

CIL - LONYDD SOLAR FARM

Environmental Statement: Non-Technical Summary

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NON-TECHNICAL SUMMARY

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1 INTRODUCTION

- 1.1 This Environmental Statement (ES) has been prepared by RPS Consulting Services Limited on behalf of Cenin Renewables Limited “Cenin” (the Applicant).
- 1.2 The ES reports on the findings of the Environmental Impact Assessment (EIA) process and accompanies the planning application for a solar photovoltaic electricity generating station (or ‘solar farm’) with an installed generation capacity of approximately 35MW and associated ancillary development, including Battery Energy Storage System (BESS).

Statutory Framework and Purpose of the Environmental Statement

Development of National Significance

- 1.3 Developments of National Significance (DNS) are infrastructure developments of national importance. For a DNS, an Inspector examines the planning application and makes a recommendation to the Welsh Ministers. The decision is made by the Welsh Ministers under the process and considered under policies in Future Wales.
- 1.4 Paragraph 5.7.5 of Planning Policy Wales (PPW) Edition 12 (February 2024) highlights that planning applications for onshore generating projects in Wales which have an installed generation capacity of between 10MW and 350MW (there is no upper limit for onshore wind generating stations) are considered as DNS applications. Therefore, with a generating capacity of approximately 35MW, Cil-Lonydd Solar Farm is considered a DNS application.

Statutory Consultation

- 1.5 The DNS (Wales) Regulations 2016 (“the DNS regulations”) requires the Applicant to undertake statutory pre-application consultation (PAC) on the full draft planning application for a period of no less than 42 days. This is to provide technical and community stakeholders, and local people, a further opportunity to provide feedback on the project and the technical assessments produced for the Proposed Development.
- 1.6 The applicant will undergo this process in April 2024. The feedback received during this process will be reported in a PAC Report and considered during design of the final scheme for the planning application.

Purpose of EIA

- 1.7 EIA is a means of identifying and collating information to inform an assessment of the likely significant environmental effects of a project. The findings of the EIA process are reported in an ES in order to inform the relevant planning authority and interested parties as part of the decision-making process.
- 1.8 This EIA seeks to identify and assess the significance of effects likely to arise from the Proposed Development which 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.

The EIA Regulations

- 1.9 The legislative framework for EIA is set by European Directive 2011/92/EU, as amended by Directive 2014/52/EU (collectively referred to as the EIA Directive). Directive 2014/52/EU entered into force on 15 May 2014.
- 1.10 In Wales, the requirements of the EIA Directive have been transposed into legislation through the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017. These regulations are referred to in this ES as ‘the EIA Regulations’.

Need for EIA

- 1.11 Schedule 1 of the EIA Regulations identifies development types that always require EIA. Schedule 2 identifies development types that require EIA if they are likely to lead to significant effects on the environment by virtue of factors such as their nature, size or location. Schedule 2 development is defined within the EIA Regulations as development of a description mentioned in Column 1 of the table in Schedule 2 where:
- ‘a) any part of that development is to be carried out in a sensitive area; or*
- b) any applicable threshold or criterion in the corresponding part of Column 2 of that table is respectively exceeded or met in relation to that development.’*
- 1.12 The Proposed Development falls within the description at paragraph 3(a) ‘Industrial installations for the production of electricity, steam and hot water (unless included in Schedule 1)’ in column 1 of the table in Schedule 2. Such development requires screening against the criteria set out in Schedule 3 of the Regulations. The criteria include the characteristics of the development, location of development and types and characteristics of the potential impact.
- 1.13 The Proposed Development would exceed the relevant thresholds for development within Schedule 2. Schedule 2 developments require consideration against the criteria set out in Schedule 3 of the EIA Regulations to determine whether EIA is required. The criteria include the characteristics of the development, location of development, and characteristics of the potential impact.
- 1.14 An EIA screening direction was not submitted. It was the intention that the Applicant would provide an Environmental Statement (ES). Accordingly, an EIA Scoping Direction (Appendix 4.2) (by means of an EIA Scoping Request (Appendix 4.1)) was sought from Welsh Government. An EIA Scoping Direction was received from Planning and Environment Decisions Wales (PEDW) on the 23rd November 2023. Further details in relation to this are provided in Chapter 4 (Environmental Assessment Methodology).
- 1.15 A notification of intention to submit a DNS was sent to Welsh Ministers on 21st March 2024 and the acceptance was received on the 10th April 2024. The Acceptance of Notification from PEDW is included in the planning application. The notification of acceptance is included as a planning application document.

Content of the ES

- 1.16 This ES has been prepared in accordance with the EIA Regulations and informed by the EIA Scoping Decision issued by Welsh Ministers (Appendix 4.2). Although there is no statutory provision as to the form of an ES, it must contain the information specified in Regulation 17 and Schedule 4 of the EIA Regulations.
- 1.17 This ES provides all information required under Regulation 17 and Schedule 4. The information supplied within this ES is considered to provide a clear understanding of the main and likely

significant effects of the Proposed Development upon the environment, and the likely residual effects having regard to the mitigation proposed, taking account of the fact that effects will be both negative and positive.

Structure of the ES

- 1.18 The ES has been structured in order to allow relevant environmental information to be easily accessible. This volume of the ES (Volume 1) includes the main text ‘written statement’ of the ES. A description of the Proposed Development is provided in Chapter 2. Information relating to the main alternatives considered during the evolution of the project and the reasons for the choices made is found within Chapter 3. Chapter 4 outlines the approach and methodology adopted for the EIA. The remainder of Volume 1 contains environmental assessment information by topic (Chapters 5-9), as shown in Table 1.1.
- 1.19 Figures and appendices to accompany the text of the ES are provided in Volumes 2 and 3. Volume 3 includes specialist reports providing background and technical information. A Non-Technical Summary (NTS) of the ES is provided as a separate summary document.

Table 5-1 Structure of ES

Structure of ES	
Non-Technical Summary	Summary of the ES using non-technical terminology
Volume 1: Written Statement	
	Glossary
Chapter 1	Introduction
Chapter 2	Project Description
Chapter 3	Need and Alternatives Considered
Chapter 4	Environmental Assessment Methodology
Chapter 5	Landscape and Visual Assessment
Chapter 6	Biodiversity
Chapter 7	Cultural Heritage
Chapter 8	Human Health
Chapter 9	Risk of Major Accidents
Volume 2: Figures	
Including all figures and drawings to accompany the text.	
Volume 3: Appendices	
Including specialist reports forming technical appendices to the main text.	

The Applicant

- 1.20 Cenin is a Welsh renewable energy developer. Cenin is an innovative market leader in the development of large-scale energy projects and smart energy solutions as demonstrated at its Parc Stormy renewable energy cluster, which incorporates anaerobic digestion, wind and solar photovoltaic generation, ultra-low carbon cement production, and Cardiff University’s energy positive Solcer House.

The Assessment Team

- 1.21 The EIA has been managed by RPS, taking into account information provided by the Applicant and design team. The ES has been completed in accordance with the guidance of Institute of Environmental Management and Assessment (IEMA) Quality Mark. All authors of this ES are qualified consultants and a statement setting out how the authors have sufficient expertise to ensure the completeness and quality of the ES is provided in Appendix 1.1.

Further Information

- 1.22 This ES is being submitted as part of a planning application for the proposed Cil-Lonydd Solar Farm and associated ancillary infrastructure, including a BESS. The application is being submitted to PEDW.
- 1.23 Copies of the ES and planning application documents can be viewed on the PEDW Developments of National Significance (DNS) website: <https://gov.wales/developments-national-significance-dns-applications>.
- 1.24 Further copies of the ES can be obtained from the following address:
RPS
2 Callaghan Square
Cardiff
CF10 5AZ
- 1.25 A paper copy of the full ES can be obtained for a cost of £250 plus VAT or an electronic copy (CD) or USB for a cost of £25. A hard copy of the Non-Technical Summary (NTS) can also be obtained, free of charge.
- 1.26 All comments on the ES (and planning application) should be issued to PEDW.

References

Department for Communities and Local Government (2006) Environmental Impact Assessment: A guide to good practice and procedures. A consultation paper. [Available online]

2 SITE AND PROJECT DESCRIPTION

Introduction

- 2.1 This chapter provides a brief description of the Site and its surrounding environs. Detailed descriptions of the Site baseline are provided in the relevant topic chapters within the ES. In addition to the Site description, this chapter also provides a description of the Proposed Development and approach to construction, the parameters of which form the basis for the assessment provided in this ES.
- 2.2 A number of measures to avoid, reduce or offset any adverse environmental effects have been included/ embedded as part of the project design. Details of these measures are provided in this chapter and are set out in each topic chapter where applicable. This chapter, together with the subsequent topic chapters, provide the detail to assess the effects of the project in accordance with Regulation 17 and Schedule 4 of the EIA Regulations.

The Site and Surrounding Environs

Site Location

- 2.3 The Site comprises land at Cil-Onnydd Farm between Newbridge to the west and Cwmbran to the east. It is located within the administrative boundary of Caerphilly County Borough Council (CCBC). The location of the Site is shown in Figure 2.1: Site Location Plan (included within Volume 2 – Figures) of the ES.
- 2.4 The Site itself extends to approximately 37.5 hectares (92.7 acres) 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.

Surrounding Area

- 2.5 The Site is located within a Visually Important Local Landscape, allocated by Policy NH2.3 of the CCBC Local Development Plan (LDP).
- 2.6 The Site is adjacent to three Sites of Interest for Nature Conservation and also contains scattered parcels of ancient woodland.
- 2.7 Within a 5km radius of the Site, are 10 Scheduled Monuments, 163 listed buildings, and 5 Conservation Areas. No other designated asset types are present within 5km of the Site. The nearest designated heritage asset to the Site is 1.8km away.
- 2.8 The Site adjoins Mynydd Maen Common to the east and neighbours Hafod Quarry, an asphalt quarry, to the south.
- 2.9 The Public Rights of Way (PRoW) NWBG/RBW/172 (Restricted Byway) traverses the Site. Additionally, a number of PRoW are adjacent to the Site:
- NWBG/RBW/171
 - ABEC/BR179
 - NWBG/RBW316
 - NWBG/RBW320

Geology and Topography

- 2.10 The Site is approximately 330m above ordnance datum (AOD).
- 2.11 The Site is partially within a Coal Mining Development Referral Area, a Sandstone Resource Area and a Mineral Site Buffer Zone for the Hafod Fach Quarry to the southwest.

