Chapter 12 Mining

Glyn Taff Solar Farm – Environmental Statement

04/03/2025

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12. MINING

Background

12.1. Neo Environmental Ltd has been appointed by Renantis UK Limited (the "Applicant") to undertake an Environmental Impact Assessment for a proposed solar farm (the "Proposed Development") on lands at Bryntail Farm, Bryn Tail Lane, Pontypridd (the "Application Site"). Please see **Figure 1** for the layout of the Proposed Development.

Development Description

12.2. Installation, operation and subsequent decommissioning of a renewable energy scheme comprising ground mounted photovoltaic solar arrays together with substation compound, transformer stations, internal access track, landscaping, biodiversity measures, boundary fencing, security measures, CCTV posts, monitoring house, storage containers access improvement and ancillary infrastructure. The solar arrays will have a combined capacity of up to 39.9MWp.

Site Description

12.3. The area of the Proposed Development (the "Application Site") lies at an elevation of approximately 140m – 330m AOD and covers a total area of c. 70.9 hectares. It is centred around Bryntail Farm at approximate National Grid Reference (NGR) E 309333, N 189800. It is south of Eglwysilan Road. The site extends west of Bryntail Farm and east of the Bryn Tail Lane. The site is within the administrative area of Rhondda Cynon Taf Council.

12.4. The site comprises 38 agricultural fields that are currently in use for livestock farming. It is on the east side of the Taff Valley c. 1.6 km east of Ynysangharad War Memorial Park. Access will be gained from the Bryn Tail Lane.

12.5. The site is adjacent to the Twyn Hywel Energy Park a consented wind farm including 14 turbines (DNS/3272053).

INTRODUCTION

12.6. A Coal Mining Risk Assessment (CMRA) was completed in order to assess the potential hazards to the Proposed Development associated with historic mining, given the rich history of mining that is synonymous with this area of Wales.

12.7. The Mining Assessment was undertaken by Engineering Geologists from Woolgar Hunter Limited, Consulting Engineers.

12.8. This chapter of the ES is supported by the following Technical Appendices:

- Technical Appendix 12.1 Geo-Environmental Desk Study and Mining Risk Assessment
- Technical Appendix 12.2 Coal Authority Report (CON29M Coal Mining Report)

12.9. The above appendices are referred to, and should be read in conjunction with, the chapter.

Terms of Reference

12.10. The terminology set out in **Table 12-1** will be referred to throughout this Chapter.

Table 12-1:- Terminology

Term in Full (Abbreviation, if appropriate)	Meaning
Coal Mining Reporting Area	The known extent of coal mining activity and is used to determine whether a coal mining report is required for property transactions and the conveyance process.
Coal Mining Risk Assessment	Identification of any Coal mining related hazards, primarily used as an initial response to a planning application.
Development High Risk Area	Defined by the Coal Authority as an area that is the part of the coal mining reporting area which contains one or more recorded coal mining related features which have the potential for instability or a degree of risk to the surface from the legacy of coal mining operations.
Mineworkings	Mineral seams which have been extracted for their resource.
Mineshaft/Mine entries'	Mine shafts are vertical or near vertical openings that are used for access for miners, winding and haulage of

	minerals, pumping and removal of water and ventilation within a mine.
Adit	A horizontal entrance to a mine.
Mine Spoil Heaps/Tips (Tips)	A spoil tip (also called a waste tip or bing) is a pile built of accumulated spoil waste material removed during mining. These waste materials are typically composed of shale, as well as smaller quantities of carboniferous sandstone and other residues.
Mine Gas	A combustible gas, chiefly methane, often occurring in mines in association with bituminous coal.
Post and Stall Workings	A mode of excavation/coal working in which pillars of coal are left to support the roof of the mine.
Longwall Workings	Longwall Mining Method: Longwall method of working consists in laying out long faces from which all coal in working section of the coal seam is removed by a series of operations, maintaining a continuous line of advance in one direction and leaving behind the void (called a goaf).
Abandoned Mine Plans	Plans of both surface and deep mining operations, which depict areas of coal and other mineral extraction and the point of entry into these workings. This record keeping was made a statutory requirement under the 1872 Coal Mines Regulation Act and Metalliferous Mines Regulation Act.
Minewater Discharge	When a coal mine closes, the pumps that were used to keep the water out of the mine while the mineral was extracted are switched off and removed. Over time the water level recovers within the mine and picks up naturally occurring minerals from the rocks, such as iron. This can be brought to surface.
Minewater Treatment Scheme	A treatment facility managed by the Coal Authority which treats contaminated minewater. Typically involves mixing of minewater with air, the filtering of iron particles with reed beds and settlement lagoons.
United Kingdom Accreditation Service (UKAS)	UKAS is the National Accreditation Body for the United Kingdom. They are appointed by government, to assess and accredit organisations that provide services including certification, testing, inspection and calibration.

