

Coal Mining Risk Assessment

Smithies Moor Road, Birstall, Batley

Reference : 10005-R-001-V02

Date : 22 January 2020

**SOIL AND
STRUCTURES**

Coal Mining Risk Assessment

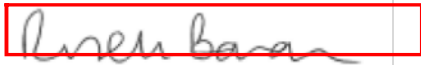
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Executive Summary

In conclusion, the Coal Mining Risk Assessment finds that;

- > The risk rating of the Site is assessed as Moderate to Low and;
- > Residual risks associated with coal mining are identified in relation to the proposed development for which further assessment and precautionary mitigation are recommended.
- > Establishing response plans for unforeseen hazards is also recommended.

Recommended follow-on work includes:

1. **Review of residual hazards and residual risks** identified herein;
2. **Submission of the Coal Mining Risk Assessment** to the local planning authority and the project design team;
3. **Further assessment** is recommended to investigate the nature and condition of the shallow geology on Site;
4. **Mitigation** is not recommended at this stage but subject to the findings of the further assessment;
5. **Response plans** being established for hazards that are not indicated to be present but may nonetheless be unexpectedly encountered.

Cross-referencing these recommendations with those of any other ground-related reporting is also recommended.

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- 1. Coal Mining Risk Assessment – Scope and Context**
- 2. Coal Mining Risk Assessment – Background Threat and Risk**

Appendices

- A. Development Plan**
- B. Consultants Coal Mining Report**
- C. Calculation Sheet – Coal Seam Projection**

Appointment

Soil and Structures Ltd were instructed by Stone Developments Ltd (the Client) on behalf of Kingcrown Developments Limited, in December 2019 to prepare a Coal Mining Risk Assessment (this Report). The Report was commissioned to support the development of residential properties on a parcel of land off Smithies Moor Road, Birstall, Batley (the Site).

Scope and Context

The Coal Mining Risk Assessment offers advice on coal and non-coal mining related hazards with respect to the proposed development of the Site.

The legal context of this advice relates to an assessment of potential coal and non-coal mining related hazards that may affect the development.

The assessment of potential coal mining related hazards is governed by both health and safety law (various acts) and also rooted within national planning policy that is governed by planning law (various regulations and orders).

In practice, this necessitates acceptance of this report and its findings by the Coal Authority, a statutory consultee on planning applications.

For further information on the scope and context of the Coal Mining Risk Assessment please refer to Annex 1.

References

The Coal Mining Risk Assessment has been written with reference to various sources of information. These are either appended or listed within Section 6.0 and referenced throughout this report.

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1.0 Introduction

1.1 The Site

Location and size: The Site comprises parcel of land approximately 0.07 Ha in size located immediately north-west of Smithies Moor Lane, Birstall, Batley (opposite No. 86 Smithies Moor Lane).

Access: The Site is accessed on foot or by car off Smithies Moor Lane. The Site access is gated and secure.

Topography: The surface topography of the Site is generally level at circa 118 mAOD. Locally to the site the topography falls to from south-west to north-east.

Existing structures: A row of disused, single storey terraced garages remains on Site with an associated heavily weathered and vegetated hard-standing area.

As of October 2019 (date of site inspection) the condition of the structures was found to be generally 'average to poor' with signs of dilapidation, e.g. heavily vegetated roofs and localised concrete spalling around steelwork.



Figure 1: Site location plan.

- > Approximate site boundary shown in red.
- > Site approximately centred on NGR 422305 425217.

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Figure 2: Site panoramas.

> Photographs taken 02 October 2019.

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Selected notes from the site inspection (02 October 2019):

- > **Natural drainage:** A dry period of around 1 week preceded the site inspection with the site walking 'dry and firm' with no obvious signs of areas of standing water.
- > **Surface evenness:** No evidence of unevenness was noted across the Site.
- > **Condition of structures:** The existing structures (garage) were in a generally stable condition with no obvious signs of cracking or distortion. The condition of the structures was found to be generally 'average to poor' with signs of dilapidation, e.g. heavily vegetated roofs and localised concrete spalling around steelwork
- > **Contamination indicators:** No olfactory evidence of contamination was noted across the site including behind the garages or within the dense vegetation. Visual indicators of possible contamination (Photo 1 opposite) were noted behind the garages with ash fill (including 'old' glass bottles) present within an old tree position (felled tree pit).
- > **Vegetation cover:** No obvious evidence of non-native, invasive species was noted on Site. Mature trees are present on Site and its immediate vicinity.



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1.2 The Development

Development proposals include for: i) demolition of the existing single storey terrace of garages and; ii) the construction of 4 no. low-rise residential units (Figure 3) with associated hard-standing (new driveways) and soft-landscaping (gardens).

An appreciation of the construction processes is essential for development-focused risk assessments given the groundworks stand to significantly alter the risk rating, e.g. outcropping coal seams being exposed.

To enable this development, the following groundworks are likely to be required, N.B. listing is outline only and not exhaustive.

- > **Preparation:** Demolition of existing garages alongside a site strip and segregation of materials, e.g. topsoil and weathered hard-standing.
- > **Earthworks:** Notwithstanding other design requirements, e.g. flood risk levels and temporary access platforms for plant, no other significant earthworks are anticipated.
- > **Utility Excavations:** Excavation of drainage and other utility alignments.
- > **Foundations:** Construction of foundations followed by super-structures.
- > **Surfacing:** Formation of hard and soft-landscaping areas, i.e. gardens.



Figure 3: Development plan extract.

> Extract from appended Development Plan

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2.0 Site Characterisation

2.1 History

The Site has been subject to three recorded uses since 1850s (the date of the earliest available ordnance survey mapping available from various online sources):

- > **The first phase:** occurred between the 1850s and the start of the 1900s when the Site was in use as open fields.

No evidence of coal mining features, e.g. old shafts or soughs, is recorded on the Site over this phase. Within 250 m of the Site, 'coal pits' are recorded; north-east (c. 150 m), south-west (c. 150 m) and north-west (c. 200 m) together with various small collieries either similar distances or further afield. Other extraction / sub-surface features within 500 m of the Site include; 'quarries' and 'wells'.

- > **The second phase:** occurred between the start 1900s and the 1980s when the Site was in use as an entrance route (road) to a smallpox hospital. This entrance was disused by the 1930s (c. 30 years of use) and is assumed to have been left derelict until the next phase of development.

No evidence of coal mining features is recorded on the Site over this phase.

- > **The third phase (Figure 1):** occurred between the 1980s and the present day when the Site was developed for the single-storey garages.

No evidence of coal mining features is recorded on the Site over this phase.

The surrounding area is characterised by historical land uses consistent with agricultural and peri-urban land use (Birstall and Westfield) within the coalfield region of the industrialised north of England.

This includes; extensive farmland (around the village of White Lees) interspersed with small scale industries including mills, a chemical works, and more prevalently, small collieries. These industries and mining features are largely hidden or obscured by cycles of subsequent development.

2.2 Geology

No exploratory hole records are available for the Site or the immediate locality to verify the geological sequence beneath the Site however, four main materials are expected within the ground, the sequence of which will vary across the different portions of the Site.

Topsoil is expected to be limited to the fringes of the Site (where no previous development has taken place) and likely to be of relatively 'good' quality. The limited volume will unlikely make it a viable source for re-use either on or off Site.

Made Ground deposits of at least two types are anticipated. The first type of Made Ground is likely to be dominated by engineering products, e.g. crushed stone (beneath the garage slabs) and hard-standing materials, laid on Site as part of its most recent phase of development as garages (re-levelling the Site). Beneath these deposits, a second type of Made Ground deposits are anticipated (as evidenced from the site inspection and illustrated in Photo 1) comprising 'ash fill' the extent of which cannot be reliably inferred at this stage. It is possible that localised, historic tipping took place, potentially in a borrow-pit or similar when the former smallpox hospital was in-use (c. 1900s to 1930s). Beneath, natural soils are expected comprising residual (decomposed) bedrock.

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Subsoil or superficial soils are not recorded on the geological mapping (Figure 4) for the Site with soils underlying the topsoil likely to comprise fully decomposed bedrock. These are likely to be dominated by clays and silts (mudstone and siltstone) but with possible localised areas of sand and gravel (sandstone).

Bedrock deposits across the entire Site are Pennine Lower Coal Measures characterised by interbedded mudstone, siltstone, sandstone and coal. Locally to the Site these are recorded dipping at a very shallow angle ~ 0 to 3 degrees in a varied direction from east to south-west (Ref. M2). The structural geology locally to the Site is also varied / complex and includes a fault recorded along the alignment of Smithies Moor Lane and others in the local area together with heavy folding and possible anticline and synclines (Figure 4) locally identified by the regional dip divergence either side of the suggested crests. This complexity makes predicting the geological sequence beneath the Site difficult. Of particular significance to the Site is the presence of the Flockton Thick (FK) coal seam that is recorded outcropping 27.5 m from the Site's northern edge (Figure 5 and Consultants Coal Mining Report), the deeper Flockton Thin (FN) and the First to Third Brown Metal coal seams. The Tankersley Ironstone deposits may also be recorded below the Site but likely completely or partially weathered.

Exploratory hole records from the locality (08) that are of greatest relevance and significance to the Site's geology are located c. 200 m south-west of the Site as illustrated in Figure 5. Various boreholes were advanced across this locality to depths of up to 19.81 m below ground level, revealed a generalised sequence of: topsoil/hardstanding over; coal measures bedrock (initially sandstone becoming interbedded with a predominance of 'shale'). Blue shale with iron-staining was noted together with one possible seam of coal (0.30 m thick) at around 6.00 m depth. These deposits are thought to correspond with the

Tankersley Ironstone and Flockton Thick (recorded at thicknesses of down to 0.30 m) coal seam respectively.

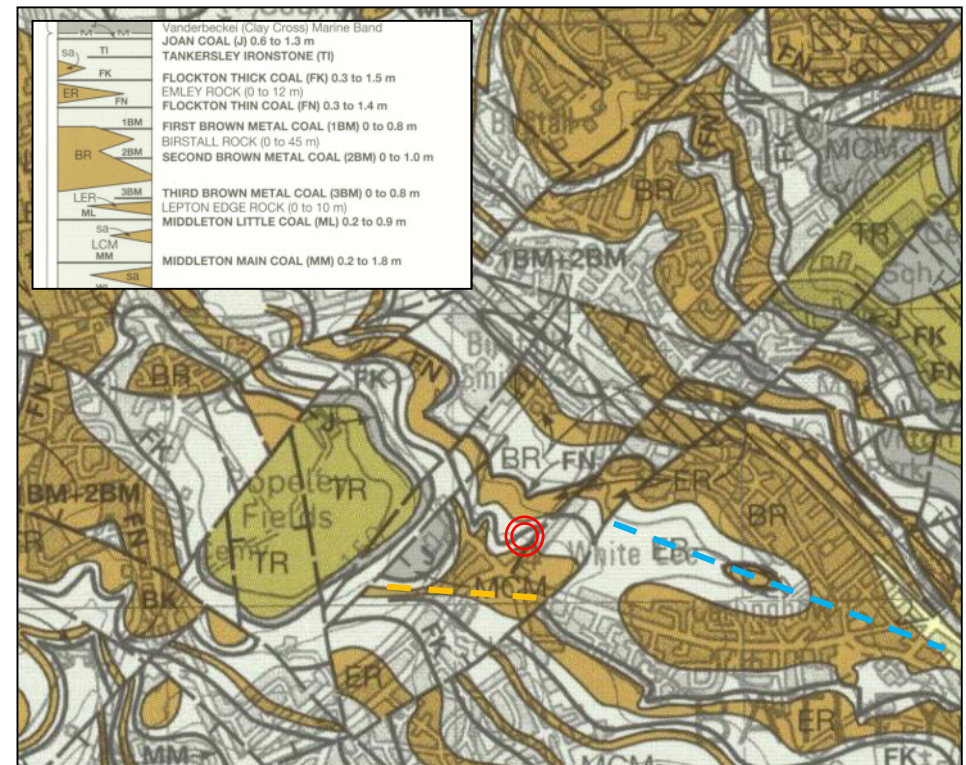


Figure 4: Geology of site and surrounding area

- > Extracted from the BGS 1:50,000 map for Huddersfield (Sheet 77) Solid and Drift Edition, under open government licence.
- > Site identified by red circle.
- > Possible anticline crest identified by blue dashed line.
- > Possible syncline trough identified by orange dashed line.
- > Insert: vertical geological section from BGS mapping (above).

