4 ENVIRONMENTAL ASSESSMENT METHODOLOGY

Introduction

4.1 This chapter of the ES sets out the approach taken to the EIA. The chapter also includes details of the consultation undertaken to date and the overall approach to the assessment of the likely effects. Further details of topic specific methodologies, such as survey methods, are provided in each topic chapter.

Scoping

4.2 Scoping is the process of identifying the issues to be addressed during the EIA process. Scoping is an important preliminary procedure, which sets the context for the EIA process.

4.3 Regulation 15 of the EIA Regulations allows an applicant to request that the PEDW sets out its opinion (known as a Scoping Direction) as to the issues to be addressed in the ES. Whilst there is no formal requirement in the EIA Regulations to seek a Scoping Direction prior to submission of an ES, it is recognised as best practice to do so.

4.4 A Scoping Request was submitted to The Planning Inspectorate (now PEDW) on 10 March 2022. The Scoping Report that comprised this request is included as **Appendix 4.1**.

4.5 PEDW issued its Scoping Direction on 6 May 2022 and a copy of this is included as **Appendix 4.2**. In line with Regulation 33(7) of the EIA Regulations, formal consultation was undertaken with the following bodies:

- RCTCBC as relevant LPA;
- Natural Resources Wales (NRW);
- Cadw;
- Coal Authority;
- The Welsh Ministers (i.e. Transport Directorate of the Welsh Government); and
- South Wales Fire and Rescue Service.

4.6 The ES topic chapters provide a summary of the key points raised during Scoping and as a result of any further consultation with both statutory and non-statutory consultees.

4.7 The Scoping exercise also highlighted a number of areas that consultees wished to see addressed within the ES. Taking into account the nature, size and location of the Proposed Development, the information provided within the Scoping Direction and other consultation responses provided so far throughout the EIA process, the following topics have been scoped in as requiring assessment within this ES:

- Landscape and Visual (Chapter 5)
- Biodiversity (Chapter 6)
- Historic Environment (Chapter 7)
- Climate Change (Chapter 8)
- Ground Conditions (Chapter 9)

Climate Change Resilience

4.8 Resilience to future climate change has been considered during the design process. The design has taken into account, for example, future flood risk and resilience to extreme weather events. Further details are provided in Chapter 2 (Project Description) and Chapter 8 (Climate Change).

Changes to Future Environmental Conditions

4.9 Consideration of predicted changes in baseline environmental conditions, including changes resulting from climate change, have been set out within each ES topic chapter, where robust information was available at the time of writing. Details are provided in the methodology section of this chapter.

4.10 The assessment of effects for each topic has taken into account identified trends or changes predicted to arise as a result of climate change.

Topics Scoped Out of the EIA Process

4.11 Effects on other aspects of the environment are not likely to be significant. The topics scoped out of the assessment are set out in detail the Scoping Report (**Appendix 4.1**) and resultant Scoping Direction (**Appendix 4.2**) and are summarised below.

Planning Policy

4.12 The ES provides an overview of relevant legislative and planning policy context within each topic chapter and the assessments have had regard to national and local policy documents, where relevant. A separate chapter on planning policy has not been included within the ES, however, a Planning Statement has been prepared to accompany the planning application.

Population (Socio-economics), Human Health, Air Quality and Risk of Major Accidents

4.13 Construction will have a temporary effect on employment provision through the creation of construction jobs however, it is unlikely that the Proposed Development will result in a significant change in population as workers are unlikely to relocate to the area on a permanent basis. Therefore, no significant effects are anticipated.

4.14 In terms of human health, the direct human health effects of the Proposed Development are limited. The Proposed Development will displace primary fossil fuel derived electricity and the consequent greenhouse gases and other pollutant emissions released during fossil fuel combustion and would likely result in a beneficial effect on human health.