Fissures & Breaklines	Types of geological disturbances which are lines of weaknesses at the surface which may have been affected by coal mining. Fissures are a crack or opening in rock or the earth, created by mining in certain circumstances and breaklines are a vertical step in the rock or earth, created when underground mining has caused differential settlement at the surface. Breaklines are usually associated with geological features such as fault lines.
Faultlines	The surface of a fault fracture along which the rocks have been displaced.
Coal Mining Reporting Area	The known extent of coal mining activity and is used to determine whether a coal mining report is required for property transactions and the conveyance process.
Coal Mining Risk Assessment	Identification of any Coal mining related hazards, primarily used as an initial response to a planning application.
Development High Risk Area	Defined by the Coal Authority as an area that is the part of the coal mining reporting area which contains one or more recorded coal mining related features which have the potential for instability or a degree of risk to the surface from the legacy of coal mining operations.

LEGISLATION, POLICY & GUIDANCE

12.11. Whilst there is no specific guidance is available for the assessment of mining-related effects, best practice and policy advocating the use of professional judgement within the frameworks is advised.

12.12. The following effects have been identified for consideration in this assessment:

- Direct effects during construction
  - Loss of geological resource resulting from ground instability induced by construction activities;
  - Instability of underlying untreated mineworkings, mineshafts and proximal mine spoil heaps (tips);
  - Disruption of the groundwater regime, resulting in mine water discharges that could affect watercourses;

- Mine gas emission and construction-related disruption of gas regime;
- Grouting to treat mineworkings (if required) to provide stable ground conditions which could alter the gas and groundwater regimes; and
- Activation of mining induced fissures/faulting.

- Direct effects during operation
  - Risk of continued uncontrolled ground instability, including that of mineworkings, mineshafts and close proximity Tips;
  - Alteration of the groundwater regime, resulting in mine water discharges that could impact watercourses; and
  - Alteration of ground gas regime.
- Direct effects during decommissioning
  - Similar to those noted for the construction and operational phases; risk of ground instability and further disruption of the gas and groundwater regimes are expected to be the key potential effects during decommissioning works.

12.13. This assessment is carried out in accordance with the principles contained within the following legislation and guidance documents.

Legislation

12.14. This assessment is carried out in accordance with the principles contained within the following legislation:

- Environmental Protection Act, April 12th, 1990, Part IIA – Contaminated Land (PB13735);
- Planning (Wales) Act, July 2015;
- The Water Environment (Water Framework Directive) England and Wales Regulations, 2017, No. 407.

Guidance

12.15. This assessment is carried out in accordance with the principles contained within the following guidance documents:

- The Coal Authority, Policy for Building Over or Within Influencing Distance of a Mine Entry, January 2012[1];
- CIRIA, Abandoned Mine Workings Manual (C758D), 2019[2];
- BS 5930:2015 Code of Practice for Ground Investigations[3];
- BS 10175:2011+A1:2013 Investigation of Potentially Contaminated Sites: Code of Practice Guidance[4].
- The Coal Authority, Risk Based Approach for Development Management; Guidance for Developers, Version Version 4-2017[5].

CONSULTATION

12.16. Following on from the desk-based findings (**Appendix 12.1**), it was considered prudent to undertake additional consultations to determine if there was any available data in respect to potential mine water discharges at the Site, as outlined in **Table 12-2**.

