

# MYNYDD MAEN SOLAR FARM

## EIA SCOPING REPORT

Request for Scoping Direction under Town and Country Planning  
(Environmental Impact Assessment) (Wales) Regulations 2017

On behalf of CENIN Renewables



JPW2051  
1  
August 2023

### Document status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
1	Final	MTJ	DP	DP	7/8/2023

### Approval for issue

Darren Parker

7 August 2023

The report has been prepared using the information provided to RPS by its client, or others on behalf of its client. To the fullest extent permitted by law, RPS shall not be liable for any loss or damage suffered by the client arising from fraud, misrepresentation, withholding of information material relevant to the report or required by RPS, or other default relating to such information, whether on the client's part or that of the other information sources, unless such fraud, misrepresentation, withholding or such other default is evident to RPS without further enquiry. It is expressly stated that no independent verification of any documents or information supplied by the client or others on behalf of the client has been made. The report shall be used for general information only.

#### Prepared by:

##### RPS

Matthew Todd-Jones  
Principal Planner

2 Callaghan Square  
Cardiff  
CF10 5AZ

T  
E

#### Prepared for:

##### CENIN Renewables

Martyn Popham  
Director

Solcer House  
Parc Stormy,  
Stormy Down,  
Bridgend  
CF33 4RS

T 01656 789970  
E [info@cenin.co.uk](mailto:info@cenin.co.uk)

## Contents

<b>1</b>	<b>INTRODUCTION .....</b>	<b>4</b>
	Introduction .....	4
	Statutory Framework and Purpose of the Environmental Statement .....	4
<b>2</b>	<b>THE SITE AND THE PROPOSED DEVELOPMENT .....</b>	<b>6</b>
	The site and its surroundings .....	6
	Project description .....	6
<b>3</b>	<b>GENERAL APPROACH TO EIA .....</b>	<b>7</b>
	Information required .....	7
	Structure of the Environmental Statement (ES) .....	8
	EIA methodology .....	9
<b>4</b>	<b>SCOPE OF ASSESSMENT .....</b>	<b>13</b>
	Work undertaken to date .....	13
	Topics scoped out of assessment .....	13
<b>5</b>	<b>TECHNICAL ASSESSMENTS .....</b>	<b>188</b>
	Chapter 1: Introduction .....	188
	Chapter 2: Project description .....	188
	Chapter 3: Need and alternatives considered .....	188
	Chapter 4: Environmental assessment methodology .....	188
	Chapter 5: Landscape and visual .....	19
	Chapter 6: Biodiversity .....	266
	Chapter 7: Climate Change .....	322
	Measures adopted as part of the proposed development .....	366
	Potential cumulative effects .....	366
	Potential inter-related effects .....	366
<b>6</b>	<b>SUMMARY .....</b>	<b>37</b>

## Tables

Table 4.1: Structure of the ES

Table 5.1: View Ranges

Table 5.2: Candidate Viewpoints

## Figures

Figure 1: Site Location Plan

Figure 2: Site Location Plan with Access Route

Figure 3: Site Location and Landscape Planning Designations

Figure 4: Site Location and Planning Designations

Figure 5: Zone of Theoretical Visibility 10km

Figure 6: Projected carbon intensity of electricity generation

## Appendices

Appendix 1: Pre-application advice from Caerphilly County Borough Council

Appendix 2: Galpin Landscape Architects Preliminary Landscape and Visual Assessment

Appendix 3: RPS Preliminary Ecological Appraisal

Appendix 4: RPS Cultural Heritage desk-based assessment

# 1 INTRODUCTION

## Introduction

- 1.1 This Scoping Report has been prepared by RPS on behalf of CENIN Renewables. It proposes the scope of environmental assessment for the proposed solar farm and ancillary development at Mynydd Maen, Newbridge (**Figure 1**).
- 1.2 This report sets out the proposed scope of the Environmental Statement (the report of the EIA process), which will be prepared in accordance with the Town and Country Planning (Environmental Impact Assessment) Wales Regulations 2017 (2017 No.567(W.136)) (referred to hereafter as the EIA Regulations). The Environmental Statement (ES) will accompany a full Development of National Significance (DNS) planning application to be submitted to the Welsh Ministers.
- 1.3 The aim of this report is to provide information to the Welsh Ministers to enable an EIA Scoping Direction to be made under Regulation 15 of the EIA Regulations. A letter to Welsh Ministers requesting such a direction accompanies this report.

## Statutory Framework and Purpose of the Environmental Statement

### Purpose of EIA

- 1.4 EIA is the process of identifying and assessing the significance of effects likely to arise from a proposed development. This requires consideration of the likely changes to the environment, where these arise as a consequence of the proposed development, through comparison with the existing and likely future baseline conditions in the absence of the proposed development.

### Purpose of Scoping

- 1.5 The process of identifying the matters to consider within an ES (establishing the scope of the assessment) is known as scoping. Scoping is not a mandatory requirement under the EIA Regulations. However, it is recognised that through the scoping exercise, the key environmental matters are identified at an early stage, which permits subsequent work to concentrate on those environmental topics for which significant effects may arise as a result of a proposed development.

### Purpose of this Scoping Report

- 1.6 This document sets out details of the proposed development at Mynydd Maen, Newbridge, the proposed EIA methodology and the proposed scope of technical assessments and invites comments from Welsh Ministers and its consultees regarding the scope of works. The intention of this scoping exercise is to gain agreement from all key parties regarding the proposed methodology and scope of assessment.
- 1.7 This Scoping Report has been informed by the following:
- Informal discussions with Planning and Environment Decisions Wales (PEDW);
  - Correspondence from Caerphilly County Borough Council and its consultees;
  - Desk-top studies, site visits and surveys;
  - Review of relevant websites;
  - Local planning policy, Future Wales: The National Plan, Planning Policy Wales (PPW) and Technical Advice Notes (TANs);
  - The EIA Regulations and EIA good practice guidance; and

- Experience of other similar developments.

### **The applicant**

- 1.8 CENIN Renewables Ltd (the applicant) (CENIN) is a Bridgend based renewable integrated infrastructure company committed to powering a greener future. In 2021 CENIN was recognised for its work by the Queen's Award for Enterprise – Sustainable Development. The founding principles of CENIN are based on energy generation using natural resources, recycling of materials and sustainable and secure job creation. These principles have led to the developments of its innovative integrated renewable energy centre at CENIN's headquarters at Parc Stormy in Bridgend County Borough.
- 1.9 Through its innovative approach to renewable energy provision, CENIN unlocks hidden green energypotential and utilise the earth's natural resources.

### **Public consultation**

- 1.10 The applicant will undertake informal consultation through brochure drops to local residences and providing a webpage which will contain all of the project information.
- 1.11 In addition, the applicant will follow the consultation requirements outlined by the DNS process.
- 1.12 As part of the consultation process, the applicant will engage with the local community in order to inform local people about the proposals, to explain the development and its likely effects and to take on board any concerns or issues. The ES will include a summary of the pre-application public consultation carried out.

## 2 THE SITE AND THE PROPOSED DEVELOPMENT

### The site and its surroundings

- 2.1 The site comprises land at Cil-Onnydd Farm between Newbridge to the west and Cwmbran to the east. It lies within the administrative boundary of Caerphilly County Borough Council (the Council).
- 2.2 The site itself extends to approximately 28.6 hectares (70.6 acres) (excluding the cable route) and consists of several parcels of land. The parcels are irregular in shape and comprise a series of agricultural fields of varying sizes. They are currently primarily used for pasture grazing, bound by a mixture of mature woodland, trees and hedgerows. The site adjoins registered common land to the east.

### Project description

- 2.3 CENIN Renewables (the applicant) proposes to develop a solar photovoltaic electricity generating station (or 'solar farm') with an installed generation capacity of approximately 40MW and associated ancillary development, including a substation. The power generated would be enough to power approximately 15,000 typical family homes.
- 2.4 The point of connection is proposed to be located at an existing 132kV substation to the southeast on Mynydd Maen Common, which would be connected to the site by a cable route of 3km.

### Solar farm

- 2.5 The main components of a solar farm are:
- Solar panels and frames;
  - Inverters;
  - Transformers;
  - Cabling; and
  - Substation.
- 2.6 Trenches of typically 1m deep and 50cm wide are required for the underground cabling. At this stage the technical requirements are being clarified and assessed but the proposal will include a substation, which would comprise an open compound with support stanchions and cabling. Battery storage is also proposed within the site.

### Dual and reversible use

- 2.7 The solar farm will be designed to accommodate sheep grazing beneath and between the rows of panels, providing an efficient dual use of land for renewable energy generation and agriculture. The solar farm will be enclosed by tall post and wire 'deer' fencing with security cameras in selected locations for security and insurance purposes.
- 2.8 A solar farm is a temporary and fully reversible use, unlike housing for example, with all equipment removed from site at the end of the installation's operational life (approximately 50 years). The methods used in construction mean that remediation works following the removal of the panels and associated infrastructure are relatively minor and will return the site to its previous greenfield character. This is an approach that will mean the proposed development would accord with one the Key Planning Principles of PPW of '*Maximising environmental protection and limiting environmental impact*' as it would not irreversibly damage or deplete the environment.

### 3 GENERAL APPROACH TO EIA

#### Information required

- 3.1 Although there is no statutory provision as to the form of an ES, it must contain the information specified in Regulation 17(3), including any relevant information specified in Schedule 4 of the EIA Regulations, as set out below:
1. A description of the development including in particular:
    - a. A description of the location of the development;
    - b. A description of the physical characteristics of the whole development, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases;
    - c. A description of the main characteristics and the operational phase of the development (in particular any production process), for instance, energy demand and energy used, nature and quantity of the minerals and natural resources (including water, land, soil and biodiversity) used;
    - d. An estimate, by type and quantity, of expected residues and emissions (such as water, air, soils and sub soil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced during the construction and operation phases.
  2. A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects;
  3. A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.
  4. A description of the factors specified in regulation 4(2) likely to be significantly affected by the development; population, human health, biodiversity (for example fauna and flora), land, (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including archaeological aspects, and landscape.
  5. A description of the likely significant effects of the development on the environment resulting from, inter alia:
    - a. The construction and existence of the development, including, where relevant, demolition works;
    - b. The use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;
    - c. The emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;
    - d. The risks to human health, cultural heritage or the environment (for example due to accidents or disasters);
    - e. The cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;



- f. The impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;
- g. The technologies and the substances used.

3.2 The description of the likely significant effects on the factors specified in regulation 4(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project, including in particular those established under Council Directive 92/43/EEC(a) and Directive 2009/147/EC(b).