Site History

- 2.12 The Site is currently made up of pasture fields, used for sheep grazing. Details of any historical planning uses on Site are set out in Table 2.1 below.

Site Planning History

- 2.13 The Site lies within the local planning authority of CCBC. The LPA online records outline the following historic planning applications of relevance:

Table 5-2 Site Planning History

Application Ref.	Address	Description of Development	Submission Date	Decision	Decision Date
2/09247	Cei-Lonydd Farm Former South Celyn Colliery	Pennant sandstone quarry including stone processing plant, conveyor route and railhead.	22 February 1992	Refused	10 April 1992
2/09826	Land At Cil-Lonydd The Pant Newbridge Gwent	Agricultural Workers Dwelling.	29 June 1991	Refused	16 August 1991
2/08102	A. Land at Cil Lonydd Farm and South Celyn Tip; 17 Ha (41.99 Acres) Working Area Grid Ref. 229 972 B. Part of Former South Celyn Colliery; 4.9 Ha (12.2 Acres) Grid Ref; 215 960.	Pennant sandstone quarry, conveyor route and railhead; stone processing plant, block making plant, concrete plant, tarmacadam coating plant, access road and bridge across the Ebbw river.	19 October 1988	Refused	6 December 1988
2/05488	The Double "D" Trekking Centre Cil Lonydd Farm Newbridge	10 No. Holiday Chalets.	2 October 1984	Granted	19 November 1984
2/03597	Hafod Fach Farm Abercarn	11 K.V. O.H. line extension.	19 August 1980	Granted	6 October 1980

Planning Context

- 2.14 The Development Plan for the purposes of Section 38(6) of the Planning and Compulsory Purchase Act 2004 comprises of:
- Future Wales: The National Plan 2040, published February 2021; and
 - Caerphilly County Borough Council Local Development Plan up to 2021, adopted November 2010.
- 2.15 The LDP Proposals Map and Constraints Map indicate the Site is not allocated for any specific use. However, it is affected either in whole or in part by the following designations:
- Visually Important Local Landscape (Abercarn) (Policy NH2.3);
 - Coal Mining Development Referral Area;
 - Sandstone Resource Area; and
 - Mineral Site Buffer Zone – Hafod Fach Quarry to the southwest (Policy MN1.3).
- 2.16 The Site is also close to the following designations:
- Ancient Woodland
 - Three Sites of Interest for Nature Conservation
- 2.17 The ES provides an overview of relevant legislative and planning policy context within each topic chapter. The assessments have regard to national and local policy documents, where relevant.
- 2.18 The ES does not include a separate chapter on Planning Policy Context as this was agreed with PEDW that it can be scoped out of the assessment. 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.
- 2.19 A separate Planning Statement is submitted with the planning application.

Project Description

- 2.20 The applicant proposes to develop a solar photovoltaic electricity generating station (or 'solar farm') with an installed generation capacity of approximately 35MW and associated ancillary development, including BESS. The power generated would be enough to power approximately 15,000 typical family homes.
- 2.21 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.

Key Components

- 2.22 The main components of a solar farm are:
- Solar panels and frames;
 - Inverters;
 - Transformers;
 - Cabling; and
 - BESS.

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2.23 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. BESS is also proposed within the Site.

Solar Arrays

2.24 The Solar PV panels are fixed panels which will be positioned at a 'fixed' tilt. There are no moving elements associated with the panels. They will be arranged in a series of rows known as arrays.

2.25 The proposal features south facing panels and east/west facing panels, in order to maximise sunlight in the configuration of the site.

2.26 The south facing panels are 2.729m at their highest point, including posts which elevate the panel 1m off the ground. The panel itself is 6.68m long and tilted southwards at an angle of 15 degrees.

2.27 The east / west facing panels will sit approximately 0.7m off the ground with an overall height of 1.4m at the highest point. The lower edges of the panels will sit at 1m above ground.

2.28 The metal support frames or mounting structures for the panels will be installed by piled technique and there would be no significant ground works required with this installation method.

Inverters and Transformers

2.29 'String' inverters will be mounted onto the support frames and will not require any additional foundations. The transformers will be housed in Glass Reinforced Plastic (GRP) containers and will be in a suitable pantone colour that can be agreed with CCBC.

Grid Connection

2.30 To optimise utilisation of the grid network with the highest amount of clean electricity, the proposal will share a grid connection with the nearby Mynydd Maen Wind Farm that is being developed by RES (DNS/3276725).

2.31 The point of connection is proposed to be located at an existing 132kV substation to the southeast on Mynydd Maen Common.

Cable Route

2.32 The cable route will be approximately 3km in length and will traverse the Mynydd Maen Common land. This will share the substation with Mynydd Maen Wind Farm.

2.33 A secondary application under Section 38 of the Commons Act will be submitted to enable temporary works to be carried out during construction of the Solar Farm. The Section 38 application and supporting statement are included in this planning application.

2.34 Trenches of approximately 1 m deep and 0.5 m wide are required for the underground cabling.

BESS

2.35 The proposal will also include a 40 MWh BESS, which will store any surplus electricity generated by the solar panels during daylight hours and release it when needed. The proposed layout and location of the BESS facility is shown in Figures 2.2 and 2.3 in Volume 2 of this ES.

Access and Parking

- 2.36 The site access will route along the existing access track into the farm which links out onto the A472 at Hafodyrynys to the north or the A467 at Abercarn to the south. Construction traffic will exit the Site in the reverse order of the above route. A variety of vehicles will need to access the Site during construction. These will include rigid and articulated HGVs and a large mobile crane associated with manoeuvring the requisite materials (including aggregate, mounting frames and the solar panels) and prefabricated buildings.
- 2.37 A detailed Construction Traffic Management Plan (CTMP) describing the delivery routes, construction routes, construction compounds and any associated parking or management of construction traffic will be submitted with the planning application.

Transport Management

- 2.38 Applicant will appoint a Site Manager for the project and the details will be provided to CCBC once confirmed. The Site Manager for the project will undertake the transport co-ordination role for the Site. In this respect, their main responsibilities will include:
- Managing implementation of the CTMP;
 - Vehicle scheduling;
 - Checking for scheduled road works, events, or incidents in the local area which may cause HGVs to deviate from the designated vehicle route; Checking for scheduled refuse collections to avoid conflict with HGV deliveries within built up areas;
 - Informing local residents and CCBC of the commencement of construction works;
 - Informing local residents and CCBC of any major or noise intensive works associated with the construction phase to avoid / minimise disruption.
 - Handling any complaints; and
 - Acting as a point of contact for employees, CCBC, contractors, the general public, and any other interested parties.
- 2.39 The CTMP states the need to avoid routes where scheduled roadworks and construction vehicles could conflict. The Site Manager will keep up to date on scheduled roadworks, events and incidents in the nearby area which could impact construction vehicle routeing. Any major roadworks or events identified on the access route that result in the deviation of the route will be agreed with officers at CCBC in advance where feasible.
- 2.40 The Proposed Development also offers the opportunity for construction workers to car share or travel by bicycle to the Site. The CTMP deems it appropriate to promote the below measures to promote sustainable travel by staff.
- Providing changing areas and storage facilities for construction staff.
 - Assist in matching car sharers through a car sharing database.
 - Minimise where possible the number of contractors on site at any one time to reduce trips
 - generated by the Site and promote car sharing.

Appearance and Design

- 2.41 The Proposed Development is low lying in nature, typically shorter in height than the many existing mature trees and hedgerows around the site.

- 2.42 The appearance will be a more modern and obvious human influence on the landscape compared to that currently formed by industrialised agriculture. Whilst construction would cover a wide area, the works would be temporary and the proposed development itself will be considerably less solid and durable in appearance than traditional buildings. This would mitigate against the likely change in the character of the landscape.
- 2.43 The Proposed Development would be removed within the 50 year lifetime enabling the site to return to its former agricultural character and appearance.

Landscape Strategy

- 2.44 The Landscape and Ecology Masterplan (See Figure 5.25 of the ES) shows the planting of a number of trees and lengths of hedgerows.
- 2.45 The mitigation measures are the planting of indigenous trees and hedgerows. The proposed tree planting and hedgerow planting would integrate the Proposed Development into the landscape as well as provide screening.
- 2.46 The objective of the mitigation planting would be to reinforce the existing and historical character of the Site as well as screening views.
- 2.47 Existing mature trees were former Beech hedgerows which have been left unmanaged. This is a typical feature in the local landscape. There are other types of boundary treatments in the same character area (stone walls, managed hedgerows, post and wire fences, coniferous trees).
- 2.48 Landscape and Biodiversity are considered in more detail in Chapters 5 and 6 of this ES respectively.

Drainage and Flood Risk

- 2.49 Based on the Natural Resources Wales (NRW) Development Advice Maps (DAM), the Site is not at risk of river and/or surface water flooding. It is located in Zone A described in Welsh Government's Technical Advice Note on Flooding (2004) as areas that are considered to be at little or no risk of fluvial or tidal/coastal flooding. This situation does not change with the Flood Map for Planning and a new TAN15, although there are some small watercourses running through the Site.

Lighting

- 2.50 There will be no use of artificial lighting during operation that could adversely affect field boundary habitats and/or adjoining woodland.
- 2.51 Some temporary task lighting may be required during construction and decommissioning depending on the time of year and sunlight levels.
- 2.52 The solar farm will cause a minimal amount of potential for redirection of light in terms of glint and glare via the surface of the panels. Any effects would be localised and unlikely to be of a magnitude that would be significant in environmental terms. Accordingly, a Glint and Glare Assessment has been undertaken and forms part of the DNS planning application (Appendix 5.1).