Table 0--1: Consultation

Consultee & Date	Summary of Response	Addressed within ES
Mining Remediation Authority 17th February 2025	Advised that there were no known mine water discharges within the Site and there are no mine water treatment schemes operating in the area.	Response used to assist mine risk review.

METHODOLOGY

[1] The Coal Authority (January 2012) *Policy for Building Over or Within Influencing Distance of a Mine Entry*.
[2] CIRIA (2019), *Abandoned Mine Workings Manual (C758D)*
[3] BSI 5930 (2015) *Code of Practice for Ground Investigations. British Standards Institute.*
[4] BS 10175 (2013) *Investigation of Potentially Contaminated Sites: Code of Practice Guidance. British Standards Institute.*
[5] The Coal Authority(2017) *Risk Based Approach for Development Management; Guidance for Developers, Version 4*

12.17. desk-based study was undertaken, which involved the collection of mining-related information from a variety of sources.

12.18. The factual information was used to develop a conceptual model of the Site, in order to make a qualitative assessment of the potential hazards in regards to the mining legacy of the Site and surrounding area.

Study Area

12.19. The study area researched covers the full extent of the Site boundary as depicted in Figure 1.

Desk Based Assessment

12.20. The following data sources have informed the assessment:

- Interactive Map Viewer | Mining Remediation Authority (datamine-cauk.hub.arcgis.com)
- British Geological Survey www.bgs.co.uk/geological-data/map-viewers;
- www.waterwatchwales.naturalresourceswales.gov.uk;
- http://www.welshcoalmines.co.uk;
- 'CON29M Coal Mining Report', obtained Feb 2025 (Appendix 12.2)
- National Library of Scotland Archives https://maps.nls.uk/geo/explore;
- Glamorgan Archives Home – Glamorgan Archives (glamarchives.gov.uk);
- Natural Resources Wales https://naturalresourceswales.gov.uk/mine
- 'Abandoned Mines and the Water Environment, Science Report' Environment Agency, dated August 2008[6];
- 'River Basin Management Plan Guidance' Environment Agency, October 2019[7].
- 'Policy For Building Over Or Within The Influencing Distance Of A Mine Entry' Coal Authority Guidance, 2012[1].
- Interactive Map Viewer (www.gov.uk/Find disused coal tips)

[6] Environment Agency (2008) *Abandoned Mines and the Water Environment, Science Report.*
[7] Environment Agency (2019) *River Basin Management Plan Guidance,*

Evaluation Methods

12.21. The evaluation of the Coal Mining Risk was conducted using desk-based research that has been collated into the report that is included within Appendix 12.1. Geo-Environmental Desk Study and Mining Risk Assessment.

Impact Assessment Methods

12.22. The predicted significance of the effect was determined through a standard method of assessment based on professional judgement, considering the combination of both sensitivity and magnitude of change as detailed in the following tables.

Sensitivity

12.23. The sensitivity criteria utilised is described in the Table 12-3.

Table 0--2: Sensitivity Criteria

Sensitivity	Description
Very High	Element is of high, national importance, has protected status, with no potential for replacement; provides vital resource to large population/area; or is associated with catastrophic impact on amenity, landscape or life should it be disturbed.
High	Element is of high regional importance with limited potential for replacement; provides significant resource to local population/area; or is associated with significant impact on amenity, landscape or life should it be disturbed.
Medium	Element is of low regional importance but high local importance with some potential for replacement; provides some resource to local population/area; or is associated with local impact on amenity, landscape or life should it be disturbed.
Low	Element is of local importance/interest only, with potential for replacement; provides limited resource to local population/area; or is associated with minor impact on amenity, landscape or life should it be disturbed.

Negligible	Element has low importance, low rarity, no resource value; and is associated with little impact on amenity, landscape or life should it be disturbed.

Magnitude

12.24. Table 12-4 outlines the magnitude of effect scoring system that has been utilised in the assessment, noting that effects can be beneficial as well as negative.

