

Coal Mining Risk Assessment

For development at: Ynysarwed Minewater Treatment Scheme,
Neath Road, Abergarwed, SA11 4DF

For proposal: Upgrades to minewater treatment plant

Assessment Summary

Assessment Result	LOW RISK
Recommended Further Work	ADVISORY COAL GAS RISK ASSESSMENT

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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.

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Version	Compiled	Checked	Date
1.1	PB	HB	14 th August 2020

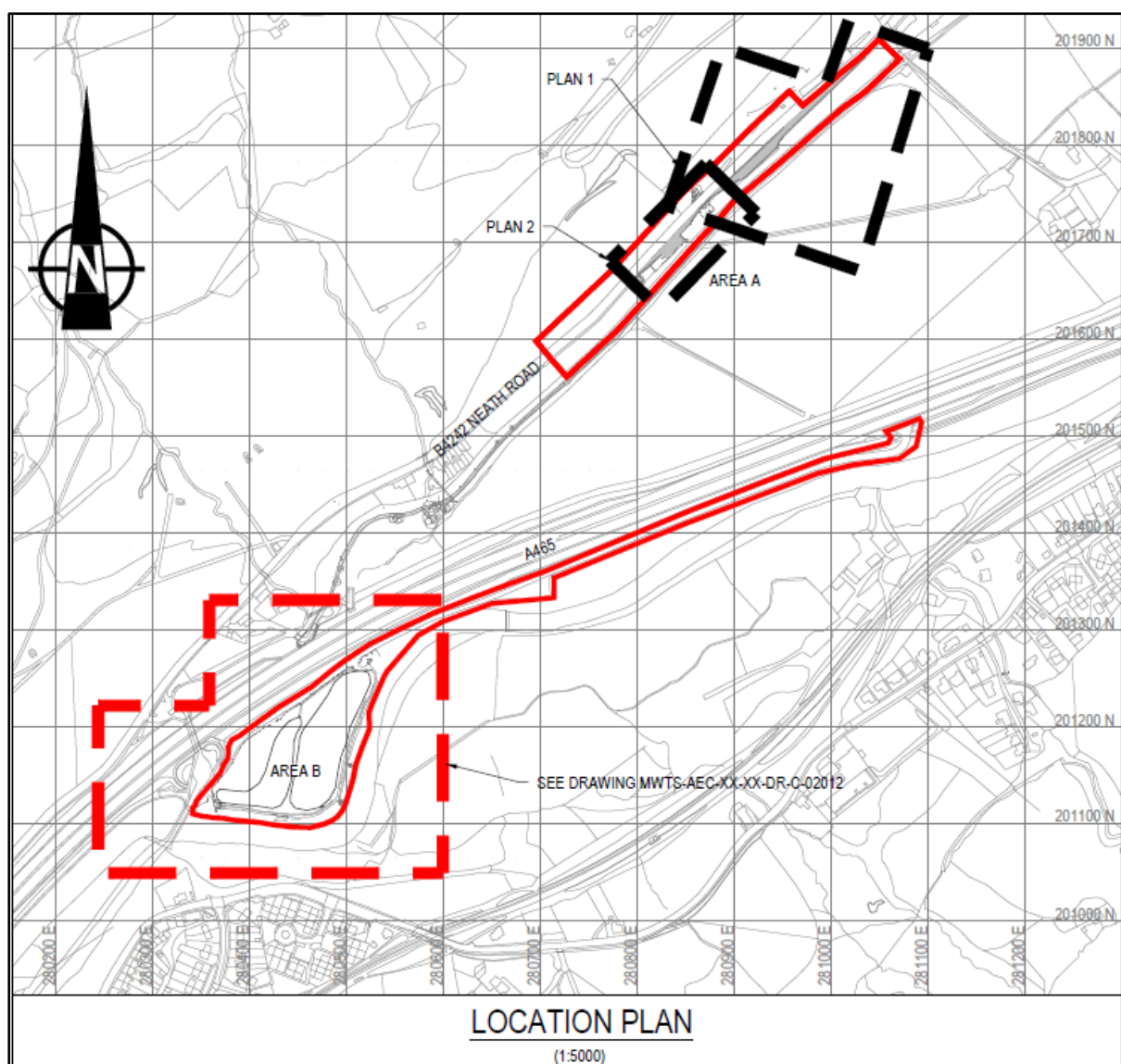
Section 1 – Description of site and proposed development

a) Site location and Description

The Coal Authority has been commissioned to prepare a Coal Mining Risk Assessment Report for a proposed development at Ynysarwed Minewater Treatment Scheme, Neath Road, Abergarwed, SA11 4DF (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 E280871, N201735. The proposed development area requires access via Neath Road. The site has an approximate elevation of between 17-29m AOD.