4.15 In terms of air quality, the number of HGV movements during the construction of the Proposed Development will not exceed the traffic criteria detailed in the IAQM/EP (UK) Planning Guidance. As such the change in the volume of traffic on the surrounding road network will not have any significant effect on air quality as experienced by the nearest receptors located in the vicinity of the site.

4.16 Solar photovoltaic technology is a relatively benign form of electricity generation with very low risk of accident or disaster and will not have a significant environmental effect in this regard. The Proposed Development will be enclosed by appropriately designed security fencing and monitored by CCTV, which will lower the risk of unauthorised access and accidents.

4.17 Therefore, no separate consideration of population, human health, air quality or risk of major accidents is considered necessary. This approach was confirmed as acceptable in the Scoping Direction other than in relation to risk associated with former coal mine workings. Due to there being two adits/shafts close to/within the proposed cable route and one in close proximity to the northern and southwestern boundary of the site, PEDW requested that this matter be scoped into the ES in a proportionate manner. In order to address this a Ground Conditions Chapter (Chapter 9) has been included in this ES.

4.18 The Scoping Direction also advised that the ES should also cover responsibilities set by the Regulatory Reform (Fire Safety) Order 2005 and NRW's comments on the potential for solar panels to leach Per- and polyfluroalkyl substances (PFAS) over time. These matters are covered below.

The Regulatory Reform (Fire Safety) Order 2005

4.19 The Regulatory Reform (Fire Safety) Order 2005 (RRFSO) provides a framework for regulating fire safety in all non-domestic premises including workplaces and the parts of multi-occupied residential buildings used in common in England and Wales. It consolidated previous fire safety legislation into one Order.

4.20 Essentially, it requires that any person who has some level of control in premises must take reasonable steps to reduce the risk from fire and make sure people can safely escape if there is a fire. It applies to virtually all premises and covers nearly every type of building, structure and open space including: offices and shops; care homes and hospitals; community halls and places of worship; shared areas of multi-household properties; pubs, clubs and restaurants; schools and sports centres; tents and marquees; hotels and hostels; and factories and warehouses.

4.21 The RRFSO requires the employer, in relation to those parts of their premises where staff may be present to:

- carry out a fire-risk assessment identifying any possible dangers and risks;
- consider who may be especially at risk;
- get rid of or reduce the risk from fire as far as is reasonably possible and provide general fire precautions to deal with any possible risk left;
- take other measures to make sure there is protection if flammable or explosive materials are used or stored;
- create a plan to deal with any emergency and, in most cases, keep a record of findings; and review them when necessary.

4.22 Whilst the above mentioned list does not specifically include solar farms and there are no internal workspaces included in the Proposed Development, the Applicant is aware of the requirements of the RRFSO and will comply with them as necessary to ensure risk from fire is managed in accordance with the legislation.

Per- and polyfluroalkyl substances (PFAS)

4.23 The Applicant can confirm that it does no use solar panels that contain PFAS. Accordingly, there is no risk of such substances leaching from the Proposed Development.

Transport

4.24 The construction period is expected to take approximately 6-8 months. It is expected that construction hours will be between 07:00 and 18:30 hours Monday to Friday and 07:00 to 13:00 hours on Saturday. It is unlikely that, even at the most intense period of construction, there will be more than 10 HGV deliveries per day. It is envisaged that the main construction route will be from the north via the A473 and Maesmawr Road. It is therefore considered that transport, both construction and operational, can be scoped out of the ES with adequate detail provided via the submitted CTMP.

4.25 The Scoping Direction confirmed that no concerns were raised by the Transport Directorate of WG. RCTCBC's Transportation section did not respond to the scoping consultation. The Scoping Direction therefore concluded that transport can be scoped subject to no significant concerns being raised by RCTCBC. Subsequent engagement with RCTCBC (via email correspondence with Gareth Davies Team Leader Development Control, dated 13/05/22) has confirmed that comment has not been provided by RCTCBC's Transportation section following issue of the Scoping Direction.

