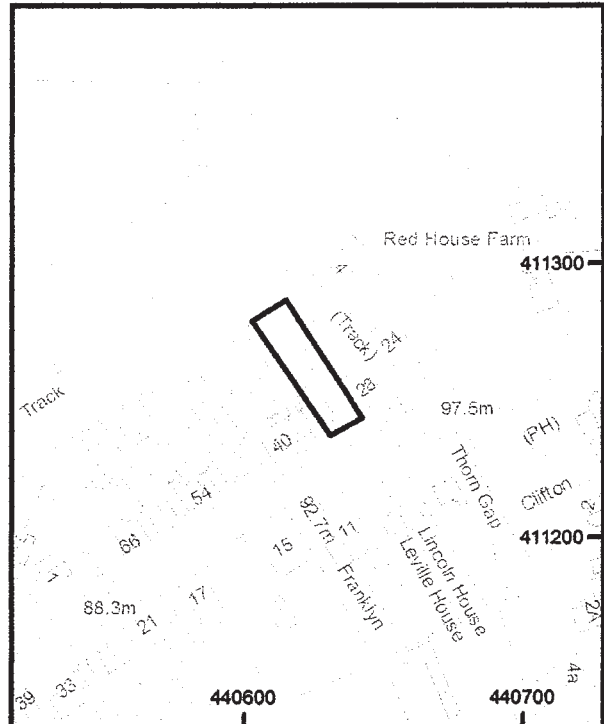
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# Enquiry boundary

## Key

Approximate position of enquiry boundary shown






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