



The Coal  
Authority

# Coal Mining Risk Assessment

## **For development at:**

Barnsley Peugeot, Pontefract Road, Barnsley, S71 1AS

## **For proposal:**

Demolition of existing car valeting facility and erection of new detached building to be used for vehicular servicing purposes

### Assessment Summary

Assessment Result	MEDIUM RISK
Recommended Further Work	INTRUSIVE GROUND INVESTIGATION

The Coal Authority works to resolve the impacts of mining by growing its expertise, innovation, organisational capability and efficiency.

It manages the effects of past coal mining, including subsidence damage claims which are not the responsibility of licensed coal mine operators and is an executive non-departmental public body, sponsored by the Department of Business, Energy and Industrial Strategy. This report is valid for 90 days.

#### Limit of liability

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*Any advice provided in this report does not prejudice our position as a statutory consultee.*

Version	Compiled	Checked	Date
1.1	HB	PB	31/01/19

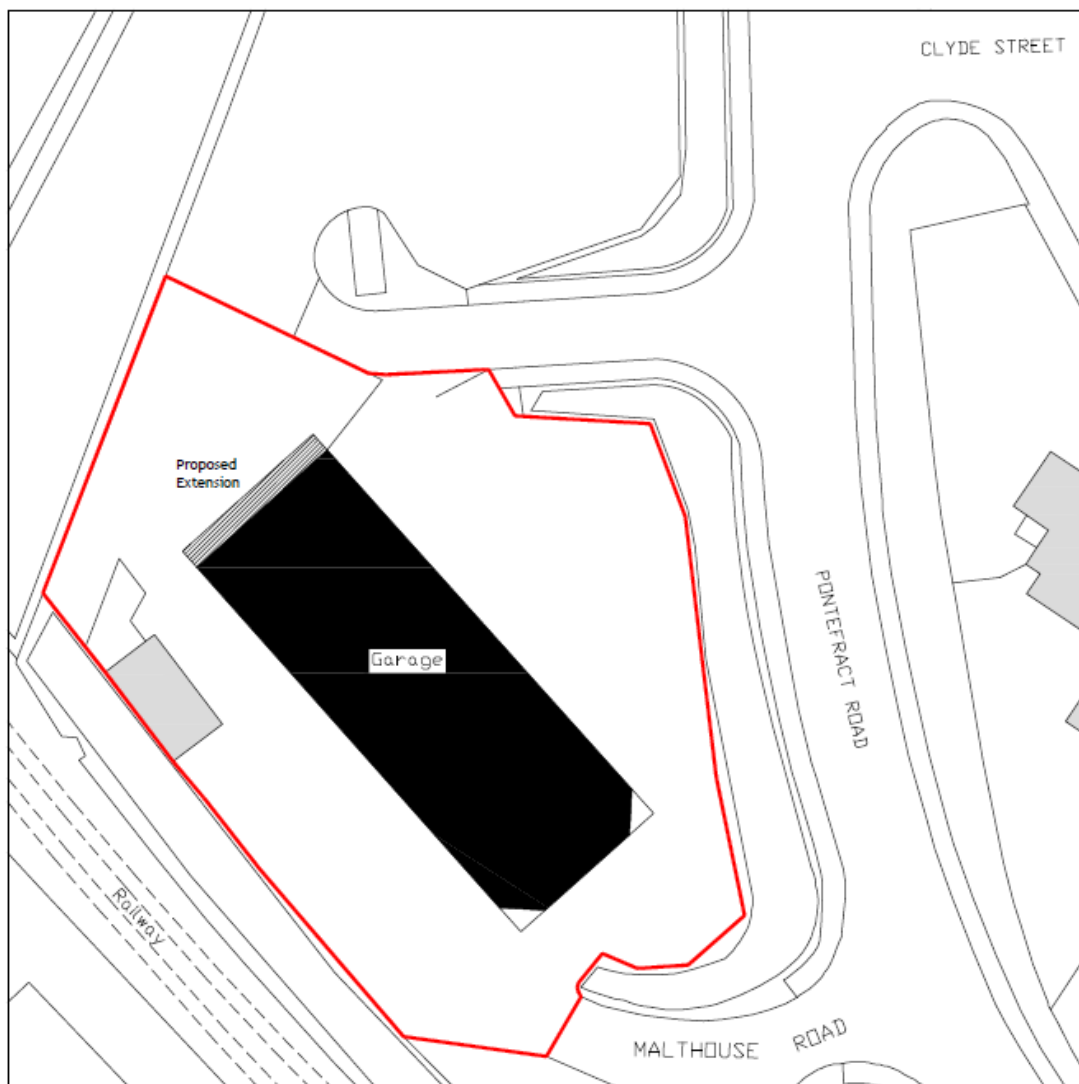
## Section 1 – Description of site and proposed development