1. A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.
2. A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.
3. A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to EU legislation such as Directive 2012/18/EU(c) of the European Parliament and of the Council or Council Directive 2009/71/Euratom(d) or UK environmental assessments may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.
4. A non-technical summary of the information provided under paragraphs 1 to 8.
5. A reference list detailing the sources used for the descriptions and assessments included in the environmental statement.

3.3 The information supplied in the ES will provide a clear understanding of the likely significant effects of the project upon the environment. The following sections outline the overall approach to EIA in order to meet these legal requirements.

### Structure of the Environmental Statement (ES)

3.4 The ES will be structured logically, enabling all relevant environmental information to be found quickly and easily. The ES will describe the EIA process and its findings, and will include the following sections:

- Non-Technical Summary (as a stand alone document);
- Written Statement;
- Figures; and
- Appendices.

## EIA methodology

### Relevant EIA guidance

- 3.5 The EIA process will take into account relevant government or institute guidance, including:
- Welsh Office Circular 11/99: Environmental Impact Assessment;
  - Future Wales: The National Plan 2040;
  - Welsh Government: Planning Policy Wales (2021);
  - Department for Communities and Local Government (2014) 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;
  - Institute of Environmental Management and Assessment (2016) Environmental Impact Assessment: Guide to Shaping Quality Development;
  - Institute of Environmental Management and Assessment (2020) Climate Change Resilience and Adaptation;
  - Institute of Environmental Management and Assessment (2016) Environmental Impact Assessment: Guide to Delivering Quality Development;
  - Institute of Environmental Management and Assessment (2022) Environmental Impact Assessment: 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.
- 3.6 Other topic-specific specialist methodologies and good practice guidelines will be drawn upon as necessary.

### Key elements of the general approach

- 3.7 The assessment of each environmental topic will form a separate chapter of the ES. For each environmental topic, the following will be addressed:
- Methodology and assessment criteria;
  - Description of the environmental baseline (existing conditions);
  - Identification of likely effects;
  - 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 project and to which the developer is committed; and
  - Identification of any further mitigation measures envisaged to avoid, reduce and, if possible, remedy adverse effects (in addition to those measures that form part of the project).

### Methodology and assessment criteria

- 3.8 Each topic chapter will provide details of the methodology for baseline data collection and the approach to the assessment of effects. Details of the proposed approach for each topic are provided in Section 5 of this Scoping Report. Each identified environmental topic will be considered by a specialist in that area. The identification and evaluation of effects will take into account relevant topic-specific guidance where available.

### Description of the environmental baseline

- 3.9 The existing and likely future environmental conditions in the absence of the project are known as 'baseline conditions'. Each topic-based chapter will include 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.
- 3.10 The baseline for the assessment of environmental effects will primarily be drawn from existing conditions during the main period of the EIA work. Consideration will also be given to any likely changes between the time of survey and the future baseline for the construction and operation of the project. 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 will be considered to form part of the baseline environment. Where sufficient and robust information is available, such as expected traffic growth figures, other future developments will be considered as part of the future baseline conditions. In all other cases, planned future developments will be considered within the assessment of cumulative effects, where necessary.
- 3.11 The consideration of future baseline conditions will also take into account the likely effects of climate change, as far as these are known at the time of writing. This will be 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).

### Assessment of effects

- 3.12 The EIA Regulations require the identification of the likely significant environmental effects of the project. Each topic chapter will take into account both the sensitivity of receptors affected and the magnitude of the likely impact in determining the significance of the effect.

### Sensitivity or importance of receptors

- 3.13 Receptors are defined as the physical resource or user group that would be affected by a proposed development. The baseline studies will identify potential environmental receptors for each topic and will evaluate their sensitivity to the proposed development. The sensitivity or importance of a receptor may depend, for example, on its frequency or extent of occurrence at an international, national, regional or local level.

### Magnitude of impact

- 3.14 Impacts are defined as the physical changes to the environment attributable to the project. For each topic, the likely environmental impacts will be identified. The magnitude of the impact will be described using defined criteria within each topic chapter.
- 3.15 The categorisation of the impact magnitude may take into account the following four factors:

- Extent;
- Duration;
- Frequency; and
- Reversibility.

- 3.16 Impacts will be defined as either adverse or beneficial. Depending on discipline, they may also be described as:
- Direct: Arise from activities associated with the project. These tend to be either spatially or temporally concurrent;
  - Indirect: Impacts on the environment which are not a direct result of the project, often produced away from the project site or as a result of a complex pathway.
- 3.17 Impacts will be divided into those occurring during the construction phase and those occurring during operation. Where appropriate, some chapters may refer to these as temporary and permanent impacts.

### Significance of effects

- 3.18 Effect is the term used to express the consequence of an impact (expressed as the 'significance of effect'), which is determined by correlating the magnitude of the impact to the sensitivity of the receptor or resource.
- 3.19 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.
- 3.20 Levels of significance that will be used in the assessment include, in descending order:
- Substantial;
  - Major;
  - Moderate;
  - Minor;
  - Neutral.
- 3.21 Where an effect is described as 'neutral' this means that there is either no effect or that the significance of any effect is considered to be negligible. All other levels of significance will apply to both adverse and beneficial effects. These significance levels will be defined separately for each topic within the methodology sections. In all cases, the judgement made as to significance will be that of the author of the relevant chapter with reference to appropriate standards/guidelines where relevant.

### Mitigation measures

- 3.22 The EIA Regulations require that where significant effects are identified 'a description of any features of the proposed development, or measures envisaged in order to avoid, prevent or reduce or, if possible, offset likely significant adverse effects on the environment' should be included in the ES.
- 3.23 The development of mitigation measures is part of an iterative EIA process. Therefore, measures will be developed throughout the EIA process in response to the findings of initial assessments. The project that forms the subject of the DNS planning application will include a range of measures designed to reduce or prevent significant adverse environmental effects arising, where practicable. In some cases, these measures may result in enhancement of environmental conditions. The

assessment of effects will therefore take into account all measures that form part of the project and to which Elgin are committed.

3.24 The topic chapters will therefore take into account all measures that form part of the proposed development, including:

- Measures included as part of the project 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 the Code of Construction Practice; and
- Measures required as a result of legislative requirements.

3.25 Where required, further mitigation measures will be identified within topic chapters. These are measures that could further prevent, reduce and, where possible, offset any residual adverse effects on the environment.

3.26 In some cases, monitoring measures may be appropriate, for example, to ensure that proposed planting becomes established. Where appropriate, monitoring measures will be set out.

3.27 The ES will set out how the delivery of measures proposed to prevent/ minimise adverse effects is secured and whether relevant consultees agree on the adequacy of the measures proposed.

### **Summary tables**

3.28 Tables will be used to summarise the effects of the project for each environmental topic.

## 4 SCOPE OF ASSESSMENT

### Work undertaken to date

- 4.1 The following studies have been undertaken or are currently ongoing in relation to the proposed development.

#### Landscape and Visual

- 4.2 A preliminary, desk based, landscape and visual appraisal of the proposed development area was completed by Galpin Landscape Architecture in May 2023 (see **Appendix 2**). A Zone of theoretical visibility ('ZTV') with proposed viewpoint locations for assessment has been prepared and consultation with the local planning authority has been undertaken to agree these viewpoints.
- 4.3 The production of a comprehensive Landscape assessment as part of the EIA to accompany the planning application will help to inform the detailed landscape mitigation measures, including the assessment of the impacts and effects of the proposed development.

#### Ecology

- 4.4 A Preliminary Ecological Appraisal (PEA) of the area within the development red line boundary and surrounding buffer zones was undertaken, dated 10<sup>th</sup> October 2022, which included a desk study identifying nationally designated sites within 2 km (10 km for international designations) of the red line application boundary (see **Appendix 3**).
- 4.5 The PEA concluded that there are no anticipated adverse impacts of the proposed development on nearby designated sites other than the locally designated Mynydd Maen, East of Newbridge Site of Important Nature Conservation (SINC). Following consideration of this issue, the development red line boundary was amended to remove the area of SINC, and the cable route was relocated to follow an existing road along the common land to reduce its impact on the SINC.

#### Heritage

- 4.6 A Cultural Heritage desk-based assessment has been undertaken by RPS (see **Appendix 4**). The study site has been assessed for its below ground archaeological potential, and potential effects on the settings of designated archaeological and built heritage assets in the surrounding area.

### Topics scoped out of assessment

- 4.7 Taking into account the findings of the above studies, together with the feedback from the pre-application consultation with the Council and our knowledge of the site and surrounding area, it is proposed that the following topics are not included in the scope of the ES:
- Population,
  - Transport,
  - Human Health,
  - Land (for example land take),
  - Heritage,
  - Soil (for example organic matter, erosion, compaction, sealing),
  - Water (for example hydromorphological changes, quantity and quality),
  - Air,
  - Material Assets, and
  - Risk of Major Accidents.

### Planning policy context

- 4.8 The ES will provide an overview of relevant legislative and planning policy context within each topic chapter. The assessment will have regard to national and local policy documents, where relevant. However, it is not proposed to include a separate chapter on Planning Policy Context in the ES. The draft guidance on EIA from the Department for Communities and Local Government 'EIA: A Guide to Good Practice and Procedures' (DCLG 2006) (paragraph 155) states that there is no requirement to provide chapters on planning and sustainability in Environmental Statements. A separate Planning Statement will be submitted with the planning application and the environmental topic chapters within the ES will each set out the policy context relevant to that topic.

### Population

- 4.9 The construction will have a temporary effect on employment provision through the creation of construction jobs however, it is unlikely that the proposals will result in a significant change in population as workers are unlikely to relocate to an area on a permanent basis. Therefore, a minor beneficial effect is therefore anticipated for a temporary period.

### Transport

- 4.10 Construction access for the project would be from the A472 at Hafodyrynys (see **Figure 2**) and the anticipated duration of construction is 12 to 15 months. Heavy goods vehicle (HGV) movements during construction would be circa 20 (10 each way) per day during peak activity.
- 4.11 It is acknowledged that there are sensitive receptors in the vicinity of the site boundary; however, based upon the expected construction traffic flows they are considered to be low enough so as not to result in any significant environmental effects.
- 4.12 Once operational, the solar farm will be operated remotely and only require around 3 or 4 visits for maintenance, monitoring and cleaning of the panels and site on an as needed basis. The vehicle movements associated with the occasional visits to the site would have a negligible influence on the surrounding highway network.
- 4.13 On the basis of the above, it is therefore considered that transport - both construction and operational - can be scoped out of the EIA and adequately addressed through the submission of separate standalone technical reports, such as a Transport Assessment, which will accompany the planning application. This would align with comments made by the Council in its pre-application advice.
- 4.14 The planning application will also be supported by a Construction Traffic Management Plan (CTMP). This will include, amongst other things, details of the proposed construction vehicle movements and types of vehicles, consideration of the travel journeys for operation/maintenance workers, details of the proposed access junction arrangement, visibility splays (where relevant), details of the proposed haulage route and its suitability, details of traffic management measures to be adopted, construction working hours and duration of works.