Table 0--3: Effect Magnitude

Magnitude of Effect	Description
Very Large	Negative: Effect may result in complete loss or damage to nationally protected or designated area; or cause loss of major resource/severe damage to key characteristics, integrity of the landscape, or receptors. Effects cannot be mitigated. Beneficial: Large scale or major improvement of area or resource quality; extensive restoration or enhancement; major improvement of quality.
Large	Negative: Effect may result in loss or substantial alteration to key elements or features or resource. Full mitigation of effects is unlikely. Beneficial: Large-scale improvement of area or resource quality.
Moderate	Negative: Effect may result in partial loss of, or damage to key characteristic features or resource; but not affecting the overall integrity. Some mitigation may be possible. Beneficial: Small-scale or local improvement of area or resource quality.
Slight	Negative:

	Effect may affect features or resource at a local scale. Cannot be completely mitigated but there may be opportunities for replacement or improvement. Beneficial: Minor benefit to characteristic features, or reduced risk of negative impact occurring.
Neutral	Negative: Very minor loss or damage to local features or resource. Beneficial: No change, loss or alteration of characteristics.

Significance of Effects

12.25. The predicted significance of the effect was determined through a standard method of assessment based on professional judgement, considering the combination of both sensitivity and magnitude of change (Tables 12.3 and 12.4) as detailed in **Table 12.5**. Major and moderate effects are considered significant in the context of the EIA Regulations. The following matrix demonstrates the way in which the sensitivity and magnitude of effects have been evaluated in a combined manner, to inform the judgement on significance.

Table 0-4: Effect Magnitude

Sensitivity	Magnitude of Impact				
	Neutral	Slight	Moderate	Large	Very Large
Very High	Minor	Minor / Moderate	Moderate	Moderate / Major	Major
High	Minor	Minor / Moderate	Moderate	Moderate / Major	Major
Medium	Negligible / Minor	Minor	Minor / Moderate	Moderate	Moderate / Major
Low	Negligible	Negligible / Minor	Minor	Minor / Moderate	Moderate
Negligible	Negligible	Negligible	Negligible / Minor	Negligible / Minor	Minor

Note: Shaded boxes indicate 'Significant' effects. All others are 'Not Significant'.

Assessment Limitations

12.26. Data from this assessment has been obtained from a variety of statutory and non-statutory bodies, and other sources. A significant quantity of data was available; however in any historic mining area, the possibility always exists of unrecorded mining activity that cannot be accounted for since it pre-dates the keeping of records[1,2]. This means that the assessment is limited to the available information. Whilst some information gaps are inevitable, it is considered that there is sufficient information to enable an informed decision to be taken in relation to the identification and assessment of likely significant effects relating to mining.

Effects Scoped Out (Construction and Operation)

12.27. The following topic areas have been 'scoped out' of detailed assessment. The construction of the solar farm could constrain the future extraction of coal; however, with a move towards decarbonisation high on the agenda for the Welsh and UK Governments, impact on coal as a mineral resource is proposed to be scoped out.

12.28. Mine tip stability has been scoped out due to the distance of the surrounding tips (750 m).

12.29. A wind farm development is in the design phase to the immediate north-east of the Site, with the closest proposed infrastructure more than 300 metres from the solar farm. Given the nature of the wind farm, there is considered to be negligible potential for any cumulative effects to arise with the Proposed Development with regards to mining and as such are scoped out from further consideration within this chapter.

BASELINE CONDITIONS

12.30. Information relating to the Site has been reviewed in order to establish the current baseline conditions relating to mining and to identify significant features. Such features are taken forward for consideration of effects.

Published Geology

12.31. The Site geology has been reviewed in detail in the Desktop Study Report at **Appendix 12.1.**

12.32. The geological map evidence indicates that the Site is underlain by a series of sedimentary bedrock deposits of the Hughes Sandstone & Brithdir Members of Carboniferous Age. These deposits comprise of thin bands of mudstones/siltstones/sandstones with interbeds of seatearths and mainly thin coals seams. The overall South Wales Coalfield is anecdotally noted to be an elongate synclinal structure (a term which means that the rocks are folded), which is

divided by a major fault system, the Neath Disturbance, which crosses from north-east to south-west of the South Wales Coal Fields.