2.3 Mining Geology and Mine Workings

Beneath the Site there are various mineral resources that had the potential to be extracted historically. Of these mineral resources, those significant to the development include (in descending order within the geological sequence):

- > **The Flockton Thick (FK) coal seam** (0.30 to 1.50 m thick) recorded outcropping immediately north to north-west of the Site. Also known as the Aldwalton Stone Coal, the Flockton Thick *"...is comprised of three leaves separated by dirt that in some districts preclude economic extraction. The top leaf, a cannel coal, was worked as a gas coal and for oil. The lower leaves are bituminous."* (Ref. M3).

This coal seam's base is anticipated to lie at a depth of c. 4 to 6 m below ground level across the Site (Figure 6). These predictions are based on a coal seam projection the reasoning of which is laid out within Appendix C.

There is no direct evidence of workings being present in this coal seam.

- > **The Flockton Thin (FN) coal seam** (0.30 to 1.40 m thick) recorded outcropping c. 50 m north-west of the Site. Also known as the Aldwalton Black Bed Coal, the Flockton Thin *"...is a good quality dull coal with common dirt partings. It is uniform in thickness and has been worked extensively in the area around Dewsbury and Batley."* (Ref. M3).

This coal seam's base is anticipated to lie at depths of: c. 19 to 21 m below ground level across the Site (Figure 6). These predictions are based on a coal seam projection the reasoning of which is laid out within Appendix C.

There is no direct evidence of workings being present in this coal seam however, it is a well-known coal seam locally and the mine shafts to the

north-east of the Site (Figure 5) are likely to have intersected it (depths of shafts unknown) making extraction more likely.

- > **Very old / simple mining methods** may be present where shallow seams of coal and other coal-related minerals are recorded. Shallow mining is suggested to have taken place in the local area (Ref. SP2). The shallow depth of the Flockton Thick coal seam would have made it viable for extraction by bell-pits however, the two cycles of development on Site would have likely resulted in these being encountered or else, would have triggered the need for treatment (albeit unlikely to a standard suitable for the proposed development).
- > **Non coal mine workings** within the local geological sequence would include sandstone, ironstone (commonly presenting as nodules within an iron-rich shale/mudstone) and fireclay/seatearth. Whilst the Emley Rock is a viable resource, its generally average quality (Ref. SP3), would have made underground mining less viable/likely.
- > **Mining records** including the Coal Authority's online interactive mapping and, the Consultants Coal Mining Report (Appendix B). Key points from these resources have been discussed in this section and the previous section (Section 2.2). Historical ground investigations and reporting available related to other nearby developments on the planning portal offer limited information that can be reliably related to the Site, i.e. too distant or lacking requisite information.

Hypothetical boreholes are illustrated on Figure 6 that have been used to assess whether there is 'competent cover' between any coal mine workings and the Site surface.

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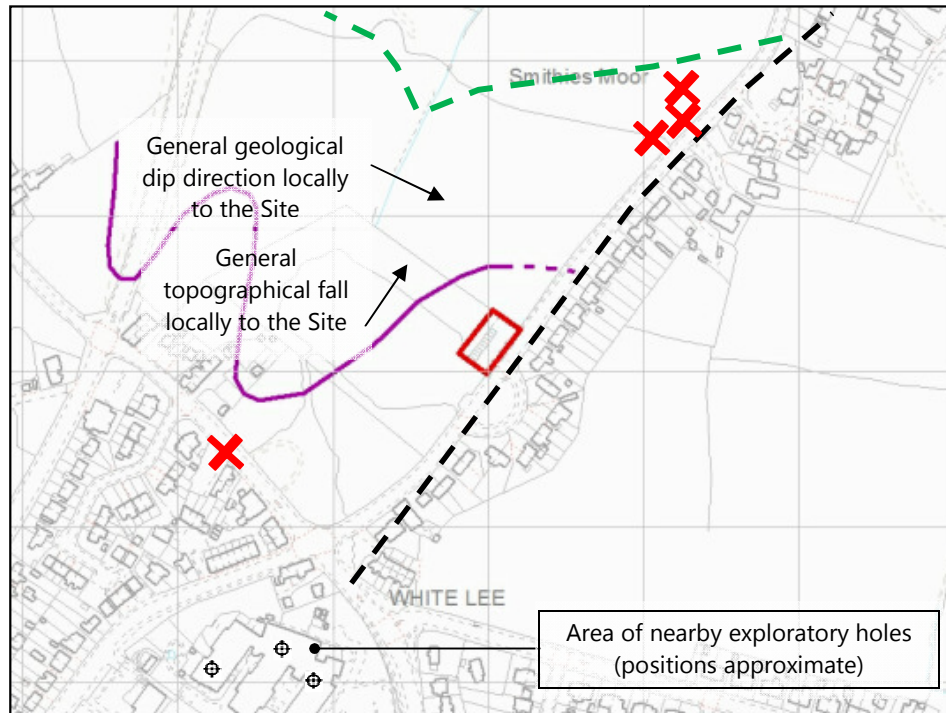


Figure 5: Local coal mining related features

- > Site boundary illustrated in red.
- > Fault illustrated by black dashes.
- > Flockton Thick (FK) coal seam outcrop illustrated in purple.
- > Flockton Thin (FN) coal seam outcrop illustrated by green dashes.
- > Mine entries (approximate positions) illustrated by red crosses.

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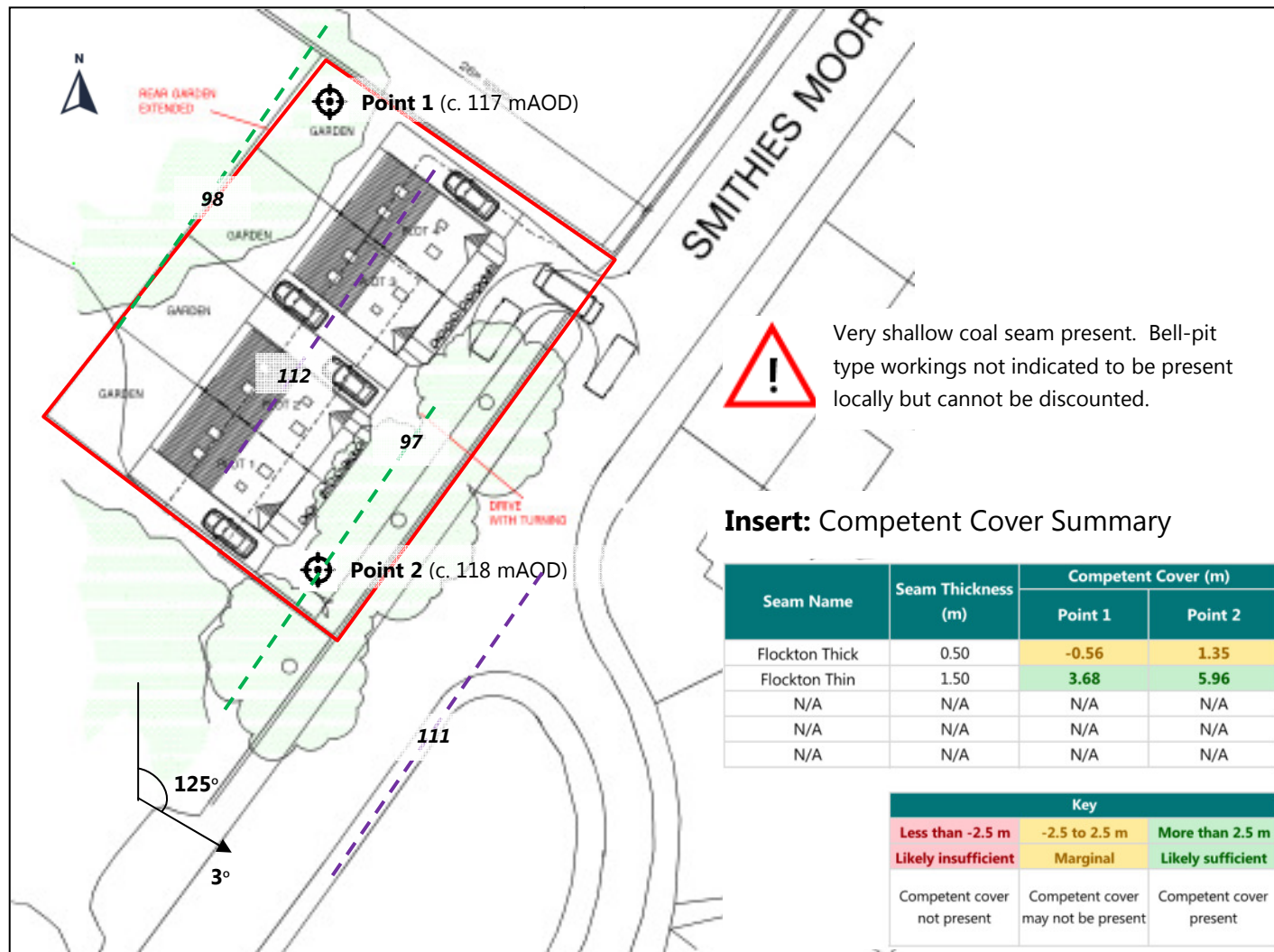


Figure 6: Flockton Thick (purple) and Flockton Thin (green) Seam Projection – development plan overlay

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3.0 Hazard Screen and Preliminary Risk Assessment

The **Hazard Screen (Table 1 and 2)** is first stage of risk management – establishing whether a hazard exists (that could present a risk). These hazards cover seven main categories further detail on which is presented in Annex 2.

Preliminary Risk Assessment (Table 3) is the second stage of risk management – establishing if the risk presented by the identified hazard is acceptable or not and, if not, what action is required to either further assess or reduce this risk. This assessment adopts the risk ratings and classifications of CIRIA C552 (Ref. C2). Referencing ‘**background threat**’ (Annex 2) as part of the Preliminary Risk Assessment is intended to support transparency; offering further detail on the hazards as well as an indication of the relative threats they pose.

Lines of evidence are used across both stages to inform the assessment. These lines of evidence relate to both the Site itself, the inherent hazards in the ground, and also the proposed development. For example, an outcropping coal seam may be present on Site but if development isn’t planned over this area then, whilst a hazard, the risk is likely be acceptably low.

Unexpected encounters can arise even where lines of evidence indicate a hazard is not present, these will need to be responded to in a safe and appropriate manner.

Figure 7 illustrates the sequential stages of risk management.