Sustainability

- 2.53 This section outlines the effects of the Proposed Development on sustainability factors such energy demand, waste, use of natural resources and residues and emissions.

Energy Demand

- 2.54 The Proposed Development will supply electrical energy to the distribution network rather than generate demand.
- 2.55 The Welsh Government formally committed Wales to legally binding targets to deliver the goal of net-zero emissions. The Climate Change Committee recommended the following targets that the Proposed Development will contribute to:
- Carbon Budget 2 (2021-25): 37% average reduction with credit (“offset”) limit of 0%
 - Carbon Budget 3 (2026-30): 58% average reduction
 - 2030 target: 63% reduction
 - 2040 target: 89% reduction
 - 2050 target: 100% reduction (net zero)
- 2.56 The Proposed Development will also contribute to cost-effective local energy generation and energy security with limited governmental subsidy and will, therefore provide socio-economic and community benefits. Notably, the design of the Proposed Development will allow an efficient dual use of the land for renewable energy generation and agriculture.

Waste

- 2.57 Waste produced during construction will be kept to a minimum and will be managed and sorted accordingly. Only registered waste management companies will be utilised to dispose of construction waste (packaging, wood, metal) or waste from the construction team (general domestic or canteen/kitchen waste). The specialist EPC hired to construct the solar installation will ensure that all waste is disposed of responsibly using only licensed waste management companies. This will be subject to appropriate due diligence checks prior to contracting.
- 2.58 Following decommissioning there will be significant potential for recycling many of the materials used in the Proposed Development. There may be some equipment at the end of the project lifespan that would result in some solid waste. However, given the scale and nature of the Proposed Development significant effects are not likely in terms of waste generation. At decommissioning stage, the solar panels will be unscrewed from the mounting frames and packaged either to send to a solar recycling depot, or if they are still operational, they may be sold on second-hand.

Use of Natural Resources

- 2.59 The Site is entirely classified as Subgrade 4 agricultural land, which is poor quality agricultural land. An Agricultural Land Classification (ALC) 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 (BMV) Agricultural Land.
- 2.60 The Proposed Development is temporary in nature and fully reversible. 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 soil structure and ability to infiltrate water. Most of the soil will not be physically impacted from the Proposed Development.
- 2.61 Following decommissioning, the applicant 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. Furthermore, the planning application is supported by a Soil Management Plan.

Residues and Emissions

- 2.62 Details of any potential effects in relation to residues and emissions having regard to water are set out in the Drainage Strategy and FCA which is submitted as part of this planning application.

Summary of Key Parameters

Table 5-3 Key Parameters of the Proposed Development

Element of Development	Key Parameter for EIA
Site area	Up to 37.5 hectares(ha) including the solar panels and cable route.
Maximum height of solar panels	The East/West facing solar is 1.2m high, South facing solar is 2.8m high.
Area covered by development	37.5 ha
Underground cabling	The cable across the common is 3043m long. 1200mm deep, 600mm wide.
Security fencing / CCTV	A 2m high security fence will be installed around the Site. column mounted infra red CCTV security cameras will be provided inside the Site.
Substation and BESS	132 kV substation to the southeast on Mynydd Maen Common, which would be connected to the site by a cable route of 3km. A40 MWh battery storage facility.

Construction Methodology

- 2.63 The details of construction methods, timing and phasing are necessarily broad at this stage of the Proposed Development. The limits of the assessment, however, have been set sufficiently wide to allow a robust assessment to be undertaken of a reasonable worst-case scenario.
- 2.64 The project is anticipated to utilise established standard construction methodologies (including piling) for solar farms. The posts will be driven into the ground (by either direct piling or screw piling) to a depth of around 1.5-2m, dependent on localised ground conditions.

Phasing of Construction Works

- 2.65 The timing of the project would be dependent on securing planning permission and the discharge of planning conditions. The construction of the solar farm is expected to take approximately 6-9 months (in the region of up to 39 weeks).

Construction Working Hours

- 2.66 All work will be conducted between 08:00 and 18:00, construction HGV deliveries and departures will not be to enter or exit the Site between 08:00 and 09:00 or between 17:00 and 18:00. All construction HGV deliveries and departures will therefore only be permitted to enter or exit the Site between 09:00 and 17:00.
- 2.67 These hours would be subject to agreement with the LPA. In the event that works are required outside of these hours in exceptional circumstances, this would be agreed with the LPA prior to commencement of the activity, as necessary.

Environmental Management during Construction

- 2.68 Construction would be undertaken in accordance with good practice environmental management procedures that will be set out in more detailed plans and method statements contained within a Construction Environmental Management Plan (CEMP) to be developed by the contractor. The CEMP will set out the key management measures that contractors would be required to adopt and implement. These measures will be developed based upon those effects identified during the EIA process and set out in the topic chapters of this ES. They will include strategies and control measures for managing the potential environmental effects of construction and limiting disturbance from construction activities as far as reasonably practicable.
- 2.69 The CEMP would be prepared during the pre-construction period once a contractor has been appointed. The final CEMP would be submitted to the LPA for approval.

Construction Working Areas

- 2.70 A number of temporary facilities would be required during construction including:
- Temporary offices and welfare facilities;
 - Storage area for materials, fuels, plant and equipment;
 - Waste management areas; and
 - Car parking facilities.
- 2.71 As far as possible, storage areas would be located away from existing properties. Such storage areas would be bunded to mitigate any spillages of potential contaminants and would avoid being located in areas of vegetation or habitat to be retained.
- 2.72 All construction works will be carried out within the defined project area and no additional land would be required outside of the Proposed Development site boundary.

Construction Access

- 2.73 The construction access will route along the existing access track into the farm which links out onto the A472 at Hafodyrynys to the north or the A467 at Abercarn to the south. Construction HGVs will exit the Site in the reverse order of the above route. A variety of vehicles will need to access the Site during construction. These will include rigid and articulated HGVs and a large mobile crane associated with manoeuvring the requisite materials (including aggregate, mounting frames and the solar panels) and prefabricated buildings.
- 2.74 Every effort would be taken to minimise the effects of traffic associated with the construction phase of the project. Materials and resources would be sourced locally where possible and deliveries and construction traffic would endeavour to avoid travel during commuter peaks.
- 2.75 A CTMP detailing the delivery routes, construction routes, construction compounds and any associated parking or management of construction traffic has been prepared. Transport has been scoped out of the ES.
- 2.76 Operational traffic movements will be minimal.

Construction Vehicles

- 2.77 The potential trip generation of the Site during the construction phase of the Proposed Development has been informed through discussions with the Applicant based upon the construction programme and experience of similar projects across the United Kingdom.
- 2.78 A variety of HGV and other construction vehicles will be used for the construction of all elements of the project, The details of the vehicles are provided in Table 3.1 of the CTMP (Appendix 2.2).
- 2.79 A range of vehicles will need to access the Site during the construction of the Proposed Development. These will include rigid and articulated HGVs, with the largest type of vehicle being a 16.5m long articulated HGV, as well as a large mobile crane associated with delivering the requisite and prefabricated buildings.
- 2.80 While the construction phase will take between 12 and 15 months to complete, the number of vehicle trips to and from the Site will fluctuate over this time. Some periods will see more trips when for example, deliveries are made to the Site, while other periods will see fewer trips when for example, only work at the Site is being undertaken.
- 2.81 The number of construction HGV movements per day will vary as the construction works progress and will be dependent upon the activities being undertaken at the Site. It is estimated however that there will be an average of six movements (three inbound movements plus three outbound movements) per day during the construction phase of the Proposed Development.
- 2.82 The Proposed Development will give rise to a maximum of 20 HGV movements (10 inbound movements plus 10 outbound movements) per day at the peak of the construction phase, with fewer number of HGV movements per day outside of peak activities.

Drainage

- 2.83 The construction phase would incorporate pollution prevention and flood response measures to ensure that the potential for any temporary effects on water quality or flood risk are reduced as far as practicable.
- 2.84 Such measures would be implemented through the CEMP, which will require the following:
- Installation of wheel washing facilities at the entrance to the construction compounds;
 - Use of sediment fences along existing watercourses when working nearby to prevent sediment being washed into watercourses;
 - Covers for lorries transporting materials to/from site to prevent releases of dust/sediment to watercourses/drains;
 - Bulk storage areas to be secured and provided with secondary containment (in accordance with the Oil Storage Regulations and best practice);
 - Storage of oils and chemicals away from existing watercourses, including drainage ditches or ponds;
 - Concrete to be stored and handled appropriately to prevent release to drains;
 - Preparation of a flood response plan in the event of flooding during construction works. This would include a procedure for securing or relocating materials stored in bulk;
 - Treatment of any runoff water that gathers in the trenches would be pumped via settling tanks or ponds to remove any sediment;

- Obtain consent for any works (e.g. discharge of surface water) that may affect an existing watercourse. The conditions of the consent will be specified to ensure that construction does not result in significant alteration to the hydrological regime or an increase in fluvial risk;
- Use of a documented spill procedure and use of spill kits kept in the vicinity of chemical/oil storage;
- Storage of stockpiled materials on an impermeable surface to prevent leaching of contaminants and use of covers when not in use to prevent materials being dispersed and to protect from rain; and
- Stockpiles to be kept to minimum possible size with gaps to allow surface water runoff to pass through.

Construction Waste

- 2.85 The specialist EPC hired to construct the Proposed Development will ensure that any waste that is required to be taken off site will be disposed of responsibly to registered waste companies from the application sites during and immediately following construction.
- 2.86 The potential waste generated during the construction process will primarily be related to packaging, and will include:
- The pallets that the solar panels are packaged in. These will be either wood crates, or cardboard boxes. These will be removed from the application site on a regular basis. If they arrive on wooden pallets, which have a financial value, these will either be returned to the manufacturer/distributor, or collection by a local contractor will be arranged. If they arrive packaged in cardboard boxes, then these will be removed on a regular basis, either through a hired skip, or through trips to the closest appropriate recycling station.