### Human health

- 4.15 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 pollutants released during fossil fuel combustion and would result in a beneficial effect on human health.



### **Land (for example land take)**

- 4.16 The site comprises agricultural land which will be developed for the production of renewable energy. The site will be designed to be capable of enabling sheep grazing during its operational life, and therefore it is anticipated that energy and agriculture will remain in a co-use across the site. The proposed development is fully reversible and the agricultural potential of the site can be fully restored following decommissioning.
- 4.17 The site is also within an identified Mineral Resource Area, with the geology underlying the site containing sandstone resource. Whilst this resource is present, it is recorded to extend significantly beyond the site boundary and the proposed use is temporary, and therefore sterilisation of minerals is not considered a significant impact.
- 4.18 The southern portion of the site is within a Mineral Site Buffer Zone for the currently active Hafod Fach Quarry. There would be no overlap of the site boundary with the quarry boundary and subsequently no constraint to mineral working. The solar array would not be a sensitive development and as such it would be suitable for inclusion within the buffer zone, which would accord with the relevant policy of the adopted Caerphilly County Borough Council Local Development Plan (2010).
- 4.19 Overall, the land will not be sterilised in perpetuity from other forms of operations or development and will remain in agricultural use as grazing of sheep will be possible whilst the solar arrays are in place and as such no likely significant lasting adverse effects on the quality of the land is expected.

### **Heritage**

- 4.20 As mentioned above, a cultural Heritage desk-based assessment has been undertaken by RPS.
- 4.21 Within a 5km radius of the study site, there are 10 Scheduled Monuments, 163 listed buildings, and 5 Conservation Areas. No other asset types are present within 5km of the study site. The nearest designated heritage asset to the study site is 1.8km distant.
- 4.22 The assessment states that there is the potential for a high level of impact on non-designated archaeological heritage assets of low/local to moderate/regional importance that may be present within the study site. It also states that there is the potential for some negligible impacts on the settings of designated heritage assets, but in no case would the proposed development be likely to have an effect on the significance of any designated heritage asset.
- 4.23 Overall, it is not considered that impacts from the proposed development would not have a significant effect on the historic environment as a whole.

### **Soil (for example organic matter, erosion, compaction, sealing)**

- 4.24 The site comprises mainly grassland agricultural fields, interspersed with blocks of woodland. The National Soils Map (1:250,000) shows the Site comprise entirely of freely draining acid loamy soils over rock.
- 4.25 Given the existing / historical use of the site, it is not envisaged to be any significant sources of potential contaminative concern. Most of the soil will not be physically impacted from the development.
- 4.26 Appropriate construction techniques will be implemented to reduce above and below ground works and to minimise any compaction of soil mitigating any potential impact on the soils structure and ability to infiltrate water.
- 4.27 The site is entirely classified as Subgrade 4 agricultural land, which is poor quality agricultural land. An Agricultural Land Classification survey is not required given the predictive map information for the site and the knowledge that the site does not contain Best and Most Versatile Agricultural Land.



- 4.28 The proposed development is temporary in nature and fully reversible and following decommissioning would ensure that the future quality of the agricultural land is maintained with no likely significant lasting adverse effects on the quality of the soil.
- 4.29 The planning application will be supported by a Soil Management Plan, but it is considered that this matter should be scoped out and not addressed as part of the ES.

### **Water (for example hydromorphological changes, quantity and quality)**

- 4.30 The entire site is located within Development Advice Map (DAM) Zone A (considered to be at little or no risk of fluvial or coastal/tidal flooding).
- 4.31 NRW surface water mapping identifies a number of isolated locations within the site boundary at low to high risk of surface water flooding. Low risk is defined as areas with a chance of flooding between 1 in 1000 (0.1%) and 1 in 100 (1%), with high-risk areas with a chance of flooding of greater than 1 in 30 (3.3%).
- 4.32 A Flood Consequence Assessment supported by a drainage strategy will be prepared in accordance with Planning Policy Wales, Technical Advice Note 15 and latest climate change data to ensure flood risk and hydrological impacts are managed appropriately. From pre-application advice from the Council, we are also aware that through a separate legislative requirement, SuDS consent will be required prior to construction and we have made contact with the SuDS Approval Body to discuss this proposal.
- 4.33 Having considered the potential impacts, hydrology and drainage can be adequately addressed as part of the planning application via a standalone Flood Consequence Assessment and Drainage Strategy and can be scoped out of the ES.

### **Air Quality**

- 4.34 It is not anticipated that there is any potential for significant effects on local receptors, with any potential effects being confined to during the construction and decommissioning of the solar farm. A Construction Traffic Management Plan and Outline Construction and Decommissioning Method Statement will be prepared to outline management measures to limit any effects during the construction and decommissioning stages.
- 4.35 In relation to traffic movement the location of the proposed development is approximately 1.4km from a declared Air Quality Management Area. Typically, there will be circa 20 Heavy Duty Vehicle (HDV) movements per day (10 each way) during the more intense construction periods.
- 4.36 In terms of air quality the number of HDV movements during the construction and installation of the solar panels together with the supporting framework will not fulfil the traffic criteria detailed in the IAQM/EP (UK) Planning Guidance. A 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.
- 4.37 Due to the nature of the development, once operational there would be no emissions generated by the development. As mentioned above in Human Health, the proposal will have no direct adverse environmental effect on air quality and therefore will have no significant environmental effect in EIA terms. More widely, the electricity the proposed development will produce will potentially displace primary fossil fuel derived electricity that relies on thermal combustion and the consequent release of Green House Gases (GHGs) and other pollutants into the atmosphere consequently, the proposal is considered to have a beneficial effect on air quality.

## Material assets

- 4.38 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 the historic environment chapter. This topic is proposed to be included within the ES (see Table 4.1). Therefore, no separate consideration of material assets is considered necessary.

## Risk of major accidents

- 4.39 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 solar park will be enclosed by appropriately designed security fencing and monitored by CCTV, which will lower the risk of unauthorised access and accidents.
- 4.40 The proposal will be supported by a Battery Safety Management Plan, confirming that the risks are understood, accounted for and mitigated as far as practicable.

## Content of the Environmental Statement

- 4.41 The scope of the EIA takes into account the pre-liminary environmental information pertinent to the site and formal pre-application consultation with Caerphilly County Borough Council (**See Appendix 1**).
- 4.42 As a result, the issues set out below are considered appropriate for assessment in an ES. It is considered that the Proposed Development may have the potential to give rise to significant environmental effects in these areas:
- Landscape and Visual
  - Biodiversity
  - Climate Change
- 4.43 Table 4.1 identifies the chapters that are proposed for inclusion in the ES. Further details of the approach to the assessment and its scope are provided in Section 5 of this Scoping Report.

**Table 4.1: Structure of the ES**

Structure of ES	
Non-Technical Summary	Summary of the ES using non-technical terminology
<b>Volume 1: Text</b>	
	Glossary
Chapter 1	Introduction
Chapter 2	Project Description
Chapter 3	Need and Alternatives Considered
Chapter 4	Environmental Assessment Methodology
Chapter 5	Landscape and Visual
Chapter 6	Biodiversity
Chapter 7	Climate Change
<b>Volume 2: Figures</b>	
Including all figures and drawings to accompany the text.	
<b>Volume 3: Appendices</b>	
Including specialist reports forming technical appendices to the main text.	

## 5 TECHNICAL ASSESSMENTS

### Chapter 1: Introduction

- 5.1 This chapter will provide the introduction to the ES, including details of the application, need for EIA and the structure of the ES.

### Chapter 2: Project description

- 5.2 The ES will include a description of the project, which will form the basis of the assessment of effects. The EIA Regulations require an ES to include:

*'A description of the development comprising information on the site, design and size and other relevant features of the development.'*

- 5.3 This project description chapter will include details of the site, together with a description of the key components of the proposed development. The description will include the following information, as far as practicable at the time of writing:

- Construction phase - a description of the key works, activities and processes that would be required during the construction phase;
- Operational phase - a description of the completed development and its use;
- Decommissioning phase - a description of the key works, activities and processes that would be required during the decommissioning phase.

- 5.4 Where options remain at the time of the assessment (with regard to construction techniques, for example), the ES will provide a clear explanation of the assumptions made. Where appropriate, the realistic worst-case scenario will be assessed.

- 5.5 Where mitigation measures have been identified and developed through the EIA process and have been incorporated as part of the project, details of these measures will be set out within the project description chapter.

### Chapter 3: Need and alternatives considered

- 5.6 This chapter will briefly set out the need for the proposed development. In addition, the EIA Regulations require the alternatives considered by the applicant to be set out in the ES:

*'A description of the reasonable alternatives studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment.'*

- 5.7 This chapter will summarise the reasons for the selection of the site and provide an outline of the alternatives considered during the EIA process, including a description of the alternative design and layout options that have been considered.

### Chapter 4: Environmental assessment methodology

- 5.8 Details of the overall approach to EIA will be set out in this chapter, together with details of the scoping process, consultation undertaken and the overall approach to the assessment of significance. Topic specific methodologies, such as survey methods, will be provided in each topic chapter.

## Chapter 5: Landscape and visual

### General

- 5.9 Landscape and / or Visual effects, associated with a solar farm development, are considered to be an important environmental issue. As such, a Landscape and Visual Impact Assessment (LVIA) would form an important part of the wider Environmental Impact Assessment (EIA) process for the project.
- 5.10 Chapter 5: Landscape and Visual Impact Assessment (LVIA), of the Environmental Statement (ES), would consider the potential effects of the proposed Mynedd Maen Solar Farm (Proposed Development) upon the physical landscape elements, features, landscape character, views and visual amenity within a 5 km radius study area (as measured in all directions from the outer edges of the Application Site).
- 5.11 The LVIA would be undertaken with reference to best practice guidance, see 'Assessment of Effects and Scope of Assessment' below, and would be completed by a suitably qualified and experienced Chartered Landscape Architect (CMLI).
- 5.12 A Glint and Glare Assessment would also be completed separately and reviewed as part of the LVIA process. It will be a standalone assessment but included within the Appendices of the LVIA Chapter and referred to within the assessment of effects section of the chapter. The assessment will have regard to proposal's impact on public rights of way, as per the request from the Council's Public Rights of Way officer.