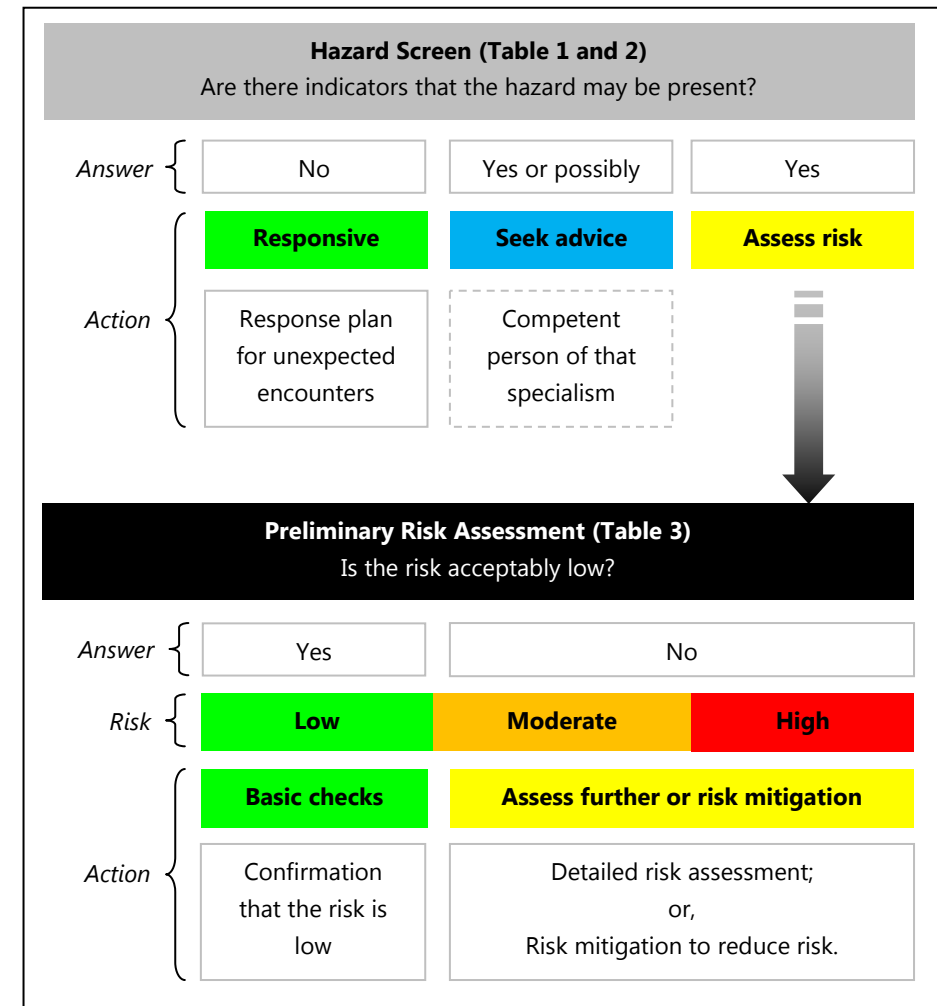


Figure 7: Decision making flowchart for risk management

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Table 1: Hazard Screen

	Indicators?	Commentary		Action
Mining Hazards				
Mine entries	No	None recorded on Site. (Appendix B)	>	Responsive
Mine workings (shallow)	No	None recorded within 30 m of Site surface. (Appendix B)	>	Responsive
Mine workings (probable)	Yes	Probable shallow mine workings recorded. (Appendix B)	>	Assess risk
Mine workings (surface)	No	None recorded on Site. (Appendix B)	>	Responsive
Mine gas sites and areas	Possible	None recorded on Site or within 250 m. Probable shallow mine workings beneath Site. (Appendix B)	>	Assess risk
Coal outcrops and sub-crops	No	Coal seam outcrop recorded 27.5 m north of Site. (Appendix B)	>	Responsive
Geological features	No	None recorded on Site. (Appendix B)	>	Responsive

Table 2: Hazard Screen – Action Summary

	Action	Outline detail of action (where 'responsive' action is recommended, confirm the suitability of response plan with the Engineer)
Mining Hazards		
Mine entries	Responsive	Notify Engineer of any evidence of marked changes of ground conditions occurs particularly where circular or square and dark grey
Mine workings (shallow)	Responsive	Refer to Mine workings (probable) below
Mine workings (probable)	Assess risk	Refer to Table 3
Mine workings (surface)	Responsive	Notify Engineer of any evidence of marked changes of ground conditions (colour, composition, 'softness')
Mine gas sites and areas	Assess risk	Refer to Table 3
Coal outcrops and sub-crops	Responsive	Notify Engineer of any evidence of coal deposits in bedrock
Geological features	Responsive	Notify Engineer of any evidence of marked changes in bedrock or broken rock (breccias)

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Table 3: Preliminary Risk Assessment

Background Threat		Consequence	Likelihood	Risk	Action
Mining Risks					
Mine workings (probable)	Moderate	Severe Rapid and large ground movement with accompanying distortion of structures or void presentation at surface (crownhole).	Unlikely Two coal seams are recorded beneath the Site that may be considered to be within influencing distance of the surface. The Flockton Thick (FK) coal seam is the shallowest seam and is predicted to lie at depth of around c. 4 to 7 m below the surface of the Site (Figure 6 and Appendix C), with the shallower depth representing the depth at the northern corner of the site. This coal is recorded as being generally variable quality and the Coal Authority does not hold formal records of it being worked beneath the Site or within the immediate vicinity. Coal seam projection (Appendix C) has been undertaken based on an outcrop presentation using best available estimates of distances, thicknesses and angles. In general however, it is considered likely that the Flockton Thick will be present at slightly shallower depths across the site based on an upper limit on the dip angle being adopted. Notwithstanding possible depth variances, the coal seam is considered to be very shallow and, based on the overlying weak, 'shale' deposits, any ground movement resulting from workings in this seam likely to have manifest at the surface or already occurred. The current structural condition of the garages ('average to poor' but with no signs of major structural stress) suggests no significant ground movement has occurred since the 1980s when the garages were constructed. Coal seam projection and competent cover assessments (Figure 6 and Appendix C) find that 'marginal' cover is present for an extraction thicknesses of 0.50 m and working to 10 times of 'competent material' needing to be present. The 10 times rule is considered conservative in this situation, primarily based on the shallowly bedded nature of the coal seam and overall, whilst suggesting a low likelihood of surface instability if relic voids/workings are present, the assessment directs the need for some further assessment.	Moderate / Low	Further Assessment Is recommended to confirm the nature, and condition of the shallow bedrock geology across the Site – shallow mine workings present? Responsive Subject to the findings of the Further Assessment it is recommended that: if any local variances in soils or rocks beneath the Site are observed, e.g. areas of comparably looser/softer or irregularly sorted/bedded material, then the advice of a suitably qualified Engineer should be sought.

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		The Flockton Thin (FN) coal seam underlies the Flockton Thick (FK) at predicted depths of around 10 to 15 m separation (Figure 6). The Flockton Thin coal seam is considered more likely to have been worked based on the better quality of coal, the thicknesses recorded locally (up to 1.40 m) and the presence of nearby coal mine shafts that would have intersected this coal seam. Notwithstanding these probable workings/voids, based on the presence of competent cover above the coal seam being greater than 10 times (10t) the likely worked thickness (1.40 m thickness assumed, Figure 6), it is considered unlikely that roof failures within this seam will result in the propagation of collapses to the surface. Furthermore, with between 10 to 15 m separating the Flockton Thick and Flockton Thin coal seams, the potential for cumulative collapse in the lower seam (FN) triggering collapse in the upper seam (FK) that in turn result in surface collapses is considered unlikely. Note on the rule-of-thumb: This rule-of-thumb (10t) is considered appropriate in this geological setting with no obvious indicators prompting increasing this ratio. It is acknowledged that there is the potential for pillar failure to occur that could result in more widespread and significant ground movement to occur. However, the background threat of this failure mechanism is considered relatively low to localised crownhole formation that results from progressive roof collapse between pillars of intact coal (left in for support).		
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Table 2: Preliminary Risk Assessment, continued

	Background Threat	Consequence	Likelihood	Risk	Action
Mining Risks, continued					
Mine gas sites and areas	High	Severe Ingress and accumulation of asphyxiant, toxic or explosive gases into occupied spaces.	Unlikely Coal workings are potentially present beneath the Site at shallow depths (Flockton Thick and Flockton Thin). Where cavities remain and are unflooded mine gas is likely to have accumulated making them a potential source of mine gas. No mine gas incidents/sites are recorded within 500 m of the Site within the Consultants Coal Mining Report. The Flockton Thick coal seam is considered to be very shallow and less likely worked and therefore exists as either; a diminished source (very shallow presentation making de-gassing more likely) or, not serve as a direct, on Site source of mine gas (where unworked). The Flockton Thin coal seam is considered more likely to have been worked. Notwithstanding, at the depths recorded (c. 20 m beneath the Site), where left undisturbed present less of a hazard with any degassing of the mine occurring in a broad and diffuse way or else through pressure/water driven flow through major voids, e.g. mine entries and more permeable zones, e.g. faults. The presence of a nearby fault (within Smithies Moor Lane) serves as a potential, higher permeability zone through which mine gas may escape to the near-surface. Whilst the pathway is viable the location of the fault within the road gives rise to a higher likelihood that degassing at the surface will occur through service corridors rather than onto the Site. Based on the lines of evidence above it is considered unlikely that mine gas would impact the proposed development.	Moderate / Low	Further Assessment Is recommended to confirm the nature, and condition of the shallow bedrock geology across the Site – shallow mine workings present? Responsive Subject to the findings of the Further Assessment it is recommended that: if any local variances in soils or rocks beneath the Site are observed, e.g. areas of comparably looser/softer or irregularly sorted/bedded material, then the advice of a suitably qualified Engineer should be sought.

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4.0 Engineering Considerations

The following sub-sections offer preliminary coal mining related advice with respect to the engineering works required as part of the development. It should be borne in mind that this advice is subject to the findings of the further assessment recommended herein and should not be relied upon to inform design decisions.

The development design is outlined Section 1.2 together with the likely groundwork activities required as part of the development.

General ground-related hazards and design considerations, e.g. excavation stability, are beyond the scope of this reporting.

4.1 General Groundwork

Coal deposits are not anticipated to be encountered as part of the development-related groundwork on Site (assuming excavations deeper than 2.50 m below ground level are unlikely). If and where coal is encountered, the advice of the Engineer should be sought.

4.2 Structural Engineering

As detailed in Table 3 and Section 5.0 hereafter, further assessment of the Site's shallow geology is recommended to verify the ground model.

Sub-structure design (foundations and ground floor slabs) will be subject to the findings of this further assessment and is based on two conditions;

1. If no evidence of shallow coal mine workings is revealed on Site then, notwithstanding other ground-related influences, e.g. zone of influence of trees, shallow strip footings and ground bearing floor slabs are likely to be a suitable option,

2. If evidence of shallow coal mine workings is revealed on Site then mitigation works will likely be required, e.g. grouting of mineworking voids, in advance of any decision of foundation options.

In general, given the anticipated shallow depth to bedrock on Site, the adoption of spread foundations, i.e. strips, is likely to be most favourable in either instance.

If piles are adopted and reliant on any end bearing, the advice of the Engineer/Designer is sought in relation to any potential instability issues associated with possible coal workings.

The ventilation of sub-floor voids is common within modern developments and, whilst not specifically recommended in this instance, would offer inherent protection against any ground gases (including mine gas) that may arise from the geology underlying the Site.

4.3 Civil Engineering

Hard-standing design will be subject to the further assessment of risk presented by the possible shallow coal mine workings beneath the Site.

4.4 Mechanical Engineering

Vertical ground source heat pumps (GSHP) screen as 'favourable' (Ref. M1) for the Site with open or partially open mine workings seen as potentially favourable conditions for the adoption of such systems (provided there are no stability issues associated with the workings themselves of the introduction of GSHP systems).

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5.0 Conclusion and Recommendations

Based on the available information the Site's mining legacy is considered to be generally well-characterised (within the scope of this reporting) and whilst unforeseen conditions always remain possible, e.g. unrecorded mine entries, these are considered a low likelihood.