Use of Natural Resources

- 2.87 The contractors CEMP will consider the main types and quantities of materials required for the project in order to assess potential for sourcing materials in an environmentally responsible way.
- 2.88 The Considerate Constructors Scheme (CCS) includes measures relating to the use of resources, including categories in relation to minimising the use of water.
- 2.89 The construction process would take into account the principles of good practice in soil handling and restoration set out in the following documents, wherever possible, to reduce the possibility of damage to soil:
- Ministry of Agriculture, Fisheries and Food (MAFF) (2000) Soil Handling Guide; and
 - Department for Food and Rural Affairs (Defra) (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (including the Toolbox Talks).
- 2.90 The EIA Directive also refers to the use of land and biodiversity resources. Further details are provided in Chapter 6 (Biodiversity) of this ES and the Soil Management Plan and Planning Statement that also accompany the planning application.

Residues and Emissions

- 2.91 The CEMP will consider ways of minimising construction activity residues and emissions, including spills, noise and vehicle emissions during the construction phase.

2.92 Details of residues and emissions in relation to water are set out in the attached Flood Consequences Assessment (FCA) and Drainage Strategy. Any impact associated with noise has been addressed by a Noise Impact Assessment, included as part of the planning application.

Operation and Maintenance

2.93 All equipment will be removed from Site at the end of the installation’s operational life (approximately 40 years). Once operational, the solar farm will be operated remotely and only require between 10-20 visits per year for maintenance, monitoring and cleaning of the panels and site.

2.94 Assessment of accidents and emergencies for the operational development is limited at this stage with security fencing and CCTV minimising health and safety risks as far as possible.

2.95 Emissions from activities from the Proposed Development shall be free from odour, noise and vibration at levels likely to cause pollution outside the Site.

Decommissioning

2.96 The solar farm is designed to be fully reversible at the end of the lifetime of the project. Solar panels, cabling, inverters, sub-station and other paraphernalia are removed leaving only small holes, trenches and areas to be back filled. The land can then revert to its previous use.

2.97 The decommissioning of the Site will ensure the future quality of the agricultural land is maintained with no likely significant lasting adverse effects on the existing quality of the soil.

2.98 There will be some long-term storage of soil for restoration uses at the decommissioning phase. Any soil removal at construction for future restoration (e.g of the tracks) will be stored on Site and labelled for subsequent return.

Environmental Management Measures adopted as part of the Project

2.99 In order to avoid or reduce the environmental effects, a number of measures have been designed (embedded) into the project. Details of these can be found within each topic chapter of the ES and are summarised in Tables 2-3 and 2-4 below.

Table 5-4 Measures adopted as part of the Project during construction

Topic	Proposed measures during construction
General / Design	Construction work will be kept away from root protection zones.
Landscape and Visual	<p>All disturbed areas would be restricted as far as practicable to the specified areas and the temporary construction compound.</p> <p>Any effects on the visual amenity receptors and their views during the construction phase will be for a temporary duration.</p>
Biodiversity	The temporary loss of land under temporary construction areas will be minimised, and reinstatement and enhancement of habitats will be undertaken in line with enhancement measures outlined at the end of the Biodiversity ES Chapter 6 (to be detailed within a LEMP).

Vegetation removal will be limited to the removal of 14 scattered hawthorn trees within a defunct field boundary (over approximately 180 m in length) in centre of the Proposed Development.

Measures to avoid impacts on SINCs, ancient woodland sites, priority habitats and trees during construction will need to be detailed in a Construction Environmental Management Plan (CEMP). Ways in which accidental physical damage, lighting, pollution, soil compaction and sediment mobilisation will be set out. There may be a requirement for the presence of an Ecological Clerk of Works (ECoW) to assist in effective implementation of the CEMP.

Measures to avoid killing / injuring of great crested newt will be implemented during construction, to include staged removal of vegetation (if required), hand-searching where necessary and discussion of material storage, vehicle access or compound locations / positioned, as required, by a Suitably Qualified Ecologist. These measures should be included within a CEMP.

Clearance of grassland vegetation (where required) will be conducted outside bird nesting season to avoid disturbing or destroying birds' nests. Should works commence during the nesting bird season (which is typically taken as March to August inclusive), any removal of vegetation or construction within marshy grassland fields should be preceded by a walkover survey by a suitably experienced ecologist. The surveyor will identify any active nests, and in the event that nests are found, work in their immediate vicinity (that could result in the damage / destruction of the nest and / or killing / injury of adult birds or dependent young) will be suspended until the nest is no longer active. A 5 - 15 m buffer around the field boundary and woodland features will be in place during construction to minimise disturbance to breeding birds, as a matter of good practice. A practical method statement will be produced detailing measures to avoid impacts on nesting birds (as outlined above) and included in the CEMP. This will provide clear guidance to contractors working on the construction of the proposed development.

A pre-commencement check for new badger setts will be completed in advance of ground investigation and construction works. Appropriate further mitigation measures to protect badgers, and avoid contravention of the law, will be set out in the CEMP (as necessary).

Measures to avoid killing / injuring of amphibians and reptiles will be implemented during construction. These will include staged removal of vegetation and hand-searching by a Ecological Clerk of Works (ECoW) where necessary. These measures should be included within a CEMP.

Construction and pre-commencement ground investigations will be timed, to minimise night-time working to minimise disturbance to bats. Artificial light to aid construction will be minimised with that present designed to minimise light spillage outside active construction areas. Artificial light will be directed away from any field boundaries, trees or

buildings within and / or adjacent to the Site. Ground investigations will be undertaken away from any potential bat roosts to minimise disturbance by noise / vibration. Control measures should be outlined in a CEMP.

The CEMP will identify best practice to be applied to minimise water pollution from spillages associated with construction works and air pollution from construction vehicle emissions and dust generation.

Night working will be avoided where possible during the construction phase, however where required, by using sensitive lighting strategies to direct light away from habitat features as outlined within the CEMP.

Sufficient gaps will be left under perimeter security fences to allow access for small mammals (it is noted that animals will also be able to dig under these fences in normal circumstances). Gaps of approximately 35 x 35 cm at ground level will allow for continued use by species such as hedgehog.

Sensitive working practices will be adopted during the construction phase to prevent entrapment or other causes of harm to mammals (i.e. providing means of escape for any uncovered excavations, appropriately store chemicals and capping exposed piping). These mitigation measures should be included in a method statement within a CEMP.

Cultural Heritage	Hedgerows are for the most part retained in the design and will be fenced off during the construction phase to prevent accidental damage.
Human Health	Standard good practice construction management would appropriately reduce disruption and disturbance to users of the public footpaths adjacent and crossing the Site.
Risk of Major Accidents	<p>The Regulatory Reform (Fire Safety) Order 2005 (RRFSO) provides a framework for regulating fire safety in all non-domestic premises including workplaces and the parts of multi-occupied residential buildings used in common in England and Wales. It consolidated previous fire safety legislation into one Order.</p> <p>Essentially, it requires that any person who has some level of control in premises must take reasonable steps to reduce the risk from fire and make sure people can safely escape if there is a fire. It applies to virtually all premises and covers nearly every type of building, structure and open space including: offices and shops; care homes and hospitals; community halls and places of worship; shared areas of multi-household properties; pubs, clubs and restaurants; schools and sports centres; tents and marquees; hotels and hostels; and factories and warehouses.</p> <p>The RRFSO requires the employer, in relation to those parts of their premises where staff may be present to:</p> <ul style="list-style-type: none"> • carry out a fire-risk assessment identifying any possible dangers and risks; • consider who may be especially at risk; • get rid of or reduce the risk from fire as far as is reasonably possible and provide general fire precautions to deal with any possible risk left;

- take other measures to make sure there is protection if flammable or explosive materials are used or stored;
- create a plan to deal with any emergency and, in most cases, keep a record of findings; and review them when necessary.

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

Considering the requirements of the RRFSO, the following specific mitigation measures will be adopted as part of the Proposed Development in order to minimise fire risk:

- Procurement of components and use of construction techniques which comply with all relevant legislation;
- Inclusion of automatic fire detection systems in the development design;
- Inclusion of automatic fire suppression systems in the development design;
- Inclusion of redundancy in the design to provide multiple layers of protection;
- Designing the Proposed Development to contain and restrict the spread of fire through the use of fire-resistant materials, and adequate separation between elements of the battery storage facility; and
- Ensuring that South Wales Fire and Rescue Service recommendations and requirements are addressed to enable an adequate emergency response to a fire.

Suitable mitigation measures have been adopted as part of the Proposed Development and would be implemented through the Battery Safety Management Plan. The assessment has demonstrated that the construction of the Proposed Development would not cause any exceedances of the risk of major accident objectives in relation to fire safety and that the overall effect would be not significant. It is therefore, not considered necessary to propose further mitigation measures for the Proposed Development.

Table 5-5 Measures adopted as part of the Project during operation

Topic	Proposed measures during construction
General / Design	The design of the Proposed Development is low lying-in nature, typically shorter in height than the many existing mature trees and hedgerows around the Site. Once in operation, this will mitigate against any likely change in the character of the landscape.
Landscape and Visual	The Landscape Masterplan (See Figure 5.25) shows the planting of a number of trees and lengths of hedgerows. This has been prepared in conjunction with the project’s ecologist to ensure that habitat creation particular to this site has been included.

The mitigation measures are the planting of indigenous trees and hedgerows. The proposed tree planting and hedgerow planting would integrate the Proposed Development into the landscape as well as provide screening.

The objective of the mitigation planting would be to reinforce the existing and historical character of the Site as well as screening views.

Existing mature trees were former Beech hedgerows which have been left unmanaged. This is a typical feature in the local landscape. There are other types of boundary treatments in the same character area (stone walls, managed hedgerows, post and wire fences, coniferous trees).