### Baseline Information

- 5.13 The following forms a summary of the baseline data collated, and work undertaken to inform the landscape and visual element of the EIA Scoping Report and the forthcoming LVIA Chapter. This work has included:
- A review of relevant landscape planning designations,
  - A preliminary review of National, Regional and Local Landscape character assessments, and,
  - Preparation of preliminary proposed ZTV.
- 5.14 A preliminary, desk based, landscape and visual appraisal of the Proposed Development area was completed by RPS Group in Summer 2022 (see **Appendix 2**). In addition, a further preliminary landscape and visual assessment was carried out by Galpin Landscape Architecture in May 2023 (see **Appendix 3**).

### Landscape Planning Designations

- 5.15 The Application Site is not within any Areas of Outstanding Natural Beauty (AONB), a designation of national importance for scenic quality, or National Parks; the nearest being the Wye Valley AONB, located approximately 24 km to the east (at its nearest point) and the Bannau Brycheiniog National Park located approximately 7 km to the northeast at its nearest point (reference **Figures 3 and 4**). As such, there would be no direct physical impacts upon the AONB or National Park as a result of the Proposed Development.
- 5.16 Other designations of local importance, which fall partly or wholly within the Application Site, include Ancient Woodlands and a Visually Important Local Landscape. As derived from the Caerphilly County Borough Local Development Plan up to 2021 (adopted November 2010).
- 5.17 Within the wider 5 km study area, there are a number of other landscape planning designations that would be indirectly impacted by the proposed development. These include:
- Listed Buildings;

- Conservation Areas (CA); the nearest being the Upper Cwmbran, located approximately 3.5 km to the east of the Application Site (at its nearest point);
- Scheduled Monuments;
- Registered Common Land;
- Historic Parks and Gardens; the nearest being Maes Manor Hotel, approximately 5.2 km to the northwest of the Application Site at its nearest point;
- Special Landscape Areas (SLA); the nearest being Mynyddislwyn, approximately 1.6 km to the southwest of the Application Site at its nearest point; and
- Country Parks.

5.18 Other designations within the local landscape, but not within the 5km study area, include:

- Significant Views.

5.19 There are a substantial number of individual trees, hedgerows and blocks of woodland across the Application Site, or immediately adjacent to it. A number of the woodland blocks, to the immediate north and south of the Application Site, are designated as Ancient Woodland.

### National and Local Landscape Character

5.20 The relevant published landscape character assessments have been initially reviewed below. Within the LVIA Chapter, particular attention will be paid to the key landscape characteristics of the relevant aspect areas of the Application Site and the surrounding areas.

5.21 National Landscape Character Areas (NLCAs) are countrywide and form the broad scale landscape character assessment of Wales. The Application Site and majority of the 5 km study area falls within NLCA 37: South Wales Valleys; with the southeasternmost parts of the 5 km study area falling within NLCA 35: Cardiff, Barry and Newport.

5.22 LANDMAP is an “all-Wales Geographical Information System (GIS) based landscape resource where landscape characteristics, qualities and influences on the landscape are recorded and evaluated into a nationally consistent dataset” (CCW (now NRW), 2011). It is administered by Natural Resources Wales (NRW) and comprises five spatially related datasets or aspect layers as follows:

- Geological Landscape: “considers the physical, primarily geological, influences that have shaped the contemporary landscape and identifies those landscape qualities which are linked to the control or influence exerted by bedrock, surface processes, landforms and hydrology”;
- Landscape Habitats: “Focuses on recording habitat features, characteristics and their spatial relationships within the context of the wider landscape”;
- Visual and Sensory: “Maps landscape characteristics and qualities as perceived through our senses, primarily visually. The physical attributes of landform and land cover, their visible patterns and their interrelationship”;
- Historic Landscape: “Landscape characteristics that depend on key historic land uses, patterns and features. Identifies only those classes of historic land uses, patterns and features that are prominent and contribute to the overall historic character of the present landscape.”; and
- Cultural Landscape: “Describes the links between landscape and people, from the way in which cultural, or human activity shapes the landscape, to the way in which culture shapes the way we respond to landscape. Focus is on mapping the landscape where it has been, or is being, shaped by a particular cultural activity or process, or where it has been directly represented, depicted or described in art, literature or folklore.”

- 5.23 The Visual and Sensory Dataset (2021) locates the Application Site predominantly within Aspect Area 'CYNONVS214: Mynydd Lwyd and Mynydd Maen'. The area is described as:

*"Areas of upland comprising both heath and grassland on the western slopes of both Mynydd Maen and Mynydd Llwyd. These areas are largely flanked by coniferous plantation woodland with more open areas to the east. More westerly areas in valleys have smaller field patterns. Some views to adjacent upland areas and to urban area of Newbridge in the valley to the west."*

- 5.24 Overall, Aspect Area 'CYNONVS214: Mynydd Lwyd and Mynydd Maen', is evaluated as Moderate.

## Visual Resources

### Zone of theoretical visibility

- 5.25 In order to further determine the geographical extent of potential visibility, a preliminary computer-generated Zone of Theoretical Visibility (ZTV) was generated (refer to **Figure 5**). The ZTV broadly defines the study area for both the landscape character and visual assessment. A 5 km radius study area is proposed for this assessment due to the overall size and height of the solar panels (a maximum of 3 m above existing ground level (EGL)). It is judged that any potentially significant landscape and / or visual effects would lie within this radius. Following field survey and analysis of existing barriers, the study area radius may be reviewed.
- 5.26 Currently, the proposed development would consist of static east and west facing PVs (finished height of a maximum 3 m above existing ground level (EGL)). The preliminary ZTV was completed to show the worst-case for this option with the origin points at 3 m above EGL. The ZTV was compiled assuming observer height as 1.6 m at eye level and takes into account screening effects of local settlements at 9 m and existing areas of substantial vegetation (woodland) at a height of 10 m. Thirty Five (35) origin points, from within the Application Site, have been used to establish the likely area from which views to the proposed development may be available. Each of these origin points are within the centre of each of the fields within the Application Site that would contain solar panels and the outer edges of the Application Site.
- 5.27 OS Terrain 5 data has been used to generate the ground model for the ZTV.
- 5.28 Furthermore, a ZTV was prepared for 15km which did not include visibility of the proposed development beyond 7km.

## View Ranges

- 5.29 For the purposes of the LVIA Chapter, views would be classified according to three distance 'ranges' as set out in Table 5.1 below.

**Table 5.1: View Ranges**

Range	Distance Threshold	Reasoning Description
Close	Less than 1 km	At close range the project could appear as a 'prominent' feature and visual receptors could experience high to medium/low magnitude of change when compared to existing views.
Medium	Between 1 km and 3 km	In medium range views the project could appear as 'present' features and visual receptors could experience medium/low to negligible magnitude of change compared to the existing situation.
Long	More than 3 km	In long range views the project would read as part of the landscape and visual receptors would tend to experience a low to negligible or lower magnitude of change compared to the existing situation.



## Candidate Viewpoints

- 5.30 A number of Candidate Viewpoints have been proposed, which are considered representative of key sensitive visual receptors within the 5km study area. An assessment of potential effects upon views from each viewpoint, as a result of the proposed development, would be completed (refer to **Figure 4**). These Candidate Viewpoints would be further refined following field work and will form the Representative Viewpoints to be assessed as part of the LVIA Chapter.
- 5.31 All Candidate Viewpoints are situated in publicly accessible locations within the extent of the ZTV, with a range of distances and orientation to the proposed development. They include a range of receptors of varying sensitivity. Photographs would be taken from each of the chosen Representative Viewpoints and illustrated in accordance with the Landscape Institute Technical Guidance Note 06/19, Visual Representation of Development Proposals (Landscape Institute, September 2019). Any additional photographs, taken during field survey, would be included for contextual purposes and / or alternative viewpoint locations if necessary.
- 5.32 Photographs would be taken during winter, so far as possible should the project programme allow, when vegetation is devoid of its leaf cover to show the worst-case scenario. Any assessment of effects upon summer views would be necessarily made using professional judgement. **Table 5.2** below describes the location of the candidate viewpoints for this assessment.

**Table 5.2: Candidate Viewpoints**

No. / Name	Sensitivity	View Location Description
CV1: PRoW ABEC/FP333/1	Medium	Close distance view from the local public right to the south of Application Site – An inaccessible viewpoint, scoped out of visual assessment (see paragraphs 5.33-5.34 for details).
CV2: PRoW ABEC/BR179/1	Medium	Close distance view from the public right of way to the south of the Application Site.
CV3: PRoW NWBG/RBW172/1	Medium	Close distance view from public right of way to the immediate east of the Application Site.
CV4: PRoW NWBG/RBW172/1	Medium	Close distance view from public right of way to the immediate west of the Application Site – An inaccessible viewpoint, scoped out of visual assessment (see paragraphs 5.33-5.34 for details).
CV5: PRoW NWBG/RBW160/1	Medium	Close distance view from public right of way to the north of the Application Site.
CV6: PRoW NWBG/FP365/1	Medium	Close distance view from public right of way to the northeast of the Application Site at junction with unnamed road / track.
CV7: PRoW CRUM/FP163/1	Medium	Close distance view from public right of way to the northeast of the Application Site.
CV8: PRoW FP 337 36/1	Medium	Long distance view from public right of way to the north of the Application Site.
CV9: PRoW CRUM/BR44/1	Medium	Long distance view from public right of way to the northwest of the Application Site.
CV10: PRoW CRUM/FP92/1	Medium	Medium distance view from public right of way to the northwest of the Application Site, at junction with unnamed road.
CV11: PRoW CRUM/BR104/1	Medium	Medium distance view from public right of way to the northwest of the Application Site, at the junction with Load of Hay Road.
CV12: PRoW CRUM/FP142/1	Medium	Medium distance view from public right of way to the west of the Application Site.
CV13: Local Road / track	Low	Medium distance view from local road adjacent to the Croespenmaen Industrial Estate to the west of the Application Site.
CV 14: PRoW NWBG/FP262/2	Medium	Medium distance view from public right of way to the southwest of the Application Site.

CV 15: PRow ABEC/BR304/1	Medium	Long distance view from public right of way to the southwest of the Application Site.
CV 16: Local Road	Medium	Close distance view from local road at the junction of Linden Court and Old Pant Road to the northwest of the Application Site.