Figure 1: Site location plan



b) Description and layout of proposed development

The Coal Authority understands that the developer plans to upgrade the existing minewater treatment scheme including the construction of a new treatment plant and the repurposing of existing plant into welfare / office space (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

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		Consultants Coal Mining Report (Appendix B)
Other mining records	X		Abandonment plans – 8049 ‘Ynysarwed Upper and Lower’
Geological plans	X		OS Geological Sheet SN80SW (1980 edition)
BGS Boreholes	X		SN80SW176, 177
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	Low risk	None recorded
c) Mine entries (shafts and adits)	X	X	Low risk	Seven recorded within 100m however none considered to influence development
d) Coal mining geology (faults and fissures)		X	Low risk	None recorded
e) Record of past mine gas emissions or potential		X	Medium risk	Gas monitoring site recorded 442.4m northwest of the site however no elevated gas levels recorded. 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	Two recorded within or adjacent to the boundary however neither considered to influence development
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 Consultants Coal Mining Report in Appendix B states that the development site is not in an area of recorded shallow coal mine workings and consequently the risk to this development from recorded mining is 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 Consultants Coal Mining Report in Appendix B states that the development site is not in an area of probable shallow coal mine workings, however the Consultants Coal Mining Report does record the No.2 Rhondda seam to outcrop within the site boundary, orientated approximately SW-NE and with the seam being considered of a workable thickness in the locality. OS geological sheet SN80SW (1980 edition) records this outcrop in the same position with the seam being shown to be locally known as the Ynysarwed. The generalised vertical section on SN80SW (GVS) records the Ynysarwed seam to be 2-4ft (0.61-1.22m) in thickness. Abandonment plan 8049 'Ynysarwed Upper and Lower' records the Ynysarwed seam to be worked north of Neath Road with no workings extending under the site. The workings closest to the site appear to be truncated by faults, suggesting the coal seam was unlikely to have been workable up to outcrop in the area. The plan includes a section showing the seam to be 3ft 6in (1.07m) in thickness.

The Ynysarwed seam is shown to be underlain by two laterally discontinuous unnamed seams of 2ft (0.61m) in thickness followed by a series of thin discontinuous and unnamed seams. None of these seams are recorded to outcrop or be worked in the vicinity of the site with no underground workings, probable workings or mining features recorded east of the mine entries accessing the No.2 Rhondda seam. It is considered that the absence of workings in the underlying seams may be due to the presence of the "Neath

Disturbance Line indicates general trend of a Smash Belt" recorded 290m south of the site on OS geological sheet SN90SW.

It is therefore considered unlikely that any further workings in the underlying seams will be present and consequently the risk to this development from underground mining (probable at shallow depths) is considered to be low.

c) Mine entries (shafts and adits)

The Coal Authority Consultants Coal Mining Report in Appendix B shows seven mine entries are recorded within 100m of the development site the source plans for which have been reviewed as part of this coal mining risk assessment. The results of this exercise are recorded in the table below:

Reference	Type	Recorded Easting	Recorded Northing	Orientation	Source document	Revised Easting	Revised Northing	Plot distance from site boundary
280201-003	Shaft	280941	201862	NA	1/2500 O.S Sheet 1870, 1920 Editions, Geological Sheet	280942	201859	12.63m north
280201-004	Adit	280924	201832	W	1/2500 O.S Sheet 1920 Edition, Ab plan 8049, Geological Sheet	280924	201832	4.7m north
280201-006	Adit	280858	201752	NNW	1 O.S Sheet 1870, 1900 Editions, Ab plans 2885, 8049, Geological Sheet	280858	201752	Within site boundary
280201-015	Adit	280784	201667	NW	1/2500 O.S Sheet 1920 Edition, Geological Sheet	280778	201674	Within site boundary
280201-021	Adit	280921	201917	W	Ab plan 8049, Geological Sheet	280921	201917	71m north
280201-025	Adit	280849	201777	NNW	Other: Former British Coal Corporation Records	280849	201777	17m north
281202-042*	Adit	281062	201995	NNW	1/2500 O.S Sheet 1920 Edition	281058	202003	93m north

* Note mine entry 281202-042 was formerly known as entry 281201-026 with the change in reference being due to the positional change placing mine entry in different kilometre square.