The existing tree canopies provide screening benefits for the Proposed Development from some views to the Site, but the nature of the trees offers less screening at a lower level. Therefore, managed hedgerows (approx. 1.5 – 2.0m in height) are proposed to provide the screening where it is required.

Along the eastern boundary, adjacent to the local road, replacing the existing post and wire fence with a stone wall would be preferable, this would continue the existing character of the wall at the entrance to Cil Lonydd farm. Hedgerow planting here would also provide screening if stone wall is not feasible.

If possible, the hedgerow planting could be managed to allow some Beech trees to grow as succession planting for the existing mature Beech trees across the site. This would help strengthen the existing character of the Site.

The tree planting and hedgerow planting would provide the following benefits and follow landscape character guidelines:

- Create habitats and extend wildlife links to existing habitats.
- Increase biodiversity.
- Provide additional screening effects to reduce visibility.
- Enhance the landscape character.
- Adhere to the landscape character guidelines.

Biodiversity

Sufficient gaps will be left under perimeter security / deer fences to allow access for small mammals (it is noted that animals will also be able to dig under these fences in normal circumstances). Gaps of approximately 35 x 35 cm at ground level will allow for continued use by species such as hedgehog.

Cultural Heritage

Depending on the results of the trial trenching, potential impacts upon buried archaeological remains will be mitigated where necessary through a programme of archaeological works allowing for the appropriate excavation and recording of the affected assets and/or preservation in situ through methods such as the use of 'feet' for the mounting of the solar arrays, which would minimise ground

disturbance in areas of archaeological sensitivity. These measures will be agreed with GGAT.

The Modern, possible military square structure (GGAT05036g) within the northern part of the Site is assumed to be retained within the development design.

Human Health

Any PRoWs through the development will likely be extinguished (after permission if granted) with alternative routes proposed to replace the original route which will be fully accessible and managed. This is due to safety reasons with the public unable to walk through a solar farm.

Some routes are inaccessible so creating new managed, well-kept routes would be beneficial for all. Any PRoW outside of the proposal will not be affected.

Risk of Major Accidents

Suitable mitigation measures have been adopted as part of the Proposed Development and would be implemented through the Battery Safety Management Plan. The assessment has demonstrated that the construction of the Proposed Development would not cause any exceedances of the risk of major accident objectives in relation to fire safety and that the overall effect would be not significant. It is therefore, not considered necessary to propose further mitigation measures for the Proposed Development.

References

Caerphilly County Borough Council (2010) Caerphilly County Borough Local Development Plan up to 2021.

Department for Food and Rural Affairs (Defra) (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (including the Toolbox Talks).

Ministry of Agriculture, Fisheries and Food (MAFF) (2000) Soil Handling Guide

3 NEED AND ALTERNATIVES CONSIDERED

Introduction

- 3.1 This chapter of the ES provides a summary of the need for the Proposed Development and a description of the reasonable alternatives considered by the Applicant. It includes a summary of the reasons for the selection of the Site, together with a description of the alternative design and layout options that have been considered. Further information on the design evolution is provided in the Design and Access Statement that accompanies the planning application and not repeated here.

Need for the Development

- 3.2 The need for the Proposed Development stems from:
1. Increasing demand for electricity;
 2. The need to decarbonise energy systems and combat the potentially devastating effects of climate change on current and future generations; and
 3. Energy security for Wales.
- 3.3 Consideration of need, having regard to the relevant national and local policy context, is provided below.

National Grid Future Energy Scenarios (July 2023)

- 3.4 'Future Energy Scenarios' (FES) (National Grid, 2023) sets out credible ways that the UK can achieve Net Zero by 2050, as well as the UK Government's commitment to a decarbonised electricity system by 2035. The document considers how much energy is needed and where the energy could come from. In all scenarios, the demand for electricity increases; this is brought about by shifting away from high carbon fuels to hit the Government's net-zero emissions target by 2050 and the predicted increase in electric vehicles ahead of the 2040 ban on petrol/diesel driven vehicles.
- 3.5 For electricity supply, in all scenarios, there are significant increases in renewable energy generation. The 'key messages' of the FES report, with regards to the Proposed Development, include:
- Significant investment in low carbon electricity generation will be required across all net zero pathways; and
 - At least 89 GW of wind and solar is connected in 2030, with 119 GW in Leading the Way.
- 3.6 Between 2021 and 2022 there was a 9.5 TWh drop in weather corrected electricity demand, partly in response to the spike in electricity prices. This added to pre-existing trends of decreasing annual electricity demand, driven by increasing efficiency of lighting and appliances. Generation capacity is expected to increase rapidly through the 2020s, with a between 42% and 85% increase by 2030 when compared to 2022.
- 3.7 Growth in total installed generation capacity is seen across all scenarios through the 2020s, the primary driver of this short-term capacity growth is new renewable generation. This is most rapid in Leading the Way, which sees up to an additional 27 GW of solar installed by 2030.

Welsh Government Declaration of Climate Emergency

- 3.8 On 29 April 2019, the then Environment Minister Lesley Griffiths declared a climate emergency in Wales on behalf of the Welsh Government.

Welsh Government Declaration of Commitment to Net Zero by 2050

- 3.9 On 9 February 2021, the Welsh Government set out its legal commitment to achieve net zero emissions by 2050.

UK Government Net Zero 2050

- 3.10 On 27 June 2019, the UK became the first major economy in the world to pass laws to end its contribution to global warming by 2050. The target will require the UK to bring all greenhouse gas emissions to 'net zero' by 2050, compared with the previous target set within the Climate Change Act (2008) of at least an 80% reduction of emissions by 2050 (against the 1990 baseline). In support of this target, the Energy white paper: Powering our net zero future (DBEIS, 2020a) was published, setting out the pathway to achieving net zero through the greater reliance on solar and wind energy.
- 3.11 Net Zero 2050 – A Roadmap for the Global Energy Sector (International Energy Agency, 2021) outlines the essential conditions for the global energy sector to reach net-zero carbon dioxide (CO₂) emissions by 2050. The Roadmap calls for scaling up solar and wind technologies during the 2020s, reaching up to 630GW of solar and 390GW of wind by 2030, four times the set record levels in 2020. The Roadmap stresses that for solar, this equates to installing the world's current largest solar farm roughly every day.

National Planning Policy Context

- 3.12 PPW Edition 12 published February 2024, Future Wales - the National Plan 2040, published February 2021 (Future Wales), and the Technical Advice Notes (TANs) set out the national planning policies of the Welsh Government. Following the publication of Future Wales, TAN 8: Planning for Renewable Energy has been revoked and there is no longer an energy-specific TAN.
- 3.13 PPW paragraph 5.7.14 confirms that the Welsh Government targets for the generation of renewable energy are:
- Wales to generate 70% of its electricity consumption from renewable energy by 2030;
 - One Gigawatt of renewable electricity capacity in Wales to be locally owned by 2030; and
 - New renewable energy projects to have at least an element of local ownership.
- 3.14 It is noted that it is vital that we reduce our emissions to protect our own wellbeing and to demonstrate our global responsibility. Future Wales together with PPW seeks to ensure the planning system focuses on delivering a decarbonised and resilient Wales through the places we create, the energy we generate, the natural resources and materials we use, and how we live and travel.
- 3.15 Regarding energy generation, Future Wales identifies that Wales can become a world leader in renewable energy technologies. Wales' wind and tidal resources, potential for solar generation, its support for both large and community scaled projects, and commitment to ensuring the planning system provides a strong lead for renewable energy development, means it is well placed to support the renewable sector, attract new investment and reduce carbon emissions.

Local Policy Context

- 3.16 The development plan for the site for the purposes of Section 38(6) of the Planning and Compulsory Purchase Act 2004 is the Caerphilly County Borough Local Development Plan (LDP) up to 2021, adopted November 2010.

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- 3.17 A key objective (5) of the CCBC LDP is to *'Improve energy, waste and water efficiency while promoting environmentally acceptable renewable energy to maintain a cleaner environment and help reduce our impact on climate change.'*
- 3.18 In 2019, CCBC declared a climate emergency, with a pledge to become net zero by 2030 in line with the Welsh Government's declaration.

Overall Need

- 3.19 Overall, there is a significant need to increase electricity supply based on predictions of future consumption due to electrification of transportation and heating in particular.
- 3.20 Given the climate emergency, there is a need for the electricity to be produced from zero or near zero carbon and greenhouse gas emission sources.
- 3.21 Solar power has an important role to play as part of the mix of energy sources required to meet increasing electricity demand in the future and national carbon and greenhouse gas reduction targets, in particular the Welsh and UK Government's legally binding targets of net zero carbon emissions by 2050.
- 3.22 The Development would contribute to the delivery of these National and Local policy objectives, diversify the energy mix, and facilitate the transition to low carbon energy, whilst decreasing the dependency on fossil fuels. Due to rapid advances in technology, solar PV is one of the most cost-effective sources of energy, leading to more affordable and secure energy supply to consumers.

'Do nothing scenario'

- 3.23 Under the 'do nothing' scenario, the Site would continue to be used for pasture.

Alternatives Considered

Site Location

- 3.24 Large scale ground mounted solar farms are generally located in the open countryside. Sites large enough to accommodate a financially viable scheme, with sufficient megawatt (MW) output, are difficult to find in or close to settlements, particularly the towns and villages that are found in the area local to the Proposed Development, in particular there are:
- 3.25 Not enough rooftop areas or existing brownfield land available and competition from other high value sectors such as residential and mixed use for such sites;
- Unsuitable roof structures and standards (including roof orientation, shading, presence of plant and other equipment);
 - Complex multiple landlords/tenant agreements; and
 - Sites within settlements are likely to be considerably more visible to more people.
- 3.26 It is rare to find a site which meets all the other requirements for a large-scale solar farm, such as close to a point of connection with capacity, with no significant environmental designations or features, and minimal impact on the environment.