Coal Mining Reporting Area

12.33. The site is recorded within the Coal Authority records as a 'Coal Mining Reporting Area' i.e. a known extent of coal mining activity, and is used to determine whether a coal mining report is required for property transactions. A CON29M Coal Mining Report (Appendix 12.2) was provided to inform the assessment. It is important to note that a recorded Coal Mining Reporting Area does not classify in detail the full extent of geological coal reserves and resources.

Development High Risk Areas

12.34. Within the Coal Mining Reporting Area, the Coal Authority defines Development High Risk Areas. The Coal Authority describes a Development High Risk Area as an 'Area that is part of the coal mining reporting area which contains one or more recorded coal mining related features which has the potential for instability or a degree of risk to the surface from the legacy of coal mining operations'[2,5]. Therefore, it does not automatically follow that 'Development High Risk Areas' are zones of concern in respect to instability; it may just represent an area which contains a coal mining feature. Therefore, professional judgment must be taken when reviewing such features and their implications.

12.35. Review of the Coal Authority Interactive Map confirms that there are localised, narrow areas of Development High Risk within the Site, which appear to be associated with coal outcrops. Although identified as a Development High Risk Areas due to the presence of coal outcrops, no shallow coal mine workings or probable shallow coal mine workings are recorded at these locations.

12.36. To further investigate the mining, a review was undertaken of the British Geological Survey 1;10,000 map (Glamorgan Monmouthshire, Sheet ST08NE & ST09 SW). The map shows that a coal seam, coinciding with the areas of 'Development High Risk' classification, outcrops within the Site, in a north-west to south-easterly direction. The seam is known as the 'Cefn Glas' coal seam, which anecdotal evidence suggests was a thin coal band which was not considered economically viable to mine due to its limited thickness. Based on several lines of evidence, including: a lack of abandoned mine working plans from the Coal Authority for this seam (Appendix 12.2); a lack of mineshafts/adits; and no historic map or memoir evidence of extraction within the inferred vicinity of the seam, it is considered unlikely that this seam has been worked.

Mineworkings

12.37. According to the Coal Authority Interactive Map and Coal Authority Report, there are no recorded past shallow mineworkings or probable shallow coal mine workings within the site Boundary.

12.38. In summary, the mineworkings below the site are generally considered to be a receptor of negligible; locally low to medium sensitivity. Because localised areas have been identified to be located in Development High Risk Areas relating to a coal seam, an assessment of potential effects, taking account of mitigation, is presented in the Assessment of Construction Effects and Assessment of Operational Effects sections below.

Mineshafts/Entries

12.39. Mine entries have the potential to fail catastrophically[1,2] There is no set influencing distance to a mineshaft, with the safe distance being calculated from the local depth to bedrock. From our knowledge of the Site, bedrock is expected to be shallow with a correspondingly small influence zone. The closest shaft is approximately 50 m away from the Developable Area therefore exclusion zones around these will not be expected to influence the Proposed Development. It has been ascertained through review of Coal Authority information and historical records, that there are no proposed solar panels, access tracks or associated cable infrastructure, currently located within the influence of recorded mine entries.

12.40. Aerial imagery was reviewed for visible signs or evidence for unrecorded mine entries within the Developable Area. Whilst unrecorded mine entries cannot be entirely discounted, based on the substantial records available and the lack of visible evidence, it is considered that the matter is of negligible to low sensitivity. Because the residual potential for unrecorded mine entries cannot be completely eliminated, an assessment of potential effects, taking account of mitigation, is presented in the Assessment of Construction Effects and Assessment of Operational Effects sections below.

Faulting and Fissures

12.41. The South of Wales coalfield is characterised by a heavily faulted plateau feature. The process of mining can exert an influence on these features and vice versa. As a result, mining induced faulting and fissuring was reviewed and considered as part of this chapter.