4.26 Transport is therefore scoped out of the ES in accordance with the Scoping Direction.

Material Assets

4.27 The EIA Regulations refer to 'material assets', including architectural and archaeological heritage. The phrase 'material assets' has a broad scope, which may include assets of human or natural origin, valued for socio-economic or heritage reasons. Material assets are in practice considered across a range of topic areas within an ES, in particular historic environment and socio-economics. These topics are included within this ES or have been scoped out as set out above. Therefore, no separate consideration of material assets is considered necessary, as confirmed in the Scoping Direction.

Agricultural Land Classification

4.28 A desktop Agricultural Land Classification (ALC) Survey of the site was completed in November 2020 and updated in March 2022. The ALC Survey confirmed that 0.1 hectares (or 0.3% of the site) is classified as being of Best and Most Versatile land (3a). The remainder of the land is split between the 3b, 4 and 5 ALC classifications. The majority of the site is category 3b (89%). Consequently, BMV land will not be significantly affected by the Proposed Development.

4.29 ALC is therefore scoped out of the ES in accordance with the Scoping Direction.

Water

4.30 The Applicant has prepared a Flood Consequence Assessment (FCA) and supporting Drainage Strategy which both identifies and addresses in detail any potential effects on the local hydrological regime. A number of mitigation measures are outlined which look to manage the potential creation of rivulet systems whilst maintaining natural flow regimes and retaining appropriate vegetation cover.

4.31 It has therefore been demonstrated through the aforementioned documents that a standalone hydrological ES chapter is not required. The FCA and Drainage Strategy will be submitted with the application as separate reports.

Environmental Assessment Methodology

Relevant EIA Guidance

4.32 The EIA process has taken into account relevant government or institute guidance, including:

- Welsh Office Circular 11/99: Environmental Impact Assessment;
- Ministry for Housing, Communities and Local Government (2019a) Planning Practice Guidance at http://planningguidance.planningportal.gov.uk;
- Department of the Environment, Transport and the Regions (DETR) (1997) Mitigation Measures in Environmental Statements. HMSO;
- Highways Agency et al. (2008) Design Manual for Roads and Bridges, Volume 11, Section 2, Part 5. HA 205/08;
- Institute of Environmental Management and Assessment (2004) Guidelines for Environmental Impact Assessment;
- Institute of Environmental Management and Assessment (2011) The State of Environmental Impact Assessment Practice in the UK. Special Report; and
- Institute of Environmental Management and Assessment (2015a) Environmental Impact Assessment Guide to Shaping Quality Development;
- Institute of Environmental Management and Assessment (2015b) Climate Change Resilience and Adaptation;

- Institute of Environmental Management and Assessment (2016) Guide to Delivering Quality Development;
- Institute of Environmental Management and Assessment (2017) Assessing Greenhouse Gas Emissions and Evaluating their Significance; and
- Institute of Environmental Management and Assessment (2017) Health in Environmental Impact Assessment: A Primer for a Proportional Approach .

4.33 Other topic specific legislation and good practice guidance will be drawn upon as necessary.

Key Elements of the General Approach

4.34 The assessment of each environmental topic scoped in forms a separate chapter of the ES. For each environmental topic, the following have been addressed:

- Methodology and assessment criteria;
- Description of the environmental baseline conditions;
- Measures adopted as part of the Proposed Development, including mitigation and design measures that form part of the Proposed Development;
- Identification of likely effects and evaluation and assessment of the significance of identified effects, taking into account any measures designed to reduce or avoid environmental effects which form part of the Proposed Development;
- Identification of any further mitigation or monitoring measures envisaged to avoid, reduce and, if possible, remedy adverse effects (in addition to those measures that form part of the Proposed Development); and
- Assessment of any cumulative effects with other developments planned in the area.

Methodology and Assessment Criteria

4.35 Each topic chapter provides details of the methodology for baseline data collection and the approach to the assessment of effects. Each environmental topic has been considered by a specialist in that area (see **Appendix 1.2**).