In conclusion, the Coal Mining Risk Assessment finds that;

- > The risk rating of the Site is assessed as Moderate to Low and;
- > Residual risks associated with coal mining are identified in relation to the proposed development for which further assessment and precautionary mitigation are recommended.
- > Establishing response plans for unforeseen hazards is also recommended.

Recommended follow-on work includes:

1. [Review of residual hazards and residual risks](#) identified herein;
2. [Submission of the Coal Mining Risk Assessment](#) to the local planning authority and the project design team;
3. [Further assessment](#) is recommended to investigate the nature and condition of the shallow geology on Site;
4. [Mitigation](#) is not recommended at this stage but subject to the findings of the further assessment;
5. [Response plans](#) being established for hazards that are not indicated to be present but may nonetheless be unexpectedly encountered.

Cross-referencing these recommendations with those of any other ground-related reporting is also recommended.

5.1 Further Assessment

To verify the ground model detailed herein (Figure 6) it is recommended that further assessment is undertaken. This further assessment should take the form of an intrusive ground investigation and update to the coal mining risk assessment.

Given the anticipated ground model for the Site (specifically the very shallow depth of the Flockton Thick coal seam) machine excavated trial pits and/or borehole drilling could be adopted as a method for investigating the shallow ground conditions on Site. Attention should be given to:

- > Not compromising proposed foundations through loss of support;
- > The presence of fill deposits on Site suggesting historical infilling;
- > The depth to rockhead, its nature and strength characteristics over as deep a profile as practicable;
- > The possible presence of coal deposits within 4.0 m of the surface of the Site;
- > The potential presence of naturally broken ground (breccias around the locally recorded fault. Potentially confused with 'broken ground' resulting from mine-working collapse.

Idealised exploratory hole positions are illustrated in Figure 8.0.

Permission to enter coal mining interests will be required from the Coal Authority if and where coal deposits are encountered as part of any groundwork, including ground investigation.

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Smithies Moor Road, Birstall, Batley

SOIL AND STRUCTURES

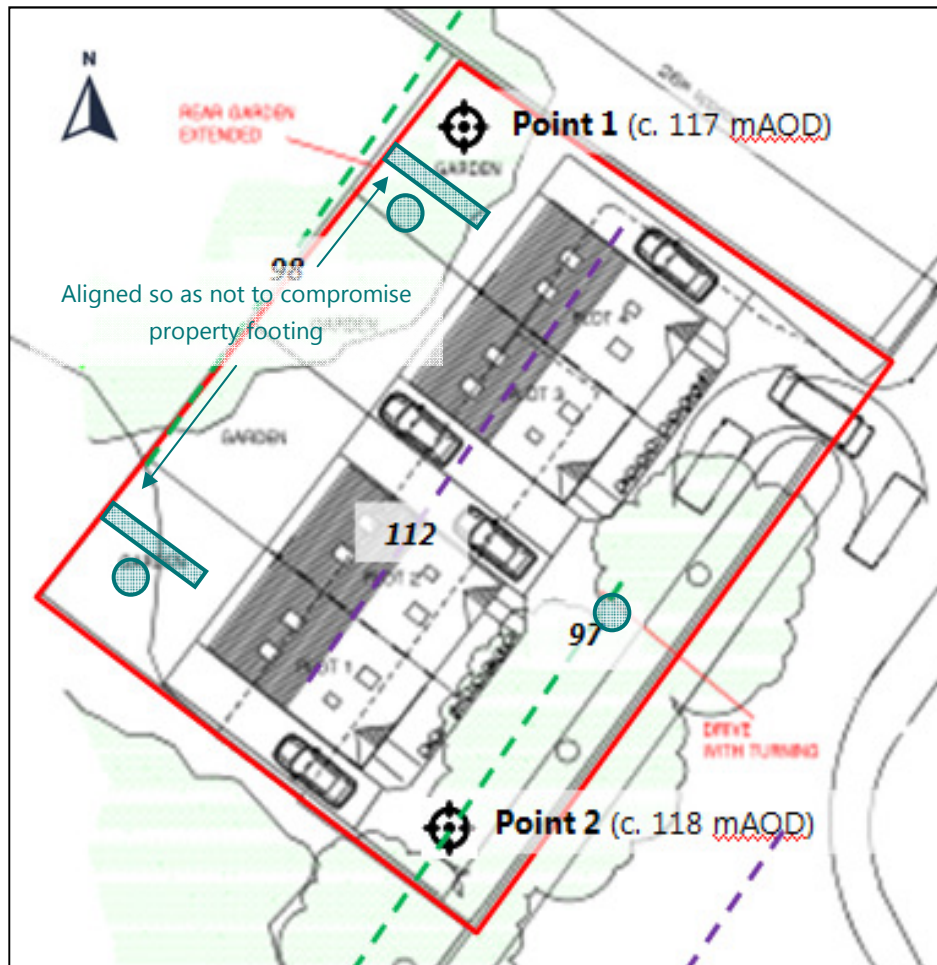


Figure 8: Idealised exploratory hole location plan

- > Extracted from Figure 6.
- > Machine excavated trial pits (rectangle) and boreholes (circle) illustrated however trial pits may be sufficient.

6.0 References

Core guidance

- C1:** CIRIA Report C758 Abandoned Mine Workings Manual (2019)
- C2:** CIRIA Report C552 Contaminated land risk assessment - a guide to good practice (2001)

Mining & geological references

- M1:** <http://mapapps2.bgs.ac.uk/gshpnational2/app/index.html>
- M2:** <http://mapapps2.bgs.ac.uk/coalauthority/home.html>
- M3:** <https://www.bgs.ac.uk/Lexicon/>

Site specific references

- SP1:** BGS 1:50,000 Mapping (Sheet 77 - Huddersfield).
- SP2:** https://www.geocaching.com/geocache/GC34Z76_white-lee-pit-the-first-of-batleys-pits
- SP3:** <http://www.wyorksgeologytrust.org/walksleaflets/kirklees/caulmswood.pdf>

Coal Mining Risk Assessment

Annex 1 – Context and Scope



Context

The purpose of site investigation is to reduce uncertainty in the ground.

For all site investigations the [legal imperative for reducing uncertainty](#) is primarily governed by health and safety law; identifying hazards and, where present, limiting their potential for harm. In addition, the reduction of uncertainty also applies to: various environmental laws (relating to the prevention of pollution and harm); as well as, the commercial risk of potential abnormal groundwork costs.

Current [UK planning policy](#), the National Planning Policy Framework (NPPF)¹, makes reference to the need to ensure that '*a site is suitable for its proposed use taking into account of ground conditions and any risks arising from land instability and contamination*' (Paragraph 178). The NPPF also makes reference to the need to adopt Mineral Safeguarding Areas (Paragraph 204).

In practice, this policy is implemented through planning conditions. Where applied, these conditions compel the developer to demonstrate the site is '[suitable for its proposed use](#)' with respect to contamination and, in former mining areas, with respect to stability. Within Mineral Safeguarding Areas, planning conditions may also compel the developer to evaluate the viability of prior-extraction of a mineral before a development 'sterilises' the ground.

The assessment of other ground-related hazards, e.g. slope stability or collapsible soils, is typically not conditioned (unless a specific hazard locally) but rather an inherent part of the engineering design.

Scope

The first stage of a 'coal mining site investigation' is invariably a desk-based exercise and can either be part of a broader-focused Desk Study or, more commonly, a standalone report; the Coal Mining Risk Assessment. The scope of this first stage includes both: i) an assessment of coal and non-coal mining related risk; as well as, ii) preliminary advice relating to ground engineering that may be influenced by coal and non-coal mining hazards.

The [assessment of risk](#) is guided by a series of international standards including ISO 31000:2018² 'Risk Management – Guidelines'. The Coal Mining Risk Assessment is developed with reference to this guidance and other additional UK and sector-specific guidance that includes; the Construction (Design and Management) Regulations (2015)³ and, the Coal Authority's online guidance⁴.

The [preliminary advice relating to ground engineering](#) covers three engineering disciplines; structural, civil and mechanical. The inclusion of this advice is designed to offer practical advice and, alongside a description of the development design earlier in the Coal Mining Risk Assessment, a fuller picture of the likely changes that the site's ground will undergo. This feeds into the risk assessment with the groundworks invariably changing a site's risk profile.

The [value of a desk-based Coal Mining Risk Assessment](#) is in the early identification and assessment of mining hazards. A well-undertaken Coal Mining Risk Assessment is the most cost-effective way to reduce uncertainty.

¹

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/NPPF_Feb_2019_revised.pdf

² <https://www.iso.org/iso-31000-risk-management.html>

³ <http://www.hse.gov.uk/construction/cdm/2015/index.htm>

⁴ <https://www.gov.uk/guidance/planning-applications-coal-mining-risk-assessments>

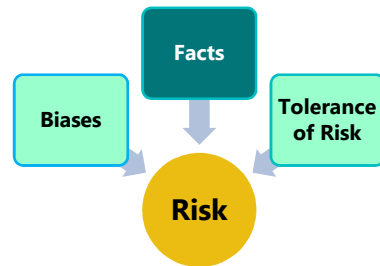
Coal Mining Risk Assessment

Annex 2 – Background Threat and Risk

This annex offers further reading and background information relating to the referencing of ‘background threat’ within the risk assessment process.

Introduction

Risk is an inherent part of all decisions and everyone has an appreciation of risk. How risk is assessed by both individuals and organisations is guided by three main influences; facts, biases and tolerance of risk.



Acknowledgement of this interplay is important given that, as well as informing the assessment; it also informs the response to risk – the practical outcome of the theoretical process. To support greater ownership of the assessment and any recommended actions, risk assessments should therefore aim to be; clear, proportionate and transparent (evidence-based).

Risk Assessment Influences

Biases: There are many types of biases that affect decisions or judgements including: i) *commercial bias*; does a given risk rating confer commercial opportunities or benefits on the person undertaking the assessment?; or, ii) *confirmation bias*; has the assessor not encountered any problems in similar scenarios and therefore generalised or under-assessed the risk rating.

Facts: The most important and ideally, guiding factor for the assessment of risk. Facts need to be evidenced clearly and assessed by a competent person¹.

Tolerance of Risk²: Is informed by both societal and individual factors. Societal factors may include: is the hazard acceptable at all, e.g. locating nuclear power stations within urban areas; or, balancing scientific and technological advances with possible burdens to society and the economy. An example of this for land contamination is the relaxation of ‘excess lifetime cancer risk (ELCR)’ as part of generic assessment criteria for soil testing (society accepting more risk). Individual factors may include: how a given risk affects them, their family and their values; or, accepting a higher risk for a greater reward.

Background Threat

Referencing ‘background threat’ as part of the Preliminary Risk Assessment is intended to offer further detail on the hazards as well as an indication of the relative threats they pose. This aims to support; clarity, transparency and proportionality and help the reader better contextualise the risk and through this, have greater ownership of the risk and any recommended actions.

Within the following tables, details on plausible routes or ‘exposure pathways’ by which a hazard may result in harm or other outcomes are detailed together with commentary on the assigned ‘background threat’ levels. The rating of ‘background threat’ is traffic-lighted between; high, moderate and low, with the nuances of the rating drawn more fully out within the commentary provided.