12.42. The Coal Authority defines fissures as types of geological disturbances which are lines of weaknesses at the surface which may have been affected by coal mining. Fissures are a crack or opening in rock or the earth, created by mining in certain circumstances and breaklines are a vertical step in the rock or earth, created when underground mining has caused differential settlement at the surface. Breaklines are usually associated with geological features such as fault lines. Surface deformation in a mining area can result in damage to the rock strata, surface damage, and ground evolving over time as the mining advances.

12.43. Within the Coal Authority Mining Report obtained (**Appendix 12.2**), it is stated that no damage arising from geological faults or other lines of weakness activated by coal mining are documented within the Site boundary.

12.44. In addition to the foregoing, reference was made to the Coal Authority Interactive Map, which has a selection option which highlights areas of mining induced fissuring. This shows that no areas of fissures or breaklines are located within the Site.

12.45. No visible morphological features indicative of fissuring were noted on aerial imagery.

12.46. Based on the available information sources, no evidence has been found of the Site being significantly affected by mining induced faulting and fracturing.

Ground Water Regime (Minewaters)

12.47. Mining can be associated with groundwater contamination, particularly following closure of mines when pumps are switched off and groundwater levels begin to rebound. Rising groundwater and high rainfall results in complex relationship between surface water and groundwater. Contamination of groundwater with acid mine drainage has an adverse impact on the water quality. According to the BGS Publication titled 'The Hydrogeology of Wales; 2015'; '*most of the minewater risings have now reduced in strength and corrosivity, whilst others are … to provide discharges that are more acceptable to the surface watercourses*'.

12.48. The Coal Authority is responsible for managing polluting discharges from abandoned coal mines and has installed eleven treatment plans in South Wales. From consultations made with the Coal Authority, no minewater discharges or mine water treatment schemes are known on the site, or in the immediate area. In this respect, the Proposed Development should not affect any mining groundwater remediation schemes.

Alteration of Gas Regime

12.49. As the Proposed Development shall not utilise deep piled foundations and the mineworkings underneath the site are at circa 180m bgl, it is considered that gases, if present in mine workings below the Site will not be altered by way of foundations creating a preferential pathway for gases to migrate elsewhere.

Summary

12.50. Based on the baseline assessment, the following potentially significant matters have been identified and carried forward for review of effects:

- Shallow mineworkings; and
- Mine entries (shafts/adits).

12.51. The following matters are considered to be of negligible risk and will not undergo further assessment:

- Faulting/ fissures;
- Minewaters;
- Ground gases; and
- Mine tips.

POTENTIAL EFFECTS

PREDICTED CONSTRUCTION EFFECTS

12.52. This section presents an assessment of the effects that the construction of the Proposed Development may have on the mining characteristics within the Site.

12.53. The baseline identified the following potential risks to and from mining:

- Ground Instability resulting from mineworking collapse; and
- Ground instability resulting from mineshaft collapse.

Mineworking Collapse

12.54. The construction of the solar panel and access tracks will change the ground loading regime which could affect shallow mineworkings, causing collapse and giving rise to ground instability; however given that no shallow mineworkings have been identified, this effect is considered unlikely to occur but cannot be ruled out completely due to the potential for unrecorded mineworkings. Localised areas of the solar panels and access track and cable corridors are located in / close to Development High Risk Areas defined by the Coal Authority; however, these appear to be associated with the outcrop of coal seam, rather than to workings themselves. No evidence has been found of mining of the seam in question. Consequently, the effect of the construction works on mineworkings is considered to be **negligible** within the Site as there are no known or suspected shallow mineworkings within areas of proposed turbines, access tracks, cable corridors, or borrow pits. The magnitude of change is considered to be neutral on a low to medium sensitivity receptor, with a resulting effect of **negligible/minor** significance (not significant). No specific mitigation is considered necessary but periodic observational monitoring would help reduce risk, as set out in paragraph 12.57 below.