The Coal Authority seeks to ensure that development is avoided above, or within the zone of influence of, all mine entries where possible. The zone of influence can be calculated as the sum of the departure value (up to 10m to account for discrepancies in source material), plus the local depth to rockhead (discussed in 3d below as likely to be in excess of 18.29m), plus the entry radius (nominally assumed to be 1.25m unless proven otherwise). On the basis of the above the zone of influence for these entries can be assumed to be a distance in excess of 29.54m from the recorded positions detailed above.

Due to the location of, entry type and orientation of mine entries 280201-026, 280201-021, 280201-004 and 280201-025 it is considered that they will not influence the proposed development.

The development site falls within the zone of influence of mine shaft 280201-003 however as there no development is planned within over 100m from this mine entry, it is considered that it will not influence the development. If the development layout is modified and works are planned within this mine entry's zone of influence this risk should be reassessed.

Mine entry 280201-015 is recorded to be within the development site boundary however due to the orientation of the adit and its position to the north of Neath Road (with all development to the south of Neath Road), it is considered that this mine entry will also not influence the development.

Mine entry 280201-006 is also recorded to be present within the site boundary. The mine entry is the source of the minewater discharge that is to be treated and consequently its true position is known. Due to the orientation of the mine adit, it is not considered that the entry or roadway emanating from it will influence the proposed works. Care should however be taken when working in the vicinity of the adit and drainage level.

Based on the distance of these entries from the site boundary, the layout of the proposed development and the orientation of the mine entries the risk to the development from recorded mine entries is considered to be low.

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 Rhondda Member and Llynfi Member formations. Boreholes located 250m southeast of the site (SN80SW96-100 and SN80SW139), sunk to a maximum depth of 18.29m failed to encounter rockhead, considered likely to be due to the location in the base of the Neath River valley with thick alluvial deposits encountered.

It is understood that a previous site investigation took place at the site with the data held by Neath Port Talbot Council (Boreholes SN80SW176, 177). It may be prudent to attempt to obtain their findings for review as part of the further site investigations for this proposed development.

No faults, fissures or break lines are known to affect the development site however OS geological sheet records the "Neath Disturbance Line indicates general trend of a Smash Belt" 290m south of the site.

e) Record of past mine gas emissions or potential

The Consultants Coal Mining Report records a gas monitoring point is recorded 442.4m northwest of the. No elevated gas levels have been recorded at this site.

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.

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

f) Recorded coal mining surface hazard

Two recorded surface hazards are shown to be present within or adjacent to the site boundary.

Mine entry 280201-004 was reported to the Coal Authority as being insecure and used as a play area for children. Remedial works were undertaken by the Coal Authority in 2003 under the surface hazard reference H.4106.

Mine entry 280201-006 was reported to the Coal Authority as being blocked of free flowing water from the adit under the surface hazard reference I-350586. This hazard is recorded as being rejected.

g) Surface mining (opencast workings)

None recorded.

Section 4 – Proposed mitigation strategy

a) Site investigation and/or remediation

After a thorough desk based review of the available evidence, it is probable that the development site has not been subject to the influence of coal mining legacy features. Accordingly, an intrusive site investigation will not be required.

It is understood that a previous site investigation took place at the site with the data held by Neath Port Talbot Council. It may be prudent to attempt to obtain their findings for review as part of the further site investigations for this proposed development.

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

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.

Although it is unlikely that coal will be encountered at the site, should coal seams be found, at or near the depth of the development's foundations, they may pose a risk of spontaneous combustion if exposed to air or may act as pathways for ground gases to reach the development. A competent engineer should be consulted if coal is encountered in, or adjacent to, the foundations of the proposed development.