### a) Site location and Description

The Coal Authority has been commissioned to prepare a Coal Mining Risk Assessment Report for a proposed development at Barnsley Peugeot, Pontefract Road, Barnsley, S71 1AS (see Figure 1), in order to provide the Local Planning Authority with information on coal mining and an assessment of its impact on land stability.

The approximate site centre co-ordinates are E:434900 N:406200. The proposed development area requires access via Malthouse Road. The site has an approximate elevation of 90m AOD.

**Figure 1: Site location plan**



**Block Plan - 1:500**

## b) Description and layout of proposed development

The Coal Authority understands that the developer plans to demolish the existing car valeting facility and erect a new detached building to be used for vehicular servicing purposes (see Appendix A).

## c) Scope of coal mining risk assessment

The purpose of this Coal Mining Risk Assessment Report 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.
- 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.

Any works that intersect coal mine workings, mine entries or coal seams may have implications for mine gas, spontaneous combustion and surface collapse. Coal Authority permission is required prior to any such works taking place. Further detailed advice can be provided upon request.

The Coal Authority's adopted policies regarding building over or close to mine entries and managing gas risks can be viewed at:

[www.gov.uk/government/publications/building-on-or-within-the-influencing-distance-of-mine-entries](http://www.gov.uk/government/publications/building-on-or-within-the-influencing-distance-of-mine-entries)

[www.gov.uk/government/publications/guidance-on-managing-the-risk-of-hazardous-gases](http://www.gov.uk/government/publications/guidance-on-managing-the-risk-of-hazardous-gases)

## Section 2 – Sources of information used to inform this report

Source reviewed	Yes	No	Remarks
Coal mining report	X		Non-Residential Coal Mining Consultants Report (see Appendix B)
Other mining records	X		Abandonment plan – 7113 'Mottram Wood' Rationalised plan – 44 3406 (NY140K - Winter)
Geological plans	X		OS Geological Sheet SE30NW
BGS Boreholes	X		SE30NW646, SE30NW636, SE30NW637, SE30NW642 and SE30NW479
Other	X		BGS Geoindex

The above information sources have been used to provide an assessment of the potential mining risk within the remainder of the report.

## Section 3 – Identification and assessment of site specific coal mining related risks

The Coal Authority's search of its detailed coal mining information identifies the following site specific coal mining legacy risks to the site.

Coal mining issue	Reported		Risk assessment	
	Yes	No	Rating	Comment
a) Underground coal mining (recorded at shallow depths)		X	Low risk	None recorded
b) Underground coal mining (probable at shallow depths)	X		Medium risk	Probable unrecorded shallow workings in the Abdy, Top Beamshaw and Low Beamshaw seams
c) Mine entries (shafts and adits)		X	Low risk	None recorded
d) Coal mining geology (faults and fissures)		X	Low risk	None recorded
e) Record of past mine gas emissions or potential	X		Medium risk	All mine workings pose a potential gas risk which should be considered in any future investigations and development
f) Recorded coal mining surface hazard		X	Low risk	None recorded
g) Surface mining (opencast workings)		X	Low risk	None recorded