Site Selection

- 3.27 The Site selection process involved looking at and identifying locations with grid capacity – i.e. points on the distribution network that have the ability to accommodate additional generated electricity. These locations are fixed and unique and not readily available. Once grid capacity has been

NON-TECHNICAL SUMMARY

identified, the next step is identifying land parcels large enough to accommodate a viable project in close proximity to the available grid connection, whilst factoring in the following requirements:

- Need for a relatively flat topography,
- Supportive planning policy (lack of constraints),
- Suitable access (including access to the Site itself, and ability to provide unconstrained access around the Site e.g. pre-existing gaps in hedgerows and established field access points etc),
- Biodiversity opportunities,
- Appropriate grade ALC land (i.e. land not classified as Best and Most Versatile (BMV));
- Low risk of flooding;
- Established and pre-existing screening in the form of existing woodland and hedgerows;
- Land that is not subject to local, national or international ecological designations;
- Proximity to residential and amenity areas;
- Proximity to Heritage constraints – including designated and non-designated assets; and
- Willing Landowner.

Table 5-6 Summary of main factors considered in Site Selection

Assessment Category	Specific Factor	Site Performance
Technical Suitability of the Site	Topography and ground conditions	The site has a relatively flat and gently sloping topography.
	Size	The site is a large usable area, making it worthwhile for a large number of panels.
	Orientation	The fields generally face south or east/west, allowing for the optimum orientation for solar. North facing fields are avoided.
	Accessibility	The site has clear road access for construction, maintenance and decommissioning from the A472 at Hafodyrynys.
Electrical Infrastructure	Proximity of nearest point of connection	The site is strategically located in close proximity to the Mynydd Maen Wind Farm Proposal (DNS/3276725) allowing the sites to share a grid connection.
	Availability of grid capacity at the substation	
	Accessibility substation to connect to via cables	

NON-TECHNICAL SUMMARY

Planning Constraints	Planning designations, both national and local level	The site is not allocated for any uses under the CCBC LDP.
	Existing land use	The aim of the proposal is to provide a collaboration of energy generation and agriculture, allowing for sheep grazing beneath panels. The site was chosen for this due to its current land use for pasture grazing.
	Landscape designations	<p>The site is not within any national landscape designations such as Areas of Outstanding Natural Beauty (AONB) or National Park or Special Landscape Area.</p> <p>At a local level, according to the CCBC LDP, the site falls within a Visually Important Local Landscape.</p> <p>However, the site was chosen due to being naturally well screened from nearby farms and properties.</p>
	Ecological designation	There are no national designations near the site.
	Heritage designations	There are no designated heritage assets on site, the nearest being 1.8km distant from the site.
	Flood risk	The location of the site at a higher elevation means there is a low vulnerability to major accidents and disasters arising from flooding.
	Neighbouring land uses	The site is strategically located in close proximity to the Mynydd Maen Wind Farm Proposal (DNS/3276725) allowing the sites to share a grid connection.
	Potential visual receptors	The site is extremely well screened from nearby farms and properties.
	Presence of Best and Most Versatile (BMV) Agricultural Land.	The land onsite is subgrade 4 agricultural land, which is poor quality agricultural land.

Site Availability	Willing landowner	The client has an agreement with a single landowner in place prior to planning submission.
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3.28 The Preliminary Ecological Appraisal (PEA) concluded that the proposed development could have an impact on nearby locally designated site, Mynydd Maen, East of Newbridge Site of Important Nature Conservation (SINC). Following consideration of this issue, the Proposed Development 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.

References

- Caerphilly County Borough Council (2010) Caerphilly County Borough Local Development Plan up to 2021.
- International Energy Agency (2021) Net Zero by 2050 A Roadmap for the Global Energy Sector
- National Grid (NG) (2023) Future Energy Scenarios (FES). [Available online at: Future Energy Scenarios 2023 | National Grid ESO]
- The Town and Country Planning (Environmental Impact Assessment) Regulations 2017
- Welsh Government (2021) Future Wales: The National Plan 2040.
- Welsh Government (2024) Planning Policy Wales: 12th Edition.

4 ENVIRONMENTAL ASSESSMENT METHODOLOGY

Introduction

- 4.1 This chapter explains the methodology used to prepare the technical chapters of this ES and details its structure and content (the Scope). In particular, it sets out the process of identifying and assessing the likely significant environmental effects of the Proposed Development. Further details of topic specific methodologies, such as survey methods, are provided in each technical chapter as applicable.

Scope of the Environmental Impact Assessment

- 4.2 The Scope of the EIA is defined through a scoping exercise where the content and extent of matters to be covered by the EIA process are considered. The scope is defined by the information and assessment considered necessary to provide a clear understanding of the potential significant effects of the Proposed Development upon its environment. Scoping is an important preliminary procedure, which sets the parameters for the EIA process.
- 4.3 Regulation 15 of the EIA Regulations allows an Applicant to request that the LPA/PEDW sets out its opinion (known as a Scoping Direction) as to the issues to be addressed in the ES. Whilst there is no formal requirement in the EIA Regulations to seek a Scoping Direction prior to submission of an ES, it is recognised as best practice to do so.
- 4.4 A Scoping Request was submitted to PEDW in August 2023. The Scoping Report that comprised this request is included as Appendix 4.1.
- 4.5 PEDW issued a DNS EIA Scoping Direction on the 23 November 2023 and a copy of this is included as Appendix 4.2.
- 4.6 The ES topic chapters provide a summary of the key points raised during consultation with both statutory and non-statutory consultees.
- 4.7 The Scoping exercise also highlighted a number of areas that consultees wished to see addressed within the ES. Taking into account the nature, size and location of the project, the information provided within the Scoping Direction and other consultation responses provided throughout the EIA process, the following topics have been scoped in as requiring assessment within this ES:
- Landscape and Visual (Chapter 5)
 - Biodiversity (Chapter 6)
 - Cultural Heritage (Chapter 7)
 - Human Health (Chapter 8)
 - Risk of Major Accidents (Chapter 9)

Topics Scoped Out of the EIA Process

- 4.8 Effects on other aspects of the environment are not likely to be significant. The topics scoped out of the EIA are summarised below.

Planning Policy

- 4.9 The ES provides an overview of relevant legislative and planning policy context within each topic chapter and the assessments have had regard to national and local policy documents, where

relevant. A separate chapter on planning policy has not been included within the ES, however, a Planning Statement has been prepared to accompany the planning application.

Water

- 4.10 A FCA has been supported by a drainage strategy in accordance with PPW, Technical Advice Note 15 and latest climate change data to ensure flood risk and hydrological impacts are managed appropriately.

Transport

- 4.11 Transport matters are addressed through the submission of separate standalone technical reports, such as a Transport Assessment and a Construction Traffic Management Plan (CTMP).

Air Quality

- 4.12 A CEMP and Outline Construction and Decommissioning Method Statement will be prepared to outline measures to limit any effects during these phases. We propose that these documents are conditioned to any planning consent. PEDW welcomes this approach and as also referred to under Transport above, these documents should be included as technical appendices to the ES.

Land (for example land take)

- 4.13 PEDW and CCBC agreed that land can be scoped out. However, a separate Coal Mining Risk Assessment was required due to parts of the site being at high risk due to past coal mining activities. A Coal Mining Risk Assessment screening report (Ground Conditions Review) has been provided as part of the planning application.

Soil

- 4.14 The Proposed Development is unlikely to have significant effects on soils and is fully reversible at the end of its lifetime. Furthermore, the site does not contain BM agricultural land. Whilst this topic has been scoped out, a Soil Management Plan has been produced to accompany the application.

Material Assets

- 4.15 Material assets is considered across a range of topic areas within an ES, in particular the Cultural Heritage ES Chapter 7. Therefore, no separate consideration of material assets is considered necessary.

Environmental Assessment Methodology

Relevant EIA Guidance

- 4.16 The EIA process has taken into account relevant government or institute guidance, including:
- Welsh Office Circular 11/99: Environmental Impact Assessment;
 - Ministry for Housing, Communities and Local Government (2019a) Planning Practice Guidance at <http://planningguidance.planningportal.gov.uk>;
 - Department of the Environment, Transport and the Regions (DETR) (1997) Mitigation Measures in Environmental Statements. HMSO;

- Highways Agency et al. (2008) Design Manual for Roads and Bridges, Volume 11, Section 2, Part 5. HA 205/08;
- Institute of Environmental Management and Assessment (2004) Guidelines for Environmental Impact Assessment;
- Institute of Environmental Management and Assessment (2011) The State of Environmental Impact Assessment Practice in the UK. Special Report;
- Institute of Environmental Management and Assessment (2015) Environmental Impact Assessment Guide to Shaping Quality Development;
- Institute of Environmental Management and Assessment (2016) Guide to Delivering Quality Development;
- Institute of Environmental Management and Assessment (2017) Health in Environmental Impact Assessment: A Primer for a Proportional Approach;
- Institute of Environmental Management and Assessment (2020) Climate Change Resilience and Adaptation;
- 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 (2023) Environmental Assessment of Traffic and Movement.

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

Key Elements of the General Approach

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

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

Methodology and Assessment Criteria

4.19 Each topic chapter provides details of the methodology for baseline data collection and the approach to the assessment of effects. Each environmental topic has been considered by a specialist in that area.