- 5.33 Following a site visit in July 2023, it is suggested that Candidate Viewpoint 1 and Candidate Viewpoint 4 should be scoped out of the visual assessment due to limited access. Although marked on the OS map as a public right of way, the footpath on which CV1 is located is not marked on the ground with any access points at either end of the route and there is no signage marking the route.
- 5.34 Candidate Viewpoint 4 is located on a route marked on the OS map as a restricted byway. Access to the route from the restricted byway to the west is not signposted and there is no access at the point where the routes meet on the map due to a fence with no stile or gate. From the eastern end, through Cil - Lonydd farm there is access from the farm through a gate to the restricted by-way but it is not clearly signposted and it is not a through-route due to the aforementioned lack of access at the western end of the marked path.
- 5.35 Confirmation of the status of these public rights of ways which are inaccessible should be sought from the Council.

### Further visual assessment

- 5.36 Within 1km of the proposed development, a broad assessment of likely effects upon views for occupants of residential receptor groups, businesses/ places of work, users of roads (including National Cycle Networks) and PRowS, not covered by the Representative Viewpoints, would be completed. In some cases, given access restrictions, the baseline view and / or summary of effects upon these receptors would necessarily be estimated. However, an overview assessment of the likely effects of the operational phase of the proposed development upon views for these visual receptors would be given. This would include an overall assessment of the sequential effects upon views for users of the PRowS and roads within the local vicinity of the Application Site.
- 5.37 Particular attention will be taken to the PRowS which pass through or directly adjacent to the proposed development (NWBG/RBW172 and ABEC/BR179).

### Photomontages

- 5.38 To illustrate the proposed development, and once field work is completed, views from some of the Representative Viewpoint locations would be illustrated with a photomontage, should this be required. The viewpoints would likely be selected through further consultation with the Council.

### Proposed approach

#### Baseline studies

- 5.39 Baseline information on the landscape will be gathered through a combination of desk studies, consultation and field surveys. Documents used in the assessment may include aerial photographs, Ordnance Survey (OS) maps and published landscape character assessments.
- 5.40 Further to the Baseline Information described above, the baseline assessment within the final LVIA Chapter will also include an assessment of the effects of the proposed development upon the landscape character of the Application Site itself and its immediate surrounds. It will also include an assessment of the existing landscape character within the wider study area in terms of its value and its sensitivity to the proposed development. The studies will identify the landscape resources and character of the surrounding area and examine how the proposed development will affect individual landscape features, elements, characteristics and the wider landscape.



- 5.41 Field work will be undertaken to gain a better understanding of the landscape of the Application Site and surrounding area, to determine its character and condition and to identify visual receptors and the extent of available views. Field work will help to establish those landscape resources which combine to give the area its distinct sense of place. Further consultation would be sought from key statutory organisations/consultees where applicable.

### Assessment of effects

- 5.42 The Landscape and Visual Impact Assessment (LVIA), undertaken as part of the Landscape and Visual Resources chapter, will identify and assess the likely significant effects that would arise as a result of the proposed development on the landscape (its fabric, character and elements) and upon views as experienced by receptors (people). The full methodology for the LVIA can be viewed within **Appendix A** of this ES Scoping Report. Please note this is written in the present tense as it will be included within the LVIA Chapter.
- 5.43 The LVIA will be based on the current published guidelines for landscape and visual assessment provided in:
- Guidelines for Landscape and Visual Impact Assessment: Third Edition (GLVIA) (Landscape Institute and Institute of Environmental Management & Assessment, 2013);
  - An Approach to Landscape Character Assessment, Natural England (2014);
  - Planning Policy Wales LANDMAP Guidance Note 1: LANDMAP and Special Landscape Areas (2016);
  - Planning Policy Wales LANDMAP Guidance Note 3: (2013); and
  - Technical Guidance Note 06/19, Visual Representation of Development Proposals (Landscape Institute, September 2019).
- 5.44 The sensitivity of landscape and visual receptors within the 5 km study area would be assessed (through the identification of the landscape resource's susceptibility to the proposed development/susceptibility of the visual receptor to change and value of the landscape resource/view), together with the predicted magnitude of impact on that receptor (through identification of the proposed development's size/scale, geographical extent and the duration and reversibility of effect). When combining sensitivity with magnitude of impact, a judgement will be made as to the significance of effect upon the landscape resource and/or view during the construction phase, the operational and maintenance phase, as well as the decommissioning phase of the proposed development.
- 5.45 Where appropriate, mitigation measures will be identified to avoid, where possible, or reduce any potential landscape and / or visual effects as a result of the proposed development.
- 5.46 The LVIA Chapter would include an assessment of cumulative effects within the study area and, within the same LANDMAP areas and from the same Representative Viewpoints where there would be potential inter-visibility between the cumulative site and the proposed development. Cumulative projects would include those with planning permission, but yet to be constructed or within the planning system. It would not include development already constructed, such as the existing Upper Pant-Ysgawen Farm/Crumlin and Penrhiwarwydd Farm solar parks, to the northwest. These existing solar parks would be considered as part of the baseline to the assessment.
- 5.47 The LVIA chapter will include an assessment of effects of the Proposed Development (as detailed above) during construction, operation and decommission phases. For the assessment of the operational phase, the LVIA Chapter will include an assessment of the proposals during daytime only, at winter year 1, when all construction and mitigation planting is assumed complete, and during summer year 15 once all mitigation planting is assumed to have reached its design and screening intention. Field work would be ideally completed during the winter season of 2022 / 2023 and therefore the assessment of effects at summer would be completed using professional judgement.

## Issues proposed to be scoped out

- 5.48 We do not propose to undertake a Residential Visual Amenity Assessment (RVAA) or an assessment of likely night-time effects.

## Cumulative Assessment

- 5.49 Other developments considered within the cumulative assessment include those that are:
- Under construction;
  - Permitted, but not yet implemented;
  - Submitted, but not yet determined; and
  - Identified in the Development Plan (and emerging Development Plans - with appropriate weight being given as they move closer to adoption) recognising that much information on any relevant proposals will be limited.
- 5.50 The LVIA Chapter would include an assessment of cumulative effects within the study area and, within the same LANDMAP areas and from the same Representative Viewpoints where there would be potential intervisibility between the cumulative site and the proposed development. Cumulative projects would include those with planning permission and pre-application within the planning system.
- 5.51 The cumulative assessment study area is defined as within a 6km radius from the proposed development. This was determined following a preliminary ZTV analysis which showed very limited visibility between 7 to 15km of the proposed development.
- 5.52 Further to this, areas with a visibility of less than 0.25 degrees of vertical angle have been scoped out of the cumulative assessment. While the proposed development may be technically visible (discounting views blocked by vegetation and built form) from these areas, the proposed development would take up a very small portion of the vertical field of view and as such would be barely perceptible to a receptor.
- 5.53 The cumulative assessment will include all energy developments including both solar and wind farms.
- 5.54 The following Solar Farms, within 6km of the proposed development, are to be considered in the cumulative assessment:
- Treowen Solar Farm (W)
  - Pen-y-Fan Solar Farm(NW)
  - Pen-y-Fan Caravan Park Solar Farm (NW)
- 5.55 Wind Farms within 6km of the proposed development to be considered in the cumulative assessment:
- Mynydd Maen Wind Farm – Pre-Application
  - Trecelyn Wind Farm – Pre-Application
  - Llanhilleth Wind Farm – Pre-Application
  - Mynydd Carn-y-cefn Wind Farm – In Planning
  - Coed y Gilfach Wind Turbines – Operational
  - Oakdale Business Park wind Turbines – Operational
  - Pen-y-Fan Industrial Estate Wind Turbine – Operational
  - Pen-y-Fan Leisure Park – Operational
  - Pen-y-Fan Ganol Farm – Operational

- 5.56 Other Solar Farms within 6km of the proposed development which have been scoped out of the cumulative assessment because there would be no or limited intervisibility:
- Mynyddislwyn (SW)
  - Pen-rhiw-arwydd (SW)
  - Near Pant-yr-eos Reservoir (SE)
- 5.57 Other Wind Farms within 10km which have been scoped out of the cumulative assessment include:
- Abertilly Wind Farm – Pre-Application
  - Tyle Crwth Wind Turbine - Operational
  - Bryn Ysgawen Farm Wind Turbine - Operational
  - Tir-y-Ferch-Gryno Farm Wind Turbine - Consented
  - Gelli-wen Farm Wind Turbine - Operational
  - Cruglwyn Wind Turbines - Operational
  - Manmoel Wind Farm (outside 10km) – Pre-Application
- 5.58 As some of the wind farms listed above are in the early stages of planning, the details of the number and locations of the turbines is subject to change.

## Chapter 6: Biodiversity

### Introduction

- 5.59 This section sets out the proposed approach to assessing the potential impacts of Mynydd Maen Solar Farm on Biodiversity. It has been prepared by BSG Ecology.
- 5.60 The Site is an upland site<sup>1</sup> which mainly comprises tightly grazed fields, containing sheep and enclosed by wire stock fencing and trees. There is a small amount of marshy grassland in the east of the Site and an off-site woodland to the north of the Site boundary. There are two off-site ponds, 13 m and 146 m east of the Site boundary respectively.

### Embedded Mitigation

- 5.61 Ecological mitigation is built into the design of the project and includes the retention of field boundary trees and hedgerows. The removal of small sections of hedgerow is anticipated to facilitate access, however any removal will involve widening existing access points as opposed to creating new gaps wherever possible.

### Methods

#### Consultation

- 5.62 No consultation outside the project team has been completed to date.

#### Desk-based review

- 5.63 A desk study has been completed. This has involved reviewing aerial photography and Ordnance Survey mapping, obtaining data on species and designated sites from the South-East Wales

---

<sup>1</sup> Informed by the Phase 1 Habitat Survey completed by RPS in September 2022 The report is titled *Mynydd Maen Solar, West of Newbridge, Caerphilly, South Wales, Preliminary Ecology Appraisal* (RPS, 2022)

Biodiversity Records Centre (SEWBRc), and review of the UK Government's Magic<sup>2</sup> website for information relating to the locations of statutory sites of nature conservation interest within

- 5 km for Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Ramsar sites. These sites are of international importance for their species and / or habitats. These can include highly mobile species (i.e. wildfowl / wetland birds, bats and otter)
- 2 km for nationally-designated statutory sites (Sites of Special Scientific Interest (SSSIs)).
- 2 km for local designated sites and Ancient Woodland Sites
- 2 km for protected and notable species<sup>3</sup>.