¹ <http://www.legislation.gov.uk/ukxi/2015/51/contents>

² <http://www.hse.gov.uk/risk/theory/r2p2.pdf>

Coal Mining Risk Assessment

Annex 2 – Background Threat and Risk

Background threat	Exposure pathway	Rationale for assigned level of threat (Incident data, public perception and general commentary on harm and other impacts)
Mining Risks		
Mine entries <i>Includes: mine shafts (vertical), adits (off-horizontal) and bell-pits that are characterised by voided or partially voided ground.</i>	High Harm: falls from height, burial and crushing; and, ingress and accumulation of asphyxiant, toxic or explosive gases into occupied spaces. Other impacts: no-build zones; time-delays; and, damage to plant, structures and sub-structures.	Aggregated incident data for harm and other impacts is not readily available however whilst considered a low likelihood, there are recent examples of mine-entries resulting in harm³ and possible harm⁴. Other impacts are likely to be frequent though generally non-reportable (some exceptions⁵⁶) as they're dealt with through the development process, e.g. mine entry filling, capping and no-build zones. The very rapidly developing nature of the hazard means that it does have an innate threat. Mine entries can occur anywhere throughout the UK where underground mineral extraction took place. Public perception of the threat 'mine shafts' pose is high⁷ given its perceived threat. Harm: With confirmed and possible links to recent injuries and fatalities, the threat of harm is considered high. Other impacts: With potentially large time and cost implications (on a site-by-site basis) for responding reactively to the adverse affects of collapsible soils the threat of other impacts is also considered high.

³ <https://www.scotcourts.gov.uk/search-judgments/judgment?id=eca78aa6-8980-69d2-b500-ff0000d74aa7>

⁴ <https://www.birminghammail.co.uk/news/local-news/couple-were-killed-by-fumes-from-old-27517> (possible unrecorded mine entry permitting mine gas emissions)

⁵ <https://www.manchestereveningnews.co.uk/news/local-news/two-middleton-bungalows-built-over-7644082>

⁶ <https://www.gov.uk/government/news/coal-authority-completes-works-to-secure-gosforth-mineshaft>

⁷ <https://hansard.parliament.uk/Commons/2016-05-26/debates/16052643000001/CoalAuthority%28CompensationProcedures%29>

Coal Mining Risk Assessment

Annex 2 – Background Threat and Risk



Background threat	Exposure pathway	Rationale for assigned level of threat (Incident data, public perception and general commentary on harm and other impacts)
Mining Risks, continued		
Mine workings (shallow) <i>Includes: recorded coal mine workings either within 50 m or 30 m of the ground surface within which collapses (via various mechanisms) may result in ground movement at the surface.</i>	Moderate	Aggregated incident data for harm and other impacts is not readily available however, overall there are a low number of recorded public or non-coal mining workforce fatalities and incidents relating to shallow mine workings. Other impacts do occur on a more frequent basis⁸ with the Coal Authority responding to and dealing with around 250 cases of coal mining related subsidence substantiated per year⁹. The rapidly developing nature of the hazard means that it does have an innate threat. Shallow mine workings can occur anywhere throughout the UK where underground mineral extraction took place. Public perception of the threat 'mine workings' pose is likely varied given its technical nature. Harm: With no known fatalities but confirmed year on year incidents and potential for harm, the threat of harm is considered moderate. Other impacts: With potentially high time and cost implications (on a site-by-site basis) for responding reactively to the adverse affects of shallow mine workings the threat of other impacts may be deemed high however, with the overall low frequency, is considered moderate.
Mine workings (probable) <i>As for shallow mine workings but 'unrecorded' either due to the lack of records.</i>	Moderate	Probable mine workings carry the same background threat as shallow mine workings (above) albeit the assessment of this hazard needing to be more in-depth given that direct records of mining activities are unlikely to exist.

⁸ <https://www.gov.uk/government/publications/coal-authority-technical-guidance-note-tgn012019>

⁹ <https://www.todaysconveyancer.co.uk/partner-news/associated-risks-with-coal-mining-subsidence/>

Coal Mining Risk Assessment

Annex 2 – Background Threat and Risk



Background threat	Exposure pathway	Rationale for assigned level of threat (Incident data, public perception and general commentary on harm and other impacts)
Mining Risks, continued		
Mine workings (surface) <i>Includes: open cast mine workings, one common type of which is open cast coal sites (OCCS), that have been backfilled or left open.</i>	Moderate	Harm: none that are directly linked or obviously plausible (unless present as open excavations/quarries where falls from height and other pathways may manifest) Other impacts: time-delays and damage to plant, structures and sub-structures. Incident data for harm is not readily available however the generally slow developing nature of the hazard (unless via inundation that occurs under very specific conditions) means that it doesn't have an innate threat. Other impacts are recorded as case-studies within technical guidance¹⁰ that have resulted in significant remedial costs. Public perception of the threat of 'quarries' is relatively high but the perception of 'buried' open cast coal sites likely low. Harm: The slow onset of this hazard means it is more likely to be observed before a threat of harm can develop and is therefore considered low. Other impacts: With potentially large time and cost implications (on a site-by-site basis) for responding reactively to the adverse affects of surface mineworkings, the threat of other impacts is considered moderate.

¹⁰ Building on fill: geotechnical aspects 3rd edition 2015 (FB 75)

Coal Mining Risk Assessment

Annex 2 – Background Threat and Risk

Background threat	Exposure pathway	Rationale for assigned level of threat (Incident data, public perception and general commentary on harm and other impacts)
Mining Risks, continued		
Mine gas <i>Includes: carbon dioxide (from natural degradation and underground fires); carbon monoxide (from underground fires); methane (from natural degradation); hydrogen (from fossil fuel deposits including coal); and hydrogen sulphide (from natural processes and underground fires).</i>	High Harm: ingress and accumulation of asphyxiant, toxic or explosive gases into occupied spaces. Other impacts: damage to structures and sub-structures.	Aggregated incident data for harm and other impacts is not readily available however there are recent examples of mine-gases resulting in harm¹¹¹²¹³ and possible harm¹⁴ that indicate the hazard is a present threat. Other impacts are likely to be frequent though generally non-reportable as they're dealt with through the development process, e.g. installation of gas protection. The very rapidly developing nature of the hazard means that it does have an innate threat. Mine gases can arise anywhere throughout the UK where underground mineral extraction took place with 'coal mine gases' being particularly prevalent and potent. Public perception of the threat of 'mine gas' is likely varied given the technical nature but tending to be high given the association with 'gas hazards' in general. Harm: With confirmed and possible links to recent injuries and fatalities, the threat of harm is considered high. Other impacts: With potentially large time and cost implications (on a site-by-site basis) for responding reactively to the adverse affects of mine gas the threat of other impacts is also considered high.

¹¹ <https://www.constructionnews.co.uk/archive/pipe-layers-valiant-rescue-bid-turned-to-tragedy-after-he-succumbed-to-deadly-gas-bravery-of-son-who-gave-his-life-for-dad-03-06-1999/>

¹² <https://www.birminghammail.co.uk/news/local-news/couple-were-killed-by-fumes-from-old-27517>

¹³ <https://www.bbc.co.uk/news/uk-scotland-edinburgh-east-fife-27905611>

¹⁴ <https://www.birminghammail.co.uk/news/local-news/couple-were-killed-by-fumes-from-old-27517> (possible unrecorded mine entry permitting mine gas emissions)

Coal Mining Risk Assessment

Annex 2 – Background Threat and Risk



Background threat	Exposure pathway	Rationale for assigned level of threat (Incident data, public perception and general commentary on harm and other impacts)
Mining Risks, continued		
Coal outcrops <i>Includes: all mineral outcrops but with particular reference to coal with the potential for spontaneous combustion and also degradation.</i>	Moderate	Harm: explosion or emission of asphyxiant, toxic or explosive gases. Other impacts: time delays and damage to plant, structures and sub-structures. Incident data for harm and other impacts is not readily available however there are recorded instance of underground fires¹⁵ and instances of spoil heap fires (a related phenomenon)¹⁶. The rapidly developing nature of the hazard means that it does have an innate threat. Coal or mineral outcrops can occur anywhere in the UK however, given the greater threat posed by coal outcrops (potential for burning) it generally relates to the former coalfield regions. Public perception of the threat of 'coal outcrops' is likely low given the technical nature. Harm: The potentially rapidly developing nature of the hazard means the threat of harm is considered high with the relatively low likelihood of incidents reducing this to moderate. Other impacts: With potentially high time and cost implications for responding reactively to the adverse affects of coal outcrop the threat of other impacts may be deemed high however, with the overall low frequency, is considered moderate. For other impacts, basis engineering design, e.g. not founding on coal deposits, can mitigate against ground movement associated with degradation of the coal; a lesser but none-the-less important pathway.