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

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 is not known to have been subject to past coal mining activity. The risk to the site from legacy mining features is low.

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

Website: 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

Licensing and Permitting Service

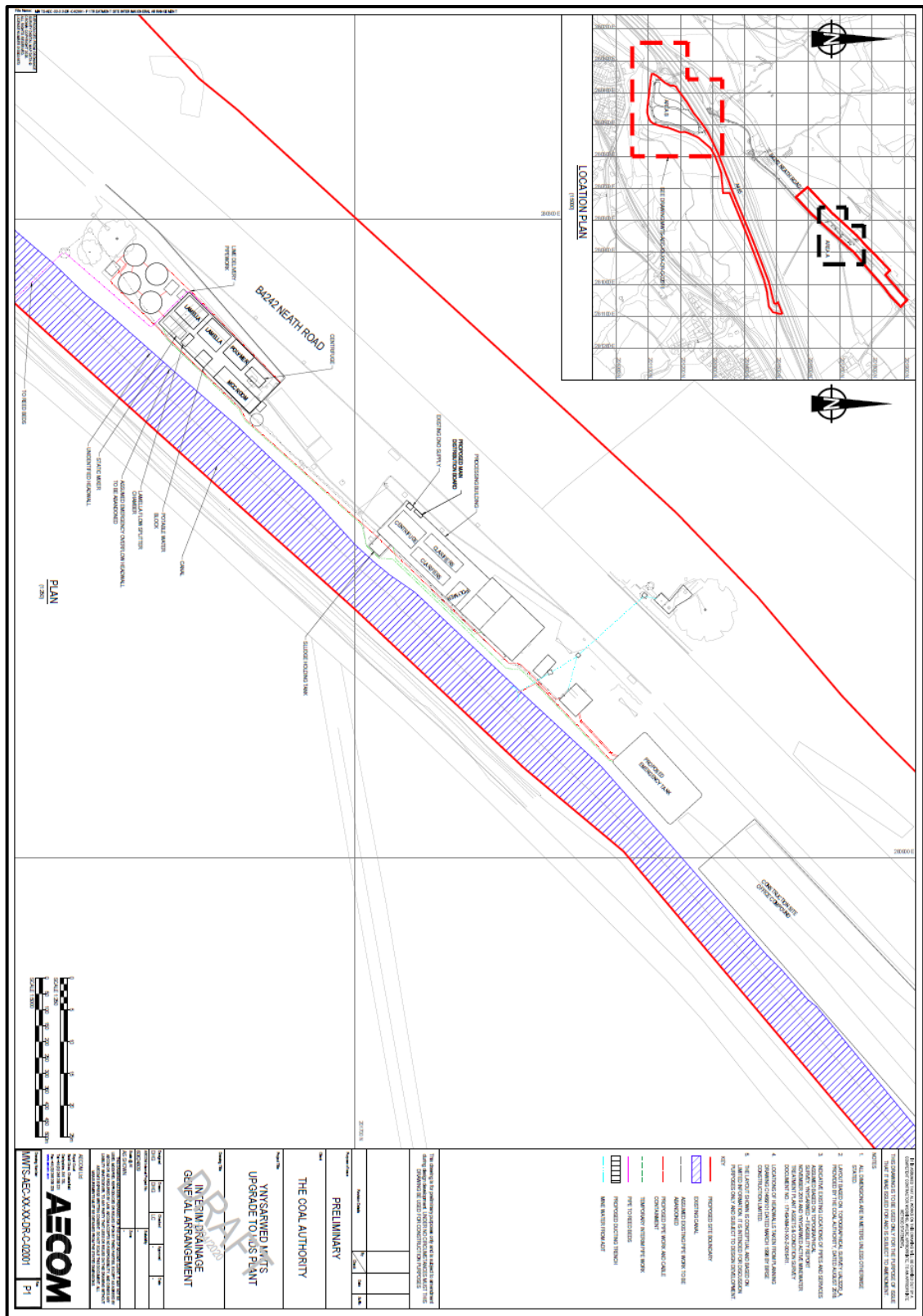
Email: permissions@coal.gov.uk

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



Appendix B – Non-Residential Coal Mining Consultants Report