### Habitat Survey

- 5.64 A Phase 1 Habitat Survey of the site was completed by RPS in September 2022<sup>4</sup> in accordance with industry standard (JNCC, 2010)<sup>5</sup> survey guidance. This involved mapping all broad habitat types present within the Site boundary and the proposed cable route.
- 5.65 An additional area of cable route has been identified and is planned for survey in July 2023.
- 5.66 A Phase 2 survey of the marshy grassland will be undertaken in July 2023, during which plant communities will be assigned to the National Vegetation Classification (NVC) categories as described by Rodwell (1998<sup>6</sup>).

### Protected Species Survey

- 5.67 The following survey work in 2023 will inform the application:
- **Great crested newt** (*Triturus cristatus*) survey. Two ponds have been identified on Site. Great crested newts surveys have been carried out on both ponds in May and June 2023. surveys were completed in line with industry standard guidance (English Nature, 2001<sup>7</sup>, Biggs *et al.* 2004<sup>8</sup>).
  - **Breeding bird surveys.** Four breeding bird surveys have been undertaken between April – June 2023, including one evening visit. The purpose of these surveys has been to investigate the species assemblage present on-site, and particularly if there are ground-nesting birds that could be displaced by the scheme, such as skylark likely to breed within the Site boundary.
  - **Badger** (*Meles meles*) survey. The Phase 1 recorded no evidence of badger. However, there is suitable habitat for the species on Site and immediately adjacent to it. A further

<sup>2</sup> <https://magic.defra.gov.uk>

<sup>3</sup> Species (or habitats) of principal importance for the conservation of biodiversity listed by the Welsh Government under Section 7 of the Environment (Wales) Act 2016.

<sup>4</sup> The report is titled *Mynydd Maen Solar, West of Newbridge, Caerphilly, South Wales, Preliminary Ecology Appraisal (RPS, 2022)*

<sup>5</sup> JNCC (2010). Handbook for Phase 1 habitat survey. A technique for environmental audit. Joint Nature Conservancy Council. Peterborough.

<sup>6</sup> Rodwell, J. S (1998). *British plant communities*. Cambridge University Press, Cambridge

<sup>7</sup> English Nature (2001). Great Crested Newt Mitigation Guidelines. English Nature, Peterborough

<sup>8</sup> Biggs, J. *et al.* (2014). Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (*Triturus cristatus*) environmental DNA. Freshwater Habitats Trust, Oxford

badger survey is planned for November 2023.

### Assessment methods

- 5.68 The desk study and baseline ecological surveys detailed above will inform the EclA for the Site. The assessment will be based on industry standard guidance (CIEEM (2018)<sup>9</sup>.

## Results

### Desk-based review: Designated Sites

- 5.69 There are no SPAs, SACs or Ramsar Sites within 5 km of the Site boundary.
- 5.70 One statutory designated site of national importance is located approximately 2 km north of the Site. Ty'r Hen Forwyn SSSI is notified for species-rich neutral grassland and the large population of wood bitter-vetch *Vicia orobus*, a nationally scarce and declining species, that it supports.
- 5.71 SEWBrEC returned a further 27 records of non-statutory designated sites within a 2 km radius of the Site; these are all Sites of Interest for Nature Conservation (SINC).
- 5.72 One of these, Mynydd Maen SINC, falls immediately adjacent to the north-eastern Site boundary. It is a large upland common with extensive areas of acid grassland, bracken and heath.
- 5.73 Three further SINC are adjacent to the Site boundary;.
- Gwydon Valley Woodlands, lying adjacent to the eastern boundary, is a large plantation of conifers on the site of a former ancient woodland and contains semi-natural ground flora indicator species which qualify it as a SINC. Red wood ants (*Formica rufa*) are locally common.
  - Cwm Hafod-Fach woodlands, immediately to the south of the western spur of the Site, comprises semi-natural ancient woodland of the valley-sides surrounding a working quarry. Acid grassland and heath is also present locally in the open areas of the upper valley.
  - Coed Cil-Lonydd is adjacent to the northern Site boundary, following the line of the Nant Gawni stream through a steep-sided valley, containing blocks of former ancient woodland. Red wood ants occur locally throughout the woodland, which supports an assemblage of semi-natural indicator species.
- 5.74 A full list of the SINC within 2 km of the Site boundary can be found in Appendix 1, extracted from the *Mynydd Maen Solar Preliminary Ecological Appraisal Report* (RPS, 2022).
- 5.75 Numerous Ancient Woodland Sites are located within 2 km of the Site boundary, including the Gwydon Valley Woodlands which is immediately adjacent to the eastern Site boundary.

### Desk-based review: Species Data

- 5.76 Data regarding the following European Protected Species and species given protection under Section 7 of the Environment (Wales) Act, 2016, were reviewed.
- 5.77 SEWBrEC data included the following:
- **Amphibians.** There are no records of any herpetofauna within the Site boundary. Great crested newt *Triturus cristatus* has been recorded approximately 800 m north-east of the Site boundary. More widespread and common newt species such as palmate newt

<sup>9</sup> CIEEM, 2018, Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine, version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester

*Lissotriton helveticus* and smooth newt *Lissotriton vulgaris* have also been recorded locally. Eight records of common frog *Rana temporaria* and one record of common toad *Bufo bufo* were also returned within 2 km of the Site.

- **Bats.** At least twelve species of bat including brown long-eared *Plecotus auritus*, common pipistrelle *Pipistrellus pipistrellus*, Daubenton's bat *Myotis daubentonii*, greater horseshoe bat *Rhinolophus ferrumequinum*, lesser horseshoe bat *Rhinolophus hipposideros*, Leisler's bat *Nyctalus leisleri*, Natterer's bat *Myotis nattereri*, noctule *Nyctalus noctula*, serotine *Eptesicus serotinus* and soprano pipistrelle *Pipistrellus pygamaeus*. No records were returned for within the Site boundary. The closest record is of a common pipistrelle, approximately 1.1 km west of the Site boundary.
- **Hazel dormouse.** There are no records of hazel dormouse *Muscardinus avellanarius* within the search area.
- **Otter and water vole.** There are two records of otter *Lutra lutra* within the search area, the closest of these is 2 km north-east. There were no records of water vole *Arvicola amphibius* within the search area.
- **Breeding / over wintering birds.** There are records of 36 species of bird; of these 2 are listed on Schedule 1 of the Wildlife & Countryside Act 1981 (as amended), namely barn owl *Tyto alba*, which is likely to breed locally, and brambling *Fringilla montifringilla*. Brambling was recorded in February, and does not breed in Wales<sup>10</sup>. There are no records of any birds from within the Site boundary. Nearby records include species such as cuckoo *Cuculus canorus*, skylark *Alauda arvensis* and bullfinch *Pyrrhula pyrrhula*; [REDACTED]
- **Invertebrates.** 32 records of invertebrates were returned via the data search, however none of these records were associated with the Site itself. Seven of the records were of three species of butterfly that are listed at Species of Principal Importance on Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006), namely grayling *Hipparchia semele* (280 m east of the Site boundary), small heath *Coenonympha pamphilus* (600 m west of the Site boundary) and wood white *Leptidea sinapis* (1.9 km north-west of the Site boundary).
- **Reptiles.** There are four records of slow worm *Anguis fragilis*, the closest of which is 1.4 km north-west of the Site boundary. No other records of reptiles were returned.
- **Badger.** There are three records of badger *Meles meles* within the study area, the closest of which was from the northern boundary of the Site.
- **Other notable species.** One record of stoat *Mustela erminea* was found within the search area, 1.7 km south of the Site boundary.
- **Plants.** The data search returned records of plants associated with a variety of habitats including bluebell *Hyacinthoides non-scripta*, and other Ancient Woodland indicator species. Japanese knotweed *Reynoutria japonica*, an invasive non-native species, has also been recorded in the wider area; the closest record of this is approximately 1.5 km west of the Site boundary.

## Habitat Survey

- 5.78 The Phase 1 survey, completed in September 2022, found that the proposed solar farm will be located within fields currently used for sheep farming, comprising improved and semi-improved

<sup>10</sup> Schedule 1 status is therefore not relevant in this context and has no bearing on the assessment.



neutral grassland with scattered broadleaved and coniferous trees along the field boundaries. Two areas of ruderal vegetation are present, along with patches of bracken *Pteridium aquilinum* through the semi-improved neutral grassland.

- 5.79 The sward of the improved grassland was tightly-grazed and covers more than two thirds of the Site. Species identified include perennial ryegrass *Lolium perenne*, white clover *Trifolium repens*, red clover *Trifolium pratense*, dandelion *Taraxacum officinale* and sheep's sorrel *Rumex obtusifolius*.
- 5.80 The semi-improved grassland is limited to the eastern side of the Site. Species include soft rush *Juncus effusus*, bracken *Pteridium aquilinum*, common nettle, *Urtica dioica*, false-oat grass *Arrhenatherum elatius*, common bent *Agrostis capillaris* and creeping thistle *Cirsium arvense*.
- 5.81 Further botanical survey is planned for July 2023 comprising a Phase 2 survey of the marshy grassland and a Phase 1 survey of the proposed cable route.
- 5.82 There are two ponds have also been located within 250 m of the main Site, and a further two ponds within 250 m of the proposed cable route.
- Pond 1 (14 m north-east of the Site boundary) is a shallow pond, containing very little aquatic vegetation. There is a small inflow and outflow, however this is not thought to create a strong current through the pond. The pond is approximately 169 m<sup>2</sup> and is surrounded by bracken and soft rush. Several willow trees *Salix sp.* Are present on the north-eastern edge of the pond.
  - Pond 2 (196 m north-east of Site boundary) is shallow, steep on one side and heavily poached on the remaining sides. It contains occasional patches of soft rush and has a small inflow and outflow running through it. The pond is approximately 60 m<sup>2</sup> and has almost no bankside vegetation.
  - Pond 3 and 4 are similar in character and both situated approximately 120 m from the proposed cable route. Both ponds are subject to seasonal drying, although they are sometimes kept artificially wet through a water-pumping system. Both ponds are heavily poached by livestock and contain no aquatic vegetation.