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

Description of the environmental baseline conditions (including future baseline conditions)

- 4.21 The existing and likely future environmental conditions in the absence of the Proposed Development are known as 'baseline conditions'. Each topic-based chapter includes a description of the current (baseline) environmental conditions. The baseline conditions at the site and within the study area form the basis of the assessment, enabling the likely significant effects to be identified through a comparison with the baseline conditions.
- 4.22 The baseline for the assessment of environmental effects is primarily drawn from existing conditions during the main period of the EIA work in the period 2022 to 2024.
- 4.23 The baseline for the assessment should represent the conditions that will exist in the absence of the project at the time that the project is likely to be implemented. The anticipated start date for construction is 2027/2028, with enabling works likely to occur in 2027. The programme would be of approximately 6-9 months duration (including enabling works). Full operation of the site has been assumed to take place in 2028/2029. Further information about the construction programme assessed as part of the EIA process can be found in Chapter 2 (Project Description) of this ES.
- 4.24 Consideration has been given to any likely changes between the time of survey and the future baseline for the construction of the project from 2027/2028 and for operation of the project from 2028. In some cases, these changes may include the construction or operation of other planned developments in the area. Where such developments are built and operational at the time of writing and data collection, these have been considered to form part of the baseline environment. Where sufficient and robust information is available, such as expected traffic growth figures, other future developments have been considered as part of the future baseline conditions. In all other cases, planned future developments are considered within the assessment of cumulative effects.
- 4.25 The consideration of future baseline conditions has also taken into account the likely effects of climate change, as far as these are known at the time of writing. This has been based on information available from the UK Climate Projections project (UKCP18), which provides information on plausible changes in climate for the UK (Environment Agency and Met Office, 2018) and on published documents such as the UK Climate Change Risk Assessment 2017 (Committee on Climate Change, 2016).
- 4.26 Climate data from the UKCP18 database has been compiled for a 25km² grid square containing the site, based on a high emissions scenario (RCP8.5). Future cloud cover change data for the period 2040-2069 has been used to inform the consideration of how environmental conditions may change at the site and within the study area in future.

Limitations of the assessment

- 4.27 Each topic chapter identifies any limitations identified in the available baseline data and whether there were any difficulties encountered in compiling the information required.

Mitigation measures adopted as part of the project

- 4.28 During the EIA process, environmental issues have been taken into account as part of an ongoing iterative design process. The process of EIA has therefore been used as a means of informing the design.
- 4.29 The project assessed within this ES therefore includes a range of measures that have been designed to reduce or prevent significant adverse effects arising. In some cases, these measures may result

in enhancement of environmental conditions. The assessment of effects has taken into account measures that form part of the project.

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

- 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 CEMP; and
- Measures required as a result of legislative requirements.

Assessment of Effects

4.31 The EIA Regulations require the identification of the likely significant environmental effects of the project. This includes consideration of the likely effects during the construction and operational phases. The assessment is based on consideration of the likely magnitude of the predicted impact and the sensitivity of the affected receptor. The process by which effects have been identified and their significance evaluated is set out within each individual topic chapter. The overarching principles are set out below.

Sensitivity or Importance of Receptors

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

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

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

4.34 Sensitivity is generally described using the following scale:

- High
- Medium
- Low
- Negligible.

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

Magnitude of Impact

4.36 Impacts are defined as the physical changes to the environment attributable to the project. For each topic, the likely environmental change arising from the project has been identified and compared with the baseline (the situation without the project). Impacts are divided into those occurring during the construction and operational phases and where necessary decommissioning.

- 4.37 The categorisation of the magnitude of impact is topic-specific but generally takes into account factors such as:
- Extent
 - Duration
 - Frequency
 - Reversibility
- 4.38 With respect to the duration of impacts, the following has been used as a guide within this assessment, unless defined separately within the topic assessments:
- Short term: A period of months, up to one year
 - Medium term: A period of more than one year, up to five years
 - Long term: A period of greater than five years.
- 4.39 The magnitude of an impact has generally been defined used the following scale:
- High
 - Medium
 - Low
 - Negligible.
- 4.40 In some cases, a further category of ‘no change’ has been used.

Significance of Effects

- 4.41 Effect is the term used to express the consequence of an impact (expressed as the ‘significance of effect’). This is identified by considering the magnitude of the impact and the sensitivity or value of the receptor.
- 4.42 The magnitude of an impact does not directly translate into significance of effect. For example, a significant effect may arise as a result of a relatively modest impact on a resource of national value, or a large impact on a resource of local value. In broad terms, therefore, the significance of the effect can depend on both the impact magnitude and the sensitivity or importance of the receptor.
- 4.43 Significance levels are defined separately for each topic. Unless stated otherwise, the assessments take into account topic specific guidance, based on the following:
- **Substantial:** Only adverse effects are normally assigned this level of significance. They represent key factors in the decision-making process with regard to planning consent. These effects are generally, but not exclusively, associated with sites or features of international, national or regional importance that are likely to suffer the most damaging impact and loss of resource integrity
 - **Major:** These beneficial or adverse effects are considered to be very important considerations and are likely to be material in the decision-making process
 - **Moderate:** These beneficial or adverse effects may be important but are not likely to be key decision-making factors. The cumulative effects of such factors may influence decision making if they lead to an increase in the overall adverse effect on a particular resource or receptor

- **Minor:** These beneficial or adverse effects may be raised as local factors. They are unlikely to be critical in the decision-making process, but are important in enhancing the subsequent design of the project
- **Negligible:** No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

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

4.45 Each chapter defines the approach taken to the assessment of significance. Unless set out otherwise within the chapter, topic chapters use the general approach set out in Table 4-1. For some topics, a simplified or quantitative approach is considered appropriate.

Table 5-7 Typical Assessment Matrix

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

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

Further Mitigation and Future Monitoring

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

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

Assessment of Cumulative Effects

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

NON-TECHNICAL SUMMARY

- 4.50 The cumulative effects of the project in conjunction with other proposed schemes have been considered within each topic chapter of the ES. Other developments considered within the cumulative assessment include those that are:
- Under construction;
 - Permitted, but not yet implemented;
 - Submitted, but not yet determined; and
 - Identified in the Development Plan (and emerging Development Plans - with appropriate weight being given as they move closer to adoption) recognising that information on any relevant proposals will be limited.
- 4.51 It is noted that developments that are built and operational at the time of submission are considered to be part of the existing baseline conditions.
- 4.52 More detail on the assessment of the cumulative schemes is included in ES Chapter 5: Landscape and Visual.

Interrelationships

- 4.53 Inter-related effects arise where effects from one environmental topic bring about changes in another environmental topic for example ecology and landscape. Each topic chapter therefore considers whether or not there are any inter-related effects with other topics included within the EIA that have not already been considered in order to identify any secondary, cumulative or synergistic effects.

Summary Tables

- 4.54 Summary tables have been used to summarise the effects of the project for each environmental topic.

References

- 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 (2015) Environmental Impact Assessment Guide to Shaping Quality Development;
- Institute of Environmental Management and Assessment (2016) Guide to Delivering Quality Development;
- Institute of Environmental Management and Assessment (2017) Health in Environmental Impact Assessment: A Primer for a Proportional Approach;
- Institute of Environmental Management and Assessment (2020) Climate Change Resilience and Adaptation;
- 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 (2023) Environmental Assessment of Traffic and Movement.
- Ministry for Housing, Communities and Local Government (2019a) Planning Practice Guidance at <http://planningguidance.planningportal.gov.uk>;
- Welsh Office Circular 11/99: Environmental Impact Assessment;

5 LANDSCAPE AND VISUAL ASSESSMENT

- 5.1 The likely effects of the Proposed Development on the landscape character and the visual amenity have been assessed within a 5km detailed study area.
- 5.2 The Proposed Development would occupy an area of approximately 37.5ha, the heights of the solar cells would vary from 1.4m to 2.8m. There would be associated infrastructure around the Site including inverters (1.5m height) and a battery compound (2.3m height).

Effects on Landscape Character

- 5.3 The Proposed Development would not significantly harm the existing positive elements which contribute to the landscape character within the study area.
- 5.4 The landscape character of the immediate Site would be affected due to the change in use of the land, however, most of the landscape elements which make up the character of the Site would remain. Existing field hedgerows, stone walls and tree boundaries will be retained intact and protected during the construction phase with only minimal removal of some existing vegetation, which contributes little to landscape character.
- 5.5 There would be a limited adverse effect on the Visual and Sensory Aspect Area (CYNONVS214) and the Visually Important Local Landscape - 2.3 Abercarn due to the introduction of a new energy development in the landscape. These effects would be localised and the Proposed Development would not have a wider impact on the landscape character within the study area.
- 5.6 The proposals include the planting of boundary hedgerows and trees which would reinforce and enhance positive landscape elements of the Site.
- 5.7 Following decommissioning at the end of the operational life of the panels, the application Site can be returned to its current condition. There would be minor long term benefits to the local landscape character arising from the mitigation measures and the enhancements to landscape features within the application Site.

Effects on Visual Amenity

- 5.8 A Zone of Theoretical Visibility (ZTV) was produced which demonstrates the limited visibility of the Proposed Development within the study area. Sixteen viewpoints were determined and agreed with the local planning authority to represent views by road users, recreational users, and residents from locations where there may be visibility of the Proposed Development. Visual representations of the viewpoints were prepared in the form of annotated photographs and photomontages.
- 5.9 The visual assessment shows that visibility from most distant views would be limited by a combination of the landform, the enclosure provided by intervening vegetation surrounding the application Site and the distance from the application Site. Due to the nature of the low profile of the solar panels and the elevated Site location, they would not be easily perceptible in most distant views from publicly available viewpoints, including from Public Rights of Way. However, there would be some adverse visual effects on views from the southwest, from footpaths within the Special Landscape Area (SLA) of Mynyddislwyn.
- 5.10 In views from within approximately 1km of the Proposed Development there would be some adverse visual effects on views, mostly these are limited to Public Rights of Way within and just outside the Site boundary. These include views from the local road to the south and east of the Site, the public bridleway which enters the Site from the south, the restricted byway which passes through the Site east-west, the public footpath on the Open Access land to the north of the Site, the public footpath

along the track on Mynydd Maen to the northeast of the Site and also views from Old Pant Road in Panside.

- 5.11 There would be sequential views from Public Rights of Way within and around the Proposed Site where views of the Proposed Development would vary along a route. The visual effects vary from adverse effects along sections of public routes which pass through the Proposed Site where views are open to the solar panels, to minor effects where views pass around the Site where views of the Proposed Development may be blocked by landform or vegetation.