¹⁵ <https://www.bbc.co.uk/news/uk-england-stoke-staffordshire-28244420>

¹⁶ <http://www.dmm.org.uk/news19/9370327m.htm>

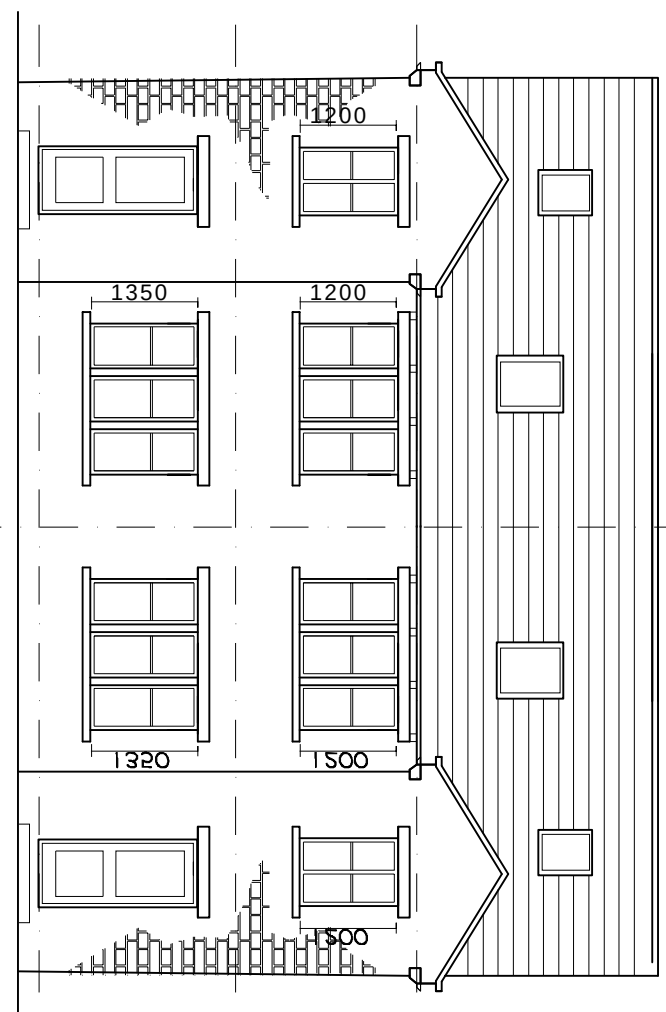
Coal Mining Risk Assessment

Annex 2 – Background Threat and Risk

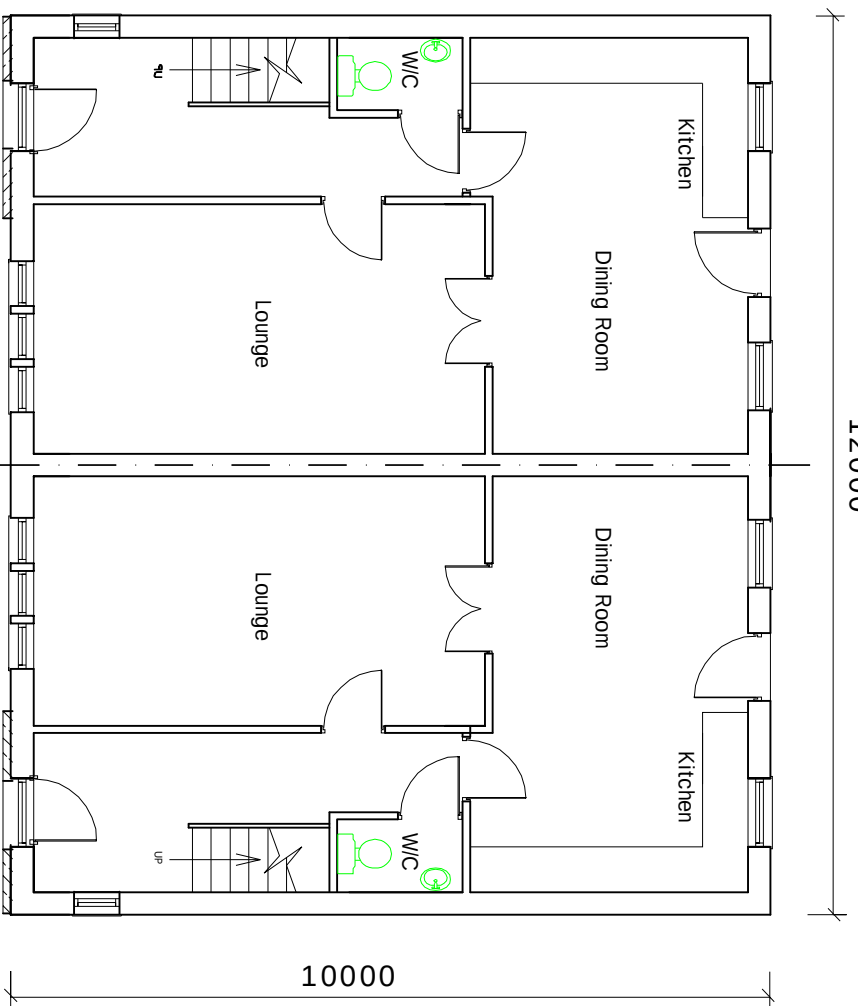


Background threat	Exposure pathway	Rationale for assigned level of threat (Incident data, public perception and general commentary on harm and other impacts)
Mining Risks, continued		
Geological features <i>Includes: faults that can be re-activated when the hydrogeological / groundwater regime changes, generally a historical hazard when deep mine pumps were stopped (primarily in coal mines) – that have largely all ceased in the UK.</i>	Moderate	Incident data for harm and other impacts is not readily available however nationally significant incidents have taken place that are not known to result in direct harm but significant other impacts¹⁷. However, the frequency with which this hazard manifests is considered to be low particularly in current context of very limited deep mines and actively managed / pumped closed mines. Public perception of the threat of 'faults' is likely varied given the technical nature but tending to be high given the association with seismic activity. Harm: The rapidly developing nature of the hazard means the threat of harm is considered high however the low frequency of incidents (none known to have been recorded in recent decades) reduces this to low. Other impacts: With potentially high cost implications for responding reactively to the adverse affects of geological features the threat of other impacts is considered high however the low frequency of incidents reduces this to low.

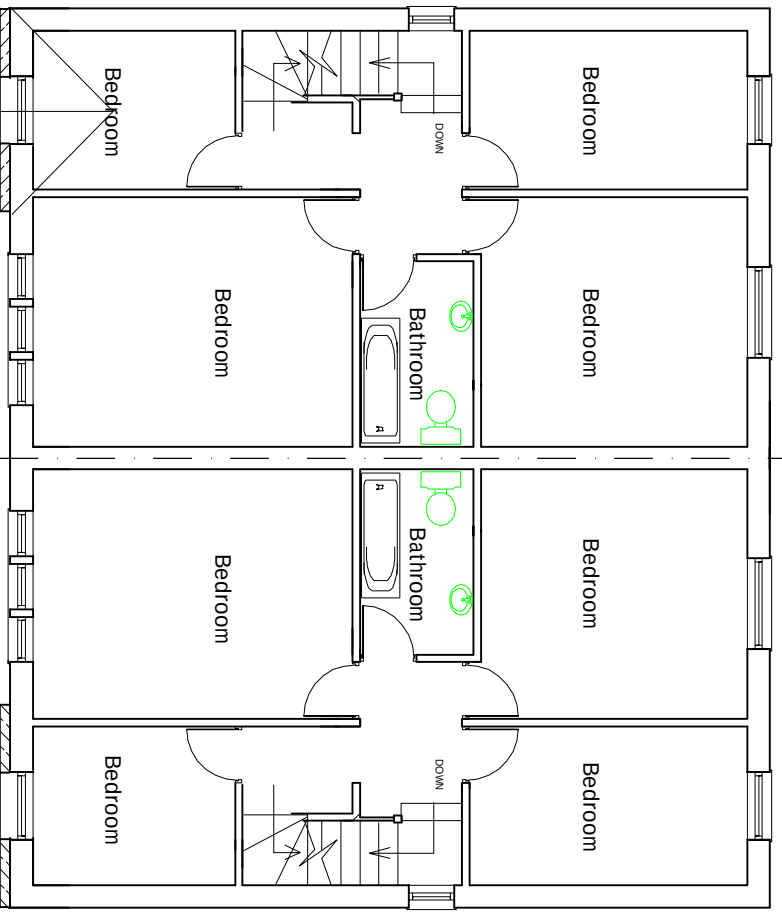
¹⁷ <https://pubs.geoscienceworld.org/qjehg/article-abstract/39/1/5/114636/A-review-of-coal-mining-induced-fault-reactivation?redirectedFrom=fulltext>