A desk based study of the coal mining information has been used to risk assess the coal mining features above. A summary of the risk posed by these features is summarised after thorough analysis of the information sources. Comment on each specific coal mining issue follows below:

### a) Underground Coal Mining (recorded at shallow depths)

Coal mining at depths shallower than 30m beneath ground level can typically pose challenges to ground stability at the surface. The magnitude of this effect depends upon the exact depth of any workings, the thickness of competent rock cover and the extraction thickness of any coal mine workings.

The Coal Authority Coal Mining Consultant's report in Appendix B shows that the development site is not in an area of recorded shallow coal mine workings. The

Consultants report indicates that two seams have been worked beneath or in close proximity to the site (the Barnsley and Fenton seams) at depths of 147m and 373m bgl respectively and with extraction rates of 1.88m and 1.70m. Based on the extraction thickness and depth of these seams, the risk to the proposed development is considered to be low.

#### b) Underground coal mining (probable at shallow depths)

Areas of probable shallow coal mine workings are identified as part of the Development High Risk Area for which no recorded plan exists, but where it is likely that workable coal at shallow depths has been mined before records were kept. The data has been estimated from available mining records by qualified mining surveyors. Since 1872 there has been a law that requires all coal mine operators to deposit working plans of the mine with the government following the cessation of operations. Prior to this date the plans were often destroyed or kept in private ownership.

Where the extraction of coal has occurred there is the potential for voids to remain long after mining has ceased. The depth of workings generally dictates the length of time that significant voids may remain, but other factors including the size of mine roof supports and the competency of overlying strata can influence the time for natural consolidation to occur. Waste material produced during mining was sometimes used to backfill abandoned sections of mine workings, therefore reducing the volume of open cavities or voids that remain. The method of backfilling workings is typically not recorded and cannot be relied upon as a satisfactory form of remediation.

The Coal Authority Coal Mining Consultant's report in Appendix B shows that the development site is in an area of probable shallow coal mine workings. The OS Geological Sheet SE30NW records the Abdy (Winter) Coal, Top Beamshaw Coal and Low Beamshaw Coal to outcrop approximately 105m, 210m and 275m west of site respectively. A dip of 5° ENE is recorded on the OS Geological Sheet approximately 650m east of site. Using this rate of dip and the recorded distances from outcrop the Abdy, Top Beamshaw and Low Beamshaw seams can be estimated to be present at approximately 9.1m, 18.3m and 24.0m below rockhead at the western edge of the site. The Generalised Vertical Section (GVS) records these seams to have a thickness of 1.22-1.42m, 1.21-1.84m and 0.52-0.64m, respectively. Based on the locations of outcrops as indicated on the OS Geological Sheet, the next seam below the Low Beamshaw coal is likely to be the Kent's Thin coal, outcropping approximately 545m west of site and therefore likely to be present at approximately 47.5m below rockhead. Therefore, there aren't considered to be any seams below the Low Beamshaw which could pose a risk to the proposed development.

The rationalised plan 44 3406 (NY140K - Winter) records workings approximately 300m northeast of the proposed development site and also notes three shafts approximately 130m east of the site associated with Mount Osborne Colliery stating 'Winter seam 40m deep'. The workings to the northeast of the site are noted to have an extraction thickness of 0.84m and are from Mottram Wood Colliery, recorded on abandonment

plan 7113. This plan records a rate of dip of '2.5in to a yard' (3.9°) southeast, which is approximately consistent with the rate and direction of dip indicated on the OS Geological Sheet. The plan also records a seam section of 2ft 9in (0.84m) coal, underlain by 1ft 6in (0.45m) alum shale, beneath which is a further coal horizon with a note of '10in (0.25m) not worked'.