### Protected Species Survey

- 5.83 A summary of the consideration of protected species and survey scope is included below.
- **Amphibians.** An Environmental DNA (eDNA) survey was completed on all four ponds on 19 April 2023. This returned a negative result for Ponds 1 and 2. Additional torching and bottle trapping surveys were completed due to the proximity of the ponds to a known GCN population. No GCN were found during either survey. It is therefore concluded that GCN are absent from the Ponds 1 and 2. Ponds 3 and 4 were both found to contain a small population of GCN during surveys following the positive eDNA result.
  - **Bats.** There are no buildings within the Site boundary. Trees within or immediately bordering the Site have not yet been assessed for their potential to support roosting bats, however no trees are planned for removal on Site as a result of the development. The Site boundaries are assessed to be of moderate suitability for commuting and foraging bats. The nearby woodlands are of high-quality and are well-connected to the Site and wider landscape. The interior of the fields is of low suitability for foraging and commuting bats due to the tight sward and lack of species diversity.
  - **Hazel dormouse.** The hedgerows on Site have grown out into lines of trees and are therefore of limited value to dormice, lacking the diversity of species that are required to support a dormouse population. The development also intends on retaining the trees and boundary hedgerows, and vegetation removal will be limited to widening of existing access points. It is therefore not proposed to complete dormouse work.
  - **Otter and water vole.** There are no watercourses or habitat capable of supporting otter and water vole within the Site. It is therefore not proposed to complete otter and water vole survey work.

- **Breeding birds.** Breeding bird surveys are ongoing in 2023. The purpose of these surveys is to investigate the species assemblage present on-site, and particularly if there are ground-nesting birds, such as skylark, present within the Site boundary.
- **Invertebrates.** There are no habitats on Site suitable for grayling or wood white butterflies. Therefore, they are not considered further in this assessment. Small heath prefer grasslands with a short, sparse sward, heathland, moorland or woodland rides. Plants suitable for supporting small heath caterpillars are present in low density within the semi-improved neutral grassland in the north-eastern part of the Site. They have been scoped out of further assessment due to the sub-optimal quality of the habitat but will be considered in the context of Net Benefit for Biodiversity, when planning the on-site improvements as a result of the Proposed Development.
- **Reptiles.** The majority of the Site is not suitable for reptiles due to the limited habitats available. Reptiles may be present in low numbers in the semi-improved grassland area of the Site where there is a more varied sward. However, given the lack of records and the minimal impact of the proposed development, reptiles are not considered further in this assessment and no further survey work is planned.
- **Badger.** No field signs or evidence of badger was recorded during the Phase 1 Habitat survey, however records adjacent to Site were found in the desk study. The Site and adjacent woodland provide suitable habitat for sett building, together with foraging / commuting resources for badger. A further survey for evidence of badger will be completed along the northern Site boundary.
- **Other notable species.** The Site contains suitable habitats to support sheltering and foraging stoat, however the proposed development is unlikely to have an impact on these, therefore they are not considered further in this assessment.
- **Plants.** No notable, protected or invasive plants were identified on Site during the Site survey. An NVC survey is due to take place in July 2023 to assess if habitats meeting the description of the Mynydd Maen SINC are present in the Site boundary.

## Scope of Assessment

- 5.84 The ecological impact assessment (EclA) will assess the likely effects of construction and operation of a solar farm at Mynydd Maen on ecological receptors.
- 5.85 It is unlikely that there will be significant impacts on the ecological interest of the majority of the designated Sites as a result of the solar farm proposal. This is based on the lack of clear effect pathway with regard to the habitats / species for which the sites have been designated.
- 5.86 It is unlikely that there will be significant impacts on the ecological interest of the non-statutory designated sites, with the potential exception of the Mynydd Maen SINC. The Site falls partially adjacent to the Mynydd Maen SINC, which has been designated for the acid grassland and heath habits. An NVC survey has been recommended to assess if habitats meeting this description are present within the Site boundary.
- 5.87 The key considerations within the ecological assessment within the Site boundary are breeding birds (particularly skylark, which is present on Site) and badger (if present) during construction and operation. The likely scale of impact on these species will be considered during the assessment. Habitats will be considered in terms of enhancement measures within the scheme. Measures will be included to ensure legislative compliance with regard to reptiles. Impacts on dormice, otter and water vole will be scoped out of the assessment.
- 5.88 The disturbance and displacement of great crested newts will also be considered for the off-site infrastructure.
- 5.89 The EclA will be undertaken following the principals set out in the above CIEEM Guidelines, and will include an assessment of cumulative effects, details of appropriate mitigation and enhancement measures and of any residual effects (should any exist following mitigation).



- 5.90 The EclA will be supported by technical survey reports detailing the baseline survey work undertaken and which will likely include the following mitigation / enhancement measures in order to demonstrate biodiversity net benefit via the development process in line with Welsh Planning Policy:
- Following management suggestions discussed in the Mynydd Maen Commons Innovation Plan<sup>11</sup>.
  - Establishment and management of perimeter buffers in association with woodland edge and mature trees.
  - Increase species diversity of retained grassland within buffers and the security fencing (along field boundaries) and of re-seeded grassland between solar arrays with seed mixes of conservation value. Appropriate measures and management prescriptions would be outlined within the EclA.
  - Areas of land within the landownership parcel to be retained for the conservation of skylark (if present).
  - Provision of habitat enhancement for reptiles and amphibians which may include the creation of hibernacula or reduced management of grassland along the boundaries.
  - Fencing with suitable gaps underneath to allow movement of mammals e.g. badger.
  - Sensitive lighting system to be timed / directed away from treelines / hedgerows.

## Chapter 7: Climate Change

- 5.91 This section of the scoping report considers the assessment of potential impacts on and due to climate change. Climate change here is considered in terms of the impact of greenhouse gas emissions (GHGs) caused directly or indirectly by the proposed development, which contribute to climate change. The potential impact of changes in climate to the development, which could affect it directly or could modify its other environmental impacts, are proposed to be scoped out of the assessment, with the exception of the likely changes to cloud cover over its expected lifetime (explained in greater detail in paragraph 5.104).

### Baseline information

- 5.92 The current baseline for land that would be taken by construction of the proposed development is the existing agricultural land-use. However, installing solar panels above ground on agricultural land will not cause any disturbance to significant soil or vegetation carbon stocks.
- 5.93 There is potential for an increase in carbon sequestration in both soils and plants underneath the solar panels due to changes in landscape design (including wildflower planting) and reduction in soil disturbance (for example, there would be no ploughing). However, the magnitude of carbon sequestration through this practice would likely be insignificant compared to the magnitudes of GHGs emitted and avoided during the construction and operational phase of the proposed development (Bai and Cotrufo, 2022). As such, these emissions are proposed to be scoped out of this assessment.
- 5.94 The current baseline for electricity generation in the operational phase of the proposed development, with regard to GHG emissions, is the equivalent level of electricity generation from alternative sources connected to the electricity grid. The current average carbon intensity of electricity generation on the UK National Grid is 0.23963<sup>12</sup> kgCO<sub>2</sub>e/kWh in the present-day baseline, taken from UK Government GHG conversion factors for company reporting (BEIS, 2022a).

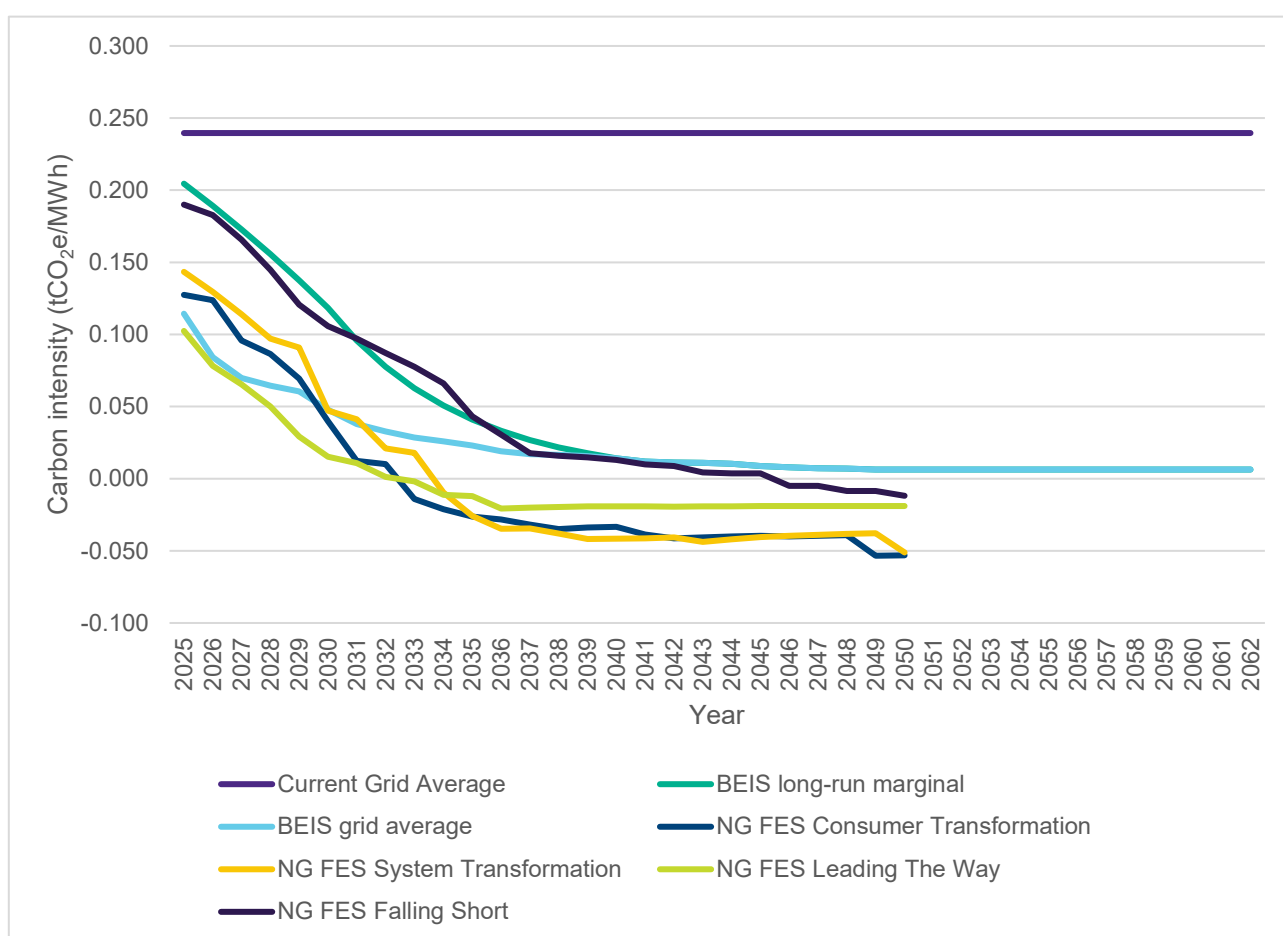
---

<sup>11</sup> Torfaen County Borough Council, 2019, Mynydd Maen Commons Innovation Plan

<sup>12</sup> Inclusive of the associated well-to-tank (WTT) emissions associated with extracting, refining and transportation of primary fuels before their use in the generation of electricity.