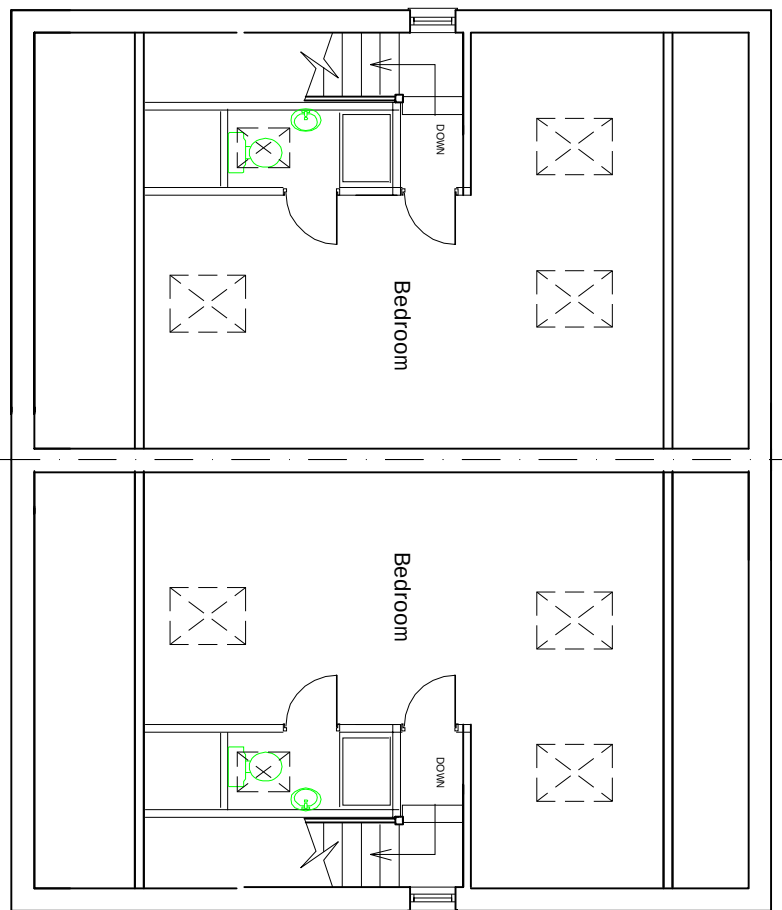
FRONT ELEVATION



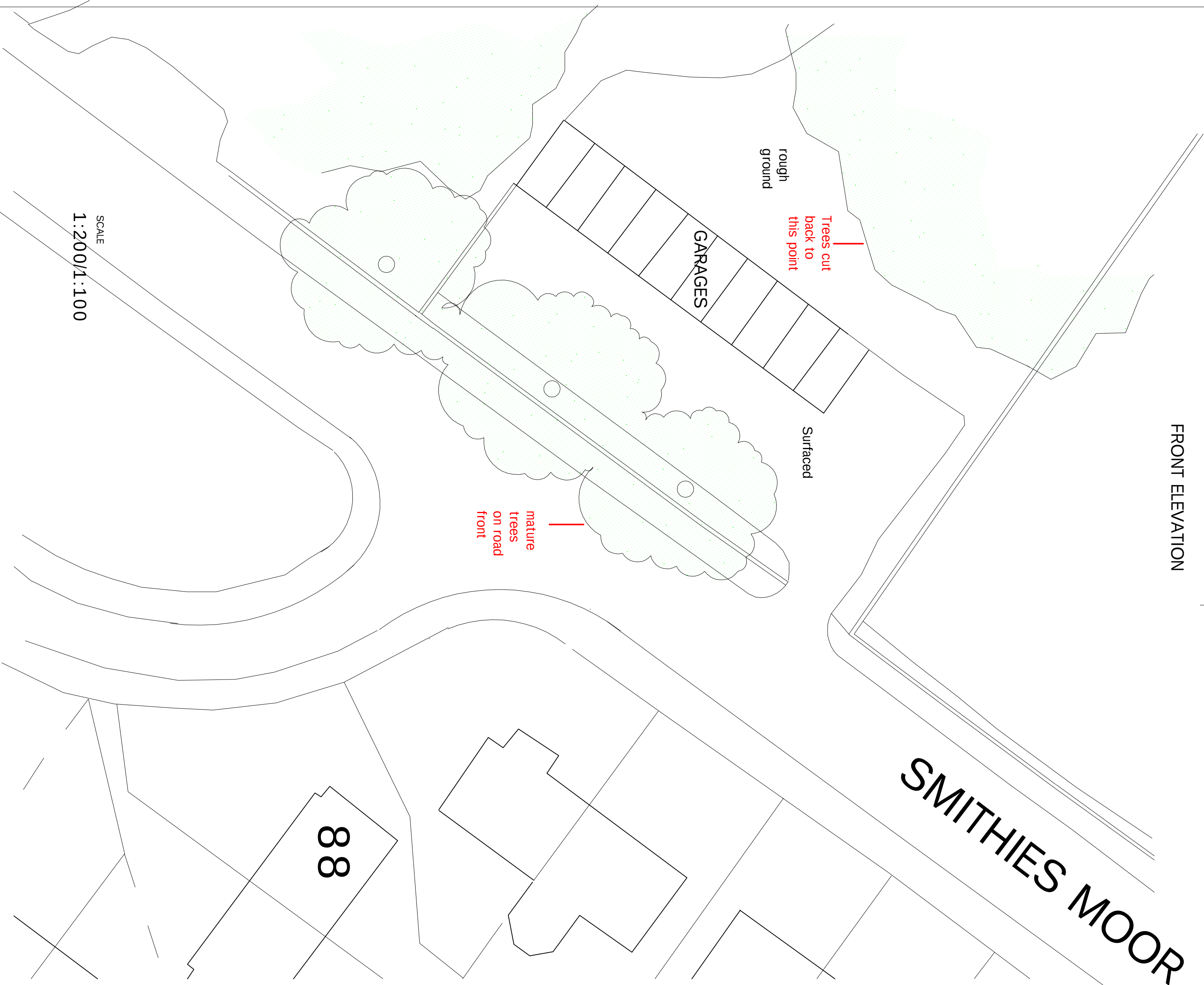
FIRST FLOOR PLAN



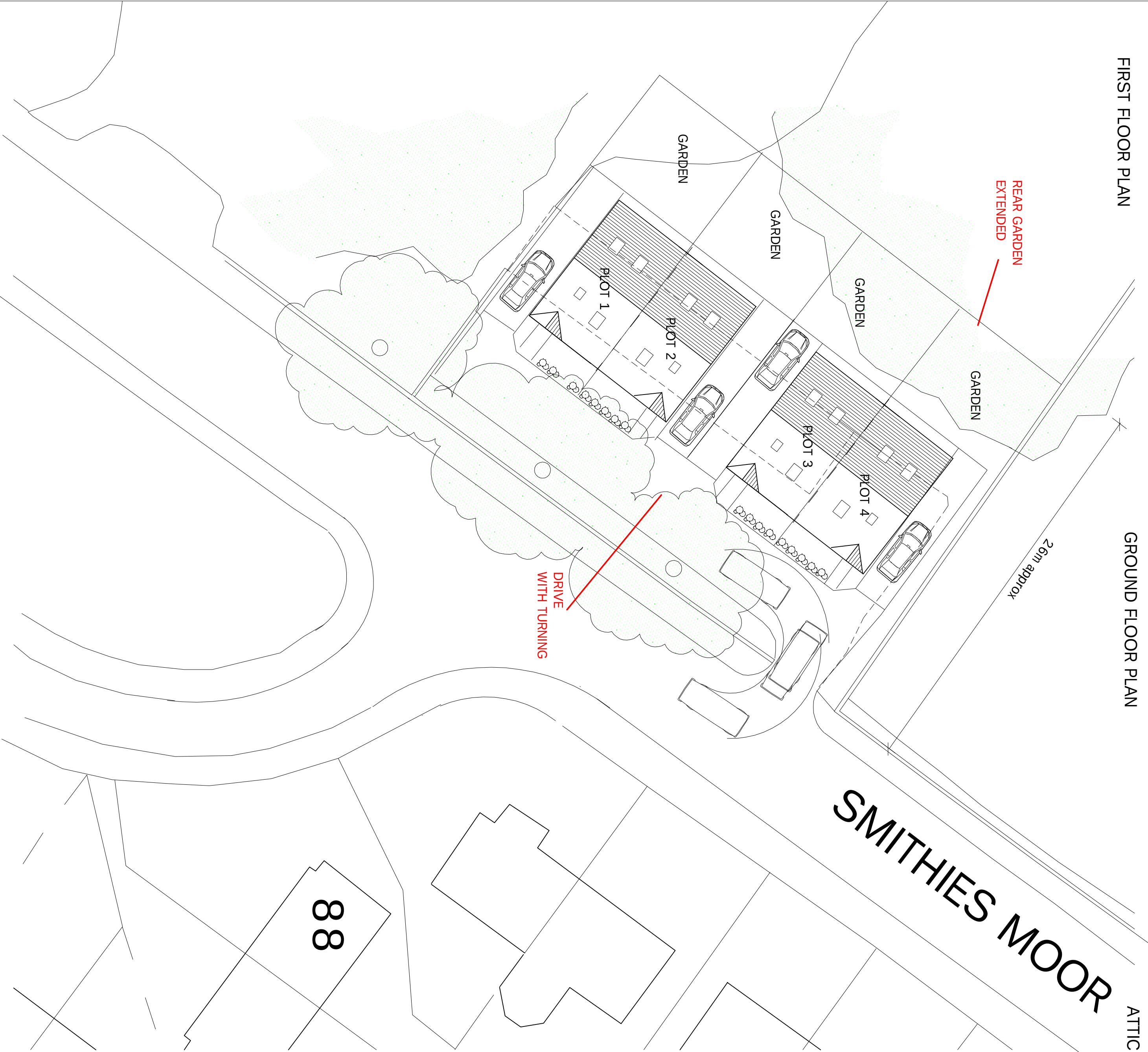
GROUND FLOOR PLAN



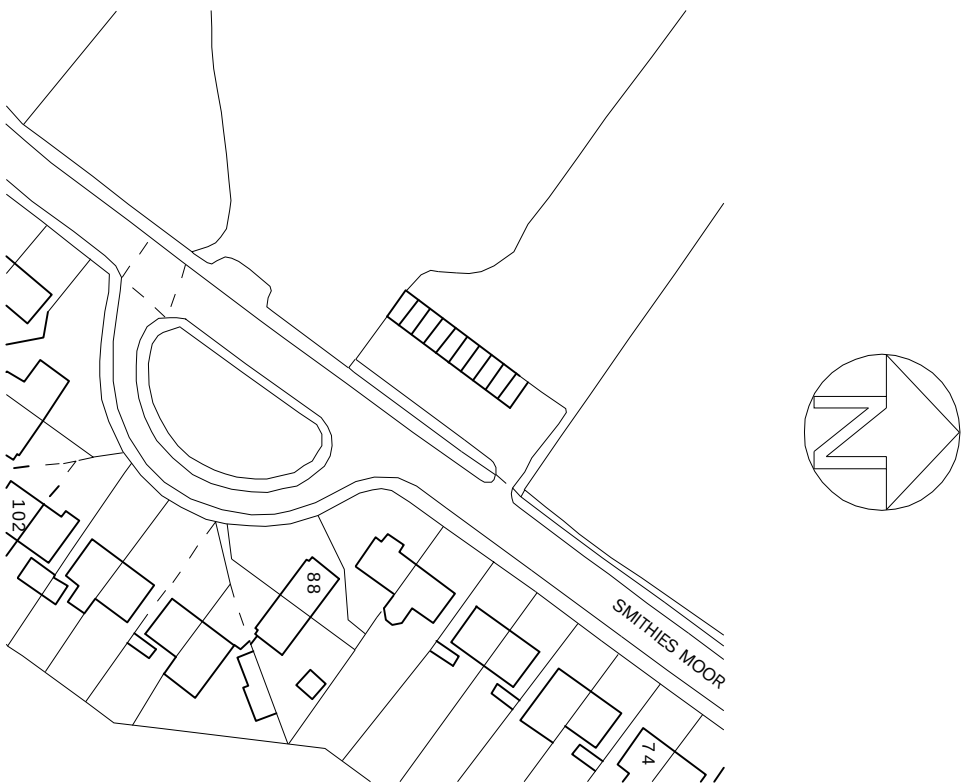
ATTIC PLAN



SITE PLAN AS EXISTING 1:200



SITE PLAN AS PROPOSED 1:200



LOCATION PLAN 1:1250

REVISIONS

NOTES:-
All work to be carried out in accordance with the current Building Regulations.
The drawings are prepared in accordance with the current Building Regulations.
contract drawings prepared. Always work to written dimensions as a preference to
scaling. Please query if in doubt.
This drawing is copyright and must not be reproduced or copied without
permission.

DRAWING
PLAN AS EXISTING
SKETCH PLAN

CONTRACT
SITE AT:-
SMITHIES MOOR LANE
BIRSTALL
CLIENT

DRAWING NO
SR-2205-1

DATE
MAY 2019



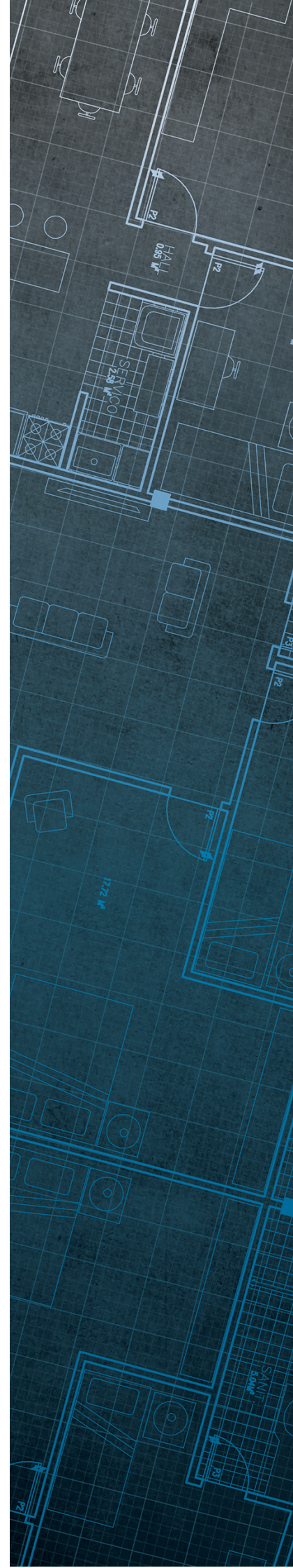
The Coal
Authority

Consultants Coal Mining Report

Land Opposite 86 Smithies Moor
Lane
Birstall
Batley
Kirklees
WF17 9AN

Date of enquiry:	30 October 2019
Date enquiry received:	30 October 2019
Issue date:	30 October 2019

Our reference:	51002182514001
Your reference:	



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

KINGSCROWN DEVELOPMENTS

Enquiry address

Land Opposite 86 Smithies Moor Lane
Birstall
Batley
Kirklees
WF17 9AN

How to contact us

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

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

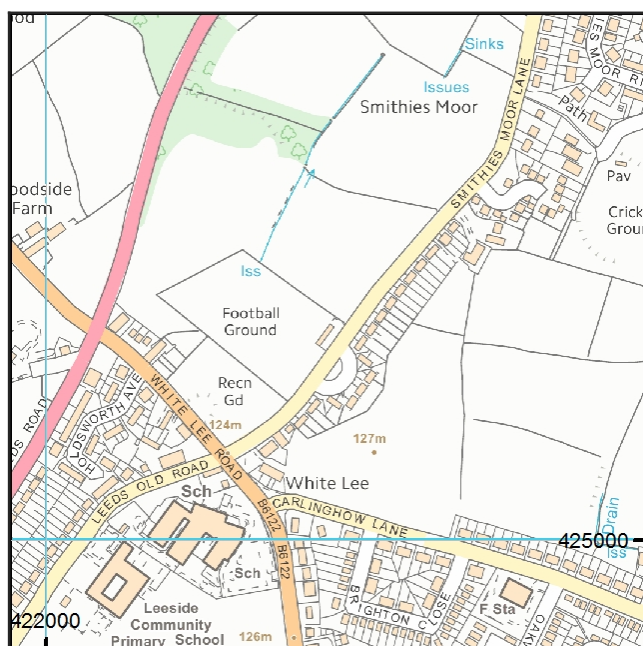
www.groundstability.com

 @coalauthority

 /company/the-coal-authority

 /thecoalauthority

 /thecoalauthority



Approximate position of property



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Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	MIDDLETON MAIN	Coal	62NV	77	North-West	0.0	East	76	1897
unnamed	MIDDLETON MAIN	Coal	62NU	86	Beneath Property	2.9	South	160	1913
unnamed	SILKSTONE	Coal	62NG	104	South-East	2.6	South-East	79	1906
unnamed	SILKSTONE	Coal	62NH	129	North	1.5	South-East	76	1928
unnamed	BLACK BED	Coal	62NB	262	North	2.4	South-East	66	1928

Probable unrecorded shallow workings

Yes.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

None recorded within 100 metres of the enquiry boundary.