The BGS records a number of boreholes to be present across the site area. Of these boreholes, five are summarised below:

<b>Borehole Ref.</b>	<b>Proximity to development footprint</b>	<b>Findings</b>
SE30NW646 (12R)	Beneath western unit	Rockhead at 12.9m. Coal 0.8m at 22.1m. Terminated at 24.0m bgl.
SE30NW636	15m north	Rockhead at 15.3m. Coal 0.6m at 20.65m bgl and 0.35m at 23.1m. Terminated at 26.25m bgl.
SE30NW637	35m north	Rockhead at 15.0m. Coal 0.95m at 20.7m. Terminated at 23.0m bgl.
SE30NW642	Beneath SE corner of eastern unit	Rockhead at 15.8m. Coal 1.5m at 17.9m. Terminated at 25.9m bgl.
SE30NW479	35m east	Rockhead at 9.0m. Coal 1.1m at 10.1m bgl and 0.65m at 15.5m bgl. Terminated at 21.0m bgl.

Based on the borehole logs it is not clear which of the named coal seams in the area the above horizons relate to. It is possible that the seams represented in the spread of boreholes are not the same in each borehole and therefore it can't conclusively be proven that the 'shallowest' seam (ie the Abdy seam) hasn't been worked beneath the building footprint. Whilst all of the horizons encountered were found to be intact, the boreholes extended to at most 12m below rockhead and therefore it is possible that, based on the estimated depths of the Abdy, Top Beamshaw and Low Beamshaw seams, further seams of workable thickness may exist beneath the proposed development site within influencing distance of surface and which may have been worked. Therefore the risk to the proposed development from unrecorded shallow workings in the Abdy, Top Beamshaw and Low Beamshaw seams is currently considered to be medium.

### c) Mine entries (shafts and adits)

The Coal Authority Coal Mining Consultant's report in Appendix B shows no mine entries are recorded within 100m of the development site.

The development site sits within a historical mining area and therefore there is a residual risk of unrecorded mine entries to be present on site. All site operatives should be made aware of this potential risk and a watching brief should be maintained during site works.

#### d) Coal mining geology (Faults and fissures)

The development site sits upon the Pennine Middle Coal Measures Formation. A number of boreholes have been drilled across the development site area, which encountered rock head at between 9.0m-15.8m bgl. Superficial deposits were found to consist of top soil, made ground and clay.

No faults, fissures or break lines are known to affect the development site.

#### e) Record of past mine gas emissions or potential

No seam mentioned in this report is recorded as being prone to spontaneous combustion.

There are no recorded past gas emissions recorded in the surrounding area, however, coal seams and coal mine workings pose a potential gas risk which should be considered in any future investigations and development. At development sites with shallow coal workings, probable shallow coal mine workings, or pathway features such as mine entries and geological disturbances on or nearby the site, the Coal Authority recommends that a more detailed gas risk assessment to be undertaken in accordance with relevant guidance.

#### f) Recorded coal mining surface hazard

None recorded.

#### g) Surface mining (opencast workings)

None recorded.

## Section 4 – Proposed mitigation strategy

### a) Site investigation and/or remediation

Due to the possibility of unrecorded shallow mine workings in the Abdy, Top Beamshaw and Lower Beamshaw seams, an intrusive site investigation will be required. Whilst it is noted that historical boreholes have been drilled close to the development footprint area, these boreholes extended to at most 12m below rockhead. It is estimated that the Abdy, Top Beamshaw and Low Beamshaw seams are likely to be present at approximately 9.1m, 18.3m and 24.0m below rockhead respectively at the western extent of the site; therefore it is not considered that the previous investigations extended to sufficient depth to prove the presence or absence of workings in each of these seams.

The site investigations will need to be carried out by a competent contractor, taking into account the findings of this report. The results should be interpreted by a qualified and competent person so that an appropriate remedial strategy can be developed.