- 5.95** Potential scenarios for the future baseline of electricity generation are shown in **Figure 6**, which displays the carbon intensity of future marginal electricity generation projected by BEIS (as generated from alternative sources, in the absence of generation capacity provided by the proposed development). For means of comparison, the figure also displays the projected grid-average carbon intensity and the National Grid's 'Future Energy Scenarios' projected grid carbon intensities (National Grid ESO, 2022).
- 5.96** In most of these scenarios a rapid and sustained decarbonisation of baseline electricity generation is projected; in certain scenarios, the negative values are projected in this sector (i.e. from carbon capture and storage) in order to deliver 'net zero' for the UK economy as a whole.
- 5.97** The current climatic conditions baseline is established by meteorological records for the area of the proposed development. The potential future climatic baseline can be considered using the 'UKCP18' projections published by the Met Office Hadley Centre (MOHC), which encompass the potential climatic outcomes in the UK from a range of potential global emissions and climate change scenarios (MOHC, 2018).

**Figure 6: Projected carbon intensity of electricity generation**



## Proposed approach

- 5.98** GHG emissions would contribute to the effect of global climate change. Assessment guidance from the Institute of Environmental Management and Assessment (IEMA, 2022) describes five levels of significance for emissions resulting from a development, each based on how the proposed development contributes towards achieving a net zero and 1.5°C-aligned reduction trajectory. To aid in considering whether effects are significant, the guidance recommends that GHG emissions should be contextualised against pre-determined carbon budgets, or policy and performance standards where a budget is not available. It is a matter of professional judgement to integrate these sources of evidence and evaluate them in the context of significance.

- 5.99 The proposed approach for assessing the impacts on climate change from the proposed development will be based on carbon life-cycle analysis for the solar farm, considering the manufacturing-stage emissions and the benefits of renewable energy generation in operation compared to the baseline. The manufacturing-stage emissions will be caused directly and indirectly from sources at a variety of locations, including on-site and from the upstream supply chain of the materials used.
- 5.100 The embodied carbon of the proposed development will be assessed using published literature values from lifecycle assessments (LCAs) and Environmental Product Declarations (EPDs). This is likely to include manufacturing, transport and installation for the photovoltaic (PV) modules and balance of system (BoS) components (primarily inverters, transformers and cabling). GHG emissions associated with maintenance and end of life of the PV modules and BoS components are accounted for in some, but not all LCAs. Where considered they have minimal impact on the overall embodied carbon of the entire LCA (International Energy Agency, 2021). As such, consideration of the GHG effects from these stages is proposed to be scoped out, given their minimal GHG contribution. Mitigation measures will be implemented to minimise GHG impacts during the decommissioning stage, including recycling of the PV modules and BoS components wherever possible.
- 5.101 GHG emission reductions from operation of the PV system will be assessed based on the carbon intensity of the alternative source of generation that is displaced, i.e., the generator that would have been supplying the grid with electricity in the business-as-usual baseline without the proposed development.
- 5.102 Similarly, potential GHG emissions reductions from alternative electricity generation displaced by the use of battery storage (which is likely to be generators that would have operated to meet
- 5.103 Hence, the emissions savings would be compared with appropriate sources, including both present-day average carbon intensity of electricity generation on the UK National Grid at the time of the assessment and future marginal generation intensity predictions, calculated by BEIS (BEIS, 2021). Both are shown in **Figure 6**. Both baselines would be used since, on the one hand, the carbon intensity of electricity generation is expected to decrease in line with government policy, and so the intensity of the marginal generation source that the proposed development would displace would also reduce. However, this reduction in carbon intensity would only be possible through the approval and construction of projects such as the proposed development, and government policy relies on projects such as these to be approved.
- 5.104 As set out below, no significant adverse effects due to climate risks to the proposed development are considered likely, with the potential exception of flooding. Assessment of climate risks is therefore proposed to be scoped out of the assessment. However, the potential effect on power generation from changes in sunlight hours or cloud cover will be considered based on the UKCP18 projections.

### Baseline studies

- 5.105 The sources of data concerning the present and future baseline have been described above, and no baseline surveys will be required.
- 5.106 Other data sources that will be used include the Digest of UK Energy Statistics (DUKES) to provide statistics on UK renewable energy and electricity generation (BEIS, 2022b), and any published national or local carbon budgets against which the GHG emissions of the Proposed Development would be contextualised. These would be taken either from legislation or from published research. The latest edition of all relevant data sources would be used.

### Assessment of effects

- 5.107 The magnitude of impact will be expressed as tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e), using 100-year global warming potential values for non-CO<sub>2</sub> GHGs from the Intergovernmental Panel on Climate Change's Sixth Assessment Report or as otherwise defined in published emissions factors and literature sources used (IPCC, 2021).

- 5.108 The sensitive receptor will be defined as the global atmospheric concentration of GHGs and it will be characterised as having a 'high' sensitivity, given the severe consequences of climate change and cumulative contributions of other sources.
- 5.109 The IEMA guidance referenced above (IEMA, 2022) states that a development's GHG impacts should be contextualised, for example on a sectoral basis, compared to the UK's national carbon budget or compared to policy requirements and performance standards. These comparisons would be used to determine whether a project's carbon footprint will support or undermine a 1.5°C compatible trajectory towards net zero.
- 5.110 It is considered that broadly speaking, the significance of the proposed development's GHG emissions can be contextualised in the following ways:
- with reference to the absolute magnitude of net GHG emissions as a percentage of the UK's national carbon budget;
  - through considering any increase/reduction in absolute GHG emissions and GHG intensity compared with baseline scenarios, including projections for future changes in those baselines; and/or
  - with reference to whether the proposed development contributes to and is in line with the UK's national carbon budget sectoral goals for GHG emissions reduction, which are consistent with science-based commitments to limit global climate change to an internationally-agreed level.
- 5.111 Taking these factors into account, effects may be described as: major adverse, moderate adverse, minor adverse, negligible, or beneficial. Minor adverse and negligible effects are considered to be non-significant; the remaining levels of effect (major adverse, moderate adverse and beneficial) are all considered to be significant. The evaluation of significance will be carried out in accordance with the guidance, which will include the application of professional judgement to contextualise and determine levels of significance in a way that makes clear the relationship between the proposed development's carbon footprint and a reduction trajectory consistent with measures required in the UK to meet our nationally-determined contribution towards the Paris Agreement's 1.5°C target (HM Government, 2022).

### Scope of the assessment

- 5.112 The scope of the assessment is the impact of life-cycle GHG emissions from the solar farm and battery, relative to the baseline of displaced alternative electricity generation and set within the context of national carbon budgets and other relevant local or national policy requirements. An assessment of the project's impacts on GHG emissions will be included in the ES.
- 5.113 Potential changes in generating capacity of the PV system due to climatic changes during the proposed development's operational lifetime (i.e., cloud cover or sunlight hours) will also be considered using UKCP18 projections.

### Issues proposed to be scoped out

- 5.114 Risks to the proposed development from climate change proposed to be scoped out of the ES, as these are not considered likely to be significant during the development's operating lifetime of 40 years:
- Potential risks that have been evaluated are increased rainfall (and corresponding flood risk), increased likelihood of extreme weather events, and increased ambient temperature (with resulting PV module efficiency losses)
  - Extreme weather events such as storms with high winds are also possible in the existing baseline and the proposed development's design will need to account for this. It is not considered that the potential for any increase in frequency or severity over the development's lifetime, due to climate change, could cause significant environmental effects.
  - Flood risk will be assessed, with appropriate climate change allowance, in the Flood Consequences Assessment for the proposed development and no separate assessment is proposed within the climate change chapter.

- The potential for small system efficiency losses due to hotter temperatures during the development's lifetime are not considered to have any potential to significantly affect the lifecycle GHG emissions and thus significantly reduce the environmental effect of the renewable electricity generation.
- GHG emissions resulting from land-use change during construction are likely to be insignificant. This is due to the current agricultural land use and minimal disturbance during installation of solar PV modules and BoS components. Carbon sequestration through biogenic growth during the operational period of the proposed development would also likely be insignificant compared to the magnitudes of GHGs emitted and avoided during the construction and operational phase of the proposed development (Bai and Cotrufo, 2022). As such the impact of land-use changes on the carbon sequestration potential of the land is proposed to be scoped out.
- The GHG emissions associated with the decommissioning of the proposed development are also proposed to be scoped out. This is because the vast majority of emissions associated with solar PV developments arises in the construction stage, from the embodied carbon of the PV modules and BoS components (International Energy Agency, 2021).

### Measures adopted as part of the proposed development

- 5.115 As a renewable energy development, climate change mitigation is an inherent aim of the proposed development, and at the scale of the proposed development it has the opportunity to make a material contribution towards the UK's Net Zero target through the decarbonisation of the UK electricity system.
- 5.116 To minimise GHG emissions during the construction of the proposed development, particularly in the embodied carbon resulting from the manufacture of the PV modules and BoS components, reductions will be sought in transport emissions across the supply chain, as well as prioritising low carbon material selections, where possible. These measures may evolve as the proposed development progresses in design.
- 5.117 GHG emissions during the decommissioning phase of the proposed development will be minimised through recycling of PV modules and BoS components where possible.

### Potential cumulative effects

- 5.118 All developments which emit GHGs have the potential to impact the atmospheric mass of GHGs as a receptor, and so may have a cumulative impact on climate change. Consequently, cumulative effects due to other specific local developments are not individually identified but would be taken into account when evaluating the impact of the proposed development by defining the atmospheric mass of GHGs as a high sensitivity receptor.

### Potential inter-related effects

- 5.119 Inter-related effects of climate change will be considered individually within the relevant topic chapters of the ES rather than within the Climate change chapter of the ES.

## 6 SUMMARY

In compiling the above Scoping Report, the requirements of regulation 33(2) of the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 have been considered.

This report clearly identifies the likely significant effects on the environment from the proposed development and provides justification for why these environmental effects should be considered within an Environmental Statement to accompany a DNS application for the proposed solar farm at Mynydd Maen.

It has been prepared with input from pre-application consultation with the Council as well as various topic specialists. The matters that have been scoped in will mean that the most relevant issues to this proposed development will be addressed and their impact further understood through undertaking technical assessments.