Abandoned mine plan catalogue numbers

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

11942	GCR113	10348
FGB428	GCR109	2487
5440	FGB419	GCR152

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

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

Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
FLOCKTON THICK	Coal	Yes	27.5	North	70
FLOCKTON THICK	Coal	Yes	28.4	North	90

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

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

Development advice

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

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

Section 5 – Data definitions

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

Past underground coal mining

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

Probable unrecorded shallow workings

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

Spine roadways at shallow depth

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

Mine entries

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

Abandoned mine plan catalogue numbers

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

Outcrops

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

Geological faults, fissures and breaklines

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

Opencast mines

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

Coal Authority managed tips

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

Site investigations

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

Remediated sites

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

Coal mining subsidence

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

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

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

Mine gas

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

Mine water treatment schemes

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

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

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

Future underground mining

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

Coal mining licensing

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

Court orders

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

Section 46 notices

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

Withdrawal of support notices

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

Payment to owners of former copyhold land

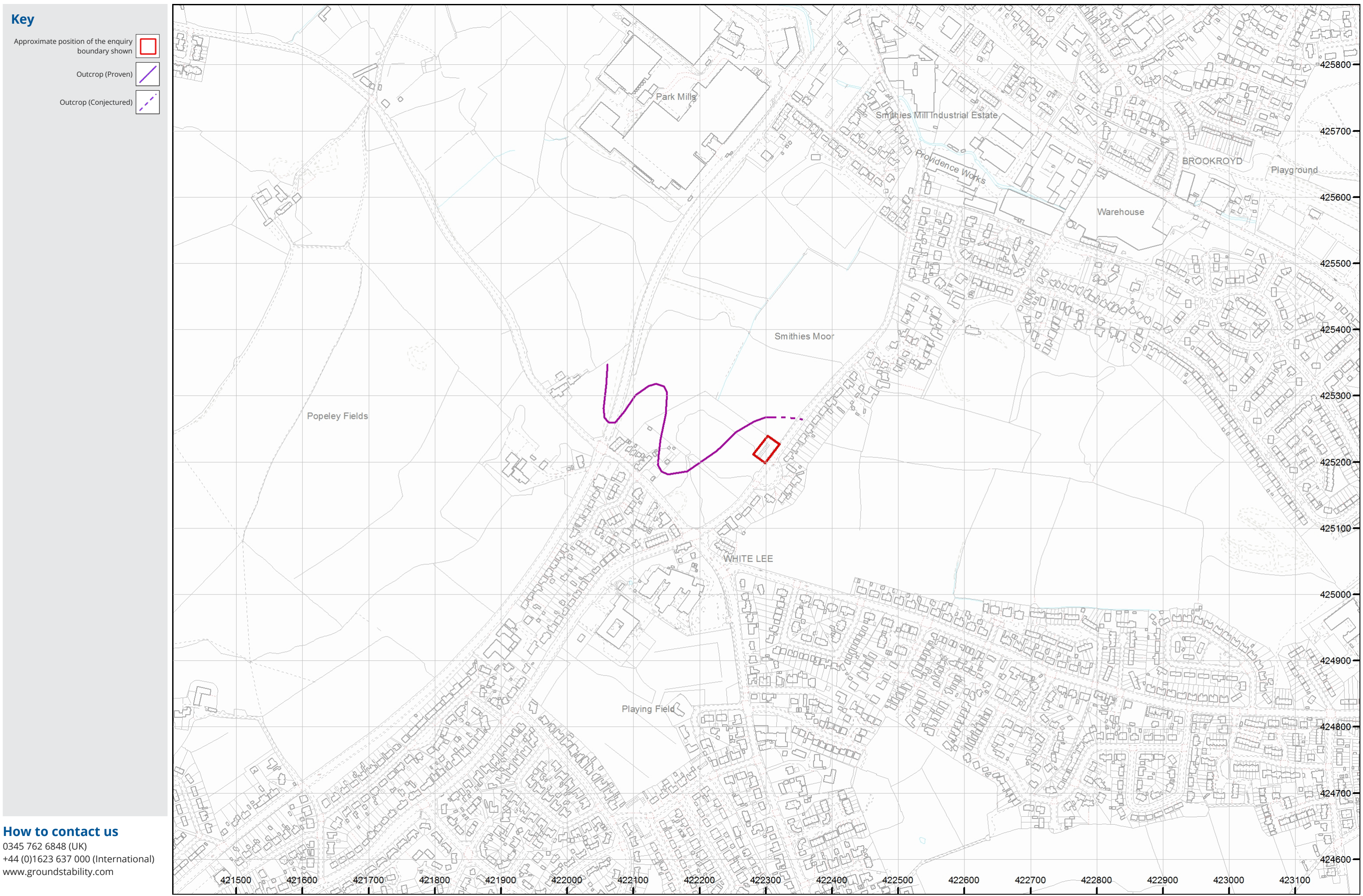
Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

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VAT receipt

Issued by	The Coal Authority 200 Lichfield Lane Mansfield Nottinghamshire NG18 4RG
Tax point date	30 October 2019
Issued to	KINGSCROWN DEVELOPMENTS 61 ST PETERSGATE STOCKPORT SK1 1DH
Property search for	LAND OPPOSITE 86 SMITHIES MOOR LANE BIRSTALL BATLEY KIRKLEES WF17 9AN
Reference number	51002182514001
Date of issue	30 October 2019
Cost	£112.13
VAT @ 20%	£22.43
Total received	£134.56
VAT registration	598 5850 68

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



Calculation Sheet
Coal Seam Projection

SOIL AND
STRUCTURES

Project Details

Name	Smithies Moor Lane, Birstall, Batley
Reference	10005

Competent Cover Summary

	Seam Name	Seam Thickness (m)	Competent Cover (m)	
			Point 1	Point 2
Coal Seam 1	Flockton Thick	0.50	-0.56	1.35
Coal Seam 2	Flockton Thin	1.40	4.68	6.96
Coal Seam 3	N/A	N/A	N/A	N/A
Coal Seam 4	N/A	N/A	N/A	N/A
Coal Seam 5	N/A	N/A	N/A	N/A

Note: Points relate to those illustrated on coal seam projection drawing within Coal Mining Risk Assessment

Key		
Less than -2.5 m	-2.5 to 2.5 m	More than 2.5 m
Likely insufficient	Marginal	Likely sufficient
Competent cover not present	Competent cover may not be present	Competent cover present

Author Russell Bowman
BSc (Hons) MSc CEng CWEM MCIWEM

Signed Russell Bowman

Calculation Sheet

Coal Seam Projection

SOIL AND STRUCTURES

Coal Seam 1	Flockton Thick				
Projection from:	Outcrop				
Coal Seam Details	Value	Units	Reliability ¹		Lines of Evidence
Ground level (at outcrop)	115.50	mAOD	✓✓	Fair estimate	OS mapping
Depth to top of coal seam (rockhead)	1.50	mbgl	✓✓	Fair estimate	No superficial soils and shallow bedrock locally
	114.00	mAOD			
Dip angle of coal seam	3	deg	✓✓	Fair estimate	Consultants Coal Mining Report - higher level
Dip direction of coal seam	125	deg	✓✓	Fair estimate	Consultants Coal Mining Report - general SE to E dip
Seam thickness	0.50	m	✓✓	Fair estimate with safety	Local BGS boreholes and BGS min. thickness (+0.20m)
On Site: Point 1	Value	Units	Reliability ¹		Lines of Evidence
Distance to crop	27.50	m	✓✓✓	Measured	Consultants Coal Mining Report - shortest distance
Ground level	117.00	mAOD	✓✓	Fair estimate	OS mapping
Depth to rockhead	1.50	mbgl	✓✓	Fair estimate	No superficial soils and shallow bedrock locally
	115.50	mAOD			
Depth to top of coal seam	112.56	mAOD	✓✓	Calculated	Data tabled above using trigonometry, accounting for topographical level differences
	4.44	mbgl			
Depth to base of coal seam	112.06	mAOD	✓✓	Calculated	Top of seam less the seam thickness
	4.94	mbgl			
10t rule valid?	>>>	>>>	>>>	Yes, likely conservative	Based on guidance within C758 ^{2,3}
Competent cover (10t rule) based on seam thickness	-0.56	m	✓✓	Marginal	Competent cover may not be present
Competent cover (10t rule) based on 1.50 m roadway	-10.56	m	✓	Likely insufficient	Competent cover not present
On Site: Point 2	Value	Units	Reliability ¹		Lines of Evidence
Distance to crop	45.00	m	✓✓✓	Measured	Consultants Coal Mining Report - shortest distance
Ground level	118.00	mAOD	✓✓	Fair estimate	OS mapping
Depth to rockhead	1.50	mbgl	✓✓	Fair estimate	No superficial soils and shallow bedrock locally
	116.50	mAOD			
Depth to top of coal seam	111.65	mAOD	✓✓	Calculated	Data tabled above using trigonometry, accounting for topographical level differences
	6.35	mbgl			
Depth to base of coal seam	111.15	mAOD	✓✓	Calculated	Top of seam less the seam thickness
	6.85	mbgl			
10t rule valid?	>>>	>>>	>>>	Yes, likely conservative	Based on guidance within C758 ^{2,3}
Competent cover (10t rule) based on seam thickness	1.35	m	✓✓	Marginal	Competent cover may not be present
Competent cover (10t rule) based on 1.50 m roadway	-8.65	m	✓	Likely insufficient	Competent cover not present

Notes

- 'Reliability' assessed based on quality and accuracy of the lines of evidence with further discussion in report
- Table 5.1 considering; dip angle, groundwater regime, extraction ratio, multiple seams, available GI information and serviceability limits
- Superficial soil bulking factor neglected and assumed to not offer any competent cover

Calculation Sheet

Coal Seam Projection

SOIL AND STRUCTURES

Coal Seam 2	Flockton Thin				
Projection from:	Outcrop				
Coal Seam Details	Value	Units	Reliability ¹		Lines of Evidence
Ground level (at outcrop)	109.00	mAOD	✓✓	Fair estimate	OS mapping
Depth to top of coal seam (rockhead)	1.50	mbgl	✓✓	Fair estimate	No superficial soils and shallow bedrock locally
	107.50	mAOD			
Dip angle of coal seam	3	deg	✓✓	Fair estimate	Consultants Coal Mining Report - higher level
Dip direction of coal seam	125	deg	✓✓	Fair estimate	Consultants Coal Mining Report - general SE to E dip
Seam thickness	1.40	m	✓✓	Fair estimate	BGS max. thickness
On Site: Point 1	Value	Units	Reliability ¹		Lines of Evidence
Distance to crop	175.50	m	✓✓✓	Measured	Consultants Coal Mining Report - shortest distance
Ground level	117.00	mAOD	✓✓	Fair estimate	OS mapping
Depth to rockhead	1.50	mbgl	✓✓	Fair estimate	No superficial soils and shallow bedrock locally
	115.50	mAOD			
Depth to top of coal seam	98.32	mAOD	✓✓	Calculated	Data tabled above using trigonometry, accounting for topographical level differences
	18.68	mbgl			
Depth to base of coal seam	96.92	mAOD	✓✓	Calculated	Top of seam less the seam thickness
	20.08	mbgl			
10t rule valid?	>>>	>>>	>>>	Yes, likely conservative	Based on guidance within C758 ^{2,3}
Competent cover (10t rule) based on seam thickness	4.68	m	✓✓	Likely sufficient	Competent cover not present
Competent cover (10t rule) based on 1.50 m roadway	3.68	m	✓✓	Likely sufficient	Competent cover not present
On Site: Point 2	Value	Units	Reliability ¹		Lines of Evidence
Distance to crop	200.00	m	✓✓✓	Measured	Consultants Coal Mining Report - shortest distance
Ground level	118.00	mAOD	✓✓	Fair estimate	OS mapping
Depth to rockhead	1.50	mbgl	✓✓	Fair estimate	No superficial soils and shallow bedrock locally
	116.50	mAOD			
Depth to top of coal seam	97.04	mAOD	✓✓	Calculated	Data tabled above using trigonometry, accounting for topographical level differences
	20.96	mbgl			
Depth to base of coal seam	95.64	mAOD	✓✓	Calculated	Top of seam less the seam thickness
	22.36	mbgl			
10t rule valid?	>>>	>>>	>>>	Yes, likely conservative	Based on guidance within C758 ^{2,3}
Competent cover (10t rule) based on seam thickness	6.96	m	✓✓	Likely sufficient	Competent cover not present
Competent cover (10t rule) based on 1.50 m roadway	5.96	m	✓✓	Likely sufficient	Competent cover not present

Notes

- 'Reliability' assessed based on quality and accuracy of the lines of evidence with further discussion in report
- Table 5.1 considering; dip angle, groundwater regime, extraction ratio, multiple seams, available GI information and serviceability limits
- Superficial soil bulking factor neglected and assumed to not offer any competent cover