Guidance on drilling or piling through coal can be found at:

[www.gov.uk/government/publications/guidance-on-managing-the-risk-of-hazardous-gases](http://www.gov.uk/government/publications/guidance-on-managing-the-risk-of-hazardous-gases)

Due to the difficulties in identifying coal related gas hazards, it may be prudent to consider completing a gas risk assessment for the development site. This may recommend basic gas protection measures within the foundation design, which are resistant to permanent gases (carbon dioxide, methane, carbon monoxide) and comparable to that suggested in BR211, as commonly used to protect against radon in residential properties.

Where development is proposed over areas of coal or past coal workings at shallow depth, developers should consider wherever possible removing any remnant shallow coal. This will enable the ground to be stabilised and remove a hazard prior to construction of any foundations associated with the development. Prior extraction of surface coal requires an Incidental Coal Agreement from the Coal Authority. Further information can be found at:

[www.gov.uk/get-a-licence-for-coal-mining](http://www.gov.uk/get-a-licence-for-coal-mining)

Concrete, cements and renders may be susceptible to attack from elevated levels of sulfates in the ground. The Building Research Establishment reports that most cases of sulfate attack occur in and adjacent to coal field areas and related industrial centres. It would be prudent for the issue of sulfate attack to be considered during the foundation design to ensure they comply with the Building Regulations 2010.

You may also wish to refer to the Construction Industry Research and Information

Association (CIRIA) publication Special Publication 32 "Construction over Abandoned Mine Workings".

b) Coal Authority permit

Any intrusive activities, including initial site investigation boreholes and any subsequent treatment of coal mine workings/coal mine entries for ground stability purposes require the prior written permission of the Coal Authority. Application forms for Coal Authority permission and further guidance on this matter can be obtained from the Coal Authority's website at:

[www.gov.uk/get-a-permit-to-deal-with-a-coal-mine-on-your-property](http://www.gov.uk/get-a-permit-to-deal-with-a-coal-mine-on-your-property)

Follow on services can be requested using the details in the contacts section.

## Section 5 – Conclusions

This report has identified that the proposed development site may have been subject to past coal mining activity, namely unrecorded shallow workings in the Abdy, Top Beamshaw and Low Beamshaw seams. The risk to the site from legacy mining features is medium.

Nevertheless, subject to the undertaking of appropriate site investigations and any potential necessary remedial measures as outlined in Section 4a of this report, the Coal Authority considers that the site may be made safe and stable for future development and the risk to the development reduced to low. The recorded coal mining legacy issues present within the site do not pose any particular implications for the layout of the proposed development.

The Coal Authority advises the developer undertake a detailed Gas Risk Assessment where proposed development occurs over shallow coal reserves as is the case here.

## Section 6 – Contacts

### **Planning and Local Authority Liaison Service**

Tel: 01623 637 119

Email: [planningconsultation@coal.gov.uk](mailto:planningconsultation@coal.gov.uk)

Website: [www.gov.uk/planning-applications-coal-mining-risk-assessments](http://www.gov.uk/planning-applications-coal-mining-risk-assessments)

### **Surface Hazards Emergency Service**

Tel: 01623 646 333 (open 24 hours a day, 7 days a week)

24-hour number for reporting public safety hazards and incidents associated with coal mining

### **Mining Reports Service**

To purchase site specific coal mining information go to our website;