4.36 Each topic chapter defines the scope of the assessment within the methodology section, together with details of the study area, desk study and survey work undertaken and the approach to the assessment of effects. The identification and evaluation of effects has been based on the information set out in Chapter 2 (Project Description) of this ES, EIA good practice guidance documents and relevant topic-specific guidance where available.

Description of the Environmental Baseline Conditions (including future baseline conditions)

4.37 The existing and likely future environmental conditions in the absence of the Proposed Development are known as ‘baseline conditions’. Each topic-based chapter includes a description of the current (baseline) environmental conditions. The baseline conditions at the site and within the study area form the basis of the assessment, enabling the likely significant effects to be identified through a comparison with the baseline conditions.

4.38 The baseline for the assessment of environmental effects is primarily drawn from existing conditions during the main period of the EIA work in the period 2020 to 2022.

4.39 The baseline for the assessment should represent the conditions that will exist in the absence of the Proposed Development at the time that it is likely to be implemented. The anticipated start date for construction is Q3 2024, with enabling works likely to occur in Q2 2024. The programme would be

of approximately 6-8 months duration (including enabling works). Full operation of the site has been assumed to take place in Q3 2024. Further information about the construction programme assessed as part of the EIA process can be found in Chapter 2 (Project Description) of this ES.

4.40 Consideration has been given to any likely changes between the time of survey and the future baseline for the construction of the Proposed Development from Q2 2024 and for operation of the Proposed Development from Q3 2024. In some cases, these changes may include the construction or operation of other planned developments in the area. Where such developments are built and operational at the time of writing and data collection, these have been considered to form part of the baseline environment. Where sufficient and robust information is available, such as expected traffic growth figures, other future developments have been considered as part of the future baseline conditions. In all other cases, planned future developments are considered within the assessment of cumulative effects.

4.41 The consideration of future baseline conditions has also taken into account the likely effects of climate change, as far as these are known at the time of writing. This has been based on information available from the UK Climate Projections project (UKCP18), which provides information on plausible changes in climate for the UK (Environment Agency and Met Office, 2018) and on published documents such as the UK Climate Change Risk Assessment 2017 (Committee on Climate Change, 2016).

4.42 Climate data from the UKCP18 database has been compiled for a 25km^2 grid square containing the site, based on a high emissions scenario (RCP8.5). Future cloud cover change data for the period 2040-2069 has been used to inform the consideration of how environmental conditions may change at the site and within the study area in future.

Limitations of the Assessment

4.43 Each topic chapter sets out any limitations identified in the available baseline data and whether there were any difficulties encountered in compiling the information required.

Mitigation Measures Adopted as Part of the Proposed Development

4.44 During the EIA process, environmental issues have been taken into account as part of an ongoing iterative design process. The process of EIA has therefore been used as a means of informing the design.

4.45 The Proposed Development assessed within this ES therefore includes a range of measures that have been designed to reduce or prevent significant adverse effects arising. In some cases, these measures may result in enhancement of environmental conditions.

4.46 The topic chapters set out the measures that form part of the Proposed Development and that have been taken into account in the assessment of effects for that topic. These include:

- Measures included as part of the design (sometimes referred to as primary mitigation)
- Measures to be adopted during construction to avoid and minimise environmental effects, such as pollution control measures. These measures would be implemented through a CoCP.
- Measures required as a result of legislative requirements.

Assessment of Effects

4.47 The EIA Regulations require the identification of the likely significant environmental effects of the Proposed Development. This includes consideration of the likely effects during the construction and operational phases. The assessment is based on consideration of the likely magnitude of the predicted impact and the sensitivity of the affected receptor. The process by which effects have been

identified and their significance evaluated is set out within each individual topic chapter. The overarching principles are set out below.

Sensitivity or Importance of Receptors

4.48 Receptors are defined as the physical or biological resource or user group that would be affected by the Proposed Development. For each topic, baseline studies have informed the identification of potential environmental receptors. Some receptors will be more sensitive to certain environmental effects than others. The sensitivity or value of a receptor may depend, for example, on its frequency, extent of occurrence or conservation status at an international, national, regional or local level.