Mineshaft Collapse

12.55. No mine entries have been identified in the area of the proposed solar panels, or on/in close proximity to the access tracks, cable routes or borrow pits. For that reason, the construction works are unlikely to induce ground instability from shaft collapse, with a **neutral to slight** magnitude of change likely on a low sensitivity receptor. Whilst examination of the detailed records has found no evidence of mine entries, in any historic mining area there remains a residual risk in any historic mining area that unrecorded features could be present. For that reason, a **negligible to minor** (not significant) effect has been assigned. As above, no specific mitigation is considered necessary but periodic observational monitoring would help reduce risk, as set out in paragraph 12.57 below.

Predicted Operational Effects

12.56. Similar to those noted for the construction phase; there is considered to be a residual risk of ground instability disruption impacts during operation. This is due to the fact that the presence of unrecorded mining features can never be completely ruled-out in any historic mining area. However, based upon our research the magnitude of change is likely to be moderate on a receptor of negligible sensitivity; and this effect is considered to be **negligible to minor** (not significant) based upon the mining features recorded underneath the Site. Implications of Climate Change

12.57. As per the projection outlined by the UK Climate Change projections (UKCP18), the implications of climate change could have consequences to our baseline conditions. In particular the likelihood of higher and heavier rainfall with an increased frequency of winter storms could have the following implications;

- Increase the likelihood of worked coal seams flooding, resulting in the distribution of possible mine water discharge at surface; Discharges from abandoned mines can vary from seasonal trickles to substantial flows, however the increase of rainfall could result in more events in which substantial mineworkings floods are brought to surface disrupting a larger quantity of contaminants into the groundwater regime.

Mitigation Measures

Proposed Construction Mitigation

Mineworking and Mineshaft Collapse

12.58. While there is no evidence of features such as mine entries or shallow mineworkings within the Site, in any historic mining area, the possibility of unrecorded features can never be completely ruled out. A Toolbox Talk will be delivered to the site construction team by Engineering Geologists to highlight the features and typical manifestations that can occur. The matter shall be recorded on the construction phase Geotechnical Risk Register, within the Construction Environmental Management Plan (CEMP), and observational monitoring procedures of unrecorded mineworkings will be included to check for any evidence of potential mining related subsidence or features. In the event of any such features being discovered, appropriate investigation would be undertaken and stand-off zones and/ or remedial action would be determined, as stipulated in the CEMP.

Proposed Operational Mitigation

12.59. No additional mitigation is required.

Good Practice Measures (Applied Mitigation)

12.60. Standard construction practice measures to be implemented to minimise the risk of detrimental effect on the mining environment. The elements of this relating to mining are as follows:

- Developing a visual monitoring regime to check for signs of unexpected / unrecorded mining features, such as surface subsidence or cracks. Any such features to be reported to a specialist engineering geologist and duly investigated. Appropriate remedial measures to be designed and implemented if necessary.

RESIDUAL EFFECTS

Residual Construction Effects

12.61. There is considered to be a low residual risk of ground instability disruption impacts during construction works. However, based upon our research this is considered to be nominal based upon the mining features found underneath the Site.

Residual Operational Effects

12.62. There is considered to be a low residual risk of ground instability disruption impacts during operation, again relating to the fact that unrecorded mining features can never be completely ruled-out. However, based upon our research this is considered to be nominal based upon the mining features found underneath the Site.

SUMMARY & CONCLUSION

12.63. Table 12-6 below summarises the predicted effects of the Proposed Development on Mining.

Table 12-6: Summary of predicted effects on mining

Predicted Effect	Significance	Mitigation	Significance of Residual Effect
Construction			
Uncontrolled instability due to mineworkings/mine entries	Negligible-Minor	Desk based research/ consultation stage has established this to be unlikely but risk cannot be completely eliminated. No specific mitigation is considered necessary but periodic observational monitoring would help reduce risk. Whilst unlikely, if unrecorded mine entries were to be discovered then a	Negligible-Minor.

		development standoff zone would have to be applied depending on proximity to infrastructure.	
Operation			
Continued potential for ground instability relating to mineworkings/mine entries.	Negligible-minor	Desk based research/ consultation stage has established this to be unlikely but risk cannot be completely eliminated. No specific mitigation is considered necessary.	Negligible