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

### **Licensing and Permitting Service**

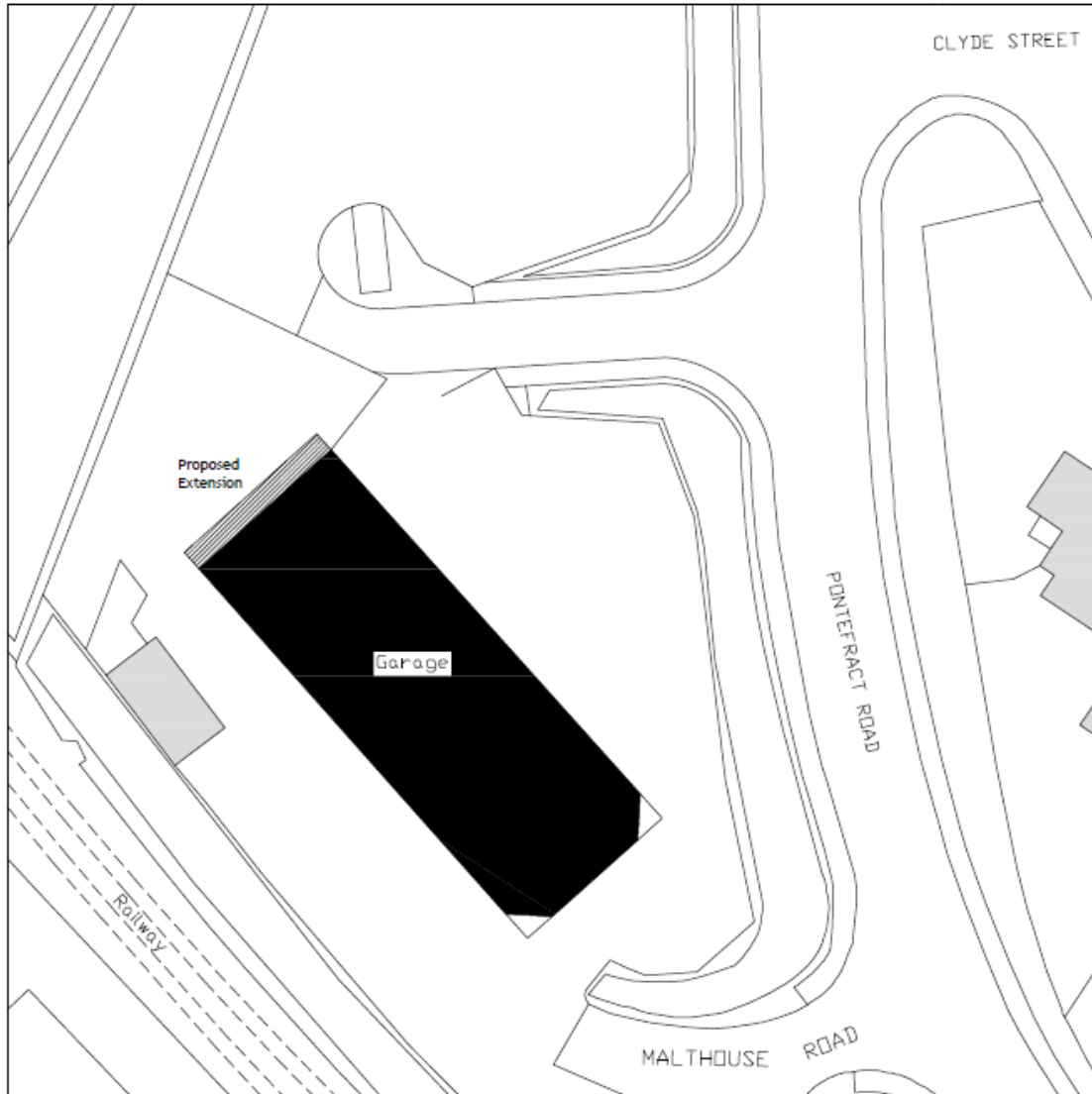
Email: [permissions@coal.gov.uk](mailto:permissions@coal.gov.uk)