4.49 Sensitivity is defined within each ES topic chapter and takes into account factors including:

- Vulnerability of the receptor
- Recoverability of the receptor
- Value/importance of the receptor.

4.50 Sensitivity is generally described using the following scale:

- High
- Medium
- Low
- Negligible.

4.51 In some cases, a further category of very high has been used.

Magnitude of Impact

4.52 Impacts are defined as the physical changes to the environment attributable to the Proposed Development. For each topic, the likely environmental impacts have been identified. For each topic the likely environmental change arising from the Proposed Development has been identified and compared with the baseline. Impacts are divided into those occurring during the construction and operational phases.

4.53 The categorisation of the magnitude of impact is topic-specific but generally takes into account factors such as:

- Extent
- Duration
- Frequency
- Reversibility.

4.54 With respect to the duration of impacts, the following has been used as a guide within this assessment, unless defined separately within the topic assessments:

Short term: A period of months, up to one year

Medium term: A period of more than one year, up to five years

Long term: A period of greater than five years.

4.55 The magnitude of an impact has generally been defined used the following scale:

- High
- Medium
- Low

- Negligible.

4.56 In some cases, a further category of 'no change' has been used.

Significance of Effects

4.57 Effect is the term used to express the consequence of an impact (expressed as the 'significance of effect'). This is identified by considering the magnitude of the impact and the sensitivity or value of the receptor.

4.58 The magnitude of an impact does not directly translate into significance of effect. For example, a significant effect may arise as a result of a relatively modest impact on a resource of national value, or a large impact on a resource of local value. In broad terms, therefore, the significance of the effect can depend on both the impact magnitude and the sensitivity or importance of the receptor.

4.0.0 Significance levels are defined separately for each topic. Unless separately defined in the topic chapters, the assessments take into account relevant topic specific guidance, based on the following scale and guidance:

- **Substantial**: Only adverse effects are normally assigned this level of significance. They represent key factors in the decision-making process with regard to planning consent. These effects are generally, but not exclusively, associated with sites or features of international, national or regional importance that are likely to suffer the most damaging impact and loss of resource integrity
- **Major**: These beneficial or adverse effects are considered to be very important considerations and are likely to be material in the decision-making process
- **Moderate**: These beneficial or adverse effects may be important but are not likely to be key decision-making factors. The cumulative effects of such factors may influence decision making if they lead to an increase in the overall adverse effect on a particular resource or receptor
- **Minor**: These beneficial or adverse effects may be raised as local factors. They are unlikely to be critical in the decision-making process, but are important in enhancing the subsequent design of the Proposed Development
- **Negligible**: No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

4.59 The terms minor, moderate, major and substantial apply to either beneficial or adverse effects. Effects may also be categorised as direct or indirect, secondary, short, medium or long term, or permanent or temporary as appropriate.

4.60 Each chapter defines the approach taken to the assessment of significance. Unless set out otherwise within the chapter, topic chapters use the general approach set out in **Table 4.1**. For some topics, a simplified or quantitative approach is considered appropriate.

Table 4.1: Typical Assessment Matrix

Sensitivity	Magnitude of Impact				
	No Change	**Negligible**	**Low**	**Medium**	**High**
Negligible	No change	Negligible	Negligible or Minor	Negligible or Minor	Minor
Low	No change	Negligible or Minor	Negligible or Minor	Minor	Minor or Moderate
Medium	No change	Negligible or Minor	Minor	Moderate	Moderate or Major
High	No change	Minor	Minor or Moderate	Moderate or Major	Major or Substantial

Sensitivity	Magnitude of Impact				
	No Change	Negligible	Low	Medium	High
Very high	No change	Minor	Moderate or Major	Major or Substantial	Substantial

4.61 Unless set out otherwise in each topic chapter, effects assessed as moderate or above are considered to be significant in terms of the EIA Regulations within this assessment.