Cumulative Effects on Landscape and Visual Amenity

- 5.12 The cumulative effects on landscape character and visual amenity are those effects which are caused by an increase in perception of solar or renewable energy developments within a particular landscape or view.
- 5.13 This assessment considered the cumulative effects on two different scenarios, one included all other operational, consented and in-planning solar energy developments within a 6km radius of the Site; and the other scenario considered the solar developments as well as all wind energy developments which are operational, consented and in-planning within a 6km radius of the Site.
- 5.14 The cumulative effect on landscape character for both scenarios was limited. The addition of the Proposed Development would not significantly increase the overall perception of solar or renewable energy developments within the study area despite a potential localised effect when considering the pre-application wind energy schemes close to the Site.
- 5.15 The cumulative visual assessment identified some potential effects from views close to the Site which show a noticeable increase in renewable energy schemes when considering the same pre-application wind energy schemes which are close to the Site.

Summary

- 5.16 The Proposed Development could be accommodated within the existing landscape character and could be integrated into the surrounding landscape without causing any long-term harm to the landscape character, visual amenity or existing landscape attributes of the area.

6 BIODIVERSITY

- 6.1 The Ecological Impact Assessment has been completed by BSG Ecology and considers the likely significant effects on ecology associated with the construction, operation and decommissioning of the Proposed Development
- 6.2 The approach to the work has been informed by scoping comments from Caerphilly County Council and Natural Resources Wales, desk study and a range of field survey work, including a Phase 1 Habitat Survey, National Vegetation Classification (of one area of grassland), breeding bird, great crested newt and badger survey. The assessment method has based on guidelines from the Chartered Institute for Ecology and Environmental Management, which are the industry standard.
- 6.3 The area of the site proposed for solar development is not subject to statutory or non-statutory designation. The grid connection route, which extends across common land to the east of the site, crosses one Site of Importance for Nature Conservation (SINC), Mynydd Maen SINC, which was designated for extensive areas of acid grassland, bracken, and heath.
- 6.4 The part of the site which is proposed for the solar array is characterized by upland enclosed pasture fields. Habitat predominantly comprises poor semi-improved and semi-improved neutral grassland, with an area of marshy grassland within the eastern part of the area. The fields are demarcated by overgrown hedgerows (lines of beech trees), with very little shrub layer and are grazed to their bases. Field boundary fences prevent stock moving between them. Ancient semi-natural woodland abuts the southern boundary of the site, and habitats along the grid connection route include acid grassland, dry heath, and mosaics of these two habitats.
- 6.5 Breeding birds are largely confined to field boundary features, with very few ground-nesting species noted (due to grazing levels and habitat type). The community includes a number of Welsh priority, red-listed and amber-listed bird species. Great crested newt is not present in the on-site ponds, but is present in small numbers on Mynydd Maen Common. The structure of the hedgerows means they are unlikely to support hazel dormouse. No evidence of badgers has been recorded on site or in adjacent habitats.
- 6.6 The design of the project involves the retention of all of the hedgerows. Their restocking with scrub species and a commitment to their long terms management, along with the establishment of field boundary margins and headlands that will not be grazed by livestock will be delivered through a management commitment for the operational life of the scheme. These and other proposed measures will ensure that the impacts of the development on biodiversity are neutral or beneficial and that the requirements of biodiversity planning policy will be met. Species that are likely to benefit from the management of the site during its operational phase include breeding birds, great crested newts, other amphibians, reptiles, hedgehog and bats.
- 6.7 The assessment concludes that there are unlikely to be any significant residual effects on ecological receptors during the construction and operation phases of the Proposed Development.

7 CULTURAL HERITAGE

- 7.1 The likely significant effects of the construction and operation of the Proposed Development upon Cultural Heritage have been assessed in line with current guidance from Cadw, GGAT, the Chartered Institute for Archaeologists and others. The assessment has been informed by baseline studies comprising a Cultural Heritage Desk-Based Assessment and Geophysical Survey (Appendix 7.1-7.2).
- 7.2 There are no designated historic assets within the Site. The assessment has considered the potential for impacts relating to change in the setting of designated historic assets within 5km of the Site. It is considered that there will be no impact and designated historic assets have been scoped out of the assessment. This is in line with the scoping opinion received from Cadw.
- 7.3 The baseline studies, including a geophysical survey, recorded evidence that the Site was part of a monastic grange in the Early Medieval and Medieval period and demonstrates a high potential for remains of an ecclesiastical site to be present within the Site. Such remains could potentially be of regional significance and medium sensitivity. In addition, there is low potential for hitherto unrecorded archaeology of other periods to be present. A programme of trial trenching will be undertaken to establish the extent, character and level of preservation of archaeological remains within the Site. This will be undertaken prior to determination and the results provided as an addendum to the ES.
- 7.4 Any archaeological remains within the Site will be disturbed in the course of construction. In the absence of mitigation, this would result in significant effects. Detailed mitigation measures will be developed based on the results of the trial trenching. These may comprise avoidance of impacts through design measures allowing for preservation in situ or offsetting through a programme of archaeological works that will allow for the excavation and recording of the remains present and the appropriate dissemination of the results. Following the implementation of the archaeological mitigation it is considered that the residual effects will be of at most minor significance in the terms of the EIA Regulations.
- 7.5 Most of the extant hedgerows were present on the Tithe mapping from 1839 and are therefore considered to be of historic importance under the Hedgerow Regulations 1997. As part of a historic landscape of local importance, they are of low sensitivity. Elements of the hedgerows within the Site will be removed during construction and the loss of small sections would result in an effect of minor significance. This is not significant in the context of the EIA Regulations.
- 7.6 No significant cumulative effects in respect of either the construction or operational phase have been identified.

8 HUMAN HEALTH

Introduction

- 8.1 The human health assessment considers how the Cil-Lonydd Solar Farm Proposed Development affects different aspects of the environment that influence population health.

Approach and assessment methodology

- 8.2 The chapter follows best practice to assess human health as part of Environmental Impact Assessment (EIA). The methods follow the health in EIA guidance set out by the Institute of Environmental Management and Assessment as well as the Wales Health Impact Assessment Support Unit. The assessment provides the evidence and reasoning used to identify and assess any likely significant effects of the Proposed Development on population health. 'Population health' refers to health outcomes of a group of individuals. Physical health, mental health and health inequalities are considered. The health assessment looks at the potential effects for both the general population and for vulnerable groups. Vulnerability relates to experiencing effects due to age, income level, health status, degree of social disadvantage or the ability to access services or resources. The health assessment considers localised population effects and also considers wider population effects at the regional and national levels.
- 8.3 The health assessment is informed by findings of other EIA chapters and assessments, including: the Landscape and Visual Impact Assessment, Noise Assessment and Project Description. The health assessment has also been informed by a review of relevant public health evidence sources, including scientific literature, baseline data, health policy, local health priorities and health protection standards. The assessment follows guidance and good practice.

Baseline Environment

- 8.4 An overall baseline health profile was gathered for relevant wards and the local authority of Caerphilly, using regional (South East) and national (Wales) data as comparators. Data was gathered from publicly available evidence sources. The data shows that overall general health and wellbeing indicators in the local study area are similar to the national average. However, overall and health-related deprivation was found to be higher in some small areas within the local study area. These indicators show that the local population are not particularly sensitive to change, however this sensitivity will be higher for vulnerable groups.

Impact Assessment

- 8.5 A number of potential impacts on human health associated with the operation and maintenance phase of the Proposed Development were identified. There is potential for the Proposed Development to result in effects to community identity from the visual impact of the solar farm, including potential impacts to users of public rights of way in the area. These impacts were not found to be of a scale that could significantly change healthy behaviour or community identity, and is assessed as a minor adverse effect, which is not significant in EIA terms. The assessment also considers how the operational electricity delivered to the National Grid is a resource that supports many aspects of public health in the UK. Public health benefits include having power to safely cook and refrigerate food, regulating temperature and lighting of homes and schools, and operating health and social care services. Given the scale of the Proposed Development's renewable electricity contribution, this is assessed as a significant benefit for public health.

Cumulative Effects

- 8.6 Cumulative effects from the Proposed Development alongside other large-scale developments that are similar in location and timing have been assessed for the same population. The combined effect from the Proposed Development with other local developments has the potential to contribute to greater effects, though these are also more distributed within the population. The conclusion is that the public health effects would be the same as in the main assessment.

Inter-relationships

- 8.7 The effects resulting from the Proposed Development are not expected to overlap and produce greater population level effects in combination.

9 RISK OF MAJOR ACCIDENTS

- 9.1 The significance of effect of major accidents in relation to fire risk has been assessed within this ES Chapter and has assessed the risk of fire hazard as part of the Proposed Development to be very low to negligible.
- 9.2 This chapter demonstrates appropriate mitigation measures which will be implemented through the construction and operation of the Proposed Development which includes implementation of a Battery Storage Management Plan. This chapter demonstrates that the Proposed Development meets the requirements of existing and emerging legislation and guidance.
- 9.3 The construction of the Proposed Development has the potential to result in the risk of fire hazard through poor construction techniques and improper installation. Through the implementation of good construction practice techniques as well as implementation of the measures contained within a Battery Storage Management Plan and Code of Construction Practice (CoCP), this risk can be adequately managed. The development will minimise fire risk by following The Regulatory Reform (Fire Safety) Order 2005, introduction of fire detection and suppression systems, and use of fire-resistant materials.
- 9.4 The overall significance of the effect on environmental receptors and human health during the construction phase, taking into account the mitigation measures as described in this Chapter, is assessed as Minor Adverse.
- 9.5 The operation of the Proposed Development has the potential to result in the risk of fire hazard through infrastructure failure. All maintenance operations will be undertaken in line with current health and safety and technical legislation and guidance. Through the implementation of a Battery Storage Management Plan, this risk can be adequately managed. These hazards are therefore mitigated through the design of the systems and appropriate safe systems of work being employed for maintenance.
- 9.6 The overall significance of the effect on environmental receptors and human health during the operation phase, taking into account the mitigation measures as described in this Chapter, is assessed as Minor Adverse.
- 9.7 Cumulative impacts with other Proposed Developments screened into the assessment have been assessed and no significant cumulative effects have been identified.