Tel: 01623 637 320

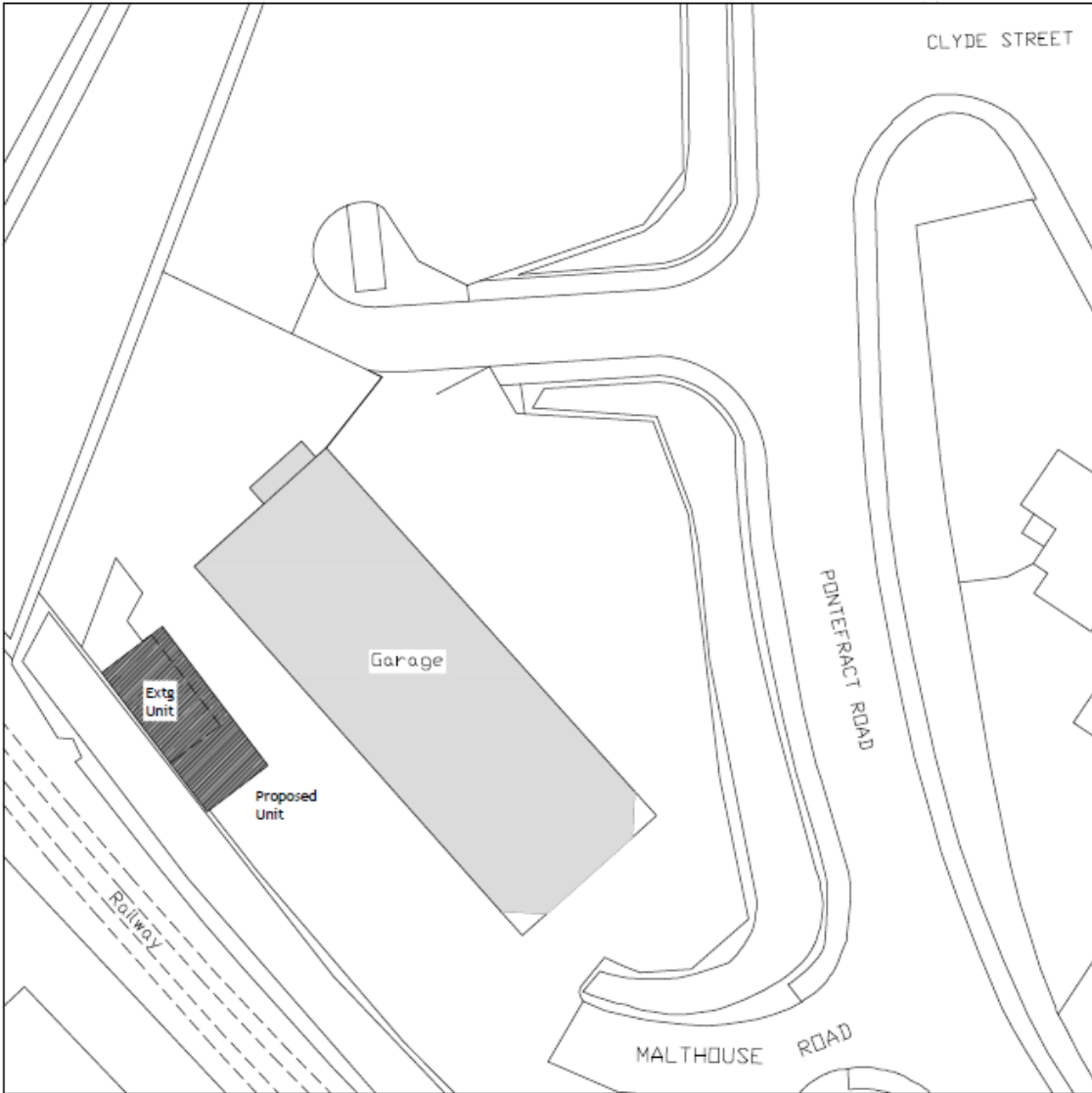
For permission to enter or disturb coal mine entries and coal seams.

## Section 7 – Appendices

### Appendix A – Plan showing proposed development layout



Block Plan - 1:500



Block Plan - 1:500

## Appendix B – Non-Residential Coal Mining Consultants Report