Further Mitigation and Future Monitoring

4.62 Where required, further mitigation measures have been identified within topic chapters. These are measures that could further prevent, reduce and, where possible, offset any adverse effects on the environment.

4.63 Where relevant and necessary, future monitoring measures have also been set out within the topic chapters.

Assessment of Cumulative Effects

4.64 The EIA Regulations require consideration of cumulative effects, which are effects on a receptor that may arise when the Proposed Development is considered together with other schemes proposed in the area.

4.65 The cumulative effects of the Proposed Development in conjunction with other proposed schemes have been considered within each topic chapter of the ES. Other developments considered within the cumulative assessment include those that are:

- Under construction
- Permitted, but not yet implemented
- Submitted, but not yet determined
- Identified in the Development Plan (and emerging Development Plan - with appropriate weight being given as they move closer to adoption) recognising that much information on any relevant proposals will be limited.

4.66 Developments that are built and operational at the time of assessment are considered to be part of the existing baseline conditions.

4.67 Details of the developments included as part of the cumulative assessment are provided in **Appendix 4.3**.

Interrelationships

4.68 Each topic chapter considers whether or not there are any inter-related effects with other topics included within the EIA that have not already been considered in order to identify any secondary, cumulative or synergistic effects.

Summary Tables

4.69 Summary tables have been used to summarise the effects of the Proposed Development for each environmental topic.

Consultation

4.70 In addition to the Scoping process, the project team has undertaken consultation with, or requested information from, a number of organisations, in order to agree methodologies and obtain and agree information regarding existing environmental conditions, including (but not limited to):

- NRW – (Chapter 6 – Biodiversity)
- Cadw - (Chapter 7 – Historic Environment)
- Glamorgan-Gwent Archaeological Trust (GGAT) - (Chapter 7 – Historic Environment).

4.71 Further information regarding the consultation with topic specific organisations is detailed within the individual topic chapters.

Local Planning Authority

4.72 The site lies within the administrative area of RCTCBC. Pre-application advice was sought from the LPA on 11th November 2021. The resultant feedback from the LPA received on 17th January 2022 helped to refine the Proposed Development prior to submitting the Scoping Report to the Planning Inspectorate (now PEDW).

4.73 Specific feedback was also obtained from RCTCBC regarding the viewpoint selections used for the landscape and visual assessment.

4.74 Similarly, specific feedback was obtained from RCTCBC's Ecology Officer regarding the biodiversity assessment work.

Statutory Public Consultation

4.75 As part of the consultation process, the Applicant has engaged with the local community in order to inform local people about the Proposed Development, to explain its likely effects and to take on board any matters raised. A summary of the statutory pre-application public consultation carried out is set out below.

4.76 Letters were issued to neighbouring properties and statutory consultees that set out the proposed development and how to comment on the proposals.

4.77 The statutory consultation was also advertised in the local paper.

4.78 As referred to in the letters, a website was set up for the Proposed Development.

4.79 Site notices were also erected at locations around the site.

Additional Non-statutory Public Consultation

4.80 In addition to the statutorily required public consultation, the Applicant also arranged a public exhibition (see below).

4.81 Details of the public exhibition are set out below. The exhibition was publicised by writing to the properties in close proximity to the site. RCTCBC officers were also advised of it as were local councillors and the relevant Community/Parish Councils.

Public Exhibitions

4.82 An exhibition was held on 28th September at Llantwit Fardre Rugby Club. The exhibition was open between 4-8 pm.

4.83 Further detail will be provided in the Pre-Application Consultation (PAC) Report.

Pre-Application Consultation (PAC) Report

4.84 A PAC report is submitted with the application providing details of all the consultation undertaken, both statutory and non-statutory.

4.85 These comments will be taken into account by the design team in the preparation of the planning application and, where relevant, in the EIA process and/or other application documents. The PAC

Report will set out where the matters have been considered and also explains whether certain matters were unable to be addressed and why.

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